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**Exploring Relationships and Information Exchange in Grocery
Supply Chains: a Case Study of the Enablers and Inhibitors.**

Vol. I

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**This thesis is submitted in partial fulfilment of the requirements for the
degree of Doctor of Philosophy.**

ABSTRACT

The last decade has seen a growing interest from academics and practitioners in the development of collaborative supply chain relationships based on information exchange. Most of the evidence gathered within this management research area has been biased towards the role of the buyer/supplier dyadic exchange in the integration of the supply chain. The role of the other parties and the systemic nature of supply chain management have been relatively ignored.

Previous research in this area has also been biased due to the narrow focus of investigation, with one problem being obtaining access to all parties involved in the supply chain. The purpose of this study was to overcome the aforementioned research biases and therefore, contribute to the understanding of the collaborative relationship development process from a broader supply chain perspective.

Open access was gained to six organisations across three tiers of a coffee supply chain in the UK grocery sector. Within this context, a theory building approach was applied to the data collected in the case study. Through constant comparison and coding of data from multiple strategic, tactical, operational, inter- and intra-organisational exchanges within the same context, several findings were made. An interesting finding from the research is the evolving role of the supply chain integrator, whereby the manufacturer seeks to balance the needs of its retail customers with the sourcing and procurement of raw and packaging materials from its suppliers.

In terms of the concepts of supply chain relationships and information exchange, there are a number of common enablers and inhibitors. The inter-relationship between the two concepts is however complex and requires further study. The other findings of the research are expressed as a tentative theoretical framework and a series of new emerging enablers and inhibitors to collaborative relationships and information exchange in the supply chain. Finally the enablers and inhibitors grounded from the case study provide a guide to the relational and often context specific factors that can influence the development of collaborative supply chain relationships based on information exchange.

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And finally, to my beautiful daughter Tabatha, I am so proud of you and wish for every your every happiness.

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I dedicate this to my Grandfather, George, my hero, a gentleman amongst gentlemen!

List of Abbreviations

AP	Accounts Payable
APO	SAP Advanced Planning & Optimisation
APS	Advanced Planning and Scheduling system
AR	Accounts Receivable
BW	Business Information Warehouse
CBS	Corrugated Board Supplier
CEM	Collaborative Event Management
CEO	Chief Executive Officer
CFAR	Collaborative Forecasting and Replenishment
CILTM	Critical Inventory Lead-time Mapping
CM	Commercial Management
CMI	Co-Managed Inventory
CPFR	Collaborative Planning Forecasting and Replenishment
CPM	Critical Path Method
CPS	Collaborative Planning System
CR	Continuous Replenishment
CRM	Customer Relationship Management
CRP	Continuous Replenishment Programme
DA	Demand Amplification
DAM	Demand Amplification Mapping
DBMS	Database Management Systems
DC	Distribution Centre
DP	Despatch Plan
DemP	Demand Plan
EAN	European Article Numbering
ECR	Efficient Consumer Response
EDI	Electronic Data Interchange
EFTPOS	Electronic Funds Transfer Point of Sale
EPOS	Electronic Point of Sale
ERP	Enterprise Resource Planning systems
FGI	Finished Goods Inventory
FI	Financial Accounting
FI/COPA	Customer Profitability Analysis
FL	Factory Logistics
FMCG	Fast Moving Consumer Goods
GS	Glass Supplier
HTML	Hyper Text Mark-up Language
ID	Industrial Dynamics
IM	Investment Management
IMP	International Marketing and Purchasing Group
IOS	Inter-organisational Systems
IP	Inventory Plan

List of Abbreviations (continued)

IS	Information Systems
ISCP	Integrated supply chain planning
IT	Information Technology
JIT	Just-in-Time
KPM	Key Performance Measures
KSF	Key Success Factors
M	Manufacturer
MIP	Materials Inventory Plan
MM/PUR	Materials Management/ Purchasing
MPS	Master Production Schedule
MRP	Materials Requirements Plan
MTP	Medium Term Plan
NDC	National Distribution Centre
NUD*IST	Non-numerical Unstructured Data-Indexing Search and Theorising
OEM	Original Equipment Manufacturer
PCS	Plastic Closure Supplier
PLS	Paper Label Supplier
POS	Point of Sale
PP	Production Plan
P	Purchasing
QR	Quick Response
R	Retailer
R&D	Research and Development
RDC	Regional Distribution Centre
SAP	Systems Application and Processes
SC	Supply Chain
SCIIR	Supply Chain Inter/Intra Organisational Relationships
SCIS	Supply Chain Information System
SCM	Supply Chain Management
SCP	Supply Chain Planning function
SCRM	Supply Chain Response Matrix
SD	Sales & Distribution
SID	Sainsbury Information Direct
SIS	Suppliers Information Service (Safeways)
SKUs	Stock Keeping Units
SP	Supply Plan
SSC	Seamless Supply Chain
TBC	Time based competition
TCE	Transaction Cost Economics
TCP/IP	Transmission Control Protocol/Internet Protocol
TIE	Tesco Information Exchange
VICS	Voluntary Inter-industry Commerce Standards
VMI	Vendor Managed Inventory

List of Abbreviations (continued)

WM	Warehouse Management
WMS	Warehouse Management System
XML	Extensible Mark-up Language

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CHAPTER 1:
INTRODUCTION TO THE RESEARCH

1.0 Introduction

This thesis begins by reviewing developments within the UK Grocery sector over the last fifteen years covering changes in market structure, consumer lifestyles, the arrival of new competitors and developments in technology. The problems associated with achieving competitive advantage in the UK Grocery sector are identified and suggestions are made as to how these may be addressed. The research rationale and justification for the research are then discussed setting out why the research should be undertaken and the likely contribution that the proposed research can make. The concepts of Supply Chain Relationships and Information Exchange in the Supply Chain are then introduced. A brief overview is then provided of the current UK grocery sector in terms of market size, the hot drinks sector and its major players. Finally, the chapter concludes by presenting the structure of the remainder of the thesis.

1.1 A Changing Retail Environment

All retail organisations are currently faced with a common enemy: the environments in which they operate are becoming increasingly turbulent. Retailers are not alone, as this trend towards turbulent, dynamic environments is something facing organisations across all industries (Miles and Snow 1986, 1992).

The UK retail grocery sector is a unique market, both geographically and in that leading retailers enjoy net operating margins of between six and eight per cent, whereas retailers in the rest of Europe achieve margins of between a half to two per cent (Burt and Sparks 1997; Hallerman 1997). The UK retail grocery sector has become a target for discounters (Guy 1996) and speciality stores, with such outlets holding significantly fewer product lines (e.g. 6,000 stock keeping units (SKUs) compared to an upper limit of 50000 SKUs for retailers such as Tesco and ASDA) (see Harvey 2000). In response to the threat of these new competitors, retailers have in some product lines tried to compete on price (Fernie 1993), however, this has resulted in eroded brand loyalty as consumers view these products as commodities, and consequently shop around for the lowest price. This has further increased pressure on retailer's operating margins, in a

mature market sector which is arguably already at a point of saturation (Alexander and Morlock 1992; Guy 1996).

Retailers are now faced with a new search for sustainable competitive advantage. One response by retailers to UK market saturation has been a move towards internationalisation (Alexander and Morlock 1992; Cannon 1992; Cox and Ghoneim 1996; Tesco 1996, 1997¹; Fernie and Staines 2001; Harris and Ogbonna 2001). This, however, presents the problem of having to compete with existing retailers in these new markets who have for many years had to exist and compete with substantially lower margins (Hallerman 1997; Ody 1997). Harris and Ogbonna (2001) suggest that this trend towards internationalisation will continue as the large retailers seek to reduce their dependence on the UK market.

The 1990s have brought dramatic changes in consumer lifestyles, extensive new European food legislation (Hughes 1995), rapid growth in the consumption of fast-food, increased disposable incomes and increasing awareness of foreign cuisine in the UK (Hughes 1995), leading to a shift in the balance of power. Consumers have now gained the upper hand as retailers are now being forced to focus their activities to meet the consumer's ever increasing needs (Tesco 1997; Mason 1998). Retailers are increasingly competing on levels of service (i.e. assistants to help customers pack their shopping, helping customers to find products within stores, etc.), as this is seen as a way of differentiating themselves from their competitors (Tesco 1997; Mason 1998). Retailers have also responded to the above changes with vast ranges of new products. With such growth in new product development, the number of product lines has also dramatically increased, the stockholding implications of this resulting in yet further pressure on already strained operating margins. The effects of continued low inflation mean that retailers cannot relieve pressure on their margins via price rises to their customers/consumers (IGD 1997).

¹ Tesco are continuing their expansion in Eastern Europe, particularly in Hungary and Poland.

It is suggested alternatively, that a major source of competitive advantage may well come from retailer's own supply chains (Gilchrist 1994), where it may be possible to substantially reduce costs and improve levels of service, including the reduction of time to market for many products (Christopher 1992). This is particularly pertinent in view of the vast number of promotions and new product introductions that characterises the UK retail grocery sector (Fearne *et al.* 1999). Such promotional and new product introduction activity is often cited as a major source of pressure in terms of increasing inventory levels (by virtue of coming to the end of promotional periods and still holding numerous weeks of excess inventory) and reducing service levels (by virtue of not being able to deliver products on time in response to dramatic uplifts in demand) (Lee and Whang 2000).

There are growing indications that many organisations, especially retailers, have realised the importance of their inbound logistics and recognised the potential for cost reduction [for example Wal-Mart (Kurt Salmon Associates 1993; Harvard Business School 1995; Weitz and Jap 1995; Vlosky and Wilson 1997). Current efforts to improve inbound logistics include: ECR (Efficient Consumer Response), VMI (Vendor Managed Inventory), Cross-docking (Peck 1997) and Collaborative Planning Forecasting and Replenishment (CPFR) (see for example Spekman *et al.* 1998; Stank *et al.* 1999a; Fernie *et al.* 2000; Barratt and Oliveira 2001).

Increasing competitive pressure has forced the retailers to look beyond their own boundaries for sources of competitive advantage. Previously, retailer-operating activity had forced inventory back upstream in the supply chain and created an atmosphere of adversity and distrust between retailers and their suppliers. The recognition of the dynamic nature of the operating environment (Forrester 1961; Towill 1996) is forcing retailers to re-examine the management of their supply chains. Such supply chains have already been recognised as a source of competitive advantage in that in the future it may well be supply chain competing against supply chain rather than organisation competing against organisation (Christopher 1992, 1996). If such supply chains are to provide this source of competitive advantage, a number of hurdles must be overcome. Particularly,

total supply chain costs must be reduced and service levels (in terms of (1) deliveries to retailers' distribution centres and (2) on-shelf availability) must be improved. Such objectives it is argued may only be achieved through the development of more collaborative relationships between retailers and their suppliers (Ferne *et al.* 2000).

The introduction of new technology such as Electronic Data Interchange (EDI), Electronic Point of Sale (EPOS), and bar-coding, have created the opportunities for exploiting competitive advantages from the sharing of information (McKinnon 1990, 1992; Hogarth-Scott and Parkinson 1993). The recent arrival of the Internet and internet-related technologies (Lee and Whang 2000) have provided yet further opportunities for sharing information with supply chain partners (Ferne *et al.* 2000).

1.2 Research Rationale

Historically, retailers have sought to remain competitive and to meet the needs of their customers by implementing numerous initiatives aimed at reducing costs and improving levels of service. Many of these initiatives, have, however, been undertaken from only an internal perspective. It is suggested that sustainable competitive advantage is no longer possible through internal improvement alone (A.T. Kearney 1994). Opportunities exist outside of organisations, in that further cost reductions and improvements in service levels can be sought from the effective management of their supply chains (Gilchrist 1994).

1.2.1 Supply Chain Management

The concept of Supply Chain Management (SCM) calls for a "systemic" view of the supply chain (Ellram and Cooper 1990; Lummus and Vokurka 1999), in that drives for improvements in parts of the supply chain must be viewed in terms of their overall impact on the supply chain as a whole (Lummus and Vokurka 1999). Such 'integrated' supply chain management offers potential synergetic benefits (for the purposes of this thesis '*synergetic benefits*' are defined as the benefits that are derived from taking a broader, more holistic approach to management of the supply chain, i.e. they are greater

than the sum of the benefits from the individual parts of the supply chain²) which are not possible when management of the supply chain is fragmented (Penman 1991). An alternative approach to SCM is vertical integration although this is rejected due to the numerous disadvantages of such an approach within the supply chain (Ellram 1991; A.T. Kearney 1994).

1.2.2 Barriers to Supply Chain Management

There are a number of hurdles to be overcome before the suggested potential synergetic benefits can be achieved (see for example Lummus and Vokurka 1999). One of the major hurdles is the continually changing business environment in which the supply chain exists. The changing business environment can to a large extent, be explained by Jay Forrester's "Theory of Industrial Dynamics" (Forrester 1958). This theory uses 'system dynamics' as a modelling technique to show that the changes in the business environment are echoed throughout the supply chain and must be addressed accordingly (Towill *et al.* 1992; Atkin 1993). A related problem is that of 'Demand Amplification'³ (Forrester 1958; Lee *et al.* 1997a, 1997b) whereby the actual process of exchanging information (usually in the form of product orders) between adjacent organisations in the supply chain causes over-amplified variations in apparent product demand. Such variations often result in high inventory holding costs, and even situations where organisations have to make large mark-downs or even write-offs to dispose of excess stock (see for example Towill 1996; Jones and Rich 1996; Christopher 1997).

Another problem to be overcome is that the concept of integration throughout the supply chain is apparently not yet fully understood. The concept of integration in the supply chain is developed from a systemic view of the supply chain (Houlihan 1984, 1985; Jones and Riley 1985), in that organisations cannot simply implement local operational improvements (improving efficiency and effectiveness) and expect supply chain related problems to cease. Any action taken will have an effect upon the supply chain as a whole. The supply chain must be viewed as a whole and solutions must be arrived at as such. It is suggested that the increased usage and role of information technology as a

² Please refer to Section 2.3.3 for a more detailed discussion of synergy.

means of enhancing competitiveness for retailers, particularly (at the time of writing) loyalty cards and the resulting information that these derive, may hold the key to integrating the supply chain as a whole. If this and other supply chain related information (such as inventory levels across the supply chain) were shared with other organisations upstream along the supply chain then some of the previously mentioned problems such as demand amplification may be overcome.

Finally, yet a further problem to be overcome is the nature of the relationships between organisations participating in the supply chain. Such relationships have traditionally been founded upon adversity (Hogarth-Scott and Parkinson 1993; A.T. Kearney 1994). These relationships need to become more collaborative and have mutual objectives, offer mutual benefits to both parties and evolve around a culture of openness and reciprocity between organisations (Fernie *et al.* 2000). Such relationships must replace the more traditional adversarial relationships that have fostered a “silo” or “trench warfare” mentality resulting in extremely inefficient and ineffective supply chains (McGuffog 1997).

1.3 Supply Chain Relationships

Organisations are beginning to realise that collaborative relationships are the way to obtain the potential benefits of the supply chain management approach (Wilson 1996; Spekman *et al.* 1998; Fernie *et al.* 2000), although from the literature review (see chapter 2, section 2.4), existing research into supply chain relationships has been predominantly on the dyadic level which ignores the full extent of the supply chain and thereby loses the systems perspective when attempting potential improvements.

There has been a large amount of research undertaken in the area of business-to-business relationships, although not in the context of the supply chain. It is argued by the author that the context of the research is critical and therefore previous research in the marketing literature (*see for example* Dwyer *et al.* 1987; Anderson and Narus 1990; Morgan and Hunt 1994; Spekman and Mohr 1994) will only be used to provide insight

³ Demand amplification is also known as the “Bullwhip Effect” (Lee *et al.* 1997a and 1999b).

for this research. Mentzer (1993) summarises the need to examine the management of relationships with customers and suppliers across the supply chain.

In general terms, there is a growing realisation of the need to form collaborative relationships with other firms in order to remain competitive (Narus and Anderson 1987; Morgan and Hunt 1994; Weitz and Jap 1995; Vlosky and Wilson 1997). More specifically, competitive advantage can be achieved by forming “partnerships” with customers, suppliers, distributors, etc. (Emsswiller 1991). Vlosky and Wilson (1997: 2) define partnerships as “*purposive strategic relationships between independent firms who share compatible goals, strive for mutual benefit, and acknowledge a high level of mutual interdependence*”.

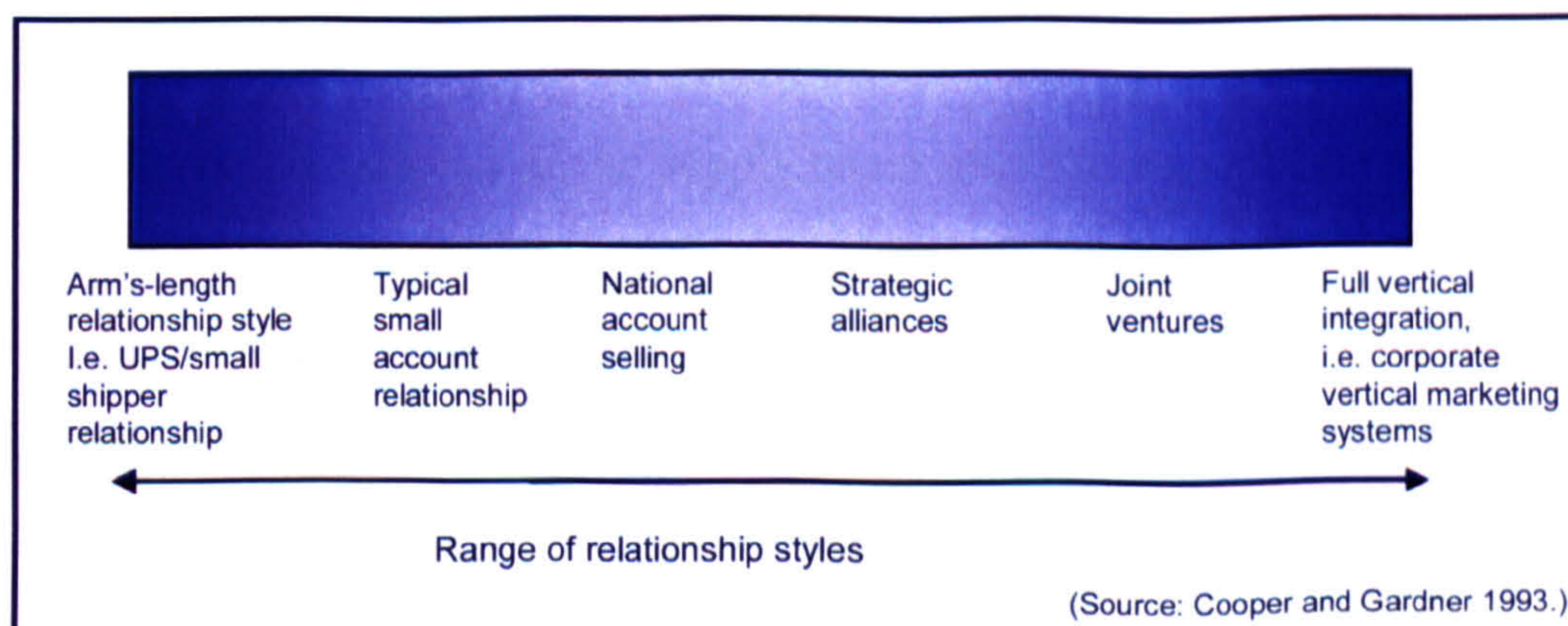
Alliances and partnerships are motivated primarily to gain competitive advantage in the market place (Spekman and Mohr 1994; Spekman *et al.* 1998). Following this argument, organisations are beginning to recognise the competitive advantage from in-bound logistics instead of from traditional areas such as production and R&D (Weitz and Jap 1995). Hogarth-Scott and Parkinson (1993) used eleven case studies to examine the nature of manufacturing organisations perceptions of their relationships with their retailing customer in the UK Retail Grocery Sector (i.e. looking at the retailer’s in-bound logistics from the perspective of the supplier). It must be noted that business-to-business relationships are dynamic, and therefore any research into relationships must be able to reflect the dynamic nature of the phenomenon.

Recently, research on the concept of SCM has focused on debate regarding the need for closer relationships between customers, suppliers and other relevant parties, in the search for competitive advantage. The arguments for closer relationships began with the theories of Coase (1937) and the transactional economic work of Williamson (1975), sometimes addressing the inter-organisational relationship concepts of writers such as Van der Ven *et al.* (1975), which led theorists to identify the concepts of networks, as opposed to “supply chains” (Harland 1996).

It has been suggested (Christopher 1992; A.T. Kearney 1994) that in the future it will not be organisations that compete, but supply chains that will compete with one another. Indeed, many authors have ventured a stage further in that they see supply chains as networks of organisations interacting together to deliver products or services to the "ultimate" consumer (see for example Jones 1989; Christopher 1992), but not implemented to assist in the development of a full understanding. If this view of supply chains as networks is to be upheld, then such supply chains must be analysed and managed accordingly as networks.

Closer relationships between suppliers and customers are a competitive necessity (AT Kearney 1994). There is clear evidence that organisations have recognised this and are attempting to implement such an approach to the management of their supply chains (AT Kearney 1994). Certainly, organisations have recognised the need to develop relationships with their customers, although it would appear that there is a bias towards the formation of relationships with customers at the expense of relationships with suppliers (Helper 1991; AT Kearney 1994). It is not clear as to the reasons for this apparent bias. Now that logic (getting close to your customers) has extended upstream as well, it is also important to forge close ties with one's key suppliers.

Figure 1: Relationship Style Continuum.



A number of authors have suggested that there is a continuum of relationships (Ellram 1990; Webster 1992; Cooper and Gardner 1993; Lambert *et al.* 1996; Spekman *et al.* 1998) along which organisations are moving towards the formation of a network of relationships (see Figure 1 above).

It has also been suggested that organisations should form different types of relationships with other organisations to suit the purpose of their dealings with a given organisation (Cooper and Gardner 1993; Lambert *et al.* 1996). If this move to a network of relationships is to succeed and if there are varying styles of relationships, which vary in their sustainability, then the network is likely to be ever changing in its make-up of organisations, as firms discard some relationships and seek new partners.

Limited empirical work has been done in modelling and studying supply chain management relationships (Hewitt 1994; Cooper *et al.* 1997; Lambert *et al.* 1998). Most research done in this area has focused on one relationship or a single level of the supply chain, such as buyer/seller, shipper/carrier, and so on (Ellram 1991; Harland 1996). One argument that has been put forth for adopting a SCM approach is that it provides synergetic benefits. However, these synergies can only be best evaluated by examining the total system, not individual parts thereof. Thus, the studying of supply chains as systems is an important issue to be borne in mind.

Recent research predominantly focuses on dyadic relationships between either retailer and supplier, or manufacturer-distributor (Cooper and Gardner 1993). Such work appears to ignore the systemic view of supply chain philosophy and therefore the traditional “pipeline” view (*a supply chain made of a series of dyadic relationships between organisations*) of the supply chain needs to be replaced with that of the “inter-business network” (Harland 1996; Juga 1996). Many of the definitions of SCM lend themselves to the representation of the supply chain as either a network (Christopher 1992; Juga 1996) or that of the external supply chain (Houlihan 1985; Stevens 1989; Davis 1993). However, much of the existing research into supply chains is in the form of internal supply chains (Oliver and Webber 1982) or dyadic relationships (Ellram and Cooper 1993). Thus there is a clear need for research into supply chains as networks of relationships between multiple organisations. This view is supported by Harland (1996: 64) who suggests, “*As there is a move towards network relationships, the need for research in external supply chains and networks will increase*”.

In terms of supply chain relationships, existing theory that has been applied to SCM has originated from other disciplines, e.g. marketing and to some extent engineering, and is generally considered inappropriate (Stock 1996; 1997). An example of this is the Transaction Cost Economic literature (Coase 1937; Williamson 1975, 1985).

SCM is a boundary spanning activity (both functionally and organisationally), and the theories that have been borrowed e.g. Transaction Cost Theory (Coase 1937; Williamson 1975, 1985) are generally more functionally oriented. Additionally in light of SCM's boundary spanning nature the borrowed theories do not address or reflect many of the behaviourally related issues that are emerging e.g. the interaction between individuals and other people, people with groups, and groups with other groups. One possible explanation for this "gap" in existing theories is the disparity between SCM researcher's prescriptive advice and practically oriented answers required by practising managers (Hewitt 1994).

A number of logistics and SCM researchers have seen the need to gather better information about the realities of SCM and to develop better, more complete theories about them (McCutcheon and Meredith 1993; Mentzer and Khan 1995; Kent and Flint 1997), in terms of theories that reflect SCM's boundary spanning nature. A prime means of developing well-grounded theories is through empirical field based research. The move towards theory development based upon field research does, however, raise the issue that such an approach is generally unfamiliar to many established SCM researchers (Holland 1995; Mentzer and Khan 1995; New and Payne 1995; Ellram 1996; Juga 1996; New 1996).

Supply chain relationships are supported by and in turn support the sharing of information (Spekman *et al.* 1998). Organisations must share demand and cost information if competitive advantages are to be achieved (AT Kearney 1994; Christopher 1997). If organisations' continue with the practise of charging for forecast or demand data (AT Kearney 1994), then the ideal of collaborative relationships is not likely to be achieved. This is seen as simply an organisation exercising its power over its supplier.

1.3.1 Supply Chain Relationships in the UK Grocery Sector

The UK grocery sector has provided the context for many adversarial relationships between retailers and grocery manufacturers, however the mid 1990s witnessed a realisation for the need to work more closely with trading partners in the supply chain (Coupe 1995; Leggett 1996; Wheatley 1996; Coopers & Lybrand 1997; Peck 1997; Kurnia *et al.* 1998). The vehicle for this change was the concept of Efficient Consumer Response (ECR) (Kurnia and Johnston 2001).

Despite its origins in the USA (Kurt Salmon Associates 1993; Partch 1993; Cooke 1994; Robins 1994; Fiorito *et al.*, 1995), ECR offered many potential benefits to both manufacturers and retailers in terms of efficiency improvements, with the biggest opportunity being the facilitation of real supply chain collaboration (Kurnia and Johnston 2001).

ECR provides a framework to align business activities (Pearce 1997), and calls for the creation of a timely, accurate and paperless flow of information – relying heavily on electronic data interchange (EDI) and strategic alliances between supply chain members (Sansolo 1993; Fiorito *et al.* 1995). The goal of ECR is to take costs out of the supply chain that do not add consumer value (Robins, 1994). By sharing information, ECR would enable supply chains to become demand driven and in so doing, to deliver enhanced customer value. Therefore, ECR could be seen as an enabler of the drive towards an integrated supply chain.

ECR has attracted a growing level of interest (albeit in the practitioner literature) from both manufacturers and retailers in many European countries (Coupe 1995; Fernie 1995; Leggett 1996; Wheatley 1996; Coopers & Lybrand 1997; Peck 1997; Kurnia *et al.* 1998). Examples of UK grocery sector organisations (both retailers and manufacturers) that have adopted ECR include: Birds Eye Walls, Johnson & Johnson, Mars, Procter & Gamble, Tesco and Van den Bergh Foods (Barry 1996; ECRE 1996; Pearce 1996, 1997).

1.4 Information Exchange in the Supply Chain

The concept of SCM is based upon achieving integration throughout the supply chain, accomplished by the creation of relationships (based upon the exchange of information) with both customers and suppliers, for the overall purpose of satisfying ultimate consumer demand. Integration with both upstream and downstream trading partners will, it is suggested, lead to a more responsive supply chain (Christopher 1997), and such integration is only possible by ensuring the free flow (Lummus and Vokurka 1999; Lau and Lee 2000) of information up and down the chain (Lambert and Cooper 2000).

In so far as logistics and SCM are concerned, Information Technology (IT) plays a significant role in supporting the drive to improve service and reduce costs (Christopher 1997). It is not clear, however, as to whether IT capabilities themselves lead to competitive advantage (Bowersox and Closs 1996), however, Ogbonna and Wilkinson (1996) suggest that the information generated by such IT can itself clearly create power and influence in the supply chain.

Many authors go further in recognising that the collection, creation, management, and communication of information are critical to the efficiency, effectiveness, co-ordination (see for example Mentzer and Khan 1996; Bowersox *et al.* 2000; Lee and Whang 2000) and competitive advantage of any supply chain (see for example, Global Logistics Research Team 1995; Stern *et al.* 1996; and Mentzer *et al.* 2000). Despite the recognition of this 'all encompassing' role of information, Lee and Whang (2000) argue that apart from Barrett and Konsynski's (1982) study of inter-organisational information systems, there has been no empirical research into information sharing in a supply chain context.

Both the Grocery and non-food retail sectors in the UK have invested heavily in electronic trading technology (such as EDI and EPOS) in order to gain competitive advantage in the short term, and secure survival for the longer term (Cunningham 1992). Lee and Whang (2000) argue that suitable and sufficient technologies are currently available for sharing information, for example, client server architecture; TCP/IP

(Transmission Control Protocol/Internet Protocol); relational DBMS (Database Management Systems); ERP (Enterprise Resource Planning systems); EDI (Electronic data interchange); object oriented programming environments; wireless communications and the internet (Lancioni *et al.* 2000).

Information sharing in the UK Grocery sector can be at best described as patchy, whilst some of the large supermarket retailers have over the last few years begun to share information with key suppliers this does not extend to all of their suppliers (Ferne *et al.* 2000). Ogbonna and Wilkinson (1996) suggest that the degree of sharing of information is also inconsistent and selective. They suggest that there is a distinction between own-label suppliers, whose relationships with retailers in many cases appear to be increasingly close, and branded manufacturers, with whom the relationship remains selectively distant (Ogbonna and Wilkinson 1996). The sharing of information between the largest grocery retailers and their suppliers has been achieved through internet-based information exchanges (Ferne *et al.* 2000; Lancioni *et al.* 2000). Unfortunately these exchanges have been developed at the individual company level [e.g. (1) Tesco Information Exchange (TIE), (2) Sainsbury Information Direct (SID) and (3) Safeways - Suppliers Information Service (SIS)] and it is suggested there is a need to develop common industry standards (Ferne *et al.* 2000).

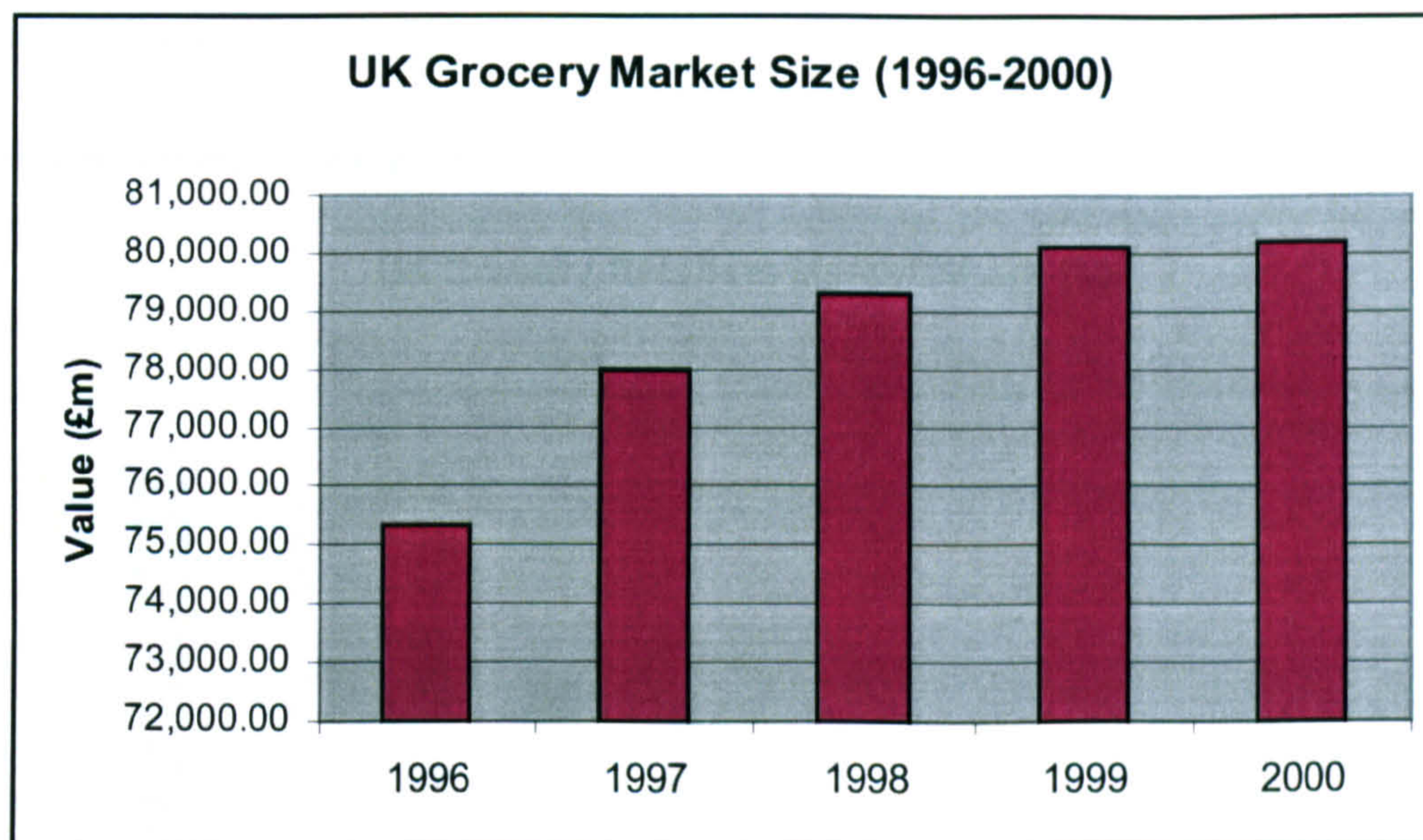
Whilst there is a growing amount of research into the role and effects of information in the supply chain (see for example Jones and Rich 1996; and Towill 1997), this is limited to the modelling of supply chain, by way of a systems dynamic technique to reflect the demand amplification effect. By making demand information available to all parties in the supply chain, it has been suggested that this would to a large extent remove the negative impact of demand amplification (Mason-Jones and Towill 1997; Mason-Jones 1998).

1.5 The UK Grocery Sector

The UK market for grocery stores, food retailers and supermarkets has grown by 0.1% since 1999 to reach a value of £80.2 billion in 2000 (Euromonitor 2001). The fact that

volume sales by food retailers have grown less than value sales indicates that inflation has provided a significant element of the apparent market value growth. Despite increased links to a renewed interest in quality and convenience after 1996, the effects of price discounting earlier in the period depressed value growth over the review period.

Figure 2: UK Grocery Market Size (1996-2000)



Source: Euromonitor (2001)

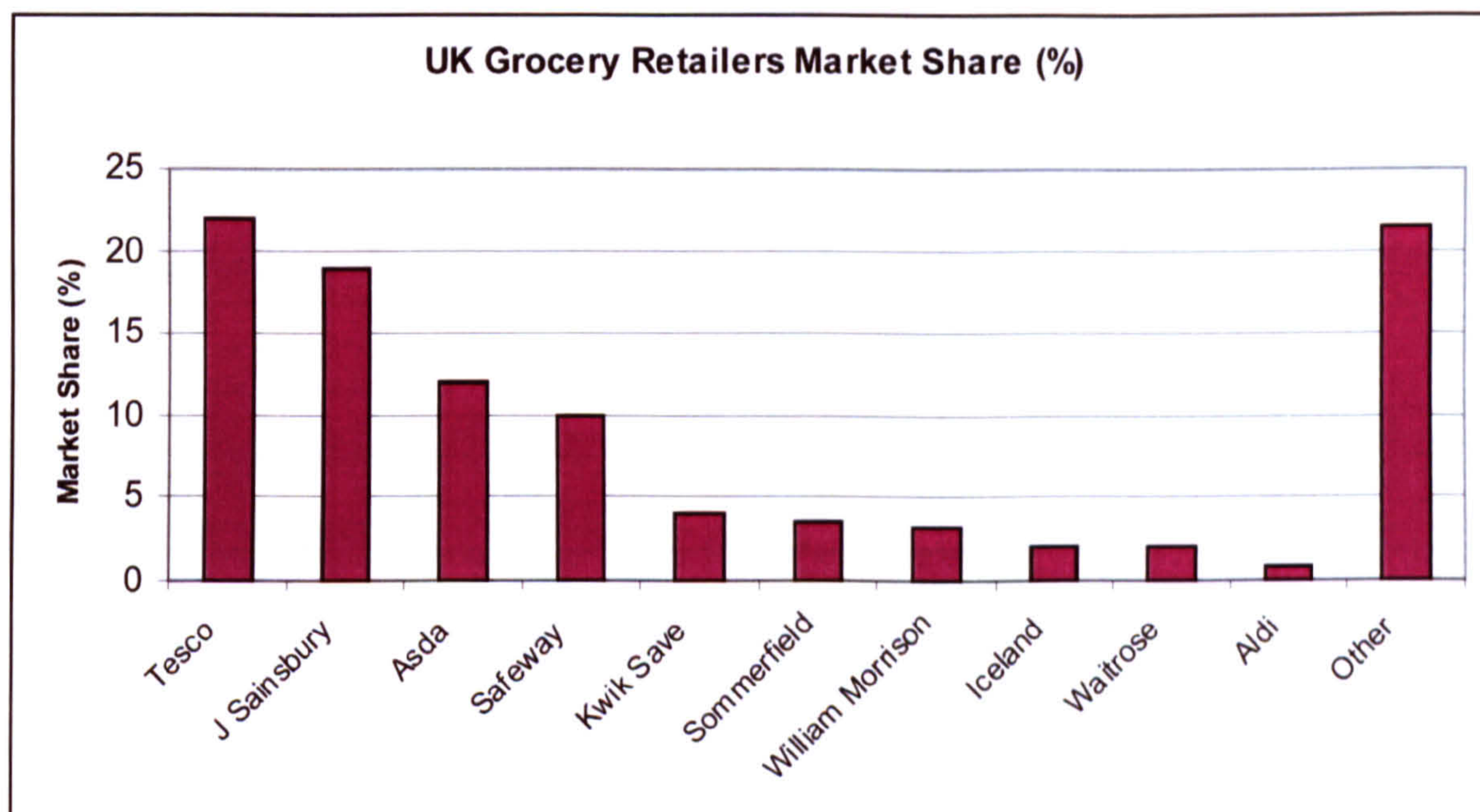
UK food retailing is a mature market, which has become increasingly concentrated in the hands of a small number of large multiple players with very limited opportunities for growth. Private labels are becoming an integral aspect of retailing, generating higher profits, enabling retailers to develop distinct corporate identities and differentiated product offers. Convenience has driven many of the developments in UK food retailing, including a broadening of products stocked, increased numbers of services under one roof, extended opening hours and convenient locations.

1.5.1 Market Share – The Major Players

Tesco is the market leader, accounting for 22% of UK food retailing in 2000. Share taken by the top four multiples has increased further since 1999, standing at 53% in 2000. Despite the loss of a leading market position since 1997, Sainsbury's sales growth improved in 2000 and the company is still 7% ahead of its nearest competitor, Asda.

William Morrison's growth over the 1996-2000 period is impressive and shows that it is not impossible for relatively small players to improve, given a consistent strategy and a real point of difference from the competition. Iceland is another retailer that has discovered a real point of difference to exploit. It also managed to move ahead of major rivals on both BSE and GM foods. The discounters are still hovering on the brink of a breakthrough, with Aldi maintaining the same share but Lidl continuing to grow via its expansion program.

Figure 3 Grocery Retailers Market Share (2000)



Source: Euromonitor

1.5.2 UK Grocery Market: Hot Drinks

Within the UK grocery market hot drinks fall into three broad categories: tea, coffee and food drinks⁴. Tea covers a wide range of plant products used for infusing with water to make a refreshing, stimulating hot drink. All tea consumed in the UK is imported in leaf form, and most is of the Indian variety, which is grown across Asia and Africa. It is usually drunk with milk, whereas, in most countries it is consumed plain or with lemon. Herbal and fruit teas represent a small segment in this sector.

Coffee is more homogeneous than tea. While it is grown mainly in South America, it has a wider worldwide consumption pattern than tea. Again, the British tradition is to drink diluted coffee with milk. Food drinks include hot drinks based either on cocoa or

⁴ Excluded from these sectors are savoury drinks, such as Bovril, and non-commercial hot drinks, such as hot milk.

chocolate, or on malt (or mixtures of the two). The demand for convenience is a noted national characteristic in these drinks. UK consumers generally prefer instant coffee (granulated or powdered) to 'real' coffee, and most tea is made using tea-bags, rather than infusing leaf tea (although powdered tea is not very popular). Most food drinks are also made using 'instant' formulations, which simply require the addition of hot water. 'Fair trade' products — which are intended to guarantee a reasonable wage for plantation workers — are common in the tea and coffee sectors.

Total sales of hot drinks were worth an estimated £1.6bn in 2000. This includes the share of the market — around 20% — taken by catering sales outside the home. Sales peaked at £1.7bn in 1998, but have since fallen back to the 1996 level.

Table 1: The Total UK Hot Drinks Market by Value (£m at rsp), 1996-2000

	Year				
	1996	1997	1998	1999	2000
Value (£m at rsp⁵)	1,600	1,625	1,700	1,650	1,600
% change year-on-year	-	1.6	4.6	-2.9	-3.0

Source:Key Note Report UK Drinks Market 2001: Market Review

The market is a mature one and shows no signs of growth, with consumption showing a long-term decline. According to the government publication National Food Survey, annual tea consumption per capita has fallen from 3 kilograms (kg) in 1980, to less than 1.8 kg in 2001. The decline of coffee started later, falling from 1 kg in the mid-1980s, to 0.8 kg by the early 2000s. Interest in making real coffee (steady consumption at 0.2 kg) has partly compensated for the decline of instant coffee (down from 0.8 kg in 1986 to 0.6 kg in 2001).

1.5.2 (A) Hot Drinks - Sectors

As a commodity, coffee is more expensive than tea, giving it a higher value share, even though the National Food Survey shows that more tea is consumed per capita. Between

⁵ NB: rsp — retail selling prices

1996 and 2000, tea lost share to coffee, in value terms, while food drinks maintained a relatively stable share of around 9%.

Table 2: The Hot Drinks Market by Sector by Value (£m at rsp and %), 1996 and 2000

Sector	Value (£m at rsp ⁶)		% of Total	
	1996	2000	1996	2000
Coffee	750	860	46.9	53.8
Tea	700	600	43.8	37.5
Food drinks	150	140	9.4	8.8
Total	1,600	1,600	100.0⁷	100.0⁸

Source: Key Note Report UK Drinks Market 2001: Market Review

1.5.2 (B) Hot Drinks - Foreign Trade

Coffee beans are imported from a wide range of countries, with 40% sourced from South America (led by Brazil) and 30% each from Asia and Africa. Most tea comes from the Indian subcontinent, but it is also imported from East Africa.

1.5.2 (C) Hot Drinks - Industry Structure

The supply of hot drinks in the UK has an unusual structure. Although the raw ingredients must, of necessity, be imported, the unique tastes of UK consumers (for tea in bags, instant coffee, and chocolate and malted drinks) mean that all the main products on the market are distinctly domestic in formulation and branding. In coffee, although brands such as Nescafé, Maxwell House and Kenco are international, the coffee itself is blended and marketed specifically to appeal to UK consumers' tastes.

1.5.2 (D) Hot Drinks - Retail Distribution

As with most drinks, the market divides clearly between the household and catering sectors, although household consumption predominates. Overall, it is estimated that 80% of the value of the hot drinks market is generated through take-home outlets. Within the take-home channel, large supermarkets and grocery superstores account for 80% of tea and coffee sales, and over 90% of food drinks. Own label accounts for 22%

⁶ see footnote 2 above.

⁷ does not sum due to rounding

⁸ does not sum due to rounding

of the take-home market for all hot drinks, by value. Recent trends have been positive out of the home, where pubs and hotels have made it easier for consumers to choose tea, coffee or hot chocolate, instead of alcohol. The creation of chains such as Costa Coffee, Starbucks, Coffee Republic and Good Bean, which sell for take-home or on-the-premises consumption, has provided a new outlet for quality coffees.

1.5.3 The UK Coffee Sector

In instant coffee, Nestlé (based in Switzerland) and Kraft Foods (based in the US), are the leaders, while Douwe Egberts of the Netherlands, Lavazza of Italy and Paulig of Finland are among the leaders in the smaller and more fragmented real coffee sector (along with some real coffee lines from Nestlé and Kraft). Paulig, whose main brand is Melitta, was acquired in 2000 by Gala Coffee & Tea Ltd, which also owns the famous UK brand, Lyons.

1.5.3 (A) Nestlé Holdings (UK) PLC

Nestlé SA is Europe's largest food group. Its many famous subsidiaries and brands in food and drink include Nestlé, Chambourcy, Perrier, Coffeemate, Findus, Buitoni, Rowntree and other household names. Nestlé's Nescafé has over 50% of the instant coffee market, led by Nescafé Original and the premium, freeze-dried Gold Blend. Further variations under the Nescafé umbrella are Blend 37, Ultra Premium, Black Gold, Nescafé Ice and 'instant' cappuccino and espresso. Marketed more distinctly as brands in their own right, are premium extensions such as Alta Rica, Cap Colombie and Mocamaba.

1.5.3 (B) Kraft Foods UK Ltd

Kraft Foods is a US-European group. Kraft Foods UK Ltd is owned by Kraft Foods Incorporated in the US. In 2001, Kraft Foods was floated off by its ultimate parent, Philip Morris Companies Incorporated. Kraft is second to Nestlé in the UK coffee market, with a wide range of instant and ground coffee products. Its main brands are Kenco, Maxwell House and the luxury brand Carte Noire. Kenco comes in a diverse

range of extensions, including Kenyan, Colombian, Costa Rican, Really Rich and Really Smooth, and Rappor — a brand designed to appeal to a young and sophisticated market.

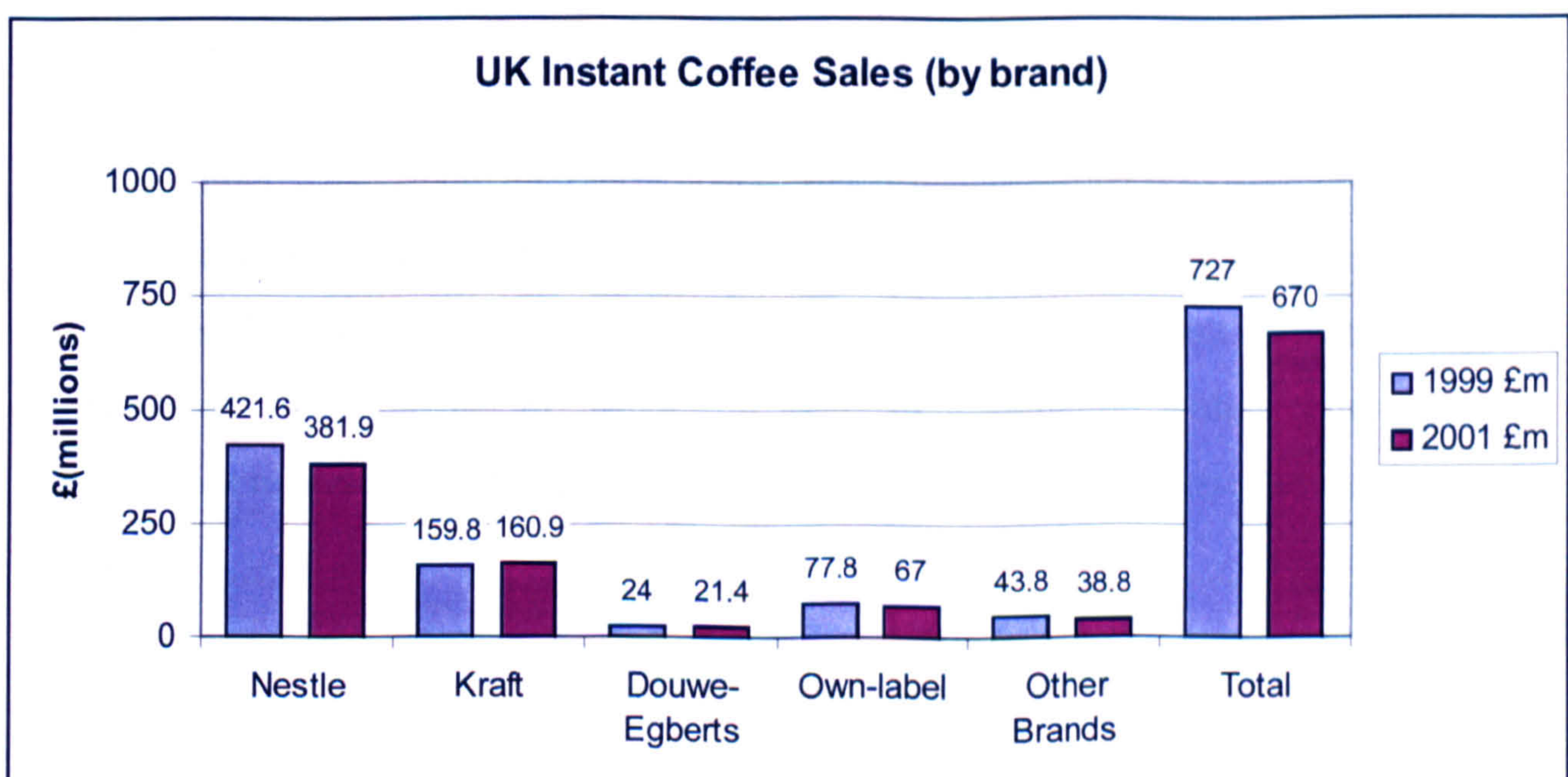
1.5.3 (C) Sara Lee - Douwe Egberts

Sara Lee - Douwe Egberts produces both instant and ground coffee. The Dutch coffee company was bought in 1978 by the US giant Sara Lee - Douwe Egberts (then Consolidated Foods). Sara Lee - Douwe Egberts roasted and ground coffees were introduced to the UK around the same time. The instant range includes Continental Gold, Continental Dark and Decaffeinated, all of which are premium coffees supplied in jars with glass stoppers. The company's newest products in 2001 are three new instant coffees: Instant Mocha, Instant Cappuccino and Unsweetened Instant Cappuccino. Sara Lee - Douwe Egberts also supplies coffee systems for the out-of-home market, including Cafitesse (filter coffee) and Piazza D'Oro (espresso coffee).

1.5.4 The UK Instant Coffee Sector

Instant coffee accounts for a staggering 87% of the total UK coffee market (Mintel 2002). Of the total instant coffee sales, as at 2001, two manufacturers dominate the sector, Nestle with a 57% share, and Kraft with 24%.

Figure 4: UK Instant Coffee Sales 1999-2001



Source: Adapted from Mintel Coffee Report 2002

The 'other brands' in figure (includes Fair Trade Brands, Cafèdirect, Foods Brands Group – Percol, Gala Coffee and Tea Ltd and Brooke Bond)

1.6 Research Objectives

The three main objectives of this research are presented in more detail in Chapter three, but for the sake of clarity they are summarised here as follows:-

Objective 1: To explore the concept of supply chain relationships in terms of their inhibitors and enablers, with specific reference to the UK Grocery sector.

Objective 2: To explore the concept of information exchange, as a sub-set of supply chain relationships, in terms of their inhibitors and enablers, with specific reference to the UK Grocery sector, and

Objective 3: To explore the inter-relationship between the exchange of information and collaborative supply chain relationships.

The three objectives for the research can be broken down into two main areas: (1) Supply chain relationships and information exchange between supply chain parties; and (2) the inter-connection between the supply chain relationship and information exchange, within the context of the supply chain relationship.

Objective three presents the long-term goal of this research, which is to develop a theory that explains the possible inter-relationship between Supply Chain Relationships and Information Exchange. This objective will be met by the development of a number of propositions relating to the exchange and usage of information within collaborative supply chain relationships. The propositions developed will then be tested in subsequent research.

1.7 Summary

This chapter began by reviewing developments within the UK Grocery sector over the last fifteen years covering changes in market structure, consumer lifestyles, the introduction of new competitors and developments in technology.

The problems associated with achieving competitive advantage in the UK Grocery sector are identified and suggestions made as to how these may be addressed. The research rationale and justification for the research are then discussed setting out why the research should be undertaken and the likely contribution that the proposed research can make. The concepts of Supply Chain Relationships and Information Exchange in the Supply Chain are then introduced, and the chapter concludes by presenting the structure of the remainder of the thesis.

Chapter two presents a comprehensive review of the following issues:

- An examination of the background to the development of the concept of SCM;
- The concept of SCM;
- The business objectives for organisations within supply chains;
- A review of supply chain relationships;
- Information management throughout the supply chain, including the role of information technology and how organisations utilise demand management; and
- The scope of SCM together with a review of the levels of existing supply chain management research.

Chapter two concludes with a critique of the various literatures contained in the chapter, together with the conclusions of each section being drawn together in the identification of the research gap addressed by this research. The research objectives are presented in Chapter three. Following a discussion of the types of possible research questions, the questions addressed by this research are presented together with suggestions as to how these are to be addressed by the research.

Chapter four reviews the philosophical approach selected for this research in terms of its suitability in relation to the proposed research. The chapter then presents the argument for a new methodological approach in researching SCM (particularly with regard to supply chain relationships and the exchange of information in the supply chain).

Chapter four then presents a review of research opportunities in SCM, which is necessary as the research opportunities highlight the need for a change in methodology. The need for theory development is discussed together with an exploration of a possible methodology, incorporating a mixture of qualitative and some of the traditional quantitative methods. Existing methodologies used for researching supply chain relationships are reviewed, and their advantages and limitations discussed. The remainder of the chapter focuses on a new potential research methodology as an approach that may lead to the development of new supply chain based theories relating specifically to the role and enablers of supply chain relationships.

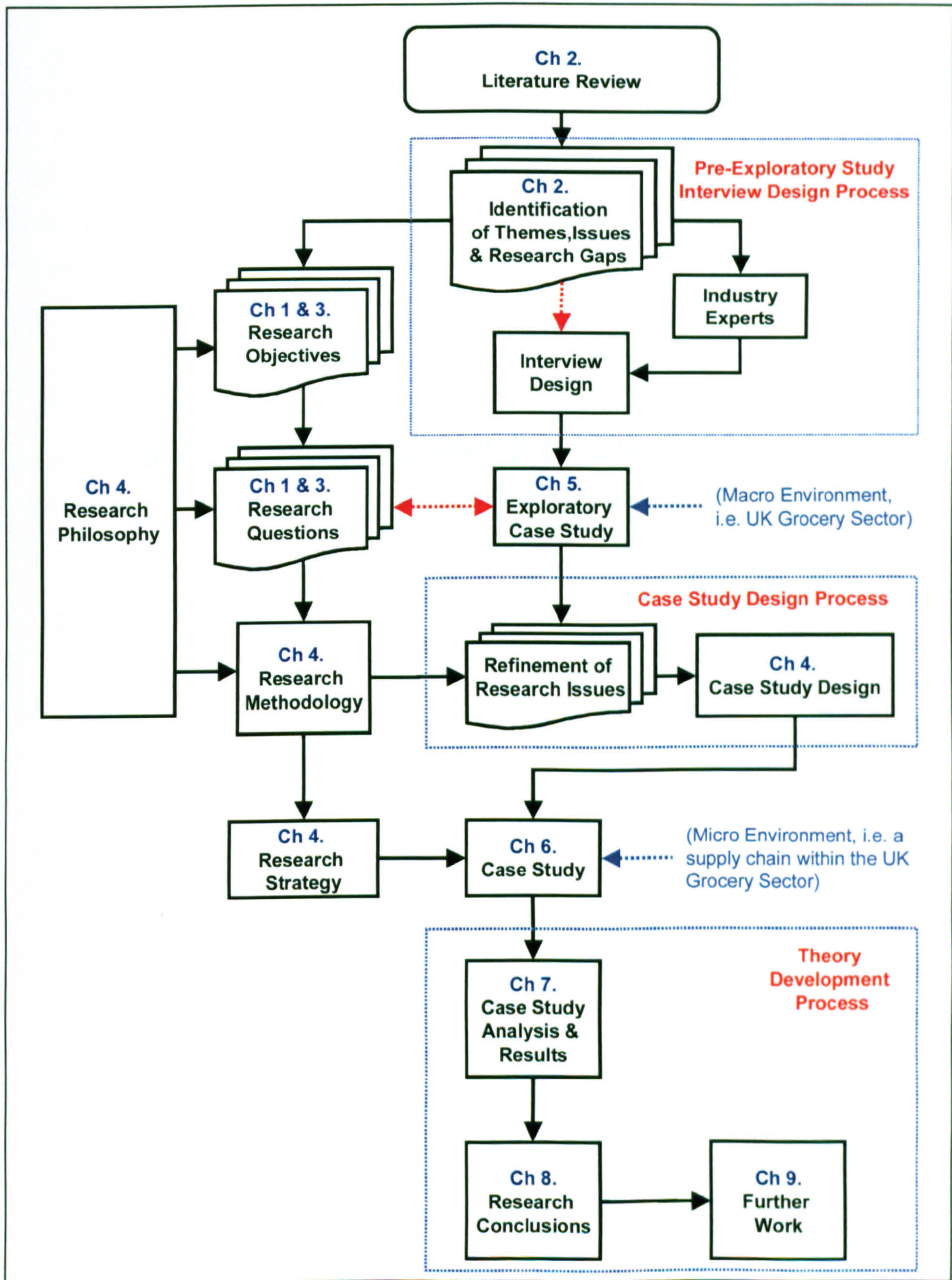
Chapter five presents an exploratory study of the UK Grocery sector and its intermediate findings. The refining of the research questions is presented together with the identification of issues to be addressed in the subsequent main case study. Chapter six presents the main case study, a coffee supply chain, setting the boundary of the case study, the participating organisations and the detailed process and information flow maps of the chosen supply chain.

Chapter seven presents the research findings of the case study together with the development of a number of research propositions. It is suggested that these propositions be tested in subsequent research. The original research problem is then revisited in light of the results of the case study.

Finally, chapter eight presents the research conclusions of the thesis together with some recommendations for further work. The implications of the research findings to management practice are then presented. The chapter then concludes with a discussion of the limitations of the research.

To guide the reader through the remainder of this thesis, Figure 2 provides an overview of the research, broken down into pertinent sections.

Figure 5: Overview of the Research



CHAPTER 2:

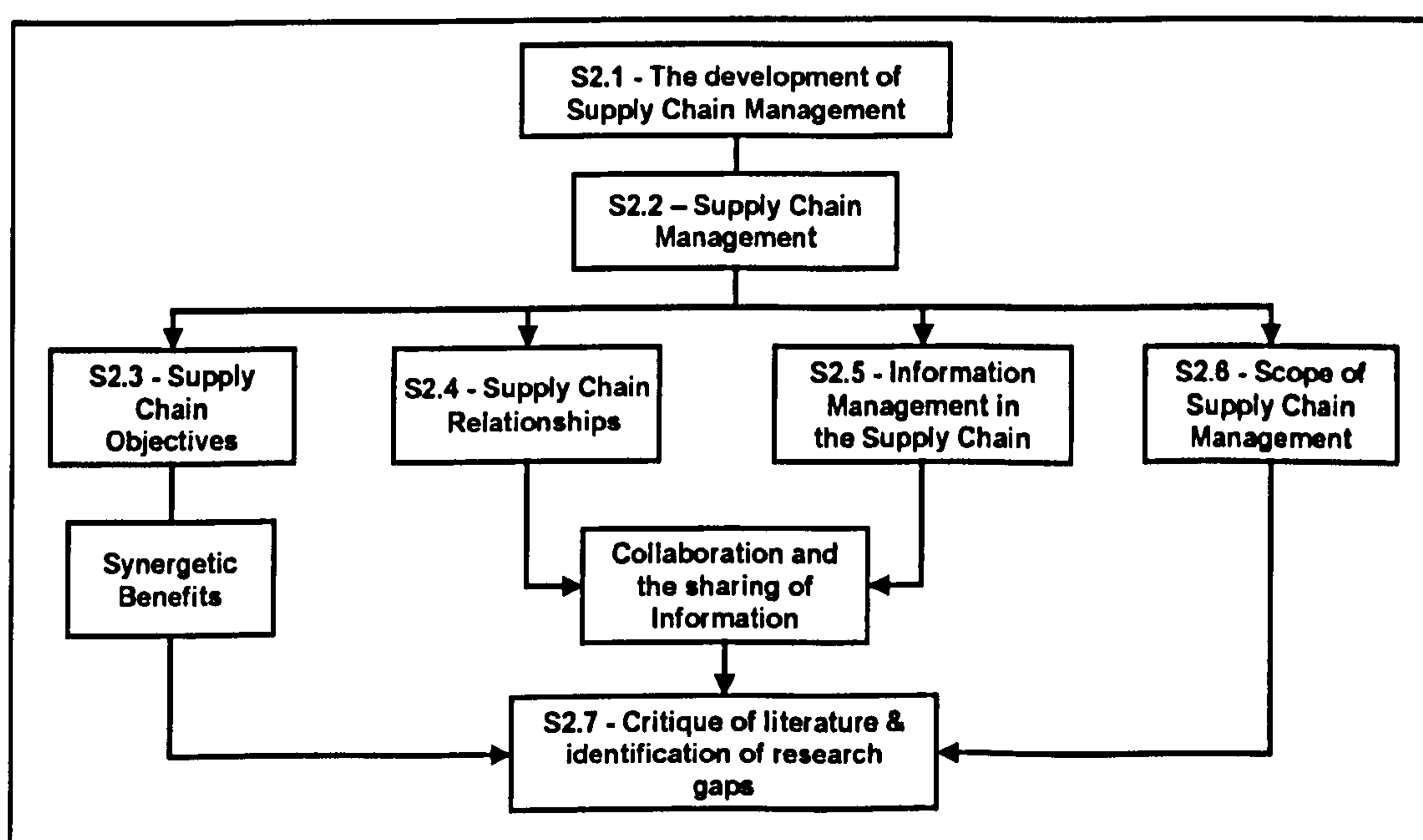
**A REVIEW OF SUPPLY CHAIN RELATIONSHIPS
AND INFORMATION EXCHANGE**

2.0 Introduction

In the previous chapter the background and rationale for the research was presented and the concepts of Supply Chain Relationships and Information Exchange introduced. This chapter reviews the relevant literature for the proposed research. The objectives of the review were to examine the relevant literature relating to the concepts of supply chain integration; relationships and information, with a general focus on literature covering grocery supply chains and the UK grocery sector in particular.

The review is set out over six sections: (1) an examination of the development of the concept of supply chain management (SCM); (2) the concept of SCM; (3) the business objectives for organisations within supply chains; (4) a review of supply chain relationships; (5) information management throughout the supply chain, including the role of information technology and how organisations utilise demand management; (6) the scope of supply chain management, reviewing the levels of existing supply chain management research. For the sake of clarity throughout the literature review the following diagram (see Figure 6 below) is repeated at the beginning of each section to explain how the various bodies of literature link together with the identification of the gaps in the literature and the development of the research questions.

Figure 6: Literature Review Structure.



It is recognised that the literature review is rather long, although it is felt justified due to the breadth of the bodies of literature and the complexity of the subject matter to hand. At the end of the literature review, a critique of the various literatures is provided together with the conclusions of such critiques being drawn together in the identification of the research gap.

2.1 Historical Background to the Development of Supply Chain Management

The military can claim the parentage of modern day logistics and supply chain management. History has provided many examples of how vital is the ability to be able to maintain a supply of provisions and equipment to troops fighting at the front line, in that many a battle has been decided as a consequence of this issue. The American War of Independence exposed the British army's inability to fight a war without having adequate provision for supplying their troops from a distant continent (Christopher 1992). In a more recent decade, the Gulf War highlighted the Allied troop's logistical capabilities and the importance of information management, both factors which proved decisive in the outcome of that particular conflict.

So far as the business world is concerned, logistics has taken much longer to come to prominence. During the 1950s and early 1960s, distribution systems were unplanned and unformulated, and it was not until the late 1960s and early 1970s that management began to recognise the benefits of planned distribution to reflect the flow of their particular goods through the supply chain (Rushton and Oxley 1989).

The 1970s saw a change in the balance of power in the UK from manufacturers and suppliers to the major retailers, who began developing their own distribution structures. This period also saw the recognition by some organisations for the need to include distribution in the functional management structure of their organisations (Rushton and Oxley 1989). In the 1970s organisations saw physical distribution as a key activity in creating and maintaining brand loyalty and market share (Gattorna and Walters 1996). Physical Distribution encompassed timeliness of deliveries, accurate order completion

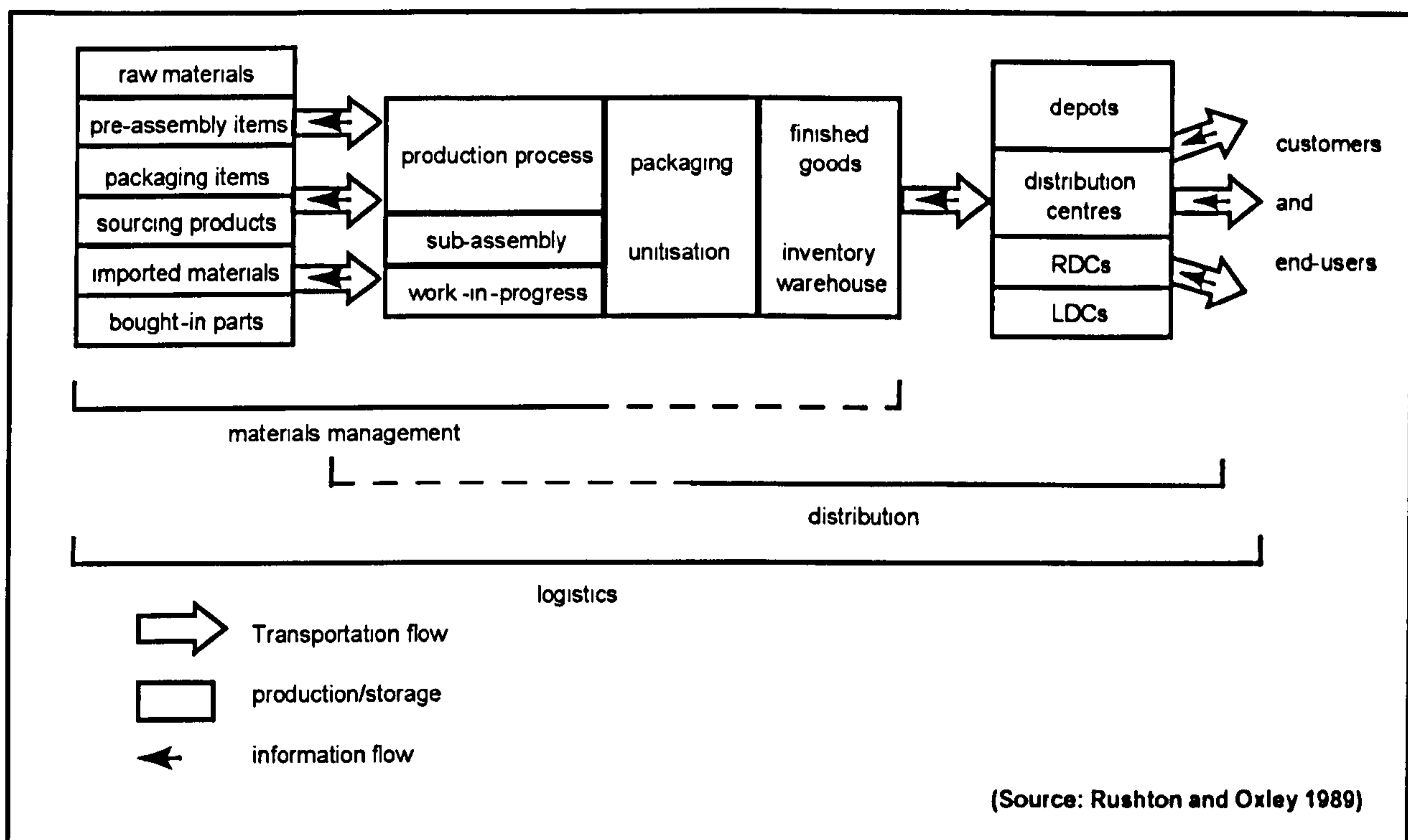
and reliability in terms of deliveries and order fulfilment. The latter activity incurred substantial costs.

The 1980s saw a major growth in the logistics area, with the recognition of the potential savings from integrating the management of the various components of logistics throughout the organisation as a whole (Bowersox 1987). Whilst physical distribution concerns the outgoing (downstream) activities of the flow of goods and services, the incoming (upstream) activities, such as raw materials, components, manufactured parts and packaging materials, was the responsibility of the Materials Management function. Both the Materials Management and Physical Distribution functions deal with the flow of materials and information (Gattorna and Walters 1996). Figure 7 (see below) shows how the two previous functions of Materials Management and Physical Distribution were co-ordinated by the new function of Logistics. LaLonde (1984:2) defined business logistics as *“the design, implementation and management of the total material flow systems to meet target customer service goals at lowest total systems cost”*.

Growing costs forced organisations to re-consider their entire distribution function. By utilising trade-offs such as improved transportation modes that reduced inventory holding costs and warehouse costs (faster transportation modes resulted in goods being held for less time in stock), organisations managed to reduce their overall distribution costs (Gattorna and Walters 1996). This was the beginning of the concept of the trade-off analysis¹.

Organisations began to co-ordinate the distribution function to maximise its efficiency, i.e. to provide the service at least cost. The benefits of a co-ordinated distribution function were initially dominant in fast moving consumer goods (FMCG) companies; however, companies throughout many varied industries adopted this co-ordinated approach (Gattorna and Walters 1996).

¹ The concept of trade-off analysis is based upon the belief that if sub-optimal performance in one or even two activities is accepted then the economies obtained from remaining activities will lower the overall costs of the performance of all activities, when viewed collectively.

Figure 7: Relationship between Logistics, Materials Management and Distribution.

It is from the concept of integration and the influence of a 'system's approach' that the concept of supply chain management has grown. Various authors can be credited with the development of this concept (see for example, Houlihan 1984; Jones and Riley 1985; Stevens 1989; Ellram 1990; and Christopher 1992). The concept of supply chain management has developed from the integration of the components of the logistics function throughout the supply chain as a whole.

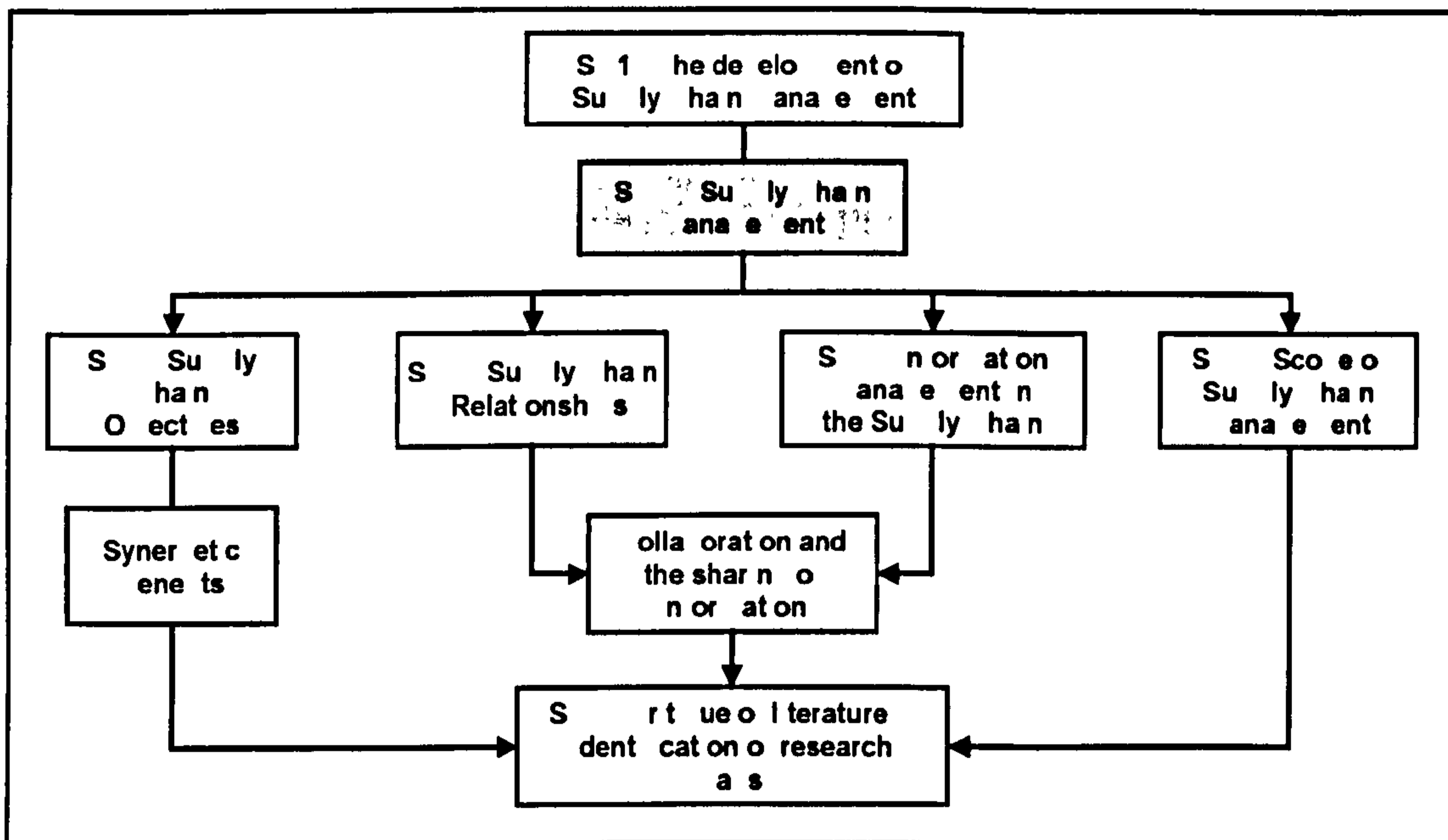
2.1.1 Summary

Logistics and to a larger extent, supply chain management have taken a long time to be recognised as a source of competitive advantage for organisations. The importance of recognising the need to manage the trade-off between various activities, in terms of the cost and benefits, has seemingly been recognised by retailers far quicker than their suppliers, particularly in the UK. The major challenge emerging has been how to integrate the various functions to provide a more co-ordinated supply chain.

2.2 The Concept of Supply Chain Management

This section reviews the development of the concept of supply chain management (SCM).

Figure 8: Literature Review of Supply Chain Management.



The theory of supply chain management can still be regarded as being in its evolutionary stage, despite its introduction nearly two decades ago (Oliver and Webber 1982; Houlihan 1984). There has since been very limited empirical research undertaken in this field and this can be said to have impeded its development. Oliver and Webber (1982) used the terminology as a consequence of the realisation of the potential benefits from integrating the internal business functions of purchasing, manufacturing, sales and distribution.

2.2.1 What is Supply Chain Management?

Since its introduction SCM has been defined in numerous ways (see for example Ellram 1990) and widely interpreted, definitions ranging from “*the total flow of goods from supplier to end user or customer*” (Jones and Riley 1985:17) to “*a philosophy that must be managed and analysed as a total system, which includes both physical product and flow of information*” (Ellram and Cooper 1990:2), and from “*management of the internal supply chain to management of an inter-business network*” (Harland

1996:64 p??). Christopher (1992:5) observed that “*supply chain management covers the flow of goods from supplier through manufacturing and distribution chains to the end user*”.

The primary objective of SCM is to achieve the most cost effective satisfaction of end customer requirements through the buyer-suppliers process integration (Christopher 1997). To achieve this value must be added to a product faster than cost (Lamming 1996). The definition of the concept of ‘value’ derives from the customer that is then translated back along the supply chain (Lamming 1996). Achieving value for the customer requires developing a relational philosophy with other parties in the supply chain versus a short-term transactional approach (Cavinato 1991; Langley and Holcomb 1992). The customer focus of supply chain management implies trying to balance the seemingly conflicting goals of high customer service levels, minimal inventory levels and lowest possible unit costs (Stevens 1989).

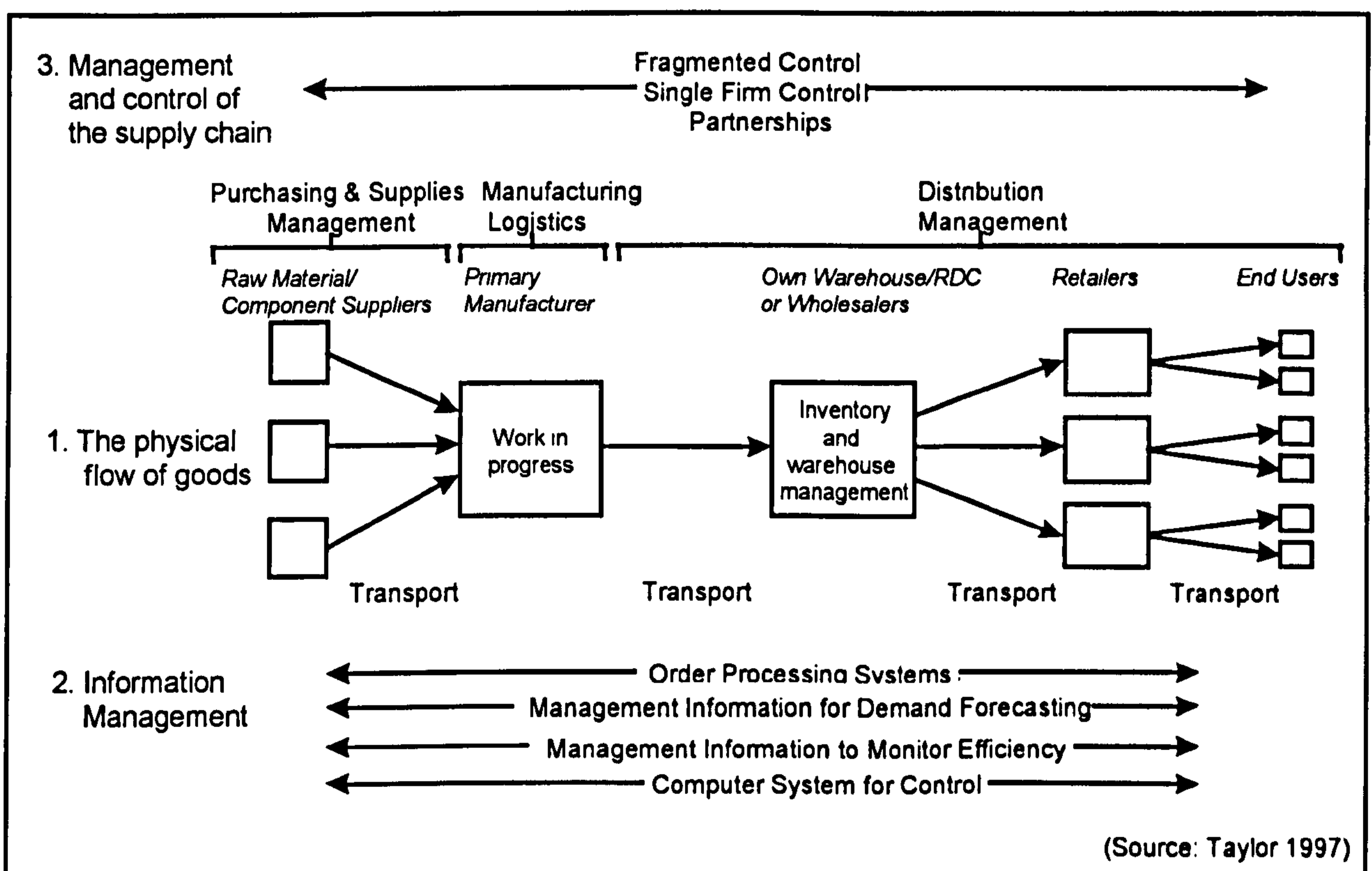
The buyer-supply process integration implies that the supply chain must be analysed and managed as a single entity (Houlihan 1985; Jones and Riley 1985; Stevens 1989; Battaglia and Tyndall 1991). This implication is fundamental to the concept of SCM, and is not limited to the integration of functional departments within organisations, but extends to all firms in the supply chain (Ellram and Cooper 1990). Without such integration, management of the supply chain is fragmented and therefore the potential benefits of SCM are not possible (Penman 1991). Such benefits can include substantially reduced costs arising from lower inventory levels, and improved levels of quality and service, all of which can lead to a sustainable competitive advantage.

Organisations must recognise the connections and inter-relationships between component parts of the supply chain and ensure a good fit between their design and operation and the competitive strategy of the companies involved (Stevens 1989) (Hakansson and Snehota 1989). Ritter (2000:317) suggests, “*Each firm is dependent on resources controlled by other firms. Thus firms are inter-dependent with each other through inter-organisational relationships*”. Taylor (1997) proposes that SCM

provides three major areas of interest: - (1) the physical flow of goods, (2) Information Management, and (3) management and control of the supply chain (see Figure 9 below).

So far as the physical flow of goods is concerned, Jones and Riley (1985:17) described SCM as concerning the “total flow of goods from supplier to end user or customer”, which can be seen to link each element of production and supply in the supply chain (Scott and Westbrook 1991).

Figure 9: A Supply Chain Management Model.



Inventory management is one of the major problems facing supply chain managers. It is useful to consider an analogy put forward by Houlihan (1988). Houlihan describes excess inventory build-up as akin to a snowdrift against a fence. The more independent entities, the more fences with snow drifts and hence, more inventory on the system. In this respect SCM looks across the entire supply chain, rather than just at the next entity or next level, in its attempts to manage supply chain inventory (Houlihan 1988; Ellram and Cooper 1990).

So far as information management is concerned, SCM views the role of information as a balancing agent (Schoenberger 1986), exchanging information for inventory (Ellram and Cooper 1990) and thereby reducing the risk of uncertainty (LaLonde 1984; Ellram and Cooper 1990), and levels of inventory in the supply chain. Ellram and Cooper (1990:3) go further to suggest that *“suppliers, customers, and third party providers share the information and plans necessary to make the channel more efficient and competitive, and improving total system performance. This sharing is more accurate and detailed than in traditional, more adversarial buyer-supplier relationships”*. Lamming (1996) supports the view that the effective management of information is essential for supply chain management.

So far as the management and control of the supply chain is concerned, it is suggested (Ellram and Cooper 1990) that the supply chain is usually “driven” by the firm or individual with the most complete channel wide inventory information. Lamming (1996) suggests that control of an “identified sequence of activities from a vantage point” is fundamental to the theory of supply chain management. He suggests that this position of control is usually vested in the organisation occupying the last significant transformation of the product before it reaches the consumer. In so far as this paper is concerned it is suggested that the retailer fulfils this criteria and can be seen to be controlling the supply chain (Atkin 1993).

Management and control of the supply chain is only possible to the degree that the entire process can be integrated throughout the entire supply chain. Integration is achieved by the creation of relationships between the various organisations in the supply chain. Following this line of thought Ellram and Cooper (1990) suggest that strategic partnerships must be formed with an organisation’s trading partners and coordinated in a manner and role similar to what is referred to as a ‘channel captain’ in the marketing literature (Stern and El-Ansary 1988).

Such partnerships or relationships must be based around trust and the sharing of information and a recognition by the parties concerned that they are mutually

dependant upon each other (Dwyer *et al.* 1987; Spekman 1988; Ohmae 1989; Ellram and Cooper 1990). Unfortunately, traditional buyer-supplier relationships have been characterised by their adversarial nature, a characteristic that must become a thing of the past, if the potential benefits of SCM are to be achieved (Ellram and Cooper 1990).

There are those, however, who oppose this ‘partnership’ view of the future of SCM. Lamming (1992) suggests that the focus on customer service objectives ignores the role of suppliers and creates a situation where the suppliers are blamed for any problems that occur in meeting the customer’s service level requirements (see also Lamming *et al.* 1994).

To highlight the fact that organisations appear to be favouring relationships with their customers (AT Kearney 1994), Lamming (1996:186) points to the notion adopted by many that the “*customer is never wrong*”² is possibly a fundamental flaw in supply chain management, suggesting that in situations of dispute the supplier is presumed to be the one at fault.

2.2.2 Theoretical Underpinning of Supply Chain Management

The concept of SCM is almost like a concept looking for a good theoretical home. It draws upon quite a number of theories, although some more than others. Each of these theories will be looked at in turn as regards their influence upon the SCM concept. Figure 10 (see below) shows the theoretical influences on SCM a little more clearly.

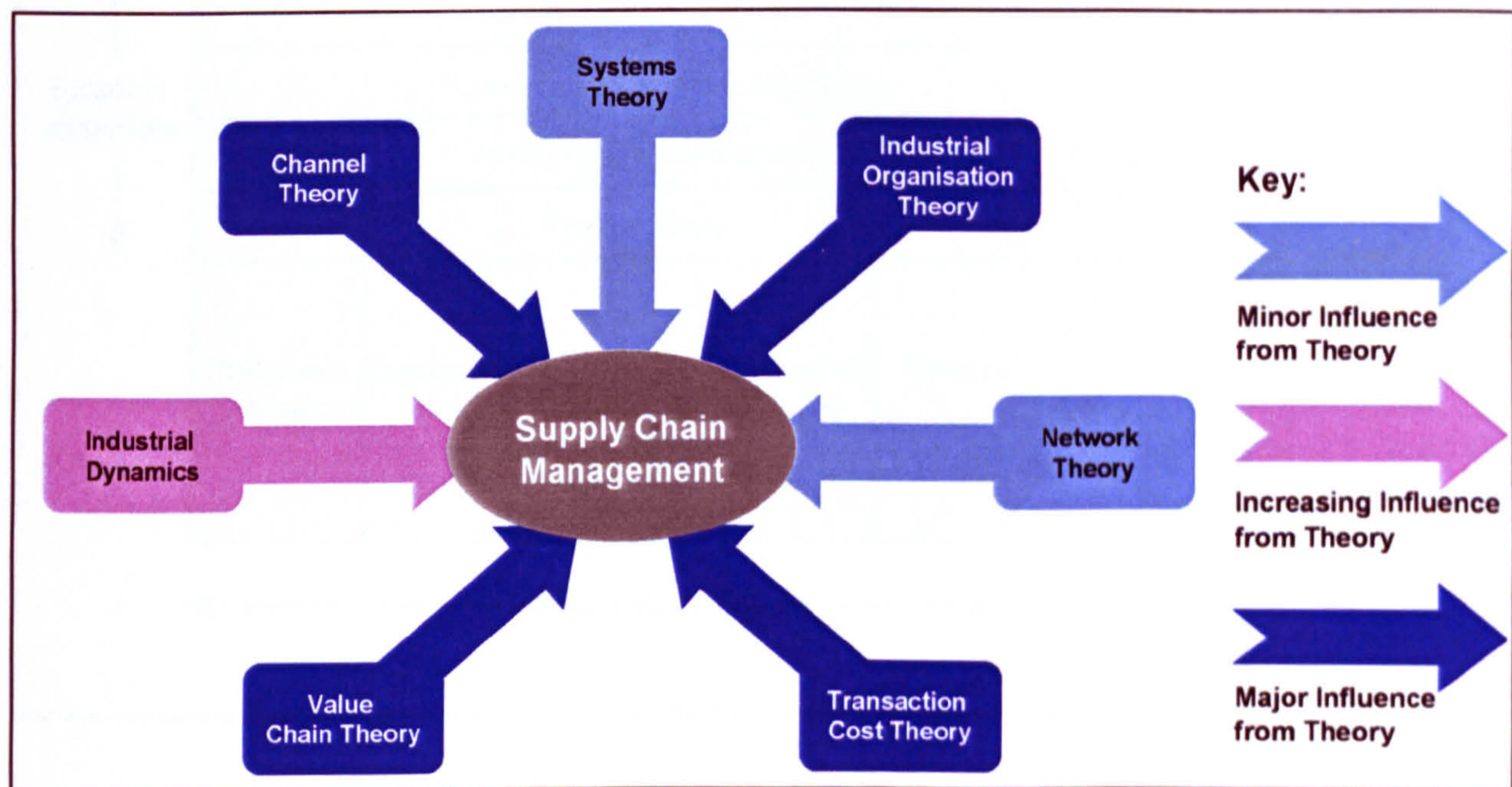
[A] Industrial Organisation Theory and Transaction Cost Theory

Ellram (1991) draws together the industrial organisation literature and the transaction cost literature in an attempt to examine the SCM concept. The concepts of vertical integration and contractual relationships drawn from the industrial organisation literature, mirror SCM in the sense of how organisations competitively organise themselves.

² A phrase attributed to H. Gordon Selfridge, American Founder of the British department stores that bear his name - Rees, N., Dictionary of Phrase and Allusion, Bloomsbury, London, 1991.

Clark (1961:23) defines vertical integration as “*the combination within a firm of functions that can be/usually are carried out by separate firms*”, which is undertaken for competitive reasons. Contractual relationships, which Williamson (1975, 1985) defined as “*obligational contracts*”, show how “*firms involved recognise their interdependence and the importance of maintaining an ongoing relationship for future business*” (Ellram 1990:10).

Figure 10: Theoretical Influences on Supply Chain Management.



[B] Channel Theory

SCM is closely related to Marketing Channels (Ellram 1991), in that it adopts a systems approach to viewing the channel as a whole rather than as a set of fragmented parts (Stern and El-Ansary 1988). Much of the work in the marketing channels literature focuses on the relational exchange aspects of channel activity (Dwyer *et al.* 1987; Stern *et al.* 1988; Anderson and Narus 1990). The corresponding ‘relational’ element of SCM is reviewed later in this chapter (see Section 2.4.).

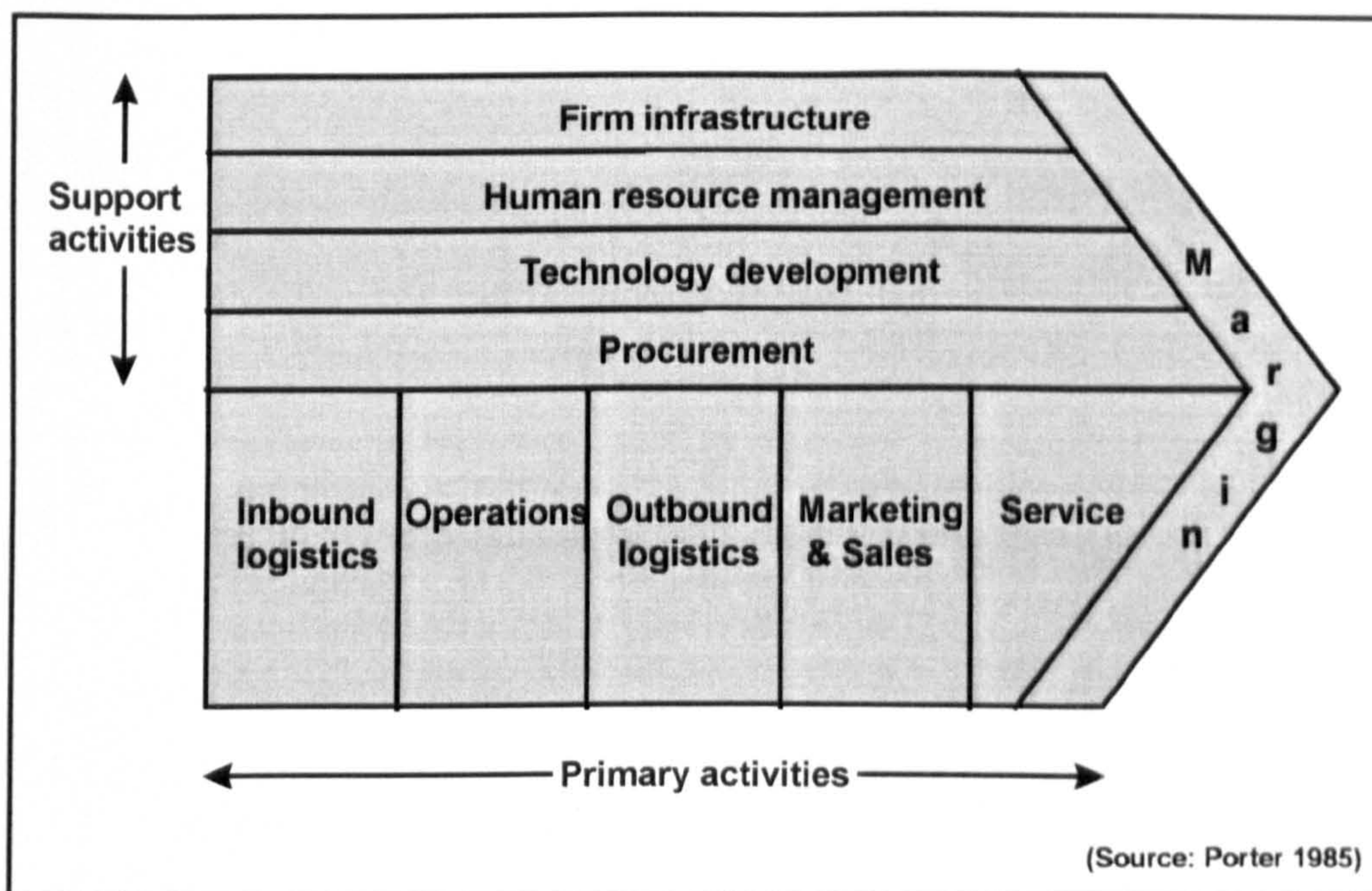
[C] Value Chain Theory

In a search for competitive advantage organisations have made the move to focus on their core competencies and to outsource other non-core activities to other organisations

(Christopher 1997). Porter's "Value Chain" (1985) establishes primary and support activities within an organisation (see Figure 11 below).

Porter (1985) suggests that through each of these activities Competitive advantage can be achieved by performing these strategically important activities more cheaply or better than its competitors (Porter 1985).

Figure 11: The Value Chain.



The Lean Enterprise Research Centre at the Cardiff Business School have through their Supply Chain Development Project extended the concept of value, and applied to the supply chain as a whole, in that the supply chain represents a value stream from suppliers to end users (Womack and Jones 1996; Hines and Rich 1997).

[D] Industrial Dynamics

Organisations and their supply chains operate in ever changing business environments, where such volatility can be explained by Forrester's (1961) "Theory of Industrial Dynamics". This theory uses 'system dynamics' as a modelling technique to show that the changes in the business environment are echoed throughout the supply chain and must be addressed accordingly (Towill *et al.* 1992; Atkin 1993; Berry *et al.* 1994). Industrial Dynamics (ID) or System Dynamics, as it is alternatively known, has been in

existence for the last forty years (Towill 1996). It has been defined as “*the application of feedback thinking and control engineering concepts to the study of economic, business and organisational systems*” (Towill 1996:23). The nature and relationship of industrial dynamics and its effect upon the supply chain is discussed further in this chapter (see section 2.5.3). ✓

[E] Systems Theory

Arising from the quite separate backgrounds of engineering and biology, general systems theory has evolved to influence the theory of supply chain management. Bertalanffy’s (1950, 1968) General Systems theory was based upon a central concept of ‘wholeness’, whereby any action within a system must be viewed in the context of the effect of that action upon the system as a whole. Authors of supply chain management literature have adopted the notion of the supply chain as a ‘system’ (see for example Stevens 1989; Ellram and Cooper 1990; Towill 1997), in that the supply chain should be managed as if it is a single entity. This does however raise the issue of where the boundary is for the supply chain. To date there is virtually no research into supply chain boundary issues.

[F] Network Theory

Ellram (1990) suggests that SCM really represents a *network* of firms interacting to deliver a product or service to the end customer, linking flows from raw material supply to final delivery (see also Jones (1989)). Many other authors in the SCM literature refer to supply networks (see Ody and Newman 1991; Lamming 1996; Christopher 1997).

Lately, research on the theory of SCM has focused on discussion concerning the necessity for closer relationships between customers, suppliers and other relevant organisations in the supply chain, in the search for competitive advantage. The arguments for closer relationships began with the theories of Coase (1937) and the transactional economic work of Williamson (1975), and sometimes addressing the inter-organisational relationship concepts of writers such as Van der Ven *et al.* (1975),

which has led theorists to identify the concepts of networks, as opposed to 'supply chains' (Harland 1996).

Kamann and Stirijker (1992) suggest that networks occur between producers and buyers in a myriad of alternative ways of co-ordinating economic activity from strategic alliances to formal written contracts and quasi-vertical integration. This is further supported by the work of Johanson and Mattsson (1987) and Thorelli (1986). There is also a large body of literature which views industrial markets as networks of relationships between organisations competing in those markets. This literature is highlighted by the work of the International Marketing and Purchasing Group (IMP) (see Hakansson 1982; Turnbull and Valla 1986; Ford 1990). There appears to be growing recognition of the need to adopt a network approach to the management of relationships whether this is in a marketing channel or a supply chain.

2.2.3 Summary

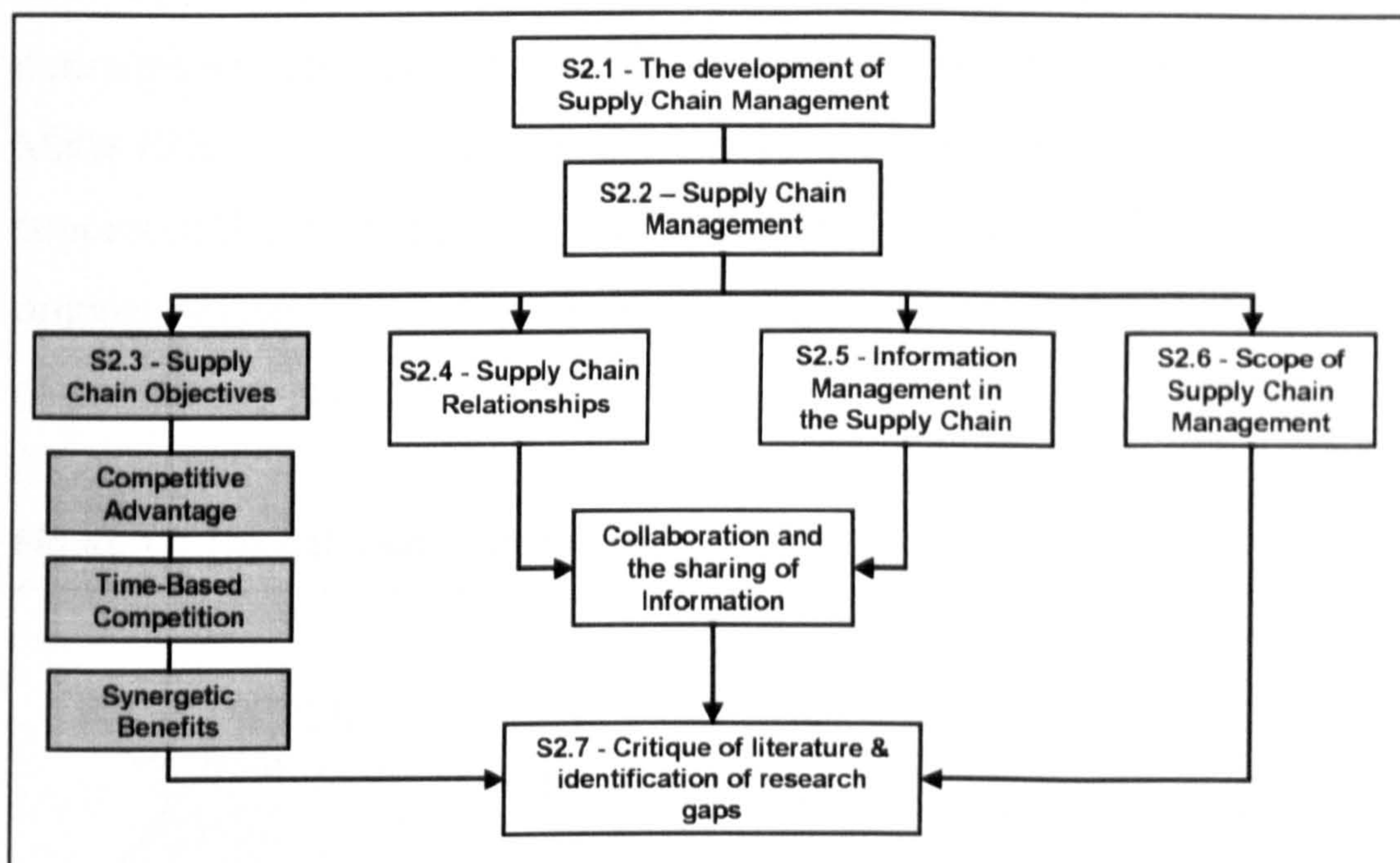
Although supply chain management has received a lot of attention from researchers in terms of defining it, the multiple definitions have simply served to fragment the overall research effort and give rise to some considerable confusion amongst researchers and practitioners. It is argued by the researcher that such 'fragmentation' has impeded the development of supply chain management in terms of our understanding of it.

The concept of integration, and the need to manage both the flow of goods and information has been recognised, although most research has failed to consider the systemic nature of supply chain management. The systemic philosophy of supply chain management is recognised, particularly in its definitions, although seemingly ignored in the research undertaken, whereby the results of such research have not been considered in view of their impact on the supply chain as a whole. Finally, whilst researchers have adopted various theories to explain supply chain management, it is suggested by the researcher that it is still a concept looking for a theoretical home.

2.3 Supply Chain Objectives

This section sets out to review the literature on the objectives of SCM and the types of benefits that organisations are seeking through management of their supply chains. The review examines the concept of competitive advantage, the recently developed concept of time-based competition, and the concept of synergetic benefits. As an aid to the review in this section the following diagram (Figure 12) is used for the structure of the review.

Figure 12: Literature Review of Supply Chain Objectives.



The primary objective of SCM is to achieve the most cost effective satisfaction of end customer requirements through the buyer-supplier process integration (Christopher 1997). Organisations in seeking to achieve this objective are striving for sustainable competitive advantages (Porter 1985). In doing so they seek to differentiate themselves from their competitors, either in terms of cost or service levels (Porter 1985).

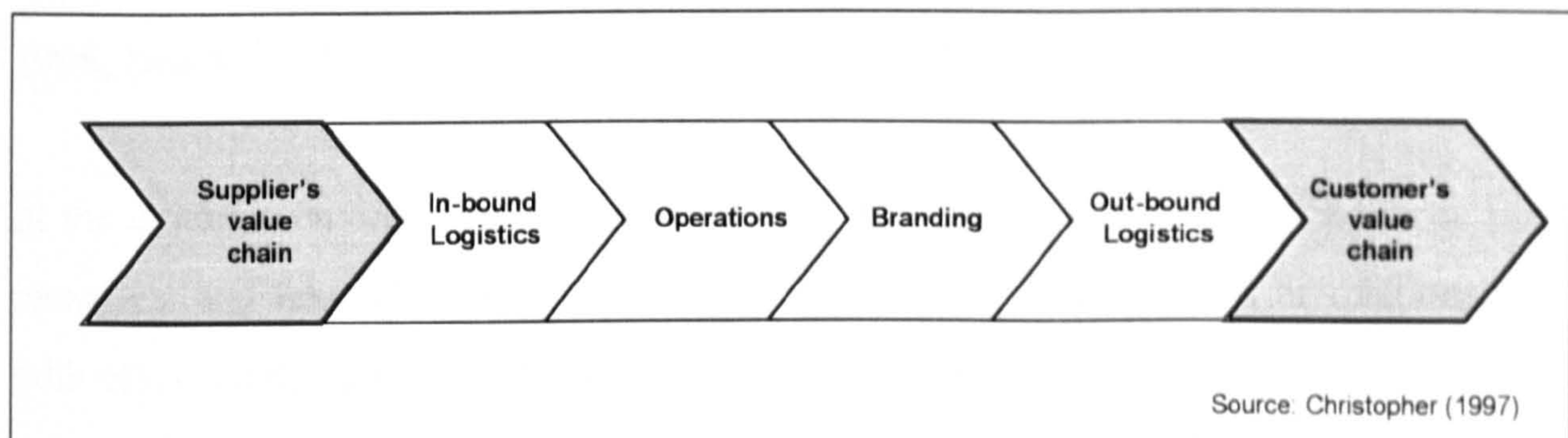
2.3.1 Competitive Advantage

Michael Porter (1980, 1985) established the concept of the 'value chain' as key to organisations identifying areas of potential competitive advantage. The value chain represents all the activities that take place within the firm to create value for customers (Christopher 1997) [see Section 2.2.2 Figure 11].

More recently Treacy and Wiersema (1993) put forward the idea that in order for an organisation to gain market leadership (and hence a competitive advantage), they must create value for their customers by excelling, relative to the rest of the industry, in one of the following areas: - operational excellence; customer intimacy; or product leadership, on the added basis that they maintain an industry standard in the remaining two areas.

Recently, there is a growing trend for organisations to analyse their value chain and to outsource any activities where it does not have a competitive advantage (LaLonde and Maltz 1992). The outsourcing of activities to other organisations brings into focus the concept of the extended value chain (see Figure 13 below), whereby this comprises the original organisations value chain, together with its suppliers' and customers' value chains (Christopher 1997).

Figure 13: The Extended Value Chain.



Supply chain management shares some concepts with the extended value chain concept in that it seeks to integrate the entire supply chain by the creation of relationships or partnerships with other organisations in the supply chain (Lambert *et al.* 1996). The competitive advantage achieved in this instance may also be regarded as 'collaborative advantage' (Moss-Kanter 1994). Cooper (1993) cites three reasons for forming supply chains: the reduction of inventory investment in the chain, to increase the levels of customer service, and to help build a competitive advantage for the channel (or supply chain).

In terms of competitive advantage, supply chain management raises the issue as to whether competition is between organisations (Cunningham 1990), or whether it is now between supply chains (Christopher 1992). Certainly, many authors now believe that competitive advantage is determined by how well the organisations in a supply chain manage to co-ordinate their activities in serving the end customer (Christopher 1992; AT Kearney 1994; Monczka and Morgan 1997; Whipple and Frankel 2000). It is however useful to consider the context in which supply chains operate.

Many organisations will be involved in a large number of supply chains, leading to a situation whereby some organisations will be supplying products and services to organisations and their competitors. Some authors suggest that this inter-connectivity necessitates the need to view supply chains as simply a path through a complex network of organisations that collectively form a particular industry (Harland 1996; Lambert and Cooper 2000; Lamming *et al.* 2000). The important issue then become how well an organisation can manage the 'network' of relationships (Bowersox 1997; Christopher 1998; Drucker 1998).

In the dynamic environment of the 1990s the successful companies will be those that recognise and take advantage (through the formation of partnerships or relationships with other organisations) of the leverage that can be gained by effective management of the supply chain from supplier to end users (Lambert 1992). Managing the supply chain as an entity can help create a competitive advantage and greater profitability (Battaglia and Tyndall 1991) for the channel through co-ordinated attention to costs, better customer service, and lower inventories (Cooper and Ellram 1993; Jones and Rich 1996; Christopher 1997).

Some retailers recognise the competitive advantage they can gain in customer service, and the mutual benefits throughout the supply chain that information sharing can provide (Ellram *et al.* 1989; Dowling and Robinson 1990). Customer loyalty and the prices customers are willing to pay may increase as a firm becomes more responsive. Properly leveraged, such responsiveness can create a competitive advantage through the

enhancement of the customer's perception of performance (Ball and Lorange 1979; Bowersox *et al.* 1992).

So far as information in the supply chain is concerned, retailers have recognised the potential for competitive advantage that information technology has to offer (Lockett and Holland 1991; Cunningham and Tynan 1993). The case of the UK grocery sector (Mason 1996; Financial Times 1997) demonstrates that direct access to customers and the information generated from that can offer the retailer a power capacity that can be used in a variety of ways to generate competitive advantage (Ogbonna and Wilkinson 1996).

Finally, if the supply chain is viewed as a network, then competitive advantage may be gained by harnessing the resource potential of the network in a more effective manner than competing firms (Cunningham 1990).

2.3.2 Time-Based Competition

The basis of competitive advantage is always moving. As a consequence of this only those organisations that can keep up with this moving target will succeed (Stalk 1988). Time³ is seen as a source of competitive advantage (Stalk 1988; Stalk and Hout 1990), and many organisations, including retailers have implemented time-based methods of competition such as Just-in-Time, or Quick Response in logistics terms (Ody and Newman 1991; Beesley 1995).

One approach, based upon time-based competition, is that of strategic lead-time management (Christopher and Braithwaite 1989; Horscroft and Braithwaite 1990). Christopher (1997:107) highlights the many benefits from being able to reduce lead-times in the supply chain as:

“A one-off release of working capital, shorter response times leading to higher service levels, less vulnerability to market-place volatility, increased flexibility

in meeting customer requirements, and finally a continuing benefit through the reduced cost of financing a shorter pipeline”.

Perhaps the most important outcome of all, arising from the adoption of a time based competition approach is the ability to move towards a situation where the supply chain is dealt with as being demand driven, whereby the consumer ‘pulls’ products or services through the supply chain. The result of this is the ability to effectively remove or lessen the need for forecasting (Christopher 1997).

2.3.3 Synergetic Benefits

The concept of synergy was introduced to the management literature in the mid 1960s (Ansoff 1965). The concept of synergy has been adopted in the strategic management literature (see Porter 1985) in the sense that it refers to the benefits that are achieved from an organisation vertically integrating with another business unit, with the resulting benefits being greater than the benefits of the two previously separate organisations combined together (Campbell and Luchs 1992).

Buzzel and Gale (1987) identified four mechanisms through which synergies create value: shared resources/activities, including distribution channels; spillover benefits of marketing and R&D; ‘similar businesses’, and shared image. Although in many cases the concept of synergy has been confined to corporate level operations, for example acquisitions and mergers (Juga 1996), a study by Douglas and Craig (1989) referred to the synergy potential in marketing and distribution, leveraged from an evolutionary process of improved co-ordination.

Juga’s (1996) study of networked organisations, in the industrial marketing context (Axelsson and Easton 1992) suggests that the concept of synergy could be applied to logistics networks. Juga (1996:51) defines ‘synergism’ as *“the co-operative action of discrete agencies such that the total effect is greater than the sum of the effects taken independently”*. Juga (1996) suggests that the synergy in networked organisations is

³ Time here is defined as ‘the time taken’ in the sense of supply chain activities.

built around the network's focus on processes, a fact which draws comparison with the integration element of supply chain management, in other words the mutual elimination of costs!

Ellram *et al.*'s (1989:31) study supports Juga's (1996) suggestions, when she suggests that:

“Retailers must work with their supply chain partners to integrate their systems. Partners to be included are carriers, vendors, distribution centres and customers. Integration will allow them to achieve important synergies, and realise the combined benefits possible with information technology and supply chain management. This combination could prove to be a formidable competitive weapon for retailers”.

2.3.4 Summary

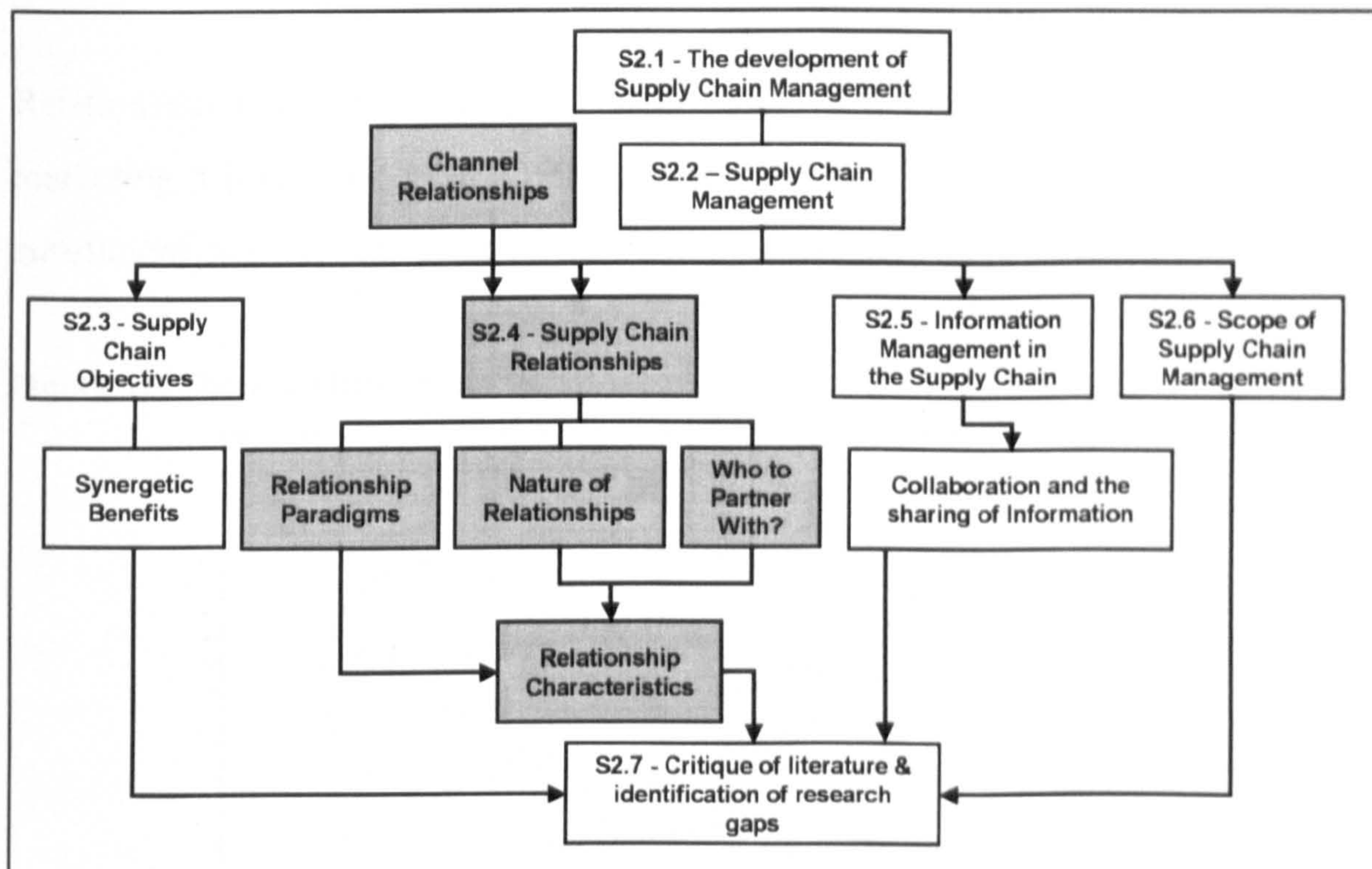
It is important that a clear understanding of what constitutes competitive advantage is held by organisations. Such an understanding includes knowing when to outsource activities, and appreciating the context of the environment in which the supply chain is operating.

It is also important that organisations understand that in order to successfully compete it is necessary to understand the impact of decisions taken locally on the rest of the supply chain. Recognition by organisations that the degree of competitive advantage may well depend upon the extent to which the total supply chain can be co-ordinated is also important.

2.4 Supply Chain Relationships

This section reviews the literature on the types of supply chain relationships that organisations are pursuing in their attempts to manage the supply chain. It begins by looking at the background to relationships in the supply chain and draws upon the Channel Relationship literature. The various relationship paradigms are reviewed, together with the nature of relationships, covering adversarial and collaborative relationships; and finally the section is drawn together by reviewing the characteristics of relationships. As an aid to the review in this section the following diagram (see Figure 14) is used for the structure of the review.

Figure 14: Literature Review Structure.



2.4.1 Introduction

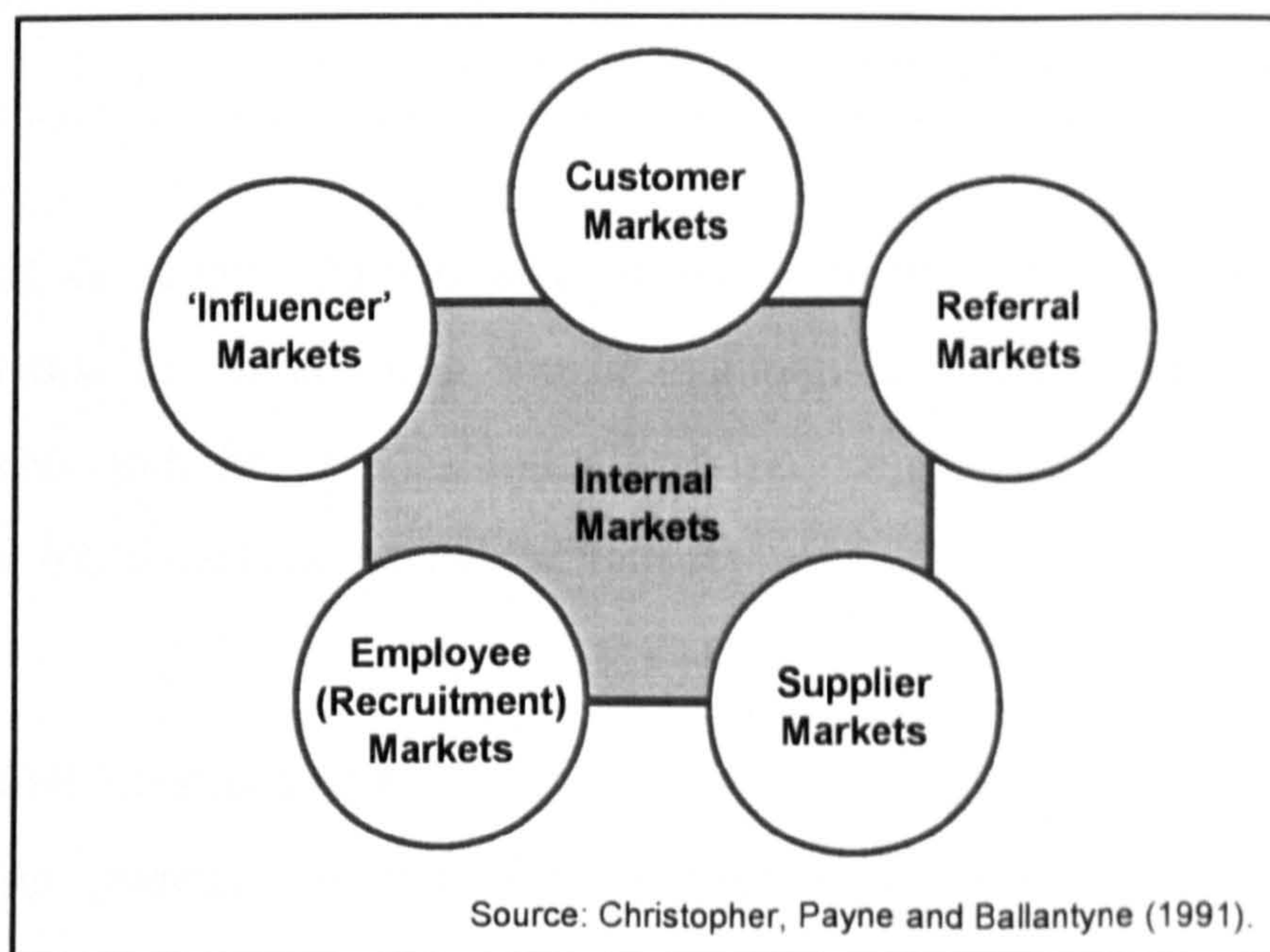
Following a period of dramatic changes in the business environment over the last twenty years, organisations in search of competitive advantage have been forced to re-organise themselves, both from the point of view of their structures and their operations. It has been suggested that organisations are pushing forward along an evolutionary continuum, towards the type of network structures considered to be the most appropriate way to balance the rival competitive demands of greater

organisational specialisation and flexibility (Miles and Snow 1986; Johnson and Lawrence 1988; Achrol 1991; Webster 1992).

Alongside these changes in the business environment and structure and operation of organisations, there has been the recognition that the traditional model of marketing i.e. the Four 'Ps' Framework (McCarthy 1960; Borden 1964), is no longer sufficient as a guide for action. With this recognition, has come the development of the concept of relationship marketing. Originating in the early 1980s (Hakansson 1982; Berry 1983) relationship marketing differs from the traditional 'transactional approach' marketing in that it seeks to develop relationships with customers on the basis of a suggested link between customer retention and enhanced profitability (Payne *et al.* 1995).

Relationship marketing adopts a much wider view of the market than traditional marketing. Christopher *et al.* (1991) refer to the 'Six Markets Model' to describe the constituent markets that are covered in the concept (see Figure 15 below).

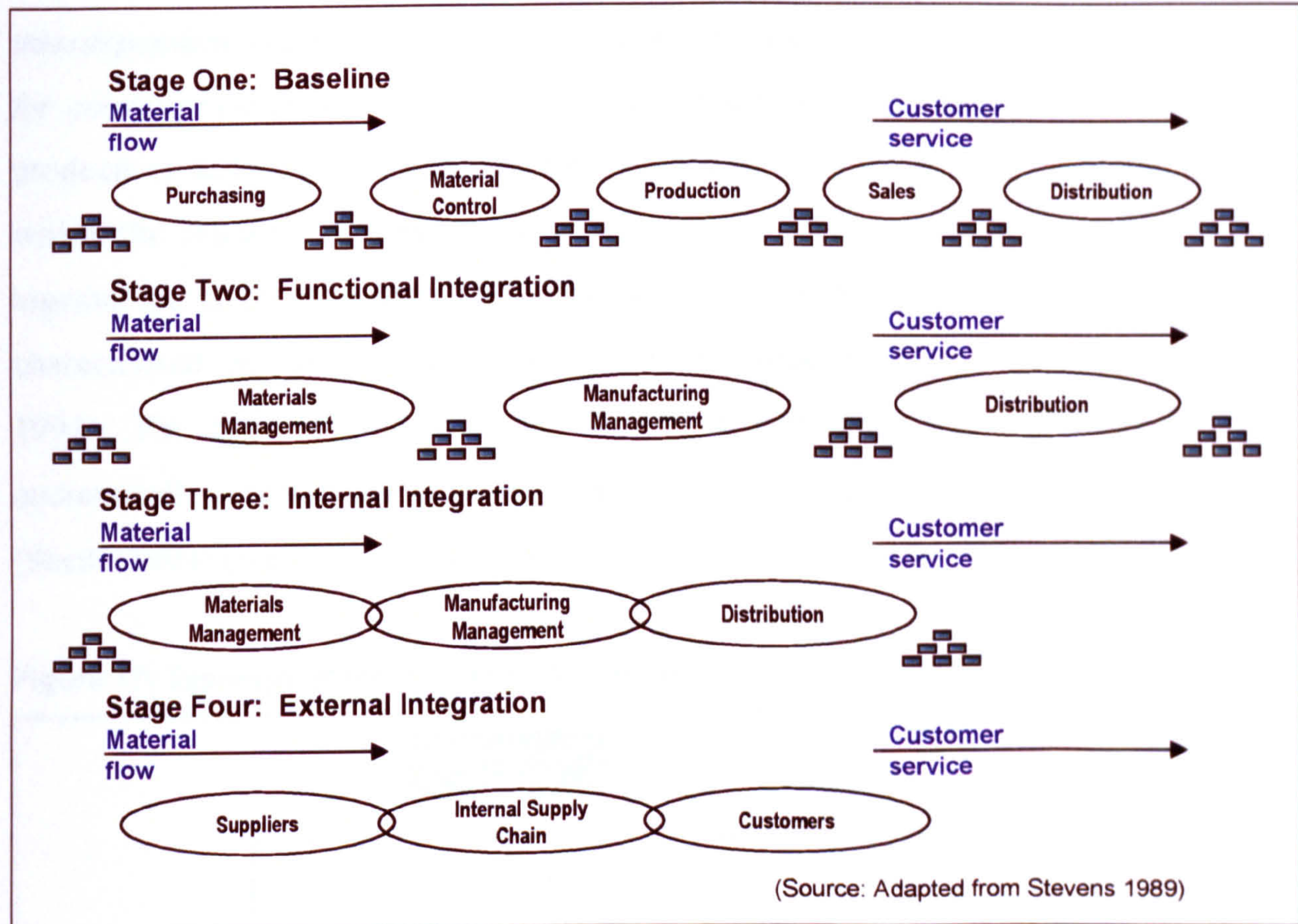
Figure 15: The Six Markets Model.



The concept of SCM requires the integration of the management of an organisation's operations with those of its customers and suppliers. Stevens (1989) described the various stages organisations may pass through on route to achieving supply chain

integration. Such stages range from functional integration, to internal integration, to external or supply chain integration. These can be more clearly seen in Figure 16.

Figure 16: Levels of Supply Chain Integration



Such external, or supply chain integration would appear to encompass the types of relationships that an organisation should maintain with the customer, supplier and internal markets from the relationship-marketing concept. The remainder of this section is reviewed in the context of these three markets.

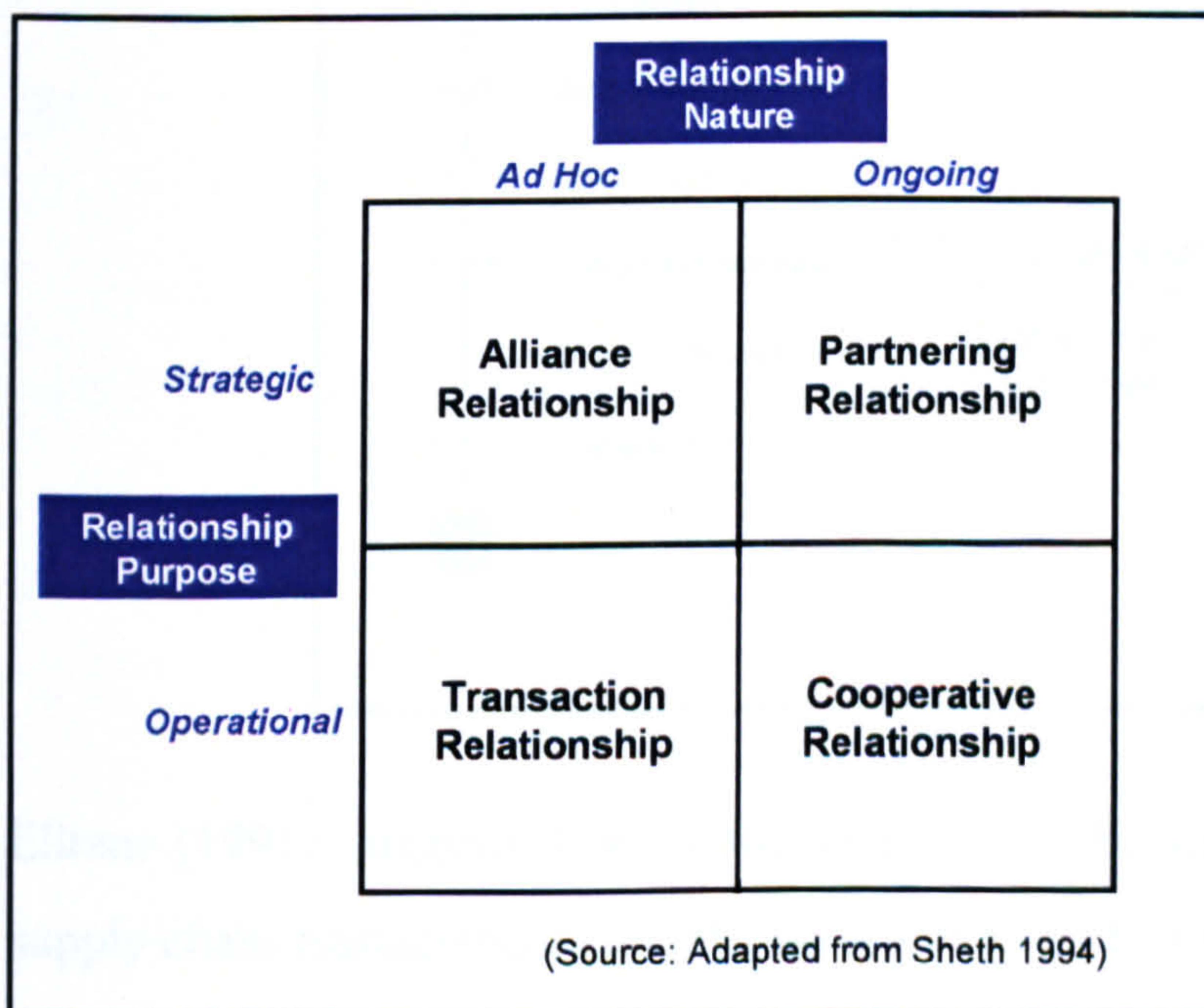
2.4.2 Channel Relationships

The marketing channel literature was reviewed since there is a general similarity between the concept of the marketing channel and the concept of the supply chain. It must be noted, however, that despite the general similarity, the actual differences of *broader goals* (in managing inventory and relationships) and *scope* (both upstream and downstream activity) of SCM (Ellram 1991; Cooper and Ellram 1993) mean that

evidence drawn from the channel literature may at best only provide a starting point for investigation in so far as supply chain management is concerned.

Stern *et al.* (1996:44) suggest that marketing channels “*can be viewed as sets of interdependent organisations involved in the process of making a product available for consumption or use*”. It should be noted that marketing channels not only supply products or services, they also stimulate demand through the various promotional units within the channel. The organisations within the marketing channel that do business together are involved in some kind of working relationships. Such relationships can be characterised as harmonious, acrimonious, misunderstood or mismanaged (Sheth 1994). The types of relationships fit onto a continuum ranging from ‘ad hoc operationally oriented transactional relationships’ to ‘ongoing strategic relationships’ (Sheth (1994) (see Figure 17 below).

Figure 17: Typology of Relationship-Marketing.



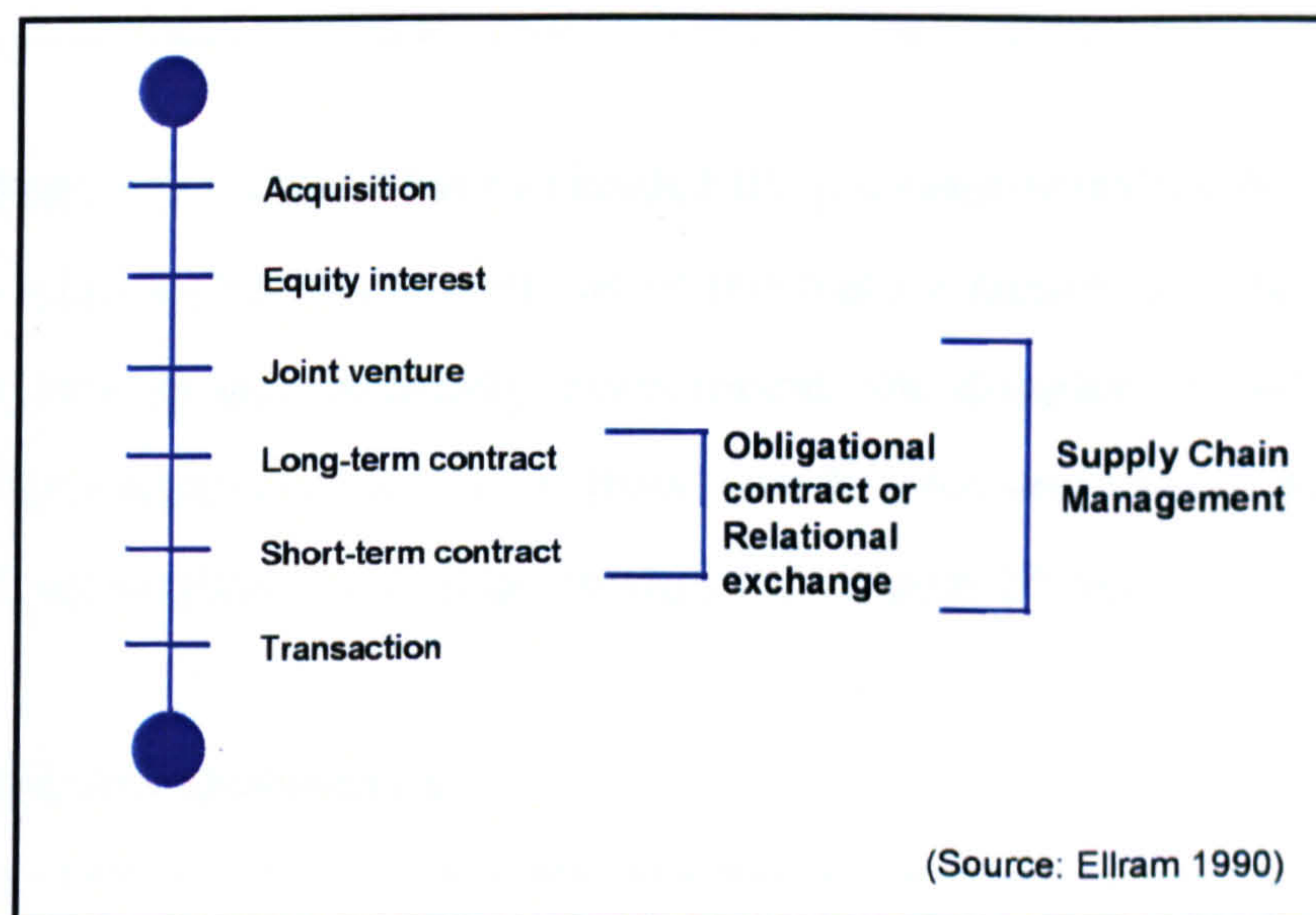
Anderson and Narus (1991) cite that the goal of a strategic partnership is to lower total costs and/or increase value for the channel, thereby achieving mutual benefits. Partnering relationships are described (Morgan and Hunt 1994:22), as requiring “*communication, collaboration, trust and commitment among channel members*” (see also Buzzell and Ortmeyer 1995). To draw upon the value chain concept (Porter 1985),

marketing channels are described as “*vertical value-adding chains*” that create “*competitive advantage*” (Barba 1993).

2.4.3 Relationships Paradigms

Organisations need to develop relationships to suit the purpose of their dealings with other organisations. A continuum of relationships has been developed by a number of authors (Ellram 1991; Webster 1992; Cooper and Gardner 1993; Lambert *et al.* 1996). Ellram (1991) draws upon the industrial organisation literature (Bain 1968) and transaction cost literature (Williamson 1975, 1985) to move towards a theory on competition and competitive strategy. Figure 18 shows a continuum of alternative legal forms for competitively organising.

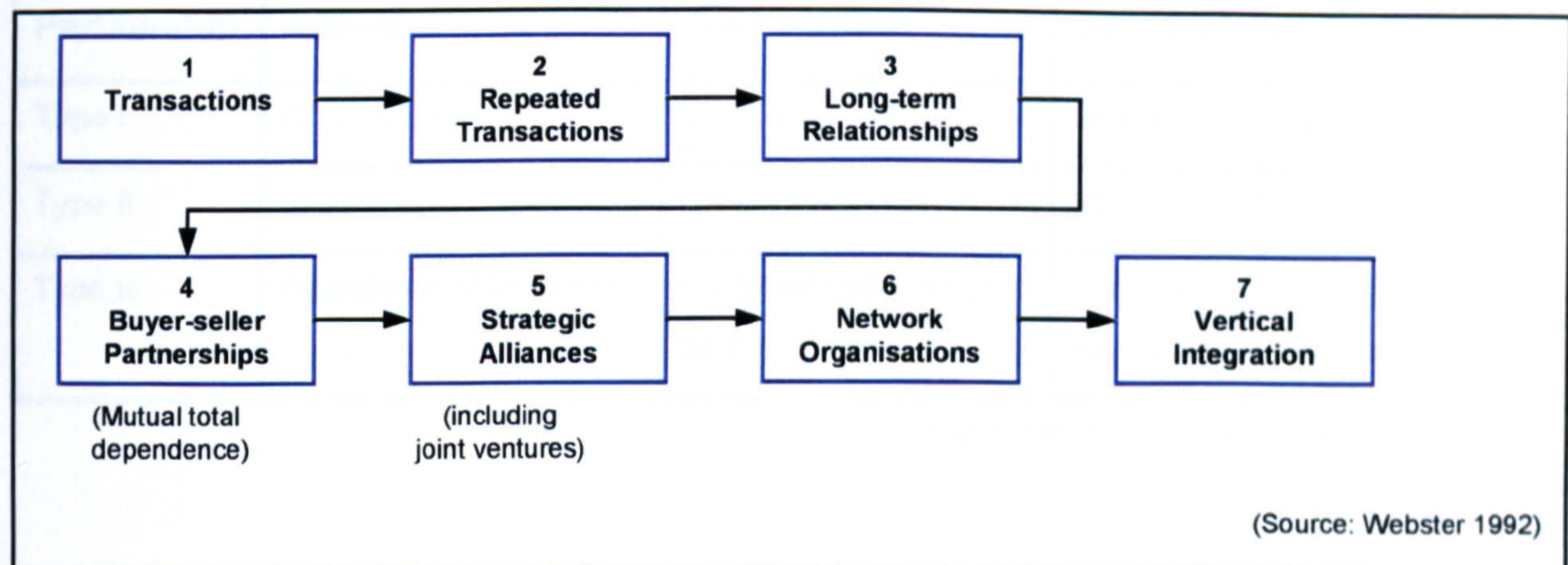
Figure 18: Types of Competitive Relationships.



Ellram (1991) suggests that in the context of the industrial organisation literature, supply chain management can take on a variety of forms including contracts of varying length, joint ventures and equity ownership. Coase (1937) and Stigler (1951) identified conditions under which an initial ‘make-or-buy’ decision could be made, and Webster (1992) extended this approach to reflect the marketing process, with a range of marketing relationships (see Figure 19 below). It is worth noting that there is an entirely separate body of literature relating to “network organisations”. This is typified by the work of the Industrial (also referred to as ‘International’) Marketing and Purchasing

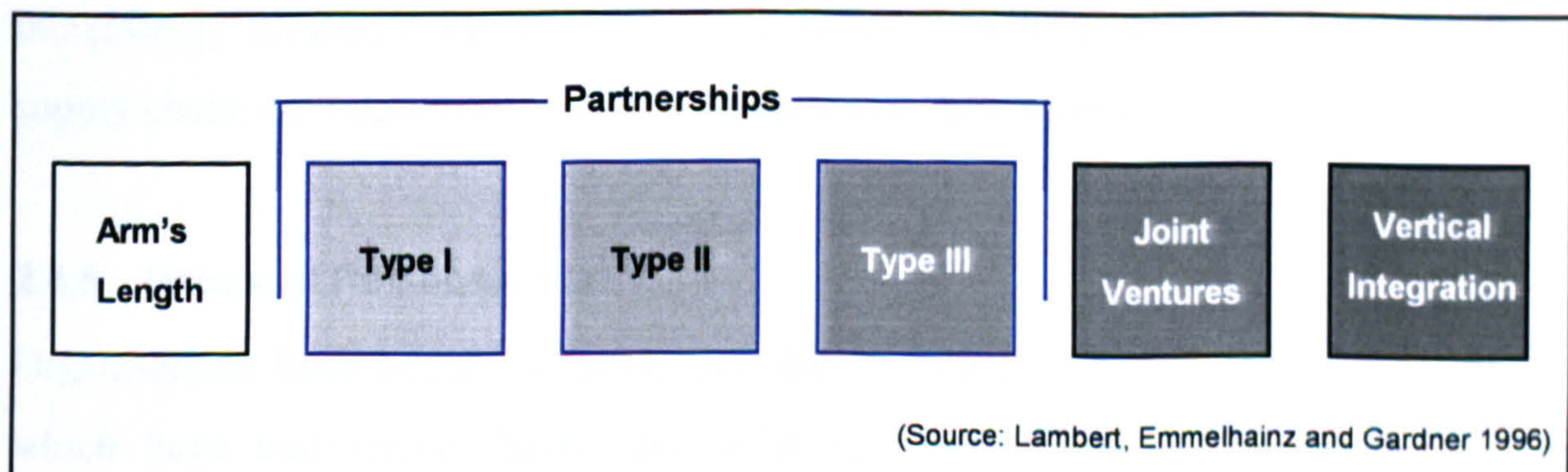
group (see for example Hakkansson 1987; Axelsson and Easton 1992). Cooper and Gardner (1993) incorporated the concept of vertical integration to develop a relationship style continuum to reflect these previous approaches (see Figure 1 in Chapter 1).

Figure 19: Range of Marketing Relationships.



Finally, Lambert *et al.* (1996), have extended the previous literature by recognising that because each relationship has its own set of motivating factors driving its development as well as its own unique operating environment, the duration, breadth, strength and closeness of the partnership will vary from case to case and over time. They identify three types of partnership 'style' relationships (see Figure 20 below).

Figure 20: Types of Relationships.



Lambert *et al.* (1996) suggest that a firm will have a large range of relationships spanning the entire spectrum of relationships. The majority, it is suggested, will be arms-length type relationships, and of the relationships that are partnerships, the

majority will be Type I, and a limited number of Type III partnerships. Lambert *et al.* (1996) suggest that the Type III partnerships should be reserved for those suppliers or customers who are critical to the organisation's long-term success. These types of relationships are categorised (in Table 3 below) as follows:

Table: 3 Lambert *et al.* (1996)'s Partnership Types.

Partnership	Activities	Time Horizon	Scope of Activities
Type I	Co-ordination	Short-term	Single functional area
Type II	Integration	Long-term	Multiple functional areas
Type III	Operational integration	Long-term with no fixed date	Firms see each other as extensions of their own firm

(Source: Lambert, Emmelhainz and Gardner 1996)

2.4.4 Who to Partner With?

The supply chain management literature is unclear regarding the question of whom to form relationships with, and proceeds no further than suggesting that the closest relationships should be reserved for suppliers or customers who are critical to the organisation's long-term success (Lambert *et al.* 1996). Various authors suggest that relationships should be formed with suppliers (Ellram and Cooper 1990, 1993; Helper 1991) and third party logistics providers (Ellram and Cooper 1990; Lambert *et al.* 1996). Spekman *et al.* (1994, 1998) highlight that the success of an organisation is increasingly measured by its ability to collaborate with companies along the entire supply chain, i.e. relationships with both customers and suppliers.

2.4.5 Nature of Relationships

Organisations have begun to realise that their relationships with other organisations, which have traditionally been adversarial in nature, must now be replaced with relationships that are more collaborative [or 'associative' (Dawson and Shaw 1989)] or 'co-operative' in nature (for example Ellram and Cooper 1990; Cooper and Ellram 1993; Fernie 1993; Moss-Kanter 1994; Buzzell and Ortmeyer 1996; Gattorna and Walters 1996; Lambert *et al.* 1996). Former adversarial relationships are seen as a

barrier to the concept of supply chain management (Jones and Riley 1985; Houlihan 1988).

From Co-operative to Collaborative Relationships

A number of authors have seen the need to differentiate between co-operation and collaboration (Spekman *et al.* 1998; Mentzer *et al.* 2000), suggesting that the two terms are evolutionary steps on the continuum between arm's length relationships and vertical integration.

Figure 21: The Transition from Open-market Negotiations to Collaboration

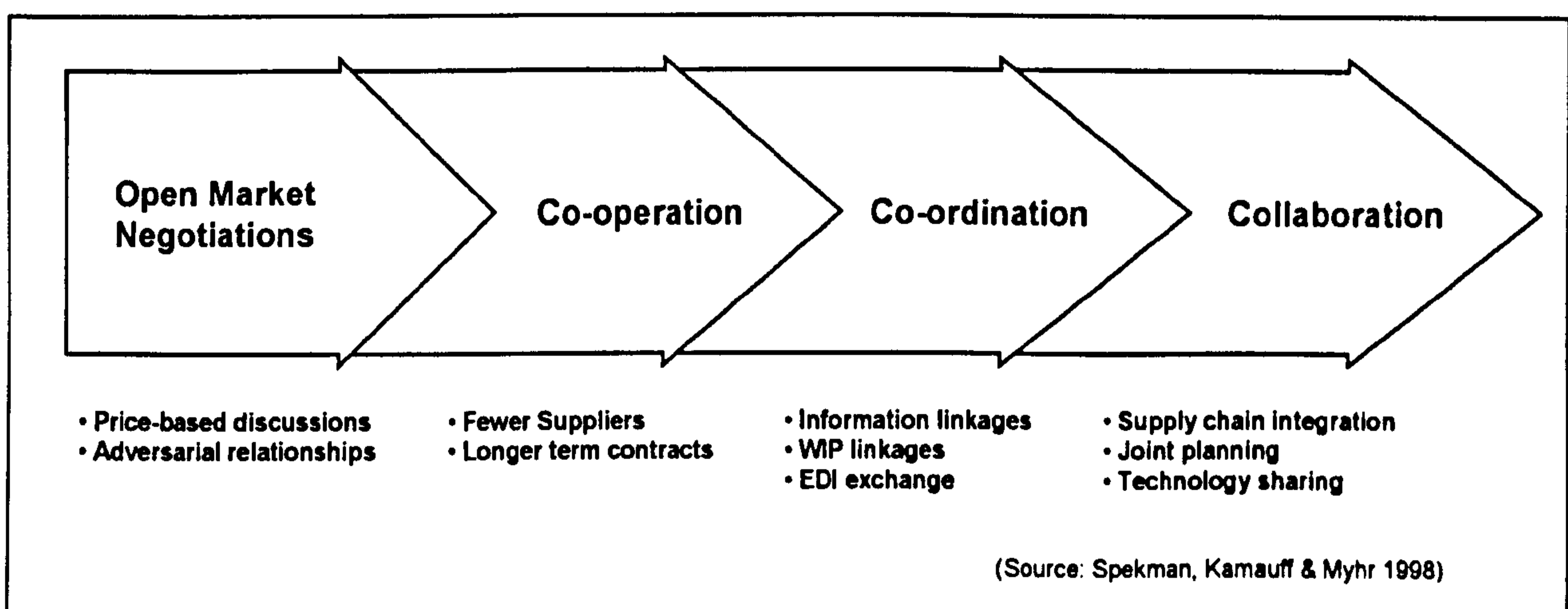


Figure 21 depicts the transition from open market negotiations to collaboration as a linear process; however, Spekman *et al.* (1998) suggest that each stage is a step function, as that requires a change in mind set and strategic orientation. Mentzer *et al.* (2000) suggest the main differentiation is that collaboration is primarily undertaken at an operational level whereas co-operation is the extension of closer operational activities to include those more suited to addressing the organisations' strategic objectives. As to the reasons for this move towards more collaborative relationships, a number of authors suggest that this is due to the following:

- An increase in the number of promotions being run (Stank *et al.* 1999a, 1999b),
- Changing demand patterns and increasing competitive pressures (Christopher 1992; Mohr and Spekman 1994; Lambert *et al.* 1998; Mentzer 1999; Stank *et al.* 1999a, 1999b)
- The need to be both more efficient and effective in matching supply and demand (Christopher 1992; Stank *et al.* 1999a, 1999b)

- The need to increase the focus of the supply chain towards more of a longer-term view (Lambert *et al.* 1996; Stank *et al.* 1999a)

The next section looks at the characteristics of such co-operative relationships.

2.4.6 Characteristics of Collaborative Relationships

The word ‘collaboration’ is frequently used in the general sense with no specific definition (Axelrod 1984). Some authors have defined ‘collaboration’ by listing different collaborative strategies and relationships (Contractor and Lorange 1988; Ring and van de Ven 1992). According to the Concise Oxford dictionary (fifth edition 1964), collaborative is defined as “*collaborating treacherously with the enemy*”.

Table 4: The Characteristics of Collaborative Supply Chain Relationships

Characteristic	Authors
<i>Advanced notification of problems and issues</i>	(Stank <i>et al.</i> 1999a 1999b)
<i>Changing individual attitudes and behaviour</i>	(Hunter <i>et al.</i> 1996) (Whipple and Frankel 2000)
<i>Clear performance measures</i>	(Stank <i>et al.</i> 1999b)
<i>Commitment</i>	(Dion <i>et al.</i> 1992) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b)
<i>Compatibility of corporate philosophies</i>	(Cooper and Ellram 1993)
<i>Complimentary capabilities</i>	(MacBeth 1998)
<i>Co-ordination and planning</i>	(Gardner and Cooper 1988) (Ellram and Cooper 1993) (MacBeth 1998) (Stank <i>et al.</i> 1999b)
<i>Mutual benefits and sharing of risks</i>	(Crewe and Davenport 1992) (Sparks 1994) (Ellram and Edis 1996) (Boddy <i>et al.</i> 1998) (McIvor and McHugh 2000)
<i>Recognition of mutual interdependency</i>	(Ellram and Cooper 1990) (Hogarth-Scott and Parkinson 1993)
<i>Shared decisions and shared resources</i>	(Stank <i>et al.</i> 1999a, 1999b) (Lee and Whang 2000)
<i>Shared expertise</i>	(Stank <i>et al.</i> 1999b)
<i>Shared goals</i>	(Dowling and Robinson 1990) (Gattorna and Walters 1996) (Spekman <i>et al.</i> 1998)
<i>Shared processes,</i>	(Lee and Whang 2000)
<i>The sharing of information</i>	(Ellram 1990, 1991) (Christopher 1992, 1997) (MacBeth and Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee and Whang 2000)
<i>Trust and openness</i>	(Dwyer <i>et al.</i> 1987) (Spekman 1988) (Ohmae 1989) (Anderson and Narus 1990) (Gattorna and Walters 1996) (Aquilon 1997) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt and Huq 2000) (Popp 2000) (Whipple and Frankel 2000) (Thoben and Jagdev 2001)

In business relationships between suppliers and customers, “*working together to the same end*” can be regarded as mutual understanding in co-ordinating exchange activities in the relationship (Alter and Hage 1993). In so far as the supply chain management literature is concerned, Table 4 above sets out the main characteristics of collaborative relationships.

It can be seen that perhaps the two most cited characteristics are that of ‘sharing of information’, and ‘trust and openness’. With regard to the sharing of information, Sparks (1994:55) refers to this as “*the value-added exchange of information*”. So far as what is shared, Christopher (1997) suggests that this should be demand and supply information. Efficient Consumer Response (ECR) is an example of efforts between retailers and manufacturers to share information in the supply chain (Sparks 1994; Barry 1996).

‘Trust’ and ‘openness’ are not words that frequently populate conversations between practitioners in the supply chain, although it would appear that both issues are perceived as of paramount importance when it comes to collaboration between organisations.

The Role of Trust in the Supply Chain

In the field of inter-organisational relationships, trust has been extensively studied, however, not so in the context of the supply chain (Smeltzer 1997). The consensus in the literature is that trust can contribute significantly to the long-term stability of an organisation (Heide and John 1990), and Lee and Billington (1992) expand on this argument to suggest that effective co-ordination of the supply chain is built on a foundation of trust and commitment. However, the implementation of such a holistic view of the supply chain requires a degree of trust between all players, hence the link with partnership/relationship initiatives (Mason-Jones and Towill 1997).

Trust is a construct that is often identified as a key variable when discussing buyer-supplier relationships (Ellram 1995; Mason-Jones and Towill 1997; Stank *et al.* 1999b; Tucker and Jones 2000). For example, Stank *et al.* (1999b) suggest that “*partnering*

relationships” differ from the more traditional transactional (or adversarial) relationships over a number of dimensions; they extend over time and focus on developing trust and co-operative planning between trading partners. Ellram (1995) reported that the perceived lack of trust was one of the most notable reasons for the failure of supply chain partnerships

However, although often identified, Smeltzer (1997) suggests that the issue of trust is seldom addressed specifically. Dyer (2000) is even more damning, suggesting that most ‘research’ on trust is anecdotal, with little evidence of hard economic benefits. Many authors talk about ‘people’ related problems that implicitly appear to be about culture and trust, i.e. the culture does not support information sharing, and people do not trust the motives or intentions of other people in order to share information with them, e.g. Andraski (1994).

A number of authors have suggested that the issue of trust arises whenever risk is perceived in relation to a particular activity (Deutsch 1958; Mayer *et al.* 1995). Dyer (2000) suggests that the greater the risk, the greater the need for trust. The existence of trust in a relationship reduces the perception of risk associated with opportunistic behaviour and allows each party to believe that its needs will be fulfilled in the future by actions taken by the other party (Moore 1998; Dyer 2000).

Numerous authors⁴ cite the existence of trust as an important facilitator of the enablers of relationships, i.e. communication, openness, information sharing etc. Stank *et al.* (1999a:25) when talking about ‘partnering relationships’, suggest that “*they extend over time and focus on developing trust and co-operative planning between trading partners to enhance future collaboration*”. Lee and Billington (1992:66) go further and suggest that “*Supply chain management is built on a foundation of trust and commitment*”.

⁴ (Dwyer *et al.* 1987) (Spekman 1988) (Ohmae 1989) (Anderson and Narus 1990) (Ellram and Cooper 1990) (Morgan and Hunt 1994) (Buzzell and Ortmeyer 1995) (Gattorna and Walters 1996) (Aquilon 1997) (Monczka *et al.* 1998) (Moore 1998) (Spekman *et al.* 1998) (Hogarth-Scott 1999) (Stank *et al.*

1999b) (Hoyt and Huq 2000) (Popp 2000) (Whipple and Frankel 2000) (Nesheim 2001) (Thoben and Jagdev 2001).

Definitions of Trust

There are multiple definitions of trust (Table 5 below), some of which are as follows: -

Table 5: Definitions of Trust

Author (Year)	Definition	Comments
Arrow (1974)	<i>"Trust and similar values, loyalty, or truth telling are examples of what an economist would call 'externalities', they are goods; they are commodities; they have real practical value; they increase the efficiency of the system, enable you to produce more goods or more of whatever values you hold high in esteem. But they are not commodities for which trade on the open market is technically possible or even meaningful"</i>	
Gabarro (1987)	<i>Character-based trust examines the qualitative characteristics of behaviour intent in partners' strategic philosophies and cultures; competence-based trust examines specific operating behaviours and day-to-day performance.</i>	There are two distinct forms of trust: (1) character-based trust and (2) competence based trust
Gambetta (1988)	<i>"The probability that A will perform an action that is beneficial or at least not detrimental to B, is high enough for B to engage in co-operation with A".</i>	
Bradach and Eccles (1989)	<i>"A generic governance mechanism in economic transactions. Trust reduces the probability that one's exchange partner will act opportunistically and stimulate inter-organisational learning".</i>	
Ring and Van der Ven (1994)	(1) A business view based on confidence or risk in the predictability of one's expectations, and (2) a view based on confidence in another's goodwill.	From a (1) management and (2) sociological perspective.
Hosmer (1995)	<i>"Trust is the expectation by one person, group or firm of ethically justifiable behaviour – that is, morally correct decisions and actions based upon ethical principles of analysis – on the part of the other person, group or firm in a joint endeavour or economic exchange".</i>	Smeltzer (1997) suggests that this definition is inappropriate for the purchasing function as purchasing professionals may not be clear or agree on the meaning of ethically justifiable behaviour!
Nooteboom et al. (1997)	<i>"Simply one's belief that one's supply chain partner will act in a consistent manner and do what he/she says he/she will do".</i>	
Childe (1998)	(1) Goodwill trust - to take decisions without unfairly exploiting the other partner; (2) Contractual trust - is the keeping of promises, such as delivering goods or making payments on time, or maintaining the confidentiality, and (3) Competence trust - depends upon the technical and managerial competence of the company to perform a function, such as to deliver components within specifications.	Separates trust into three categories (1) Goodwill Trust, (2) Contractual Trust, and (3) Competence Trust.
Rousseau et al. (1998)	<i>"Accept vulnerability based on positive expectations of another person's intentions or behaviour".</i>	
Spekman et al. (1998)	<i>"A willingness to forego opportunistic behaviour".</i>	Suggests that trust is conveyed through faith, reliance, belief, or confidence in the supply partner
Dyer (2000)	<i>"One party's confidence that the other party in the exchange relationship will fulfil its promises and commitments and will not exploit its vulnerabilities".</i>	

The vast majority of the above definitions suggest that trust involves one party having confidence in or relying on another party to fulfil its obligations (Moore 1998). Smeltzer (1997) and Dyer (2000) synthesise a number of these definitions into some statements of the characteristics of trust:

- Does not act in a purely self-serving manner, demonstrating a degree of goodwill;
- Accurately discloses relevant information when requested;
- Does not change supply specifications, standards or costs to take advantage of other parties;
- Generally acts according to normally accepted ethical standards, which are venerated for their fairness; and
- The reliability, or consistency of behaviour of another party.

Barriers to Developing Trust in the Supply Chain

One of the major barriers to the development of trust in the supply chain is the perception that 'information is power' and therefore sharing information will diminish the perceived power of the organisation in possession of the information (Towill 1997). Fearne and Hughes (2000) suggest that information sharing in the UK grocery sector remains limited, even with dedicated suppliers. Some retailers continue to charge their suppliers for 'point of sale' (POS) data, a situation that is primarily due to the fact that there is a misconception that it is what you know that gives you advantage (Fearne and Hughes 2000). They suggest that it is rather how you interpret information and use it strategically to drive innovation and efficiency that gives rise to competitive advantage.

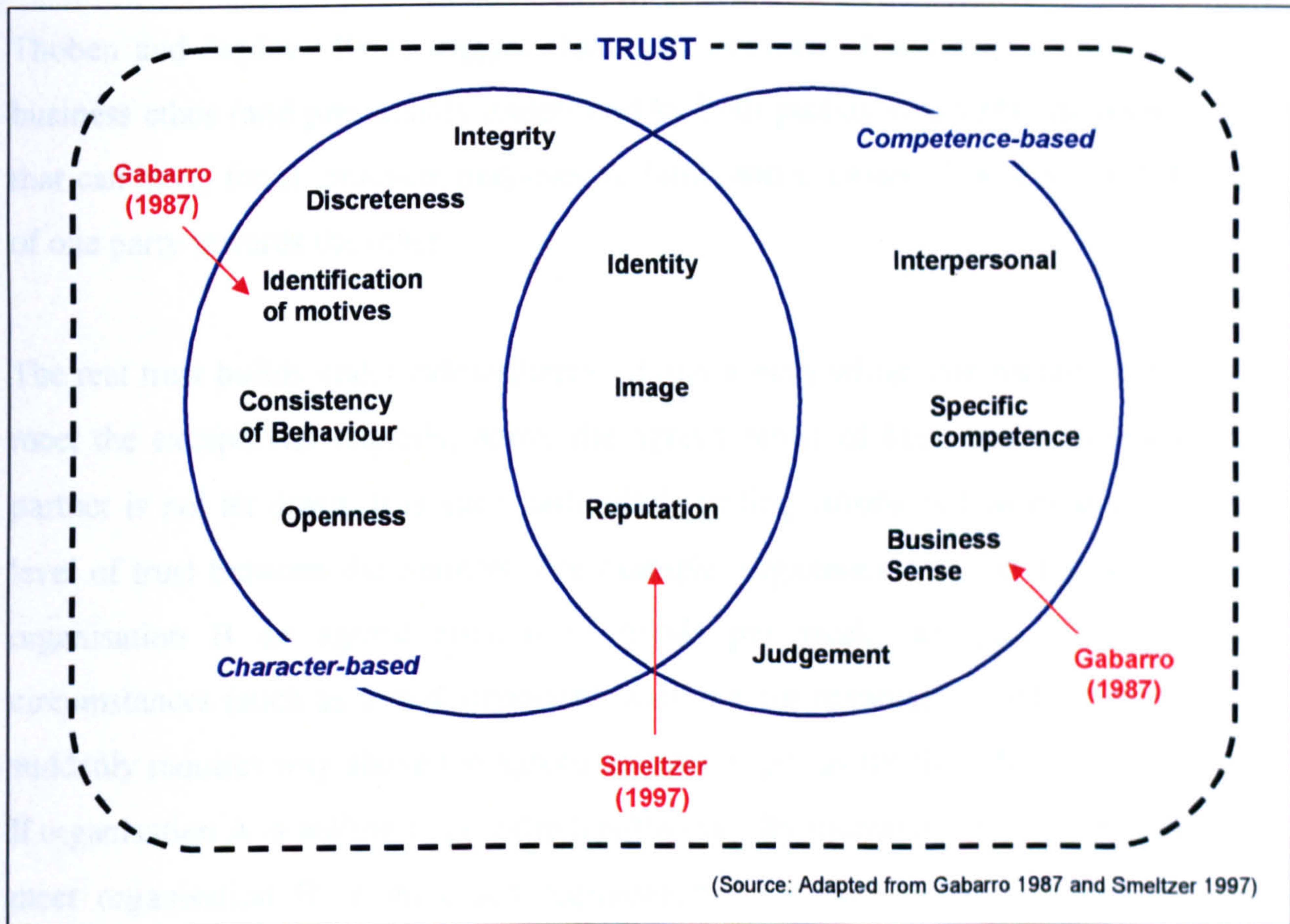
Whipple and Frankel (2000) identify a further barrier, which is the lack of understanding how to define and measure trust, however, they suggest that many executives and managers typically know when high levels of trust do or do not exist in a relationship.

Some Enablers to Developing Trust

To understand how to begin to develop trust, some authors suggest that there is a need to identify the sources, or origins of trust (Smeltzer 1997; Whipple and Frankel 2000).

According to Bradach and Eccles (1989), multiple sources and reinforcing mechanisms provide the basis for trust in economic exchange; including norms of obligation, recurrent transactions and personal relationships. In terms of 'Character-based trust' and 'Competence-based trust' respectively, Gabarro (1987), defines a number of potential sources (as shown in Figure 22): -

Figure 22: Sources and Origins of Trust



Smeltzer (1997) identifies three additional concepts that he suggests are the origins of trust: -

- Identity,
- Image, and
- Reputation.

Dyer (2000) highlights two further sources of trust development: (1) demonstration of commitment in the supplier selection process, and (2) the provision of help and assistance to a supplier also builds trust between the buyer and supplier.

Trust between collaborating partners is a pre-requisite for a successful relationship within a supply chain. Usually, when two parties start a relationship (i.e. agree to do business together), they start with some basic level of trust as expected by the norms of business environment. However, as the relationship flourishes the trust builds and this forms a foundation for ever-closer and mutually dependent business relationship (Thoben and Jagdev 2001).

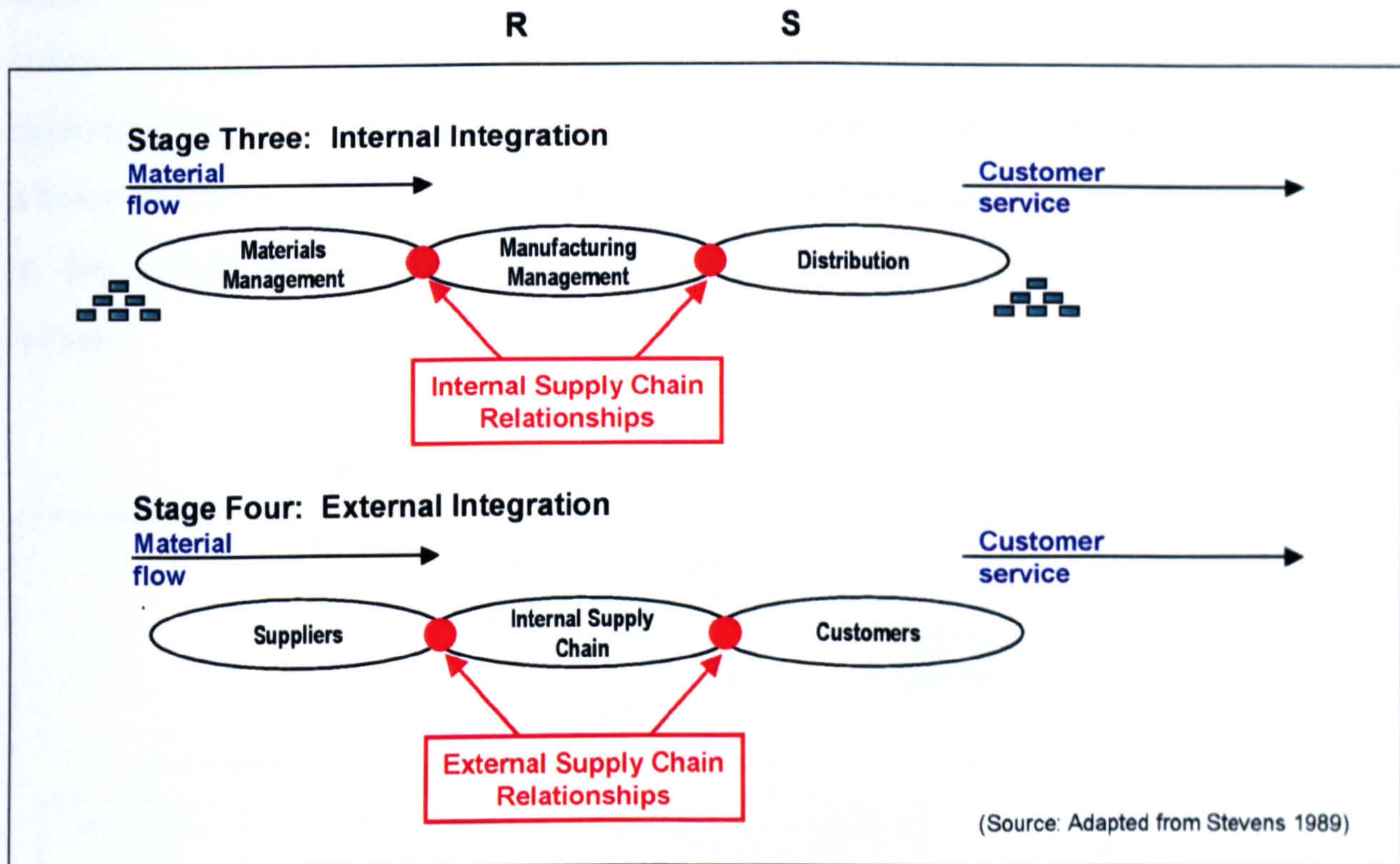
Thoben and Jagdev (2001) suggest that apart from the 'basic trust' expected by the business ethos (and presumably understood by both parties involved), the level of trust that can have, for all practical purposes no limit, and is closely linked to the behaviour of one party towards the other.

The real trust builds under extraordinary circumstances where one partner is willing to meet the exceptional requests, above the agreed terms of business, so that the other partner is not let down. It is such particularly testing situations that establish the real level of trust between the partners. For example, organisation A has agreed to supply organisation B an agreed amount of goods per week, and due to exceptional circumstances (such as a new important customer for organisation B), organisation B suddenly requires way above the agreed amount of goods for the following few weeks. If organisation A is willing to go extra lengths (say, by increasing its overtime levels) to meet organisation B's increased requirements, then organisation B will perceive organisation A to be more reliable and hence more trustworthy.

2.4.7 Summary

Internal and external organisational relationships play a key role in facilitating the degree of supply chain integration. Without such internal and external relationships (as shown in Figure 23 below), the researcher suggests that supply chain integration is almost impossible. In view of this organisations need to form a range of differing types of relationships along the supply chain.

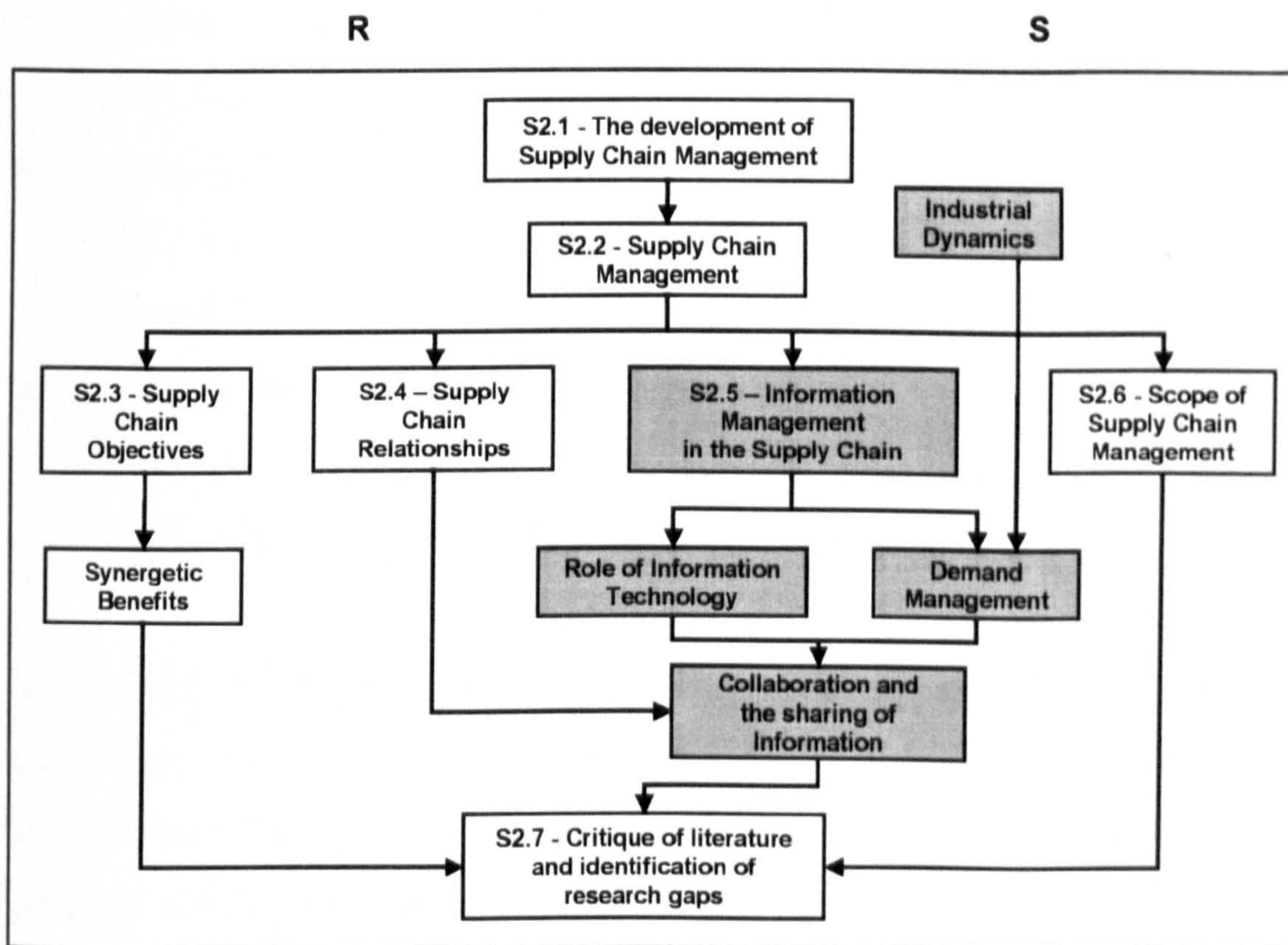
The question arises as to with whom to form such relationships; the answer to which may very well determine the extent of competitive advantage derived from the supply chain.



In terms of developing relationships along the supply chain, the nature of such relationships must change from the traditional adversarial forms to a more collaborative-based approach. The question arises as to what constitutes a collaborative relationship?

2.5 Information Management in the Supply Chain

This section reviews the literature on information management in the supply chain, and is divided into three sections; firstly, the role and types of information technology in the supply chain and how such technology and the information generated can lead to competitive advantage; secondly, how organisations attempt to manage and meet customer demand, drawing upon the industrial dynamics body of literature; and finally, a brief review of collaboration and the sharing of information. As an aid to the review in this section the following diagram (see Figure 24) is used for the structure of the review.



2.5.1 The Role of Information Technology in the Supply Chain

For the sake of clarity throughout this review the relationship between Information Technology (IT) and Information Systems (IS) is defined as follows:

Information Technology (e.g., Electronic Data Interchange (EDI)) enables the development of Information Systems (e.g., Automatic Orders and Payments), and it is

from the use of such information systems that benefits (e.g., reduced costs and improved availability) are derived.

Information Technology (IT) has for years been viewed as a supporting technology for many business organisations, however, in light of the recent explosion in information technology all organisations must understand the broad effects and implications of new information technology and the role it plays in creating substantial and sustainable competitive advantage (Porter 1985; Porter and Millar 1985). Porter and Millar (1985) suggest that the recent 'information revolution' is affecting competition in three vital ways: -

- It changes industry structure and, in so doing, alters the rules of competition (e.g., by automating order processing, rivalry has increased in many distribution industries.).
- It creates competitive advantage by giving companies new ways to outperform their rivals (e.g., by way of enabling cost reduction (Parsons 1983), and enhanced differentiation by virtue of being able to customise products for customers).
- It spawns whole new businesses, often from within a company's existing operations (Porter and Millar 1985) (e.g. a company with information processing embedded in its value chain may have excess capacity or skills that can be sold outside.).

In contrast, the work of Benjamin *et al.* (1990) argues that it is doubtful that a technology with such low entry barriers (electronic data interchange) can offer a competitive advantage, and that it is merely a cost of doing business. Powell and Dent-Micallef (1997) go further and suggest that Information Technologies have not in themselves produced sustained performance advantages, due to ease of imitation by competitors. They, however, suggest that IT must be integrated with the firm's human and business resources throughout the entire organisation, to achieve a competitive advantage.

In so far as the supply chain is concerned, McFarlan (1984) suggests that Information Systems (IS) that link customer with supplier offer a significant competitive advantage, but also bring a risk of strategic vulnerability through the increased dependence on the

linked partner. Ogbonna and Wilkinson (1996) suggest that the Information Systems being developed by retailers for the analysis and use of data generated by Electronic Point of Sale (EPOS) technology can potentially serve to consolidate and extend power and control over grocery manufacturers, and could even lead to competitive advantage (Bowersox and Closs 1996), particularly in relation to an organisation's logistical performance (Introna 1991; Bowersox and Daugherty 1995). This recent change places the role of information technology in a new light. By supporting Information Systems, either internally or externally, such technology may be seen to increase the potential for competitive advantage.

IT is seen as one of the few productivity tools that is both capable of increasing productivity (by virtue of more effective planning and scheduling resulting from more rapidly available information) and decreasing cost simultaneously (Closs *et al.* 1997), together with redefining organisations and their inter-connections (Schary and Coakley 1991). Both the Grocery and non-food retail sectors in the UK have invested heavily in electronic trading technology [such as EDI and EPOS] in order to gain competitive advantage in the short term, and secure survival for the longer term (Cunningham 1992).

2.5.2 Types of Information Technology

This section focuses on the types of IT used in the retail sector and briefly looks at Inter-organisational Systems (IOS) which said Information Technology supports, before returning to focus on the main examples of the use of IT in the retail sector, namely EDI and EPOS.

Holland and Lockett (1992) stress that retailing is an important sector in the UK economy, and contemporary research suggests that IT is a critical aspect of retailing strategy (Achabal and McIntyre 1987; Walters 1989). Recent developments in information technology have provided new opportunities for supply chain managers to improve control of their logistics - by enabling information to be shared between parties (e.g. EDI), responsibilities to be realigned (e.g. so that the supplier may access stock

level data and take the necessary replenishment action), and new directions taken in strategic development (Scott-Morton 1991). IT can also be seen as a way of reducing lead times for the selling, re-ordering and delivery cycle time (Ody and Newman 1991). Ody and Newman (1991) highlight that the use of these technologies is not limited by the size of the organisation, citing the use of EDI by a small Welsh sheep farmer to receive orders from Tesco.

[A] Inter-organisational Systems

Inter-organisational Systems (IOS) are information technology based systems that exceed legal enterprise boundaries by linking two or more organisations (Cash and Konsynski 1985; Swatman and Swatman 1992). IOS have been defined as “*information systems that allow the exchange of information across organisational boundaries*” (Christiaanse 1995:2). Bytheway and Dhillon (1996) highlight the level of collaboration and co-ordination that is necessary among trading partners when using electronic communication across organisational boundaries. Benjamin *et al.* (1990) suggest that IOS can profoundly affect companies and industry structures; however, sustained advantage from using EDI is hard to achieve.

[B] Electronic Data Interchange

Electronic Data Interchange (EDI) is probably the most common type of technology supporting the concept of IOS (Raghunathan 1999). There are multiple, yet mostly similar definitions of what exactly EDI is: -

- The UN/EDIFACT standard (1984) defines EDI as “*the electronic transfer from computer to computer of commercial or administrative transactions using an agreed standard to structure the transaction or message data*”.
- A number of authors have extended this definition to reflect the inter-organisational aspect of EDI. For example: (1) Monczka and Carter (1988:3) define EDI as “*the direct electronic transmission, computer-to-computer, of standard business forms between two organisations*”; (2) Jenkins (1994:11) defines EDI as “*The direct computer-to-computer communication of inter-company and intra-company*

business documents in a machine readable standard format" (see also Marcussen 1996; Walton and Maruchek 1997; Crum *et al.* 1998).

EDI can be characterised by its essentially co-operative, rather than competitive role (Bytheway 1990; Swatman and Swatman 1992), and if the role of EDI is misunderstood the full potential from its use may not be achieved (Quinn 1991).

By the mid 1990s there had been a significant growth in the use of EDI (Hill and Swenson 1994). Senn (1992) estimated that by 1995 one half of all inter-organisation business documents would be transmitted between corporations by way of EDI. The growth in the use of technologies such as EDI may be due to a general drive towards just-in-time manufacturing and inventory (Ricks 1997)

EDI not only reduces the cost of information transfer, it also accelerates the process in terms of the speed and accuracy of data flow (Carter and Ragatz 1991), and this yields several other important benefits: (1) the shortening of order lead times, and (2) improvement of the responsiveness of the ordering system further back along the supply chain (McKinnon 1990). These findings were supported by Cox and Ghoneim (1996) who summarised the benefits of EDI in the Retail, Manufacturing and distribution sectors as being: improved speed of communications; reduced clerical error; decreased administration costs; increased internal efficiency; decreased inventory costs; improved data sharing; improved focus on core business; increased sales; improved vendor relationships; improved customer service; and improved trading partner relationships.

Larson and Kulchitski (2000) suggest that there is a growing recognition that the 'best' technology or medium for buyer-supplier communication depends on characteristics of the message being sent. According to Lengel and Daft (1988:226), the "*richness of medium should be matched to the needs of message for effective communication*".

The richest communication medium is 'face-to-face', because it allows for multiple cues (e.g. facial expression and body language), immediate feedback, and a personal

focus. The telephone is lower in richness, because fewer cues are available, and is somewhat less personal. Mail and fax are less rich than the telephone, as even fewer cues are available and feedback cannot be immediate. Finally, standard electronic forms (as transmitted via EDI) are impersonal and lowest in media richness. Lengel and Daft (1988) suggest that routine communications (e.g. purchase orders) do not require transmission via rich media. On the other hand, non-routine communications are much better sent via rich media.

The majority of the research on EDI proposes a positive link between EDI and buyer-supplier relations. Based on in-depth case studies with fifteen organisations, Emmelhainz (1987:7) concluded, "*EDI appears to further improve vendor relationships*". Further, Monczka and Carter (1988) found EDI to have a positive impact on buyer-supplier relationships. However, these researchers also noted that collaboration, commitment and communication between the trading partners must precede the EDI implementation effort.

Larson and Kulchitski (2000) report that an implication of their research is that closer, more co-operative buyer-supplier relationships are well worth pursuing. This confirms conclusions reached by Ellram and Edis (1996), that buyers and suppliers have much to gain by working together towards shared goals, in an environment of mutual trust and open communication. Larson and Kulchitski (2000) report that co-operative relations were found to yield improved lead-time performance. However, the role of information technology in enabling communication to support these closer relationships remains unclear. The study also failed to find a link between EDI and buyer and supplier relationships. Implementation of electronic communication media seems insufficient to ensure closer relationships. Both collaborative relationships and information technology investments are on the rise, but there is a missing link between relationships and technology. Perhaps part of the answer is to consider joint (buyer-supplier) information technology initiatives when developing shared goals.

Larson and Kulchitski (2000) suggest that further research is needed to better understand which types of organisations, buyer-supplier relationships, and items are best suited for EDI versus the Internet.

The grocery sector has over the last decade seen retailer's move to composite distribution; a main catalyst for this change has been the improvement in flows of information through the supply chain (Ferne *et al.* 2000). The centralisation and co-ordination of orders have been facilitated by advances in electronic trading, initially by the rolling out of EPOS (Electronic Point of Sale) in stores and in the 1990s by the transmission of orders to suppliers by EDI (Electronic Data Interchange). These information technology developments meant that lead-times were reduced and retailers began to apply Just-in-Time principles to their logistics operations (Ferne *et al.* 2000).

The breakthroughs of the last decade in the form of Efficient Consumer Response (ECR) and the use of information technology to capture data on demand direct from the point of sale use are now transforming the organisation's ability to hear the voice of the market and to respond to it directly (Christopher 1998). The use of information technology to share data between buyer's and suppliers is, in effect, creating a virtual supply chain. Virtual supply chains are information based rather than inventory based (Christopher and Towill 2000). (For a more detailed discussion of ECR see section 2.5.3 [C])

Some authors suggest that further progress (in terms of improved supply chain performance) can only be achieved through collaboration between supply chain partners and a commitment to implementing ECR and Collaborative Planning, Forecasting and Replenishment (CPFR) initiatives (Ferne *et al.* 2000; Sparks and Wagner 2001). CPFR is discussed in greater detail in section 2.5.3 [E].

2.5.3 Demand Management

This section is divided into two main parts: firstly, how organisations attempt to manage demand and overcome the problems of Demand Amplification (DA), otherwise known as the 'Forrester effect' (Forrester 1958), or alternatively, the 'bullwhip effect' (Lee *et al.* 1997a, 1997b), and secondly, some retail industry based initiatives which attempt to manage demand in the most efficient and effective manner. This section

begins, however, by briefly reviewing the background to the principles behind the ‘Forrester effect’, namely Industrial Dynamics (ID).

[A] Industrial Dynamics (ID)

The body of literature concerning Industrial Dynamics (ID) or ‘System Dynamics’, as it is alternatively known, has been in existence for the last forty years (Towill 1996). It has been defined as *“the application of feedback thinking and control engineering concepts to the study of economic, business and organisational systems”* (Towill 1996:26).

Industrial dynamics is concerned with problem solving in systems that bring together organisations, people and machines. Towill (1996) suggests that it brings together ‘hard control theory’ (Tustin 1953) and ‘soft systems theory’ (Von Bertalanffy 1950; Vickers 1967; Checkland 1981). One major application of the principles of ID is the work of Forrester (1958, 1961).

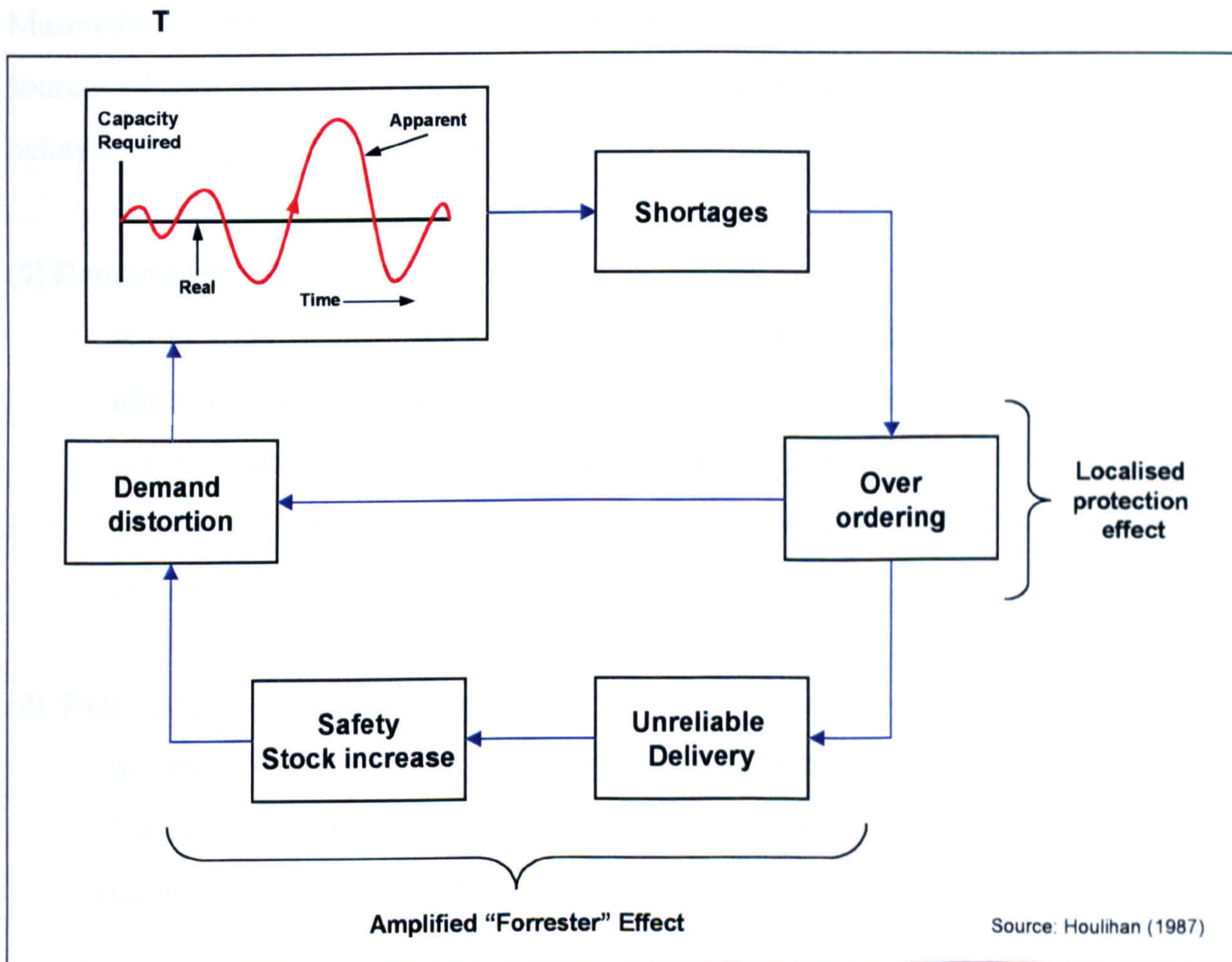
[B] Demand Amplification in the Supply Chain

Demand Amplification (DA) is a fundamental problem in supply chain management (Towill 1996). In his study of industrial dynamics, Forrester (1961:15) described supply chains as *“information feedback control loops”*, and suggested that these information feedback loops exist wherever the external environment affects a decision that will itself affect the original environment.

Towill (1996:25) describes demand amplification as:

“What often appears as small random ripple variations in sales at the market place are dramatically amplified at each level of the supply chain so that upstream companies experience the classical “boom-bust” scenario with huge swings in manufacturing capacity required together with anti-phase variations in stock levels”.

Based on a number of supply chain studies, Towill (1996) proposes as a basic rule of thumb that demand amplification is experienced at a ratio of 2:1 across each business interface, therefore, in a typical traditional supply chain consisting of a retailer, distributor, original equipment manufacturer (OEM), sub-assembler and raw materials supplier, the latter is commonly bombarded with swings 16:1 bigger than the marketplace.



As can be seen in Figure 25 above, each player can be over-ordering against uncertainties in both the marketplace and in the supply chain. There is a growing body of literature⁵ in which the authors recognise the fact that organisations must strive to overcome the effects of demand amplification, and over ordering behaviour, if they are to achieve the potential benefits of SCM. For example, Stalk and Hout (1990:21) specifically warn of the dangers of slow information lead times: *"The underlying*

⁵ (Burbidge 1961, 1984) (Towill 1992, 1996, 1997) (Towill *et al.* 1992) (Berry *et al.* 1994) (Jones and Rich 1996) (Christopher 1997) (Lee *et al.* 1997a, 1997b) (Mason-Jones and Towill 1997, 1998, 1999)

problem here is that once information ages, it loses value... old data causes amplifications, delay and overhead...".

One of the major causes of demand amplification is that, in many supply chains, only the player closest to the end customer has the luxury of knowing the true demand (Mason-Jones and Towill 1997; Christopher and Towill 2000). Market information notoriously suffers from delay and distortion as it moves through the supply chain Mason-Jones and Towill (1997). Lee *et al.* (1997a, 1997b) identify three further sources of demand amplification: (1) demand signal processing; (2) 'rationing game' behaviour; and (3) order batching: -

(1) Demand Signal Processing:

Arises from retailers who based on their forecasting approaches knowingly or unknowingly distort demand as a result of the occurrence of a larger than average sale in a particular period. This results in a larger than normal order being placed with the supplier. The distortion (when repeated further upstream) results in double and sometime triple forecasting.

(2) 'Rationing Game' Behaviour:

In times of perceived or actual shortages, retailers often tend to inflate their orders (sometimes referred to as 'phantom demand') so as to potentially gain an improved share of the items in short supply.

(3) Order Batching:

This results from retailers ordering in large infrequent batches (resulting from drives for economies of scale in terms of ordering costs). The supplier only receives their 'notification of demand' when the retailer places an order.

A number of authors have suggested that a further barrier is any time delay in exchanging and processing of information (Stalk and Hout 1990; Spekman *et al.* 1998).

In fact, Stalk and Hout (1990:21) specifically warn of the dangers of slow information lead-time, summing up the problems with information delays when they state:

“The underlying problem here is that once information ages it loses value ... old data causes amplifications, delay and overhead ... the only way out of this disjointed supply system between companies is to compress information times so that the information circulating through the system is fresh and meaningful”.

Williams (1997), suggests that in order to overcome this problem the sharing of demand information should be on a real-time basis, or as close to real time as possible. Mason-Jones and Towill (1997, 1999) go further and suggest that the best way to ensure everyone in the supply chain gets the most up-to-date and useful information is to directly feed each level of the supply chain with the market sales data. However, a number of authors recognise that sharing information is only simple in theory, in practice; they suggest that attitudes towards other organisations in the supply chain must also be changed (MacBeth and Ferguson 1994; Mason-Jones and Towill 1998).

Such change in attitude is made more difficult as unfortunately many information strategies have involved far too much bias towards the technology used as opposed to concentrating on the fidelity and availability of the actual data transferred (Davenport 1994; Mason-Jones and Towill 1998).

Despite the evidence from Mason-Jones and Towill (1999) there is still the attitude that ‘information is power’, leading to incomplete or even distorted disclosure (Towill 1997). Mason-Jones and Towill (1998) argue that whilst the introduction of EDI in many companies has offered marked improvements in the speed of transmission of orders as documented by Macbeth and Ferguson (1994) the current information flow in the vast majority of supply chains is still far from ideal.

[C] Efficient Consumer Response (ECR)

The first robust initiative created to enable integration in the supply chain dates back to 1992, when fourteen trade association sponsors, including the Grocery Manufacturers of America and the Food Marketing Institute created a group named “Efficient Consumer Response Movement”, or “ECR”, with the purpose of leading an unprecedented transformation in business practices (Ellram *et al.* 1989; Kurt Salmon Associates 1993; Partch 1993; Cooke 1994; Robins 1994; Fiorito *et al.*, 1995).

The concept of ECR actually originated from the concept of quick response (QR), an existing strategy in the textile and apparel industries (Christopher 1992; Cooke 1994; Whiteoak 1994; Fiorito *et al.* 1995; Bowersox *et al.* 1996). QR was a new style of relationship for organisations trying to become demand driven, with the ultimate aim of transforming the supply chain into an efficient ‘pull’ system based on consumer demand, with decisions taken in response to “real” requirements (Christopher 1992).

Although ECR originated in the USA, and where it has seen most of its development (Brockman and Morgan 1999; Hoffman and Mehra 2000), the concept has attracted a growing level of interest (albeit in the practitioner literature) from both manufacturers and retailers in many European countries (Coupe 1995; Leggett 1996; Wheatley 1996; Coopers & Lybrand 1997; Peck 1997; Kurnia *et al.* 1998). Examples of UK grocery sector organisations (both retailers and manufacturers) that are adopting ECR include: Birds Eye Walls, Johnson & Johnson, Mars, Procter & Gamble, Tesco and Van den Bergh Foods (Barry 1996; ECRE 1996; Pearce 1996).

ECR proposed that supply chain benefits could be achieved by excelling in four core strategies:

(1) Efficient promotions:

Addresses inefficient promotional practices that tend to inflate inventories and practices, whose effects may not be fully passed through to consumers to influence their purchase decisions;

(2) Efficient replenishment:

Focuses on shortening and eliminating costs in the order cycle, starting with accurate point-of-sale data. Includes efficiencies to be gained by using continuous replenishment programs, EDI, cross docking, computer assisted ordering and new receiving techniques;

Efficient store assortment:

Addresses how many items to carry in a category, what type of items and in what sizes/flavours/packages, and how much space to give to each item. This is closely linked to the principles of category management; and

Efficient product introductions:

Addresses improving the entire process of introducing new products, which is subject to high failure rates, thereby bringing extra costs into the system. [For a more detailed explanation please refer to Kurt Salmon Associates (1993) and Glinner (1997)]

Whilst ECR brings many potential benefits to both suppliers and retailers in terms of efficiency improvements, the biggest opportunity it presented was to enable real supply chain collaboration. ECR calls for the creation of a timely, accurate and paperless flow of information – relying heavily on electronic data interchange (EDI) and strategic alliances between supply chain members (Sansolo 1993; Fiorito *et al.* 1995). The goal of ECR is to take costs out of the supply chain that do not add consumer value (Robins, 1994). By sharing information, ECR would enable supply chains to become demand driven and in so doing, to deliver enhanced customer value. Therefore, ECR could be seen as an enabler of the drive towards an integrated supply chain.

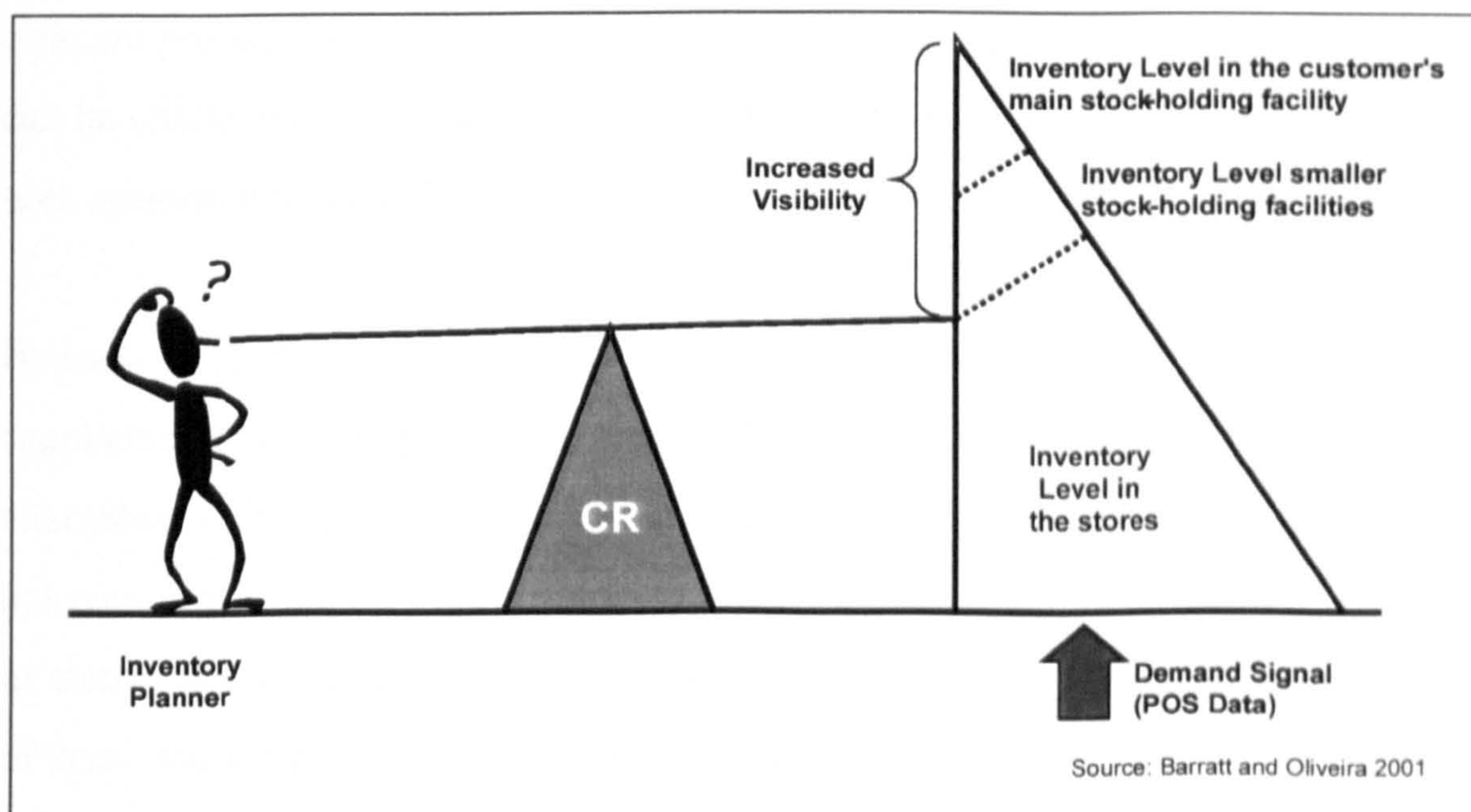
[D] Vendor-Managed Inventory (VMI) and Continuous Replenishment (CR)

A number of other ‘collaborative-based’ initiatives are worthy of mention. Vendor-managed Inventory (VMI) and Continuous Replenishment (CR) are coexisting supply chain management techniques that, in different ways, try to deliver the promised

a sales forecast. The inventory policy is then based on the sales forecast, built from historical demand data and no longer purely based on the variations of inventory levels at the customers' main stock-holding facility, as seen in Figure 27. A process that is usually owned by the supplier, the CR practice allows the management of the supply chain at different levels (such as by product or by store), according to business needs. Some customers have made their point-of-sale data available to their suppliers who usually consolidate this information as a monthly pattern in comparison with the previous year and, based on that, try to predict future sales.

At the same time CR represents an innovation versus VMI practices. The process of creating the sales pattern and then predicting future events is also CR's major weakness (see Figure 27 below). According to Joe Andraski, vice-president of customer marketing operations at Nabisco (cited in Andraski, 1994:3), "CR is usually done by a manufacturer, based on algorithms and history, but its ultimate success is dependent on the skill of the continuous replenishment analyst working with a particular account, whereas real forecasts need to come from the retailer".

Figure 27: Continuous Replenishment - One Step Ahead



Ralph Drayer, Vice-president for ECR at Procter & Gamble (cited in Andraski, 1994), suggests that there is still a lot of excess inventory in the pipeline, even after CR.

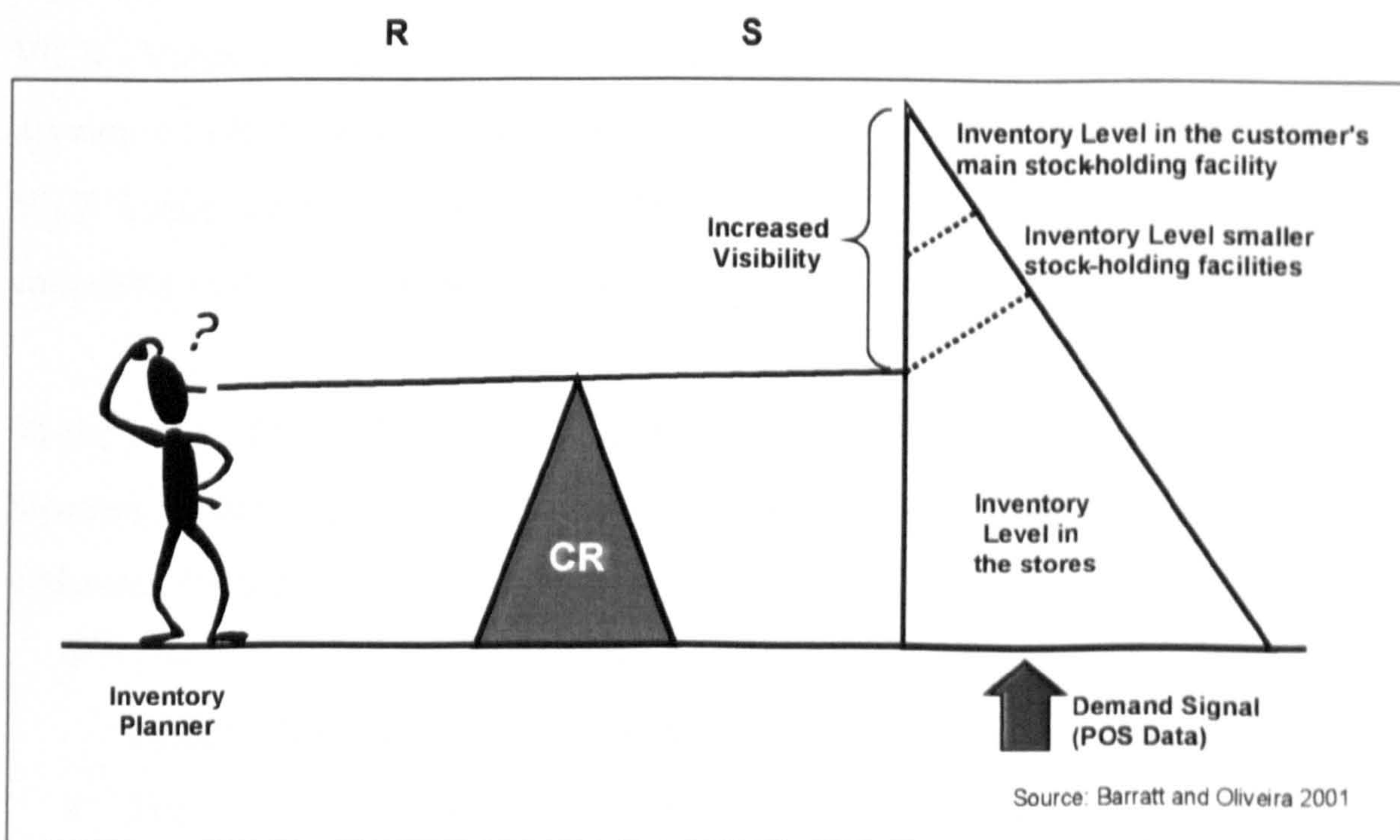
VMI in practice is unsuitable as it does not allow the supplier to see, and therefore to be able to eliminate, stock held in the stores and on the shelves. According to Bernstein (1997), VMI can usually work with a manufacturer supplying large volumes of a frequently replenished product with relatively stable sales. Unless the business enjoys these conditions a VMI-based business practice will maintain unnecessary cost throughout the supply chain.

According to Frantz (1999), inaccurate forecasts, especially for promoted products, are one of the main obstacles that restrict achieving much improved performance. VMI is not an efficient tool to manage promotions, as there is no visibility of POS data - it only allows an after-promotion analysis, without enabling the trading partners to intervene during the promotion (basically because the data is not available until the promotion is finished). A major problem is that the grocery sector is characterised by its players running multiple promotions as a way of generating increased sales. The same reasons are applied to the inability to manage new product introductions. The replenishment process is inefficient, according to Cooke (1994), as manufacturers rely on drop-offs in distribution-centre stock levels to trigger deliveries. Therefore, VMI can only assure an efficient product assortment by over filling the whole pipeline. Again the grocery sector can be characterised as one in which maintaining a constant stream of new products is seen as normal practise.

Because of all these weaknesses, the grocery sector (in terms of retailers and first tier suppliers) has to a large extent started to look beyond VMI and has led the search for alternative techniques. Neil Tall Associates (in Bernstein, 1997), suggest that VMI is not going to be the only way, not even the predominant way, but that VMI will be one of many methods employed in the search for greater supply chain efficiencies. Another of these many methods is the Continuous Replenishment Programme, (CRP), or simply (CR), which emerged as a business practice in early 1990s attempting to address and improve ECR's four core strategies (Andraski, 1994).

In terms of supply chain management, CR moves one step ahead of VMI and reveals stock levels in retailer's stores. For the first time, point-of-sale data is used to generate a sales forecast. The inventory policy is then based on the sales forecast, built from historical demand data and no longer purely based on the variations of inventory levels at the customers' main stock-holding facility, as seen in Figure 27. A process that is usually owned by the supplier, the CR practice allows the management of the supply chain at different levels (such as by product or by store), according to business needs. Some customers have made their point-of-sale data available to their suppliers who usually consolidate this information as a monthly pattern in comparison with the previous year and, based on that, try to predict future sales.

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Ralph Drayer, Vice-president for ECR at Procter & Gamble (cited in Andraski, 1994), suggests that there is still a lot of excess inventory in the pipeline, even after CR. Although CR has provided a better approach to replenishment and product assortment processes, there is still a long way to go. In relation to promotion and new product introduction processes, there is still a clear gap between CR practices and ECR promises.

[E] Collaborative Planning, Forecasting, and Replenishment (CPFR)

Following its emergence in 1995, “*CPFR has won the support of companies in the drug, grocery, general merchandise, and apparel industries*” (Blair 1998:81). According to Cooke (1998), in October 1995, five companies, Warner-Lambert, Wal-Mart, SAP, Manugistics and Benchmark Partners, initiated the first CPFR project. Hill (1999) reported that this new business model applied to Listerine products, improved in-stock availability from 87% to 98%, and reduced lead-time from 21 to 11 days.

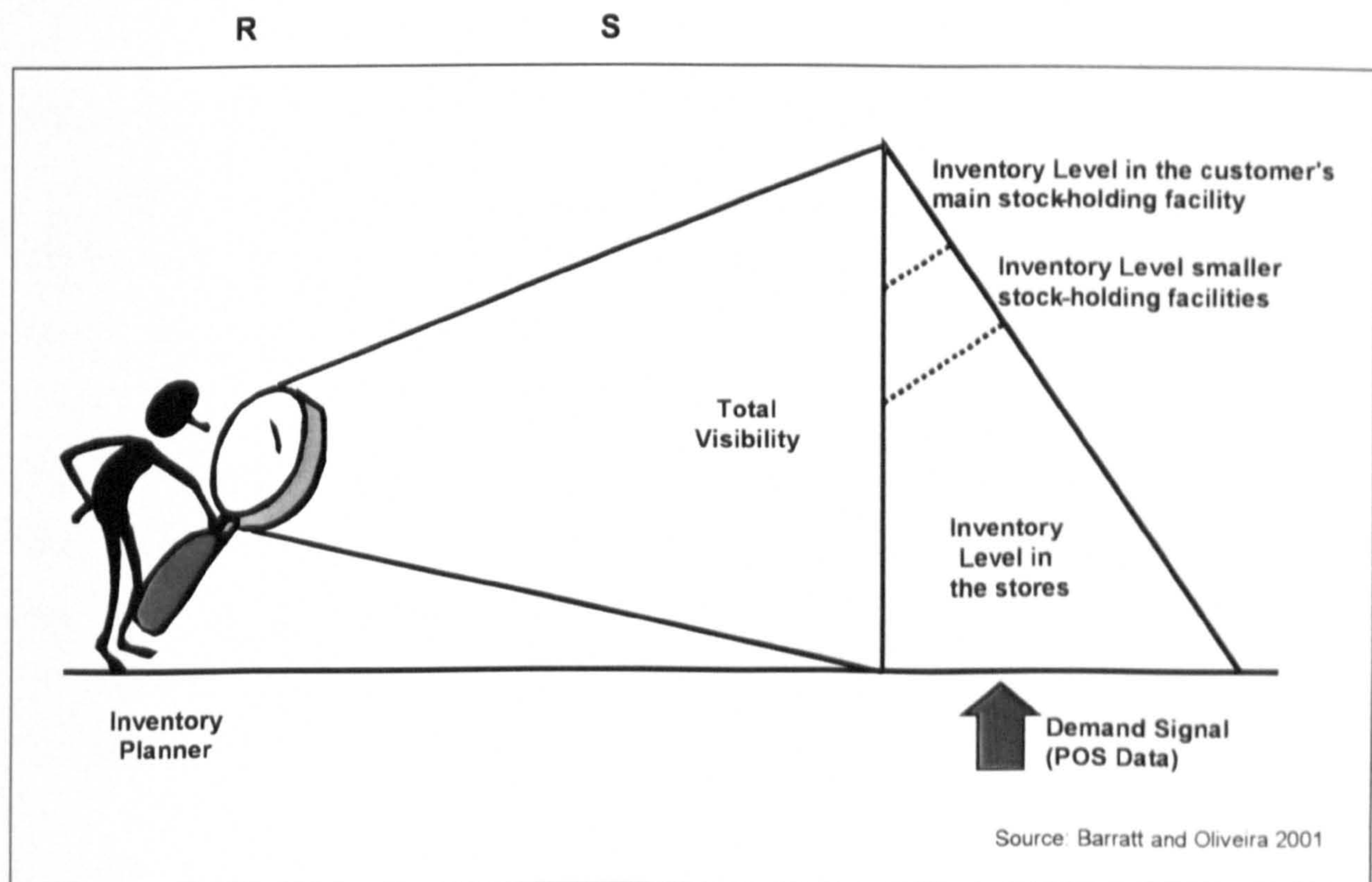
CPFR can be seen as an evolution from ECR (Tosh 1998; Stank *et al.* 1999a). Uchnat (1999) reports that in 1996, a working group was formed to develop the initial vision of Collaborative Forecasting and Replenishment (CFAR) and then in 1997, the vision was expanded to CPFR (Collaborative Planning Forecasting and Replenishment). In 1997, VICS (Voluntary Inter-industry Commerce Standards) created a sub-committee to develop CPFR as an industry standard (Stank *et al.* 1999a). One year later, in 1998, VICS issued the first document on CPFR: “*VICS CPFR Guidelines*”, which has been constantly updated since then (see www.cpfr.org, VICS 2000).

At the heart of the CPFR process is the aspiration to cover the gaps left by previous business practices (such as VMI and CR). With CPFR, several issues are more fully addressed for the first time, such as:

- The influence of promotions in the creation of the sales forecast (*and its influence on inventory management policy*);
- The influence of changing demand patterns in the creation of the sales forecast (*and its influence on inventory management policy*);

- The common practice of holding high inventory levels to guarantee product availability on the shelves;
- The lack of co-ordination between the store, the purchasing process and logistics planning for retailers;
- The lack of general synchronisation (or co-ordination) in the manufacturer's functional departments (sales/commercial, distribution and production planning);
- The multiple forecasts developed within the same company (marketing, financing, purchasing, and logistics);

Andraski, (1994), reports that CPFR engages the manufacturer and the retailer into exchanging marketplace information in order to come up with a customer-specific plan that can substantially reduce inventory (see Figure 28 below). Forecasts force sharing of promotion schedules, POS data, and inventory data and that enables shorter lead-times and integration between forecasting and replenishment processes (Frantz, 1999).



Drayer suggests (cited in Tosh, 1998) that CPFR provides a natural evolution from what started with continuous replenishment. He argues that the real power of CPFR is that, for the first time demand planning and supply planning have been co-ordinated under a joint business-planning umbrella – a major advance. Doug Carolan, president and CEO, Associated Wholesalers Grocers, Kansas City, (cited in Tosh, 1998), reports that the link with the retailer is going to become the key to understanding the replenishment cycle.

Point of sale (POS) data is fed into a model based on a sequence of steps that is relatively free of human involvement. Several established rules (*jointly agreed*) are set and the whole process is managed by exception - in other words, unless something goes wrong, the system is prepared to read the (POS) data on-line and based on this information, plan the replenishment sequence in terms of the optimum size and time of delivery. One step ahead of CR, the CPFR process is now based upon consumer demand and results in unprecedented flexibility and agility across the part of the supply chain between the retailer and manufacturer.

2.5.4 Collaboration and the Sharing of Information

A number of authors have highlighted the fundamental need for information sharing if supply chains are to improve their performance (Stank *et al.* 1999a; Lambert and Cooper 2000; Lau and Lee 2000).

Lee and Whang (2000) highlight the almost total lack of empirical research into information sharing in the supply chain. Apart from Barrett and Konsynski's (1982) study of information sharing in the general context), Lee and Whang (2000) suggest that most work has been conceptual in its nature, and has not focused on information sharing in a supply chain context.

Information, particularly the transparency and quality of information flows, plays an important part in many accounts of supply chain developments and both of the assumptions outlined above (1) intermediation is a potential barrier to greater

transparency in supply chain because it acts as a source of information asymmetry and impactness; and (2) that intermediation necessarily raises costs and frequently constitutes a non value adding activity (Popp 2000).

Mason-Jones and Towill (1997) argue that "*information enrichment*", i.e. immediate sharing of marketplace data throughout the chain is not merely desirable, but obligatory. This must be achieved in a process integration scenario as we move towards the 'Seamless' Supply Chain (SSC) in which all 'players' think and act as one (Towill 1997). The breakthroughs of the last decade in the form of Efficient Consumer Response (ECR) and the use of information technology to capture data on demand direct from the point of sale are now transforming the organisation's ability to hear the voice of the market and to respond to it directly (Christopher 1998). The use of information technology to share data between buyer's and suppliers is, in effect, creating a virtual supply chain. Virtual supply chains are information based rather than inventory based.

A major problem in most supply chains is their limited visibility of real demand (Christopher and Towill 2000). Shared information between supply chain partners can only be fully leveraged through process integration. By process integration is meant collaborative working between buyers and suppliers, joint product development, common systems and shared information. This form of collaboration in the supply chain is becoming ever more prevalent as companies focus on managing their core competencies and outsource all other activities (Christopher and Towill 2000). The second decoupling point is the 'information' decoupling point. The idea here is that this should lie as far as possible upstream in the supply chain – it is in effect the furthest point to which information on real final demand penetrates (Christopher and Towill 2000).

[A] Types of Information That Should Be Shared

Lee and Whang (2000) suggest that there are certain types of information that should be shared in the supply chain: -

Inventory Level Status:

If retailers and manufacturers independently manage their respective inventories without sharing inventory status, they may end up having duplicate inventories, or stock-outs at both locations. Examples of attempts to overcome this problem can be seen in initiatives such as Continuous Replenishment Programmes (CRP) and Vendor Managed Inventory (VMI) (Lee and Whang 2000).

Sales Data:

In traditional supplier-buyer relationships, companies communicate demand information exclusively in the form of orders. Lee and Whang (2000) suggest that as orders are the ‘processed’ results of various sources of information and conjectures by the buyer, orders data often distort the true dynamics of the marketplace – a phenomenon often referred to as ‘the Bullwhip effect’ (Lee *et al.* 1997a, 1997b). See also section 2.5.3 [B].

Order Status for Tracking/Tracing:

A typical supply chain involves multiple functions and independent companies in the delivery of goods and services to the end consumer. As a consequence of this it is often difficult for the customer to ascertain the current status of the order.

Sales Forecasts:

As has already been mentioned above, multiple forecasts in the supply chain are one source of demand amplification. In many cases the manufacturer may have a better overall view of the total market than the retailer. It therefore makes sense to endeavour to reduce the number of forecasts by creating ‘joint forecasts’ between the retailer and the manufacturer - see section 2.5.3 [E].

Production/Delivery Schedule:

A manufacturer could make use of its supplier’s production or delivery schedule to improve its own production schedule.

Performance Metrics and Capacity Levels:

By sharing performance metrics bottlenecks in the supply chain can be identified and overall performance improved. Capacity information can contribute to mitigating potential shortage-related ‘gaming’ behaviour (referred to in Section 2.5.3 above).

Lummus and Vokurka (1999) identify the information requirements of organisations dependant upon their position in the supply chain (see Table 6 below).

T	S	R	q
	S		
	<ul style="list-style-type: none"> • On-Hand Inventory • Material Production Schedule • Actual Production Completed • Manufacturer's Orders • Shipping Notices 	<ul style="list-style-type: none"> • On-Hand Inventory • Material Production Schedule • Actual Production Completed • Summarised Demand • Distributors' Orders • Customer Direct Orders • CRP Customer Inventory • Shipment Load Parameters 	<ul style="list-style-type: none"> • In-Transit Inventory • Planned Shipments • Delivery Schedules
		R	
	<ul style="list-style-type: none"> • On-Hand Inventory • Warehouse Space Availability • Retailer's Orders • Shipment Load Parameters • Shipping Notices • Shipment History • Trade Deals (forecast) 	<ul style="list-style-type: none"> • On-Hand Inventory • Consumer Sales Data (POS sales) • Planned Promotion Quantities • In-Store Display Requirements • Account Details (forecast) 	<ul style="list-style-type: none"> • Demand (market forecast) • Consumer Promotions (forecast)

Source: Lummus and Vokurka (1999)

A number of authors suggest that promotional related information should be shared so as to allow more effective management of such prolific promotional activity (Mentzer and Khan 1996; Lummus and Vokurka 1999; Bowersox *et al.* 2000).

Market sales data is the catalyst information for the whole supply chain, holding undiluted data describing the consumer demand pattern. Therefore the best way to ensure everyone in the supply chain gets the most up-to-date and useful information is

to directly feed each level of the supply chain with the market sales data (Mason-Jones and Towill 1999).

Bowersox *et al.* (2000) highlight the need to share information relating to prescribed inventory levels. Finally, Stank *et al.* (1999a) suggest that in an attempt to reduce uncertainty in the supply chain, parties in the supply chain should share advanced notification of problems and issues.

[B] Information Should Be Shared Between Whom?

Internally, the shared information between Marketing (trading/commercial) and supply chain should be made available to suppliers, e.g. promotional plans (Lummus and Vokurka 1999). All the nodes (parties) in the supply chain should be supplied with the necessary information (Lummus and Vokurka 1999).

[C] Barriers to Information Sharing

The literature reveals a multitude of reported barriers to the sharing of information in the supply chain as follows:

- Aligning the incentives of different supply chain partners, in terms of clearly identifying how the benefits of such information sharing are to be shared (Lee and Whang 1999).
- Timeliness and accuracy of shared information (Stank *et al.* 1999a; Lee and Whang 1999). In a seminal publication, Stalk and Hout (1990) emphasised the importance of time compression through a supply chain in order to gain shorter lead times, order control and stock level reductions. One available resource within companies that invariably has an unnecessarily long lead-time is demand information. In fact Stalk and Hout (1990:21) specifically warn of the dangers of slow information lead time, summing up the problems with information delays when they state:

“The underlying problem here is that once information ages it loses value ... old data causes amplifications, delay and overhead ... the only

way out of this disjointed supply system between companies is to compress information times so that the information circulating through the system is fresh and meaningful”.

In many supply chains only the player closest to the end customer has the luxury of knowing the true demand. Market information notoriously suffers from delay and distortion as it moves through the supply chain (Mason-Jones and Towill 1997).

- Capability to use information effectively (Whiteoak 1994; Mason-Jones and Towill 1998; Stank *et al.* 1999a; Lee and Whang 1999).
- Demand amplification (Williams 1997; Spekman *et al.* 1998; Mason-Jones and Towill 1998).
- Attitudes of others parties in the supply chain (MacBeth and Ferguson 1994; Mason-Jones and Towill 1998). Following on from this there is still the attitude that ‘information is power’, leading to incomplete or even distorted disclosure (Towill 1997)
- Too technology focused, resulting in a ‘solution looking for a problem’ (Davenport 1994; Mason-Jones and Towill 1998). Andraski (1994), reports that only about 7% of US retail supply chains operate effectively, the main reason for this is that supply chains are 20% technology problems and 80% people problems.
- Understanding what information to share and creating the availability of that information (Lummus and Vokurka 1999).
- A lack of trust with regard to how the benefits of such information sharing are to be shared (Lee and Whang 1999).
- Fears over the confidential nature of the information being shared (Staff 1998; Lee and Whang 1999; Stank *et al.* 1999). This is of particular concern for organisations when a supplier with which the information being shared, also supplies a competitor of the organisation (Lee and Whang 1999).
- Lack of standards to govern the format of the information being shared (Lee and Whang 1999; Fernie *et al.* 2000).

- Despite the growing numbers of different technologies that facilitate the sharing of information with other parties in the supply chain, the cost of such technology can be prohibitive (Lee and Whang 1999).

[D] Information Sharing in the UK Grocery Sector

Until recently there was very limited information sharing in the UK grocery sector. Such sharing was limited to order lead times, delivery information and historic sales (MacBeth and Ferguson 1994; Fernie *et al.* 2000). However, over the last few years there has been a significant growth in information being shared by parties in the supply chain. Retailers have mostly completed their move to composite distribution, primarily as a result of improved flows of information between retailers and their suppliers (Fernie *et al.* 2000). The sector has also seen improvements in overall performance due to the rolling out of electronic point of sale (EPOS) technology and the transmission of orders via electronic data interchange (EDI) (Fernie *et al.* 2000).

With the recent explosion of Internet-related technology, retailers have begun to develop Internet based information exchanges [e.g. Tesco Information Exchange (TIE), Sainsbury Information Direct (SID)] (Fernie *et al.* 2000). Such exchanges are still relatively crude and as they have been developed independently, manufacturers are faced with the issues of receiving information from their major retail customer in a multitude of formats, giving rise to the call for information standards to reduce the time taken to consolidate such differently formatted information (Fernie *et al.* 2000). In the future, the information exchanges created by the retailers have the potential to provide promotional and sales forecast information to their suppliers (Fernie *et al.* 2000).

2.5.5 Summary

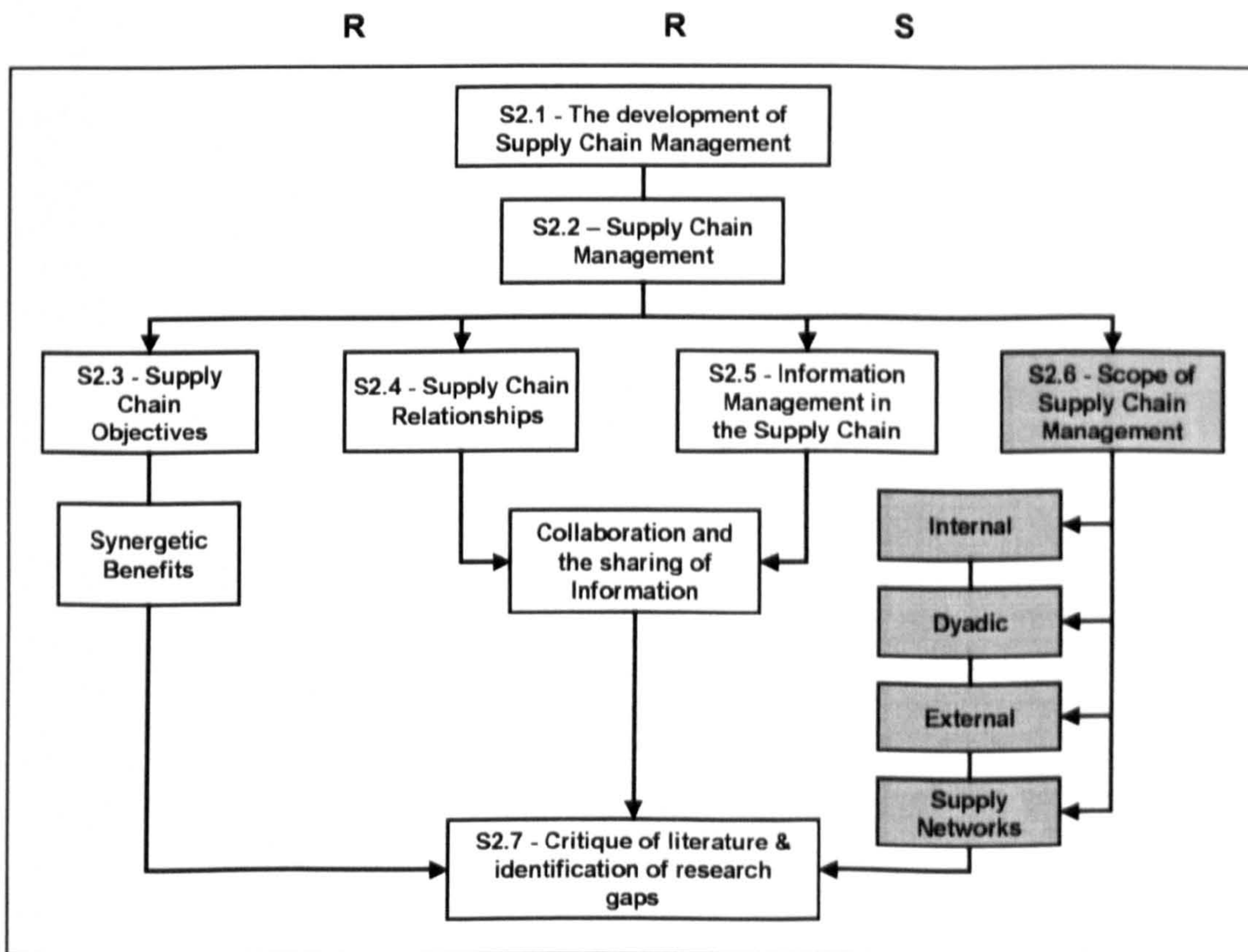
The recent explosive growth of the Internet and the over-hyped 'Year 2000' problem has heightened the perceived importance of information technology in managing the supply chain. This chapter has reviewed the role and types of information technology in the supply chain, and how organisations have attempted to manage demand for their

products and services. The review has also highlighted the lack of research into the sharing of information in the context of a supply chain.

Many organisations have sought to create transparency of transactional-related information with the implementation of enterprise resource planning (ERP) systems and advanced planning and scheduling (APS) systems. Despite such efforts many organisations appear to be struggling to adopt information technology and systems that utilise the growing availability of supply chain information, such as point of sale (POS) data, forecast, promotional and inventory level data. It is clear that research is required to understand the barriers to the sharing and usage of such supply chain information.

2.6 Scope of Research into Supply Chain Management

This sections sets out to review the literature on the scope of research into supply chain management. As an aid to the review in this section the following diagram (Figure 29) is used for the structure of the review.

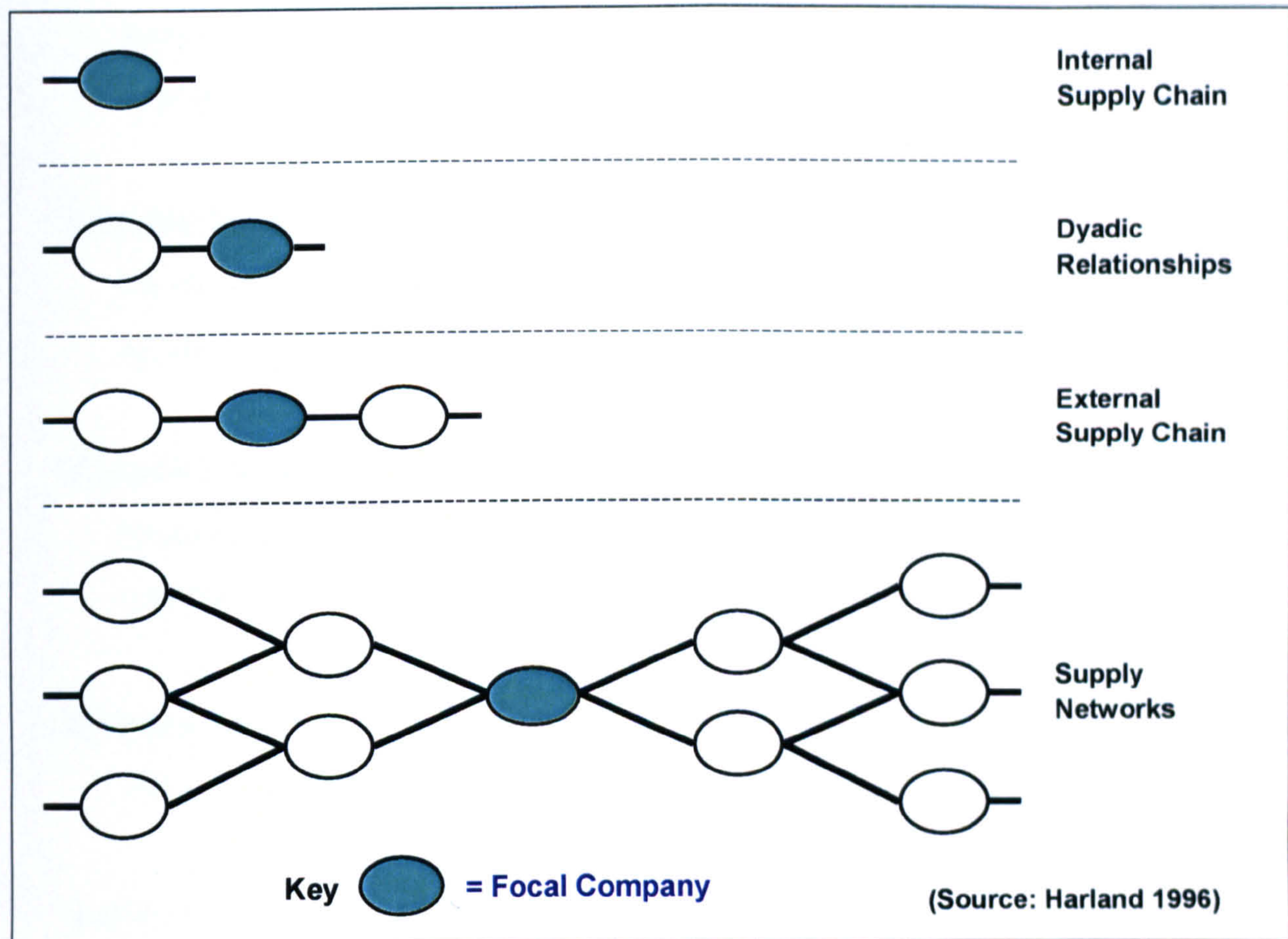


Harland (1996) suggests that there are four main uses of the term 'supply chain management' relating to the level in the context of the scope of the supply chain about which the research is undertaken. These are the internal supply chain; the dyadic relationships; the external supply chain, and the supply network (see Figure 30 below). These four levels of research are now discussed in more detail.

2.6.1 Internal Supply chains

Harland (1996:67) describes this level of research as "*... the internal supply chain that integrates business functions involved in the flow of materials and information from inbound to outbound ends of the business*". The internal supply chain has been described (see for example Oliver and Webber 1982; Houlihan 1984; Jones and Riley 1985; Stevens 1989; Saunders 1994), as relating to the pre-existing concepts of materials management (Lee and Dobler 1965; Ammer 1968), and the value chain (Porter 1985). As this proposed research is adopting the view that the supply chain exceeds the boundaries of the firm the review of internal supply will be limited to the above.

R S



2.6.2 Dyadic Relationships

Harland (1996:65) describes this level of research as “*the management of dyadic or two party relationships with immediate suppliers*”. There is an evolving body of research that defines and views supply chain management as a type of relationship that lies between vertical integration and a pure market (for example, Ellram 1991; Christopher 1992; Webster 1992; Cooper and Ellram 1993; Cooper and Gardner 1993).

Dyadic business relationships have been viewed in the context of a number of business trends, which highlight the increasing dependence on relationships with suppliers (Slack 1991; Christopher 1992): -

Vertical disintegration

The fear of becoming locked into obsolete technologies have forced some firms to vertically dis-integrate (see for example Miles and Snow 1986), the forming of relationships offers the chance to switch between various suppliers and

thereby avoiding the need to divest vertically integrated parts of a business (Harland 1996);

Supplier base reduction

As the numbers of suppliers are reduced, more longer-term relationships must be developed with the remaining suppliers (Hakkansson 1987; Lamming 1989).

Focusing of operations

Organisations concentrating on a limited set of tasks derived from customer criteria (Christopher 1992).

Outsourcing

The contracting out of non-core activities (Rao and Young 1994).

Just-in-time

The delivery of parts and services at exactly when they are required. Frazier *et al.* (1988) identified that the traditional adversarial relationships were not conducive to just-in-time; and

Partnerships and partnership sourcing

The creation of 'win-win' relationships (Macbeth and Ferguson 1994).

Harland (1996) contends that the above trends establish the context for what many researchers term as 'supply chain management'. Harland (1996:66) goes on to point out that whilst these dyadic relationships are the building blocks of supply chains, "*two links don't make a chain*".

2.6.3 External Supply Chain

Harland (1996:67) describes the external supply chain as "... *the management of a chain of business including a supplier, a supplier's suppliers, a customer and a customer's customers, and so on*" A more simple description is that of a "pipeline" (Farmer and Ploos von Amstel 1991). Hayes and Wheelwright (1984) suggest that a

firm's physical location in the chain would affect demand volatility. In this respect Hayes and Wheelwright were referring to research covered by the industrial dynamics literature (Forrester 1961; Towill 1996).

2.6.4 Supply Networks

Harland (1996:68) describes supply networks as “...*the management of a network on interconnected businesses involved in the ultimate provision of product and service packages required by end customers.*” Mitchell (1969:2) defines a network as “*a specific type of relation linking a defined set of persons, objects or events. The set of persons, objects of which the network is comprised can be called actors or nodes*”. Establishing a link between networks and supply chains, Christopher (1992:3) defines supply chain management as “... *the network of organisations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate consumer*”.

Juga (1996) highlighted the use of the network concept in the study of inter-unit relationships of large multinational corporations (Prahalad and Doz 1987; Ghoshal and Bartlett 1990). The concept has also been applied successfully to the study of relationships between organisations (Thorelli 1986; Jarillo 1988), offering a useful analysis framework especially in the industrial marketing context (Axelsson and Easton 1992). Juga (1996) points to the fact that organisations within the network recognise their inter-dependence and are willing to share information, co-operate with each other, and customise their product or service to maintain their position within the network (Miles and Snow 1986, 1992).

2.6.5 Summary

The traditional approach to research into supply chain management has in the view of the researcher been limited in terms of its narrow focus, omitting the systemic philosophy of the supply chain concept. This research is different because of its holistic nature, i.e. it looks at a broader section of the supply chain, which includes six

organisations, thereby increasing the complexity of the supply chain in terms of the numbers of relationships and information flows. However, it is suggested that by including a much broader section of a supply chain, the research is able to explore much more deeply, supply chain relationships and information flows within in their natural environment.

2.7 General Critique of Literature and Identification of Research Gaps

This section provides a critique of the various literature groups reviewed and identifies a number of ‘gaps’ in the literature, to be addressed by the research question and supporting propositions.

2.7.1 Supply Chain Management

The multiple definitions and interpretations have created some confusion as to what SCM is and how the supply chain should be managed to achieve the potential benefits of SCM. What is clearly apparent is that some of the theories that SCM draws upon, whilst having been considered for defining what SCM is, have been omitted when considering attempts to minimise costs and improve service levels across the supply chain as a whole. This would appear to be true for both systems and network theory.

Additionally, although many of the definitions of supply chain management incorporate the systemic view of the supply chain, it is apparent that beyond the traditional boundaries of the firm the focus has been limited to the mechanics of purchasing and logistics issues (Lamming 1992). Lee and Billington (1992:67) suggest that *“Unfortunately, most organisations are designed to create winners and losers: working together for system optimisation receives little more than lip service”*.

It is doubtful as to whether integration throughout the supply chain is being achieved (AT Kearney 1994). Neuman and Samuels’ (1996) study reveals that whilst the concept of integration is accepted, implementation rates are poor due to misunderstandings and poor communication between prospective supply chain partners, and more importantly, the poor attitudes of retailers. They suggest that prospective supply chain partners are

also experiencing difficulties due to the shift in culture required by the concept of SCM. Lamming (1996) emphasises another problem with SCM in that organisations have adopted a short-term view of the supply chain, which will not support the partnership view (Ellram and Cooper 1990) of how to integrate and thereby successfully manage and control the supply chain.

Finally, the retailer, who is dominant and is the focus of the current research, has the opportunity to drive through efforts to optimise the supply chain in the sense of lowering total supply chain costs and improving levels of service. The retailer along with the other organisations in the supply chain have to recognise that their supply chain relationships must move to a state of mutual dependency rather than the traditional adversarial style relationships (Atkin 1993).

2.7.2 Supply Chain Objectives

It is stated in the literature and agreed by many authors that supply chain management offers a considerable potential competitive advantage (see for example Ellram 1991; Ellram and Cooper 1993). In fact, Giunipero and Brand (1996) cite potential benefits of SCM as follows: improved co-ordination (supplier to customer); reduced lead times; greater productivity of operations; lower inventories; increased reliability of delivery; lower costs of products; shorter order cycle time to customers; improved information exchange; improved quality of final product; consolidated buying strength; quality improvement from suppliers; shorter product development time; reduced number of suppliers; and reduced number of competitors for an organisation's distributors.

Whilst some of these benefits may have been achieved by organisations who have attempted to implement the supply chain management concept (AT Kearney 1994), it is suggested that the benefits presently achieved are only short-term due to the lack of integration throughout the supply chain as a whole, i.e. the supply chain has not been viewed as a whole when considering potential improvements (AT Kearney 1994).

2.7.3 Supply Chain Relationships

Closer relationships between suppliers and customers are a competitive necessity (AT Kearney 1994). There is clear evidence that organisations have recognised this and are attempting to implement such an approach to the management of their supply chains (AT Kearney 1994). Certainly, organisations have recognised the need to develop relationships with their customers, although it would appear that there is a bias towards the formation of relationships with customers at the expense of relationships with suppliers (AT Kearney 1994). It is not clear as to the reasons for this apparent bias.

A number of authors have suggested that there is a continuum of relationships (see for example Ellram 1990; Webster 1992; Cooper and Gardner 1993; Lambert *et al.* 1996) along which organisations are moving towards the formation of a network of relationships. It has also been suggested that organisations should form different styles of relationships with other organisations to suit the purpose of their dealings with that organisation (Cooper and Gardner 1993; Lambert *et al.* 1996). If this move to a network of relationships is to succeed and if there are varying styles of relationships, which vary in their sustainability, then the network is likely to be ever changing in its make-up of organisations, as firms discard some relationships and seek new partners.

Supply chain relationships involve the sharing of information. Organisations must share demand and cost information if competitive advantages are to be achieved (AT Kearney 1994; Christopher 1997). If organisations continue with the practise of charging for forecast or demand data (AT Kearney 1994), then the ideal of co-operative relationships is not likely to be achieved. This is seen as simply an organisation exercising its power over its supplier.

Limited empirical work has been done in modelling and studying supply chain management relationships. Most research done in this area has focused on one relationship or a single level of the supply chain, such as buyer/seller, shipper/carrier, and so on (Ellram 1991; Harland 1996). One argument that has been put forth for adopting a supply chain management approach is that it provides synergetic benefits.

However, these synergies can be best evaluated by examining the total system, not individual parts. Thus, studying supply chains as systems is an important issue.

2.7.4 Information Management in the Supply Chain

In so far as logistics and SCM are concerned IT plays a significant role in supporting the drive to improve service and reduce costs (Christopher 1997). As to whether IT leads to a competitive advantage (Bowersox and Closs 1996) is not clear, the information generated by such IT can clearly create power and influence in the supply chain (Ogbonna and Wilkinson 1996).

The concept of SCM is based upon achieving integration throughout the supply chain, accomplished by the creation of relationships with suppliers, for the overall purpose of satisfying consumer demand. There is limited empirical research into the relationships between information, integration and consumer response. Daugherty *et al.* (1992) examined the relationships between information, integration and consumer response, and suggested that higher levels of shared information and communications with supply chain partners lead to integration and greater responsiveness, although they found little evidence to support this. This study was however based upon secondary data and the findings could not be generalised due to limited numbers of respondents, with such respondents being drawn from only one industry sector. A further limitation could be said to be the fact that responsiveness was limited to individual firms with a distribution channel and not the responsiveness of the channel as a whole. A similar investigation by Daugherty *et al.* (1995), however, managed to support a relationship between information, responsiveness and operating performance (see also Powell and Dent-Micallef 1997).

Finally, it is suggested that information sharing is not open and extensive, but restricted and selective (Ogbonna and Wilkinson 1996). There is a distinction between own-label suppliers, whose relationships with retailers in many cases appear to be increasingly close, and branded manufacturers, with whom the relationship remains selectively distant (Ogbonna and Wilkinson 1996).

Whilst there is a growing amount of research into the role and effects of information in the supply chain (see for example Jones and Rich 1996; Towill 1997), this is limited to the modelling of supply chain, by way of a systems dynamic technique to reflect the demand amplification effect, and not how to reduce or avoid it. Christopher (1997) suggests that the way forward is a re-orientation of the supply chain towards collaboration through shared information.

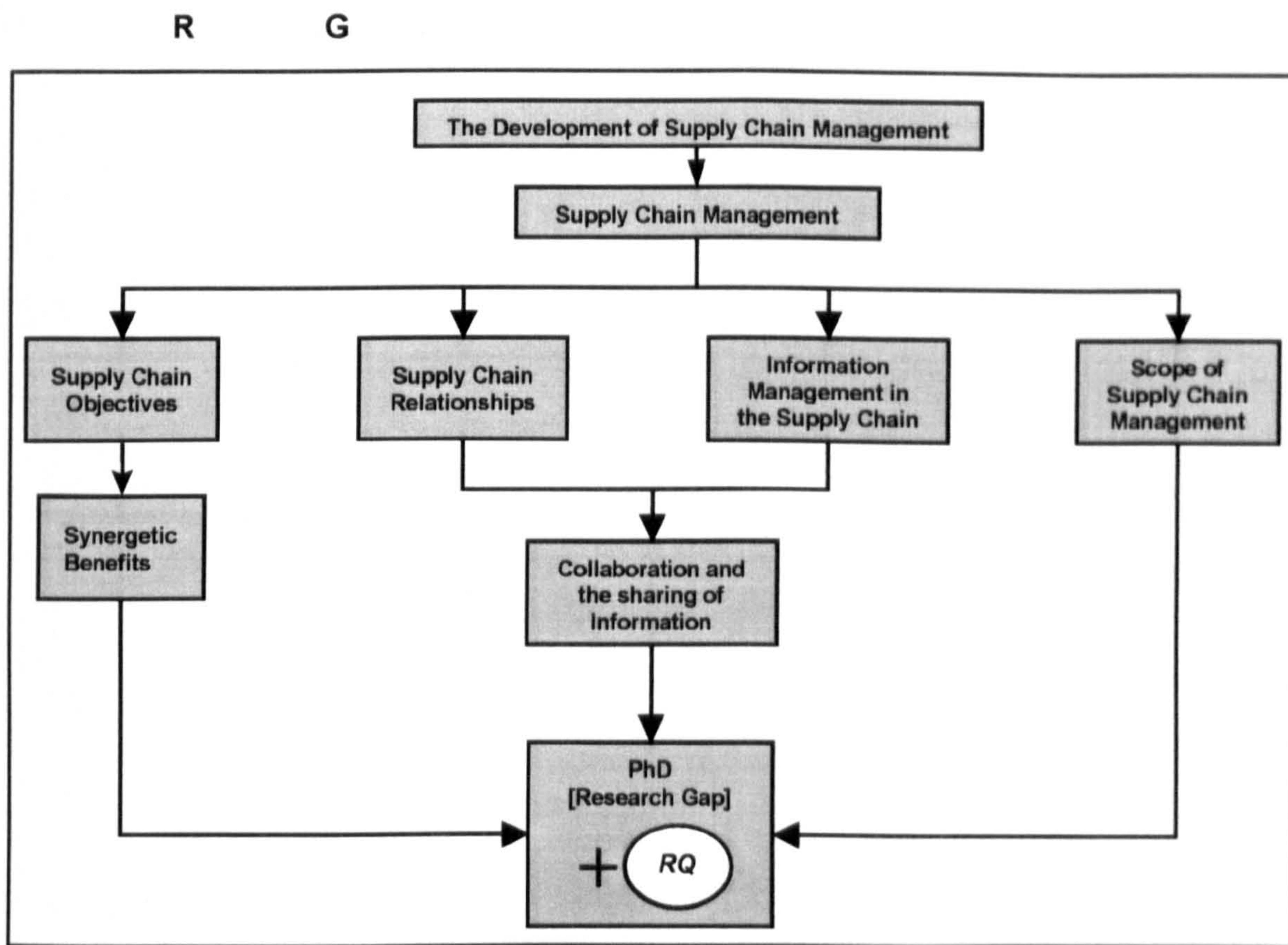
2.7.5 Scope of Research into Supply Chain Management

Recent research predominantly focuses on dyadic relationships between either retailer and supplier, or manufacturer-distributor (Cooper and Gardner 1993). The work appears to ignore the systemic view of supply chain philosophy and the traditional 'pipeline' view of the supply chain needs to be replaced with that of the 'inter-business network' (Harland 1996; Juga 1996).

Many of the definitions of SCM lend themselves to the representation of the supply chain as either a network (Christopher 1992; Juga 1996) or that of the external supply chain (Houlihan 1985; Stevens 1989; Davis 1993). However, much of the existing research into supply chains is in the form of internal supply chains (Oliver and Webber 1992) or dyadic relationships (Ellram and Cooper 1993). Thus there is a clear need for research into supply chains as networks of relationships between organisations. This view is supported by Harland (1996:64) who suggests that "*as there is a move towards network relationships, the need for research in external supply chains and networks will increase*".

2.7.6 Identification of Research Gaps

A gap in the literature is the lack of research that recognises the supply chain as a frequently complex network of organisations. This 'gap' is widened yet further by the fact that existing research fails to adopt a systemic view of the supply chain in that attempted improvements are not viewed in the context of their effect on the supply chain as a whole.



A further gap in the literature concerns the sharing of real demand and cost information. If the sharing of such information is considered to be the key to achieving the potential benefits of an integrated supply chain, then the sharing of information must be examined in a network context and through the adoption of a systemic perspective i.e. the effect of sharing of information on the supply chain as a whole. The aforementioned gaps in the literature lend themselves to the generation of the research question as discussed further in Chapter three. The positioning of the research questions in relation to the literature is shown in Figure 31 above.

The next chapter presents the research objectives together with a discussion of the possible types of research questions. The chapter then concludes with an introduction to and discussion of the research questions for this research.

CHAPTER 3:
RESEARCH OBJECTIVES and QUESTIONS

3.0 Introduction

The chapter begins with a discussion of the research objectives together with an introduction and discussion of the research questions. The chapter then concludes with a discussion of the possible types of research questions and their inference in terms of the types of research they are suited to.

This research into supply chain relationships and information exchange is set within the UK grocery sector; a unique sector (in geographical terms) that is under increasing pressure from new forms of competition (e.g. Wal-Mart's recent acquisition of ASDA). In response to this competition, to dramatic changes in consumer lifestyles (Hughes 1995), and an increasingly dynamic environment, retailers are being forced to examine their inbound logistics for potential sources of sustainable competitive advantage. Such competitive advantage may arise from the formation of synergetic relationships¹ between organisations operating in UK grocery supply chains. A growing number of researchers have suggested the need for more collaborative relationships in the supply chain based on the exchange of information between the parties to such relationships (Christopher 1992, 1996; Spekman *et al.* 1998; Stank *et al.* 1999b; Fernie *et al.* 2000). For example, Spekman *et al.* (1998:54) suggest that:

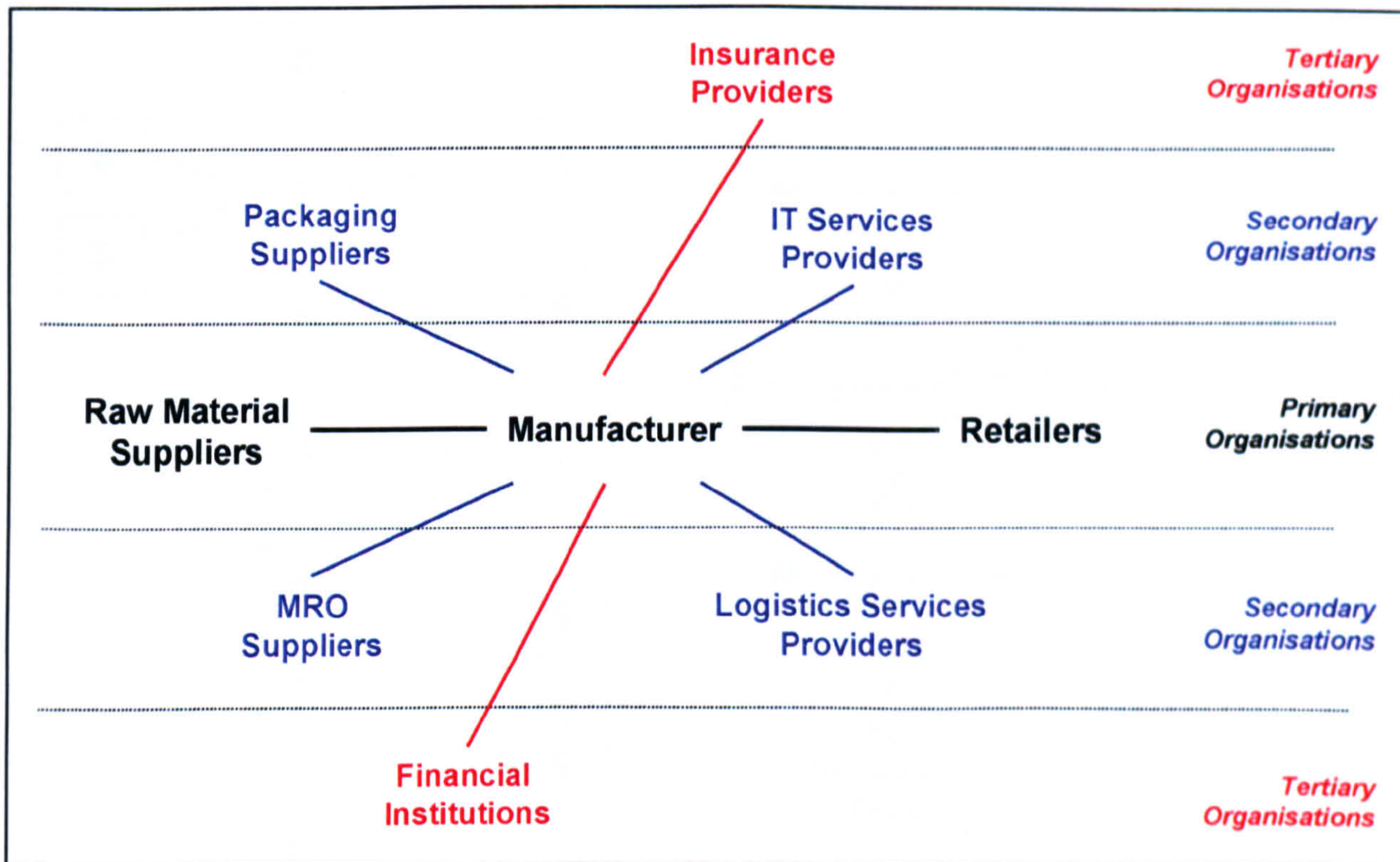
“Within the requirements of the new competition, a shift in the level of intensity among trading partners emerges. Collaboration, whereby firms exchange bits of essential information and engage some suppliers/customers in longer-term contracts, has become the threshold level of interaction. That is, collaboration is the starting point for supply chain management and has become a necessary but not sufficient condition”.

Such relationships based on information exchange and usage, the authors suggest, are seen as the key to competitive advantage, in terms of reducing total supply chain costs whilst simultaneously improving customer service.

¹ By working more collaboratively, two or more organisations derive benefits which when viewed collectively; exceed the sum of the benefits achieved by the organisations working individually.

Despite the recent growth of the supply chain relationship literature, organisations are still experiencing considerable problems in developing and maintaining such relationships (Lambert *et al.* 2000). Many relationships are evolving, but tend to be only with customer organisations and not throughout the supply chain as a whole (AT Kearney 1994).

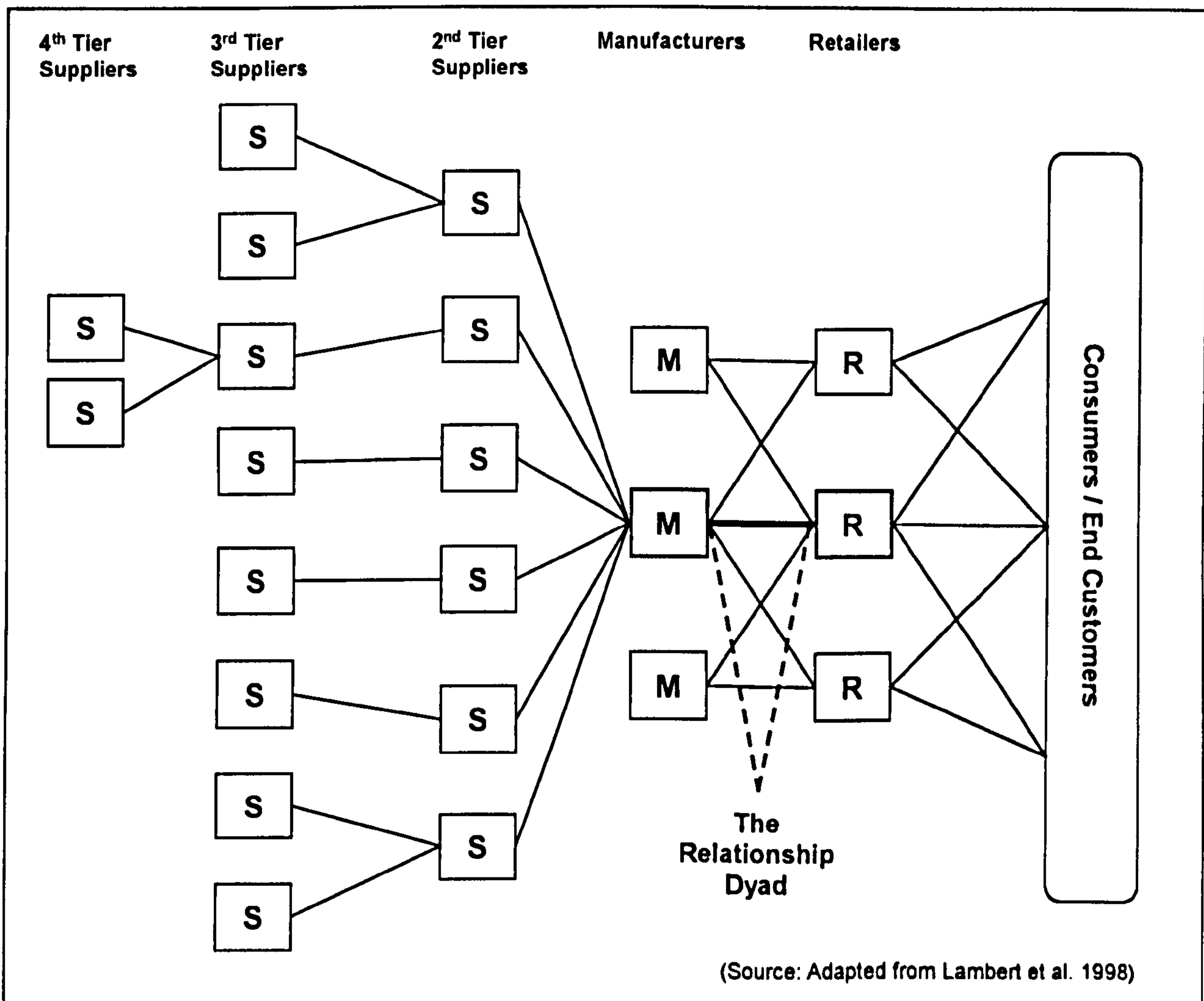
Figure 32: Primary, Secondary and Tertiary Supply Chain Organisations



Where relationships have evolved with first tier suppliers (see Figure 32 above), such relationships are only between the primary organisations in the supply chain (which represents more of a pipeline approach), and omit both secondary organisations (such as packaging suppliers and/or logistics providers), and tertiary organisations (such as insurance providers and other financial institutions), which collectively form a network of organisations, or alternatively, a path through the complex network of organisations that make up the UK Grocery sector. Such approaches, it is argued do not support an integrative approach to a co-ordinated view of the supply chain, in that the full extent of the supply chain is not represented. Certainly, the tertiary organisations may be seen as too remote to be considered in current research activities. Whilst there has been significant research into supply chain relationships, the vast majority have focused on

the relationship dyad (see figure 33 below), i.e. buyer-supplier or retailer-manufacturer (Hewitt 1994; Cooper *et al.* 1997; Lambert *et al.* 1998).

Figure 33: The Relationship Dyad - the Focus of Supply Chain Research

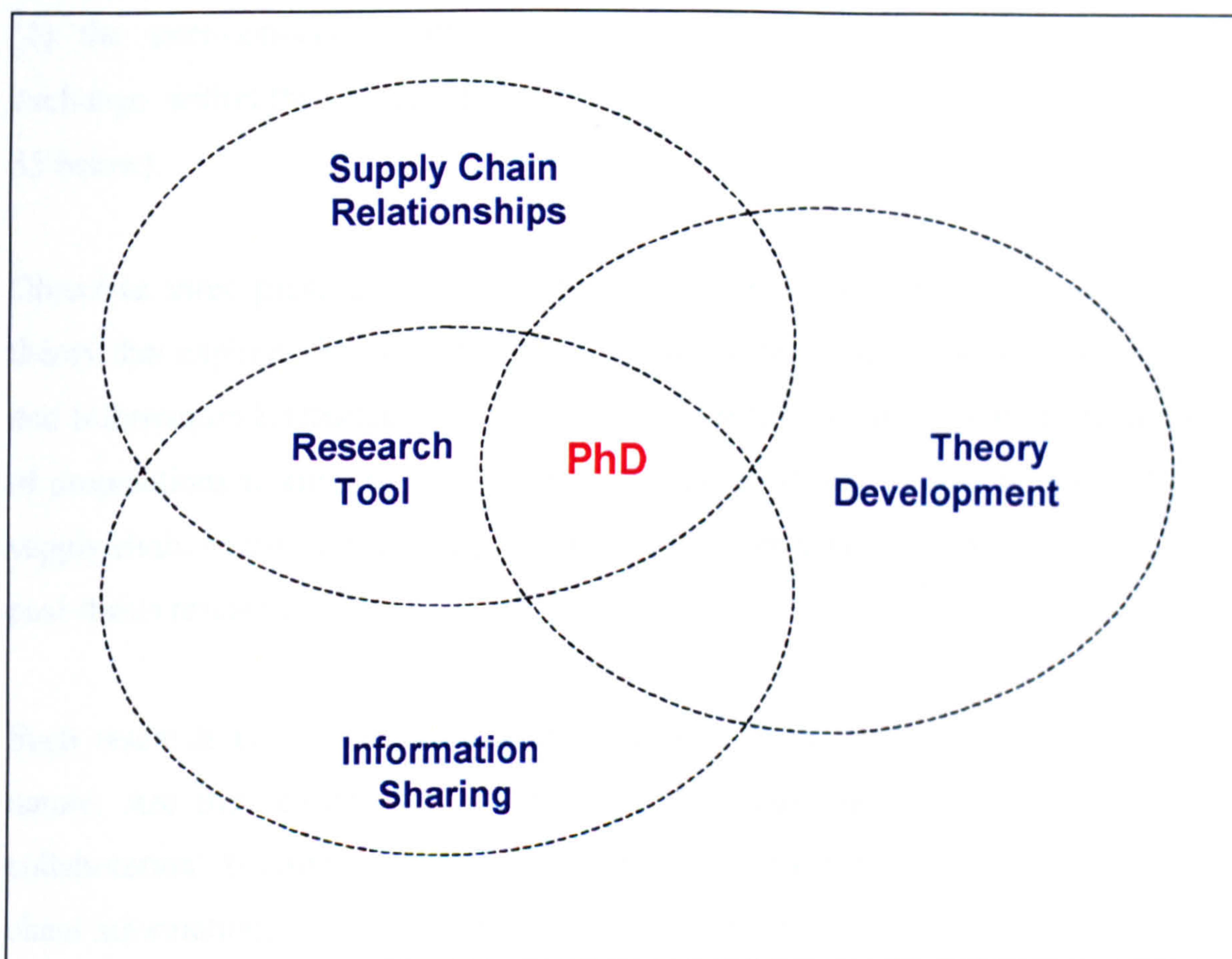


Although it can be argued that the retailer-manufacturer dyad is the main starting point of the supply chain, it is suggested that this excludes the upstream parts of the supply chain, where the status of relationships and degree of information exchange may have a significant impact on the supply chain as a whole. Research into information sharing is rather limited, with some researchers suggesting that no empirical research has been undertaken, particularly within a supply chain context (Lee and Whang 2000). In view of this, it is suggested and supported by evidence from the results of an exploratory study (see Chapter 5 for further details) and it is argued that there is the need for both development of theory and practical case histories, which could enable organisations to understand how relationships and information exchange and usage at different levels,

i.e. strategic, tactical or operational (see for example Day 1995; Mason-Jones and Towill 1999; Siemieniuch *et al.* 1999; Mentzer *et al.* 2000) between different parties (both upstream and downstream) in a supply chain could create potential for synergy, and give rise to an integrated SCM approach.

In this research study, the aim is to develop a new framework that enables a deeper and broader evaluation of relationships and information exchange (and usage) across a supply chain within the UK grocery sector (in this instance the supply chain is made up of a retailer, a grocery manufacturer and four packaging suppliers – for further details of the supply chain organisations, please see Chapter 6). Such evaluation, it is suggested will lead to the development of propositions (to be tested in post-thesis work) with the overall view to theory development (see Figure 34 below).

Figure 34: Research Aims



3.1 Research Objectives

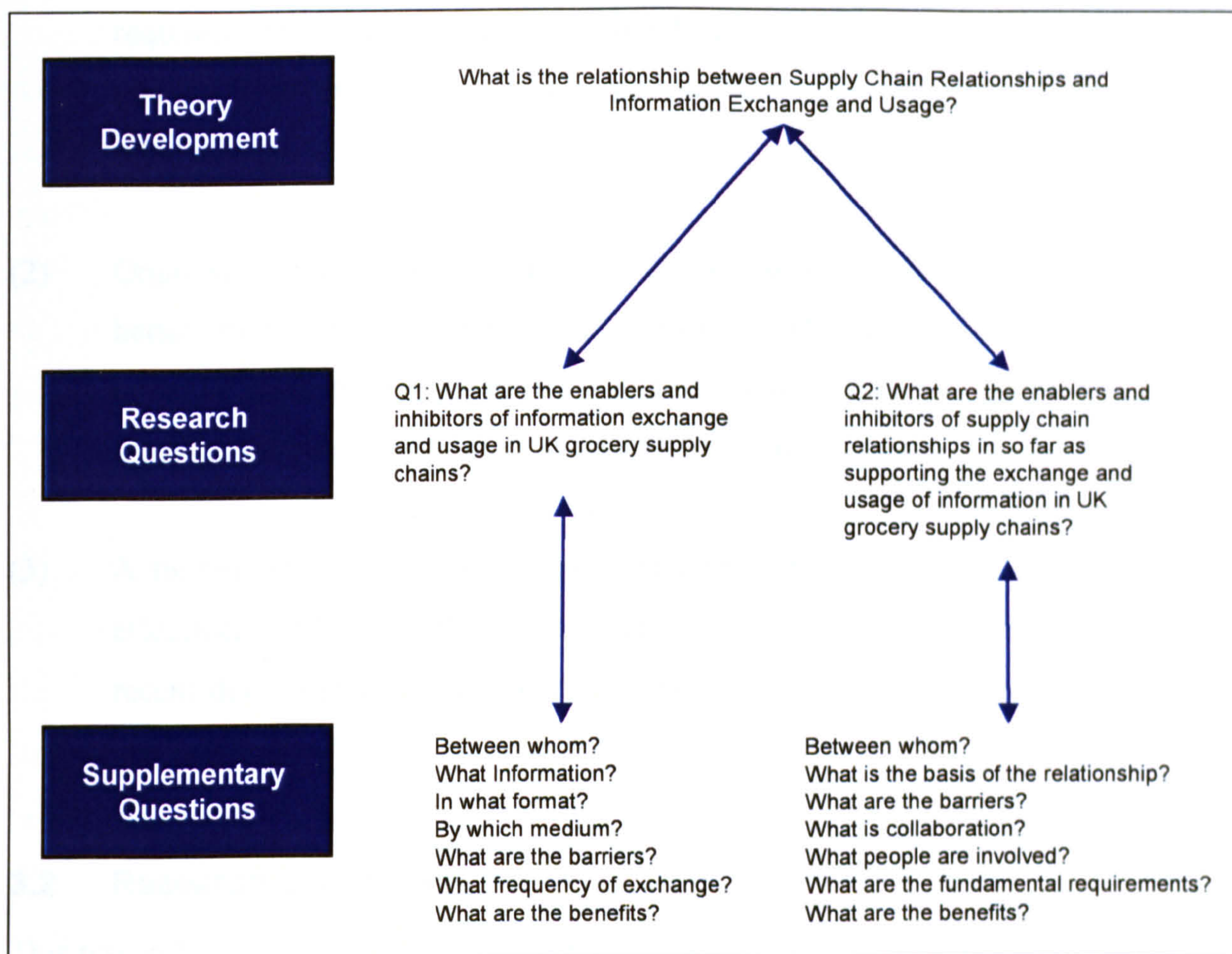
The three main objectives of this research can be summarised as follows: -

- Objective 1:** To explore the concept of supply chain relationships in terms of their inhibitors and enablers, with specific reference to the UK Grocery sector.
- Objective 2:** To explore the concept of information exchange, as a sub-set of supply chain relationships, in terms of their inhibitors and enablers, with specific reference to the UK Grocery sector, and
- Objective 3:** To explore the inter-relationship between the exchange of information and collaborative supply chain relationships.

The three objectives for the research can be broken down into two main areas: (1) Supply chain relationships and information exchange between supply chain parties; and (2) the inter-connection between the supply chain relationship and information exchange, within the context of the relationship (this can be more clearly seen in figure 35 below).

Objective three presents the long-term goal of this research, which is to develop a theory that explains the possible inter-relationship between Supply Chain Relationships and Information Exchange. This objective will be met by the development of a number of propositions relating to the exchange and usage of information within collaborative supply chain relationships. The propositions developed will then be tested in subsequent post-thesis research.

Such research is intended to illuminate supply chain relationships in terms of their nature. Are they collaborative, opportunistic or adversarial? What is the nature of collaboration? Is collaboration sufficient to facilitate the exchange and usage of supply chain information, or is this merely part of the concept of total supply chain thinking?

Figure 35: Research Objectives

Supply chain relationships have for a long time been described as collaborative, when in fact, it is believed that they are merely opportunistic. There are some examples of what may be called collaborative relationships^{2,3}, and this research seeks to explore what characteristics these so-called collaborative relationships are made up of. Such identification of characteristics would benefit supply chains in the grocery sector in the UK, and would be of interest to all organisations partaking in such supply chains.

The research is worth undertaking for the following reasons: -

- (1) Whilst retailers in the UK face growing competition from other European and American retailers, the development of more competitive supply chains has been hampered by the lack of co-ordination between members of such supply chains.

² The relationship between Sainsbury and Nestle is often quoted/suggested as one of the most collaborative supply chain relationships in the UK grocery sector.

³ Nestle has for some time worked increasingly closer with its packaging suppliers.

Whilst such supply chains are largely uncoordinated, the necessary information required to better co-ordinate these supply chains is available, but under utilised due to the adversarial and at best opportunistic nature of existing supply chain relationships.

- (2) Organisations in such UK grocery supply chains would also benefit from a better understanding of both the concept of SCM and how such supply chains could be made both more efficient and effective and thereby more competitive from the development of more collaborative relationships.
- (3) A further benefit to organisations would be to better understand how to more effectively utilise supply chain related information in conjunction with the recent development of high sophisticated and powerful internet-based software applications.

3.2 Research Question(s)

This research aims to answer the following two questions: -

- RQ1.** How does the exchange of information offer potentially synergetic benefits to organisations in UK retail grocery supply chains?
- RQ2.** What is the nature of the relationship required to support the exchange of information in UK retail grocery supply chains?

In determining whether and how the exchange of supply chain information offers potentially synergetic benefits to organisations in UK retail grocery supply chains (**RQ1**), it is necessary to establish the nature of relationships between various organisations in such supply chains required to support the exchange of information in UK retail grocery supply chains (**RQ2**). In this way, it is believed that the extent to which supply chain information is exchanged is dependent upon the nature of the relationship between the organisations.

The research questions are subject to subsequent modification as the research progresses. Maxwell (1996) suggests that the research questions should not be formulated until such times as the purpose and context of the design are clarified, and in many cases, a significant part of the research must be undertaken before it is clear what specific research questions the research is trying to answer. In this sense, Maxwell (1996) believes that the research questions should not be presented up front, thereby determining the research design, but should be the result of an interactive design process (see chapter 4).

From the realist perspective (the chosen philosophical perspective for this research – for more details please refer to chapter 4), researchers should treat their data as fallible evidence about the phenomena, to be used to critically develop and test ideas about the existence and nature of the phenomena (Cook and Campbell 1979; Campbell 1988; Maxwell 1992). The main risk with realist questions, is that the researcher's increased reliance on inference may lead them to draw unwarranted conclusions or to allow their assumptions or desires to influence their results (Maxwell 1996). Overcoming this risk is dealt with in question of research design, in Chapter four.

The aim of this exploratory research is to examine the nature of supply chain relationships that provide the most potential for synergy through increased collaboration. The research is based upon a central belief that collaboration based upon the exchange of information is an integral part of successful SCM.

3.3 Types Of Research Questions

Research questions have been categorised by Yin (1994) as: “who”, “what”, “where”, “how” and “why”. Yin (1994) suggests that “what” questions give rise to two possibilities so far as the nature of the research is concerned. They can be either *exploratory* (with the goal of developing pertinent hypotheses and propositions for further inquiry), or *descriptive* (regarding the incidence or prevalence of a phenomenon). Yin (1994) suggests that “how” and “why” questions are more *explanatory* in the sense that such questions deal with operational links needing to be

traced over time (suggesting the need for the use of case studies), rather than mere frequencies or incidence (whereby surveys could be used).

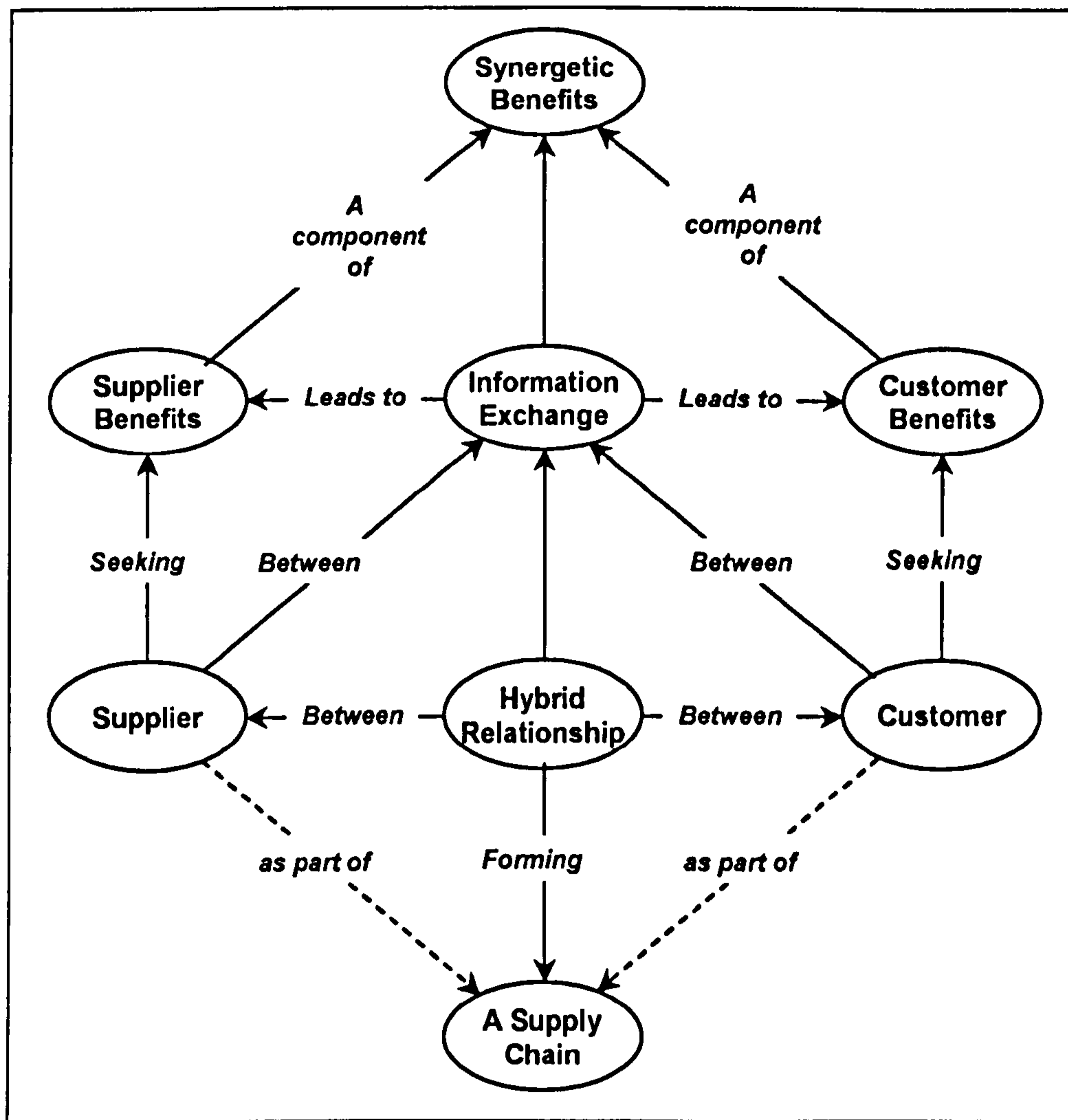
Yin (1994) suggests that the most important condition for differentiating among the various research strategies is to identify the type of research question being asked. In general “what” questions may either be exploratory (in which case any of the strategies may be used) or about prevalence (in which surveys or the analysis of archival records would be favoured). “How” and “why” questions are likely to favour the use of case studies, experiments and histories. Yin (1994) also agrees that the case study approach is most suitable when examining contemporary events, for example collaborative supply chain relationships.

This research is positioned between both sides of Yin’s (1994) explanation of ‘what’ type questions, in terms that the supply chain activities are described, and propositions are developed in relation to the nature of the relationship and information exchange at multiple levels and positions across the supply chain.

3.4 Conceptual Framework

The concepts embraced by the research are represented in the conceptual framework shown in Figure 36 below. The conceptual framework shows the relationships between these concepts, for example, that UK grocery retailers and supply chain participants form relationships for the purpose of seeking benefits (such benefits may be in the form of reduced costs or improved levels of service). The concepts are defined as follows: -

- **Consumers, via the UK Grocery Retailer’s customers** (as the customers are not always the consumer, who may be other members of the customer’s household) create the demand for organisations in the UK grocery sector.
- **The UK Grocery Retailers** are the interface between the customers/consumers and the grocery supply chains (when looking upstream from the consumers), and are the focal point for the culmination of multiple [up to approximately 50,000 product lines on average in the UK - see Harvey (2000)] **Supply Chains** (when looking downstream towards the consumers).

Figure 36: Conceptual Framework for the Research.

- **A Supply Chain** is made up of a collection of organisations (including the retailers) that are involved in the supply of a product or service to the ultimate consumer.
- **Suppliers** are those organisations (upstream of the UK Grocery Retailer) that are involved in a **Supply Chain** for a product or service within the UK Grocery Sector.
- **Benefits** are the outcomes sought by **UK Grocery Retailers** and **Suppliers** as a consequence of their activities within a **Supply Chain**.
- **Collaborative Relationships** are the linkages between two or more organisations, based upon the sharing of information, trust and openness, co-ordination and planning, mutual benefits and sharing of risks, a recognition of mutual interdependency, shared goals, and possibly, compatibility of corporate philosophies.

The relationships between the concepts within the framework are described as follows: -

- **UK Grocery Retailers** look to form relationships with other suppliers for the purpose of seeking **benefits**, which arise from their activities within *a supply chain*.
- The driving force behind the formation of the relationships is the goal of meeting demand generated by the **consumers** (via the retailer's customers).
- The relationships formed in a **supply chain** must be co-operative in nature if the **benefits** to be achieved are to be optimised. Without such **collaborative relationships** the **benefits** obtained may only be optimised locally, and not for a **supply chain** as a whole.

When such **collaborative relationships** are formed thereby enabling the integrated management of a **supply chain**, the **benefits** achieved, described as synergetic benefits, are greater than the sum of the individual **benefits** obtained without the formation of **collaborative relationships**.

3.5 Summary

This chapter has presented the objectives of this research, namely to develop a deeper understanding of supply chain relationships, and the possible inter-relationship with information exchange and usage. This chapter has also presented the research questions together with a conceptual framework that represents concepts embraced by the research.

In the next chapter a number of possible research methodologies are reviewed in terms of their suitability for addressing the research questions. In doing so, the philosophical perspective adopted by the research is discussed and the research strategy developed.

CHAPTER 4:

**PHILOSOPHICAL PERSPECTIVE
AND RESEARCH STRATEGY**

4.0 Introduction

The two primary objectives of this research are to develop a deeper understanding of supply chain relationships and information exchange in terms of their inhibitors and enablers, with specific reference to the UK Grocery sector.

The methodology for this research has been derived from the consideration of the research objectives, together with a number of further issues; (1) the research problem; (2) the context of the research; (3) the systemic nature of the logistics and SCM discipline; and finally, (4) the various philosophical research perspectives. The following sections consider each of these issues, commencing with the research problem.

(1) The Research Problem

Whilst there has been significant research into supply chain relationships, the vast majority have focused on the relationship dyad (see Chapter 3 - Figure 33), i.e. buyer-supplier or retailer-manufacturer (Hewitt 1994; Cooper *et al.* 1997; Lambert *et al.* 1998). The supply chain relationship research can therefore be argued to have not taken a sufficiently holistic approach, in accordance with systemic philosophy of the supply chain concept.

Although it can be argued that the retailer-manufacturer dyad is the main starting point of the supply chain, it is suggested that this excludes the upstream parts of the supply chain, where the status of relationships and degree of information exchange may have a significant impact on the retailer-manufacturer dyad and on the supply chain as a whole. It has also been highlighted that research into information sharing is rather limited, with some researchers suggesting that no empirical research has been undertaken, particularly within a supply chain context (Lee and Whang 2000).

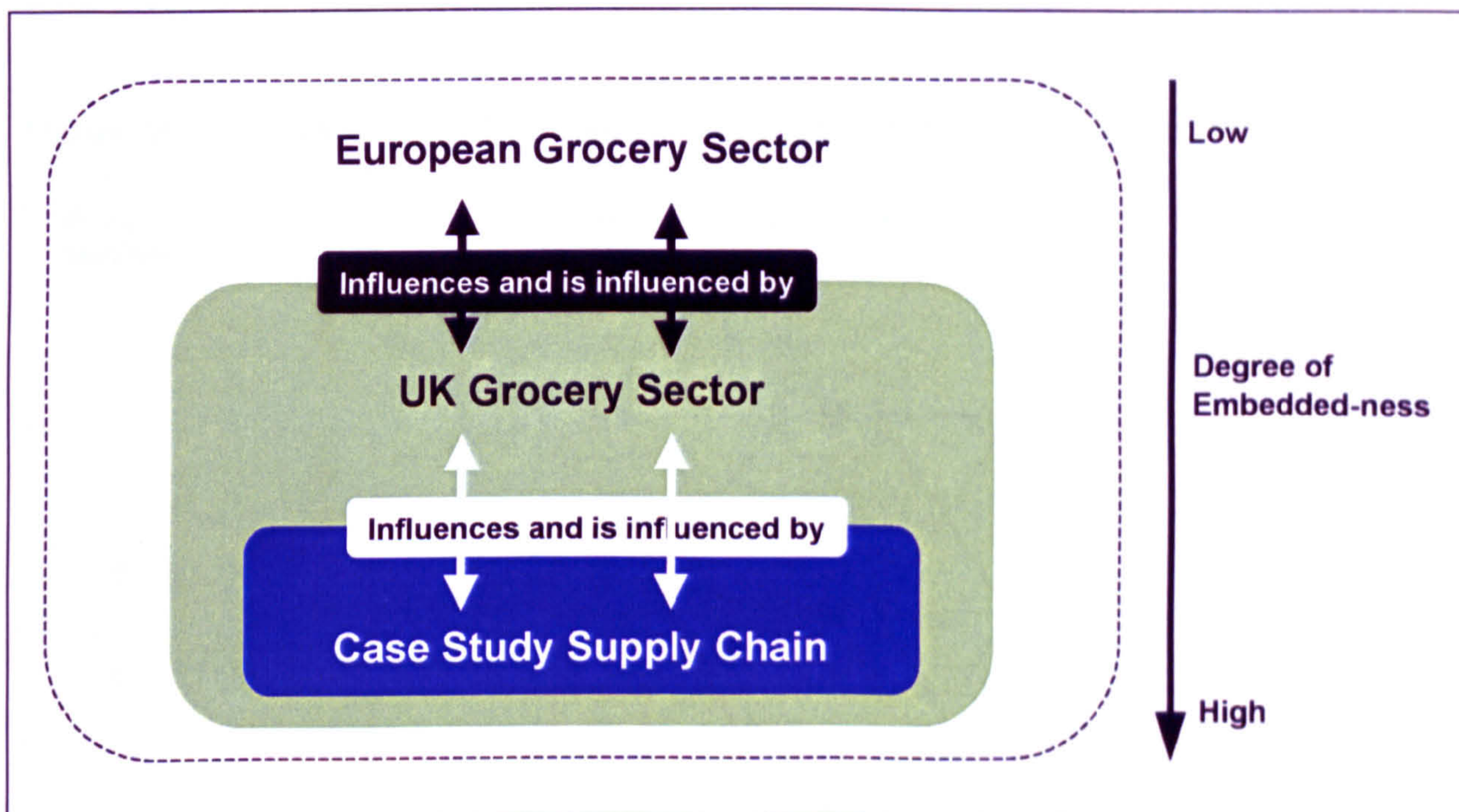
A supply chain can comprise a number of organisations that are linked by a number of relationships in varying forms. A supply chain is also made up of three main flows: (1) products, moving downstream towards consumers; (2) money, moving upstream from retailers to eventually raw material suppliers; and (3) the flow of information, hopefully

both upstream and downstream. Such information may theoretically include: point of sale data (POS), inventory related information, production plans and schedules, forecasts, and promotional related information.

(2) The Research Context

The phenomena under study are supply chain relationships and information exchange, and are present within the chosen case study. The case study supply chain is situated within the UK grocery sector, which itself is situated within the European grocery sector.

Figure 37: The Case Study Supply Chain within the European Grocery Sector



It is argued that the case study supply chain influences and is influenced by the UK grocery sector, which itself influences and is influenced by the European grocery sector (see Figure 37 above). Hogarth-Scott (1999:672) suggests that it is important not to underestimate the impact of the environment on the supply chain relationship:

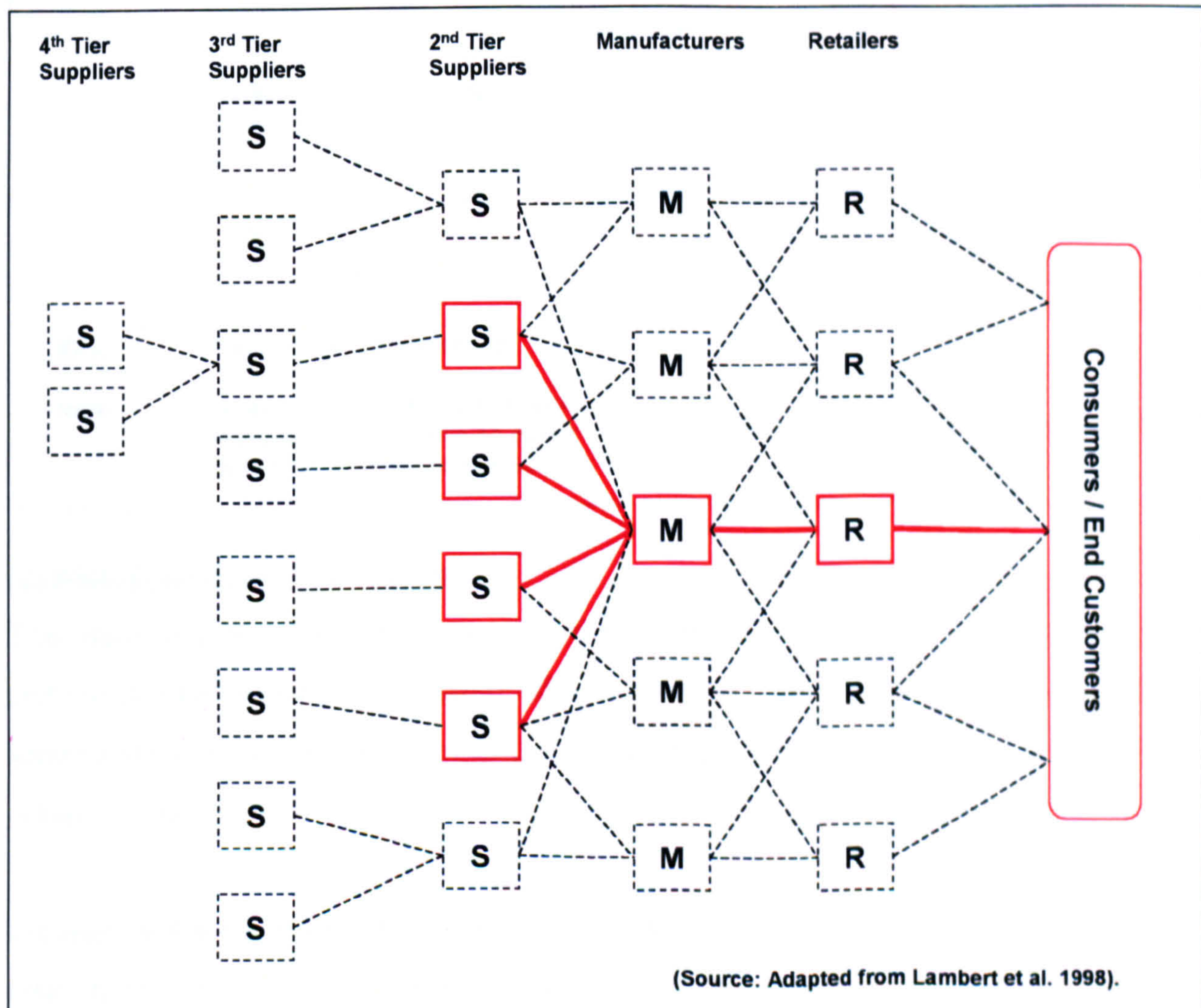
“The inter-organisational domain (the relationship) is influenced by the external environment. One of the major driving forces for relationship formation is the reduction of environmental uncertainty”.

(3) The Systemic Nature Of The Logistics And SCM Discipline

A further problem is that although it is possible to identify the organisations in the supply chain, a boundary must be established, both to limit the amount of work that is possible for a single researcher to undertake, but also to reflect the degree of influence that the organisations may have on the more distant parts of the supply chain (see Figure 38 below).

In addition to the boundary setting issue, it must be noted that the organisations in the chosen supply chain do not work exclusively with each other, but also trade with many other organisations. So for example, the retailer in the chosen supply chain also trades with many of the manufacturer’s competitors.

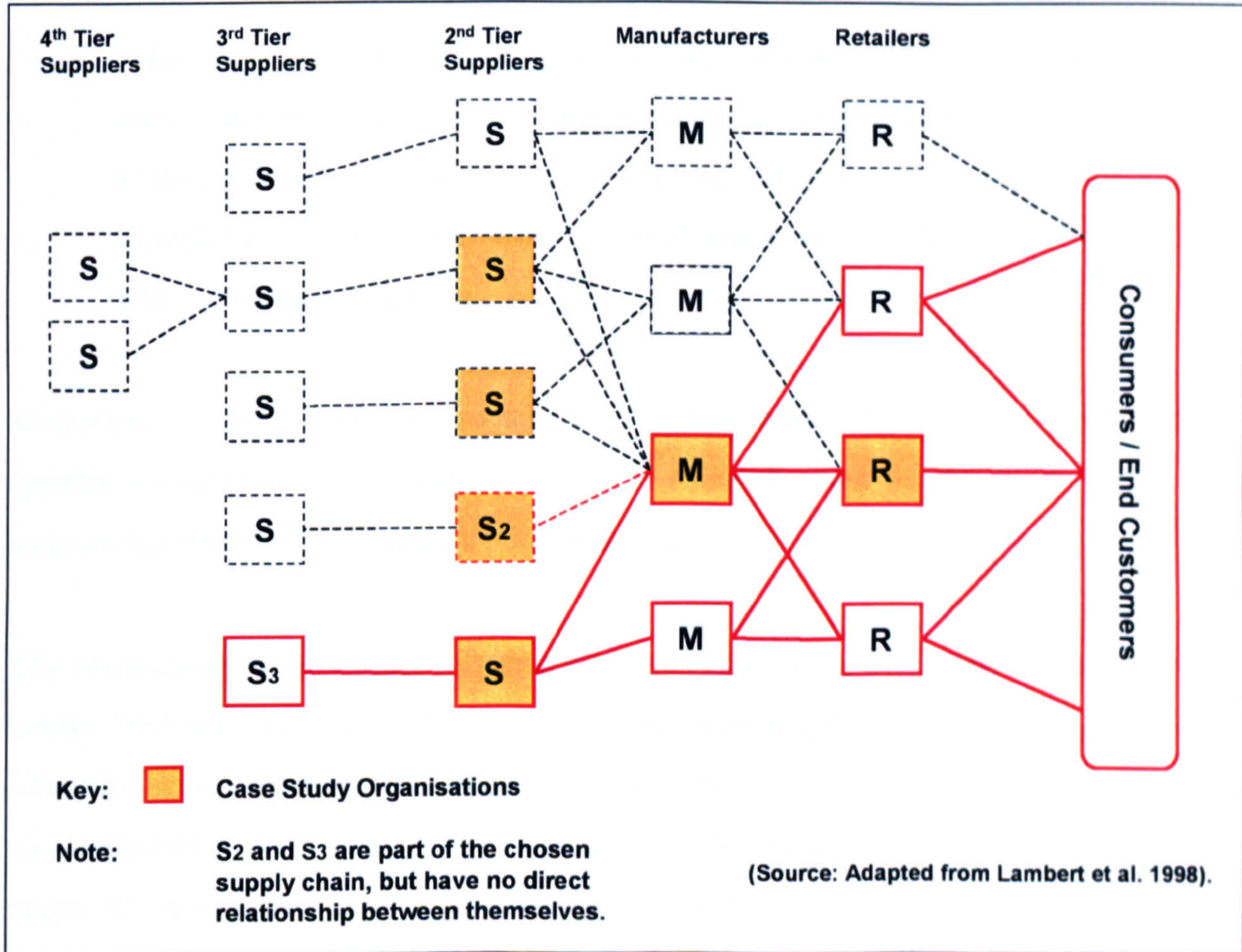
Figure 38: Establishing the Boundaries of the Case Study Supply Chain



The manufacturer similarly trades with all of the major grocery retailers in the UK, together with many other retail customers across a variety of channels. The

manufacturer does however have a large number of dual or single source suppliers, having gone through a significant supplier-base reduction programme. The packaging suppliers do however trade with many of the manufacturer’s competitors (see Figure 39 below).

Figure 39: The Complexity of the UK Grocery Sector



(4) Philosophical Perspectives

This study is exploratory in its nature and aims to achieve a deeper understanding of, and expand knowledge of the nature of collaborative supply chain relationships, their scope and intensity, and their facilitation of information exchange between supply chain organisations.

Through tentative propositions relating to scope and intensity of such supply chain relationships, the data are examined, and patterns are sought which may give rise to testable explanations of collaborative supply chain relationships and their impact upon

information exchange between supply chain organisations. Subsequent studies could then test the hypotheses arrived at the outcome of this study.

At the centre of scientific philosophy are the inter-connected concepts of Ontology and Epistemology. Blaikie (1993: 6-7) refers to these two concepts as follows:

“Ontology refers to the claims or assumptions that a particular approach to social enquiry makes about the nature of social reality, and epistemology refers to the claims or assumptions made about the ways in which it is possible to gain knowledge of this reality, whatever it is understood to be; claims about how what exists may be known”.

Researchers, when exploring social issues, must take into account philosophical approaches appropriate to their studies. The research must be designed taking into account the nature of the phenomenon under study.

The research design is further influenced by the researcher's own view of the nature of reality. Philosophical approaches have developed forming a continuum ranging from the scientific and objective (traditionally referred to as 'positivist') to the subjective (contemporarily referred to as 'interpretative'). Between these two extremes a wide range of approaches have developed, all of which, including the 'interpretative' approach, are seen as responses, or as Blaikie (1993) suggests, '*criticisms*' of the more traditional 'positivist' approach.

The philosophy adopted by this research is that of realism. Realism is a relatively recently emerging philosophical perspective, with its own ontology and epistemology. Blaikie suggests, “whilst sharing positivism's desire for producing causal explanations and interpretivism's views on the nature of social reality, realism argues for a view of science that is different from either of these approaches” (Blaikie 1993: 59). The realist approach to social enquiry has been essentially described in the work of philosophers such as Keat and Urry (1975); Harré (1986); and Bashkar (1975, 1978, 1986).

In terms of a realist ontology, Bhaskar (1978: 250) suggests “things exist and act independently of our descriptions, but we can only know them under particular descriptions”. This is in contrast to the positivist view of science whereby this is seen as a systematic attempt to express in thought the structures and ways of acting of things that exist independently of thought (Bhaskar 1978).

Bhaskar (1975: 56) describes three separate domains of reality to classify experiences, events and mechanisms: (1) the *empirical* domain, made up of events that can be directly observed (*i.e. witnessed or experienced by the researcher*), (2) the *actual* domain, made up of events, which it is accepted, may or may not have been observed, and (3) the *real* domain, made up of structures and mechanisms which produce these events. These can be seen in Figure 40 shown below.

Figure 40: Domains of Reality

Domain Comprising	(1) Empirical	(2) Actual	(3) Real
Experiences	✓	✓	✓
Events		✓	✓
Mechanisms			✓

(Source: Blaikie 1993 - Adapted from Bhaskar 1975: p.56)

The three domains are distinct, and the transitions from (1) to (2) and (2) to (3) are contingent. Outhwaite (1987: 22) describes that events can occur without being experienced, and more importantly, causal mechanisms can neutralise one another in such a way that no event takes place, there is no potentially observable change in reality [for example: objects on a table are subject to gravitational attraction, however, they are prevented from falling to the ground by the resistance offered by the table (Outhwaite 1987: 22)].

Realism is “methodologically open” from an epistemological perspective, in the sense that it does not define a particular method. Blaikie (1993: 58) suggests that realism “is

concerned with developing methods appropriate to the particular matter of the social sciences". Whilst realism accepts that the social world is real and exists, it also accepts the interpretative view that society is both produced and reproduced by its members, who may have different perceptions and interpretations about the same reality. This view is somewhat clarified by Layder (1993:16) who suggested that "a central feature of realism is its attempt to preserve a 'scientific' attitude towards social analysis at the same time as recognising the importance of actor's meanings and in some way incorporating them in research".

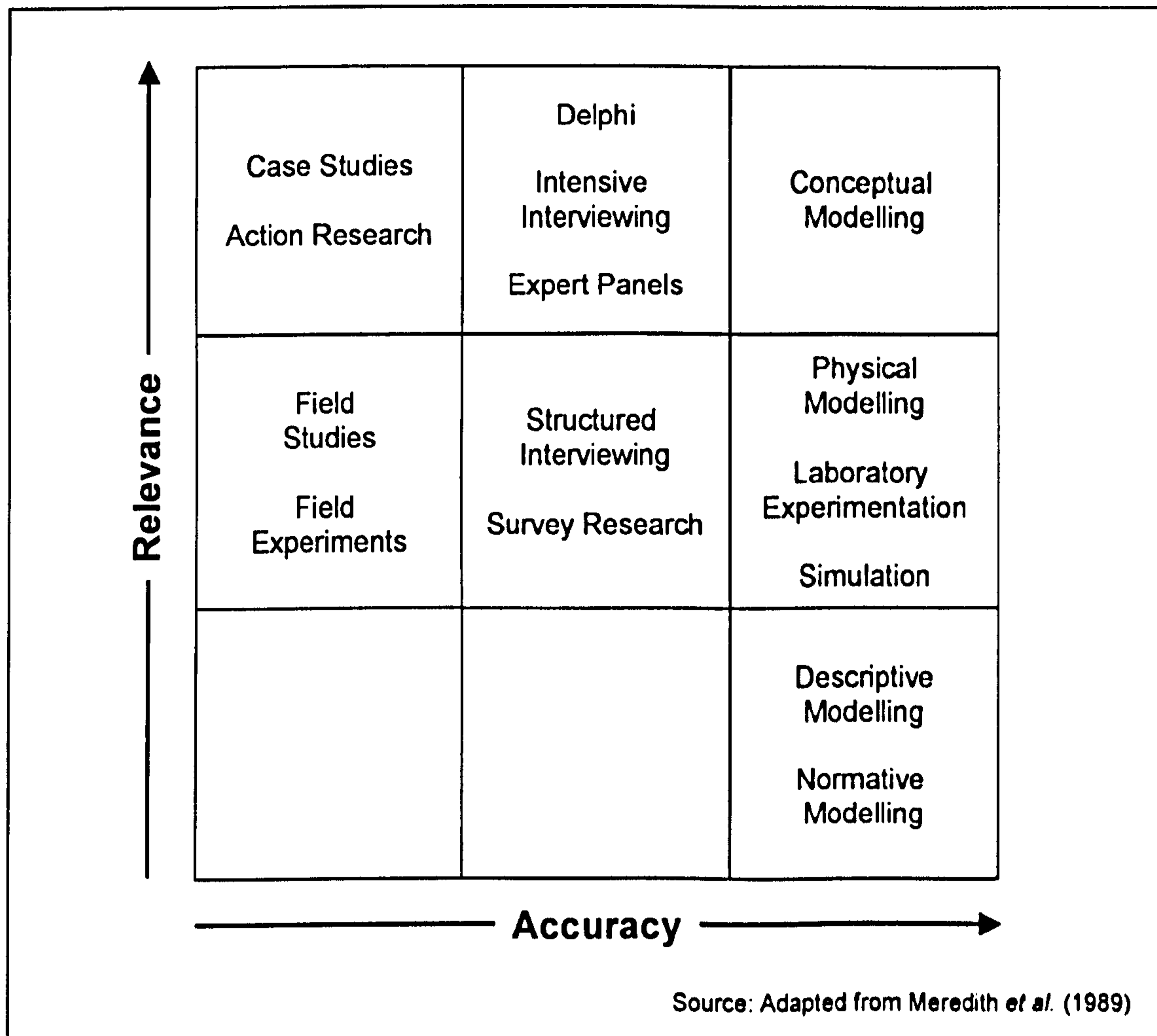
4.1 Methodological Issues

The issue of epistemology¹ has broader implications in terms of the selection of a research methodology. Here, a major concern is a lack of a relationship between usefulness and validity, as evidenced by the observation "*the body of knowledge published in academic journals has practically no audience in business or government*" (Daft and Lewin 1990:4) (See also Mentzer and Khan 1995; Mears-Young and Jackson 1997). A primary cause of this concern appears to be over-reliance on research methods that place accuracy (in the sense of replicability) above all else. Thus, Mentzer and Khan (1995:232) analysed logistics research articles published in *The Journal of Business Logistics* between 1978 and 1993 and concluded, that "*present research has a large degree of substantive justification, but little subsequent theory development and testing*".

Mentzer and Khan (1995:233) argue that practitioners consider most logistics/SCM research to be '*irrelevant, narrow, trivial and unrealistic*'. The need for more descriptive, empirically based research is argued by a number of authors (Mentzer and Khan 1995; Kent and Flint 1997; Mentzer and Flint 1997). Meredith *et al.* (1989) provide a framework of research methods contrasting the issues of relevance and accuracy. It can be seen that Case studies are suggested as being high in terms of relevance, although low in terms of accuracy. This argument between relevance and accuracy forms a theme that is increasingly expressed by researchers who are anxious to

restore the practicality of management research. But prescriptive research requires comprehensive understanding of a specific situation that is often not generalisable to other settings (Daft and Lewin 1990). The trade-off between relevance and accuracy is discussed later in the research design (section 4.4).

Figure 41: A Framework of Research Methods



Starting with a desire to conduct research within the operating context of the firm (in this case, a supply chain in the UK grocery sector), and working from the premise that improved knowledge of the business process in organisations is desirable, it is helpful to make methodological choice in terms of the *research purpose*. Blaikie (1993:203) identifies a range of research purposes that are related to the current level of understanding and current state of theory development. This range extends from exploration and description, where theory development is limited, through

¹ Epistemology refers to the claims/assumptions made about the ways in which it is possible to gain knowledge of this reality, whatever it is understood to be; claims about how what exists may be known

understanding and explanation to change and evaluation where theory development is most advanced. A corollary of such thinking is that a positivist methodology will provide greatest insights where theory development is already well advanced, but only limited insights during the early stages of the understanding/theory development life cycle. The reverse process can be argued for qualitative methods, which can be particularly helpful where existing theory is weak (Eisenhardt 1989). Such methodological pluralism (Gill and Johnson 1991:127) need not imply some unresolved conflict between ideographic or nomothetic methodologies. Mitroff and Mason (1982:362) state: '*use of different research methods aims to integrate the separate dimensions*'. They encourage researchers to develop more holistic and unified approaches, and to compare the *apples and oranges* of alternatives in the pursuit of unification.

In view of the above, it can be argued that despite significant research, theory development is relatively limited in the field of supply chain management. In terms of the objectives of this research it is suggested that the use of more qualitative methods are most appropriate in terms of theory development, particularly when considering supply chain relationships and information exchange.

4.1.1 The Role of Theory in Logistics and Supply Chain Management

The need for theoretical development in logistics and the strategic repositioning of the discipline have been suggested as major challenges for logistics researchers (Stock 1990). Despite recent advances made by logistics, the requirement for further theoretical development on the strategic role of logistics remains a key priority (Mentzer and Khan 1995; Stock 1996). At this point there appears to be some diverging thoughts over theory building and development. Mentzer and Kahn (1995) argue that logistics has done an outstanding job of developing specific solutions, for specific problems. However, there still exists a need for theory based on sound empirical examination of construct relationships over multiple industries and situations. The knowledge so generated must be combined into useful models, using sound and rigorous scientific methods (Seaker *et al.* 1993; Mentzer and Khan 1995).

(Blaikie 1993).

Theory development in the discipline of business (including marketing, management and logistics) evolved from economics (Bartels 1962). The concept of 'value' was first borrowed to justify the existence of marketing at a time when it was being criticised as a needless waste of resources. Marketing scholars attempted to rebuff criticism of the discipline by presenting the notion that marketing creates 'time', 'place' and 'possession' utilities, which add value for customers. Logistics researchers later borrowed the concept of 'value' to justify the importance of the logistics discipline, i.e. logistics adds time and place utilities to products (Stock 1997).

4.1.2 Existing Methodologies in Supply Chain Management Research

SCM can be argued to encompass all the functional areas of business, and thus insight may be drawn from the various bodies of literature for each of the functional disciplines. Figure 42 (see below) summarises some of the various authors who have put forward the argument for the use of case study based research.

Figure 42: The Functional Scope of Supply Chain Management

Functional Scope of SCM (Articles proposing a case study methodology)				
Purchasing	Logistics	Operations Management	IT / IS	Marketing & Sales
<ul style="list-style-type: none"> • Ramsay (1998) 	<ul style="list-style-type: none"> • Ellram (1996) • Stock (1996) • Juga 1996) • Stock (1997) • van Hoek (1997) 	<ul style="list-style-type: none"> • Meredith (1993) • McCutcheon & Meredith (1993) • Lewis (1998) • Meredith (1998) 	<ul style="list-style-type: none"> • Holland (1995) • Benbasat <i>et al</i> (1997) 	<ul style="list-style-type: none"> • Hogart-Scott & Parkinson (1993) • Easton (1995) • Vlosky & Wilson (1997) • Easton (1998)

The following sections, review two methodologies that have been used to research supply chain relationships, and discuss the limitations of each methodology, concluding with the choice of methodology for the research upon which this thesis is based. The logistics and SCM literature is dominated by the *positivist* approach to research, resulting in an overall bias in favour of quantitative research methods (Ellram and Siferd 1994; Mentzer and Khan 1995). Despite this historical bias, the argument for the use of more qualitative methods is growing stronger (Ellram 1996; Juga 1996).

4.1.3 Surveys

The use of surveys produces somewhat of a dilemma for the logistics/supply chain researcher. Whilst surveys can be strong in terms of their accuracy and statistical generalisability, there are a number of weaknesses that give rise to concern. Valsamakis and Groves (1996a, 1996b) used a survey methodology to study the relationships between suppliers and customers in the UK fashion retailing industry. Questionnaires were sent to the managing directors of organisations in the industry. However, no mention is made as to whether both parties to the relationships were surveyed, or indeed if not, as to how to overcome this bias in terms of the survey representing only one side of the dyadic relationships. Stank *et al.* (1999a) employed a survey methodology in their study of the benefits of inter-firm co-ordination in food industry supply chains. In this instance only one party to the relationship was interviewed.

Frankel and Whipple (1998) also adopted a survey methodology to study strategic supply chain alliances in the grocery and personal care sectors in North America. In this instance both partners to the alliance were studied, however, only informants from the purchasing and sales functions were surveyed, thus limiting the perception of the breadth of the alliance, i.e. not all of the functional disciplines were targeted.

Spekman *et al.* (1998) used multiple informants from multiple levels of the supply chain in their study of supply chain partnerships in a number of broad industries (life sciences, oil and gas, consumer products, utilities and high-tech electronics and automotive). A limitation of this study, was however, the fact that the respondents were asked only for their perceptions of their relationships with their counterparts (i.e. Company A's buying department's perception of the relationship with the sales department of Company B). In this respect, the duality of the organisational relationship is not examined, and the results are somewhat limited.

A number of authors have further criticised the use of surveys (see for example Lambert *et al.* 1996; Bagchi and Virum 1998). Lambert *et al.* (1996) suggest that a main criticism of the use of mail surveys is that whilst facilitating the gathering of large amounts of data from numerous sources, the extent and richness of the data is limited.

Surveys do not permit the gathering of data to provide "*thick*" descriptions (Geertz 1973). Lambert *et al.* (1996) went further in their criticism of the use of surveys, in that they suggested that with mail surveys there is no assurance that all respondents have interpreted the questions in the same way.

Considering the scope of supply chain relationships, in the sense that they often involve multiple participants at different levels of the organisation, and from multiple functional areas, e.g. marketing and sales, logistics, production, customer service and planning, then the survey methodology is not suitable for exploring the relationships. This is particularly so if the purpose of the investigation is to develop rich descriptions of potentially complex interactions for the purpose of theory development.

4.1.4 Case Studies

Hogarth-Scott and Parkinson (1993) used a case study methodology to study retailer-manufacturer relationships in the UK food channel. Case studies were developed with eleven food manufacturers who had a long-term relationship with one particular retailer. Each of the case studies explored the manufacturer's perceptions of their relationship with the retailer. A major limitation of the case studies was due to the fact that the informants were the national account managers responsible for managing the relationships with the retailer, (i.e. a single informant). In the broad context of supply chain relationships a single informant cannot possibly hope to reflect the breadth of the relationship between the parties, especially as only one side of the relationship was represented in the case studies.

Siemieniuch *et al.* (1999) also adopted a case study methodology to identify critical human and organisational issues that could enhance or constrain any move to closer supply chain relationships. The research examined these aspects of the current and evolving trading relationship between a large UK supermarket chain and a branded manufacturer of foodstuffs. Interviews were undertaken in both organisations with multiple informants. One limitation of the research, however, was the fact that the manufacturer's suppliers (both raw materials and packaging) and ancillary service providers (such as information systems and logistics providers) were not involved. In

this respect whilst the breadth of the relationship was taken into account, the context, (i.e. the supply chain as a whole) was omitted.

Baba (1988) suggests that most partnership/relationship research is based on only a limited number of interviews, often with just one manager (or informant), and from only one party to the partnership/relationship (i.e. a single perspective). This gives rise to single view of a dyadic arrangement, and a single actor's view of an arrangement that may encompass multiple actors.

In view of the above, the supply chain management research issues identified earlier would benefit from the growing interest in the use of more qualitative methods, although it will be more appropriate to combine such qualitative methods with some more traditional quantitative methods (Jick 1979). This is on the basis that such an approach would be more suited to the goals and objectives of the types of research issues proposed for investigation.

4.2 The Case Study Method

The proposed methodology adopted by this research, primarily because it is more suited to the purpose of the research (Ellram 1996), is that of the case study in which a number of complimentary data collection methods are employed (such use of multiple information sources, is also referred to as 'triangulation' of data sources). Supply Chain Mapping (a *quantitative* method) is combined with the use of semi-structured interviews (a *qualitative* method) (Ellram 1996). Such methods have been selected in accordance with Yin's (1989) three criteria for choosing a research method: (1) *the type of research question posed*; (2) *the extent of control a researcher has over actual behavioural events*; and (3) *the degree of focus on contemporary as opposed to historical events*.

Going beyond Yin's (1989) initial criteria, the case study method was deemed to be particularly appropriate for the following reasons: the difficulty in distinguishing between a phenomena and its context (*i.e. how can a supply chain be separated from the UK retail grocery sector?*); and the immaturity of the field of logistics and/or SCM.

A number of authors (Ellram 1996; Juga 1996) support the use of the case study method in Logistics and SCM research in order to gain a deeper insight into specific phenomena (*i.e. Supply Chain Relationships and Information Exchange*). This section reviews the position of case-based research with respect to other approaches in Logistics and SCM.

There has been growing interest in the use of case study based research in management research (Ellram 1996; Meredith *et al.* 1989; McCuthcheon and Meredith 1993). The majority of this interest has come from the Operations Management Discipline (Meredith *et al.* 1989; McCuthcheon and Meredith 1993) and latterly from the Logistics Discipline (Mentzer and Khan 1993; Ellram 1996; Siemieniuch *et al.* 1999).

Ellram (1996) highlights attention to the fact that the majority of empirical research undertaken in logistics, operations and materials management has focused on quantitative research methods (see also Flynn *et al.* 1990; Mentzer and Khan 1993; Ellram and Siferd 1994). Such quantitative methods include simulations and model building together with statistical testing of survey data.

Mentzer and Khan (1993) highlight the fact that qualitative methods had not received widespread use and acceptance in logistics, operations and materials management. Ellram (1996) cites the recognition for empirical research incorporating real world data to improve the relevance of business research (Meredith *et al.* 1989; Flynn *et al.* 1990; Mentzer and Khan 1993; Ellram and Siferd 1994). Ellram (1996) suggests that empirical research can include either quantitative analysis, qualitative analysis or a mixture of both. She also suggests that qualitative results are frequently expressed verbally, often to create an understanding of relationships or complex interactions (*i.e. Supply Chain Relationships and Information Exchange*).

Ellram (1996) comments that a mixture of both methods can be used in case-based research (see also Hendrick and Ellram 1993). Ellram goes on to suggest that “*Case studies may be used to create theory to then test with surveys, or follow up to surveys to provide greater insight. The appropriate class of research methods to choose from depends upon the researcher’s goal and the nature of the research question*”.

Ellram (1996) suggests that case studies focus on holistic situations, i.e. a supply chain, in real life settings, and tend to have set boundaries of interest, such as an organisation, a particular industry, or particular type of operation. Yin (1981) suggests that a case study method is often chosen because the researcher wants to know how the context of the phenomenon of interest affects the outcomes (*i.e. how does the UK grocery sector affect particular supply chains?*).

Case study research can be based on single or multiple studies, drawing upon both qualitative and quantitative evidence (Yin 1984). Research within the scope of a case study can take three forms: *Exploratory* - defining the questions and hypotheses of a subsequent study, *Descriptive* - providing a complete description of a phenomenon within its context, *Explanatory* - data collection and testing of cause-effect relationships. This issue of single versus multiple case studies will be discussed further in section 4.4 – Research Design.

Wilson and Vlosky (1997) suggest that the use of induction can offer new insights into the phenomenon; possible forms of inquiry for inductive theory building include participant observation, document analysis, in-depth interviews, field notes, etc. Eisenhardt (1989) defines a case study as “a research strategy that focuses on understanding the dynamics present within single settings”. Miles and Huberman (1984) define a case as “*a phenomenon occurring in a bounded context*”. Low (1997) used a single embedded case study for analytic generalisations (*see* Yin 1981, 1994) in an explanatory study of the dynamic interplay between business relationships and network positions in a given context.

4.2.1 Rigour in Case Based Research Design

This section reviews the issue of rigour in case-based research designs, together with the relative strengths and weakness in building theory from the use of case study research. Yin (1981) lists four tests ‘commonly used to establish the quality of any empirical social research’: -

- Construct validity:** establishing correct operational measures for the concepts being studied
- Internal validity:** (for explanatory case studies): establishing a causal relationship whereby certain conditions are shown to lead to other conditions as distinguished from spurious relationships
- External validity:** establishing a domain to which a study's findings may be generalised
- Reliability:** demonstrating the operations of a study - such as the data collection procedures - can be repeated with the same results.

Kent and Flint (1997) suggest that "case studies are strong in realism, internal validity and parts of construct validity; but they do suffer from statistical conclusion weakness, statistical generalisability external validity, and replication. They suggest that these weaknesses severely limit the generalisability of a single study. They go on to suggest that all three methods (*referring to surveys, modelling and case studies*) have their own relative strengths and flaws (Brinberg and McGrath 1982). Kent and Flint (1997) suggest that the only way to thoroughly research any concept in logistics is through the research concept of triangulation (for a fuller discussion of the use of triangulation see Section 4.4.5).

New and Payne (1995) discuss the issue of rigour, validity and relevance as general issues for management research. Ackoff (1979a, 1979b) addresses the need for connection to "real" problems. Rosenhead (1992) calls for research to reflect real life complexity and problems. New and Payne (1995) suggest that research has neglected "complex supply structures" (*i.e. supply chains*).

New and Payne (1995) suggest that a major problem in empirical logistics research is the formulation of presumed causal links. They suggest three types of causal relationships and review each of these. New and Payne (1995) suggest that operational systems (*i.e. a supply chain*) that span organisational boundaries make the identification

and measurement of practice and performance difficult. New was involved with the A.T. Kearney (1994) study in which a combination of survey and expert panel meetings were used. New and Payne (1995) summarise the advantages and disadvantages of such methods. It is worth noting that researchers must take great care when defining "*relationships*", as such can have great bearing upon the outcome of said research. New and Payne (1995:65) support the idea of "*the careful and detailed construction of explanatory stories which describe the behaviour in particular cases*" (Eisenhardt 1989).

4.2.2 Strengths of Case Studies

Case study-based research offers a numbers of strengths: - (1) the level of "*richness*" arising from case data (Vlosky and Wilson 1997); (2) case studies can provide "*thick description*" (Geertz 1973); and (3) case studies allow the use of both qualitative and quantitative methods (Vlosky and Wilson 1997). Eisenhardt (1989) summarised the major strengths of theory building case-based research as follows: -

- (1) "*The likelihood of generating novel theory*": creative insight often arises from the juxtaposition of contradictory or paradoxical evidence (Cameron and Quinn 1988). Eisenhardt (1989) goes on to suggest that the constant juxtaposition of conflicting realities tends to "*unfreeze*" thinking, and so the process has the potential to generate theory with less researcher bias than theory built from incremental studies or armchair, axiomatic deduction.
- (2) "*The emergent theory is likely to be testable with constructs that can be measured and hypotheses proven false*". The constructs should be measurable, as these have already been measured during the theory building process. This implies that the hypotheses are similarly testable, as they have undergone repeated verification during the theory building process (Eisenhardt 1989:540).
- (3) "*The resultant theory is highly probable to be empirically valid*". This is due to the fact that the theory building process is so intimately tied with evidence that it is very likely that the resultant theory will be consistent

with empirical observation. The intimate interaction with actual evidence often produces theory that closely mirrors reality (Eisenhardt 1989:541).

4.2.3 Limitations of Case Studies

Eisenhardt (1989) suggests that the characteristics that lead to strengths in theory building from case studies also lead to weaknesses. Eisenhardt (1989:545) summarises the major weaknesses of theory building from case-based research as follows: -

- (1) *“The intensive use of empirical evidence can yield theory which is overly complex.”* This is due to the staggering volume of data that case-based research often presents a researcher with. The result is a theory that is very rich in detail, but lacks the simplicity of overall perspective.
- (2) *“The resultant theory is narrow and idiosyncratic.”* This often produces very modest theories where the researcher cannot raise the generality of the theory (see for example Bourgeois and Eisenhardt 1988; Eisenhardt and Bourgeois 1988; Gersick 1988).

4.3 A Case Study for Exploring SC Relationships

In this section a methodology for exploring supply chain relationships and information exchange is proposed and presented. A case study is the preferred research strategy when in contemporary events the relevant behaviours of the individuals cannot be manipulated (Yin 1994). Collaborative supply chain relationships (based upon information exchange) are an example of a (in terms of the UK) contemporary event within the field of SCM. The actions of the participants of the supply chain and therefore the parties to the collaborative supply chain relationship are outside the control of the researcher. When compared with the criteria for selecting an appropriate research strategy, as suggested by Yin (1994), the case study is a suitable strategy to employ in the design of this research (see section 4.4).

Employing the case study approach as the mode of investigation necessitates a supply chain management researcher to address a number of key elements in the research design (Yin 1994), the research questions; its propositions (if any); its unit(s) of

analysis; the logic linking the data to the propositions; and the criteria for interpreting the findings. Research questions should be framed in terms of *who, what, where, how* and *why* (Yin 1994). These suggest the most relevant research strategy. The task here is to clarify precisely the nature of the research questions.

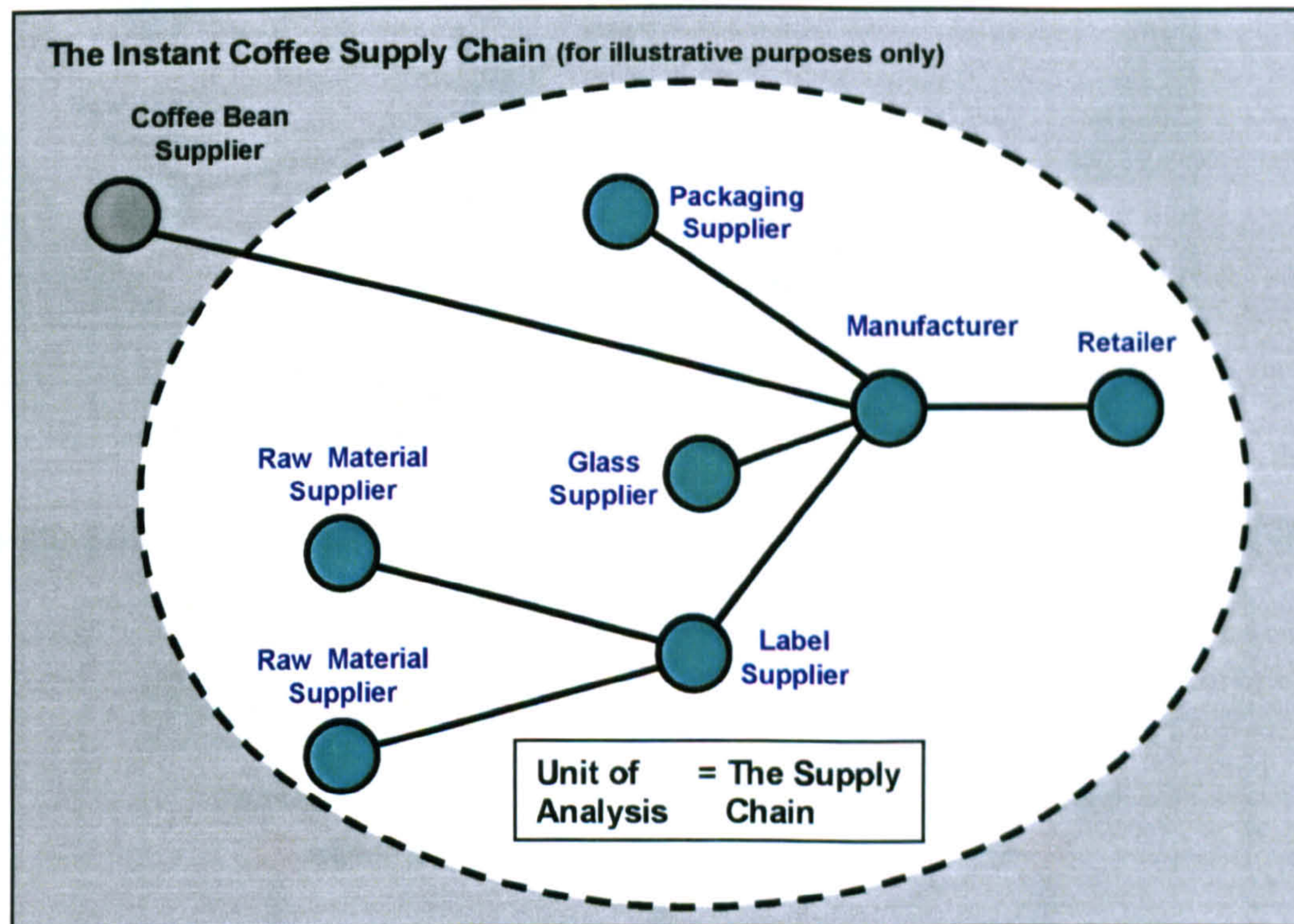
Any tentative propositions will continue to be modified and updated during the progress of the research. Where no proposition exists at the outset of the research Yin (1994) stresses the need for the study's purpose to be clearly defined to guide the investigator. Supply chain management research that is exploratory in nature can be initially explored in a pilot study. A pilot study is used primarily to assist researchers with refining their data collection plans in respect of both the content of the data and the procedures to be followed (Yin 1984). Tentative propositions may be developed from the pilot study but these may not be tested in the case study. In terms of supply chain relationships and information exchange, following the completion of a comprehensive literature review, interviews could be undertaken with a representative sample of industry participants to refine the research issues relating to the gaps in the literature and develop tentative propositions.

The third element is concerned with the fundamental problem of defining what the case is. Yin (1984) suggests that no issue is more important than defining the 'unit of analysis'. Such definition limits the boundaries of the research and without which the researcher is unable to answer the question "*What is my case?*". The unit of analysis according to Yin (1994) should relate to the way in which the initial research questions should be defined. In SCM research, New and Payne (1995:68), citing Baba (1988), suggest that the unit of analysis is the "*inter-firm operation*" – "*future research on partnerships must have the partnership dyad as the minimum unit or sub-unit of analysis. Investigations that capture only from one side of a given partnership (even if both partnership types are represented in a sample) will fail to reflect accurately the dynamic forces that bond or break partnerships in the long run*".

In terms of this research the unit of analysis is the supply chain itself (Lee and Whang 2000). This is more clearly shown in Figure 41 below. In Figure 41 it should be noted

that the 'coffee bean supplier' is not included in the unit of analysis. Whilst it could be argued that the supplier is part of the supply chain, in terms of supply chain relationships the transaction between the manufacturer and supplier is purely price-based, as the product is a commodity and there is no suggestion of collaboration between the parties.

Figure 41: Unit of Analysis – Supply Chain



If the proposed methodology is applied to a UK retail grocery context, then a typical supply chain for a jar of instant coffee may comprise the retailer, the manufacturer of the instant coffee, raw material suppliers, i.e. the coffee beans, packaging suppliers, etc. The supply chain is broken down into multiple sub-units of analysis that for the purposes of this investigation are referred to as the Supply Chain Inter/Intra Organisational Relationships (SCIIOR). It is argued by the author that the internal (Intra-Organisational Relationship) and external relationships (Inter-Organisational Relationships), as shown in Figure (44 and 45) marked A, B, C, D and E, respectively, must be examined before being able to comment on the relationship between the supplier and buyer organisations.

Figure 44: Sub-Unit of Analysis I

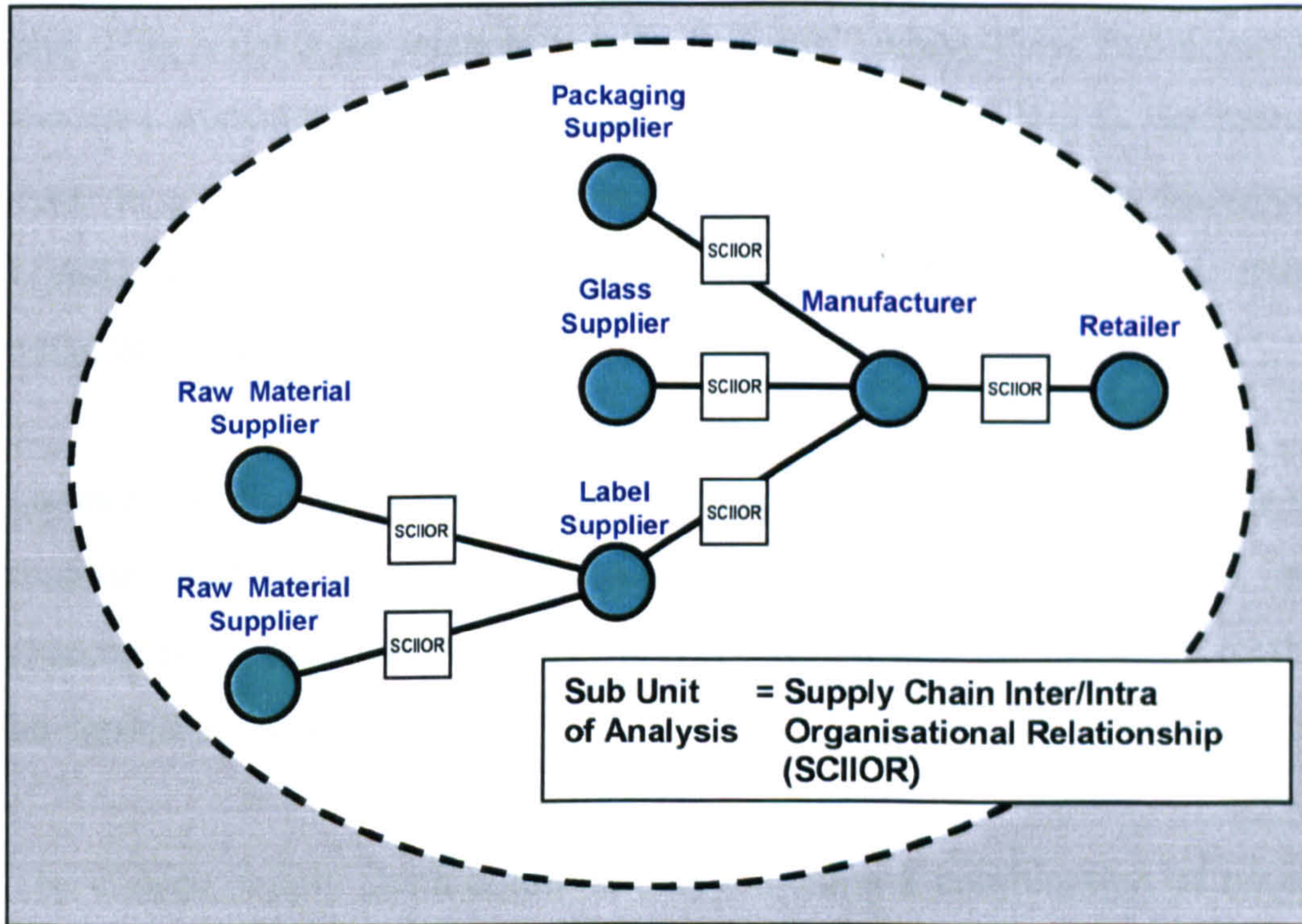
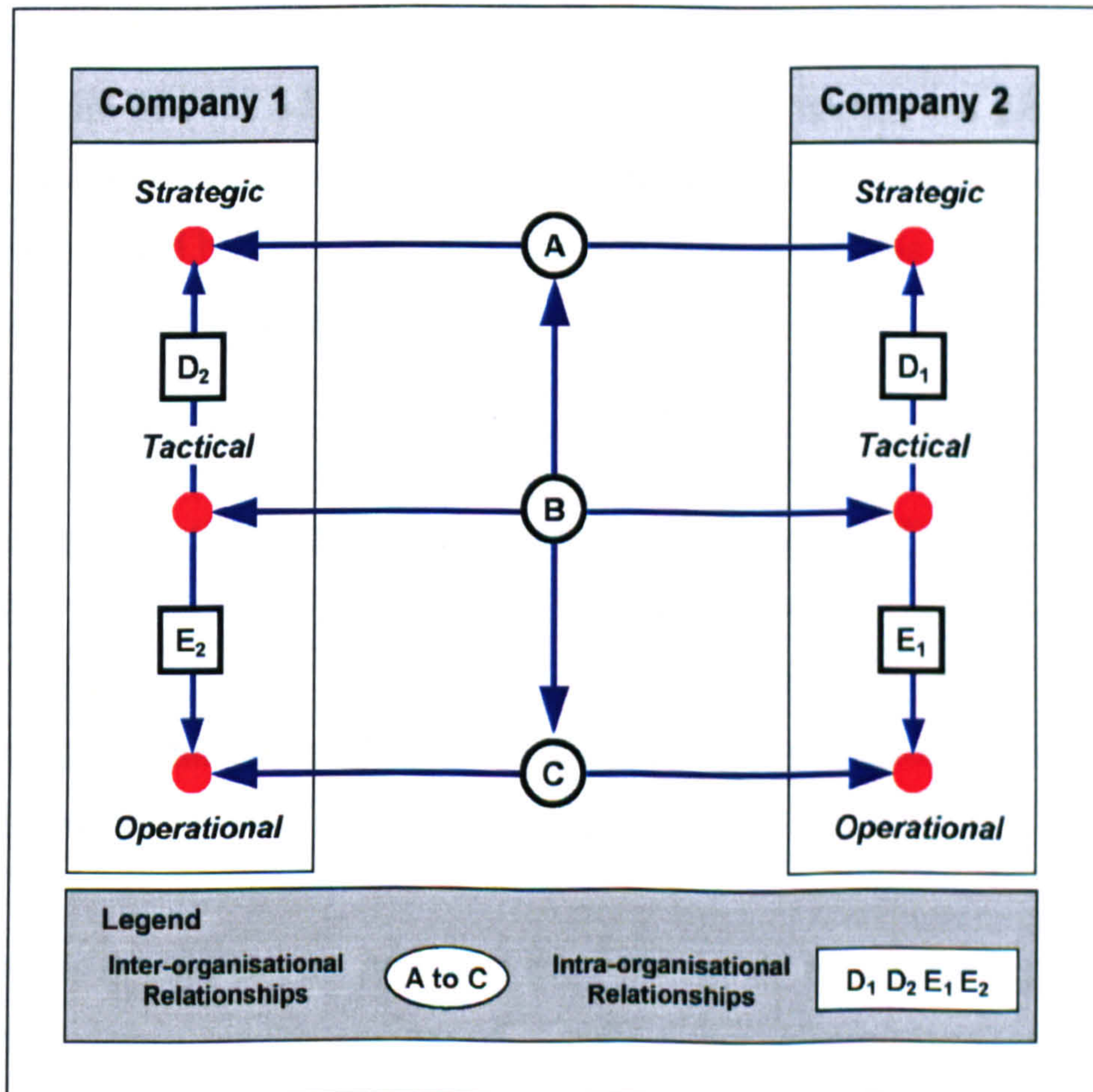


Figure 45: Sub-Unit of Analysis – SC Inter-Intra Organisational Relationships (SCIOR)



The final element to be considered is “*The logic linking the data to the propositions*”, and “*The criteria for interpreting the findings*”, where these two components represent the data analysis steps in case study research. Linking data to the propositions can be done in a number of ways. One approach is pattern matching described by Campbell (1988), whereby several pieces of information from the same case may be related to some theoretical proposition.

Furthermore the development of an integrated supply chain requires the management of material and information flows at three levels: strategic, tactical, and operational (Mason-Jones and Towill 1999). It is suggested that the proposed methodology could be carried out as follows: -

The chosen supply chain could be mapped using a combination of mapping tools (see Hines and Rich 1997; Hines *et al.* 1998). Secondly the use of semi-structured interviews with informants taken from all three levels (strategic, tactical and operational) from all organisations in the supply chain. Semi structured interviews are proposed as they allow a number of pre-determined questions (from a literature review and pilot study) to be put to the informants, together with allowing the informants to raise their own issues. The interviews could be transcribed and analysed using one of the many qualitative data analysis tools (see for example, NUD*IST² - Robson and Rawnsley 2001).

The benefits that this type of methodology offers supply chain management research would be a significantly greater depth and richness of data regarding not only both sides of the dyadic relationship, but also of the relationship in its context, (i.e. as part of a number of relationships that make up an entire supply chain). In terms of the systems nature of supply chain philosophy this would enable consideration of relationships and their developments upon the rest of the supply chain.

The limitations of adopting the proposed methodology do raise some concerns. To gain a better and deeper understanding of supply chain relationships and information exchange access to a potentially significant number of informants both within an

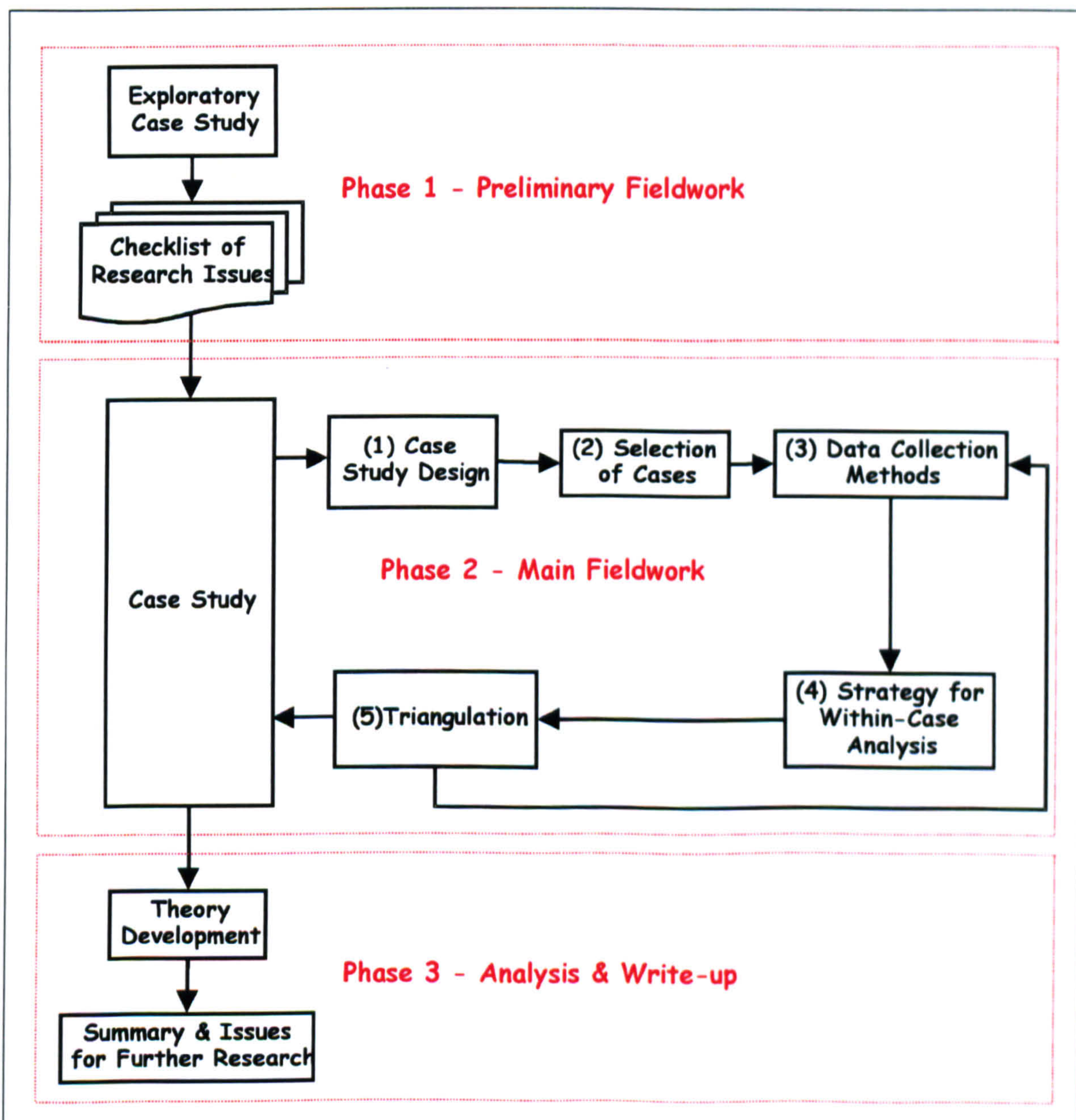
² Non-numerical Unstructured Data-Indexing Search and Theorising – a software application.

organisation, but also within the supply chain for that organisation is required. This requirement, if achieved is also susceptible to risk of loss of access or potential informants leaving during the course of the research data collection period.

4.4 Research Design

This research is divided into several stages and Figure 46 presents the major phases and their logical sequence. This section reviews the research design and discusses the two main fieldwork phases.

Figure 46: Research Design

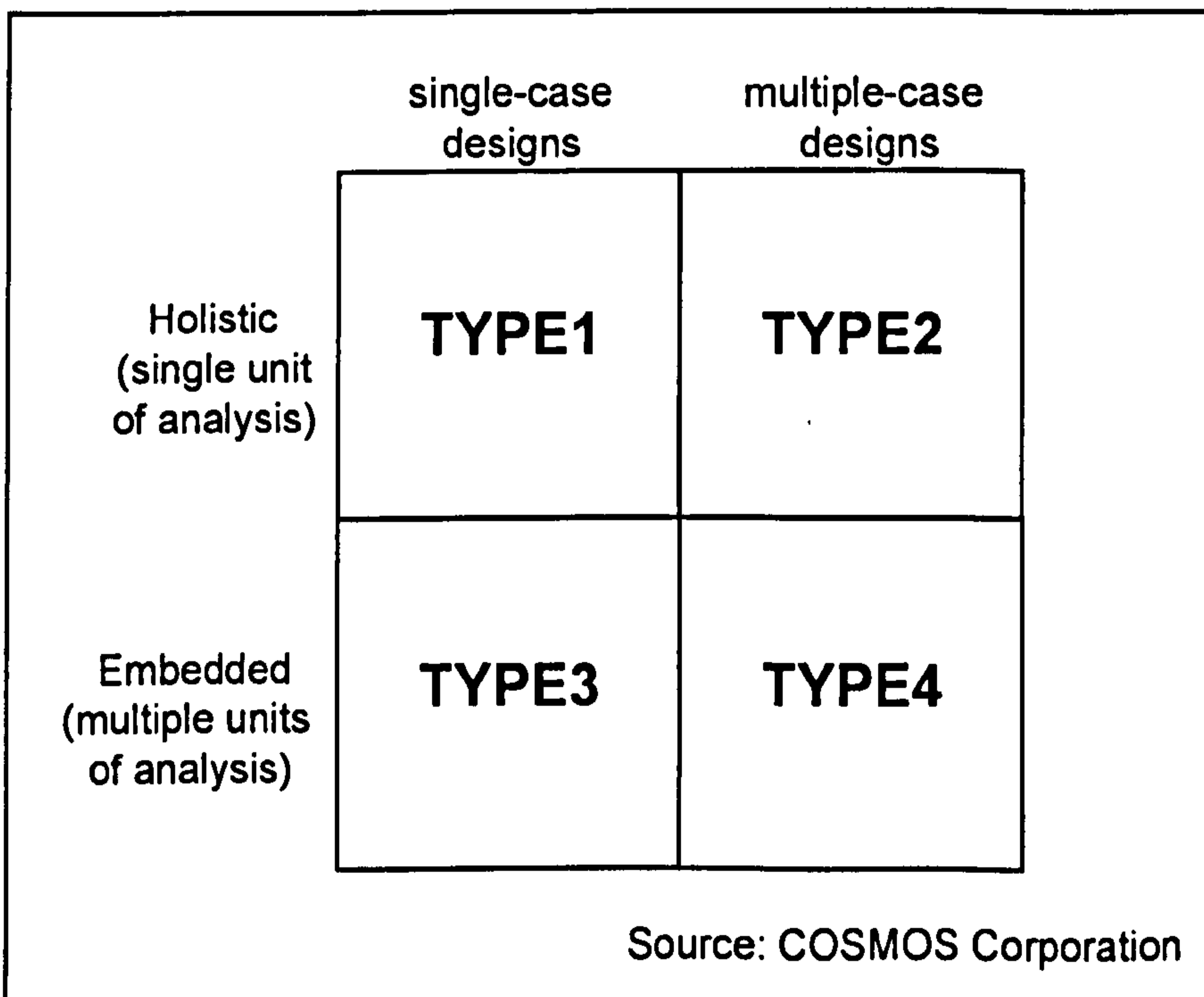


The first stage of the research is an exploratory study, the objectives of which, are to compare the findings of the literature review with the current thoughts and views of a cross section of practitioners from various roles and positions in the UK Grocery Sector, and to identify any further issues in the form of a checklist for consideration in the subsequent main part of the study (i.e. the case study). The design of the pilot study is such that the UK grocery sector as a whole has been targeted as the environment within which the second part of the research, i.e. the main case study will be positioned within.

4.4.1 Case Study Design

Before discussing the design of the main part of the fieldwork, it is necessary to consider the dichotomy of whether to use a single or multiple case study design (Yin 1981, 1984; Eisenhardt 1989, 1991; Ellram 1996). Figure 47 shown below more clearly highlights this dichotomy.

Figure 47: Single or Multiple Case Study Designs?



The choice between single and multiple case studies is difficult, although in the case of this research, produces an extra dilemma for the researcher: (1) to study a greater extent of a single supply chain or (2) to consider multiple supply chains. The problem with studying multiple supply chains is clearly apparent, how to manage such a mammoth task within a reasonable and realistic time-scale. This is compounded further by the fact

that owing to the dynamic nature of supply chains and the environment that they operate within such a task becomes almost impossible.

In terms of studying a greater extent of a single case study, it is argued that this would allow adopting more of a systemic perspective. Bearing in mind the predominance of previous research in focussing on the dyadic relationship between buyer and supplier, extending the scope of the case study to include multiple tiers of organisations would provide a new insight into the development of supply chain relationships. This line of argument is supported by Stake (1994) who suggests that the more the object of study is a specific, unique, bounded system, the greater the usefulness in terms of its contribution to knowledge.

Further support for the use of a single case study is provided by Yin (1981) and Ellram (1996) who both suggest that a single case study is the desired approach in three instances: (1) the phenomenon under study represents a critical case in testing a well formulated theory; (2) the phenomenon represents an extreme or unique case; or (3) access to studying the phenomenon was previously unavailable. In the case of instances (2) and (3) both Yin (1981) and Ellram (1996) suggest that purely descriptive information alone would be revelatory.

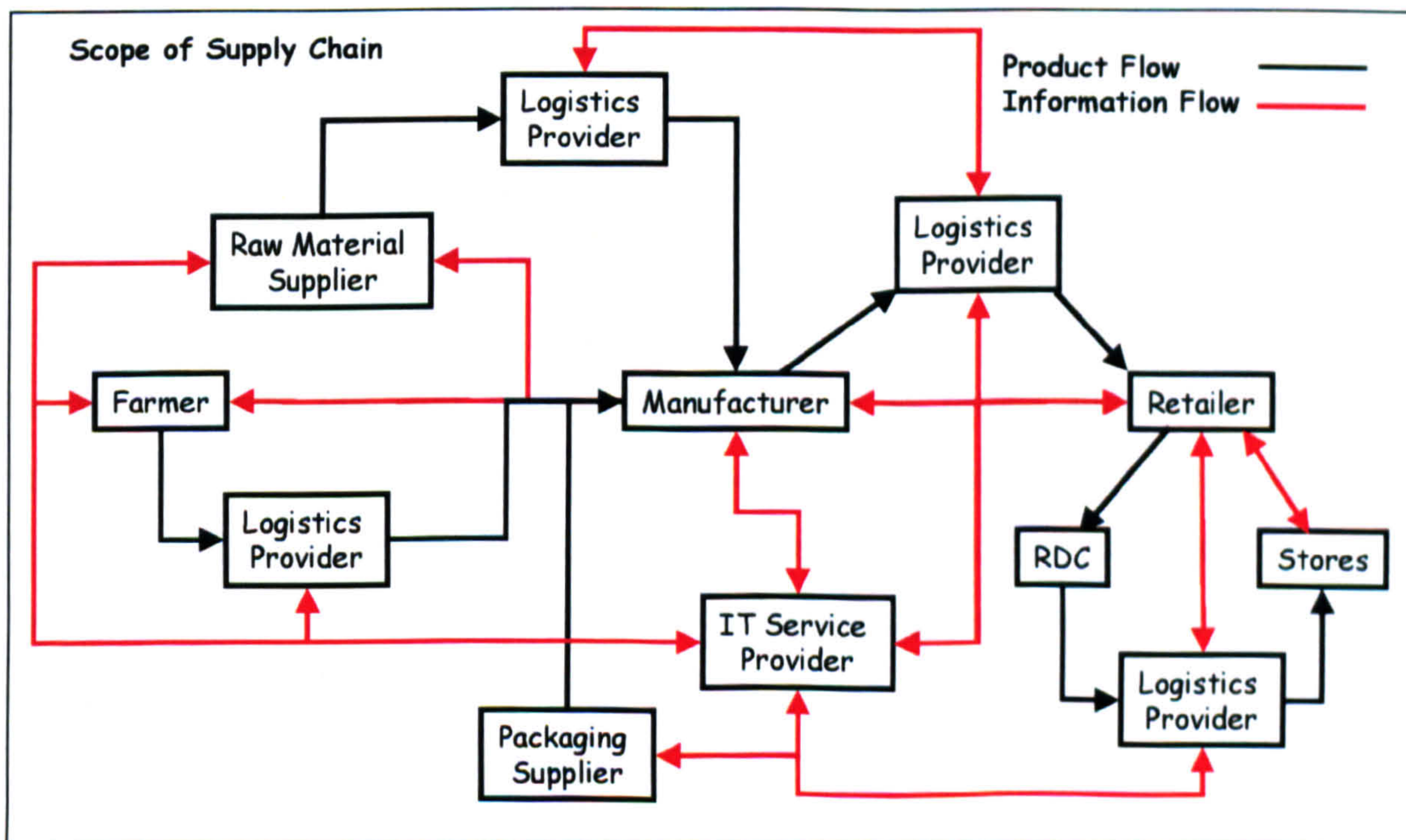
In terms of considering a multiple case study approach, Eisenhardt (1989, 1991), although recognising the valuable contribution to theory development from single case studies is still inclined to suggest that by using a multiple case study approach, the researcher is likely to produce even more knowledge about the phenomena being investigated. Eisenhardt (1991) goes on to suggest that possibly the 'classic single case studies' (see for example Selznick 1949; Moss-Kanter 1977) succeeded because of their fortuitous timing in the early stages of the field.

In terms of the state of the field (in respect of supply chain relationships), it is argued that despite having been in existence for nearly twenty years, the concept of SCM and particularly the issue of supply chain relationships are still relatively, in their infancy.

The second and main part of this research will therefore be a single case study of a supply chain that operates within the UK grocery sector. The case study will use a number of techniques both qualitative and quantitative for data collection. To identify the supply chain in terms of the organisations involved throughout the supply chain, and to provide the context for the case study a simple flowcharting approach will be adopted. In addition to this, semi-structured interviews will be used to examine the supply chain relationships and information exchange in the supply chain.

The supply chain 'mapping' serves two purposes; firstly, New (1996) suggests that in order for research into SCM not "to collapse into an amorphous study of everything" researchers must clearly define the boundaries of the supply chain, together with a definition of the supply chain concept. Secondly, the systemic nature of the concept of SCM requires that the supply chain must be considered in its entirety and therefore, research into supply chain relationships must accordingly consider relationships throughout the entire length of the supply chain.

Figure 48: Scope of Supply Chains



The next issue to consider in terms of the research design is what is a supply chain? This research uses some of the definitions from the exploratory study to define a supply chain. The selected supply chain includes raw material suppliers, logistics providers,

packaging suppliers, manufacturers and a retailer. This can be more clearly seen in figure 48 above.

The case study is based upon a significant proportion of a supply chain (i.e. the first three tiers) specifically to capture the full effects of the context, (i.e. the UK grocery sector), upon the phenomenon (i.e. a supply chain of relationships between the various organisations in the chosen supply chain). The case study will be exploratory in nature, in that it will be used to define the questions and hypotheses of a subsequent study.

4.4.2 Selection of Cases

The selection of cases in an important aspect of building theory from case studies (Eisenhardt 1989:542). For this research two methods of selecting cases were considered, statistical and theoretical sampling. Sampling of cases from a chosen population could be used for the selection of cases, however such an approach is unusual when theory building from case studies (Eisenhardt 1989). In this research where theory building is an objective, the cases are chosen for theoretical, not statistical reasons (Glaser and Strauss 1967). Eisenhardt (1989) suggests that cases may be chosen to fill theoretical categories and provide examples of polar types, and in doing so extend the emergent theory. Pettigrew (1988) supports such an approach, and suggests that given the limited number of cases that can usually be studied, it makes sense to choose cases such as extreme situations and polar types.

In this research, the case study will be chosen to reflect the situation whereby organisations in the supply chain are sharing various supply chain-related information with their customers or suppliers or not as the case may be. Also cases may be selected on the basis that access is available to all the organisations that make up the supply chain for a particular product.

This research will therefore use a single case study comprising of a single supply chain, where the supply chain is the unit of analysis, with X number of sub-units of analysis³ (i.e. the supply chain inter/intra organisational relationship – see figure 42).

³ At present the number of sub-units of analysis is not known.

4.4.3 Data Collection Methods

In line with Ellram's (1996) suggestion, the qualitative aspects of the case study, i.e. the semi-structured interviews (whereby the researcher can ask certain pre-determined questions but also facilitate the discussion of issues pertinent to the respondent), will facilitate the creation of an understanding of the supply chain relationships and the complex interactions that occur. The interview structure will be similar to the interview used in the exploratory study, but amended to take into account the issues arising from the exploratory study. Interviews will be carried out with multiple respondents in each organisation, at varying levels (both strategic and operational) and from varying functions covering the breadth of the supply chain relationship.

In connection with the use of a survey methodology to examine supply chain relationships Lambert *et al.* (1996) criticised such a methodological choice as result of the lack of assurance that all respondents have interpreted the questions in the same way. In the case study this potential criticism can be overcome by revisiting each of the respondents to verify the responses received and the context within which the responses were given.

By including a number of organisations in the supply chain, the issue of the data collection not representing both sides of the relationships can be overcome (Frankel and Whipple 1998; Spekman *et al.* 1998). By so including all organisations in the supply chain, it is believed that all supply chain influences upon the particular relationship can be addressed.

4.4.4 Strategy for Within Case Analysis

The process of analysing data is the heart of building theory from case studies, and it is both the most difficult and least codified (Eisenhardt 1989). One criticism levelled at research is often the "huge chasm" that remains between the discussion of the data collection and the conclusions, "*One cannot ordinarily follow how the researcher got from 3600 pages of field notes to the final conclusions, sprinkled with vivid quotes though they may be*" (Miles and Huberman 1984:284), giving rise to little or scant discussion of the analysis (Eisenhardt 1989).

A further problem that faces the researcher using case study research is the often-staggering volumes of data (Pettigrew 1988; Eisenhardt 1989). Eisenhardt (1989) suggests that the volume of data is all the more daunting because the research problem being addressed by case study research is often open-ended.

Within-case analysis usually involves a detailed write-up of each case (in the case of this research, this would be the write up of each sub-unit of analysis), based upon simply pure description. Whilst simply descriptive, such write-ups are central to the generation of insight (Gersick 1988; Pettigrew 1988). Eisenhardt (1989) suggests that the overall idea is to become intimately familiar with each case as a stand-alone entity.

4.4.5 Triangulation

The use of multiple, but independent measures is known as *triangulation*, a term which has been borrowed from navigation and surveying where a minimum of three reference points are taken to check an object's location (Smith 1975). Easterby-Smith *et al.* (1991) highlight the use of four types of triangulation: -

- Theoretical:** Involving borrowing models from one discipline and using them to explain situations in another discipline, which can frequently reveal insights into data which had previously appeared not to have much importance.
- Data:** Research where data is collected over different time frames or from different sources.
- Investigator:** Where different people collect data. This usually occurs in multi-disciplinary research teams, and enables researchers to examine the same situation and to compare, develop and refine themes using insights gained from different perspectives.
- Methodological:** This involves the used of both quantitative and qualitative methods of data collection, and has been suggested by numerous

researchers (Campbell and Fiske 1959; Jick 1979; Dunn *et al.* 1994).

Ellram (1996) suggests that triangulation, in the sense of using different techniques to study the same phenomenon, provides validity within the case study method. The application of this multiple method approach to logistics knowledge can guarantee the coexistence of theory testing and theory building in a research programme (Seaker *et al.* 1993).

This research will adopt both data and methodological forms of triangulation. Data will be collected from respondents in the form of responses to a semi-structured interview, together with historical documentation and from observation of the organisations. Additionally, methodological triangulation will be adopted by which both quantitative, (i.e. supply chain mapping), and qualitative, (i.e. semi structured interviews and observation), methods will be used to collect the data.

4.5 Summary

Following consideration of the research objectives, together with a number of further issues; (1) the research problem; (2) the context of the research; (3) the systemic nature of the logistics and SCM discipline; and finally, (4) the various philosophical research perspectives; this chapter has presented the methodology for this research. The next chapter presents an exploratory study undertaken prior to the main case study.

CHAPTER 5:

AN EXPLORATORY STUDY

5.0 The Initial Fieldwork - Introduction

The first stage of the field research is an exploratory study, the objectives of which, are to compare the findings of the literature review with the current thoughts and views of a cross section of practitioners from various roles and positions in the UK retail grocery sector, and to identify any further issues in the form of a checklist for consideration in the subsequent main part of the study (i.e. the case study). The design of the exploratory study is such that the UK retail grocery sector as a whole has been targeted as the environment within which the second part of the research, i.e. the main case study will be positioned within.

This chapter presents the exploratory research undertaken prior to the main case study. The scope and objectives of the exploratory research are discussed, together with the interview schedule and how the interviews were approached. The analysis of the data gathered from the exploratory research is presented together with the preliminary findings. Finally, the limitations and how the exploratory research is used to shape and inform the main fieldwork are discussed.

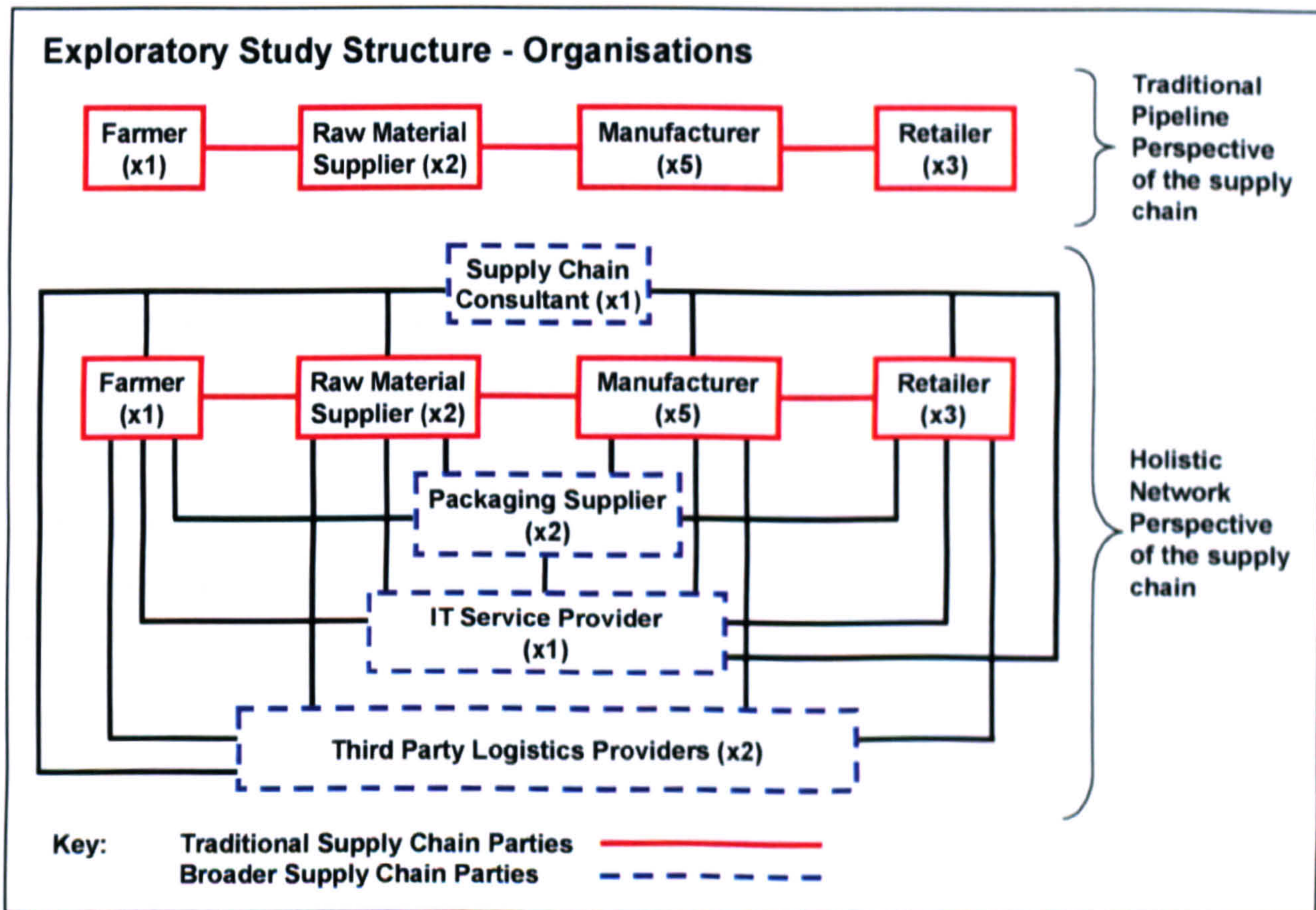
As the first phase of the research, and acting as the exploratory study, semi structured interviews were undertaken with industry experts from Retailing, and then tracking back upstream along the supply chain with, Manufacturers, Supply Chain Intermediaries (e.g. consultants and information technology service providers), Suppliers and Raw Materials providers. Such interviews were used to analyse the indications of the literature review and to establish what issues should be raised in further interviews and the next phase of the research, i.e. potential benefits sought from relationships; expectations of supply chain partners; levels of commitment required; key factors for successful partnerships, what relationships have been established within the supply chain, the basis of present 'collaborative' supply chain relationships, the extent to which they are collaborative, and the benefits that are sought by the parties to the relationships.

One of the key underpinning themes of this research is the systemic nature of the SCM philosophy. In line with this, any research must therefore consider a broad view of supply chain, rather than looking at one part of it in isolation. One traditional analogy of

the supply chain has been that of a “pipeline”, however, with this study a broader, more holistic perspective is adopted, *i.e. that of a supply chain network*. Such an approach allows for the inclusion of organisations that would traditionally have been excluded, *i.e.* such as logistics service providers, packaging suppliers and information technology service providers. This approach also enables the research to take into account the context or the environment that the supply chain operates within, *i.e. the UK grocery sector*.

For the purposes of the exploratory study, it was decided by the researcher to approach organisations with varying roles and positions in supply chains from the UK grocery sector. The distribution of the exploratory-study organisations, whose names have been altered on the grounds of confidentiality, are shown in Figure 49.

Figure 49: – Exploratory Study Structure (Organisations)



The exploratory study was undertaken to compare the findings of the literature review, as summarised above, with the current thoughts and views of a cross section of practitioners from various roles and positions in the UK Grocery Sector. The

exploratory study was also used to raise further issues in the form of a checklist for consideration in the subsequent main part of the research (*i.e. the case study*).

5.1 Objectives Of The Exploratory Study

The objectives of the exploratory study were: -

- (a) To identify which issues drawn from the literature on supply chain relationships and information exchange could be found in the UK grocery sector.
- (b) To analyse issues raised in the literature review and to establish what issues should be raised in further interviews and the next phase of the research, *i.e.* potential benefits sought from relationships; expectations of supply chain partners; levels of commitment required; key factors for successful partnerships, what relationships have been established within the supply chain, the form of present ‘collaborative’ supply chain relationships, the extent to which they are collaborative, and the benefits that are sought by the parties to the relationships.
- (c) The exploratory study would also be used to derive a definition of *Supply Chain Management*.
- (d) To exercise the researcher’s technique for interviewing.

5.2 Pre-Exploratory Interviews

Prior to the exploratory study, interviews were held with four industry “experts”. Such “experts” were drawn from practitioners with many years of experience of logistics and SCM in the UK grocery sector. Table 7 (below) sets out some of the criteria for selecting the respondents.

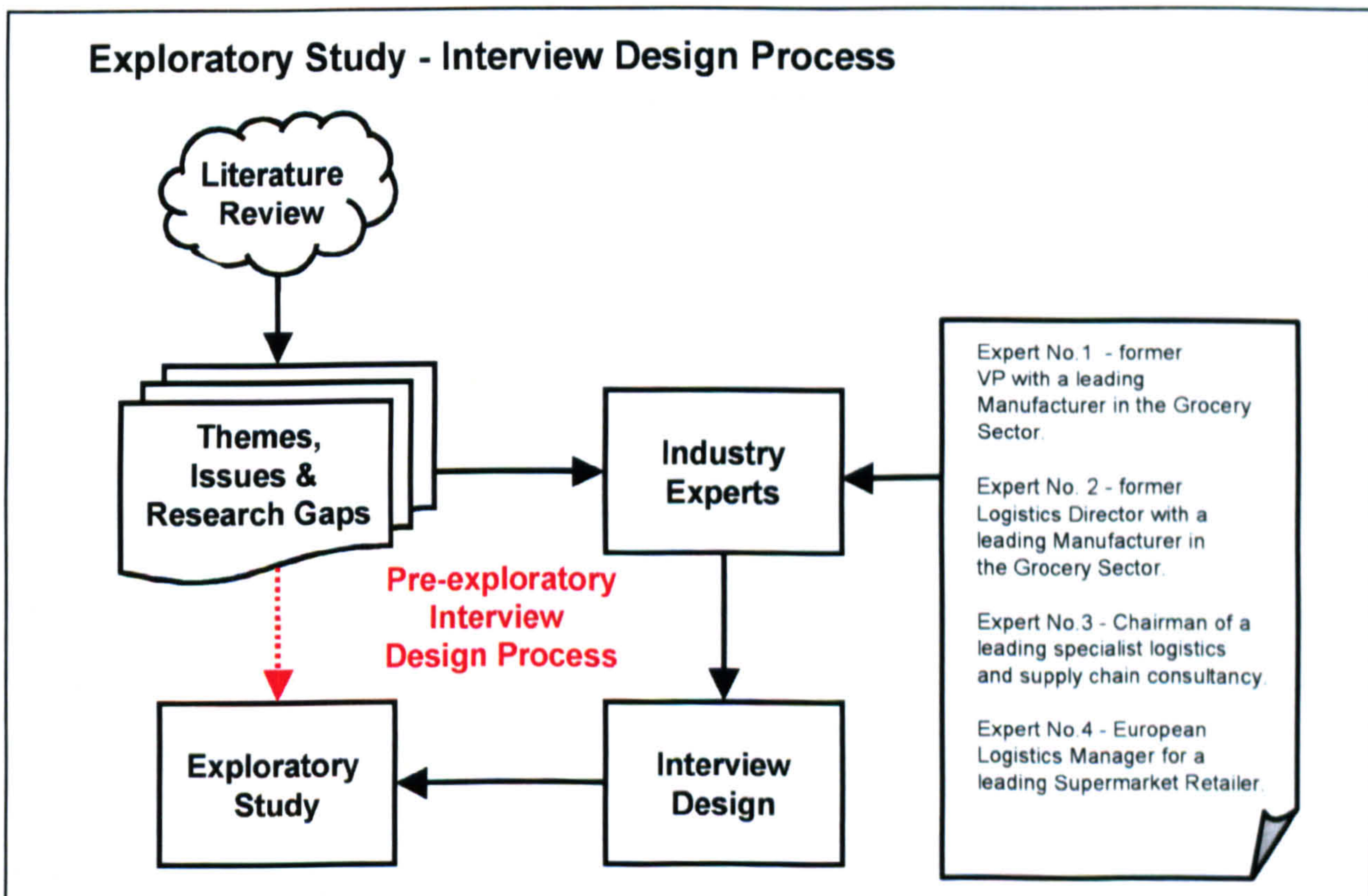
The main criterion for selecting the respondents was the breadth of experience of the respondents within and across the grocery sector. All four of the respondents were approached and the objectives of the pre-exploratory study explained to them. One of the respondents had also published a considerable number of articles in both academic and practitioner journals. The purpose of these interviews was to discuss the issues and research gaps identified by the literature review and to develop the interview structure and questions.

Table 7: Pre-Exploratory Study Respondents

Expert	Level of Experience	Type of Industry Experience	Years of Industry Experience	Industry Recognition
No. 1	Senior Vice-President	Grocery Manufacturing/Retailing/Consultancy	25 years +	Conference Speaker
No. 2	Logistics Director	Grocery Manufacturing/Consultancy	25 years +	Visiting Professor
No. 3	Chairman	Retailing/Manufacturing/Consultancy	30 years +	Keynote Speaker
No. 4	Senior Manager	Retailing/Information Systems	25 years +	Conference Speaker

The design process for the pre-exploratory study is shown in Figure 50 below.

Figure 50: – Pre-Exploratory interview Design Process

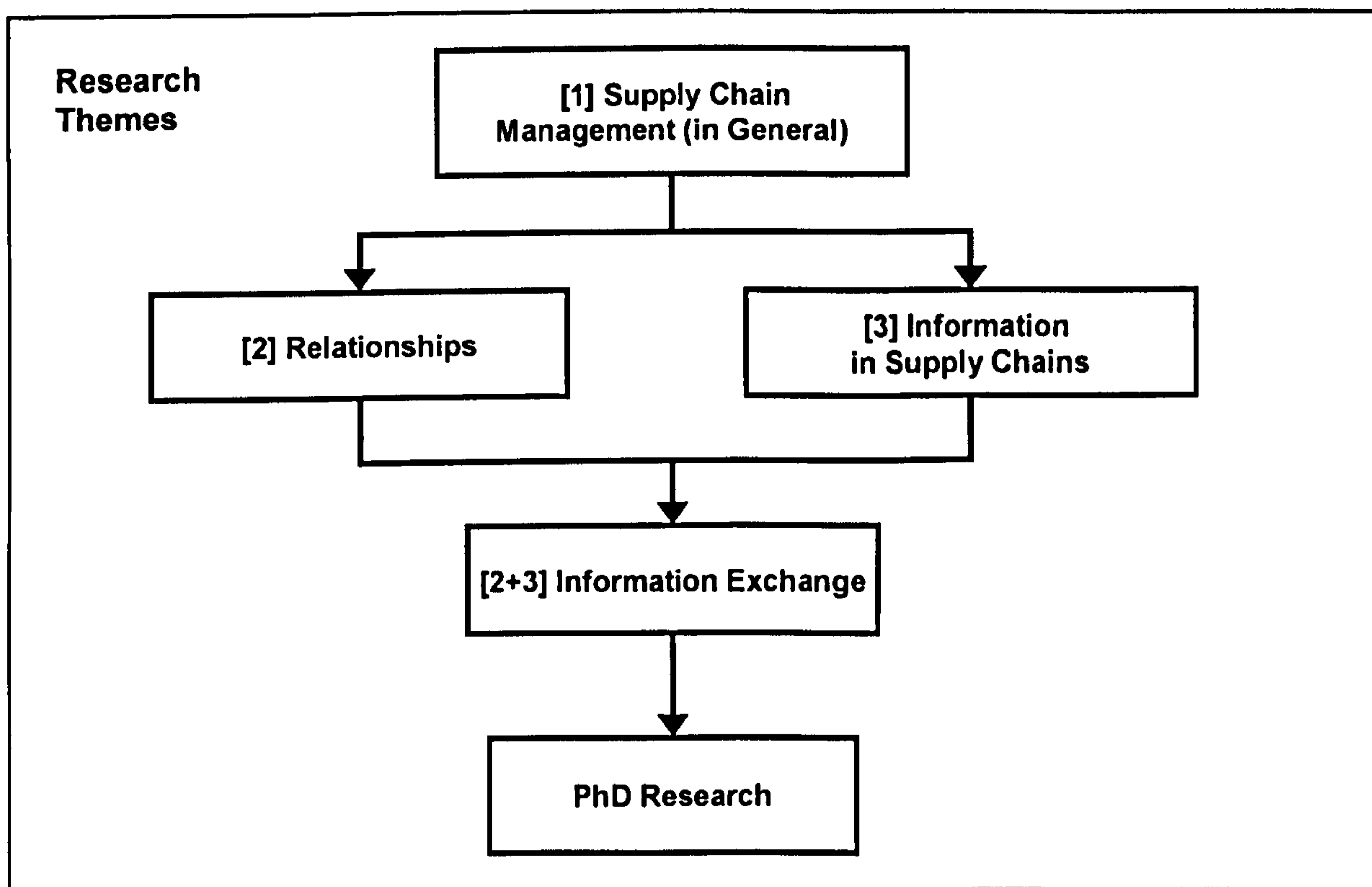


5.3 Interview Structure

A semi-structured interview was developed, based upon the three themes identified from the literature. This approach was chosen in order to allow the three themes identified from the literature review to be addressed in the interviews, but also to allow

respondents to discuss any further issues that existed or that may arise as a result of the questions contained in the interview. The questions were asked in the same order, although on some occasions the respondents when answering one question would also answer a subsequent question. When this occurred the respondent was asked to verify their earlier answer. The full interview structure is contained in Appendix A. The three themes identified from the literature review can be more clearly seen in Figure 51 below.

Figure 51: Research Themes



These three themes are considered by the researcher to be at the core of the objectives for this research. The questions put forward under each of the three themes are now briefly discussed as follows: -

Theme 1: Supply Chain Management (*in General*)

Under the theme of Supply Chain Management (in general), questions were developed that addressed issues such as the definition of SCM, what the concept of SCM meant to the respondent's organisation¹, what the concept had to offer to organisations in terms of general and specific benefits, how these potential

benefits, both general and specific, offered by the concept could be achieved, and what were the major barriers to the implementation of the concept.

Theme 2: (*Supply Chain*) Relationships

The literature review revealed that supply chain relationships, whilst prevalent between manufacturers and retailers (A.T. Kearney 1994), were more tenuous upstream, and that this meant that supply chain integration was therefore limited to downstream areas. Interviewees were asked as to why they formed relationships with other supply chain organisations, and how successful these had been.

Any particular problems were targeted and reasons sought as to why the interviewees believed that such problems occurred, and how such problems could be overcome. Interviewees were also asked to describe the types of relationships they had in the supply chain, together with the basis of those relationships, i.e. based upon sharing information, mutual objectives, etc.

Finally, interviewees were asked to provide details of what they considered to be the fundamental characteristics and requirements necessary to make relationships work in a supply chain context in terms of delivering the potential sought-after benefits.

Theme 3: The Role of Information in the Supply Chain

Interviewees were asked to describe the role of information in the supply chain. They were also asked to confirm if they shared information with other supply chain organisations, what information was shared, in what form and by what medium, i.e. manually (either face to face or over the telephone), paper-based (by mail or facsimile) or electronically (via a computer in the form of e-mail or networked information exchange), and specifically, why such information was shared.

¹ The respondent was asked for their interpretation of what SCM generally, meant to their organisation.

Interviewees were also asked to describe any potential barriers to the sharing and usage of such information and how these barriers could be overcome. The benefits of sharing information were also targeted (both generally and specifically); and if no information was presently being shared, were the interviewees aware of reasons as to why it should be shared, with whom it should be shared, what type of information should be shared and in what format.

In addition to the three themes above, four further themes were also identified during the literature review. These additional themes were as follows: -

Additional Theme 1: Supply Chain Objectives

The literature suggests that organisations enter into supply chain relationships for a broad range of reasons. The most important of these seems to be that of cost reduction in the form of reduced inventory holding. The literature also suggests that it is necessary for both parties to the relationship to have mutual objectives, if such objectives are to be achieved.

Additional Theme 2: Longitudinal Perspective

This theme addresses the issues relating to supply chain planning, and in particular the literature suggests that organisations need to consider both short-term together with more medium and long-term planning horizons.

Additional Theme 3: Scope of Supply Chain Management

The literature review revealed that most examples of supply chain integration were concentrated upon the consumer end of the supply chain, and that supply chain relationships were more tenuous in the more upstream parts of the supply chain.

Additional Theme 4: Supply Chain Structures

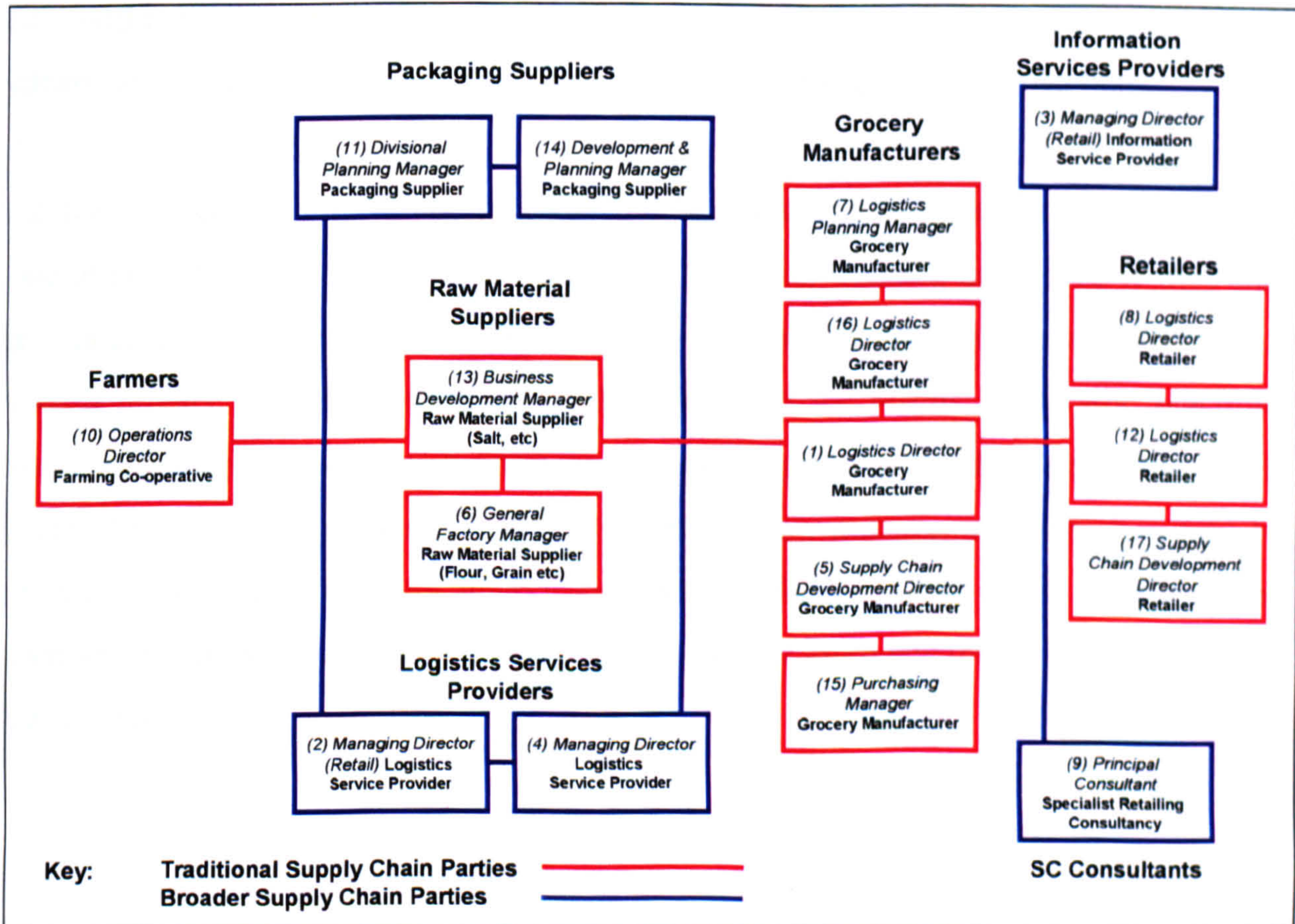
Finally, the literature review revealed that organisations had adopted a number of different supply chain structures, ranging from “pipelines”, to “networks”, to “hierarchies”.

Whilst these themes are seen as very interesting, investigating them in the exploratory study may potentially reduce the focus of the research. Additionally, by the very nature of qualitative research, large amounts of data are often produced, risking the research being overwhelmed by the data. Investigating the themes is therefore proposed as future potential research areas for consideration after this current research.

5.4 Undertaking the Interviews

The first objective of the exploratory study was to identify which issues drawn from the literature on supply chain relationships and information exchange could be found in the UK grocery sector. In view of this objective it was considered necessary to interview respondents from organisations beyond those that would have traditionally been considered part of the supply chain. It was desirable to include organisations such as: (1) Logistics Service Providers, (2) Information Services Providers, (3) Packaging Suppliers and (4) Supply Chain Consultants. These additional organisations, together with the more traditional organisations such as (5) Retailers; (6) Manufacturers; (7) Raw Material Suppliers and (8) Farmers, represent a broader scope of the grocery sector.

Figure 52: Exploratory Study Respondents



Initially, a number of organisations within each of the above eight organisational categories were approached by letter, setting out the objectives of the research and requesting an interview. A number of organisations responded, some of which declined to take part for a number of reasons ranging from, being in the process of merger and acquisition or yearly account reporting. Seventeen organisations responded positively providing at least two organisations from each category with the exception of the Farmer and Supply Chain Consultant categories. The distribution of such organisations can be seen in Figure 52 above.

All seventeen exploratory interviews were undertaken at the interviewee's premises with the exception of one (who was visiting Cranfield for another meeting). In most cases, a brief tour of the organisation was undertaken and where possible, company documentation was collected. The interviews were conducted during the period of April to October 1998.

A broad overview of the study was given, and interviewees were asked to provide their own views, and not those that related to their company positions. All interviewees were asked for permission to be tape-recorded, and none refused. Interviewees were assured of confidentiality of reporting so that no individuals or organisations would be identifiable in written reports. Each interview lasted between one and two hours.

At the end of the interviews, the respondents were thanked for their time and co-operation, given the researcher's visiting card for later contact, and asked if they had any questions they wanted to raise. On some occasions reassurance was sought about confidentiality, and about what would be done with the results. Generally, reactions were very positive, with most interviewees thanking the researcher for having made them express verbally their thoughts on supply chain management, which would be useful to them at work. All interviewees were offered a copy of the results of the exploratory study, and were written to shortly after the interview thanking them for their participation.

5.5 Data Analysis

Analysis of qualitative data normally goes hand in hand with its collection, and it is therefore appropriate to describe the method of analysis being used within this research.

The interviews were transcribed by the researcher, which enabled the recording of additional notes, memos, ideas and comments. Whilst the transcription took a considerable amount of time, this was considered essential so as to allow for reflection upon what the interviewees had said and more importantly, within the context of how it was said.

All transcribed interviews were returned to the individual interviewees for verification of what they had said during the interviews. Again, this was seen as time consuming but considered necessary as the findings of the exploratory interviews were being used to shape and inform the next part of the research. The four pre-exploratory interviews were not considered for the purposes of the exploratory study, although these had been used to shape the development of the interview structure. It was soon apparent that there was a considerable amount of data, which was possibly too much, but in any event both overwhelming and difficult to analyse.

The use of computers in qualitative data analysis, whilst relatively new to mainstream research, has generated much interest. In this research, the analysis of the semi-structured interview data obtained was undertaken using NUD*IST (Non-numeric, Unstructured Data: Indexing, Searching, and Theorising) software, version 4 (Miles and Huberman 1994; Richards and Richards 1994a, 1994b; Weitzman and Miles 1995). This was believed to be particularly suited to dealing with large amounts of primarily qualitative data.

NUD*IST offers a comprehensive range of facilities for analysis, including coding and memoing with the opportunity to change and adapt the coding structure and introduce new codes as analysis proceeds. However, the memoing facilities were not found to be intuitive or easy to use (LoPresti 1997).

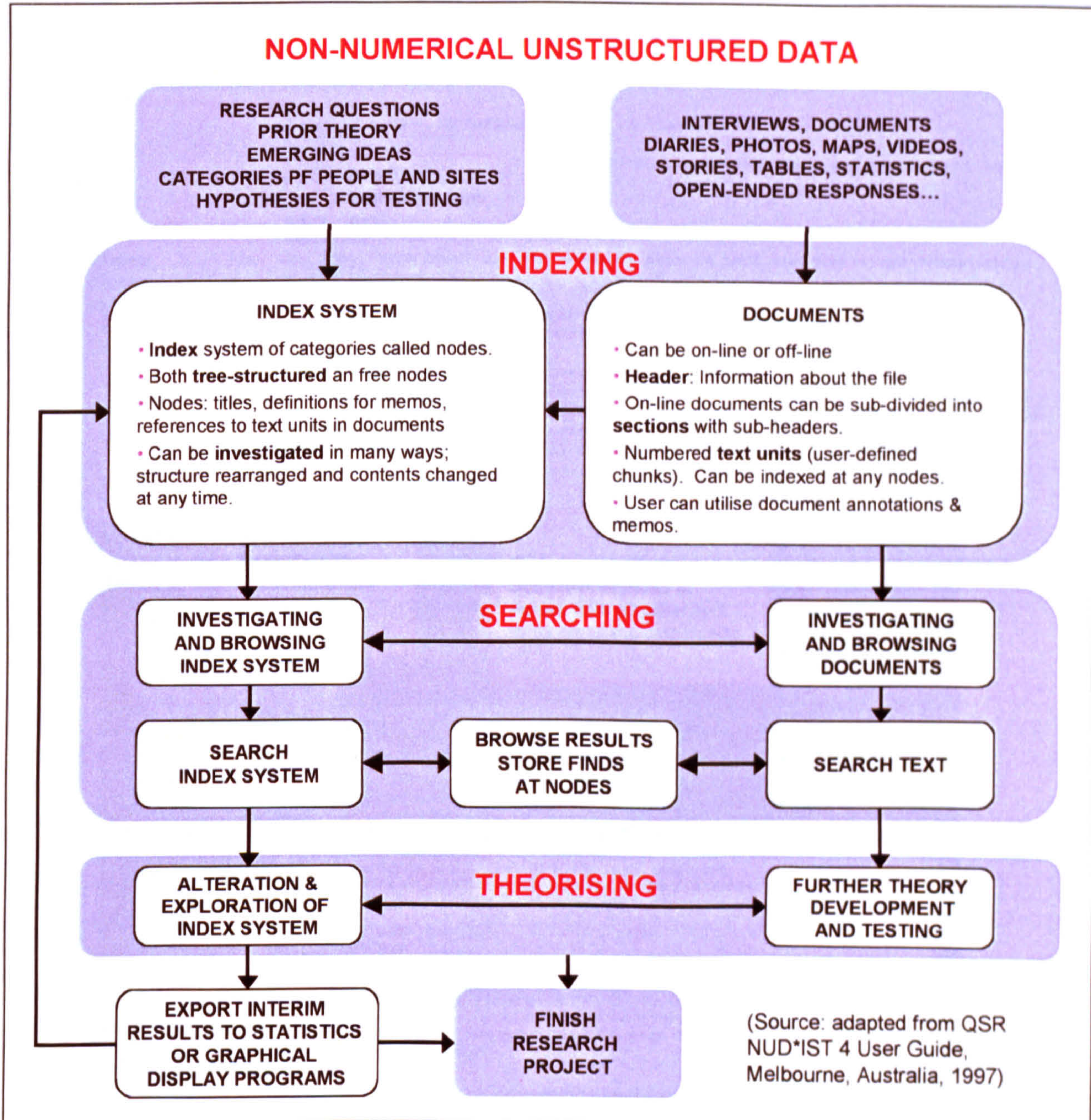
NUD*IST is a software programme that is also a methodological 'toolkit' in that it is flexible enough to cover most qualitative methods (QSR NUD*IST 4 User Guider 1997). The programme facilitates this by separating the retrieval and browsing features of word-processor type programmes into two parts: (1) the researcher can search, code, and retrieve text units and, additionally, (2) the researcher can also search and retrieve the resultant index/coding categories. NUD*IST can also be used as a simple, glorified word processor for textual search or to examine sophisticated index category relationships.

The coding or indexing function can be carried out independently of the process of relating the index categories. NUD*IST provides a hierarchical structure or 'tree' for the purposes of storing or relating these categories. For example, this flexibility allows grounded theory researchers who are building theory up from the data and may not wish to create relationships between their index categories to simply store the coding 'folders'. Conversely, those researchers who have an *a priori* coding structure can have their data automatically fit itself to this structure. Figure 53 indicates the Indexing, Searching, and Theorising functions of NUD*IST as well as the dual databases for coding and transcript data.

With this research the coding for the base data was created in advance (see Appendix B). By searching the respondent name and group it is possible to ask questions of the data such as "What did Manufacturers say about X?" or "How do packaging suppliers' replies about Y differ from manufacturers' replies?" It also reduces the search time required, an important consideration when dealing with approximately 26,000 lines of text.

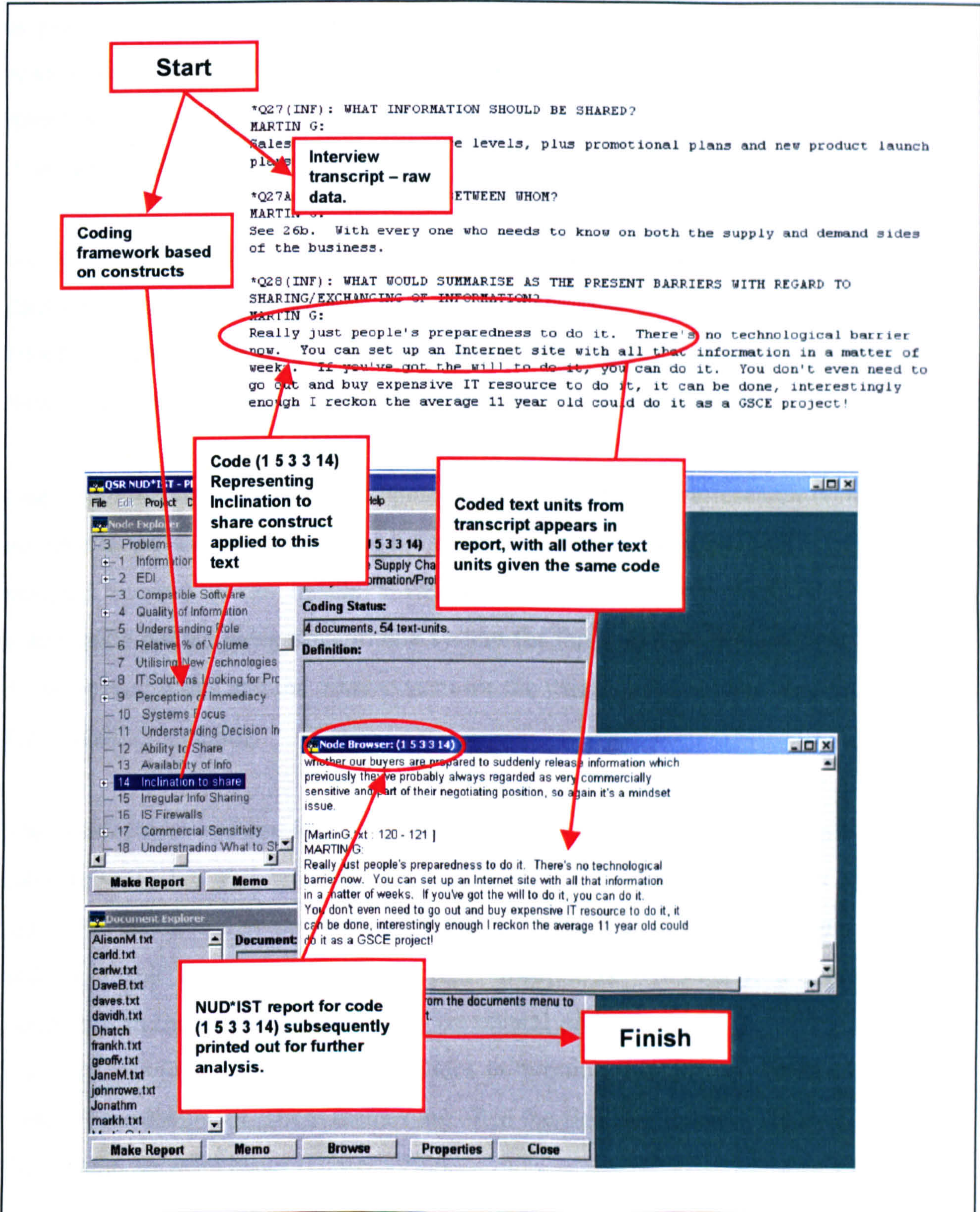
A command file was written so that when each of the transcribed documents was entered into NUD*IST the individual questions and answers would be placed in a similar node. This allows the researcher to open a particular question node and see all the respondents' answers to that question.

Figure 53: The Indexing, Searching, and Theorising functions of NUD*IST



The analysis process started by using the coding frame, based on the constructs, to allocate portions of the raw data to each code. These portions are referred to a “text-units”. Text units are coded elements that the software programme uses as units within the database system. Hence an interview, for example, can be allocated into small sections that relate to the coding system. These small sections are then stored as an entity or data item within the database referred to as a text unit (see Figure 54 below). Various reporting systems are available that enable text units to be retrieved for further work.

Figure 54: Data Entry and Transformation Process using NUD*IST



It was possible to build up a coding hierarchy (see Appendix C) by intensively examining each question/answer node. Such a hierarchy continuously evolves during the analytical stage in which concepts are merged, deleted or created; labels renamed or redefined; memos about codes and documents added or changed; text and index searches lead to new ideas; and categories are promoted, downgraded, or subsumed

within the hierarchy. This continual “surgery” has resulted in the hierarchy as it stands at present with the extraneous nodes removed revealing the structure underneath. The reader will note that Node (1) refers to the base data and Node (1 4) refers to the question/answer nodes so that the *a posteriori* indexing system begins with Node (2) ‘Concepts’ and Node (3) ‘Themes’.

As an example, a Retailer, respondent XYZ’s interview would be coded to “Base data/Respondents/XYZ”, as well as to “Base data/Type of Respondent/Retailer”. One benefit of base data coding is to allow cross coding such as matching what all retailers have said about *information sharing* to that spoken by Manufacturers.

One major advantage of using computer software in qualitative research is that there is no need to jettison or reduce data; it has already been stated above that NUD*IST was selected because it can handle a vast amount of qualitative data. NUD*IST also maintains a double index system: one system for the base data in document form with its associated codes and the other system for the categories and ideas that emerge from the researcher’s coding.

The hierarchical system forms a “tree” growing downward, for example from the substantive to the abstract. Searches can be performed on the text index system – a search for the words or phrases *awareness*, *external perspective* and *changing market* and the result added to a node entitled “*awareness*”. Similarly, a search can be performed in the coding index system on several nodes looking, for example, for text units that would appear in all of the nodes in question. Memos can be attached to any node or text document. These memos are often the first step towards theory by detailing the relation between codes (Glaser 1992).

It should be noted that software programmes such as NUD*IST do not mechanically construct theory for the research but simply remove the drudgery associated with qualitative research. The researcher’s input is, of course, still necessary to make the conceptual leap from dialogue to code to concepts to theory.

The interview transcriptions were coded in a number of stages: rough and fine. During the first stage all transcripts were coded by question and then by any patterns, concepts or issues that arose. At this point, the next stage would be to categorise, re-categorise and refine the emerging patterns, concepts or issues. It was during this next stage that it became clear that the researcher's thought processes were not aligned or compatible with the logic behind the software package in terms of the categorisation and re-categorisation process.

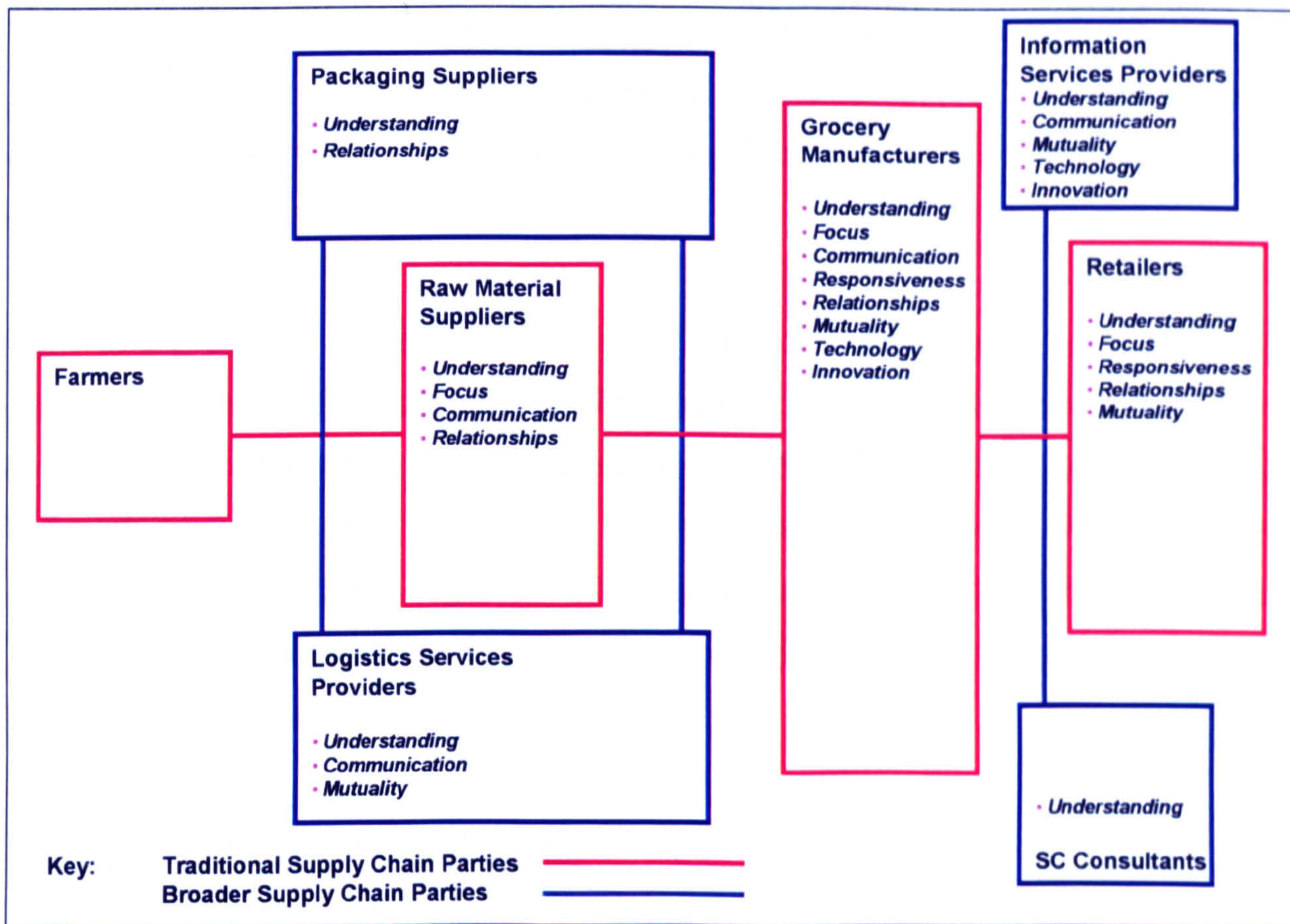
Rather than continue with the coding via the software package, it was decided to finish the categorisation process manually. Although this would prove to be very time intensive and laborious it was considered that by virtue of the manual coding this would be better in terms of providing a clearer understanding of the process whilst maintaining an overview of the emerging patterns, concepts and issues.

One issue that arose from this decision was that by switching to the manual coding, there was a risk that some data may actually have to be jettisoned. This problem was overcome by use of the research questions as a filter. The researcher painstakingly examined all of the data, and only then decided which parts of the hierarchy had no relevance to the research questions.

In light of the fact that not every respondent answered every question and that there were not similar numbers of respondents in each category, it was decided to include all issues that were referred to by at least one respondent. This was on the basis that although not all issues would in fact be seen as important by all parties in a supply chain, it was nevertheless important to develop a comprehensive list of issues that could be taken forward to the next part of the research.

For each sub-theme tables summarising all corresponding issues were then produced. See for example, Figure 54 below. All completed tables for all sub-themes can be found in Appendix D.

Figure 55: Example of Issues for Sub-theme No.1 – Achieving SC Benefits.



From the above table it is clear that “understanding” is a strong issue to almost all parties in the supply chain with the exception of *Farmers*. However, in view of the limited numbers of respondents it is not possible to exclude the possibility that the Farmer respondents interviewed were unique and that in fact “understanding” in the context of supply chain management, is a real issue for farmers as a whole. It was therefore decided to include all issues for the next part of the research and not to comment upon the distribution of issues by supply chain parties.

5.6 Preliminary Findings

The findings of the exploratory study are discussed in accordance with the selected research themes, i.e. Supply Chain Management (Theme 1), Supply Chain Relationships (Theme 2), and Information in the Supply Chain (Theme 3) as set out in Figures 56, 58 and 59 below.

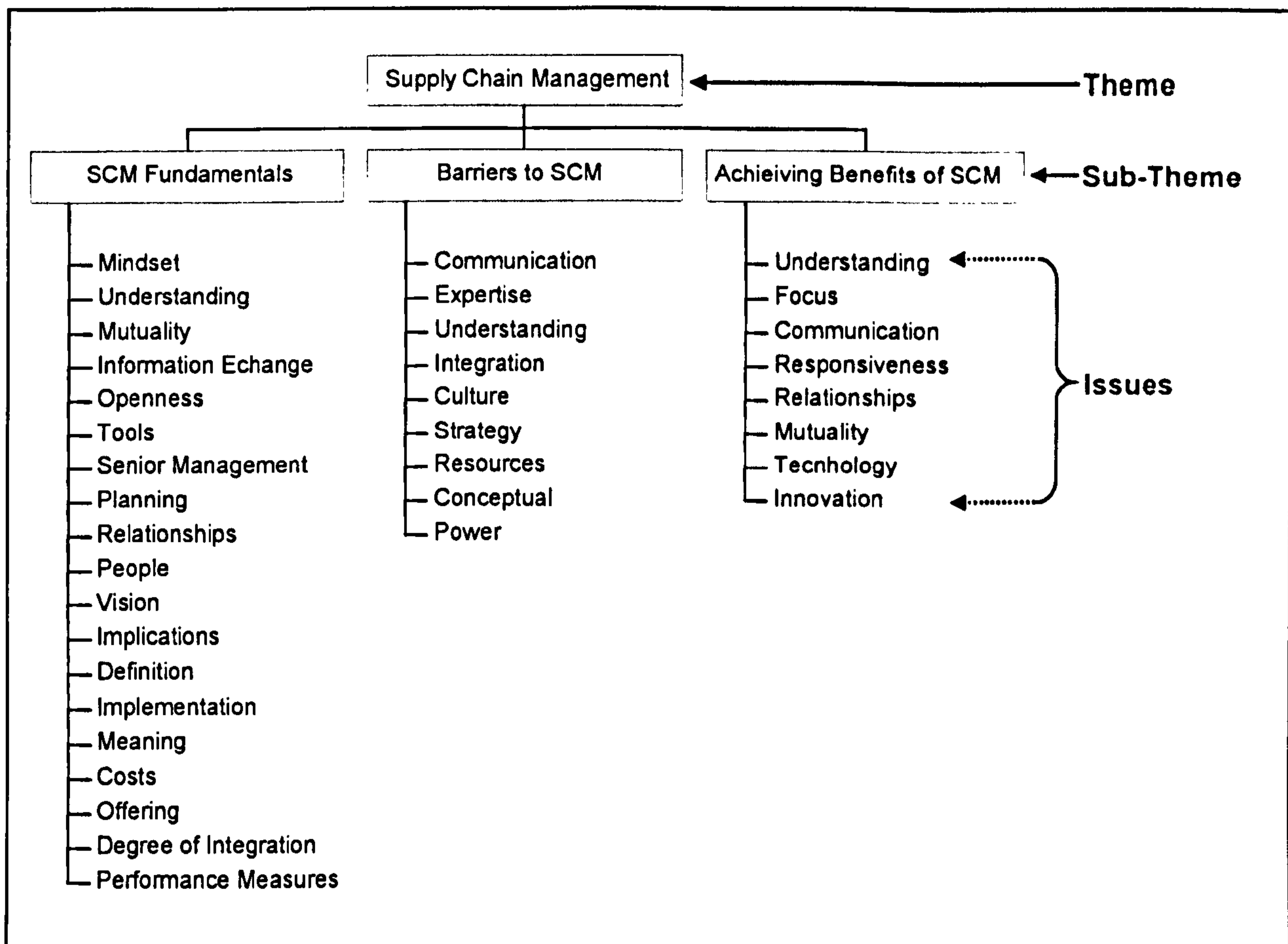
Each of the themes is presented by way of categorising emerging sub-themes (for example – “**Theme 1: Supply Chain Management**” is broken down into three sub-themes (1) **Fundamentals**; (2) **Barriers** and (3) **Achieving Benefits** and for each of these sub-themes a number of emerging issues are listed. The process of identification of issues is then discussed together with a summarisation of each of the sub-themes. The possible uses of the results of the exploratory study are then discussed together with the limitations of the exploratory study.

Theme 1: Supply Chain Management

In terms of Supply Chain Management (in general), the issues have been categorised into three main sub-themes:

- **SCM Fundamentals:** the basic foundations of the concept of SCM,
- **Barriers to SCM:** what issues are likely to prevent the implementation of the SCM concept, and
- **Achieving Benefits of SCM:** the fundamental issues which need to be in place if the potential benefits of SCM are to be achieved.

Each of the sub-themes was made up of a number of issues, which are more clearly shown in Figure 50, below.

Figure 56: Theme 1 Supply Chain Management, Sub Themes and Issues.

The scope of this research does not facilitate the discussion of the individual issues and therefore it was decided to summarise the sub-themes and issues. These are briefly discussed below, although a full analysis of sub-themes by issues can be found in Appendix D. One of the objectives of the exploratory study was to define supply chain management. The definition of SCM from the results of the exploratory study is now briefly discussed.

Definition of Supply Chain Management

One of the objectives of the exploratory study was to generate a definition of SCM that would be used in the remainder of the research. Sixteen of the seventeen respondents provided the researcher with their definitions of SCM. This section examines those definitions and derives from the responses working definition to be used during the remainder of the research.

A number of the respondents appeared to have great difficulty in defining SCM as they believed it was “all encompassing”, but generally, the respondents had some form of definition. Some were brief and succinct whilst others were more laboured spelling out specific issues and concepts. The responses are listed below with emphasis added to the main concepts mentioned.

Farmer A: “It's basically a smooth, in my head if you like, it's to get a **smooth supply** from whoever is supplying you to whoever you are supplying,”

Raw Material Supplier B: “That's a big question. It's all encompassing, it's from logistics right through to the way you actually chose to satisfy your own customers, ..., so it's the **mix of channels** that you use and how **efficient** they are and the appropriateness to the **end user** really”.

Manufacturer C: “I think it's about managing the supply chain in the most **cost effective way**”.

Manufacturer B: I would define supply chain management as having a **totally integrated management process** starting with the **consumer** and working back upstream to our **suppliers, raw materials and packaging**”.

Manufacturer A: “So the new definition which I'm now calling the value chain model, **maximising total performance and added value across the entire process** by reviewing each internal and external operation and link in a **systematic and standard way** in order to **optimise speed, certainty and cost effectiveness of response** to the customer”.

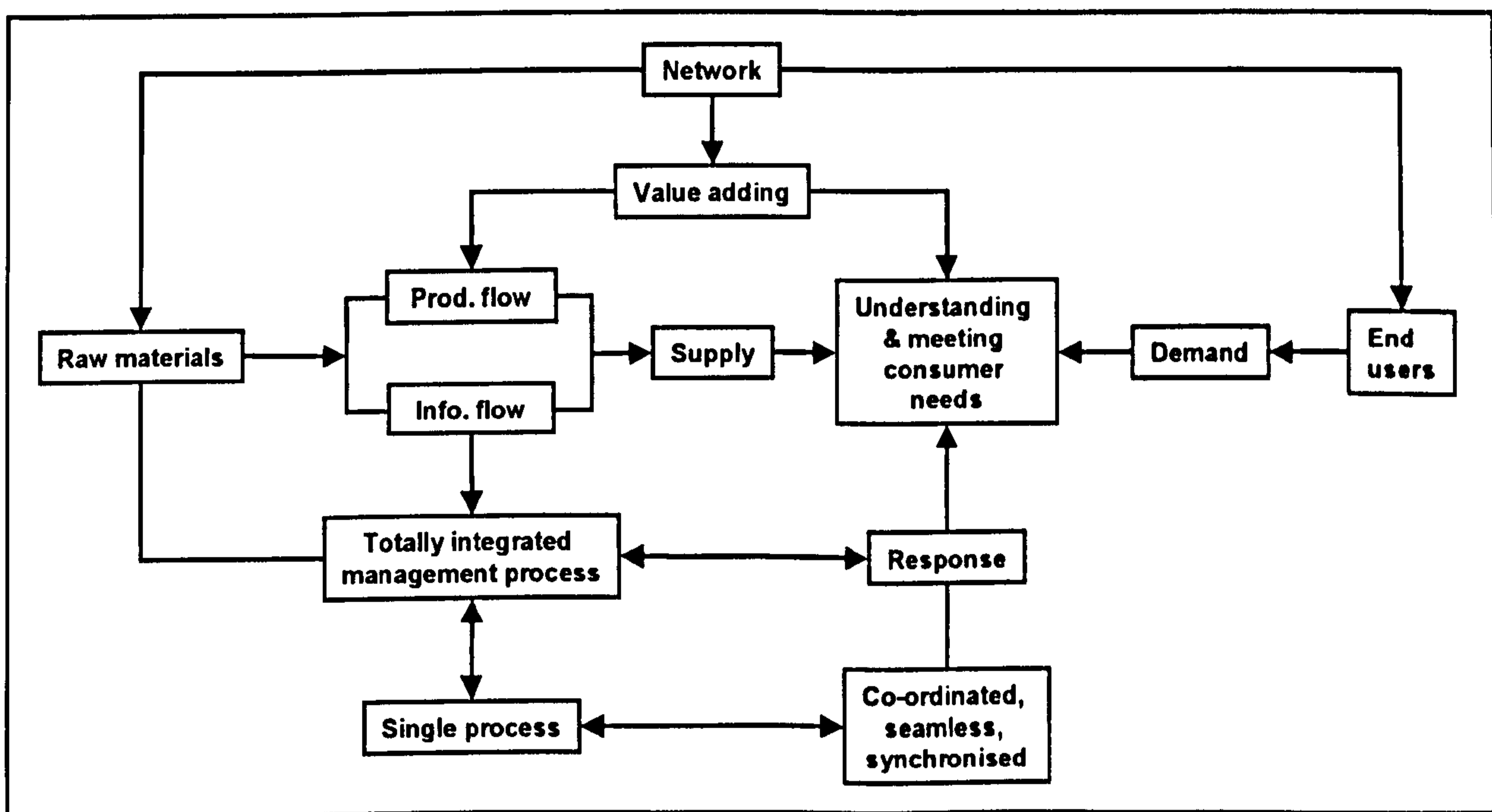
Manufacturer E: “All the activities that are involved in the response to **demand, the co-ordination and control** of those activities and the conceptual view of them rather than looking at them in discreet functional tunnels”.

- Manufacturer D:** “We talk about the extended supply chain as running from our material suppliers factories through to the shelves of our retail customers”.
- Retailer A:** “Plough to plate”.
- Retailer B:** “... it’s taking the process that gets the raw material, whatever that means through to the consumer, and so that’s the scope of it. And it’s treating the supply chain, raw material through to consumer, as one process and managing it as one process”.
- Retailer C:** “From the back door onto the shelf”.
- Consultant A:** “Well I consider the supply chain from the cotton as a seed sitting on the ground to where the consumer is actually wearing it”.
- Logistics Provider B:** “.... It’s the management of the process that moves product and information from point of manufacture all the way through to the consumer, ...”.
- Logistics Provider A:** “I suppose in a way it’s the optimisation of all of the elements of the movement of really right from the raw materials through now I suppose actually to in the grocery sector the product actually getting into the house of the final consumer, so it’s really integrating all of those stages in an optimum way”.
- IT Service Provider A:** “I think it’s all about the processes that are involved, and it’s taking out all the waste, whether that’s waste in time or in materials. It’s almost trying to act as a seamless flow of information and obviously goods as well. So rather than taking business by business, so it is about processes”.
- Packaging Supplier B:** “Well supply chain management starts off right back to your supplier and right through to our final customer and we’re sort of in the middle of the patch”.

Packaging Supplier A: “Its basically about management not just of the chain but of the networks of raw materials supply, production and retailing channel, It’s about understanding what those ultimate consumer needs are, i.e. what the demand within the network of the chain and the ultimate fulfilment of that demand through a more co-ordinated approach through the various channels or networks that exist within the market”.

From these responses, key concepts have been identified in Figure 57.

Figure 57: Definition of Supply Chain Management



The following definition is arrived at from the concepts having been synthesised into a working definition, as follows: -

“Supply chain management is the co-ordinated management of the value adding process for understanding and meeting ultimate consumer demand across a network of organisations”.

The following sections discuss the issues relating to SCM raised by the literature review, identification of these issues by respondents during the exploratory study,

together with the identification of any further additional issues arising from the exploratory study respondents. A summarised version of the data obtained from the respondents is presented in Table 8.

What does SCM mean to Organisations?

A traditional view of supply chain management is that it is a new name for physical distribution (*Manufacturer D*), and that it is still a matter of balancing the movement of goods and management of warehouses (*Packaging Supplier B*).

In contrast to this, SCM is also seen as an opportunity to improve sales through improved product availability (*Manufacturer B, Retailer B*), to improve service levels and to reduce costs. In terms of costs, it is suggested that SCM means that these will be redistributed throughout the supply chain, which will probably result in a increase in conflict between supply chain parties (*Manufacturer B*).

Overall, there appears to be a general recognition that SCM is a critical issue for organisations, although it represents an enormous opportunity (*Retailer A*). Whilst the concept of SCM is recognised as being quite pragmatic (*Raw Material Supplier B*), its meaning is extremely subjective, depending upon the type of business, how the business has evolved and the position of the organisation in the supply chain (*Retailer A*).

The Benefits of SCM

In view of the possibility that benefits may vary by product and by supply chain, the issues relating to the benefits of SCM will only be discussed generally. Some of the benefits of SCM identified by the exploratory study are reductions in cost (throughout the supply chain generally, but also in some parts of the supply chain specifically), redistribution of costs throughout the supply chain, reductions in inventory (although where in the supply chain is not clear), improved service levels and growth of the business in terms of improved product availability. However, organisations are increasingly aware that cost reduction is no longer always the first consideration and that service maximisation may derive benefits that outweigh the benefits of previously targeted cost reduction.

How to Achieve SCM Benefits

The exploratory study identifies five issues specific as to how organisations may achieve the benefits offered by SCM: -

- Understanding:** The cost and information flows along the supply chain and therefore being able to make better decisions (*Logistics Provider B*),
- Communication:** Openly sharing information with other supply chain organisations (*Raw Material Supplier A*)
- Relationships:** Developing trust with other suppliers and customers (*Raw Material Supplier A*).
- Mutuality:** Working as members of a team (representing the supply chain) and being accepted as equal members of those teams (*Retailer C*)
- Technology:** Using this to facilitate and support the sharing of information across the supply chain (*IT Service Provider A*).

Barriers to SCM

The exploratory study identifies a number of issues, which represent barriers to the implementation of SCM: -

- Communication:** Increasing the number of people in supply chain organisations that talk to each other (*Retailer C*).
- Expertise:** Sufficient people with the skill and competence in understanding how to manage supply chains (*Manufacturer D*).
- Understanding:** Processes and the impact of short-term changes upon such processes (*Manufacturer A*).
- Integration:** Recognition that functional departments (such as manufacturing), which may currently not be seen as part of the supply chain, are indeed very much part of the supply chain (*Manufacturer B*),
- Culture:** A supply chain culture must be developed, and issues such as cross-functional teams, will represent major changes for many

organisations. *Retailer B* summarised this as “So the big job is really a hearts and minds exercise, it’s a cultural issue”,

Strategy: Performance measures must be aligned with goals, irrespective of the time-horizon for such goals. To achieve changes in behaviour, goals with appropriate performance measures must be established (*Packaging Supplier A*).

Conceptual: SCM is conceptually difficult to comprehend due to multiple decision points that can impact the entire supply chain. (*Logistics Provider B, Manufacturer B*). Also the way that organisations have structured themselves has not helped people in those organisations to see the bigger picture, and may have resulted in increasing total costs rather than reducing them (*Retailer B*).

Further Issues

Further issues that were raised during the exploratory study and which will be added to the checklist for use in the main case study are as follows: -

Mindset: Getting the organisation to understand what is meant by SCM and also the organisational role in SCM. Moving away from functional thinking is paramount if an effective supply chain is to be achieved (*Retailer A*).

Mutuality: The exploratory study would suggest that when seeking to take costs out of the supply chain, that this needs to be mutually beneficial for other supply chain partners and not at their expense (*Manufacturer C*).

Info Exchange: Visibility across the supply chain requires a certain amount of information flowing backwards and forwards (*IT Service Provider A*).

Openness: Trust is vital for relationships to survive (*Raw Material Supplier B*), but should be based upon open information exchange (*Packaging Supplier A*).

- Tools:** Supply chain tools require people with the ability to understand their use and impact. **Retailer A** suggested that “Technology is like a hammer or a saw to a carpenter, it's something to be used, you can give the hammer and saw to me and I'll make a right mess of it, give it to a real carpenter and he'll make you a wonderful table”.
- People:** The exploratory study suggests that there is a lack of people who understand the concept of SCM and can work within a SCM-mindset (*Retailer A*).
- Degree of Integration:** AT Kearney (1994) suggest that there is a bias toward organisations developing relationships with customers at the expense of suppliers. The exploratory study supports this but suggests that organisations have not developed relationships with customers until they have clarified their sourcing policies that may affect supplier relationships (*Manufacturer D*). A further reason for the low level of supplier integration (in the sense of relationship development) is that organisations may not have a clear vision as to where their organisations are heading with SCM (*Manufacturer B*). Yet further reason that provides some insight into the lack of supplier integration is the idea that implementation of the SCM concept (i.e. supplier relationship development) is difficult as organisations are faced with dealing with cultural and historical barriers that exist between their organisation and the supplier organisation (*Retailer A*).

Table 8: Summary of Theme – Supply Chain Management (in General)

Sub-Theme	Summary
Fundamentals of SCM	<ul style="list-style-type: none"> • Mindset: “And then I think there’s this of getting the business to understand what you mean by supply chain and what their role within the supply chain is all about, so then you start getting into the debates about breaking out of functional silos and all that sort of stuff, but it really is key, it’s absolutely paramount if you’re going to have an effective supply chain to do just that” – Retailer A • Understanding: “Another element that we’ve seen as absolutely critical has been modelling total supply chain cost, because up to now we’ve had a very good understanding of the cost in our bit of the supply chain, we’ve done ABC analysis etc but we’ve had little or no understanding of costs either in our suppliers part of the supply chain or in our customers part of the supply chain.” – Manufacturer D • “And then I think there’s this of getting the business to understand what you mean by supply chain and what their role within the supply chain is all about,....” – Retailer A • Mutuality: “What we’re about is actually taking that cost out and it being mutually beneficial,....” – Manufacturer C • Info Exchange: “Knowledge of what is going on, so visibility of that supply chain. So that demands a certain amount of information flowing backwards and forwards. So knowing where stockholdings are, knowing what the lead times are at various stages, getting things like that” – IT Service Provider A • Openness: “the major issues are those of trust really and open information issues” – Raw Material Supplier B • “So its a kind of multi-layered thing, but fundamentally, its got to be about senior management’s commitment to a broader and more open ended relationships” – Packaging Supplier A • Tools: “Technology is like a hammer or a saw to a carpenter, it’s something to be used, you can give the hammer and saw to me and I’ll make a right mess of it, give it to a real carpenter and he’ll make you a wonderful table” – Retailer A. • Relationships: “I know it’s a pretty hackneyed old word but I mean you do need some sort of partnership approach with all of the players in the supply chain, and that actually isn’t only with people like suppliers and logistics operators, it’s actually within the major retailers as well....” – Logistics Provider A. • People: “Good people. I think there’s a lack of acknowledgement that it is a skill throughout that supply chain and I think people provide you with that” – Retailer A. • Implications: “There’s a lot of OB (Organisational Behaviour) and OD (Organisational Development) type issues come into it with people” – Raw Material Supplier B. • “And again until there is an understanding that all of this directly leads to poorer customer service, higher inventory, higher cost, more capacity, and that if you really do want to remove these things, you’ve got to have this more systematic approach” – Manufacturer A. “So I think that we have tended to delegate it low in the organisation on the basis that it was all about controlling budgets and controlling costs, rather than looking at it strategically and try to pull the whole thing together” – Retailer B. • Costs: “.... it should also offer reduced cost in terms of reduced storage, probably reduced handling cost, although not necessarily and some of that cost might reside within different parts of the supply chain in different organisations, and that’s another area where you get a lot of conflict” – Manufacturer B. “I think one of the down-sides to a lot of supply chain thinking is owed to much emphasis on the latter and not on the former. Its all about cost containment and delivering least cost often ignoring the maximisation of service” – Packaging Supplier A • Offering: “I think effective SCM can make businesses more profitable, and I think it can make them more profitable by both supporting growth,.... but it can also make companies more profitable by reducing costs, & there’s no doubt that there’s still plenty of waste to take out of the SC” – Manufacturer D “Satisfied customers. What else is there?” – Retailer A • Degree of Integration: “I think it’s very early days. We aren’t so far on with our suppliers and one reason for that is quite deliberate thing that our parent organisation Company X is in the throws of looking at European-wide part sourcing of materials and we need to be quite careful about seeing what the supply network is going to be before getting too far down the track of integrating with particular suppliers, so that’s a factor that’s delaying some of the work in that area” – Manufacturer D. “Part of the problem is I don’t anybody has really got a vision of what the end game is, so if we don’t know what the end game is we don’t know how far along the track we’ve gone. So therefore we don’t know how far we’ve got. In many senses I think we’ve barely scratched the surface, so I don’t know, 5%, 10%, 20%, I don’t know. But for all I know we can’t go as far as I think we could go and therefore maybe we’re 80% of the way, ” – Manufacturer B. “I think execution of what you want to do becomes the issue, that’s much more difficult because you are then breaking into the realms of the cultural barriers, historical barriers that exist. But there’s so much more to do, I mean it’s a huge topic, and believe me we’re only touching the tip of the iceberg, only touching it at the moment,....” – Retailer A.

<p>Achieving SCM Benefits</p>	<ul style="list-style-type: none"> • Understanding: "I think they've got to understand the cost and the information flows along the whole supply chain and the relative trade-offs. Until they understand them all and evaluated the relevant trade-offs they can't begin to take management decisions" - Logistics Provider B • Focus: "Focusing upon the role of people in the supply chain". - Retailer B • Communication: "The true benefit is when you're open with them, you trust them and you say right, here's the source of our materials and they say here's the materials, we've got them, we know where they are, we want to sell you them". - RM Supplier A • Relationships: "It goes back to the trust in relationship with the suppliers". - RM Supplier A • Mutuality: "...it is about people working together as a team and being accepted as equal members of those teams". - Retailer C • Technology: "And this is where some of the Extranet stuff comes in, . . . Then the next step is what other information can you share, and Internet type technologies allow other types of information to be shared". - IT Service Provider A
<p>Barriers to SCM</p>	<ul style="list-style-type: none"> • Communication: "The barriers to SCM has got to be communication. You have got to move away from all communication coming through the National Account Manager and the buyer, and you have got to get experts talking to experts, which I think is happening, . . . and that's not easy because you're actually getting people to communicate who have never had to communicate before, and they really are venturing into the unknown so that takes a lot of facilitation. But only when you start communicating do you actually then start realising where the barriers are and what impact those barriers are actually having". - Retailer C • Expertise: "Another one is actually one of skill and competence that we've got a long to go before everybody whose involved in running supply chains has a sufficient understanding to be able to do that in the most effective way, and that's something that again we're addressing as a strategic issue". - Manufacturer D • Understanding: "Functional thinking, lack of understanding of the process. The inability, quite often, to understand that if you do change your mind at the last minute, if you foist uncertainty on the system, you pay for it". - Manufacturer A. • Integration: "I think there are certainly some organisational barriers that still exist, and within our customers there are still significant differences of opinion between their logistics people and their commercial people. We have an issue in that manufacturing is still not regarded as part of supply chain, clearly it has to be, but at the moment it paddles it's own canoe". - Manufacturer B • Culture: "Then you had suppliers where we had traditionally never spoken to them unless we wanted more money out of them. And to get them to actually work in cross-functional teams and to believe our agenda and that we were honest and whatever, was another huge change. So the big job is really a hearts and minds exercise, it's a cultural issue". - Retailer B • Strategy: "If at the end of the day, you've got a set of long term goals, that represent X, but you're short term measures actually encourage Y, you will not get any change of behaviour pattern. So the message there is senior management has to adopt different performance measures as it would be appropriate for achieving goals set for X rather than Y". - Packaging Supplier A • Conceptual: "I think there are far too many decision points in terms of both accountability and responsibility and also information flow. . . ." - Logistics Provider B • "I think it's a problem area and I think it's because if you move the concepts of SCM it immediately begins to impinge on every single part of the business and a lot of those parts of the business will have conflicting requirements". - Manufacturer B: • "Traditionally, the way we have structured it has not helped people see the bigger picture, and the way we have organised to deliver cost". - Retailer B

Theme 2: Supply Chain Relationships

In terms of Supply Chain Relationships, the issues have been categorised into eight main sub-themes:

Status: The current status of the respondent's organisation's supply chain relationships;

Objectives: What are the objectives of current supply chain relationships;

Benefits: What benefits are being sought and achieved from current supply chain relationships;

Types: What types of relationships does the respondent organisation presently have;

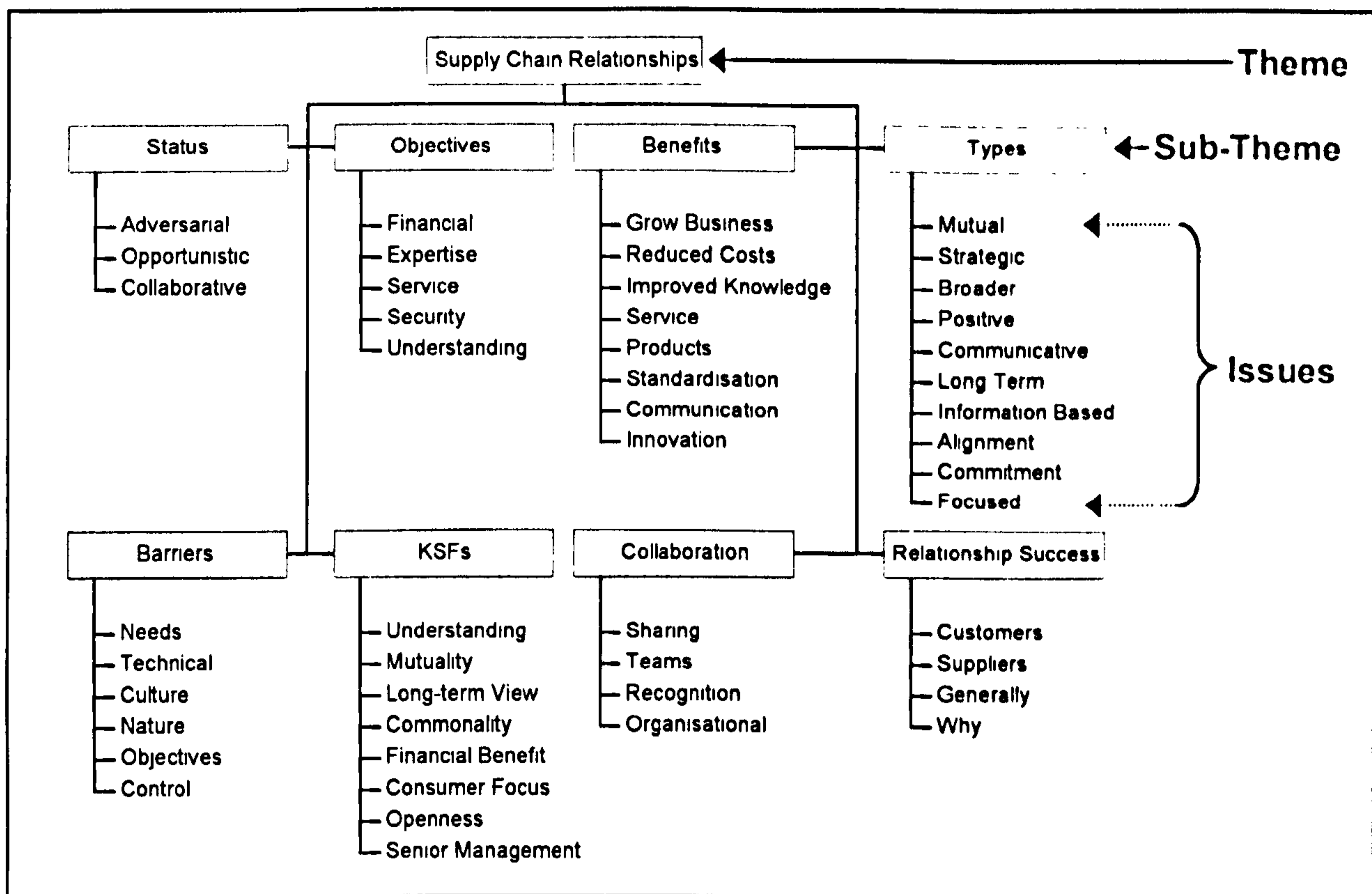
Barriers: What are the barriers to the formation of supply chain relationships;

Key Success Factors (KSFs): What factors have to be considered and present for supply relationships to succeed;

Collaboration: What is the nature of collaboration in the context of supply chain relationships;

Relationship Success: To what extent are current supply chain relationships successful?

Each of the sub-themes was made up of a number of issues, which are more clearly shown in Figure 58, below.

Figure 58: Theme 2 Supply Chain Relationships, Sub Themes and Issues.

The following sections discuss the issues relating to Supply Chain Relationships raised by the literature review, identification of these issues by respondents during the exploratory study, together with the identification of any further additional issues arising from the exploratory study respondents. A summarised version of the data obtained from the respondents is presented in Table 9.

Why Form Supply Chain Relationships?

The objectives of supply chain relations were targeted in the exploratory study together with the benefits that may arise from such relationships.

(A) Objectives

Financial: The exploratory study would appear to suggest that there is a financial element to all supply chain relationships, possibly generated by pressure from shareholders (*Packaging Supplier A*).

Service: This is seen as a key issue for a number of organisations, albeit mainly from logistics providers (*Logistics Provider A*).

Security: Somewhat surprisingly only one organisation mentioned that security (from a financial perspective) was an objective of their developing relationships with other organisations in the supply chain (*Farmer A*).

Understanding: A clear issues arising from the exploratory study was the development of relationships for the purpose of increased understanding of the processes in the supply chain (*Manufacturer A*).

(B) Benefits

Business Growth: One benefit identified by organisations from the exploratory study was the growth in business with the supply chain partner (*Manufacturer B*). It was suggested that by improving product availability, i.e. improved service levels (*Logistics Provider B*) that the partner's business grew, and as a result the organisation's business with that supply chain partner also increased (*Manufacturer D*).

Reduce Costs: An interesting issue arising from the exploratory study was the recognition that although cost may decrease as a result of the relationship, the benefits may not be shared equally (due to the balance of power in the supply chain), but that the benefit would manifest itself in other ways (*Manufacturer D*).

Improved Knowledge: Gaining better knowledge of the critical paths through the supply chain; better understanding of the impact of decision making upon the supply chain; were both identified from the exploratory study. One example of how this manifested itself was in a better understanding of promotional activity by both parties and how such promotions could be more effectively managed, in terms of capacity needed by the supplier together with a clear understanding of how decision during a promotion would impact upon both supplier and customer organisations (*Retailer C*).

Service: The exploratory study suggests that service levels (in terms of customer service, and both product quality and availability) have improved as a result of improved supply chain relationships (*Retailer A*), although indications were that such improvements were preliminary in the sense that much more were envisaged (*Manufacturer A*).

Communication: There were indications that levels of communication were improving through the development of improved supply chain relationships (*Manufacturer B*). It was not clear whether this was as a result of the relationship or part of the relationship development itself.

Degree Of Success Of Supply Chain Relationships

Adversarial: The inference from the exploratory study is that relationships are in general inclined to be adversarial, although the degree to which they are adversarial may be declining (*Packaging Supplier A*).

Opportunistic: The indications, predominantly from the upstream end of the supply chain, would suggest that relationships are made out to be collaborative, but are still in many cases opportunistic (*Farmer A*). One of the respondents used the analogy of a “smiling crocodile” (*Raw Material Supplier B*).

Collaborative: The exploratory study suggests that there is some degree of polarity in the supply chain. At the upstream end of the supply chain, the organisations perceive their relationships with their immediate suppliers and customers to be collaborative (*Raw Material Supplier A*), whilst at the downstream end of the supply chain, whilst the retailers perceive their relationships to be collaborative, the manufacturers are somewhat inclined to believe that in some cases they have no choice but to co-operate with the retailers, as a result of the retailer’s power in the supply chain (*Manufacturer D*). Both ends of the supply chain consider that only some of their relationships are collaborative.

An interesting issue was raised by one of the retailers, in that “Are ‘collaborative’ and working in a ‘total supply chain’ way the same. The retailer suggests that they are not (*Retailer A*). One of the respondents suggests that there are three types of relationships (1) Collaborative - between mature, strategic, random suppliers, and the retailers who sell their product, (2) Retailer dominated - a myriad of suppliers supplying commodity type products and decisions are based on cost and margin driven, and (3) Manufacturer dominated - power of the (manufacturer’s) brand is so strong (*Consultant A*), although the respondent does not believe that there are many of these types of relationships in the grocery sector.

Barriers To Supply Chain Relationships

- Needs:** A lack of understanding of the role and needs of suppliers can hamper relationship development in the supply chain (*Manufacturer A*).
- Technical:** Technical barriers are commonplace in the supply chain, appearing in the form of an imbalance of such capabilities (*Retailer A*), or in the form of computer systems that are not capable of communicating with each other (*Consultant A*).
- Culture:** Barriers relating to cultural issues are prevalent in the supply chain. Such issues can arise from the attitudes of retail buyers (*Farmer A, Packaging Supplier A*), and national account managers (*Retailer A*) in the sense that they have been used to a more adversarial approach based upon price negotiation, and that moving towards a more collaborative approach is relatively alien to them (*Packaging Supplier A*). The ability to embrace the matured aspects of collaborative relationships will take time to develop (*Packaging Supplier A*).

Nature: The nature of supply chain relationships, and as a part of the cultural issue, are based upon short-term commercial considerations which are contrary to the longer-term nature of collaboration and “total supply chain thinking” (*Farmer A, Manufacturer B*). Such short-termism also does not readily facilitate the collaborative systems development (*Manufacturer B*). Another factor relating to the nature of supply chain relationships is that organisations as part of many supply chains are faced with managing a balance between a variety of relationship forms between the same organisations (some are collaborative and some are more adversarial). Such an approach was suggested as requiring “Jekyll and Hyde” characteristics to be able to cope with these concurrently different forms of relationships (*Retailer C*). Finally, the exploratory study also suggests that in supply chains, the more ‘divorced’ you get from the consumer (i.e. organisations much further upstream in the supply chain), the more cost sensitive you become and the less service aware you are, which leads to a more adversarial (price negotiation-based approach) to supply chain relationships (*Packaging Supplier A*).

Control: The exploratory study also suggests that supply chain relationships create a problem of control in the sense maintaining a view of the other organisation’s constantly changing requirements, which implies the need to maintain an ongoing service requirement evaluation procedure which is seen to be prohibitive from a cost and resource perspective (*Manufacturer D*).

Overcoming Barriers To Supply Chain Relationships

Understanding: The exploratory study suggests that by developing joint understanding of the parties’ needs, requirements and objectives, then some of the relationship barriers can be overcome (*Raw Material Supplier B, Logistics Provider B*).

- Mutuality:** Benefits that are mutual in their nature are suggested by the exploratory study as a way of facilitating supply chain relationships (*Raw Material Supplier A*). In addition to mutual benefits, mutual philosophy and respect may be the basis for relationship development (*Retailer B*).
- Commonality:** Similar to the issue of mutuality, the exploratory study suggests the need for the development of a common process between the parties to a relationship (*Manufacturer A, Retailer B*), and a common vision (*IT Service Provider A*).
- Openness:** The issue of openness (in terms of sharing information) is suggested by the exploratory study as a way of overcoming barriers to supply chain relationships (*Retailer B, Logistics Provider A*).
- Senior Management:** Finally, the exploratory study suggests that high-level support in terms of senior management is required to develop and maintain supply chain relationships (*Manufacturer B*).

Types Of Relationships

- Mutual:** A recurring issues from the exploratory study is the issue of ‘mutuality’. In terms of the type of supply chain relationship, a relationship based upon mutual objectives and key performance indicators is suggested by the exploratory study (*Manufacturer B, Retailer B*).
- Strategic:** Relationships must be developed at not only the operational level but also the strategic level throughout the supply chain (*Manufacturer D*).
- Communicative:
& Info-Based** The exploratory study suggests that relationships based upon communication should be developed in the supply chain (*Logistics Provider B, Manufacturer A, Retailer A*), and that the level of communication may determine the level of development of the relationship (*Retailer A*). One major part of the communication is the open exchange of supply chain related information, albeit within the bounds of confidentiality (*Logistics Provider B*).

Further Issues Relating To Supply Chain Relationships

The exploratory study also raises some issues that relate to the nature of collaboration. Suggested issues range from **'sharing'** in terms of information, knowledge, understanding, personnel, and vision (*Manufacturer B, Logistics Provider A*); **'teams'** in terms of multi-disciplinary management groups working across organisational boundaries (*Manufacturer B*); **'recognition'** of the fact that opportunities for improving the supply chain as a whole will only result from working together (*Manufacturer D*); and **'organisational'** in the sense that collaboration must be between organisations that make up a supply chain, and not just between or within one or two parties (*Manufacturer B*).

Table 9: Summary of Theme – Supply Chain Relationships

Sub-Theme	Summary
Current Relationship Status	<ul style="list-style-type: none"> • Adversarial: "It's not quite a normal distribution at the moment, but if you regard adversarial as on the left hand side, and totally strategic on the right hand side, it's probably still skewed towards adversarial, at the moment, but it is slowly, but surely, migrating towards a more strategic relationship" - Packaging Supplier A • Opportunistic: "They're generally made out to be quite co-operative and they're generally not as co-operative as they're made out to be" - Farmer A "An analogy of the smiling crocodile has just popped into my head there" I think they like to be seen as leaders of this new all heralded SCM because they're at the sharp end and they've got the info. I don't see however that, you know they regard themselves as, it's an interesting concept actually, they regard themselves probably as the ultimate customer" - Raw Material Supplier B • Co-operative: "We perceive we have a very good relationship with a number of companies, but that relationship is different to what we would understand as a normal relationship with other customers. On that side of it they want if you like, professional standards, professional agreements and then just get on and do it. If something goes wrong you will know about it, but you won't know about it if it just continues to go right. Well you will because you won't get any phone calls. And so that's different to what we have with other people" - Raw Material Supplier A: "I think it's interesting, co-operative is quite an interesting word that you use there because we can co-operate with different degrees of willingness and if somebody with a big stick is standing over you and says 'I'd like your co-operation', there's a fair chance that you're going to say 'yes sir', and I suspect to some extent the relationship between retailers and manufacturers has had an element of that in it. I think the sort of thing we've been talking about, particularly about trying to develop joint strategic objectives, goes a lot further than that sort of co-operation under duress and I do believe we are moving in that direction" - Manufacturer D. "Co-operative and working in a total supply chain way are two different things in my way of thinking. Co-operatively I'd probably score it as high as 60%" - Retailer A "You've probably got three different types, the co-operative relationships are those between mature, strategic, random suppliers, and the retailers who sell their product ... Why because they both rely on each other and you've got a mature relationship, fairly sophisticated systems and they both recognise that they need each other to survive, that's the first type. Then you have a relationship where the retailer is king and that's basically because you have a myriad of suppliers supplying commodity type products and decisions are based on cost and margin driven, ... so that is much less a win/win relationships and it's really just because it's a commodity type item. Third, ...and in grocery you probably don't find this very much, ...but that would be where the power of the brand is so strong, that they're dictating and it gets back to that whole in control, they're dictating terms to the retailer" - Consultant A.
Objectives of Relationships	<ul style="list-style-type: none"> • Financial: "Profitable relationships, no, that's a crude way of putting it! Certainly, there is an element of financial success there. If you are not generating profitable business then the shareholders will ultimately get a little (huffy) about life, so we can't deny that there is a financial metric, to all relationships" - Packaging Supplier A. • Service: "...I think our objectives as well would be to interpret the requirements of the retailers at a practical level to provide the service that they need to make their total supply chain work" - Logistics Provider A: • Security: "There's also a certain amount within that, in this day and age, you go for security as well, you go to where you think you can get the money from" - Farmer A. • Understanding: "Our relationships with our sales people, because we've delivered and proved customer service are good, and they understand that we don't run the show but we support their show, relationships with suppliers are starting to develop quite fast and it's partly getting our people to understand that within limits, the more you bring a supplier into the picture, about what our real objectives are and our real performance is, the more they can help. Because they actually know more about their machinery and their materials and packaging than we do" - Manufacturer A.
Benefits of Relationships	<ul style="list-style-type: none"> • Grow Business: "...but what we do believe is that if we help our customers to achieve their objectives to grow business profitably, then they will be much more inclined to help us grow our business, e.g. when we're introducing new products, then we would expect to get fast distribution of new products..." - Manufacturer D. "Well there are hard benefits like improved consumer availability and therefore improved sales, ..." - Manufacturer B. "I'm looking for long term partnerships, openness in our relationships with clients, a willingness to share information, to share objectives and the ability to grow our

	<ul style="list-style-type: none"> business through providing first class service" - Logistics Provider B Reduce Costs: "... we had a lot of discussion about what would we expect to be the product of supply chain initiatives and we recognise that quite often cost would decrease in one part of the supply chain and increase in another part which might well be our own, and we don't feel that it's just a simple oh well share the cost savings out between us because we don't think life's like that and this is maybe an issue of the power bases etc. So we would see the benefits of supply chain, not necessarily coming through in straight forward supply chain cost to us, but also coming through in other areas" - Manufacturer D Improved Knowledge: "But it's then also about by working with suppliers so that you can actually understand where all the critical paths are in the supply chain, because we do tend to make decisions and change our minds at the last minute, and what at the moment we don't understand is well where is that likely to impact the supplier and what is the severity of that impact likely to be, because what's the point in us upgrading a promotion and then ending up with a lot of annoyed customers because the supplier couldn't produce, well we need to understand that, what their capacity are, what their production schedules are, if they do a promotion, is all the stock actually manufactured before we go into promotion or is it being manufactured all the time. So I think it's understanding where all the critical parts of the supply chain are and then understanding if we make a decision, or a supplier makes a decision, where the impacts going to be. " - Retailer C. Service: "I think we have improved customer service substantially over the last few years, we've cut inventory at the same time, but there is a lot further to go" - Manufacturer A. "Oh gosh, they don't change really, customer service, quality, availability" - Retailer A. Products: "We've seen big improvements on date codes and our on shelf availability is improving all the time, still got a long way to go but it is certainly improving and we're working with suppliers to actually always come up with new ideas on how we can keep achieving on availability" - Retailer C. Communication: "We put a lot of store by the softer benefits like we've just got improved relationships, we've got a good dialogue going, we like to think that they think we're a good supplier, we like to think we're a good supplier, so there's a lot of sort of soft, intangible benefits" - Manufacturer B.
<p>Types of Relationships</p>	<ul style="list-style-type: none"> Mutual: "Well, let me paint you the ideal. The ideal would be where we had joint objectives, shared KPIs that we worked towards and a totally integrated business plan together with a fully integrated supply chain operation." - Manufacturer B. Strategic: "So at a strategic level one of the most important things is sharing the strategies so that we can understand how to design our business. The same principles will apply to the suppliers and with suppliers there's a particularly important dimension because one thing that we need with suppliers is obviously to run the supply chain efficiently, but the other which is very important with them is that we will grow our business through product innovation and the role of the suppliers in supporting product innovation is also critical" - Manufacturer D. Positive: "Well the ones that we've developed plans with we want a very open, progressive relationship, geared towards sharing and acting in all parts of their supply chain, openly exchanging information within in the bounds of confidentiality" - Logistics Provider B. Communicative: "Recognise that there are certain things I'm not going to tell you and you're not going to tell me, and even if I tell you it may not be true" - Manufacturer A. "Can we work together, yes we're working together pretty good at the moment but we want to work differently, we want to work on the very areas that we're not so good at, either of us. We then say OK we don't want a one to one working relationship and you'll have heard this a thousand times before, national account manager and buyer, we want the right people talking to the right people, so that's a key determinate" - Retailer A. Info Based: "Well the ones that we've developed plans with we want a very open, progressive relationship, geared towards sharing and acting in all parts of their supply chain, openly exchanging information within in the bounds of confidentiality" - Logistics Provider B. Focused: "So that's why we carefully chose the categories that we have these relationships in and don't have them in every category. Like you wouldn't have a relationship in an ideal world with something like cigarettes, it's a declining market, but your cigarette suppliers are probably some of the biggest suppliers that you have, which is true, so you've got to keep what you've got, so then it's coming into different categories of partnership" - Retailer C.

<p>Barriers to Relationships</p>	<ul style="list-style-type: none"> • Needs: "I think the first problem is that if the customer for example hasn't really thought through the role that the supplier has to play in this. " - Manufacturer A. • Technical: "I think the second thing is that the different levels of technical capabilities that retailers and suppliers have" – Retailer A • Culture: "The major problem if you like with our customers it goes basically back to quality again, price/quality. If they happen to buy something for slightly too much you tend to find them come back to you saying look you know this wasn't quite as good as we thought it was or whatever we're going to have to know £5 a tonne or whatever, and they tend to use that a little bit too much" - Farmer A. • "The biggest one is people relationships, where you have, it comes out with the score card normally, you can actually see that you've got a buyer and a national account manager, whoever it might be, I only used that just as an example, it's really just like this, there's no co-operation going on. Now immediately you can get over that barrier and people start working in a different way and they actually can relate, you'll start to see improvements, all along you score lines, and it's so black and white it's just frightening" - Retailer A. • "Well obviously, trust and attitude is one key issue there, There is an ongoing hearts and minds exercise still to go through, animals do not necessarily change their spots overnight. And that may well be an human resource development issue as well. You have a generation of retail buyer in particular who have lived through the eighties, and have been used to flexing their muscles and throwing their weight around. It will still take time for the newer generation of strategic thinking traders to come through who are able to embrace the matured aspects of collaborative relationships - Packaging Supplier A. • Nature: "If they've over bought if you like and they've paid slightly too much for something, you'll nearly guarantee they'll get back to you saying there's a problem. Now if the markets going the other way and they've bought it right, you'll never have a quality problem. In a good year you can sell almost anything quality wise, in a bad year its got to be absolutely AI smack on, you always try to get it AI smack on but it's surprising how, on what you consider to be the same quality product, it's surprising how their views alter, and its market related, it's price related" - Farmer A. • "One is short term commercial considerations and while most supply chain and logistics work tends to be sort of longer term in its nature because you're talking about systems and you're talking about things which are going to take minimum several months to put in place and maybe several years" – Manufacturer B. • "So one minute they're there negotiating very hard, and the next minute they've been brought into another meeting saying right OK then, how are we developing together. And some of them feel they've got to have almost like a Jackal and Hyde characteristic to be able to cope with almost two different forms of relationships" – Retailer C. • Packaging Supplier A: "I think that there is a truism within the Supply Chain, that the more divorced you get from the consumer, the more cost sensitive you become and the less service aware you are". • Objectives: "The biggest one is people relationships, where you have, it comes out with the score card normally, you can actually see that you've got a buyer and a national account manager, whoever it might be, I only used that just as an example, it's really just like this, there's no co-operation going on" – Retailer A. • "We are, in the sense that we charge a management fee for what we do, constantly challenged with regard to what is an appropriate fee or margin, and constantly challenged, particularly in the more mature product areas with regard to the value we deliver" - Logistics Provider B. • Control: "I think it's very difficult to answer that question because there I don't think there's a relationship measure, I mean we do survey our customers and the last major survey that we did asked them what were the most important things to them now, now being at the end of 1996, what were the most important things in their view likely to be 5 years hence, so at the end of the century, the beginning of 2001 or whatever, and then how did they rank 4 or 5 major food manufacturers who were there suppliers including ourselves" - Manufacturer D.
<p>Key Success Factors</p>	<ul style="list-style-type: none"> • Understanding: "Trust and a deep understanding of each others business and desires and needs, requirements, not just the commercial requirements but the wants, what our customer in our distribution channel has to understand ... " - Raw Material Supplier B. • "I think that understanding each others role within the process but also what each party wants out of it, and to be constantly revisiting that relationship but constantly revisiting your own strategy within your relationship to make sure that both parties don't misunderstand" - Logistics Provider B.

	<ul style="list-style-type: none"> • Mutuality: "Compromise, there's got to be an understanding. If it's going to be long term they've got to be getting something out of it and we've got to be getting something out of it, that's the only reason we're doing it, is that both companies can be successful" - <i>Raw Material Supplier A.</i> • "And supplier relationships are exactly the same, is the honesty, the openness, its gaining respect for each other, and I would say that most importantly, that you do share the same philosophy. I mean that I do believe that you have got to start there" - <i>Retailer B.</i> • Commonality: "So you have to be willing to understand a common process and develop that, you have to be willing to share plans, . . ." - <i>Manufacturer A.</i> • "And supplier relationships are exactly the same, is the honesty, the openness, its gaining respect for each other, and I would say that most importantly, that you do share the same philosophy. I mean that I do believe that you have got to start at the top. You don't necessarily have to start with the top people, but start at the top in terms of the analysis if you like, and make sure that philosophy is shared, and if its not then you have to agree to change it, which is where you do need to go to the top of the organisation in terms of the people" - <i>Retailer B.</i> • "A common vision, I guess is what is needed" - <i>IT Service Provider A.</i> • Openness: "And supplier relationships are exactly the same, is the honesty, the openness, its gaining respect for each other, and I would say that most importantly, that you do share the same philosophy" - <i>Retailer B.</i> • "I think trust, willingness to share information, understanding the cost dynamic right throughout the supply chain and the potential trade-offs that exist" - <i>Logistics Provider A.</i> • Senior management: "The motherhood statements like high level support, definitely, and that means board to board dialogue" - <i>Manufacturer B.</i>
<p>Nature of Co-operation</p>	<ul style="list-style-type: none"> • Sharing: "So definitely information exchange, definitely knowledge and understanding. Well, it will take lots of forms. It will take the form of sharing of information and data and knowledge; it will take the form of, for want of a better term I'll call it join understanding, and that could be training, it could be management exchange or personnel exchanges or whatever, for example we're talking to one of our customers about exchanging our graduates on a six month basis" - <i>Manufacturer B.</i> • "Well I think it should take the form of a willingness of all parties to share on the vision and develop the vision together and to have an understanding of the potential benefits, and I think it's about sharing vision, I think it's developing trust between each of the parties and understanding that the benefit that there is some benefit for everybody" <i>Logistics Provider A.</i> • Teams: "There's probably some issues about organisational structure which we haven't really tackled yet, and certainly you find that our customers are moving more towards sort of multi-disciplinary management groups and we need to start thinking about the same sort of thing, so that their logistics person responsible for coffees can pick up the phone and hold a sensible conversation with our coffees logistics people" - <i>Manufacturer B.</i> • Recognition: "I think the co-operation is about identifying where the opportunities to improve supply chain efficiency by working together across the boundaries between enterprises, I think it's as simple as that. And it needs to be seen as being done" - <i>Manufacturer D.</i> • Organisational: "There's probably some issues about organisational structure which we haven't really tackled yet, and certainly you find that our customers are moving more towards sort of multi-disciplinary management groups and we need to start thinking about the same sort of thing, so that their logistics person responsible for coffees can pick up the phone and hold a sensible conversation with our coffees logistics people. So there's definitely a big issue about organisational structures as well, and it's us that needs to move on that front not the customers. And certainly our suppliers are light years away from it at the moment" - <i>Manufacturer B.</i>

Theme 3: Information in the Supply Chain

In terms of Information in the Supply Chain, the issues have been categorised into six main sub-themes:

Role of Information: What is the role of information in the supply chain?

Sharing: What information is currently shared and/or should be shared?

How Information Shared: How is the information currently shared between the organisations being shared?

Why Sharing Information: Why is information currently being shared, for what purpose is it being shared?

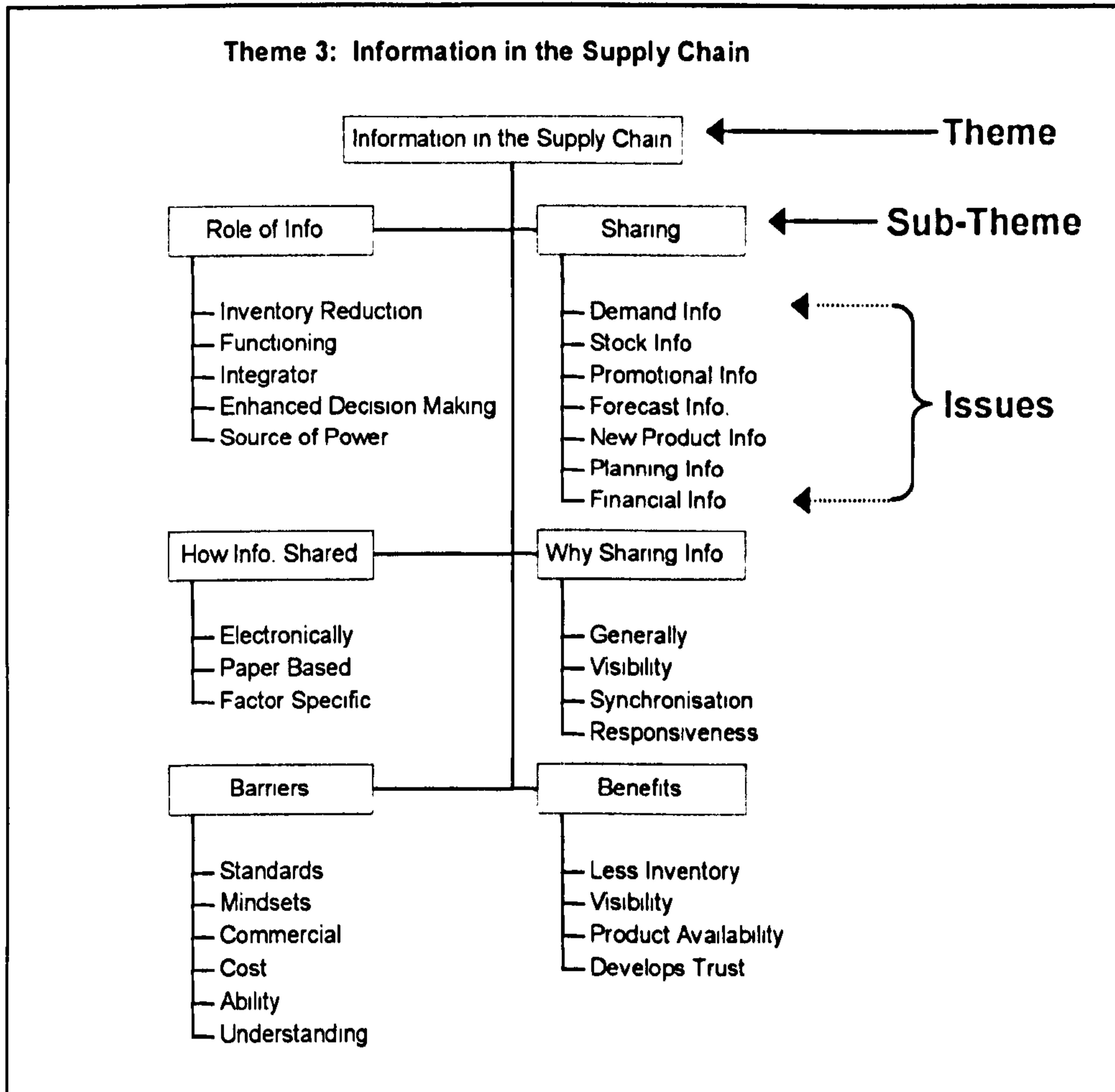
Barriers: What are the barriers to the sharing of information in the supply chain?

Benefits: What benefits are being achieved from the sharing of information?

Each of the sub-themes was made up of a number of issues, which are more clearly shown in Figure 59, below.

The following sections discuss the issues relating to the role of information in the supply chain raised by the literature review, identification of these issues by respondents during the exploratory study, together with the identification of any further additional issues arising from the exploratory study respondents. A summarised version of the data obtained from the respondents is presented in Table 10.

Figure 59: Theme 3 Information in the Supply Chain, Sub Themes and Issues.



What Is The Role Of Information In The Supply Chain

The exploratory study suggested that there are a number of different roles for information in the supply chain: -

Inventory Reduction: The exploratory study suggests that accurate timely information relating to demand and to forecasts when shared across the supply chain, results in inventory reduction, on the basis that safety stock is reduced by virtue of organisations having better, more accurate and timely information (*Packaging Supplier A*).

Functioning: The general impression from the exploratory study was that information is seen as what makes the supply chain function (*Retailer B*). It is suggested as being “*Critical, pre-requisite, necessary but not sufficient*” (*Manufacturer A*).

Integrator: Information is suggested as being critical to the integration of the supply chain in that it is used to create visibility across the supply chain, to facilitate understanding of processes and requirements (*Manufacturer D*).

Decision Making: By seeking to provide visibility across the supply chain (*Logistics Provider B*), the exploratory study suggests that information enables (supported by the appropriate technology) enhanced decision making, as organisations can consider the impact of their actions upon the supply chain as a whole (*Retailer A*).

To What Degree Is Information Being Shared In The Supply Chain

In general terms, the exploratory study suggests that whilst there are instances of information being shared, this is only in patches throughout the supply chain. The study also suggests that there are many instances of where information is not even shared within organisations, let alone externally with customers or suppliers.

What Information Is Shared and Why, In What Format, and By What Medium

The exploratory study reveals that the following types of information are being shared in the supply chain, with suppliers, customers or both: -

Demand Info: This information, generated by Electronic Point of Sale (EPOS) technology and consolidated at regional distribution centre (RDC) level is currently being shared by some retailers in the supply chain (*Retailer A, Retailer B, Manufacturer A*).

Stock Info: The exploratory study confirms that some organisations are sharing stock information (in terms of stock holding levels) with their suppliers and customers (*Retailer A, Manufacturer A*).

Promotional Info: Two of the retailers interviewed revealed that they were about to commence the sharing of promotional information with limited numbers of their suppliers (*Retailer A, Retailer B*). The exploratory study suggests that the sharing of such information may well

have positive effects upon the management of promotions (*Retailer A*).

New Product Info: In line with the sharing of promotional information, the exploratory study suggested that some manufacturers are beginning to share new product information with some of their customers with the view to improving this process (*Manufacturer D*).

The exploratory study identified two main ways that information is shared in the supply chain: -

Electronically: Organisations are using a number of different electronic formats for sharing information, including electronic data interchange (EDI); Intranets, i.e. networks contained within organisational boundaries; Extranets, i.e. networks linking across organisational boundaries; and the Internet (*Raw Material Supplier B, Manufacturer D and Retailer A*).

Paper Based: Despite the availability of these preceding technologies some organisations are still using facsimile-based technology (*Packaging Supplier B, Manufacturer D*); whilst some organisations are still reliant upon information sharing via the transmission of pieces of paper (*Farmer A, Manufacturer D*). The exploratory study does however reveal that organisations are using a combination of information sharing media (*Raw Material Supplier B, Manufacturer D*).

With regard to why information is being shared, the exploratory study suggests that this is carried out with the view to achieving the following two main objectives: -

Visibility: In order to achieve visibility of demand across the supply chain, organisations have seen the need to share information with other parties in the supply chain (*Retailer A, Retailer B*). However, for some organisations the goal of visibility is primarily sought within

their own organisational boundaries, where such visibility is not presently available (*Manufacturer E*).

Synchronisation: In what could be seen as seeking integration, the exploratory study suggests that information is shared by some organisations in the supply chain as a means to synchronise the activities of that organisation with those of its supply chain partners (*Manufacturer A, Manufacturer B, Retailer A, Retailer B and Packaging Supplier A*). Such an objective could be described as seeking ‘quasi supply chain integration’, the benefits of integration without the suggested costs and loss of flexibility arising from the more traditional interpretation of integration, i.e. vertical integration.

Barriers To Sharing Information

The exploratory study suggests a number of current and potential barriers to the sharing of information across the supply chain: -

Standards: Whilst organisations can see the benefits arising from sharing information in the supply chain, they are faced with the barrier of the lack of information standards, which results in some exploratory study organisations faced with the situation of having to deal with multiple information and data standards (*Retailer B, Manufacturer B*). This standards issue is further complicated by the fact that there is a lack of agreement in the grocery sector as to common units of orders, such as a case of product X meaning differing quantities to different organisations (*Logistics Provider B*). There are efforts to create standards relating to information sharing and order quantities although these are in their early stages (*Manufacturer A, Retailer B*).

Mindsets: One persistent barrier to the sharing of information is that of ‘mindsets’, in terms of both organisational and individual. Whilst organisations may agree to share information, individuals involved may not understand the reasons for sharing information

with organisations that have traditionally been seen as competitors, despite being part of the same supply chain (*Manufacturer A, Retailer B*). The concept of information as a 'source of power' is still in existence although may be declining in parts of the supply chain (*Farmer A, Retailer A*).

Commercial: Although there are indications of information sharing practices in the supply chain, the commercial sensitivity barriers are still prevalent, with organisations worried that if they share information regarding their suppliers with their customers, they fear being 'removed from the loop' with the customer going direct to the supplying organisation's supplier (*Manufacturer A*).

Cost: Despite the advent of the Internet with its relatively low cost of use, the perceived cost of sharing information via this and other mediums is still suggested as a barrier to the wide-scale exchange of information throughout the supply chain (*Retailer B*).

Ability: Finally, the ability to initially capture data accurately, and the ability to process data into information and to use this information are suggested by the exploratory study as barriers to the exchange of such information between organisations in the supply chain (*Packaging Supplier A, Retailer A*).

Benefits Of Sharing Information

In view of the possibility that benefits may vary by product and by supply chain, the issues relating to the benefits of sharing information will only be discussed generally. Some of the benefits of information sharing identified by the exploratory study are reductions in inventory (*Manufacturer D, Logistics Provider B*) throughout the supply chain generally, but also in some parts of the supply chain specifically, visibility across the supply chain (*Manufacturer A, Manufacturer E*), and growth of the business in terms of improved product availability (*Logistics Provider B*).

Table 10: Summary of Theme – Information in the Supply Chain

Sub-Theme	Summary
Role of Information	<ul style="list-style-type: none"> Inventory Reduction: "That good timely information can actually take an awful lot inventory cost out of the Supply Chain. Basically, you are replacing safety stock with certainty that is driven by better information and more shared forecasting" - Packaging Supplier A Functioning: "Critical, pre-requisite, necessary but not sufficient. But data is as essential to SCM as SCM is essential to business success" - Manufacturer A "And its about flowing products in one way and it about information flowing the other way. Its absolutely vital, that's what logistics is about, if you look at a supply chain as an information flow and a product flow, all these logistics departments that have grown up in the last five years. Its all about this information flow. Its people beginning to understand the importance of it in terms of it speeding up the supply chain but improving the quality of information to take costs out of the product flow, so its absolutely vital" - Retailer B Integrator: "that over the last 8 years or so we've moved to try and integrate the processes by which we run our supply chains and one of the key enablers for that has been integration of the information that is being used to manage it, so that people are using essentially a single set of numbers right through the business, whether it's for financial planning, whether it's for planning the factories, whether it's for procuring the materials and so on. So integration that way has been very important to our business, and I think the next stage is going to be that same kind of integration in the use of information between us and our suppliers and us and our customers" - Manufacturer D Enhanced Decision Making: "I think people tend to see information technology as just something that's going to happen and it's all going to be automated and you don't have to have people thinking anymore, and nothing could be further from the truth. Because a lot of work in supply chain is analysing information, you can use your computer to get to the numbers much more quickly, or the trends that you're looking at, but then you need to analyse that trend, you need to be looking and the computer will give you most of the information but you've got to have some form of intellect to decipher that information and then to use it to plan forward, and there's this misconception that it all happens automatically." - Retailer A "And every de-coupling point within the supply chain that you hand over information there seems to be a dramatic level of inefficiency built into that step, so everybody talks about having one forecast and one piece of information but I do agree that if that can be effectively transferred up and down the supply it would be extremely useful" - Logistics Provider B
What information is shared	<ul style="list-style-type: none"> Demand Info: "You talk about stock and you talk about production, and then there's some orders in there as well. And then ultimately if you knew what it was you would look at consumption by the consumer" - Manufacturer A Stock Info: Retailer A: "Sales, how to move information, stock holding information, availability information.. ." Promotional Info: "we're just about at the end of this month we'll be launching a new package which is on promotions, how to manage promotions in a different way, which I think is going to revolutionise the way promotions are managed within our business" - Retailer A New Prod Info: "something that's been starting to happen much more has been very early discussion of plan new product introductions which would have been unheard of a couple of years ago, we would not have talked to our customers about new product introductions until launch presentations, now we're quite often talking to them about things that are only at a fairly early conceptual stage" - Manufacturer D
How is Information Shared	<ul style="list-style-type: none"> Electronically: "So we're desperately trying to develop EDI, to develop Intranets, we have actually now got going with one of our customers,.. ." - Raw Material B "There's a bit of hesitation at the moment while a number of different technical solutions get debated, so EDI versus Intranet etc, ... We would do most of those things down with an Intranet link and as I say several of the major customers are setting up these intranets, well I think they're called Extranets when they go to the suppliers" - Manufacturer D Paper Based: "Mostly over the telephone, when we're doing direct sales to our own customers, all the things that are done through contract etc are actually done for us if you like, so we're not too close to the end buyer" - Farmer A "We're not using EDI very much so we would be mainly fax, the fax can be driven straight out of our SCM systems. We haven't used EDI very much, we have put our SAP terminals in our suppliers" - Manufacturer D
Why is Information Shared	<ul style="list-style-type: none"> Visibility: "I don't know what we do, it's quite an interesting point that is actually, I don't know what we do with the retailers, but one of the things that I mentioned to you before was the barrier between Manufacturer E "Department X" and Commercial, I believe we should have visibility of market stocks, and markets to have the visibility of our production plan. There

	<ul style="list-style-type: none"> has been some concern about that and where we negotiate to try and get visibility, but it's something that isn't ours of right, and that's a concern to me because I think it should be. We've recently had a lot of demand for a product, it was a lot higher than was forecast, a lot higher than we've actually got capacity for at the moment, and I really had to plead to get visibility of stock so we can actually spend our capacity to make some benefit" - <i>Manufacturer E</i> Synchronisation: "What is critical that both trade customers and manufacturers are working off the same hymn sheet. It would be nice to think that we will get into a perfectly synchronised Supply Chain where manufacturers will make exactly what is being sold, and will make what will be sold more to the point. For some categories that highly possible, for others it will be more difficult" - <i>Packaging Supplier A</i>.
Barriers to Information Sharing	<ul style="list-style-type: none"> Standards: "I think that the third thing I think is about technical standards generally, because the supplier doesn't want to, if they want to share a bit of information about how Heinz baked beans are selling, they do not want to fire one message to Sainsbury that integrates into a different system to Tesco's and Sainsbury and find themselves with three messages, so there is a wholes standards thing here, and also as we begin to turn, what I would really call at the moment more sort of data flow than information flow" - <i>Retailer B</i>. "Well I suppose commonality of terminology I guess in the sense of when is case a case, what is a case to retailer X maybe, half a case to retailer Y" - <i>Logistics Provider B</i>. Mindsets: "I mean one of the difficulties in all SCM is you can set an arrangement up between two companies, thinking it's two companies, but it's also actually two sets of people and two cultures. Then the companies change, I mean most companies don't stay still for more than about a year or two, so one set of partners change, another set of partnership change, another set of partners change and then you've got to different groups of people thinking what the hell is this relationship, how did we get into this, because it's not our style. And this is quite important, and that's why you've got to do it in a rigorous, systematic way and that takes a lot of time and effort, you've got to change the process, you can't just depend on personalities, otherwise it won't last" - <i>Manufacturer A</i>. Commercial: "Yes, I mean it can be abused, you've got to be careful what you share and it can be abused. I mean as I say if you were to share information with a customer about a supplier then the customer then started going to the supplier and fiddling prices you know. Yes and it depends on the people involved" - <i>Manufacturer A</i>. Cost: "We are using the Internet, but I mean that the Internet is still not bad, when you go into extranets it starts to get a bit more expensive etc. So it depends upon what mechanism are you going to use" - <i>Retailer B</i>. Ability: "First and foremost the ability to capture information accurately. Even retailers are not universally capable of doing that. The ability to turn data into proper information, so actually making intelligence out of the numbers that they are capturing" - <i>Packaging Supplier A</i>.
Benefits of Information Sharing	<ul style="list-style-type: none"> Less Inventory: "Well it's a simple efficiency thing because people are going to be much more likely to make sensible decisions if they're working from the same knowledge base and information base, because certainly if whoever is responsible for let's say for stock, only knows part of the stock in the supply chain, they're unlikely to make the best decisions as if they know what the total supply chain stock is and it clearly might need several people in the chain to see that, but if they have visibility together then they're much more likely to make the right decisions" - <i>Manufacturer D</i>. "That's where it typically goes wrong, only I think if there is an important relationship in terms of information exchanges that is the only one of any real consequence in my opinion. In terms of the impact of the short term availability or overstocking problems, that's where the key is in terms of getting the relationship right and the real value" - <i>Logistics Provider B</i>. Visibility: "I mean something like 10-30% of the product codes ordered at the moment, even by EDI, are wrong. So if they're wrong you've got to spend a lot of time and effort getting it right, and that means there's confusion in our operation, confusion at the customers operation. It also means there's confusion at the time you come to do invoicing and all the rest of it, it also means there's delayed payments, so poor cash flow, so it ripples write through the whole supply chain" - <i>Manufacturer A</i>. Prod Availability: "That's where it typically goes wrong, only I think if there is an important relationship in terms of information exchanges that is the only one of any real consequence in my opinion. In terms of the impact of the short term availability or overstocking problems, that's where the key is in terms of getting the relationship right and the real value" - <i>Logistics Provider B</i>.

5.7 Implications and Limitations of the Exploratory Study

This section discusses the implications and limitations of the exploratory study, and how such issues were dealt with in the major phase of the research. The implications of the exploratory study are presented in terms of how the exploratory study influenced the research design and focussed the research questions.

5.7.1 Implications of the Exploratory Study – Research Questions

Following the completion of the exploratory study, the researcher felt it was necessary to revise the research questions to reflect the outcomes of the analysis. Prior to the exploratory study the research questions were as follows: -

RQ1. How does the exchange of information offer potentially synergetic benefits to organisations in UK retail grocery supply chains?

RQ2. What is the nature of the relationship required to support the exchange of information in UK retail grocery supply chains?

In terms of **RQ1**, it was felt necessary to consider the organisations' position in the supply chain – information can vary in its relevance in terms of potential impact, e.g. demand data reduces in relevance the further upstream that it passes. Information can be exchanged but needs to be utilised to have a positive impact on the relationship and the SC performance. Information can be shared, but under utilised, resulting in no change in supply chain performance. The under-utilisation of information could even have a detrimental impact on the current supply chain relationship due to the increased expectancy of improvement resulting from the sharing of data and/or information.

As a result of this **RQ1** was amended as follows: -

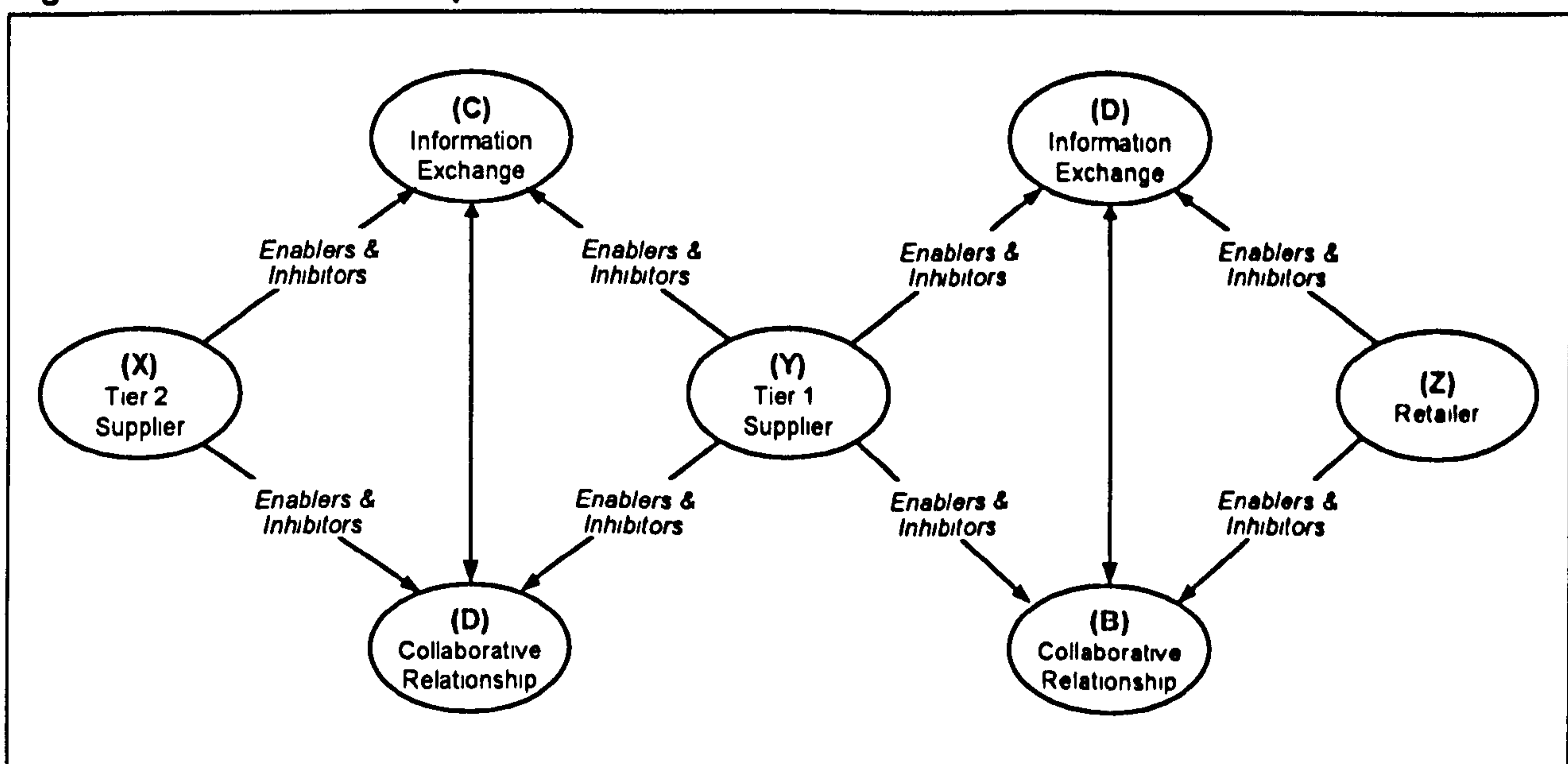
RQ1. What are the enablers and inhibitors of information exchange and usage in UK grocery supply chains?

In terms of **RQ2**: It was felt necessary to also consider the position of the relationship in the supply chain – as the context and types and nature of relationships may vary depending on where the organisations exist in the supply chain. The nature or characteristics could be better described in terms of the issues that inhibit SC relationships and issues that enable or facilitate SC relationships. As a result of this **RQ2** was amended as follows: -

RQ2. What are the enablers and inhibitors of supply chain relationships in so far as supporting the exchange and usage of information in UK grocery supply chains?

In addition to revising the research questions, following the completion of the exploratory study, it was felt necessary to revise the conceptual framework to reflect the outcomes of the analysis. The focus of the research is emerging as the concepts of collaborative supply chain relationships and the concept of information exchange. The conceptual framework is revised to reflect this emerging focus. Additionally, to reflect the need to consider a broader part of the supply chain, the conceptual framework is extended to include an additional tier of suppliers (Tier 2), which in this instance represents the manufacturer's packaging suppliers (see Figure 60 below).

Figure 60: Revised Conceptual Framework



The next section looks at the implications of the exploratory study for the research design for the remainder of the research.

5.7.2 Implications of the Exploratory Study – Research Design

There are a number of implications from the exploratory study that need to be considered in terms of how these have impacted the research design for the subsequent main case study element of the research.

- The **context specific nature** of supply chain data/information: -

For example, the relevance (in terms of percentage of total volume) of supply chain-related information is dependent upon the position in the supply chain of the organisation receiving the information – as consumer demand related information (derived from POS data) passes upstream along the supply chain, it appears to reduce in terms of its relevance to grocery manufacturer's suppliers in terms of its impact on their production scheduling. For the grocery manufacturer it has a greater relevance in terms of the percentage of total volume, but significantly reduces when passed to the grocery manufacturer's supplier, because the supplier may only supply a relatively small volume of its products to the particular grocery manufacturer.

The implications of this are that the methodology needs to be able to capture this context specificity, i.e. by including a larger number of organisations along the supply chain, beyond just retailers and manufacturers. By virtue of including more organisations, the systemic philosophy of supply chain management can be considered, as a larger part of the total supply chain is represented in the research. It is worth noting that the supply chain could include further organisations beyond 3rd tier suppliers, however, a decision has to be taken as to the practical impact of actions taken at the downstream end of the supply chain on organisations that could be potentially far removed from retailers (i.e. 4th tier suppliers of starch used in the production of corrugated board).

- The **context specific nature** of supply chain relationships themselves: -

In consideration of the people that work on particular supply chains, they may or may not necessarily work on other supply chains, lending weight to the argument that supply chains are more likely to be unique. This has implications for the research methodology in terms of the issue of generalisability. Studying a single supply chain does not allow the research to generalise whatsoever, but to only be able to comment on the particular supply chain in question.

- **The length of the supply chain: -**

It is clear that the supply chain extends beyond a pair of organisations e.g. a retailer and a manufacturer. Whilst traditionally research has focused on the retailer-manufacturer or customer-supplier dyad. The extent of the supply chain, in this case made up of a retailer, a manufacturer and four packaging suppliers, necessitates a methodology that is capable of addressing the multitude of relationships that when considered holistically represent the supply chain.

- **Levels of relationships within and between organisations: -**

There is a need to think about strategic, tactical and operational relationships (e.g. previous research has to a large extent focused on a single level or at best has been extended to consider the strategic and operational (e.g. Mentzer 2000). This led to the development of the sub-unit of analysis (i.e. the SCIIOR - supply chain intra-inter-organisational relationship model – as described in section 4.3).

- **Less emphasis on quantitative research methods: -**

It was recognised relatively early on in the exploratory study that the supply chain mapping may prove to be difficult, in terms of gaining access to sufficient data. Additionally, bearing in mind the time that the study would take it would be difficult to get a snapshot in time of the chosen supply chain. In terms of the research design it led to the extent of the supply chain mapping being limited to a simple flow charting of supply chain processes and information flows.

- **Selection of the final case study: -**

Due to the potential breadth of the supply chain that would be studied in the main case study, it was decided to adopt a theoretical sampling approach. The retailer and the manufacturer had both been part of the exploratory study, and had previously endured a very poor relationship, but one that was now being cited by both parties (and used as an industry exemplar at conferences, etc.) as the leading example of a collaborative relationship.

- **The unit of analysis: -**

Prior to the exploratory study it was considered that the unit of analysis for the research would have been the supply chain relationship itself, however, following the exploratory study it became apparent that the relationships between and within organisations determine to a large extent the nature of the supply chain performance. Therefore the unit of analysis for the remainder of the research would be the supply chain itself, leading to the adoption of the supply chain relationship as the sub-unit of analysis (i.e. the SCIIOR model as described in section 4.3)

5.7.3 Limitations of the Exploratory Study

There are a number of limitations of the exploratory study that need to be considered, as follows: -

[A] Single Respondents, Single Organisations

In the exploratory study, semi-structured interviews were undertaken with single respondents from organisations participating in UK retail grocery supply chains. This gives rise to a degree of individual bias arising from the risk that the views expressed by the respondents were not that of the organisations, or indeed truly reflected the current situation. A single respondent also means that the breadth of possible supply chain relationships is also not represented. Also, the interviews were undertaken with only single organisations. In terms of their responses in relation to supply chain relationships, none of the organisations party to those relationships were accordingly interviewed. This therefore means that a possibly biased view of the supply chain relationship has been perceived by the researcher. To overcome these potential problems, it is proposed

that the research will use multiple respondents from the organisations participating in the main phase of the research. As the main phase of the research will involve more organisations in a particular supply chain (i.e. retailer-manufacturer-packaging supplier), then the potential bias that may be derived from interviewing only one party to a relationship will be overcome (i.e. multiple perspectives would be captured, e.g. Retailer-Manufacturer, Manufacturer-Retailer, Manufacturer-Supplier, and Supplier-Manufacturer).

[B] Numbers of Respondents per Position and Role in the Supply Chain

In the case of Farmers and Consultants, only one respondent for each of these roles in the supply chain was interviewed. The Farmer interviewed was also the manager of a large farming co-operative (with over fifty members) in the UK. The respondent when interviewed was asked to comment generally on behalf of the co-operative members.

[C] Verification of Data Collected

Once interviews had been undertaken and analysed there was subsequently a process of referral back to the respondent for verification of the context of the responses given. This appeared to work well and for the major fieldwork this approach would be retained. The case study respondents would be interviewed and verification of the responses sought from each of the respondents after the analysis had been undertaken.

[D] Identification of Benefits from Relationships and Information Exchange

It was only possible to suggest such benefits arising from supply chain relationships and information sharing at a general level of discussion, as the exploratory study organisations were not necessarily in the same supply chains. In light of the indications arising from the exploratory study, the individual nature and characteristics of supply chains the main phase of the research will focus upon the benefits arising, or not as the case maybe, from the supply chain for the product chosen for the main case study.

The next chapter presents the main case study from the research. This includes the following: (1) the contextual considerations of the case study together with a summary of a number of research design issues; (2) the identification of the supply chain,

including the boundaries of such coffee supply chain, and the organisations within the supply chain; (3) a review of the supply chain processes and information flows; and finally, (4) a summary of the case study.

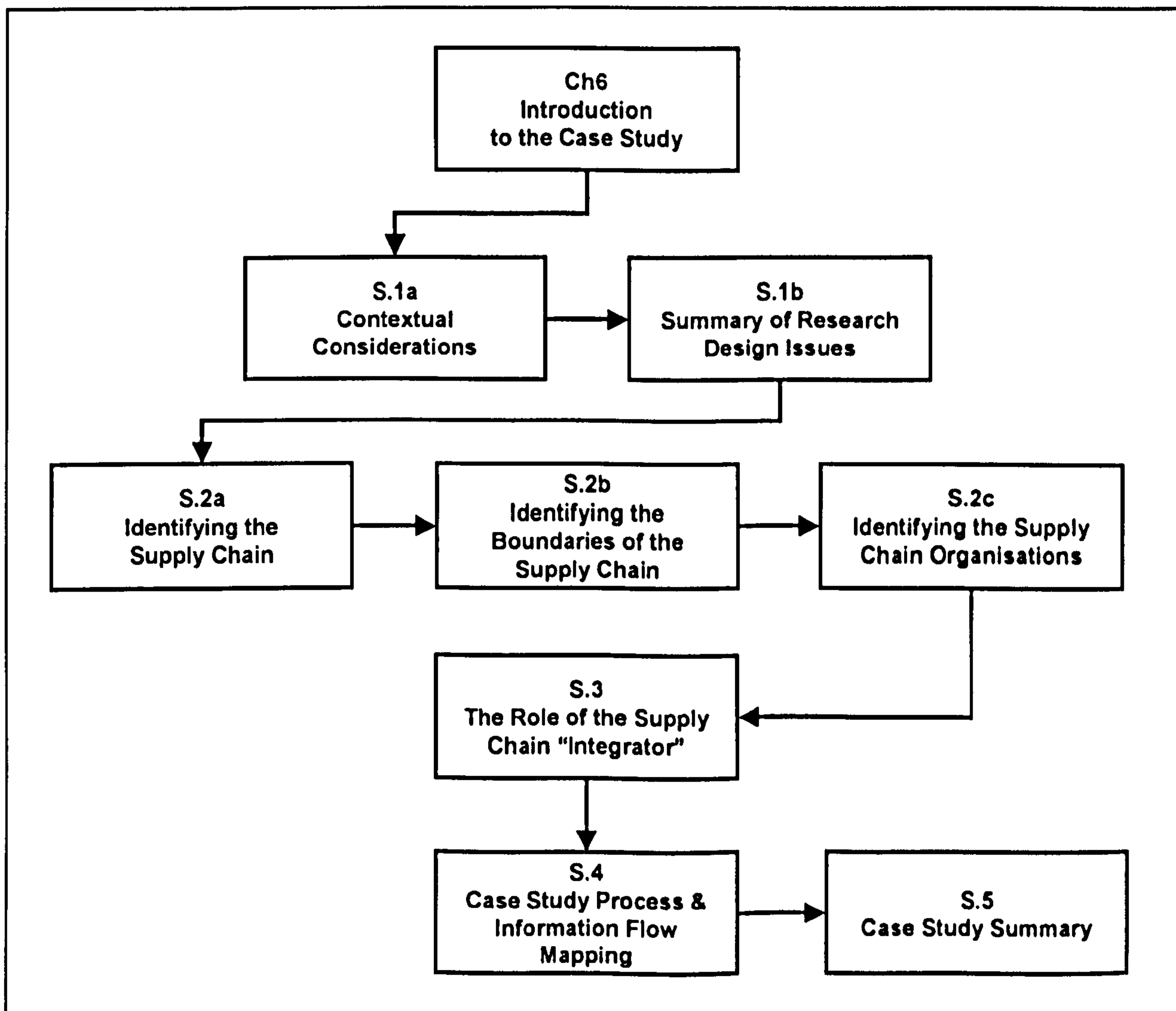
CHAPTER 6:

CASE STUDY – A COFFEE SUPPLY CHAIN

6.0 Introduction

This chapter presents a case study that provides the context for this research. The case study is of a single supply chain for a coffee product. The supply chain is set in the context of the UK grocery sector, which is itself set in the context of the European grocery sector. The case study is set out over four sections: (1) the contextual considerations of the case study together with a summary of a number of research design issues; (2) the identification of the supply chain, including the boundaries of such coffee supply chain, and the organisations within the supply chain; (3) the role of the supply chain “integrator”; (4) a review of the supply chain processes and information flows; and finally, (5) a summary of the case study.

Figure 61: Overview of Case Study Structure



For the sake of clarity throughout the case study the above diagram (see Figure 61 above) provides a step-by-step overview of the development of the case study and

explains how the various sections of the case study link together to form the context for the case study analysis, which is presented in Chapter 7.

6.1(a) Contextual Considerations

Having developed the research instruments, theoretical framework and establishing (through the exploratory study) that the research methodology and design are in harmony with the research questions, the next stage in this research is to apply the instruments and research framework in the environment of a specific supply chain.

The retailer and the manufacturer from the case study supply chain were already involved in an ongoing relationship development programme at the commencement of this research. The retailer was operating a new jointly (with the manufacturer) derived tool for enhancing planning decisions, entitled 'Collaborative Planning System' (CPS) and the manufacturer utilising a similar tool, specifically developed to address promotional activity, entitled 'Collaborative Event Management' (CEM). Despite the different titles the two systems were identical, utilising POS data and visibility of inventory levels across the manufacturer and retailer's respective parts of the supply chain. The retailer was also making available such POS data, inventory level data, and performance data for the manufacturer's and retailer's service level performance (at the retailer's distribution centre (DC) and store level respectively) via an internet-based extranet service called Sainsbury Information Direct (SID). The progress with these three systems was evidence of both parties wishing to develop a closer relationship with the view to improving the performance of their supply chain activities.

The relative performance of both parties prior to the decision to develop a closer relationship was increasingly unsatisfactory. Both retailer and manufacturer were struggling with poor service levels and relatively high inventory levels. The retailer was losing its number one position in the retail sector to its closest rival Tesco; and finally the retailer (at a strategic level) perceived that the manufacturer as an uncooperative and unresponsive supplier.

6.1(b) Summary of Research Design Issues

This section summarises some of the major research design issues that have been considered when undertaking the case study. Such issues include: single case versus multiple case designs, and data collection issues such as multiple sources, multiple respondents and data verification. A single case design was selected for two reasons. Firstly, adopting a single case design would allow the researcher to pursue a deeper investigation into the relationships existing in the selected supply chain, and secondly, exploring a single supply chain would be more practical in terms of completing the research in a reasonable time frame, i.e. achieving greater depth within time available to a single researcher.

The case study adopted the data collection instrument which had been fine tuned and tested in the exploratory study, and applied this to a new but relatively similar scenario (the exploratory study looked at the UK grocery sector as a whole, whereas the case study explores a supply chain within the UK grocery sector). As a result, the data were collected from multiple sources through the use of semi-structured interviews combined with document analysis of internal reports and company documents, press cuttings, thereby addressing any concerns regarding data triangulation.

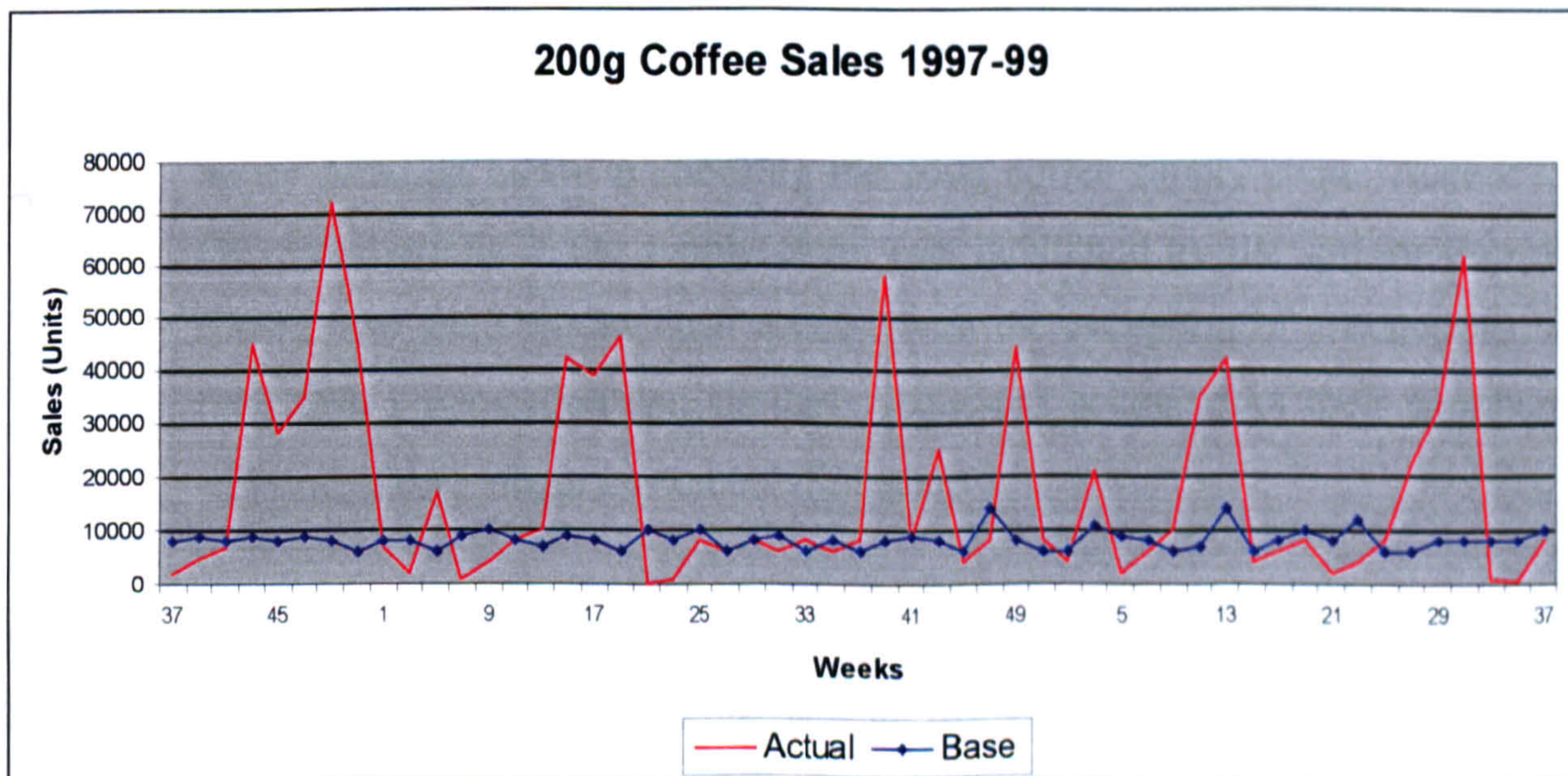
In terms of the respondents interviewed, these were mostly from the retailer and manufacturer respectively, with mainly two interviewees from the four packaging suppliers. With the packaging suppliers there was a tendency for the organisations to only offer one or two people. This proved to be slightly disconcerting at first, although the very fact that the packaging suppliers were smaller organisations, meant the respondents from these organisations had responsibility for broader areas and activities that were in the manufacturer and retailer, attributed to a number of individuals.

6.2(a) Selecting the Supply Chain

The supply chain selected is that for the sourcing, production, distribution and retailing of 200g jars of coffee trading under the 'Nescafe' brand. This supply chain was chosen for the following reasons: -

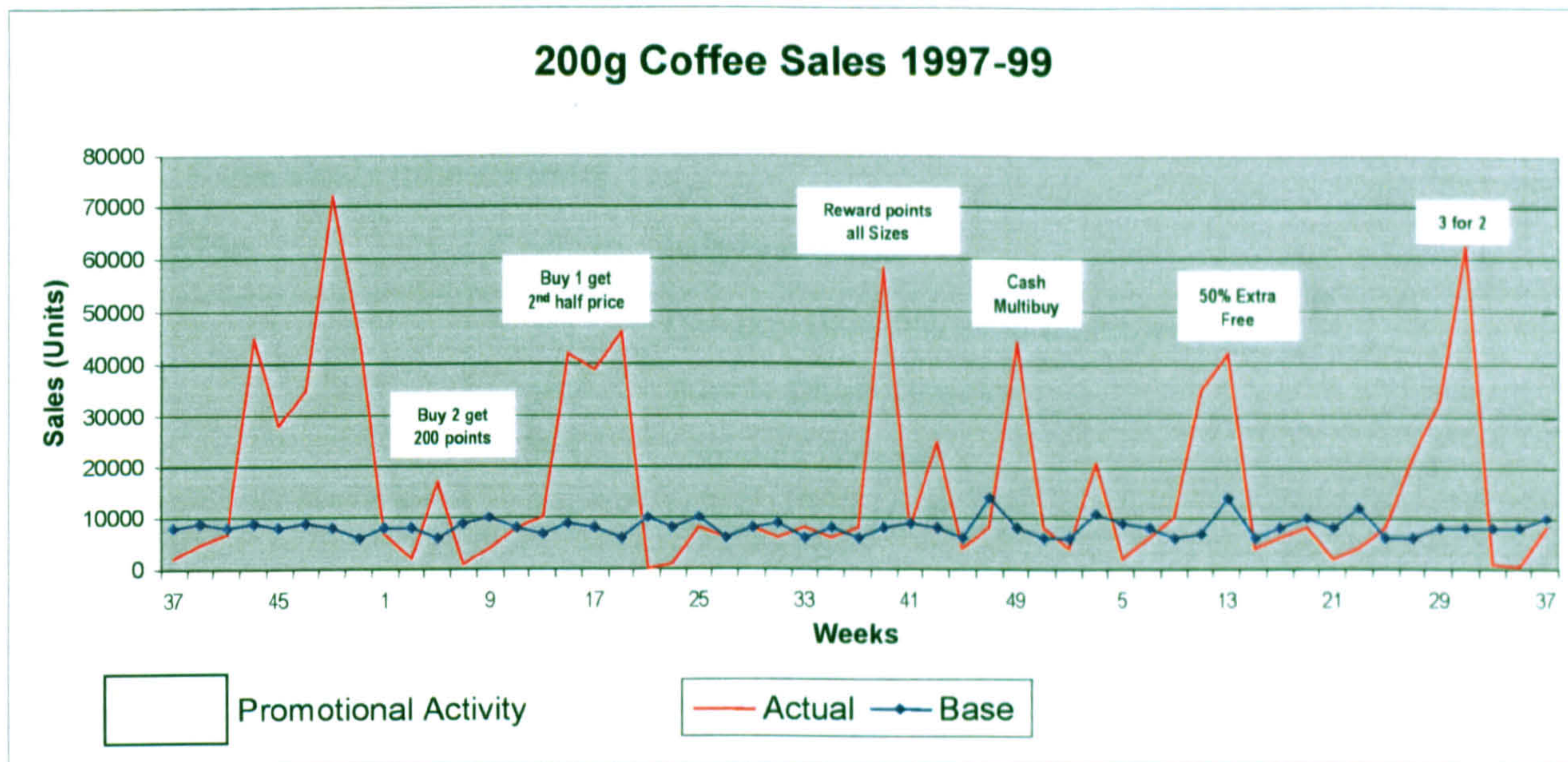
- (1) The 200g coffee supply chain is **relatively simple** in terms of the raw materials and the processes involved. As it turned out this involved six organisations; Sainsbury (a supermarket retailer); Nestlé UK Ltd (a grocery manufacturer); Waddington Labels Ltd (a plastic/paper label supplier); Rexam Glass (a glass manufacturer); Massmould Ltd (a plastic closures manufacturer); and SCA (a corrugated cardboard manufacturer). The organisations are discussed in much greater detail in Section 6.2c.
- (2) Whilst the supply chain and product are relatively simple there is clear evidence that promotional activity, on behalf of the manufacturer and their retail customers is a major cause of dramatic demand volatility (see figure 62). Promotional campaigns have been mapped against sales and Nestlé have identified a consistent pattern of increased demand volatility within their customer's sales (see figure 63).

Figure 62 Comparison of A Customer's Actual and Base Sales



Source: Adapted from Green 2001

- (3) Sainsbury and Nestlé were already heavily involved in an ongoing relationship development programme at the commencement of this research. One of the major objectives of this programme was the improvement of the planning, management and execution of promotional activity, entitled 'Collaborative Event Management' (CEM).

Figure 63: The Impact of Promotional Activity on Customer Sales

Source: Adapted from Green 2001

- (4) Due to the nature of the research questions in seeking to investigate the enablers and inhibitors of information exchange and the nature of supply chain relationships required to support such information exchange, **being able to gain access to the organisations across the supply chain** was a major deciding factor in choosing the 200g coffee supply chain. Access to the organisations in the supply chain was facilitated by the sponsorship of Nestlé who gave almost open access (with the exception of production) to their own organisation and similarly requested access from their suppliers and one of their major customers (Sainsbury).

The main sponsor for the research within Nestlé was the 'Head of Supply Chain Development' who provided details of the relevant managers across the broad range of functions that are involved with the sourcing, production, distribution of 200g jars of Nescafe within Nestlé. The sponsor also suggested names of managers within their customer Sainsbury, and made an initial contact via e-mail requesting an interview for the researcher. Effectively the main sponsor selected the supply chain and suggested the respondents that would be key informants for the supply chain for the selected product. From this point onwards, the researcher dealt directly with these other managers in

setting up interviews and meetings. The managers interviewed within this case study are found within Table 11.

Table 11: Case study Interviewees

Organisation	Coding	Interviewees
Retailer	R1	Collaborative Planning Manager
	R2	Supply Chain Director
	R3	Logistics Director
	R4	Head of Supply Relations
	R5	Deputy - Supply Chain Controller Tea & Coffee
	R6	Deputy - Supply Chain Operations: Grocery A
Manufacturer	M1	Director of e-Business
	M2	Head of Supply Chain Development
	M3	Director of Supply Chain Systems
	M4	Supply Chain Manager Coffee
	M5	Head of Customer Service (Bev. Division)
	M6	JS Account Manager
	M7	Customer Service Co-ordinator
	M8	Project Manager
	M9	Purchasing Manager – Packaging
	M10	Supply Chain Development & Change Manager
	M11	Distribution & Contract Manager (Bardon)
Plastic Closure Supplier	PCS1	Managing Director (responsibility for SCM)
Glass Jar Supplier	GS1	Managing Director
	GS2	Marketing Director (SCM)
Paper Label Supplier	PLS1	Sales Manager
	PLS2	Head of Customer Service
Corrugated Board Supplier	CBS1	Managing Director – with responsibility for SCM
	CBS2	Supply Chain Manager (Coffee)

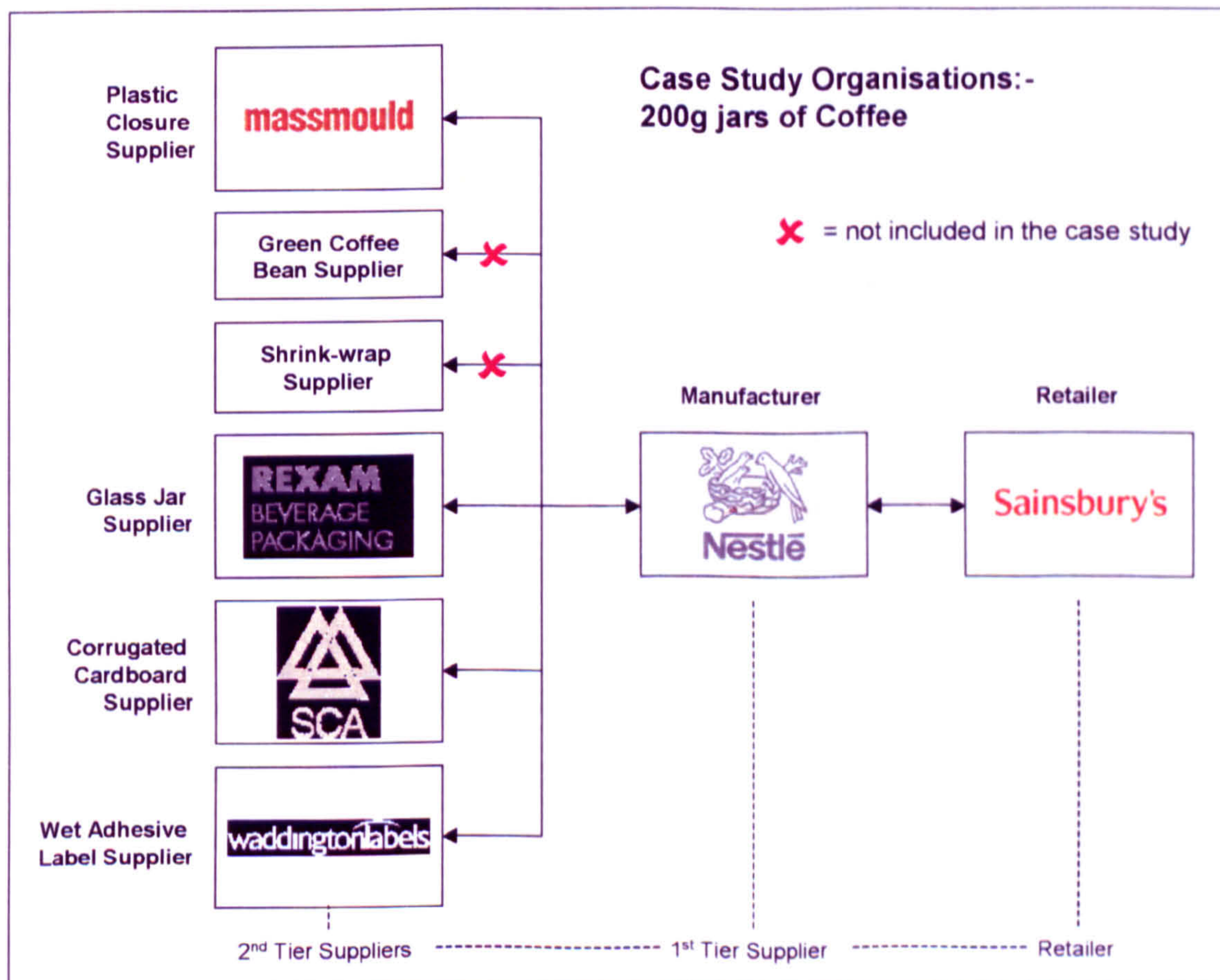
Each of the interviewees in Table 11 were contacted by e-mail and sent a copy of the outline research proposal (see Appendix E). This was followed by a telephone call if no response was received within seven days. All interviews were carried out on the interviewee's premises, with each interview lasting between one and a half and two hours. At the commencement of each face-to-face interview the research objectives were re-stated and the interviewees were given the option to refuse any questions they

were unhappy with. Only on two occasions did respondents decline to answer a particular question, both citing that the answer was confidential. The benefits of such face-to-face interviews are that concepts and issues can be thoroughly discussed and developed. In total, twenty-four interviews were undertaken covering the six organisations in the chosen supply chain. Each of the interviews were transcribed, reviewed and compared with interview notes taken by the researcher during each of the interviews.

6.2(b) Setting the Boundaries of the Supply Chain

Starting with the retailer Sainsbury, and then moving on to the grocery manufacturer Nestlé, this dyadic relationship could in line with the majority of previous research into supply chain relationships, have been the major focus of the research. However, for this product Nestlé have six suppliers (see figure 64 below).

Figure 64: The 200g Coffee Supply Chain



Of these six, two suppliers, the shrink-wrap supplier and somewhat surprisingly the green coffee bean supplier, are not included in the case study. The reasons for this are as

follows: both the shrink-wrap and green coffee beans are purchased on a commodity basis. The resulting relationship between the manufacturer and the two suppliers is very much at 'arms length', and the manufacturer is not seeking to develop any collaboration with the suppliers. Price is by far the determining factor in the buying decision. The four other suppliers are made up of: Waddington Labels (a supplier of paper and plastic adhesive labels); Rexam Glass (a supplier of glass); Massmould (a supplier of plastic closures, i.e. plastic lids); and finally, SCA Packaging (a supplier of corrugated cardboard trays). All of the case study organisations can be seen in Figure 64 above.

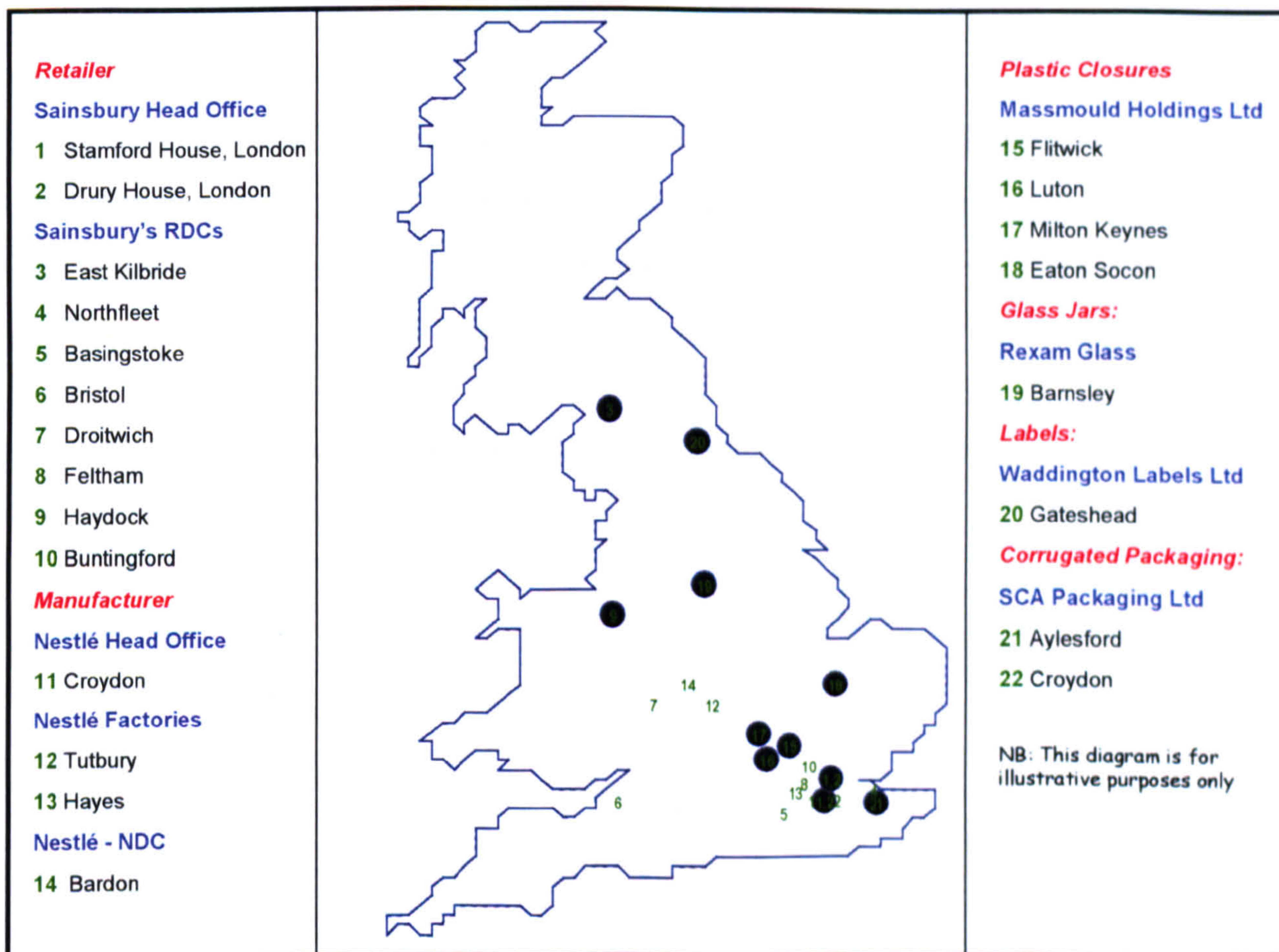
It was decided to limit the case study to these six organisations. It would have been possible to include the 3rd tier suppliers, e.g. all the suppliers to SCA Packaging, i.e. starch, ink, paper and printing plates suppliers. It was decided not to include the 3rd tier suppliers for the following reasons: -

- (1) Both retailer and manufacturer considered the 3rd tier suppliers too remote and beyond their influence.
- (2) Changes in daily demand at the retailer have relatively no material impact on the 3rd tier suppliers.
- (3) Extending the number of tiers of suppliers would place even more pressure in terms of gaining access to the companies, and significantly increasing the amount of time necessary to complete the field research.
- (4) It was considered (by the researcher) that the retailer and two tiers of suppliers was appropriate in terms of providing sufficient data and significant examples of "collaboration" to address the research questions and objectives.
- (5) Some of the 3rd tier suppliers are in a similar situation to the shrink wrap and green coffee bean supplier, i.e. their relationship to their downstream customer is very much at 'arms-length' and the materials they supply are simply purchased on price alone, e.g. chemical additives, colourings, and paper.
- (6) Finally, on a more pragmatic basis, after initial contact with the packaging suppliers, there was very little inclination on the part of the suppliers to

allow access to their own production processes, let alone their procurement activities, or indeed arranging access to their suppliers.

The physical location of all the case study organisations is identified and shown in Figure 65.

Figure 65: Location Of Case Study Companies



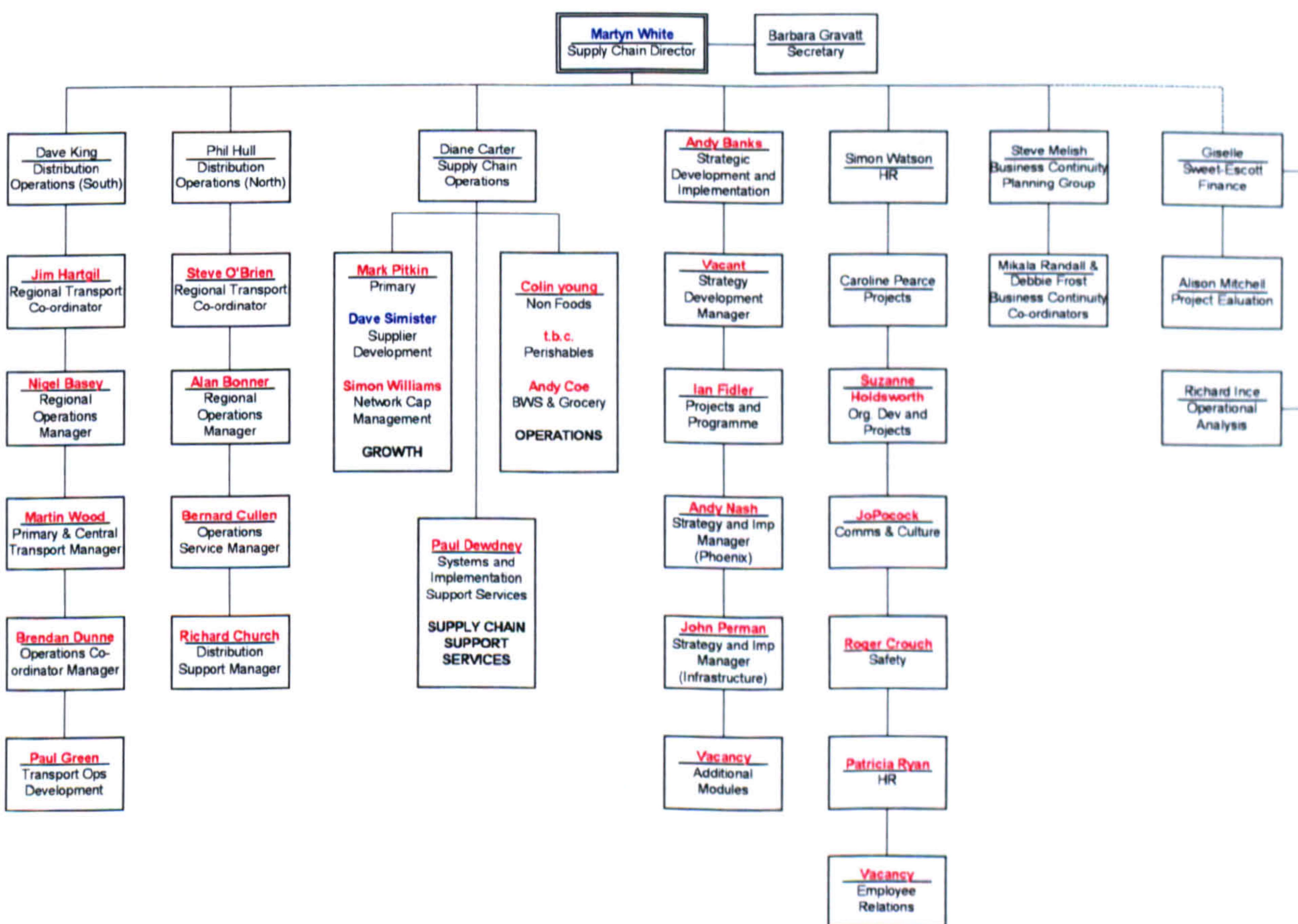
6.2(c) The Organisations in the Case study Supply Chain

This section provides a brief background to all the companies included in the case study. The companies are presented in the order of their position in the supply chain, starting with the closest to the final consumer, i.e. retailer, manufacturer and the four 2nd tier (packaging) suppliers.

6.2.1 Sainsbury's Supermarkets

Sainsbury's Sainsbury's Supermarkets, (hereinafter referred to as Sainsbury) was established in 1869 by John James and Mary Ann Sainsbury and is Britain's longest standing major food retailing chain. The founders' principles and values guide the retailer as strongly today as they did at the outset – to be the customer's first choice for food shopping by providing high-quality products, value for money, excellent service and attention to detail. Sainsbury's Supermarkets employs over 138,000 people (including its Savacentre trading format). Of these, 70% are part-time and 30% full-time. 58% of employees are women. A large Sainsbury's Supermarket offers over 23,000 products - 40% of these are Sainsbury's own brand. In addition to a wide range of quality food and grocery products, many stores offer bread baked on the premises, delicatessen, meat and fish counters, pharmacies, coffee shops, restaurants and petrol stations.

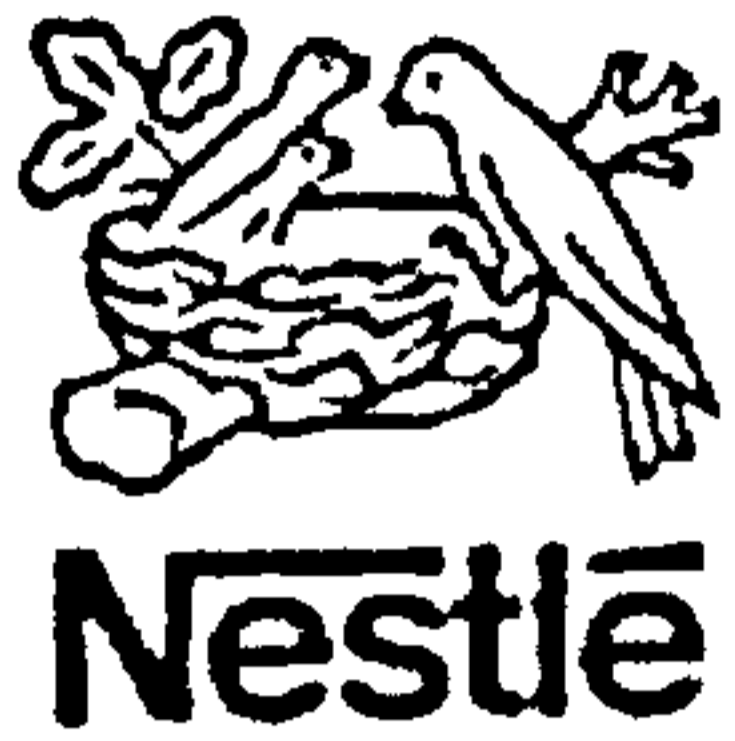
Figure 66: Sainsbury's Supermarkets - Supply Chain Organisational Chart



Interviews were carried out with (1) the Supply Chain Director (as shown in figure 66 above); (2) Logistics Director (no longer a recognised or filled position in Sainsbury);

(3) Collaborative Planning Manager; (4) Head of Supply Relations; (5) Deputy - Supply Chain Controller Tea & Coffee; and (6) Deputy - Supply Chain Operations: Grocery A. No access was possible to any distribution or retail outlet facilities.

6.2.2 Nestlé (UK) Limited



Nestlé (UK) Limited (hereinafter referred to as Nestlé) is the UK subsidiary of the world's largest grocery manufacturer Nestlé S.A. based in Vevey, Switzerland. Nestlé can trace its origins back to 1866, when the Anglo-Swiss Condensed Milk Company built the first European condensed factory in Cham, Switzerland. This was subsequently merged in 1905 with S.A Henri Nestlé, based in Vevey, Switzerland.

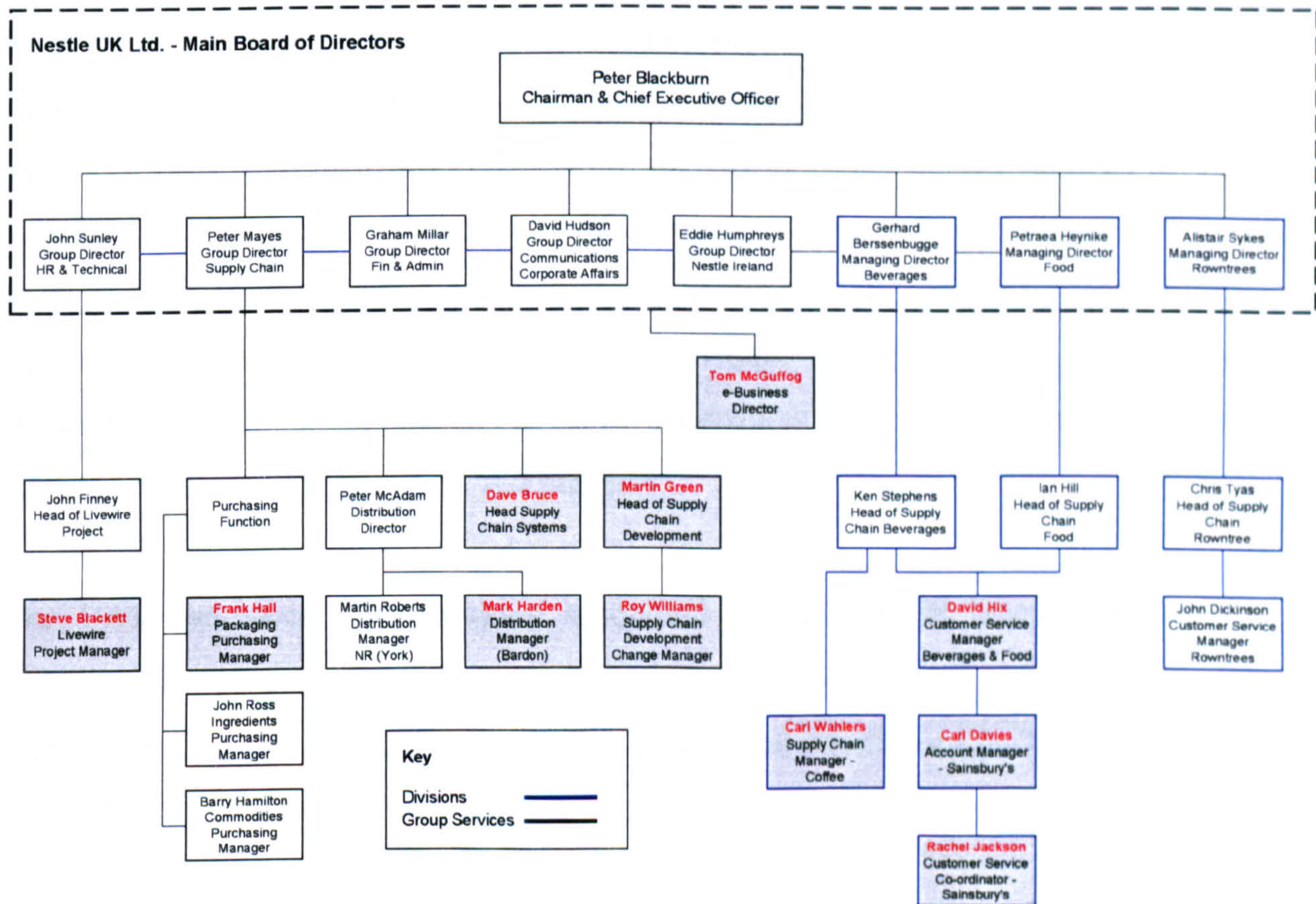
The very high child mortality rate in the 19th century was particularly due to the fact that there was no substitute product to meet the nutritional needs of nursing infants. In order to improve the state of affairs, Henri Nestlé had devoted several years to the development of his Milk Food, which was based on the scientific insights of the time as well as on his own findings. He had also developed a specific production process, thus ensuring constant product composition and quality. In 1867 he marketed his Milk Food and created the symbol of the "Nest" (in German, Nestlé means "little nest"), which has remained the focal element of the company's identity.

Although milk and infant nutrition go back to the firm's origin, many other food products came to widen its range over the years: chocolate, instant drinks (the Nescafé process was developed in 1938), culinary, refrigerated and frozen products, ice cream, mineral water and pet-food. Today, Nestlé is the world's largest food firm (Company Annual Report 2000).

Its products, which are made in 509 factories distributed over 83 countries, are being sold all over the world. Right from its beginnings, the Nestlé group has devoted itself not only to food in general, but has also implemented solutions to the nutritional problems being faced by mankind. These problems may be specific to certain age groups (babies, elderly people), to given situations (hospitalised patients) or to social

data (longer life expectation, obesity). For a long time, Nestlé has built up know-how and knowledge that - together with its potential and its research and development activities – have given the group an excellent position in all fields of nutrition.

Figure 67: Nestlé (UK) Limited Organisational Chart



Interviews were undertaken with eleven respondents as shown in Figure 67 above.

6.2.3 SCA Packaging UK Limited



SCA Packaging UK Limited (hereinafter referred to as “SCA”) is a UK based subsidiary of Svenska Cellulosa Aktiebolaget SCA, Sweden. SCA offers customized transport and packaging solutions to its customers, featuring IT-based design technology, with local service close to customer facilities.


The packaging business area is adapted to provide customers with a logistics solution by offering the best method of transporting, protecting and storing products along the entire supply chain, as well as displaying their products on the outer package. It has developed a 15% market share across Europe (SCA Annual Report 2000), and its customers are

European food processing companies and producers of industrial products and consumer goods. Some 35 million packaging units daily, for products ranging from washing powder, vegetables and perfume to large automotive components, are delivered from SCA's 180 plants, which are based mainly in Europe and Asia.

SCA Packaging is also one of Europe's leading producers of containerboard in the form of kraftliner, testliner and fluting (SCA Annual Report 2000). The paper grades are produced both from fresh wood fibre from the Group's own forest resources in Sweden and from recycled fibre, recovered by SCA paper collection facilities across Europe or through SCA Raw Materials and Logistics' supply network. The recycling department supplies recovered fibre to the whole SCA Group. It collects, sorts, distributes and trades used paper for recycling. The same department also coordinates road shipments for SCA's UK operations via SCA Transport.

For 1999, net sales for packaging amounted to SEK19,858 (excluding recycling). SCA's sales of corrugated board (in various forms) to food manufacturers across Europe represent nearly half the total European corrugated board packaging sales (SCA Annual Report 2000).

6.2.4 Waddington Labels

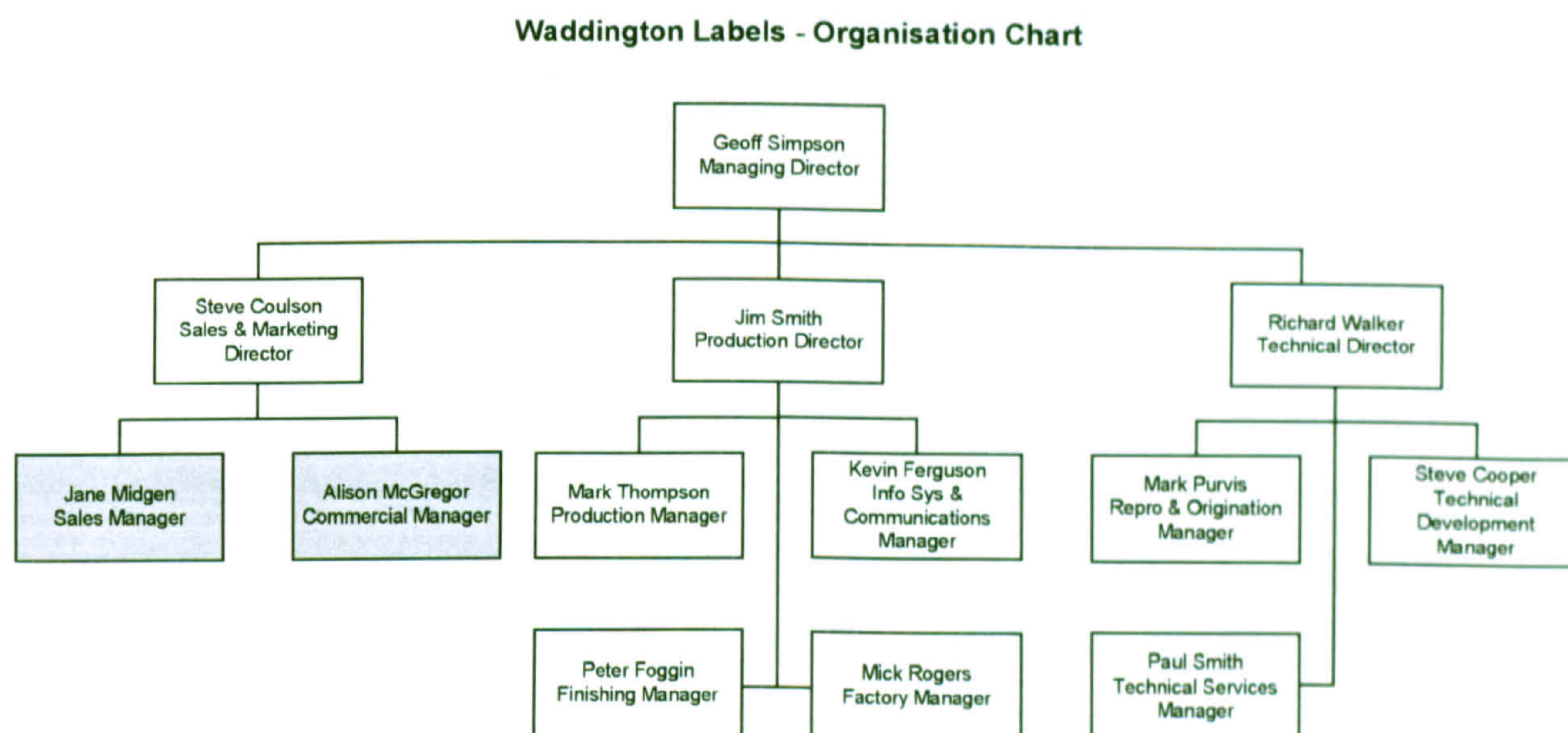
 Waddington Labels Ltd., (hereinafter referred to as "Waddington Labels") is a subsidiary of Waddington PLC.

Waddington Labels are the largest wet adhesive label manufacturer in the UK, in terms of both volume and turnover, and specialise purely in wet adhesive labels. Waddington Labels supply to a range of large grocery manufacturers throughout Europe. Labels range from paper, to plastic to metalised paper. In terms of the case study supply chain, Waddington Labels are the sole supplier of printed labels for the manufacturer, and the manufacturer is by far Waddington Labels' single biggest customer.

Interviews were carried out with the Sales and Commercial Managers responsible for the Nestlé account (as highlighted in figure 68 below). The commercial manager is also responsible for customer service logistics, covering in-bound raw materials and finished

product out of the production plan.. No access was possible to the manufacturing aspects of the printed labels supplied by Waddington.

Figure 68: Waddington Labels Ltd. Organisational Chart



6.2.5 Rexam Glass Limited



Rexam Glass Limited (hereinafter referred to as “Rexam Glass”) is a subsidiary of Rexam, one of the world’s largest packaging suppliers.

Interviews were carried out with the Managing Director and Marketing Director (with responsibility for supply chain management). No access was possible to the manufacturing aspects of the glass jars supplied by Rexam Glass.

6.2.6 Massmould (Holdings) Ltd.



A CROWN CORK & SEAL Company

Massmould Holding Limited (hereinafter referred to as “Massmould”), is based in Flitwick, Bedfordshire and comprises of five factories across the UK, (Flitwick [two factories], Milton Keynes, Luton and Eton Socon). Massmould is a wholly owned subsidiary of Crown Cork and Seal, whose plastic closures group is a global leader in plastic closure design, production and application. Massmould manufactures a broad range of custom and standard wide-mouth coffee caps. The group serves customers from manufacturing plants and licensees in 30 countries. The group offers a broad range of plastic closures for the beverage, food (wet and dry), beauty care, pharmaceuticals, household and

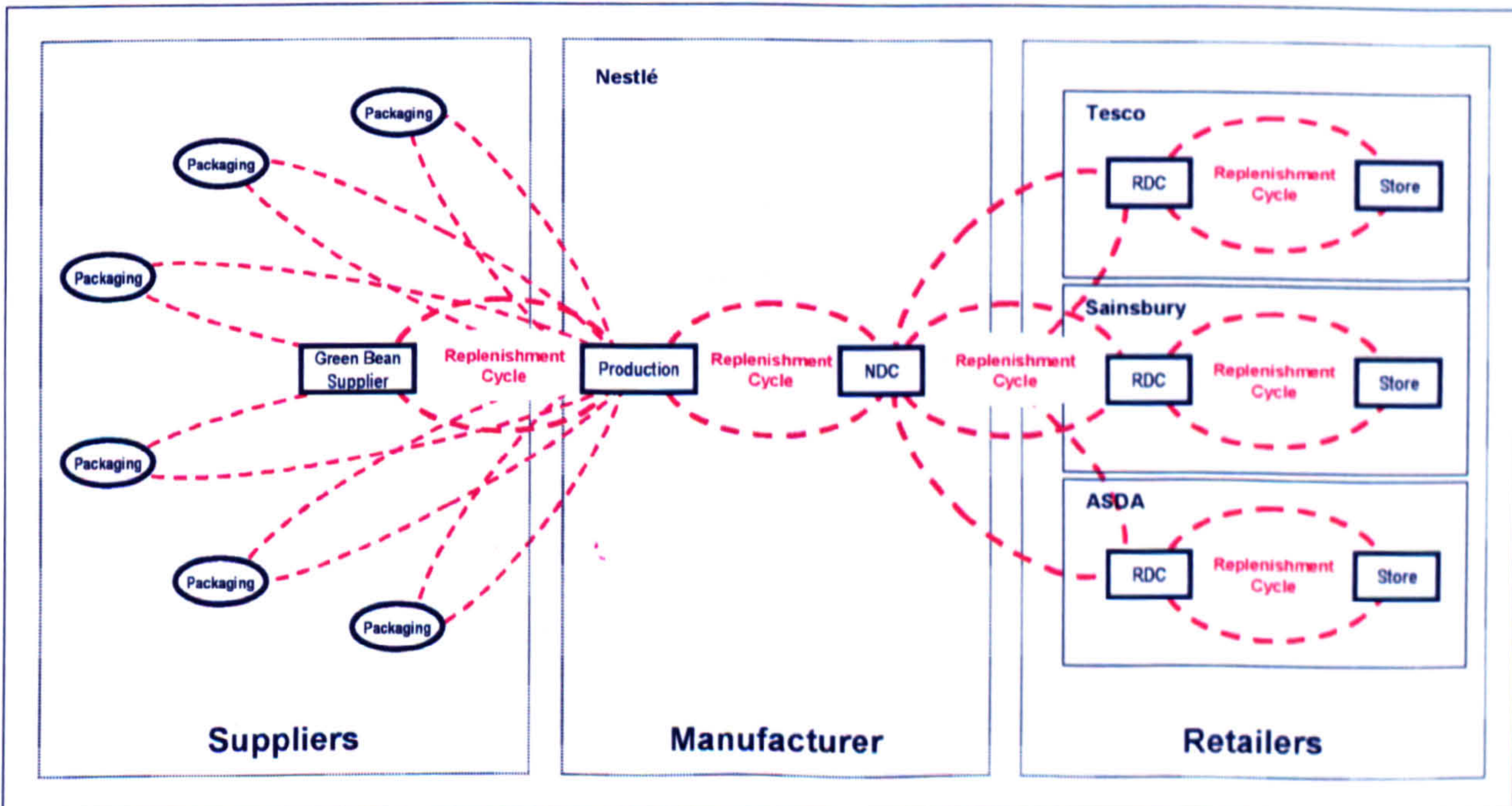
industrial markets. In relation to the food industry, high quality, product efficiency, seal integrity and security are key customer requirements in the food industry.

6.3 The Evolving Role Of The Supply Chain “Integrator”

This section presents an in-depth review of the manufacturer involved in the case study supply chain. Such a review encompasses the manufacturer’s supply chain planning activities; it’s physical movements; how the manufacturer manages these movements; and the information flows and data elements within the manufacturer.

It is suggested that the manufacturer acts as an integrator in the supply chain in terms of co-ordinating demand from its retail customers whilst co-ordinating the procurement of raw materials and packaging components from its various suppliers (see figure 69). The manufacturer as the “Integrator” is not a role explicitly recognised by the retailer, although from the interviews with the respondents from the retailer, the role was very much implicit in terms that several respondents recognised the manufacturer’s growing expertise, beyond that of the retailer, e.g. forecasting and managing promotions.

Figure 69: The Supply Chain Integrator



Such an integration role is essential, it is suggested, if the supply chain is to become integrated and realise the potential benefits of SCM. The degree of success will to a large extent depend on the manufacturer’s ability to develop more collaborative

relationships with key retailer customers and suppliers. In view of this “matchmaking” role, the extent of the manufacturer’s internal integration (level 3 of Stephen’s (1989) supply chain integration model – see Chapter 2, section 2.4) is essential. The remainder of this section looks at the manufacturer’s supply chain planning activities; its physical movements; how the manufacturer manages these movements; and the information flows and data elements within the manufacturer.

The Nestlé supply chains usually involve the supply of ingredients and components into Nestlé factories; their conversion into finished goods; and their storage and eventual distribution in response to customer requirements. The supply chains involve the processes of procurement, supply, production, storage and distribution; the processes by which these activities are planned and scheduled; and also the processes by which real demand is captured and managed in terms of customer orders. For Nestlé UK the Nescafé 200g supply chains exist to support the provision of finished goods to Nestlé UK’s customers. The supply chain has a distinctive infrastructure in terms of its unique distribution and order management processes. Similar information flows, data elements, business processes, organisational structures and information systems support all of Nestlé’s supply chains, despite some distinctions in terms of physical infrastructure.

6.3.1 A Model For The Supply Chain

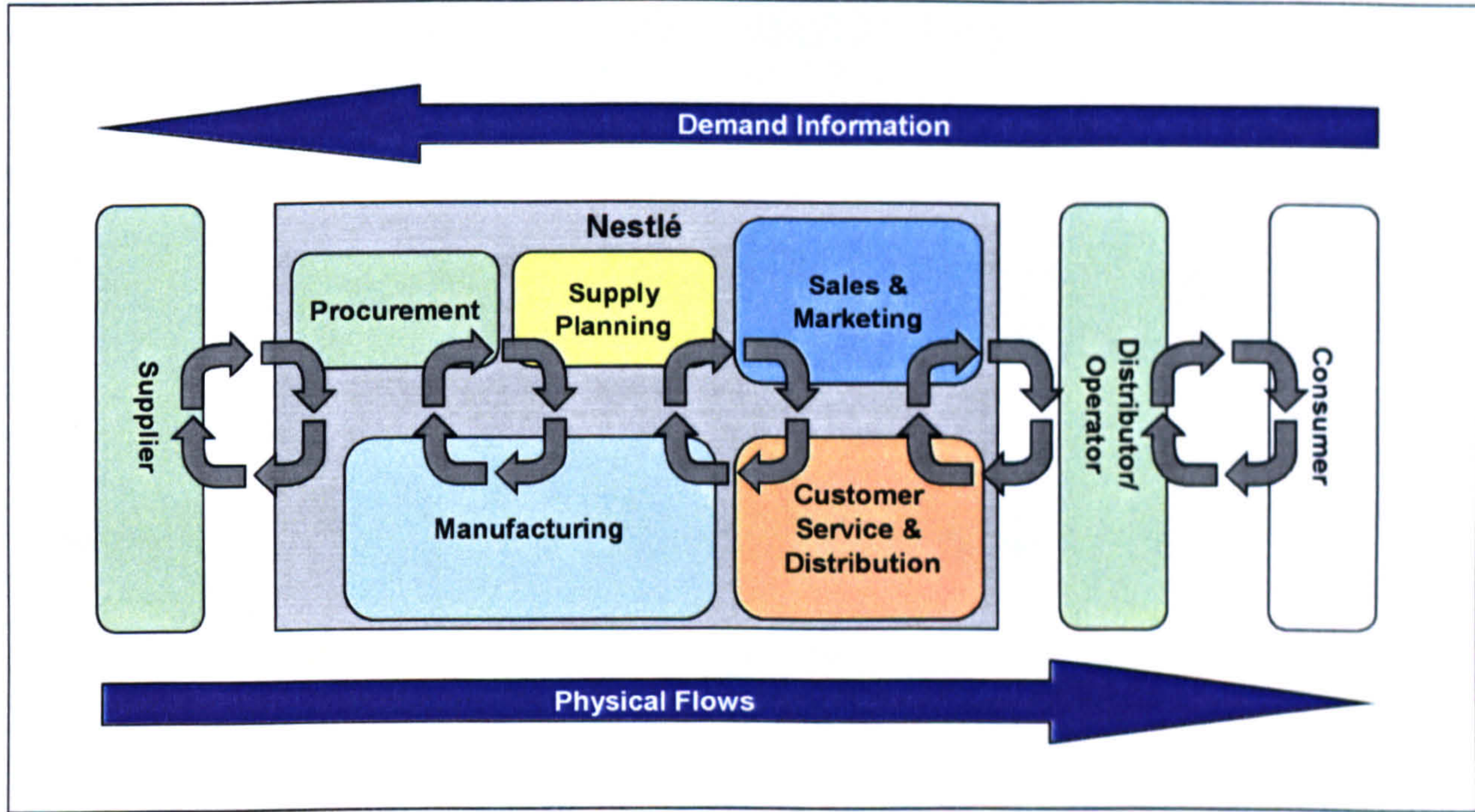
A number of internal Nestlé documents (relating to corporate standards) have been consulted in the preparation of this case study of the 200g Nescafé supply chain¹. The supply chain is represented here (see figure 70 below), with flows of information and finished goods, representing supply, in response to an opposing flow of information on demand, back from the customer.

The model also indicates the information that flows from the supply activities, which is used as an essential iterative force in refining demand plans down the Supply Chain. However, it is possible to describe the information flows more comprehensively, and relate them to the business processes that take place throughout the Supply Chain. The

¹ R561: *Development of Logistics within Nestlé*; R605: *Supply Chain Key Performance Indicators*; and R645: *Improving Supply Chain Management at Nestlé*.

model also relates these business processes to organisational responsibilities and IS systems support.

Figure 70: Basic Nestlé Supply Chain Model

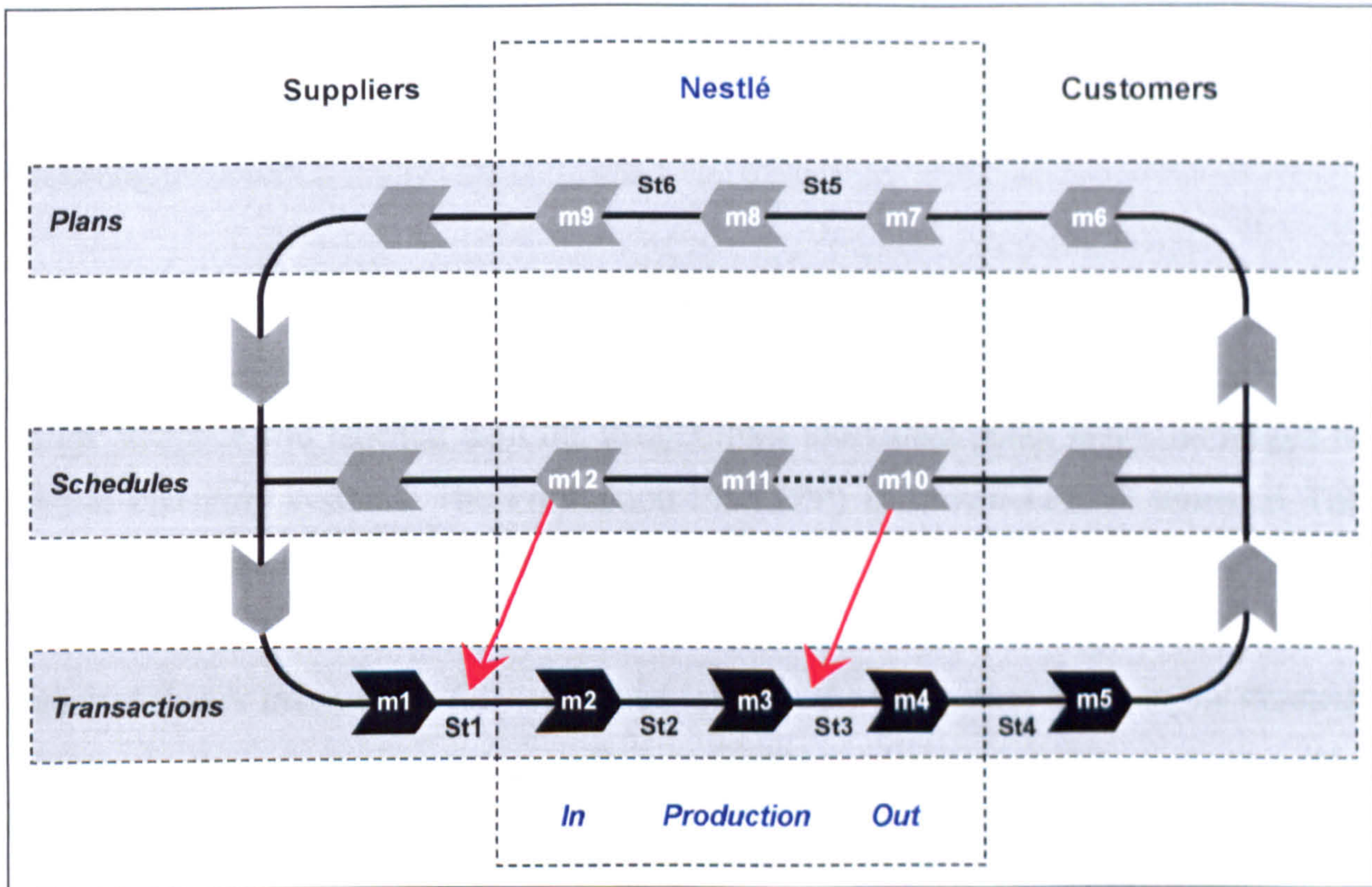


Importantly, figure 70 identifies seven main areas of organisational involvement.

Table 12: Main areas of organisational involvement

Area	Comments
Marketing	<ul style="list-style-type: none"> • Strategic development of volume and profitability • Product promotion and innovation
Sales	<ul style="list-style-type: none"> • Cost-effective optimisation of availability, display and sale of materials through trade channels • Despatch forecasts and plans, inc short-term adjustments
Supply Planning	<ul style="list-style-type: none"> • Production plans • Optimisation of planned inventory levels: service vs cost
Procurement	<ul style="list-style-type: none"> • Identification and choice of suppliers of materials and components • Negotiation of long-term supply contracts
Manufacturing	<ul style="list-style-type: none"> • Conversion of raw materials and other components into finished goods
Customer Service	<ul style="list-style-type: none"> • Balancing of incoming order quantities vs available stock • Optimisation of delivery service to customers
Distribution	<ul style="list-style-type: none"> • Cost-effective storage and distribution of materials vs defined customer service requirements

Figure 71: Supply Chain Information Flows



Measure	Comment	Measure	Comment
M1	Movements in suppliers chain	m10	Nestlé (UK) customer orders
M2	Inward movement to Nestlé (UK)	m11	Nestlé (UK) production schedules
M3	Nestlé UK Production	m12	Nestlé (UK) Material Supply schedule
M4	Distribution to Nestlé (UK) customers	St1	Inventory held by customers
M5	Distribution within customers'	St2	Inventory in Goods Inward Nestlé (UK)
M6	Customers' demand plans	St3	Inventory in Finished Goods Nestlé (UK)
M7	Nestlé (UK) planned despatches	St4	Inventory in Finished Goods at Customers
M8	Nestlé (UK) planned manufacturing	St5	Plan of Nestlé (UK) Finished Goods Inventory
M9	Nestlé (UK) supply plans	St6	Plan of Goods Inward Inventory

6.3.2 Integrated Supply Chain Planning

Demand² is planned (activity **m 7**) as the best estimate of despatches that will be invoiced over the period in question, i.e. neglecting any demand that may not be fulfilled as a result of customer service failures (see Figure 71 above). This permits the

² See footnote 1 for internal document sources.

demand forecasts to be consistent with the financial projections. The increasing use of customers' own demand estimates is driven by the need to eliminate uncertainty from the supply chain, with eventual benefits of enhanced service levels and reduced costs of financing inventory.

Production is planned (activity m 8) as the best estimate of production that will meet the Demand Plan (DP). Production is defined as stock that has been produced, palletted, shrink-wrapped and labelled with the details from individual pallet labels messaged to central inventory systems. The Production Plan (PP) is known in SAP terms as The Master Production Schedule (MPS).

Finished Goods Inventory (FGI) is planned (st 5) as the interaction between the demand and production plans, iterated to reflect the effect of any material shortages. The iteration process between the three sets of plans also reflects the optimum mix between customer service, inventory costs, production efficiencies and risk of stock surpluses/write-offs. The achievement of the optimum mix between: (1) serving the customer and (2) the risk of surplus write-offs may be helped by reference to the stock policy statement for each line that details the minimum and maximum week's cover allowed for each line. The actual inventory achieved (st 3) will depend on the accuracy of the original stock position used as the basis of the Inventory Plan (IP) together with the accuracy of both the Despatch and Supply Plans (DP and SP).

The Production Plan drives the Materials Requirements Plan (MRP) (activity m9). Once again the balance ultimately achieved between supply (represented by the Purchasing Plan) and demand (represented by the Production Plan) will be represented as the Materials Inventory Plan (MIP) (st 6). And once again the actual inventory achieved (st 2) will be determined by the accuracy of the original stock position used as the basis of the inventory plan, the accuracy of the production plan, and the level of inbound customer service.

The creation of operational plans for Despatches, Production and Procurement, together with their associated levels of inventory, all require feeds of information on historic

actuals as the basis for future estimates. These have been omitted from figure 70 for the sake of simplicity.

6.3.3 Physical Movements Down The Supply Chain

The transactions represented in figure 71 represents the flow of physical materials and associated data down the supply chain:

- Within the supplier's own supply chain (summarised as **m1**)
- From the supplier into the NUK ingredient/packaging stores (**m2**)
- Through the production process (**m3**)
- Out to customers via the distribution system (**m4**)
- Out to the consumer via the customers' own supply chain (**m5**).

The five movements represent distinct sets of activities that generate significant chunks of costs. And they are separated by periods of storage and relative inactivity whose costs are mostly represented as inventory financing, handling costs and fixed asset depreciation.

6.3.4 Organising Movements in the Supply Chain

A major problem with organising supply in relation to procurement plans is the long cycle associated with the supply of some components. Supply of packaging materials, for instance, can take as long as 10-20 weeks, by which time the original demand plans are often out of date. One view is that the movement of supply components needs better demand estimates.

The evolved solution for this difficulty is to use the integrated plan as the basis of the stock forecasts and supply activities of the suppliers. But to use more up-to date versions of the integrated plans, - particularly supply schedules – as the basis for the actual movements of stock into NUK inbound logistics stores (**m2**). The schedules are represented as the short-term production schedule (**m11**) and the short-term delivery schedule (**m12**) where the immediate demand is balanced against the actual stocks of inbound materials held at the supplier (**st1**). Because this estimate of demand is based

on a shorter-term view, it is not compromised by the uncertainty of the long-term forecasts and represents a more accurate view of demand.

Taking the process even further, and using actual components usage (m3) in the workrooms as the basis of the replenishment requirement, even more up-to-date and accurate views of demand can be obtained. The difficulty of this approach is that frequent, accurate supplies are necessary to avoid stock outs. Perfect supply service, including quality assurance is critical in maintaining service into the workrooms with the benefit of very low stock levels.

Where relationships between supplier and customer are good, the customer may give the supplier a clear up-to-date view of his own production plans, to allow the supplier to use this more accurate view of demand and maintain adequate stocks of materials. The customer may even allow the supplier to see day-to-day fluctuations in actual usage in his factories, and permit the supplier to make his own calculations of replenishment quantities. The supplier then has responsibility for maintaining stocks of the supplied materials within agreed levels at the customer. The process is variously referred to as Vendor Managed Inventory (VMI); Co-Managed Inventory (CMI); Continuous Replenishment Planning (CRP).

The management of customer orders (m10) against NUK stocks of finished goods (st3) is an analogy of the inbound supply logistics. The orders are checked against the availability of current stock and iterated until they balance. Once sufficient stock is identified to fulfil the order, then the delivery specification can be sent authoritatively to the carrier (m4).

The stocks have been created as a result of the integrated planning process. The orders usually represent demand over the next two to five days. If data are available of actual movements of finished goods out of the customer's own supply chain (m5), (e.g. the sale to consumers, or despatches from a retail warehouse) this expression of demand can be used as inherently more up-to-date and accurate than the customer's own schedules and/or plans.

Production activities are organised on a day-to-day basis by the short-term production schedule (m11). Although this is initially driven by the medium-term Production Plan (m8), it is adjusted on a regular and *ad hoc* basis, by examination of actual inventory levels of individual materials. The fluctuation of these, as a result of actual production and actual sales, can depart markedly from the inventory Medium Term Plan (MTP) as a result of inaccuracies in planning either despatches or production. The shortage or surplus position on individual line inventory is a major factor in prioritising production decisions.

As a general principle, the integrated planning process is used throughout the supply chain to provide inventory plans and actuals that correspond to relevant demand plans and actuals. The physical movement of materials along the supply chain is managed according to the best available, most accurate view of current demand (i.e. not planned demand).

6.3.5 Data Elements Throughout The Supply Chain

Four main data elements can be identified in the data flows throughout the conventional Nestlé UK Supply Chain, including both trading partners:

- **What** is being despatched
- **Where** transactions are moving to or from
- **When** the transaction is taking place
- **How Many** materials are required

Definitions of “What” and “Where” are complex and are mainly used to define multiple characteristics of materials and trading partners. In order to avoid having to transmit these multiple details with reference to individual transactions, the NUK convention is to simplify the data flows by codifying the material and customer characteristics, using international standards, e.g. European Article Numbering (EAN). All that is then necessary is for the participating trading partners to ensure that maintenance of the relevant fields of the material and customer databases is properly synchronised.

As far as trading partners are concerned, the synchronisation needs to take place for those processes where the supporting systems use the same master data, e.g. those concerned with order capture, order management, delivery and billing. However, for materials, the need for synchronisation occurs across the entire chain, in planning, scheduling and real-time transactions.

Definitions of “When” and “How Many” are variable across transactions. The four data elements conventionally make up a “service specification”, so we have the concept of the supply chain ultimately driven by customer demand, and represented by a series of service specifications.

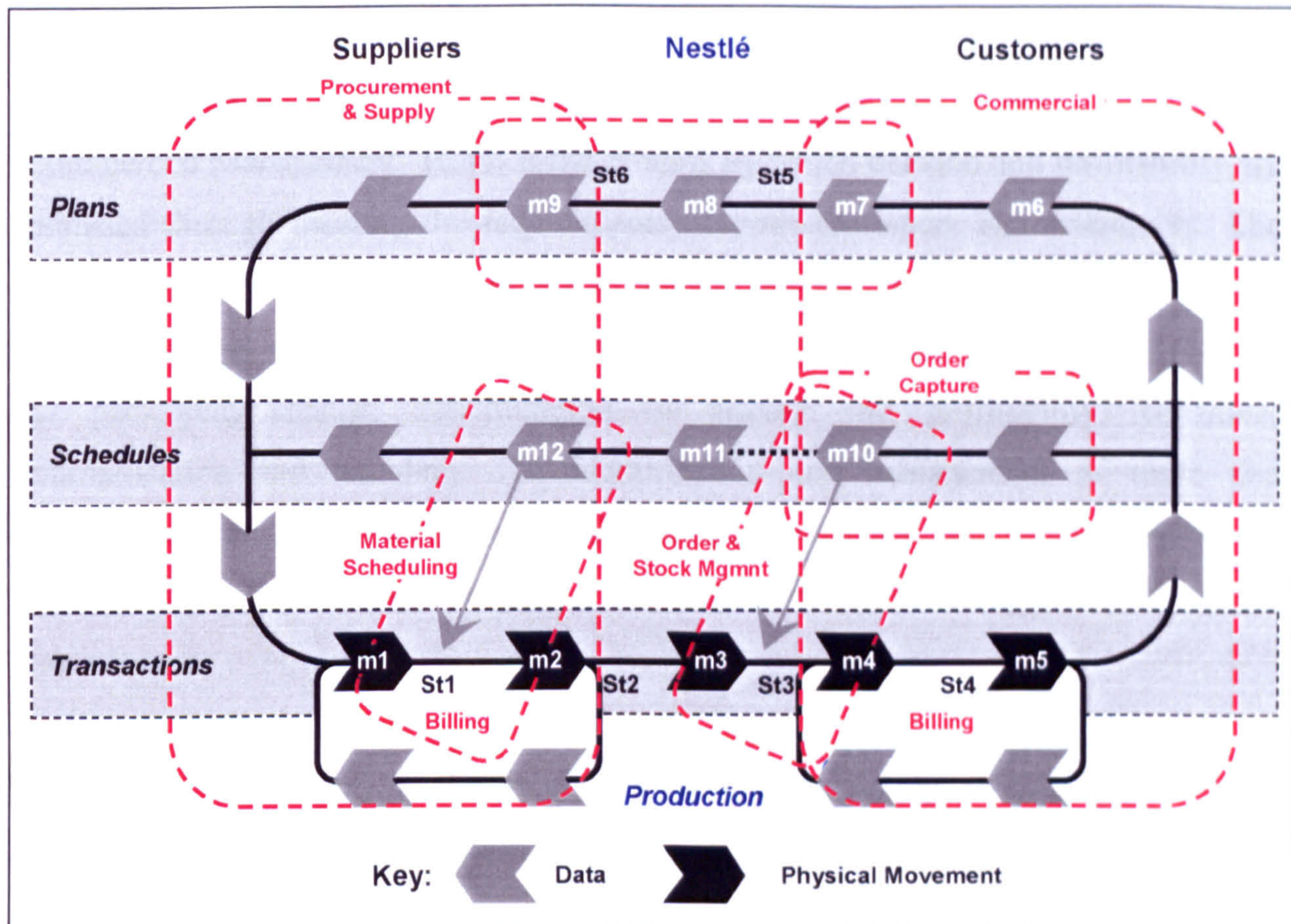
Experienced managers recognise that efficient supply chains are those where accurate statements of demand can best be represented by simple, effective data flows. This is difficult enough to achieve within an organisation; it is particularly difficult to achieve between trading partners. Both within and between trading partners, the efficient data flows can be enhanced by good informal human communications. Ultimately, efficient supply chains and good customer service depend on good communications, good relationships, shared ideals and shared benefits.

6.3.6 Supply Chain Performance Data

Data on historical performance are also used to monitor and control the efficiency of the various business activities that make up the Supply Chain. These are often expressed in relative terms, e.g. percentage (%) Customer Service; Inventory, as weeks cover.

Key Performance Indicators on prime measures such as Inventory Cover, Planning Accuracy, Customer Service and Costs can be supported by a series of Process Performance Indicators, whose emphasis may change according to current problems. Details of current NUK Supply Chain KPIs are given in the Appendix G.

Figure 72: Process Definitions and Responsibilities



Measure	Comment	Measure	Comment
M1	Movements in suppliers chain	m10	Nestlé (UK) customer orders
M2	Inward movement to Nestlé (UK)	m11	Nestlé (UK) production schedules
M3	Nestlé UK Production	m12	Nestlé (UK) Material Supply schedule
M4	Distribution to Nestlé (UK) customers	St1	Inventory held by customers
M5	Distribution within customers'	St2	Inventory in Goods Inward Nestlé (UK)
M6	Customers' demand plans	St3	Inventory in Finished Goods Nestlé (UK)
M7	Nestlé (UK) planned despatches	St4	Inventory in Finished Goods at Customers
M8	Nestlé (UK) planned manufacturing	St5	Plan of Nestlé (UK) Finished Goods Inventory
M9	Nestlé (UK) supply plans	St6	Plan of Goods Inward Inventory

Integrated supply chain planning (ISCP) is the process by which demand plans prepared by the commercial department are iterated with production and supply plans prepared by production, in order to evolve inventory plans for components and finished goods which are sufficient to efficiently meet demand. The co-ordination of an

integrated set of supply chain plans is the responsibility of the Supply Chain Planning (SCP) function.

“Commercial Management” (CM) is the process by which demand and profitability are optimised through meeting the requirements of both customers and consumers. The management of consumer demand is traditionally the role of the Marketing function, through activities such as identification of consumer requirements; direction of product and packaging change; determination of pricing and profitability; consumer communication and branding. The identification and management of trade and distribution channels including the overall management of customer relationships is the responsibility of Sales. Some merging of the Marketing and Sales roles has taken place in recent years.

Procurement and Supply is the process by which the supply of raw materials and components is organised in relation to current and future factory usage. Responsibility for procurement lies with Purchasing (P), although increasingly, physical supply into the factories is the responsibility of Factory Logistics (FL) functions. Manufacturing is the process by which ingredients; packaging materials and other components are converted into finished goods by Production.

Order Capture is the process by which orders are obtained from customers and presented as current demand to the NUK Supply Chain in a standard format. The responsibility has traditionally lain with Sales, but is increasingly becoming the responsibility of the Supply Chain and Customer Service functions of both customers and Nestlé UK. Order and Stock Management is the process by which customer orders are balanced against available stock, the respective expressions of each being adjusted so that total demand for a given day is balanced by available stock. This is the responsibility of the Customer Service function.

Distribution is the process by which stock is delivered to customers in accordance both with generally agreed service arrangements, and with specific delivery requirements

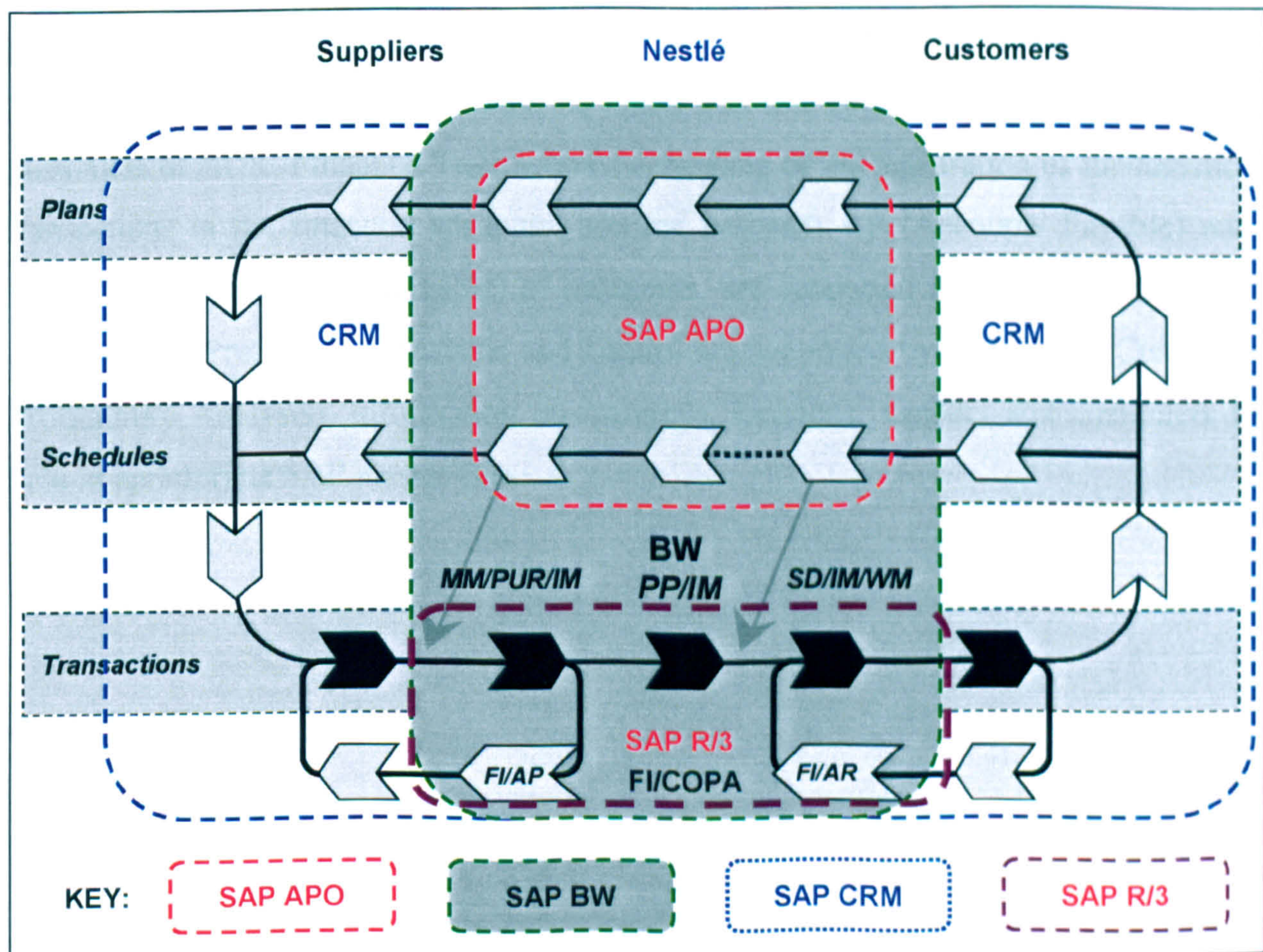
given in the order. In Nestlé UK this is usually the responsibility of Nestlé Group Distribution although increasingly this important role is subcontracted to third parties.

Billing is the process by which billing documents are despatched to customers in relation to defined transactions and checked against the eventual financial transactions with the customers. Responsibility for the Billing process at the respective ends of the Nestlé Supply Chain is that of Accounts Payable and Accounts Receivable sections within Finance. Change Management is the process by which details of materials and trading partners are maintained by the Corporate Masterfiles Group in a standard SAP format, in Central SAP Files.

6.3.7 Systems Support

The principal information systems supporting the Nestlé UK Supply Chain are as follows:

Figure 73: Systems Support in the Supply Chain



The planning systems are supported by SAP APO (Advanced Planning & Optimisation), including the planned supply of materials and components via MRP (Materials Requirement Plan).

SAP BW (Business Information Warehouse) supports the provision of historical data on supply and demand to the supply planning processes and general management information on supply chain process performance,

Demand and Supply Transactions, consisting of inventory movements, both in and out (SAP WM [Warehouse Management] and IM [Investment Management]), are supported by the SAP R/3 system (Release 3). MM/PUR (Materials Management/Purchasing) supports the supply of materials. R/3 also covers the management of orders all the way down the chain from order receipt to preparation of invoice via SAP SD (Sales & Distribution).

The management of relationships with trading partners; including the management of promotional events and capture of orders, is supported by SAP CRM (Customer Relationship Management). It should be noted that this applies to both suppliers and customers of NUK. Financial Transactions; consisting of the registration of the logistics transactions in the financial accounts; and the despatch AP (Accounts Payable) and receipt AR (Accounts Receivable) of payments, are supported by SAP FI (Financial Accounting). Profitability Analysis and control are supported by FI/COPA (Customer Profitability Analysis). Information on materials, locations, vendors and customers is held in appropriate SAP master files.

6.4 The Case Study Supply Chain Process and Information Flow Maps

This section contains the results of the process and information flow mapping undertaken by the researcher for the case study supply chain. The purpose of the process and information flow mapping is to provide the context for the subsequent case study analysis. It is not the purpose of this section to identify gaps or deficiencies in the various processes or information flows. This section presents two levels of process and information flow maps. Firstly, level one presents a high level representation of the case study organisations that make up the selected supply chain, and secondly, level two presents, in five parts, a more detailed map of the case study supply chain. It should be noted that although there is some reference to organisations other than those identified as part of the case study supply chain, these are for additional contextual information only.

Figure 74: Level 1 – High-level Supply Chain Map

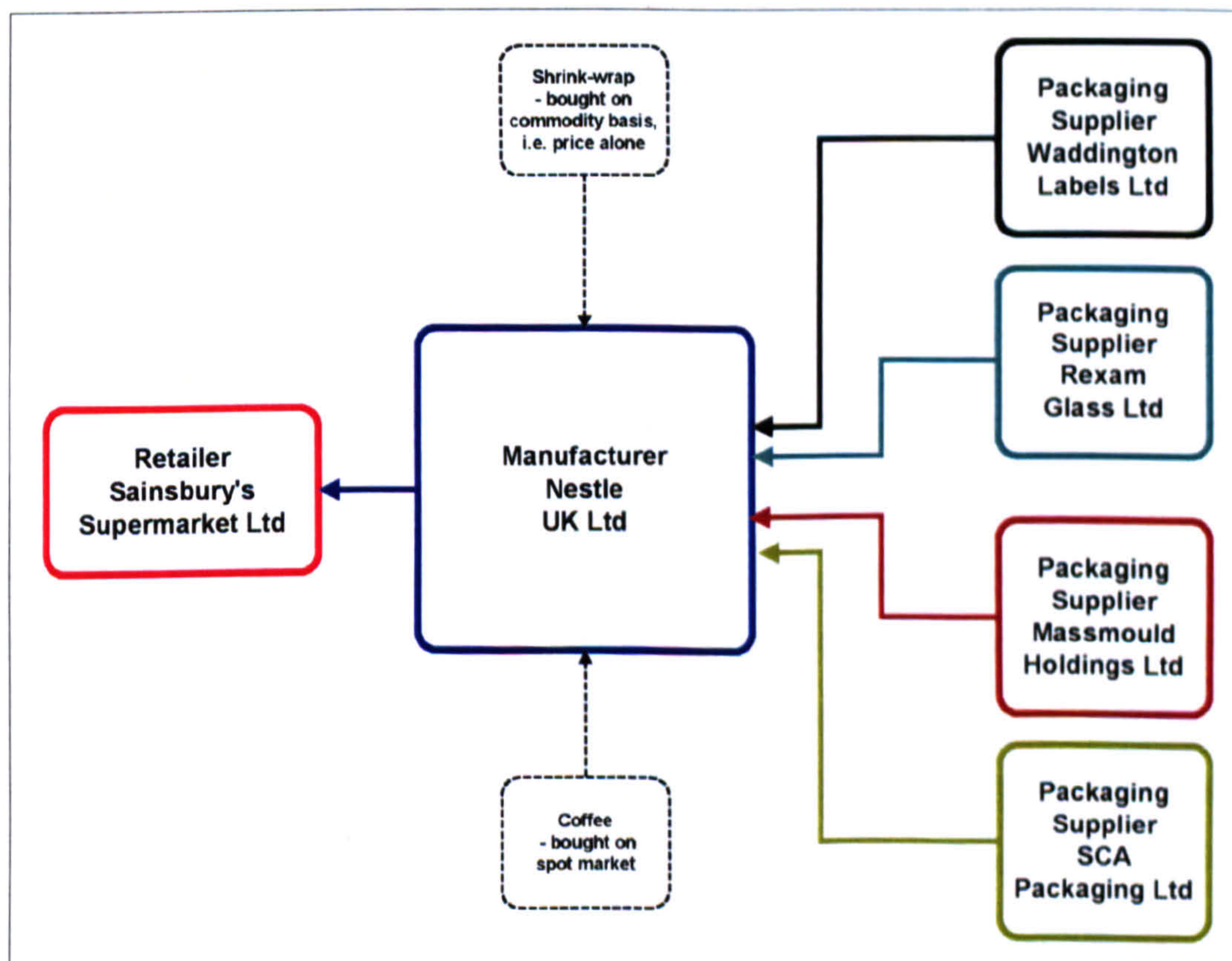


Figure 74 presents the level one high-level process map for the case study supply chain. Reference is made to the fact that there are two additional suppliers (green coffee beans and polypropylene shrink-wrap), although on the basis that for these two items are seen

as commodities, with very much arms-length relationships based on minimal information sharing, these two suppliers were not included in the main case study.

During each interview, additional time was devoted to the process and information flow mapping. Respondents were asked to describe the various processes that they were familiar with. Of particular interest were the boundary spanning processes and information sharing. Additionally, the interview questions themselves elicited further information to assist with the development of the process and information flow mapping.

It must be noted that for both the manufacturer and the packaging suppliers (with the exception of the corrugated board supplier), the production processes are simply shown as “production”. It was not possible to gain access to provide greater detail of the various production processes. For the packaging suppliers, the reasons given for not providing access varied from confidentiality to not considering production as part of the supply chain. For the manufacturer, access was not possible due to conflicting objectives between the supply chain function (comprised of in-bound and out-bound logistics) and the production department. This internal conflict is discussed in greater detail at the end of this chapter.

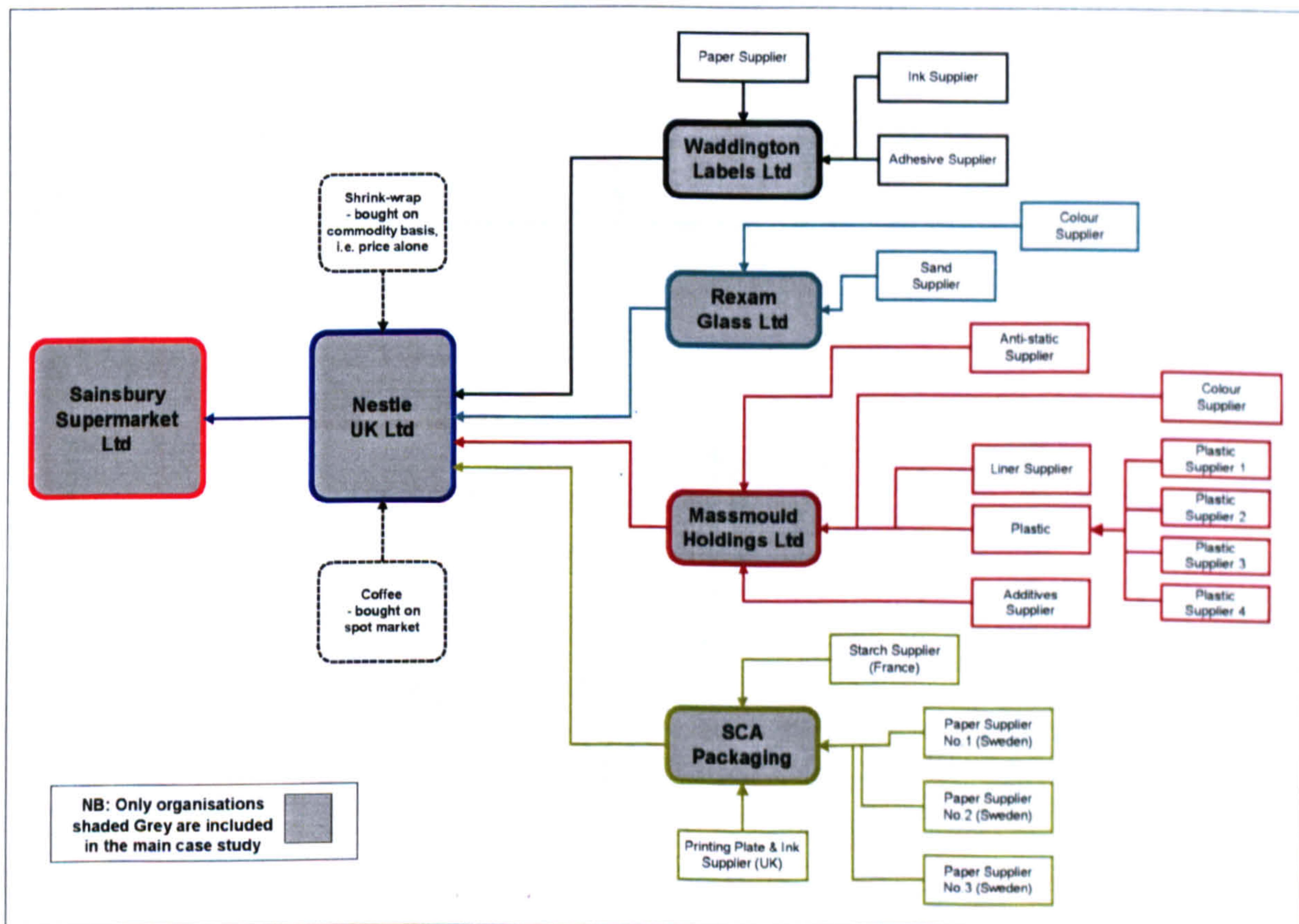
The chosen supply chain is relatively simple, with the three tiers of organisations making a total of six organisations (eight including the green coffee beans and polypropylene shrink-wrap suppliers). The next five figures present a much more detailed map of the case study supply chain in terms of process and information flows. Despite the relatively simple appearance of the case study supply chain when the processes and information flows are examined in closer detail, the complexity becomes more noticeable. If the supply chain is then considered as just one of the many thousands of supply chains that end with the retailer, the complexity becomes significant. The major processes presented in Table 13 include the following (commencing from the consumer end of the supply chain, i.e. the retailer-manufacturer, the manufacturer-supplier, and the supplier):

Table 13: Major Case Study Supply Chain Processes

Stage in SC	Process (*)	Process (*)	Process (*)	Process (*)
Retailer- Manufacturer	Retailer placing an order with the Manufacturer (M)	Demand and Forecast Planning (R/M)	Production scheduling (M)	Product dispatch to Retailers NDC/RDC (M)
Manufacturer- Supplier	Fill from stock (M)	Placing orders with suppliers (M)	Demand & Forecast Planning (M/S)	
Supplier	Fill from stock (S)	Placing orders with suppliers (S)	Demand & Forecast Planning (S)	

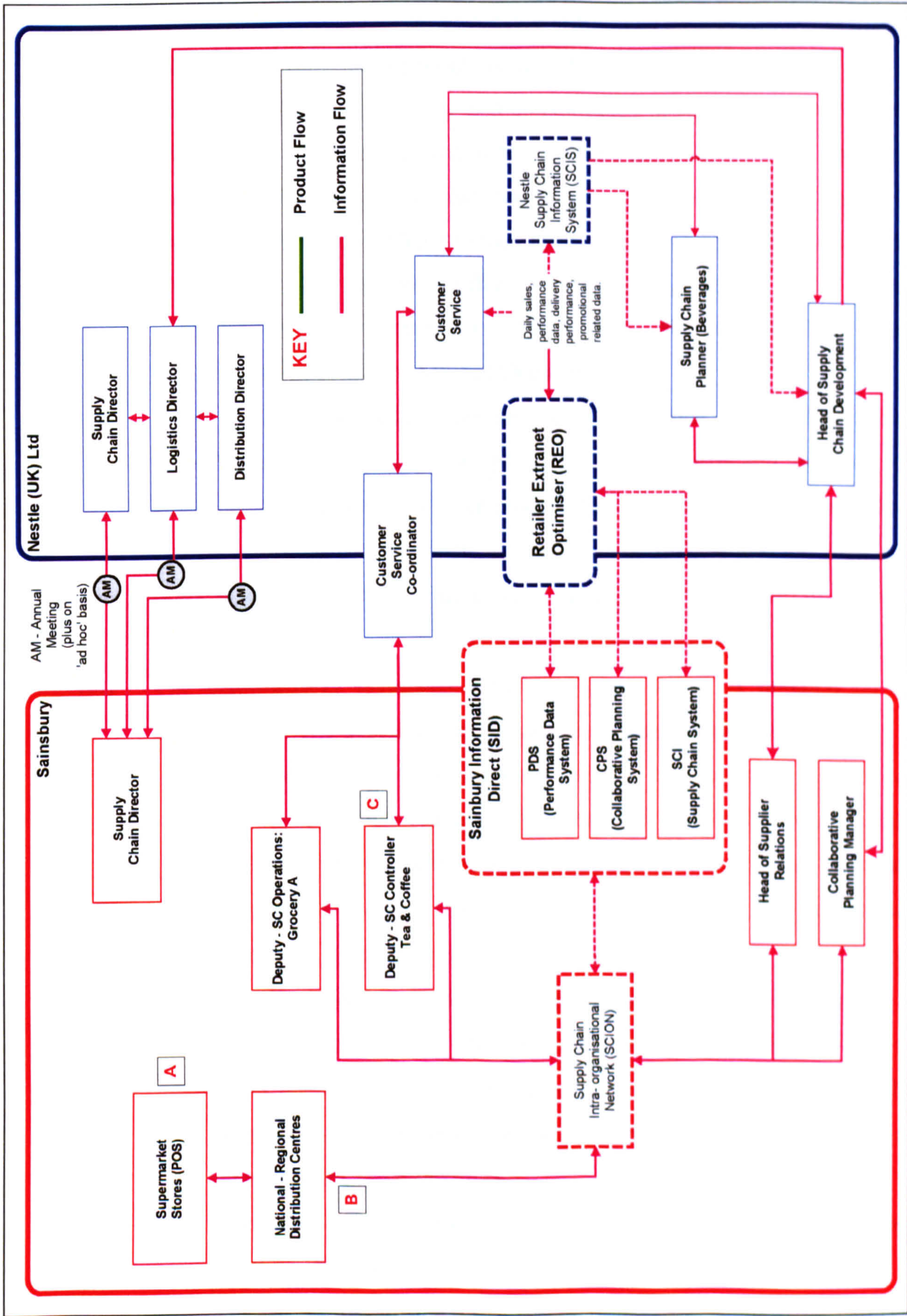
NB: * denotes who manages the process, e.g. (M) = manufacturer, (R/M) = jointly managed process between the retailer and manufacturer.

Figure 75: Case Study Supply Chain + Extra Tier Suppliers



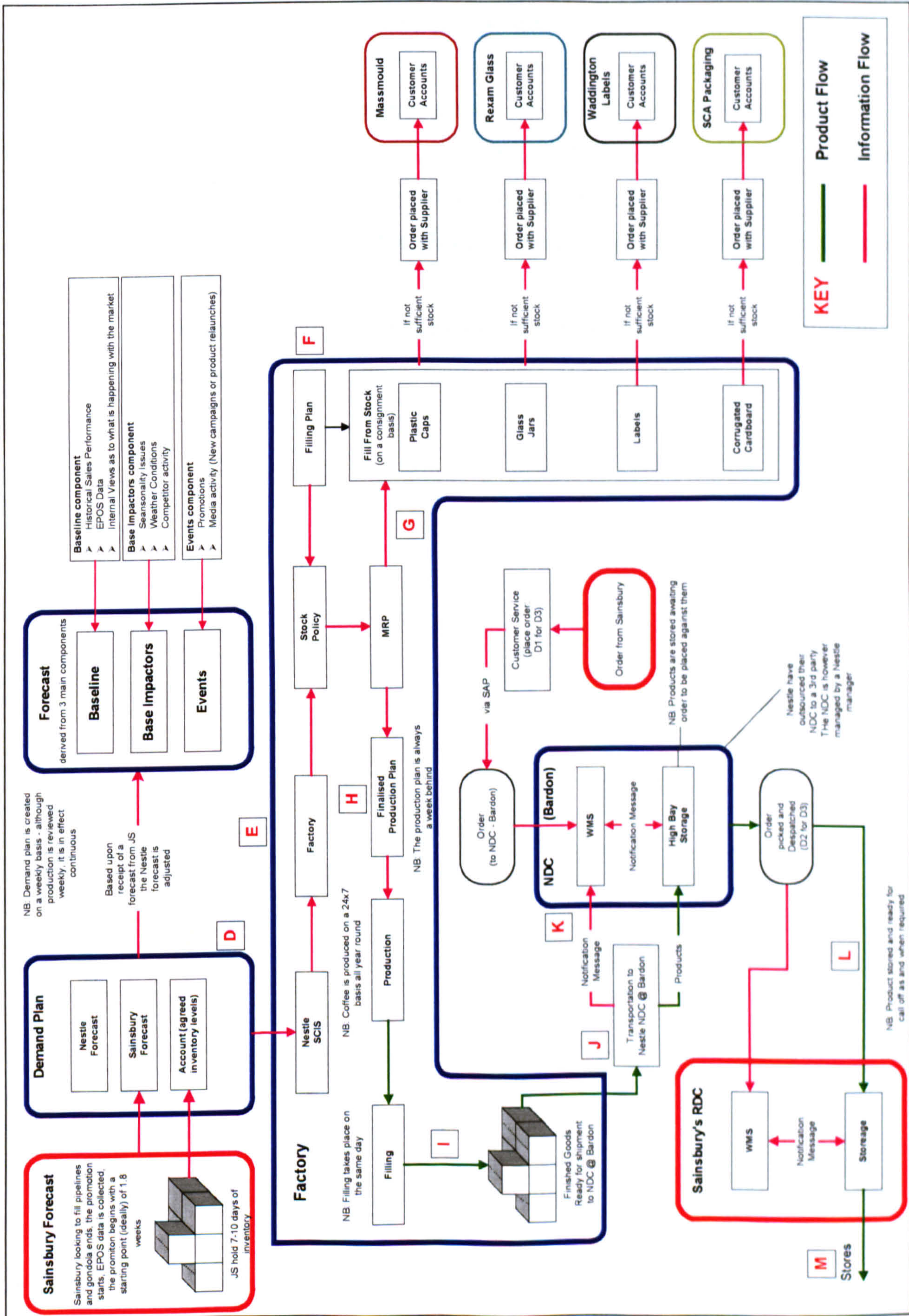
The case study supply chain (see figure 75 above) appears relatively simple with there being only eight organisations taking part within it. Of these eight organisations two, the supplier of Polypropylene shrink-wrap and the coffee bean supplier are not (for reasons previously discussed in Section 6.2(b)) included in this detailed discussion of the supply chain, its processes and information flows. The process for the procurement, production and replenishment of demand is as follows (the various steps are indicated on figures 76 to 81 respectively): -

Figure 76: Supply Chain Level 2 Processes (Retailer-Manufacturer)



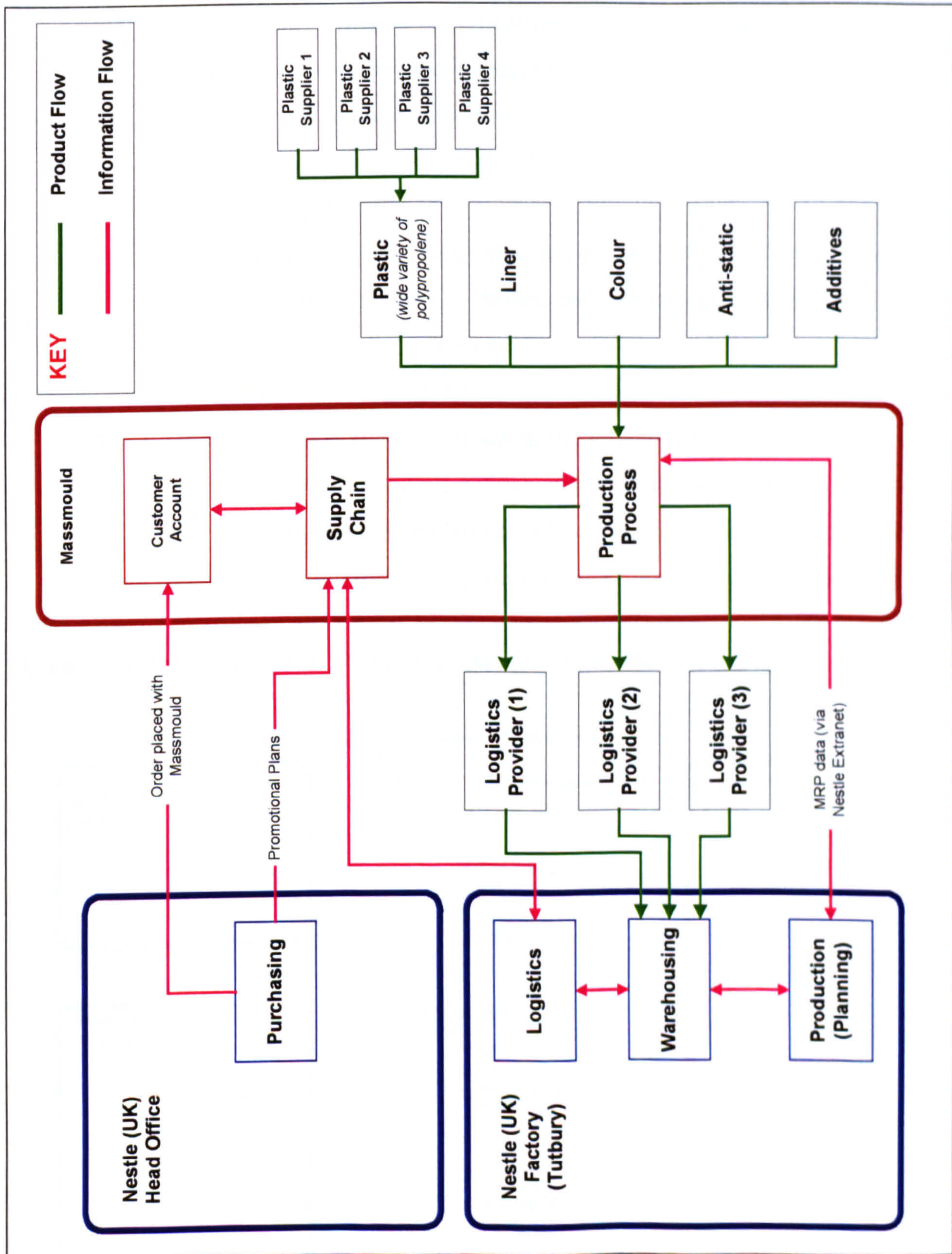
- (A) 200g jars of coffee are purchased from the Retailer's store outlets, either as a normal purchase, or as a purchase stimulated by a promotional offer. The item clearing the checkout creates EPOS data.
- (B) The EPOS data is transferred and consolidated at Retailer's RDC on an hourly basis. This is the first replenishment decision point. If there is sufficient product in stock, then the retailer can replenish from its own stock. If there is not sufficient stock in terms of required minimum stock levels, then one of the coffee buyers will place an order with Manufacturer. The order is transmitted electronically to the manufacturer's Customer Service Department.
- (C) Upon receipt of an order from the Retailer's coffee buyer, this is the second replenishment decision point. If there is sufficient product in stock (at the manufacturer's national distribution centre, then the order can be replenished from stock. If there is not sufficient stock then an order is placed on the manufacturer's supply chain information system (SCIS).
- (D) The manufacturer maintains a demand plan, which is updated on a weekly basis. The demand plan is made up of three main components:
 - i. **The manufacturer's forecast**, which is comprised of three elements; (1) the manufacturer's baseline demand forecast (this includes historical sales performance, EPOS data, and any internal views as to what is happening with the market); (2) any base impactors (which could include any seasonality factors, any weather conditions, and a factor for any competitor activity; and (3) an events component (which includes any promotional activity by either the retailer or the manufacturer, and any media activity, such as new advertising campaigns or product re-launches by either the retailer or the manufacturer).
 - ii. **The retailer's forecast** (which is based on a premise that the retailer will look to maintain seven to ten days worth of inventory).
 - iii. **The agreed inventory levels** for the retailer's account.
- (E) This is the manufacturing decision point.

Figure 77: Supply Chain Level 2 Processes (Manufacturer)



- (F) The manufacturer's production department consider their stock policy and filling plan. The filling plan utilises data from the manufacturing resource planning (MRP) to counter-balance itself.
- (G) The filling plan comprises two actions: (1) to fill from stock on a consignment basis where possible, and (2) if there is not sufficient inventory (raw materials or work-in-progress), then an order is placed with suppliers (for either plastic closures, glass jars, labels or corrugated cardboard).
- (H) A final production plan is produced, which stimulates the production of the product.

Figure 78: Supply Chain Level 3 Processes (Manufacturer-Packaging Supplier 1)



- (I) The glass jars are filled and packaged, and as finished goods they are ready for shipment to Manufacturer’s national distribution centre (NDC)

- (J) The palletised finished goods are transported to the manufacturer's NDC. Upon their dispatch notification is sent electronically to the manufacturer's warehouse management system (WMS).
- (K) The palletised products are then stored in high bay storage awaiting the order to be placed against them. The retailer's order is then picked and is ready for despatched.
- (L) The products are then transported to one of the retailer's seven regional distribution centres (RDC). When the products are dispatched to the retailer's RDC a notification is sent to the retailer's warehouse management system (WMS).
- (M) Upon the arrival of the products at the retailer's RDC, they are stored in high bay storage awaiting a final order to be placed against them. The order is then picked, palletised where possible and despatched to the retail store or alternatively to another RDC, for onward transhipment.

Figure 79: Supply Chain Level 3 Processes (Manufacturer-Packaging Supplier 2)

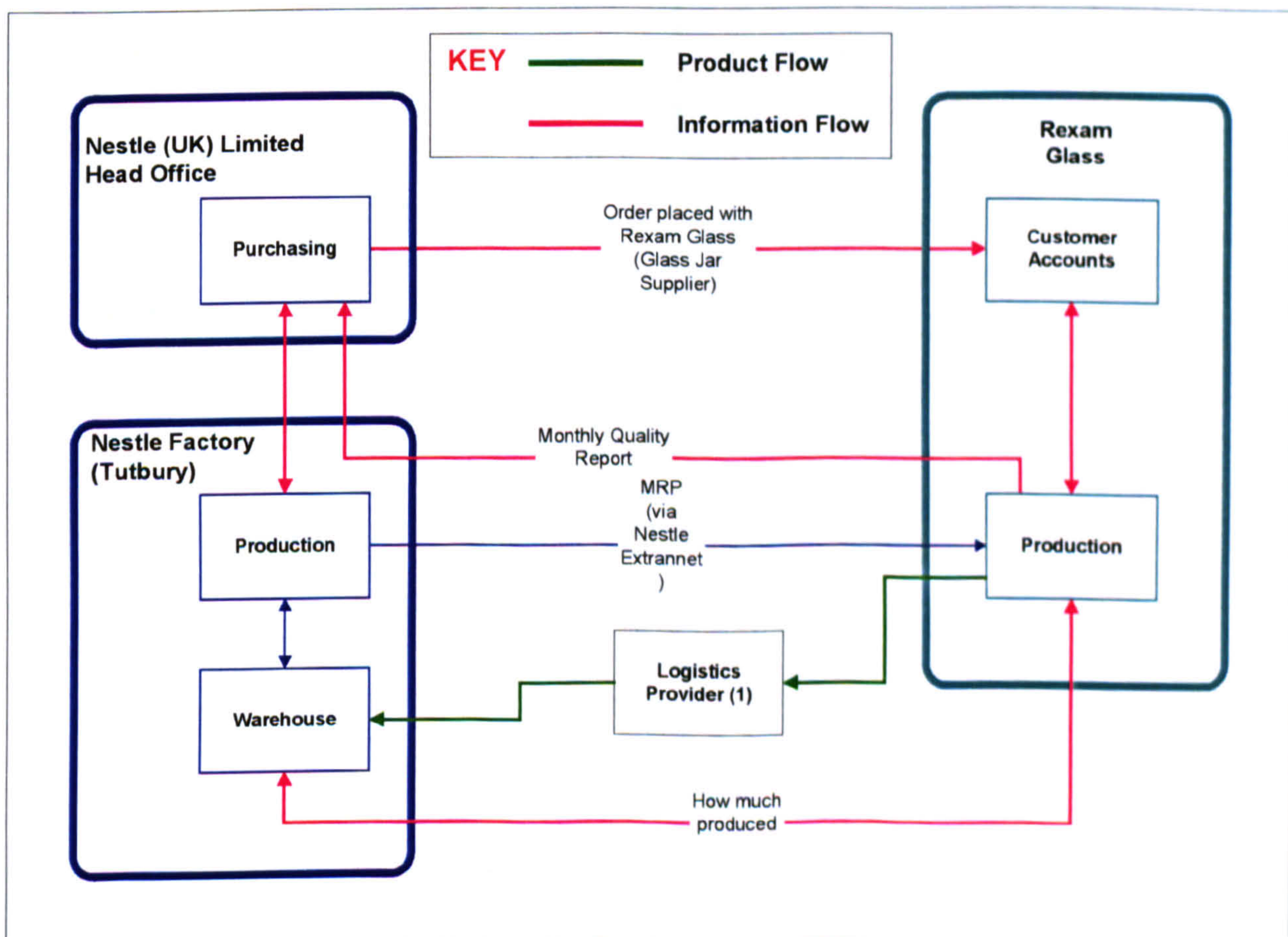


Figure 80: Supply Chain Level 3 Processes (Manufacturer-Packaging Supplier 3)

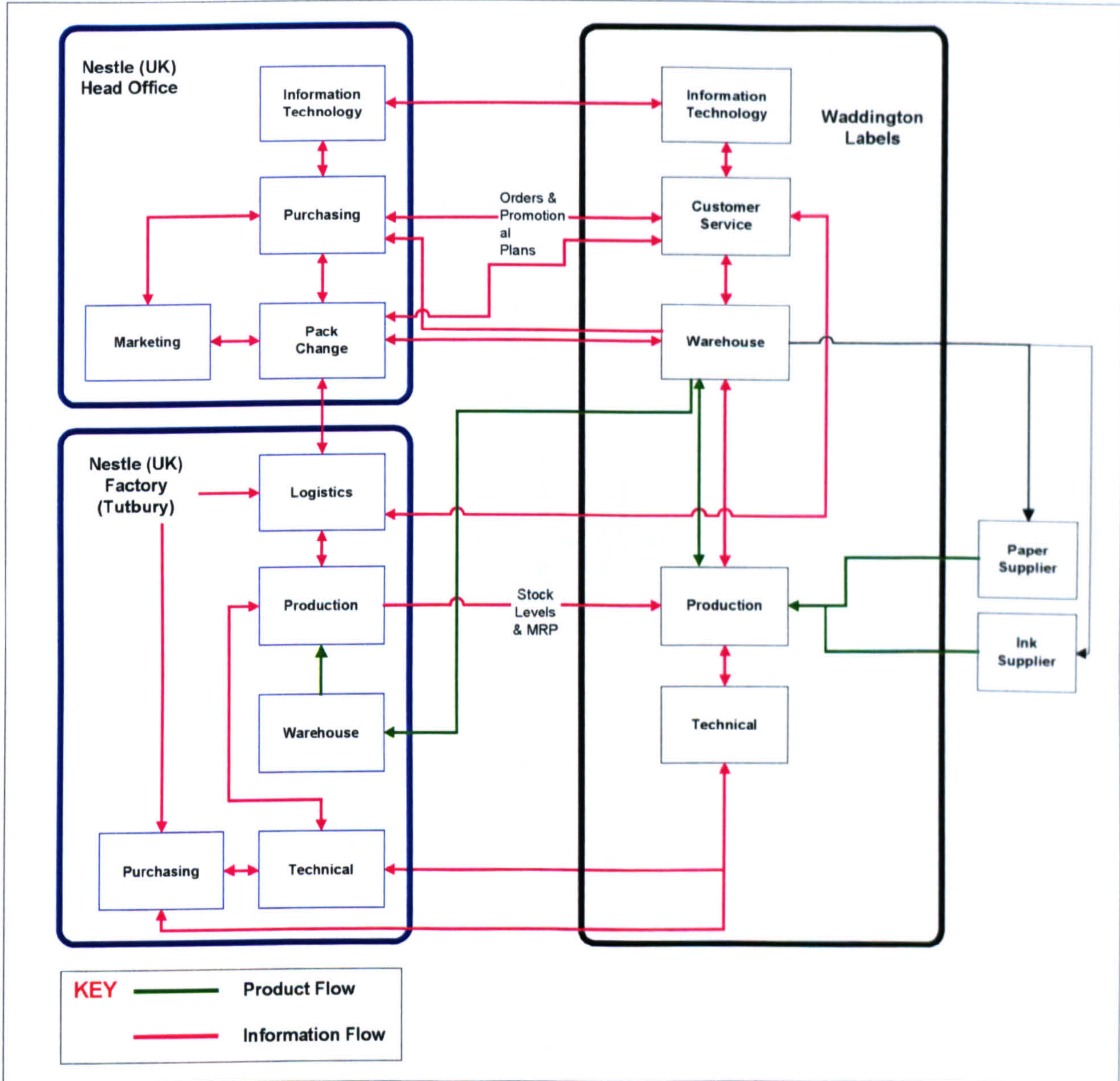
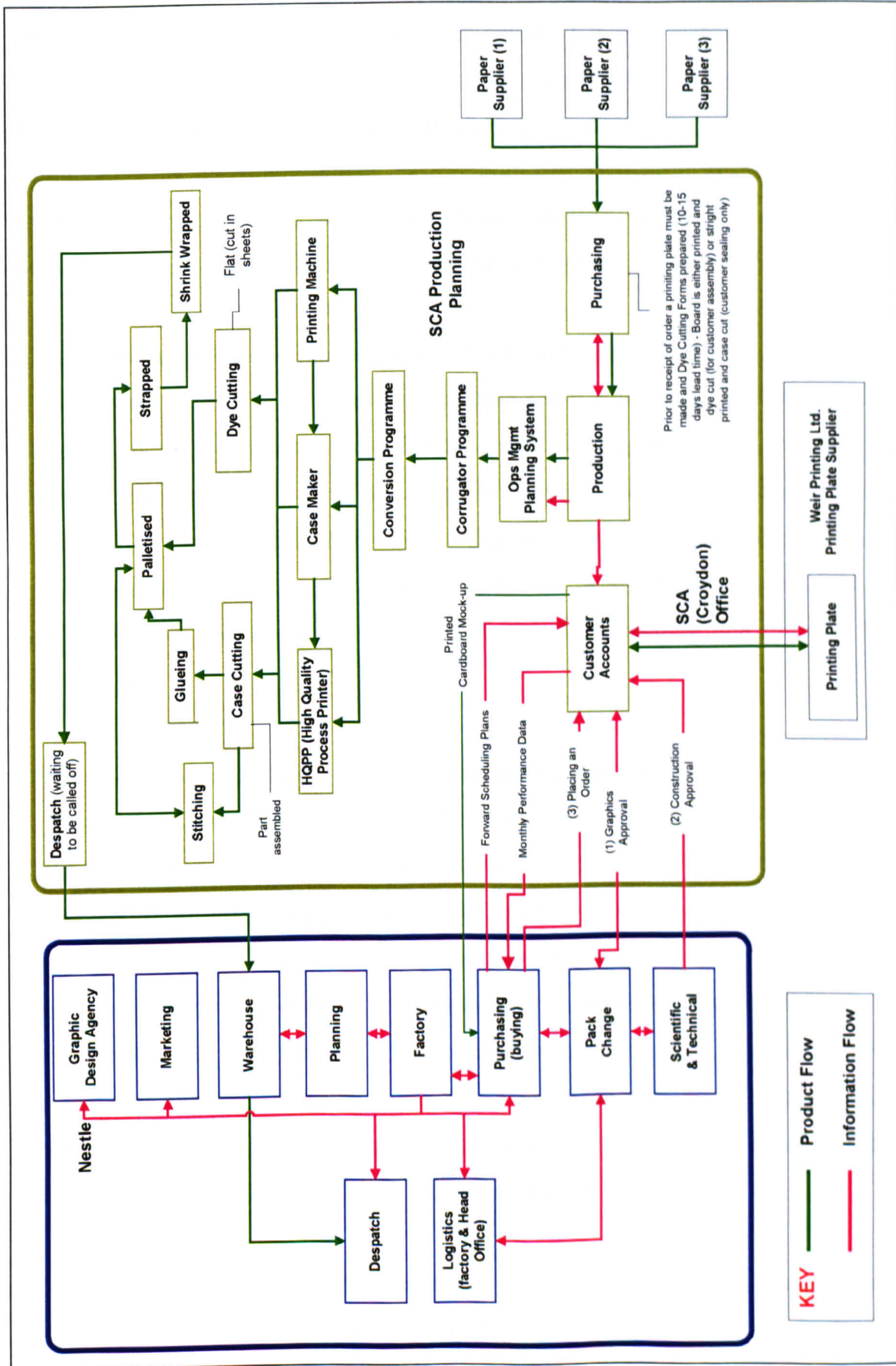


Figure 81: Supply Chain Level 3 Processes (Manufacturer-Packaging Supplier 4)



6.5 Case Study Summary

This chapter has presented the main case study for this research. The contextual considerations have been discussed, i.e. that the supply chain presented is itself part of the UK grocery sector within the European grocery sector. The role of the case study manufacturer as the supply chain “aggregator” has also been discussed. Finally the results of the process and information flow mapping have been presented, which provides the context for the case study analysis contained in the next chapter.

In terms of the context for the case study this is considered by the researcher to be one of the driving factors in the choice of the case study methodology. Although the case study has only included three tiers of the theoretically possible supply chain, it has for the first time captured more of a “complete supply chain” feel to the research. The “completeness” is derived from the notion that the case study organisations believe that the first three tiers of this supply chain represent the most significant part of the overall supply chain for the production and sale of this stock keeping unit through the case study retailer.

In terms of the manufacturer, one issue that availed itself during the field research was the internal relationship within the manufacturer. No access was granted to the production department. This resulted in having to rely on the inbound logistics, purchasing departments, supply chain information systems and supply chain planning respondents to gain insight into the production processes. Due to the way that production is measured within the manufacturer, and within its parent organisation, there is a conflict in objectives. The production department’s objectives are to (1) maximise its capacity utilisation, and (2) to minimise unit costs. The supply chain department is looking to (1) reduce the amount of finished goods inventory, and (2) achieve greater flexibility to enhance customer service.

During the case study it became apparent that the internal or “intra-organisational relationship” for the manufacturer was equally as important as developing closer more collaborative relationships with its suppliers and customers. In all fairness to the manufacturer there was recognition of this issue and ongoing discussions were taking

place as to how the production function and the supply chain processes can be more aligned to enhance the overall performance of the manufacturer and of the overall supply chain.

With this chapter having provided the context for the research, the next chapter presents the analysis of the semi-structured interviews, in terms of addressing the research questions and objectives.

CHAPTER 7:
CASE ANALYSIS

7.0 Case Analysis- Introduction

The final stage of the field research is a case study of which the first part was described in detail in chapter six. The case study examined in detail a single supply chain comprising a retailer, a manufacturer, and four packaging suppliers. Chapter six presented the backgrounds of the case study organisations together with the results of a detailed process and information flow mapping exercise undertaken by the researcher.

The case study supply chain was also investigated by means of a large number of semi-structured interviews undertaken with multiple respondents across the case study supply chain organisations. The analysis of the data gathered from the case study interviews is now presented together with the findings of such interviews. The interviews were used to explore the issues of supply chain relationships and information exchange and usage.

A semi-structured interview was developed, based upon the three themes (1) supply chain management, (2) supply chain relationships, and (3) the role of information in the supply chain. The three themes emerged from the literature review and were further explored in the exploratory study discussed in chapter 5. Some questions from the exploratory study interview structure were amended in light of the findings of the exploratory study. Similarly, some new questions particularly related to the sharing and usages of information were added to the interview structure, a copy of which is contained in Appendix F.

The semi structured interview approach was chosen in order to allow the three themes mentioned above to be addressed in the interviews, but also to allow respondents to discuss any further issues that existed or that may arise as a result of the questions contained in the interview. The questions were asked in the same order, although on some occasions the respondents when answering one question would also answer a subsequent question. When this occurred the respondent was asked to verify their earlier answer. The questions put forward under each of the three themes are now briefly discussed as follows: -

Theme 1: Supply Chain Management (*in General*)

Under the theme of Supply Chain Management (in general), questions were developed that addressed issues such as the definition of SCM, what the concept of SCM meant to the respondent's organisation, what the concept had to offer to organisations in terms of general and specific benefits, how these potential benefits, both general and specific, offered by the concept could be achieved, and what were the major barriers to the implementation of the concept. There were no new questions about this theme.

Theme 2: (*Supply Chain*) Relationships

The literature review revealed that supply chain relationships, whilst prevalent between manufacturers and retailers (A.T. Kearney 1994), were more tenuous upstream, and that this meant that supply chain integration was therefore limited to downstream areas. Interviewees were asked as to why they formed relationships with other supply chain organisations, and how successful these had been.

Any particular problems were targeted and reasons sought as to why the interviewees believed that such problems occurred, and how such problems could be overcome. Interviewees were also asked to describe the types of relationships they had in the supply chain, together with the basis of those relationships, i.e. based upon sharing information, mutual objectives, etc.

Finally, interviewees were asked to provide details of what they considered to be the fundamental characteristics and requirements necessary to make relationships work in a supply chain context in terms of delivering the potential sought-after benefits.

Additional questions added to this theme were as follows: -

Q19: What additional benefits have accrued from the joint management of the supply chain?

Q20: Are there parts of this supply chain that are more synchronised than others?

Q20a: Which parts?

Q20b: What are the barriers to such synchronisation?

Q21: What are the key elements of a synchronised supply chain?

Q22: What inventory management concepts are being practised by your organisation?

Theme 3: The Role of Information in the Supply Chain

Interviewees were asked to describe the role of information in the supply chain. They were also asked to confirm if they shared information with other supply chain organisations, what information was shared, in what form and by what medium, i.e. manually (either face to face or over the telephone), paper-based (by mail or facsimile) or electronically (via a computer in the form of e-mail or networked information exchange), and specifically, why such information was shared.

Interviewees were also asked to describe any potential barriers to the sharing and usage of such information and how these barriers could be overcome. The benefits of sharing information were also targeted (both generally and specifically); and if no information was presently being shared, were the interviewees aware of reasons as to why it should be shared, with whom it should be shared, what type of information should be shared and in what format.

Additional questions added to this theme were as follows: -

Q25c: Through which medium (e.g. paper, verbal, electronic (either fax, e-mail or internet/intranet/extranet))

Q25d: Is the information time sensitive? Why?

Q26: How is the information used?

Q26a: If not –why not? (*wrong format, unreliable, out of date*)

Q26b: What are the barriers to using shared information in the supply chain?

Q26c: What would need to change to make the information usable?

Q26d: For what purpose is the information used?

Q26e: What mechanisms are in place for using the information?

Q27: What information should be shared?

Q27a: Why? – And between whom?

Q27b: When and how often?

- Q27c:** In what format?
- Q27d:** Through which medium (e.g. paper, verbal, electronic (either fax, e-mail or internet/intranet/extranet))
- Q27e:** For what purpose should the information be shared/exchanged?
- Q27f:** How would it be used? - For what purpose?
- Q27f:** Why is it not shared? – What are the barriers?
- Q27g:** Of what use would it be? - What would enable it to flow?
- Q31:** Are there any disadvantages from sharing information with supply chain partners?
- Q31:** What are the actual benefits accruing from information being shared across the supply chain?
- Q32:** How far does true consumer demand penetrate along this supply chain?
- Q33:** What has been the impact of sharing information across the supply chain upon the following: -
Demand Volatility; SC Responsiveness; Batch Sizes; Unit Costs; Inventory Levels; Lead Times; Points of Aggregation/ Dis-aggregation, Service; Product Availability; Total Cost, and No of SKU's.
- (a) If no impact – why not?
- (b) Would you expect there to be some impact – what and why?
- Q34:** What are the key enablers of information sharing/exchange in the supply chain?
- Q35:** If true consumer demand were allowed to drive the supply chain would this be easier or more complex than the retailer and manufacturer jointly managing this process?
- Q36:** In the context of sharing of information and co-management of the supply chain both upstream and down stream. Are the data being shared and the techniques used to manage the supply chain essentially the same?
- Q37:** Is integrated planning the answer to medium term optimisation while short term planning should be essentially demand driven, whether for production or for materials supplies?

7.1 Case Analysis

The data gathered from the semi-structured interviews was analysed in the same way as the exploratory study, as described in Chapter 5 – Section 5.5. The findings of the case study are now discussed in accordance with the selected research themes, i.e. Supply

Chain Management (Theme 1), Supply Chain Relationships (Theme 2), and Information in the Supply Chain (Theme 3).

7.2 Theme 1: Supply Chain Management

Each of the themes is presented by way of categorising emerging sub-themes (for example – “**Theme 1: Supply Chain Management**” is broken down into three sub-themes (1) **The Benefits of SCM**; (2) **Barriers** and (3) **Achieving Benefits** and for each of these sub-themes a number of emerging issues are listed and briefly discussed.

(1) The Benefits of SCM

In terms of the benefits that the case study organisations derive from managing the supply chain, a number of key issues emerge: These are (1) financial; (2) Process; and (3) Information. These can be more clearly seen in Table 14.

Table 14: Benefits Derived from SCM – 200g Jars of Coffee.

SCM Benefits Derived - 200g Jar of Coffee			Tier 3				Tier 2	Tier 1
	Code	SC Benefits	Closure Supplier	Glass Supplier	Label Supplier	Cardboard Supplier	Manufacturer	Retailer
Financial	A1	<i>Inventory Reduction (Finished Goods)</i>						
	A2	<i>Inventory Reduction (Raw Materials & WIP)</i>						
	A3	<i>Reduced SC Inventory Costs</i>						
	A4	<i>Reduced Working Capital Investment</i>						
	A5	<i>Increased Product Sales Volume</i>						
	A6	<i>Improved Return on Inventory (ROI)</i>						
	A7	<i>Reduced SC Administration</i>						
Process	B1	<i>Improve Customer Service</i>						
	B2	<i>Increased Product Availability</i>						
	B3	<i>Improved Inventory-Service Level Trade-off</i>						
	B4	<i>Improved Responsiveness</i>						
	B5	<i>Better Understanding of Process</i>						
	B6	<i>Better Relationships (Customers & Suppliers)</i>						
	B7	<i>Enabled New Perspective</i>						
	B8	<i>Reduced Product Wastage</i>						
	B9	<i>Reduced Lead Times</i>						
	B10	<i>Utilise Supplier's Expertise</i>						
	B11	<i>Improved Product Shelf Life</i>						
Info	C1	<i>Better Availability of SC Info</i>						
	C2	<i>Increased Delivery Plan Accuracy (DPA)</i>						
	C3	<i>Enhanced Reputation (Customer & Suppliers)</i>						

(A) Financial

Financial benefits, in the form of **inventory reduction of mainly finished goods, but to some extent raw materials and work-in-progress, have been**

realised by the case study organisations. In line with this reduction of inventory **working capital investment** has similarly reduced.

Inventory: *“We have seen that since the implementation of supply chain management as a role within (the manufacturer), inventory has gone like that [motioning sharply down], the company average for coffee was something like 6.5 - 7 weeks, and now it is down to 4 weeks” (M4) (R3)*

Capital: *“Reduced inventory can be across the whole of the supply chain and obviously that reduces the working capital in the company” (M3) (R2)*

And finally, most of the case study organisations have also reported an increase in product (volume) sales as a further benefit derived from a more co-ordinated approach to managing the supply chain. *“I think there is a benefit in terms of growing in terms of volume, revenue, profitability” (GS2).*

(B) Process

The case study organisations reported a large number of process-related benefits. Better customer service in the form of improved product availability was reported, whilst simultaneously reporting a reduction of inventory levels. The retailer, the manufacturer and the cardboard supplier, all reported a better understanding of supply chain processes, mainly through developing better relationships with each other.

Cust. Service: *“improved customer service and at the same time it seems to be reduced costs” (M10) “It's a paradox, the less inventory you are holding the better the customer service has been, because we are managing it more proactively” (M4). “The delivery plan accuracy has improved from some 70% to in excess of 80%, so that's all adds up to reduced inventory, better customer service, and we have reduced our packaging inventory” (M4). “Well, if it's done correctly it allows us to provide a better service to our customers and the consumer at less cost and hopefully therefore generate a better return for the shareholders investment” (GS2)*

Prod. Avail: *“balancing the amount of money we have tied up in stock against the availability to customers ” (R1, M11, PCS1) “in terms of the output, well, its about availability and freshness ” (R3)*

Relationships: *It brings us very very close to our customer, I don't think the value of it can be underestimated but I think the relationships you build because of it are very very strong, we are never complacent about our business, you cant afford to be but it is very hard to replace that sort of relationship as it has been built up ” (PLS1, PCS1).*

Other process improvements reported by the case study organisations included: **responsiveness, better utilisations of a supplier's expertise and reduced lead times** *“Reduced manufacturing lead-times and greater 'responsiveness' of the manufacturing process, for example, a process that makes every product every week is inherently more responsive then a process that makes every product every month ” (M2)*

(C) Information

The main information related benefit reported by the case study organisations was the improved **availability of supply chain related information.**

Availability: *“We are getting better information on the consumer, and how much coffee is being pulled through from the customers ” (M4).*

Another information related benefit reported by the case study organisations was an **improved reputation** with either their customers or suppliers, primarily due to making more supply chain related information available.

(2) Barriers to SCM

In terms of the benefits that the case study organisations derive from managing the supply chain, a number of key issues emerge: These are (1) information flow; (2) Functional; (3) Lack of Understanding; (4) Objectives; (5) Organisational Transition;

(6) Technology; (7) Culture; (8) People; (9) Relationships; and finally (10) Communication. These can be more clearly seen in Tables 15, 16 and 17.

Table 15: Barriers to SCM (I) – 200g Jars of Coffee.

Barriers to SCM			Tier 3				Tier 2	Tier 1
	Code	SC Barriers	Closure Supplier	Glass Supplier	Label Supplier	Cardboard Supplier	Manufacturer	Retailer
Info Flow	A1	<i>Demand Visibility</i>						
	A2	<i>Shared Visibility</i>						
	A3	<i>Shared Communication</i>						
	A4	<i>Same Info</i>						
	A5	<i>Open</i>						
	A6	<i>What Info</i>						
	A7	<i>How to Use Info</i>						
Functional	B1	<i>KPMs</i>						
	B2	<i>Processes</i>						
	B3	<i>Training</i>						
	B4	<i>Objectives</i>						
	B5	<i>Behaviour</i>						
	B6	<i>Org Structure</i>						
Lack of understanding	C1	<i>Decision Implications</i>						
	C2	<i>Supplier Issues</i>						
	C3	<i>Transition</i>						
	C4	<i>Process</i>						
Objectives	D1	<i>Conflicting</i>						
	D2	<i>Shareholders</i>						

(A) Information Flow

The lack of information flow across the supply is recognised as a major barrier to effective supply chain management. The case study organisations perceive a number of issues related to the lack of information flow, including: **shared demand visibility, communication, knowing what information to share and how to use shared information.**

Visibility: *“I think that if you are not getting good quality information flowing through at the right times that is when you are going to get ‘bumps in the road’, and they can tend to be some fairly large bumps at times” (M3). “It is visibility of how their behaviour impacts the greater supply chain” (M7, GS2, M1).*

Communication: *“... sit down in the same room for long enough and regularly enough to share the information in an open way. You can't have SCM or SCDev, whether it be us to Nestle or us a specific customer or Nestle to a*

logistics partner and logistics partner to a retailer whatever, unless you're all prepared to share the same information" (GS2).

What to Share: *"The issue is what information are you prepared to share" (M1, M2).*

How to Use: *"If you do share it how does the other party actually make use of it" (M1, M2).*

(B) Functional

The case study organisations reported a large number of functional-related barriers, including processes, training, behaviour, key performance measures (KPMs), and objectives. Of these, functional processes were seen as major barriers by all of the case study organisations, followed by the impact of functionally based training and behaviour.

Processes: *"The fact that it doesn't fit functionally within any particular area" (GS2) and "Functional thinking and a lack of understanding of the process" (M1).*

Training: *"Functionally processes, training and people, those kinds of issues, together with conflicting objectives, I suppose, from time to time" (M5).*

Behaviour: *"Well the most important barrier is the cultural one. For us, we in effect took people out of different functions and put them altogether in logistics and you say that you now run it as a process" (R3). "This is production we don't want you looking at production, you worry about distribution you don't know anything about production" (M11).*

Other functional related issues reported by the case study organisations included: performance measurement and organisational structure. *"I think if production is measured on cost effective production then and utilisation of equipment then you are immediately putting them into a situation where they want the best quality material and long production runs. If purchasing are*

measured on cost and cost alone they want the cheapest possible material, but then that causes snarl ups in production which reduces their efficiency rates and at the end of the day... that you are going to need in the short term through to actually starting to measure people in a more of a supply chain way rather than a functional way” (M3). And, in terms of organisational structure as an issue: “Big companies like this - there's this silo mentality, particularly if you're structured and you've got food divisions, corporate this - we're group distribution - well what's that, I'm looking after my own interests - the fact that I might make the trade off to benefit you or benefit the company as a whole - big companies suffer from that” (M11).

(C) Lack of Understanding

The main barriers reported by the case study organisations were, in terms of a lack of understanding of: decision implications, suppliers issues and processes in general.

Decision

Implications: *“If we can explain to them the impact or sort out a process that explains to them the impact of their decision to design a jar like that. You know, so that it doesn't optimise the cube” (M5). “You put a supply chain in place and you expect everybody to jump on board just because the train happens to pass your station, unless they know that there's a good reason for doing it, they won't” (M9).*

Supplier

Issues: *“We have spent a lot of time trying to help the rest of our business to understand some of the supplier's issues” (M9).*

Processes: *“Functional thinking, lack of understanding of the process” (M1).*

(D) Objectives

Both the retailer and the manufacturer reported that conflicting objectives were a major barrier to managing the supply chain. For example *“We have an issue in*

that manufacturing is still not regarded as part of supply chain, clearly it has to be but at the moment it paddles its own canoe” (M2).

Table 16: Barriers to SCM (II) – 200g Jars of Coffee.

Barriers to SCM (Continued)			Tier 3				Tier 2	Tier 1
	Code	SC Barriers	Closure Supplier	Glass Supplier	Label Supplier	Cardboard Supplier	Manufacturer	Retailer
Organisational Transition	E1	<i>Split Personality</i>						
	E2	<i>Transition costs</i>						
	E3	<i>Managing Change</i>						
Technology	F1	<i>Bottlenecks</i>						
	F2	<i>Limitation</i>						
	F3	<i>Fixed Costs</i>						
	F4	<i>Legacy Systems</i>						
	F5	<i>Standards</i>						
	F6	<i>Exploiting</i>						
Culture	G1	<i>Functional</i>						
	G2	<i>People</i>						
	G3	<i>Organisational</i>						
	G4	<i>Openness</i>						
	G5	<i>Fearing Change</i>						
	G6	<i>Ideas – Beliefs</i>						
People	H1	<i>Skills</i>						
	H2	<i>Recruiting</i>						
	H3	<i>Differing Ideas</i>						

(E) Organisational Transition

As organisations move from the more traditional adversarial approach to managing their supply chains, to a more collaborative one, such transition itself gives rise to a number of barriers, including: **Split Personalities**; **Transition** to a more collaborative approach; and **Managing Change**.

Personalities: *“I don't think that (the manufacturer) mistrust their suppliers - far from it. I just think they are an organisation in transition and they have a little bit of schizophrenia which is perfectly natural, they've just got to move a little bit more decisively and be prepared to cut the links with the more traditional style of the past” (PCSI).*

Transition: *“Yes, well I think where people understand it, its not potentially a barrier, however, I think that unfortunately a lot of people do not understand it and they go in to it - a more collaborative approach, and*

they hit that pain and they don't come out the other side, they go back"
(R3).

Change Mgmt: *"I think change management is probably the other thing ... particularly in terms of exploiting systems, it just take a long time, even when you can get the systems, to put them in, to get them right, to get systems bedded in, it's still an art more than a science. I think we need to work a lot harder at methodologies and training and approaches to overcome those kind of issues"* (R2).

(F) Technology

The case study organisations reported that technology was a major source of barriers to supply chain management. The technology related barriers included: **Limitations of the technology itself; the fixed costs of the technology; and legacy systems.**

Limitations: *"... it still takes you as long to set up a press to do 15,000 labels as it will do to do 200,000 labels and that is a fixed cost and that is one of the biggest barriers"* (PLS1).

Fixed Costs: *"There are certain things that are still, these presses take time to set up and I think this is the biggest aspect where people are looking and saying well we only want this many labels, it still takes you as long to set up a press to do 15,000 labels as it will do to do 200,000 labels and that is a fixed cost and that is one of the biggest barriers"* (PLS1).

Legacy Sys: *"We grow by acquisition, and if you keep buying company after company, you get a right 'mish-mash' of ideas and systems. We are going through this process of trying to get to a common system, etc"*
(M11).

Another technology related barriers reported by the case study organisations were **technology standards and the ability to exploit the technology.** *"What*

we've got is three of our major customers who between them have critical mass and actually are quite prepared to share their information and give us visibility in their systems, but they're all doing it in three different ways and also they've got three different sets of definitions, so it's a bit like the good old days when EDI was first starting and there was no sorts of standards, there was no consistency" (M2, R2, R3).

(G) Culture

Culture was perceived by most of the case study organisations to be one of the most important barriers to managing the Supply Chain. There were a number of different forms of culture highlighted by the case study organisations including: **Functional; people; and fear of change.**

Functional: *"For us, - the retailer - we took people out of three different functions and put them altogether in logistics and said to them that they must run it as a single process. Now the issue was, that all these people had come from three different cultures. We had to get a logistics culture together" (R3, M11, CBS2).*

People: *"We needed to get a critical mass of people to buy into the collaborative culture that we were trying to create" (R3).*

Fear of Change: *"Skills, individual skills, businesses core beliefs, culture, resistance to new things" (GS1, CBS2).*

Other culture related barriers reported by the case study organisations included organisational culture and individuals ideas and beliefs (R3, M11, M10, CBS2).

(H) People

The case study organisations generally considered there to be a number of people related barriers to managing the supply chain. The organisations reported that the main barrier was the **skills level** amongst their people.

Skill Levels: *“Skills, individual skills, businesses core beliefs, culture, resistance to new things” (GS2) “People, lack of good quality people, we’re still desperate for good quality well trained supply chain professional’s” (R2).*

Two further people related barriers cited were the difficulty in **recruiting people** with the necessary skills and that employees are very subjective and have their **own ideas** as to how the supply chain and its process should be managed (GS, R2).

Table 17: Barriers to SCM (III) – 200g Jars of Coffee.

Barriers to SCM (Continued)			Tier 3				Tier 2	Tier 1
	Code	SC Barriers	Closure Supplier	Glass Supplier	Label Supplier	Cardboard Supplier	Manufacturer	Retailer
Relationships	I1	<i>Longevity</i>						
	I2	<i>The Right People</i>						
	I3	<i>Inter-organisational Tension</i>						
	I4	<i>Intra-Organisational Tension</i>						
Communication	J1	<i>Formal</i>						
	J2	<i>Informal</i>						
	J3	<i>Regular</i>						
Forecasting	K1	<i>Approach</i>						
	K2	<i>Noise Creation</i>						

(I) Relationships

Relationship related barriers were cited as barriers to managing the supply chain by the case study organisations. These included: **Intra-Organisational Tension**; the **longevity** of the relationship; and having the **right people** involved in the relationship.

Intra-Org. Tension:

“I think that tensions between companies have, putting the competition aside, have probably reduced quite substantially and are probably less of an issue than the barriers within company. Those sort of personal issues are probably, in a lot of businesses, harder to overcome than working between companies” (R2). “I think that these words have been used ‘supply chain is nothing to do with us, we are manufacturing!’ Which partly, as well, sort of says that ‘you, supply chain function there, stop telling us that we have got to be different’” (M10).

Longevity: *“A lot of talking, a lot of collecting information and I don't believe there is the, partly down to the longevity of the relationship, the forum for the right people to sit down ... and regularly enough to share the information in an open way” (GS2).*

The Right People: *“Having the right people in the relationship can make or break it, taking time getting the right people talking to each other is more cost effective than a dozen relationships between the wrong people” (M10, R2).*

(J) Communication

The case study organisations perceived a number of communication related barriers to managing the supply chain. These included: communication of a formal, informal and also regular nature.

Formal: *“I meet once a year with my counterparts in the manufacturer, but apart from that I have no real contact with them” (R2). “We need to have agreed lines or channels of communication, otherwise we end up not knowing what the customer is doing, or we incorrectly perceive what they are doing” (M1).*

Informal: *“The customer service co-ordinator acts as an initial point of contact, whereby we can raise issues with her in order to speed up the resolution of those issues” (R4, R5 and R6). “Quite often the ‘implant’ the customer service co-ordinator – will hear what is going on and will let me know, otherwise I would have to wait for the formal channels of communication to work, which may cost me a couple of days time – this may mean the difference of being able to positively respond, rather than it becoming a service issue” (M4, CBS2).*

Regular: *“There is no point sharing information unless you are going to meet regularly to review the situation and mutually agree what your combined response is likely to be” (GS2, M9).*

(3) How to Achieve SCM Benefits

In terms of how the case study organisations perceived that supply chain benefits could be achieved, a number of key issues emerge: These are (1) collaboration; (2) sharing; (3) process; (4) people; (5) awareness and (6) management. These can be more clearly seen in Table 18.

Table 18: Achieving Supply Chain Benefits – 200g Jars of Coffee.

Achieving SC Benefits – 200g Jar of Coffee			Tier 3				Tier 2	Tier 1
Enablers	Code	Context	Closure Supplier	Glass Supplier	Label Supplier	Cardboard Supplier	Manufacturer	Retailer
Collaboration	A1	Customer Relationship Development						
	A2	Supplier Relationship Development						
	A3	Internal Relationship Development						
	A4	Total Supply Chain View						
Sharing	B1	Objectives						
	B2	Performance Measures						
	B3	Information						
Process	C1	Re-Engineering						
	C2	Integration						
People	D1	Supply Chain Culture						
	D2	Open-minded						
	D3	Business Education						
	D4	Coaching						
Awareness	E1	Clear Understanding						
	E2	Less Price Focused						
	E3	Learning from Mistakes						
	E4	Visibility						
	E5	Better Information						
	E6	Identification of Idiosyncrasies						
	E7	Removal of Disconnects						
Management	F1	Senior Management Driven						
	F2	Utilising Shared Information						
	F3	Enhanced Decision Making						

(A) Collaboration

Collaboration, in the form of **relationship development**, is seen by the case study organisations as one of the key facilitators in terms of achieving supply chain benefits. Collaboration, is however, seen as taking different forms. This can be about relationship development with:

Customers: *“beginning to work much more closely with customers ... joint objective of getting product on the shelf at the lowest overall cost” (M2).*

Internally: *“we have achieved an awful lot, but a lot of that has not been able to have been achieved within what you might call the traditional areas of supply chain, which is your logistics, your transport, your customer service. To move to the next stage, significantly, needs to involve commercial and manufacturing”* (M10, M2).

And finally, but only to some extent, relationship develop is necessary with **suppliers**. There was also seen a need to adopt a **total supply chain** view, albeit just by the manufacturer in the case study supply chain.

(B) Sharing

The element of sharing was seen as key to achieving supply chain benefits. The case study organisations considered sharing the following:

Objectives: *“the joint objective of getting product on the shelf at the lowest overall cost”* (M2).

Information: *“Need to be clear about how we pass on customer requirements to our suppliers”* (M9).

Also, between the manufacturer and the retailer, the sharing of **performance measures** was also seen as necessary, *“Resolving conflicting KPIs”* (M3).

(C) Process

Both **process re-engineering** and **process integration**, across organisational boundaries, were seen by the case study organisations as key to achieving supply chain benefits.

(D) People

There are many issues relating to people (or employees) that are seen by the case study organisations as critical to achieving supply chain benefits. These include the following:

Culture: *“understanding and appreciating the effect of decisions on the SC” (M3)*
“Changing the culture to appreciate the impact of the SC and how business-commercial decisions impact the SC” (M10).

Organisational

Education: *“So over the last two years my main focus has been raising the awareness and understanding of commercial people of what is supply chain” (M10).*

Having the right supply chain culture and sufficient organisational education were both seen by all the case study organisations as paramount to achieving supply chain benefits. In conjunction with this, having enough people in organisations that are sufficiently **open-minded** was also seen as important *“yes they (talking about HR) have a huge part to play in the training of people up and down the supply chain but to appreciate the concept within which they work and you know modify their behaviour” (M7).*

(E) Awareness

A common theme was one of awareness, but again, one that exists in a number of differing forms:

Understanding: *“A clear understanding of costs in the SC” (M9).* *“A clear understanding of the business internally, including raw materials and less of a price/cost focus – more about impact on the SC” (PLS1).* *“An understanding of the complexity of the SCs being operated - a mixture of pull and push” (R2).* *“Understanding the implications of decision making for the business, for the SC and the consumer at operational and tactical levels” (M10, M3, PCS1).* *“A clear understanding of how we are going to use and manage the data/information shared with us” (M8).* *And finally, “A clear understanding of the role of the exchanged data, who needs to receive it” (M8).*

Idiosyncrasies: *“These should be identified and articulated, e.g. conflicting KPIs, disconnects, areas lacking visibility” (M2 M9).*

Disconnects: *“these should be identified and articulated, e.g. conflicting KPIs, disconnects, areas lacking visibility”* M2. An example of this is *“manufacturing as a functional silo still sits outside of supply chain so that's a bit of a problem area which is slowly being addressed”* M2.

Learn from mistakes: *“it's a slow step by step approach, do an initiative here, it seems to work, we'll move onto something else”* (M2).

These were all seen by the case study organisations as paramount to achieving supply chain benefits. The case study organisations also suggested that **visibility** from the sharing of **information** would heighten awareness across the supply chain: *“Visibility of processes and who is involved with those processes”* (M6, M10). *“Having a total view of the supply chain, both internal and external”* (M10). *“Demonstrating the benefits of SCM to all functional areas, suppliers and customers”* (M10). *“Getting better information, in terms of more accurate, more timely, in a user friendly format”* (M9).

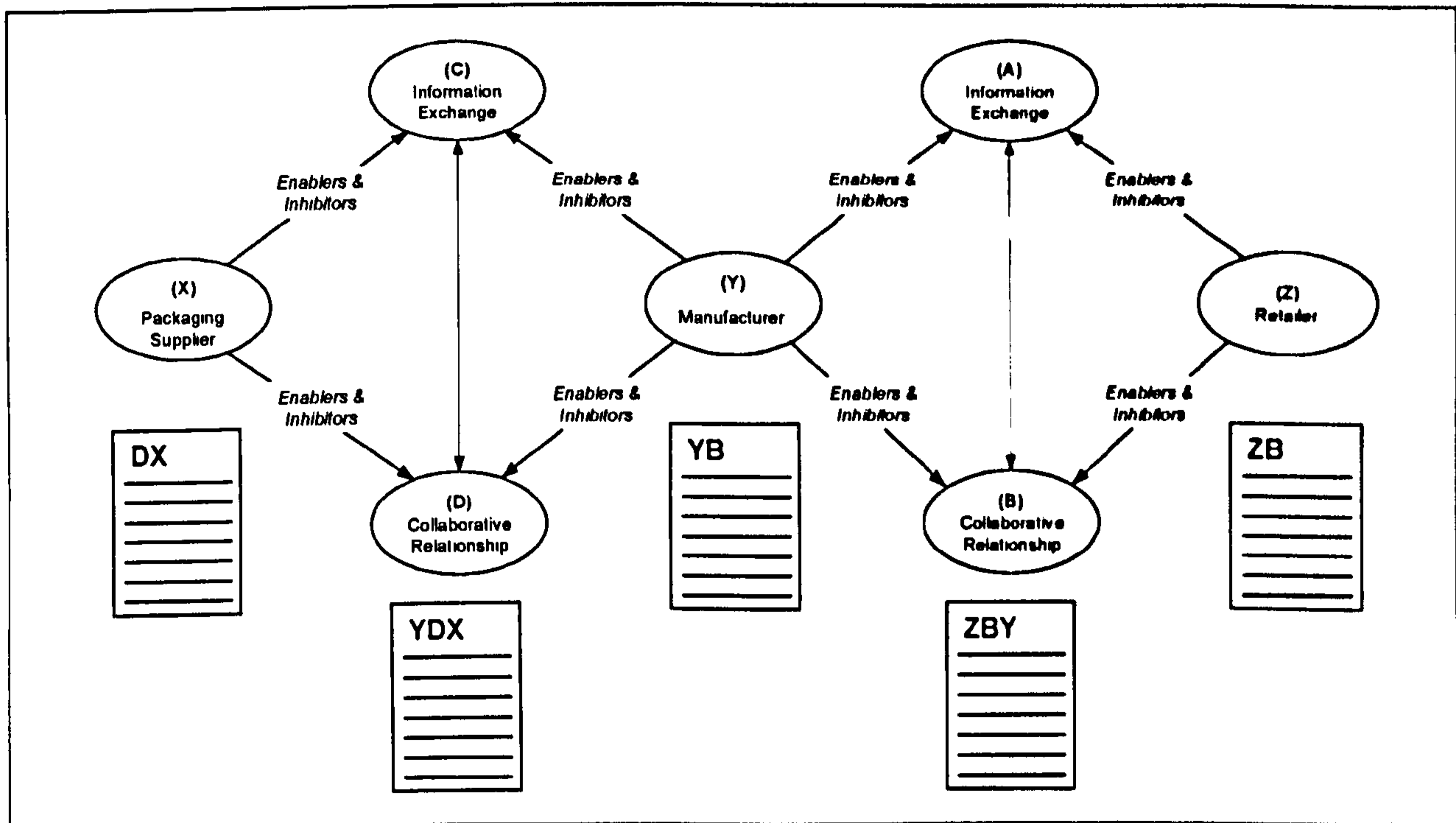
(F) Management

In terms of management of the supply chain, in order to achieve supply chain benefits, **shared information** must be utilised to enhance decision-making. Additionally, senior management must also be **driving** activities if supply chain benefits are to be achieved. *“Utilising the shared data in a meaningful way”* (M8, M9). *“Developing an understanding of how decisions taken by the commercial department – marketing and sales – particularly in terms of managing promotions, impact the SC – also utilising the expertise of supplier leads to better overall decisions”* (M10). *“You have got to have someone at the most senior level like the Chief Executive banging the table, knocking heads together and saying from now on we're going to do things a new way”* (M2)

7.3 Theme 2: Supply Chain Relationships

This section presents the enablers and inhibitors of collaborative supply chain relationships. The following diagram containing the research conceptual framework is used to present the findings (see figure 82).

Figure 82: Supply Chain Relationship Enablers and Inhibitors



It should be noted that the enablers and inhibitors of the relationships between the manufacturer and the four packaging suppliers (YDX) and the internal relationships within the four packaging suppliers (DX) have been combined due to the limited number of responses for the individual packaging suppliers.

The case study has revealed a significant number of enablers and inhibitors. Whilst this volume can be seen as one of the disadvantages of qualitative research, the depth of the findings in terms of the identification of the context for each of the enablers and inhibitors is also one of the major strengths of qualitative research. It is the richness of the findings that are particularly suited to research of such an exploratory nature. The complete lists of enablers and inhibitors can be found in Appendix II and I respectively. Table 19 (overleaf) presents the enablers and inhibitors for supply chain relationships for the retailer in the case study.

Table 19: Enablers and Inhibitors of SC Relationships (ZB) Retailer - Internal

Supply Chain Relationships	Code	Enablers	Inhibitors
Retailer	ZB	<ul style="list-style-type: none"> • Benefit Demonstration • Collaborative Culture • Interdependency recognition • Internal co-ordination • Internal Understanding • Long-term commitment • Mutual Respect • Senior Management commitment • Understanding role of suppliers 	<ul style="list-style-type: none"> • "Customer" mentality • Functional Management Style • Functional silo mentality • Functional-based teams • Increasing Competitive Environment • Managing Multiple Suppliers • Mechanistic Relationship Behaviour • Understanding supplier issues • Panic Buying Behaviour • Poor in-house logistics

Enablers (Code ZB - Retailer)

Nine supply chain relationship enablers were identified in the case study retailer, as follows (see Table 19 above): - (1) **Demonstrate benefits quickly** as this helps to build buy-in to the relationship [R1]; (2) **Developing the right culture** (collaborative) often implies taking people out of their environments and get them talking to each other, which in itself can help to breakdown internal political divisions [R3]; (3) **Interdependency recognition** – demonstrating why the interdependency with the supplier exists [R3]; (4) **Reducing internal political divisions** – improves **internal co-ordination** [R3]; (5) **Internal understanding** – creates a sense of unity and helps to achieve subsequent co-ordination with trading partners [R3].

(6) **Striving for internal long-term commitment** to supplier relationship – is needed to move away from previous opportunistic behaviour [R3]; (7) **Mutual respect** must be developed internally [R3]; (8) **Senior management commitment**, in terms of supporting the role of supplier implants, i.e. having employees from suppliers based in the retailer's offices, facilitating the relationship interface [M4]; and (9) **Understanding the role of suppliers** – this is part of the culture of interdependency [R3].

Inhibitors (Code ZB - Retailer)

Ten supply chain relationship inhibitors were identified in the case study retailer, as follows (see Table 19 above): - (1) By maintaining “we are the customer” mentality – leads to master-slave behaviour [R4]; (2) A functional management style – reinforces the (3) silo mentality [R3]; Cultural resistance to changing status quo – leads to a one step-forwards, two steps backwards mentality [R3]; (4) Functional-based teams – reinforce the silo mentality [R3]; (5) Increasing competitive environment – this gives rise to opportunistic behaviour [M10].

(6) Managing multiple suppliers – leads to insensitive approaches to decision making and lack of resource commitment [R2]; (7) Mechanistic relationship behaviour – trying to manage a large number of suppliers leads to insensitive approaches to decision-making [R2]; (8) Lacking understanding of supplier’s issues – leads to insensitivity to realities [R2]; (9) Panic buying behaviour – through a lack of visibility of current status leads to potential build-up of inventory [M3]; and (10) Poor in-house logistics, in terms of the in-effectiveness of the SC from the Retailer’s DC to on-shelf – gives rise to frustration and resentment on behalf of the supplier who achieves a significantly greater level of service than the retailer themselves achieve [M3].

Enablers (Code ZBY Retailer-Manufacturer)

Forty-eight supply chain relationship inhibitors were identified in the case study relationship between the retailer and the manufacturer, as follows (see Tables 20 and 21 below): -

(1) A clear communicable strategy – being able to communicate to the manufacturer a clear strategy about where the retailer is going and how they think they will get there – [M6]; (2) A relationship manager – to maintain an overall view of the relationship [M5]; (3) Advanced problem notification – reduces the resentment derived from poor service performance [R4] [R5]; (4) Board to board dialogue – high level on-going support is required to develop and maintain the relationship [M2]; and (5) Common philosophies – establishing an agreed philosophy, or at least how to change the existing ones. This needs senior management support to accomplish this [R3] [M1].

Table 20: Enablers and Inhibitors of SC Relationships (ZBY) Retailer – Manufacturer (I)

Supply Chain Relationships	Code	Enablers	Inhibitors
Retailer – Manufacturer	ZBY	<ul style="list-style-type: none"> • Advanced problem notification • Board to board dialogue • Common philosophies • Communicable strategy • Communication • Communication Mechanisms • Context dependent Relationship • Customer Implants • Decision support tools • Exchange quality information • Full process review • Identifying communication channels • Improving information quality • Individual chemistry • Information sharing mechanism • Integrated relationships • Integrated SC Operations • Integrated SC Plan • Joint Replenishment Decisions • Jointly Defined Processes • Multiple level relationships • Mean what is said • Multiple level relationships • Multiple Relationship Levels • Mutual agreed process • Mutual compromise • Mutual Objectives • Mutual Recognition • Mutual Respect • Mutual understanding • Ongoing board level dialogue • Ongoing partner education • On-going Trust Development • Openness • Openness about processes • Opportunism .v. collaboration 	<ul style="list-style-type: none"> • Collaboration Slippage • Commercial pressures • Cost driven • Cultural differences • Differing trading strategies • Inaccurate information exchange • Joint initiative resources • Misunderstanding decision implications • Perceived supplier performance • Perceived supplier responsiveness • Poor forecast quality • Poor Personal Relationships • Poor strategic relationships • Product Lead-times • Role of EPOS • Short-term focus • Technology incompatibility • Time to Implement • Un-timely information exchange

(6) **Communication mechanisms** – if physical communication is not possible then there must be a mechanism for communication and information flows between the two organisations [M11]; (7) **Full process review** – the organisations must be prepared to

reveal “warts and all” to get to the most effective process [R1]; (8) **Identifying communication channels** – gathering information and directing it to where it is needed “*A funnel of information*” [M6]; (9) **Improving information quality** – helps to develop trust [M4]; and (10) **Individual chemistry between people** – can determine the on-going status of the relationship [M2] [R4].

Table 21: Enablers and Inhibitors of SC Relationships (ZBY) Retailer – Manufacturer (II)

Supply Chain Relationships	Code	Enablers	Inhibitors
		<ul style="list-style-type: none"> • People relationship facilitators • People relationship skills • Proactive approach • Quality of information exchanged • Relationship Commitment • Relationship Manager • Seek industry best-practice • Senior Management commitment • Service Co-ordinators • Share future plans • Shared KPIs • Solving operational issues • Supply Chain Consolidators • Supply chain culture • System enabled processes • Understanding buying behaviour • Understanding information requirements • Understanding partner's issues • Understanding role of people • Vendor managed inventory • Willingness to share 	

(11) **Integrated relationships** – both internally and externally, across all levels i.e. strategic, tactical and operational - [M2]; (12) **Joint replenishment decisions** – with regard to planning promotions [R4] [R6] [R5]; (13) **Jointly defined processes** – helps to improve understanding and co-ordination [M1]; (14) **Maintaining multiple level relationships**, i.e. strategic, tactical and operational – there are often differing

perceptions of the other party to the relationship with the organisations at the various levels [R4] [R6]; and (15) **Mutual Objectives** - [M2].

(16) **Mutual recognition** – to maintain commitment and enthusiasm for the relationship [M1]; (17) **Mutual respect** – without this the relationship diminishes [R3]; (18) **Mutual understanding** – of each other’s objectives, drivers, strategies [M2]; (19) **Mutually agreed process** – the mutually agreed process is key to the relationship [M1]; and (20) **Ongoing board level dialogue** – part of the relationship support process [M2].

(21) **Ongoing partner education** – highlighting the benefits of collaboration to the customer [M4]; (22) **On-going trust development** – helps to reinforce the relationship, and through greater openness to improve the quality of the information being shared [M4]; (23) **Openness** – in terms of information exchange is required to maintain and develop the relationship [M7] [M3] [R3] – in terms of information exchange with all customers, i.e. a balanced approach [M3]; (24) **Openness about processes** – sharing information concerning processes leads to processes that are easier to operate and improve [M11] [M1]; and (25) **Opportunism .v. collaboration** – understanding the difference between the two [M11].

(26) **People relationship skills** – proactive, confident, team-working and influencing skills [M5] [M11]; (27) **Proactive approach**, in terms of forward thinking – is a key to an on-going relationship [M4] [R6] [R4]; (28) **Quality of information exchanged** – poor information is misleading and demeans the relationship and reduces trust [M4] – without the quality the trust does not develop between the two organisations [M4]; (29) **Role of compromise** – the relationship must be built around the fact that often compromise is the only way to move forward [M2]; and (30) **Role of people** – people are still needed as many core processes are not integrated [M5].

(31) **Seek industry best practice** – via IGD (Institute of Grocery and Distribution) and ECR (Efficient Consumer Response) initiatives - [M2] [R2]; (32) **Senior management commitment** – for the role of the service co-ordinators [M4] [M2]; (33) **Service co-ordinators** – enable a joint process for agreeing forecasts for promotions [R6] – enable

and effective communication channel [R6] [M4] – facilitate an on-going learning process for both organisations [R6] – facilitate on-going dialogue between a large number of departments across both organisations [R6] – resolving issues builds a trust-based relationship [R6]; (34) **Shared Key Performance Indicators** – [M2]; and (35) **Solving operational issues** – helps to build trust in the relationship [R6].

(36) **Supply chain consolidators** – to further the understanding of the dynamics of the supply chain [M4]; (37) **Supply chain culture** – trust and mutual understanding, compromise and communication [M2] [R3]; (38) **System enabled processes** – idealistic but where everybody should be aiming for [M5]; (39) **The availability of the right decision support tools** – e.g. sales profiling tool used in supporting promotional plans [M4]; and (40) **Totally integrated SC operations** - [M2].

(41) **Totally integrated SC plan** – focuses the organisations on a ‘single plan’ mentality [M2]; (42) **Trust** – is a fundamental requirement for the relationship to survive [M4] - without this the relationship diminishes [R3] [M2]; (43) **Understanding information requirements** – there is significant difference between customers as to what information should be shared [M4]; (44) **Understanding partner’s issues** – creates a sense of unity and helps to achieve co-ordination [R3]; and (45) **Understanding the customer’s buying behaviour** – customers tend to over order when products are on shortage – it is a case of educating them regarding the visibility of demand and volatility of their orders [M3].

(46) **Understanding the need for realism** – saying yes and failing is worse than saying ‘no’, blind agreement, due to the perceived master/servant role, can create resentment between the parties [M1]; (47) **Vendor managed inventory** – makes it easier to balance the overall supply chain co-ordination of supply and demand, and would significantly reduce order volatility [M3]; and (48) **Willingness to share** – the openness helps to develop the relationship commitment [M1] [M11].

Inhibitors (Code ZBY)

Eighteen supply chain relationship inhibitors were identified in the case study relationship between the retailer and the manufacturer, as follows (see Table 21 above):

(1) **Collaboration slippage** – not doing what had been previously agreed – not entering information on CPS [M4]; (2) **Commercial pressures** – give rise to trading conflict which is difficult for joint initiatives in the supply chain relationship [M1] [M2] [M10] [M5]; (3) **Cost driven** – too much focus by customer on cost when quality is more of an issue over short to medium term [M3]; (4) **Cultural differences** – leads to resistance to change required by relationship initiatives [M2]; and (5) **Differing trading strategies** – gives rise to negative impressions regarding the supplier's responsiveness [R1] [R6] [R4].

(6) **Information Usage - Inaccuracy of information exchanged** [M4] - **Timeliness of information exchange** [M4]; (7) **Joint initiative resources** - Not enough time spent leads to poor decisions and resentment [M5]; (8) **Poor personal relationships** – inhibits organisational relationship development [R4]; (9) **Poor forecast quality** - leading to a perception of poor commitment to relationship [M4]; and (10) **Poor strategic-level relationships** – leads to lack of endorsement of tactical and operational relationships [R4].

(11) **Misunderstanding of decision implications** – leads to misconceptions of supplier service performance [M5]; (12) **Product lead-times** – suppliers can only support Day1 for Day3, when Day1 for Day2 is sought [R6]; (13) **Short-term focus** – too much focus on the short-term leaves parties frustrated with each other [M5]; (14) **Perceived supplier performance** – leads to poor perceptions [R4]; and (15) **Perceived supplier responsiveness** – leads to pressure on relationship [R6] [R4].

(16) **Technology incompatibility** – leads to pressure on relationship [R6] [R4]; (17) **Time to Implement** – leads to change fatigue [R3]; and (18) **Under-estimating the role of EPOS** – customers do not appear to appreciate how useful EPOS data is [M3].

Enablers (Code YB) - Manufacturer

Thirteen supply chain relationship enablers were identified in the case study relationship within the manufacturer, as follows (see Table 22 below): -

(1) **Ability to share information** – the physical capability to share information with another organisation [M10]; (2) **Close proximity of staff** – all staff involved with a particular customer are located together to facilitate communication and co-ordination [M11]; (3) **Communication** – creating visibility across all the functional areas represented in the trading activity with the customer [M11]; (4) **Having the right culture** – internal trust and mutual understanding, compromise and communication [M2]; and (5) **Honesty** – being prepared to be truthful with a customer or supplier [M10].

(6) **Manage the problems** – look to deal with the problems and not the symptoms [M9];

(7) **Openness** – to be prepared to share information with the other organisation [M10];

(8) **Service Co-ordinators** – enable the internal co-ordination of information [M11]; (9)

Strive to get **quality information** from 80% of customers – is likely to be the best you are going to get [M4]; and (10) **Thinking beyond the Master-Servant relationship mentality** – restricts the need to be creative to solve supply chain issues [M1].

Table 22: Enablers and Inhibitors of SC Relationships (YB) Manufacturer - Internal

Supply Chain Relationships	Code	Enablers	Inhibitors
Manufacturer	YB	<ul style="list-style-type: none"> • Creative Thinking • Customer Implants • Customer team clusters • Honesty • Information critical mass • Information sharing ability • Internal Communication • Maintain current information • Openness • Problems not symptoms • Supply chain culture • Trust • Understanding demand aggregation 	<ul style="list-style-type: none"> • Forecast driven DC • Future production plans • Information location • Information Overload • Information starved • Managing change • Organisational Size • Production forecast driven • Promotions management process • Role of EPOS • Timeliness of information exchange

(11) **Trust** – is a fundamental requirement for the relationship to survive [M10]; (12) **Understanding the need to manage the aggregated demand** – the ability to balance supply and demand across all customers [M4]; and (13) **Updated information** – ensuring all concerned received updated information on a regular basis [M6].

Inhibitors (Code YB) - Manufacturer

Ten supply chain relationship inhibitors were identified in the case study relationship within the manufacturer, as follows (see Table 22 above): -

(1) **Forecast driven DC (Distribution Centre)** – lack of availability of demand and promotional information leads to ineffective decisions [M11]; (2) **Information overload** – information for the sake of information leads to excessive administration [M11]; (3) **Information location** – not having the right information in the right place diminishes its usefulness [M3]; (4) **Managing change** – a time consuming process [M10]; and (5) **Promotions management process** – poor availability of information leads to poor service and responsiveness [M8].

(6) **Openness of future production plans** – these need to be made available to suppliers [M3]. (7) **Organisational size** - leading to lack of co-ordination and duplication of work [M6]. (8) **Production is forecast driven** – production information shared with suppliers distorts the reality as it is forecast driven and not based on actual short-term demand [M3]. (9) **Under-estimating the role of EPOS** – not having enough people working on EPOS data and thereby limiting its effective usage [M3]; and (10) **Timeliness of information exchange** - leads to increased uncertainty and poor responsiveness. diminishes the usefulness of information and inhibits decision making [M11]

Enablers (Code YDX) – Manufacturer and Suppliers

Forty-one supply chain relationship enablers were identified in the case study relationship between the manufacturer and the packaging suppliers, as follows (see Table 23 below): -

Table 23: Enablers and Inhibitors of SC Relationships (YDX) Manufacturer –Suppliers.

Supply Chain Relationships	Code	Enablers	Inhibitors
Manufacturer & Paper Label, Glass, Plastic Closure and Corrugated Board Suppliers	YDX	<ul style="list-style-type: none"> • Ability to share info • Advanced problem warning • Broad communication interface • Clear communication channels • Communication capabilities • Customer Implants • Direct Communication channels • Direct Factory Relationships • Dual sourcing • Early Supplier involvement • Equivalent Level Communication • Good personal relationships • Information based Culture • Issue Identification • Joint Training Programmes • Long term supply • Mean what you say • Multiple level relationships • Mutual Benefit • Mutual honesty • Mutual commitment • Mutual trust • Mutual Understanding • Ongoing Communication • Openness • Pre-emptive Communication • Proactive problem management • Proactive suppliers • Realistic supplier communication • Role of self-billing • Sharing personnel • Supplier compliance measures • Supply chain culture • Supply chain manager • Supply Chain Meetings • Timely information exchange • Understanding information requirements • Understanding partners drivers • Understanding partners values • Understanding SC dynamics • Vendor managed inventory • Willingness to share 	<ul style="list-style-type: none"> • Availability of future plans • Customer over-forecasting • Design change reporting • Differing Management Policies • Fragmented information • Inconsistent forecast quality • Inconsistent information exchange • Information exchange accuracy • Managing change • Managing Promotions • Perceived lack of confidence • Prior capital investment • Promotional information availability • Staff turnover • Supplier In-exclusivity • Traditional Industry views

(1) **Clear communication channels** – facilitate the on-going dialogue necessary for the relationship to exist [PLS1]; (2) **A supply chain manager** – with a cross-functional role supervising activities from a “total business” viewpoint, implying the need for multi-skills [PCS1]. (3) **Ability to share info** [M10]; (4) **Advanced problem warning** – reduces uncertainty and to some extent strengthens the relationship [CBS2]; and (5) **Realistic supplier communication** – telling them how it is, with any opportunistic motives - [M10] [CBS2].

(6) **Broad communication interface** – there are many people across the two organisations that need to be able to communicate with each other [CBS2]; (7) **Communication capabilities** – e-mail provides a means of informing people [CBS2] – gathering information and directing it to where it is needed “*A funnel of information*” [PLS1] – plays a key role in maintaining the relationship and helping to contextuallise decision making [PLS1] – the availability of people to be able to communicate with suppliers [PCS1] – the most important element of the relationship [CBS2]; (8) **Equivalent level communication** – the need for communication on equivalent levels removes the element of embarrassment about discussing problems and creates a common ground [M9]; (9) **Communication linkages** - Setting up direct linkages between corresponding people across the two organisations [GS2]; and (10) **Co-ordination** – customer service plays a vital role in co-ordinating the relationship interface with the customer [PLS1].

(11) **Direct communication channels** – the right people talking to the right people, rather than through a third party (i.e. purchasing) saves time and resolves issues more quickly [CBS2]; (12) **Dual sourcing** – due to the nature of the product (in terms of quality) and the demand for the product (doubtful if one supplier could supply everything) helps to focus the relationship development [M9]; (13) **Exchange of personnel** – particularly at shop-floor level helps to identify issues and builds understanding [M9]; (14) **Direct factory relationship** – a direct relationship between factories helps to sort out manufacturing issues rapidly [GS2]; and (15) **Good personal relationships** – help to reinforce the corporate relationship commitment [CBS2].

(16) **Supply chain culture** – trust and mutual understanding, compromise and communication [CBS2]; (17) **Issue identification** – having identified the issues then look to build the relationship [M9]; (18) **Customer implants** – supplier employees spending time at customers premises on a weekly basis, acting as information conduits [PCS1]; (19) **Information based culture** – enables the flow of information [CBS2]; and (20) **Early supplier involvement** – not involving suppliers can lead to resentment [PCS1].

(21) **Multiple level relationships** – relationships at operational, tactical and strategic levels [GS2] [CBS2]; (22) **Proactive problem management** – look to deal with the problems and not the symptoms [M9]; (23) **Mean what you say** – there is no point in saying one thing and doing another – this develops resentment [CBS2]; (24) **Mutual benefit** - there must be two-way benefit if the relationship is to survive [PCS1]; and (25) **Mutual trust and honesty** – there must be two-way trust and honesty if the relationship is to survive [M10] [PCS1].

(26) **Openness** – being afraid to share information will starve the relationship [M10] [CBS2]; (27) **Pre-emptive Communication** – giving advanced warning of potential problems to customers [CBS2]; (28) **Proactive suppliers** – a ‘can do’ approach from suppliers demonstrates commitment to the relationship [M9]; (29) **Recognising the role of the supplier in product development** – this can speed up the process [PCS1]; and (30) **Long-term supply reduces safety stocks** – due to the nature of the relationship, safety stocks can be reduced [CBS2].

(31) **Service co-ordinators** – enable the co-ordination of information flows between suppliers and a number of departments within the customer [CBS2] – facilitate the flow of information [GS2] – helps to build a closer relationship with the customer, helps to demonstrate commitment to the relationship [CBS2] – speed up the information flows [CBS2]; (32) **Joint training programmes** – shared training helps to foster communication and strengthens the relationship [GS2]; (33) **Supplier compliance** – OTIF (On Time In Full) is the base measure of compliance [PCS1]; (34) **Supply chain meetings** – regular meeting between Manufacturer, packaging supplier and supplier’s

supplier strengthen the relationships [CBS2]; and (35) **The role of self-billing** – can help to build confidence in the relationship [M9].

(36) **Timely exchange of information** – minimising the delay in exchanging information maximises its usefulness [CBS2]; (37) **Understanding each other's values and business drivers** [GS2]; (38) **Understanding the supply chain dynamics** – in terms of the key drivers, helps to better co-ordinate the supply chain in terms of performance [CBS2]; (39) **Understanding what information to exchange** – in terms of the key drivers, helps to better co-ordinate the supply chain in terms of performance [CBS2]; (40) **Vendor managed inventory** – makes it easier to balance the overall supply chain co-ordination of supply and demand, and would significantly reduce order volatility [PLS1]; and (41) **Willingness to share information** [CBS2].

Inhibitors (Code YDX)

Ten supply chain relationship inhibitors were identified in the case study relationship between the manufacturer and the packaging supplier, as follows (see Table 23, above):

(1) **Information exchange accuracy** – Shared production plans based on forecasts rather than demand give rise to service problems when shortfalls occur [GS2]; (2) **Communication of information** – inconsistent sharing of information leads to increased uncertainty [PLS1]; (3) **Staff turnover** – leads to constantly having to build new personal relationships [CBS2]; (4) **Differing management policies** – leads to conflicting actions [PLS1]; and (5) **Fragmented information** – different sources on information gives rise to inconsistencies and further time delays [CBS2] – many different sources on information relating to design changes gives rise to inconsistencies and further time delays [PLS1].

(6) **Inconsistent quality of forecasts** - leads to extra work for the supplier [PLS1]; (7) **Managing change** – a time consuming process [M10]; (8) **Managing promotions** – poor availability of information leads to poor service and responsiveness [PLS1] – poor accuracy leads to increased uncertainty [GS2]; (9) **Over-forecasting by customer** based on previous experience – Despite improvements in product availability this continues

and gives rise to service problems [GS2]; and (10) **Poor Availability of future development plans** – leads to delays in ability to respond [GS2].

(11) **Poor reporting of design changes** – leads to extra pressure on supplier's lead times [PLS1]; (12) **Prior capital investment** – difficult to convince suppliers that further investment required [M10]; (13) **Supplier in-exclusivity** – supplier works for competing customers, leads to multiple “masters” [M10]; and (14) **Traditional industry views** – contrary to SC philosophy [M10] – reluctance to commit to investment to support relationship [M10].

Table 24: Enablers and Inhibitors of SC Relationships (DX) Packaging Suppliers.

Supply Chain Relationships	Code	Enablers	Inhibitors
Paper Label, Glass, Plastic Closure and Corrugated Board Suppliers	DX	<ul style="list-style-type: none"> • Openness • Service co-ordinators 	<ul style="list-style-type: none"> • Prior capital investment

Enablers (Code DX) – Packaging Suppliers

Only two supply chain relationship enablers were identified in the case study relationship within the packaging suppliers, as follows (see Table 24 above): - (1) **Openness** by manufacturing customers with suppliers regarding future production plans [CBS2]. (2) **Service co-ordinators** – enable the co-ordination of information flows between the organisations and its suppliers [CBS2].

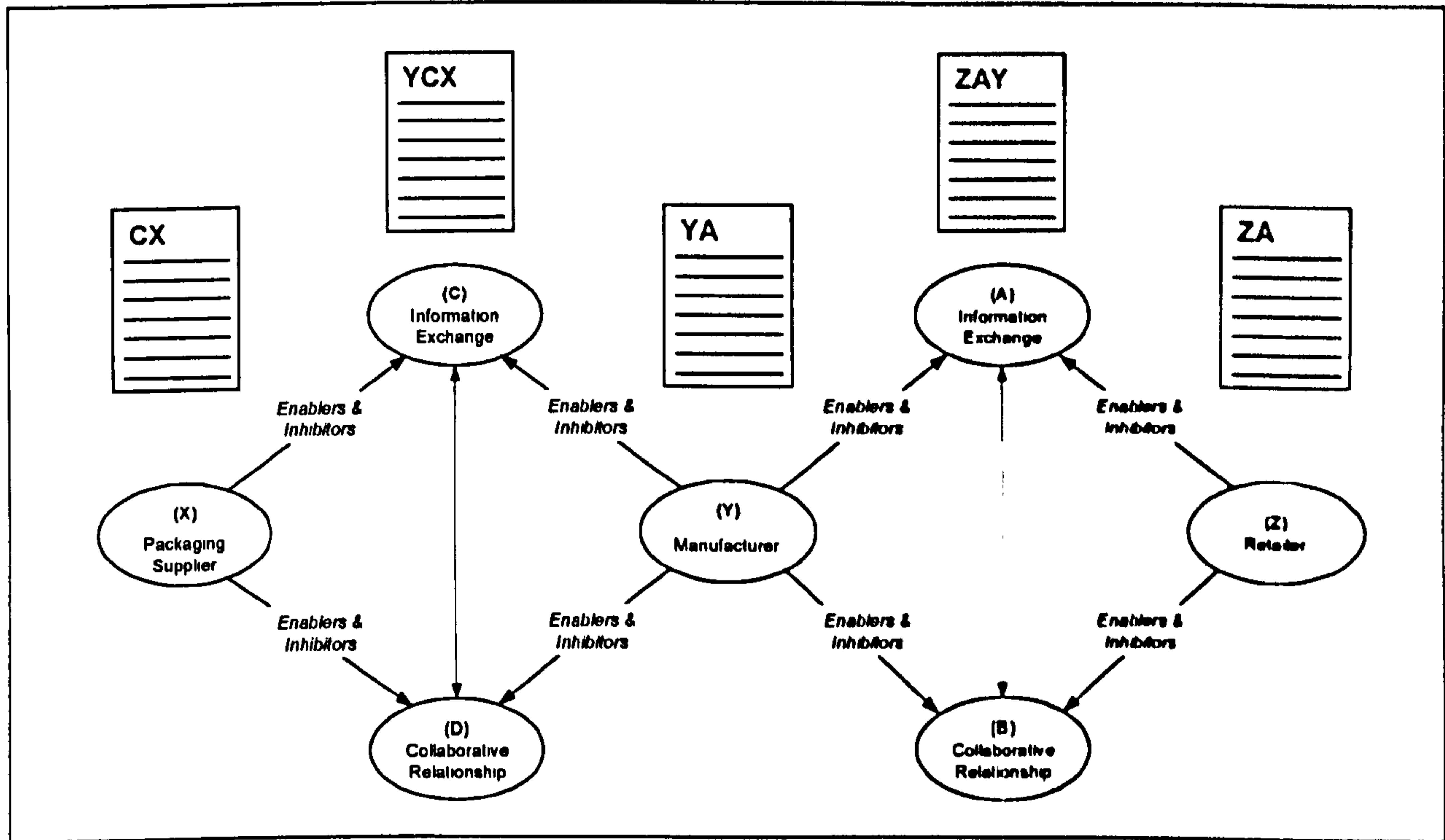
Inhibitors (Code DX)

Only one supply chain relationship inhibitor was identified in the case study relationship within the packaging suppliers, as follows (see Table 24, above): - (1) **Prior capital investment** – difficult to convince suppliers that further investment required [M10].

7.4 Theme 3: Information in the Supply Chain

This section presents the enablers and inhibitors of information exchange in the context of a supply chain relationship. The following diagram containing the research conceptual framework is used to present the findings (see figure 83).

Figure 83: Information Exchange Enablers and Inhibitors



It should be noted that the enablers and inhibitors of the information exchange between the manufacturer and the four packaging suppliers (YCX) and the internal information exchange within the four packaging suppliers (CX) have been combined.

The case study has revealed a significant number of enablers and inhibitors. Whilst this volume can be seen as one of the disadvantages of qualitative research, the depth of the findings in terms of the identification of the context for each or the enablers and inhibitors is also one of the major strengths of qualitative research. It is the richness of the findings that are particularly suited to research of such an exploratory nature. The complete lists of enablers and inhibitors can be found in Appendix J and K respectively. Table 25 (overleaf) presents the enablers and inhibitors for information exchange for the retailer in the case study.

Table 25: Enablers and Inhibitors of Information Exchange (ZA) Retailer - Internal

Information Exchange	Code	Enablers	Inhibitors
Retailer	ZA	<ul style="list-style-type: none"> • Cost-effective exchange medium • Information accuracy • Information culture • Internal Visibility • Ongoing process visibility • Right technology in place • Time/Resource Commitment • Utilisation knowledge 	<ul style="list-style-type: none"> • EDI inflexibility • Gaps in information flow • Inability to use information • Information quality • Multiple standards (systems) • Multiple standards (technical) • No information strategy • Ownership of data • Reluctance to share information • Technological capability • Technology driven

Enablers (code ZA) - Retailer

Eight information exchange enablers were identified in the case study relationship within the retailer, as follows (see Table 25 above): -

(1) The need for a **cost-effective medium for exchange**, e.g. using the Internet and web-related technologies to share information with suppliers, which would not have been possible with preceding technologies such as EDI [M8]; (2) **Changing “Heart and Minds”** in terms of developing an information culture [R1]. In this instance an information culture is one where information is seen as an enabler of more effective decision making achieving by sharing this with a trading partner; (3) Next, is **creating internal visibility**, in terms of clearly identifying internal processes, identifying all stock locations etc [M4]; (4) In terms of supporting joint activities there needs to be an **investment of time and resources** [R2]; and (5) A key enabler is **providing accurate information**, in inaccurate information is counter-productive, misleading and diminishes trust within the retailer’s organisation [R1].

(6) **Recognising the ongoing process** - this is not a short-term activity, but an ongoing awareness of internal processes [R2]; (7) Ensuring that the **right supporting technology is in place**, thereby enabling people to use information more effectively, i.e. saving time with data entry, processing, interpretation etc [R4] [R6] [R1]; and finally, (8)

understanding how to use information, in terms of having people who know how it can be used based on the visibility it gives you of the supply chain [R1].

Inhibitors (code ZA) - Retailer

For the retailer, internally, twelve information exchange inhibitors were identified. (see Table 25 above) as follows: -

(1) **EDI inflexibility** – suffers from lack of flexibility, particularly for smaller suppliers [R4]; (2) **Technical capability** – a lack of access to technology to share information diminishes the value of the information available by having to send it by alternative, but slower means [R3]; (3) **Multiple systems standards** – leads to lack of usage [R3]. (4) **Multiple technical standards** – leads to lack of usage [R3]; and (5) **Inability to extract Meaningful Useful Data** - failure to utilise information exchanged [R2].

(6) **Reluctance to sharing sales data** – commercial sensitivities [R3] – requires significant effort to overcome [R3]; (7) **IT solutions look for problems** – leads to being **technology driven** [R2]; (8) **Lacking ability to use information available** – is a missed opportunity [R2]; (9) **Lacking an Information Strategy** – causes different approaches across the organisation [R4]; and (10) **Not having the right systems in place** – leads to delays in processing information and not being able to spread visibility across the organisation [R3]; (11) **Quality of information** – leads to lack of usage [R3]; and (12) **Unclear ownership of data** – delays the sharing of information [R3].

Enablers (code ZAY) – Retailer and Manufacturer

Twenty-eight information exchange enablers were identified in the case study relationship between the retailer and the manufacturer, as follows (see Table 26 below):

(1) **Utilisation mechanism** – ensuring that a mechanism is in place, which will enable the use of the information [R1] [M3]; (2) **Common product codes and descriptions** – everybody would then be working from the same “hymn sheet” [M3] [M4]; (3) **Broader relationship interface** – more than one to one [M4] [M7]; (4) **Information accuracy** – only spending time collecting the information that is required [M3]; and (5) **Creating an**

“us” Mentality – developing a culture that encourages joint activities and team-working [M4] [M7] [R2].

Table 26: Enablers and Inhibitors of Information Exchange (ZAY) Retailer – Internal

Information Exchange	Code	Enablers	Inhibitors
Retailer – Manufacturer	ZAY	<ul style="list-style-type: none"> • Broad relationship interface • Commitment • Common product codes • Common Supply Chain Terminology • Common Technology • Common Vision • Customer implants • Good personal relationships • Informal information channel • Information accuracy • Joint category management • Joint culture • Joint education • Joint team building activities • Key information collection • Mutual benefit identification • Mutual process understanding • Mutual respect • Openness • People relationships skills • Process visibility • Time/Resource Commitment • Trust • Understanding information role • Utilisation knowledge • Utilisation mechanism • Visionary leadership 	<ul style="list-style-type: none"> • Confidentiality/Sensitivity • Context specificity • Immediacy perception • Information validity • Multiple standards (data) • Multiple standards (product codes) • Multiple standards (systems) • Mutual trust • Ongoing Commitment • Relative % of Total Volume • Right information • System incompatibility • Technology Utilisation • Timeliness of information • Trusting customer's word • Understanding decision implications

(6) Creating an **informal information channel** – maintaining the informal flow of information is an important addition to the formal information channels [M6] [M4] [M7]; (7) **Joint education** – trying to educate and learn from each other [M4]; (8) **Good personal relationships** – can make or break the business relationship [R2] [M7]; (9) **Honesty** – a commitment to do what you have said you will do [M4]; and (10) **Customer implants** – dedicating people to work on a daily basis with the other side, e.g. customer service co-ordinators [M4] [M7].

(11) **Time and resource commitment** – in terms of supporting joint activities [R2]; (12) **Joint category management** - managing the whole category together profitably, i.e. working together with a common goal [M4]; (13) **Mutual understanding of processes and structures** – both sides spending time getting to understand each other's processes and structures [M4]; (14) **Need visionary leadership** – someone who is prepared to try and see what happens [M3]; and (15) **Need to Identify the Mutual Benefit** – be clear about the benefit for both parties [M6].

(16) **Openness** – be prepared to share information [M4]; (17) **People relationship skills** – skills needed to foster the relationship [M6]; (18) **Accurate information** – inaccurate information is counter-productive, mis-leading and diminishes trust [M7]; (19) **Process visibility** - this is not a short-term activity, but an on-going activity [R2]; and (20) **Common vision** – having a common idea of where you are both going [M4].

(21) **Common supply chain terminology** – in terms of terminology, understanding related issues [M4] [M6] [M7]; (22) **Common technologies** – Overcomes the need for integration interfaces, e.g. the rise of XML (extensible mark-up language) [M3]; (23) **Mutual respect** - start from a point of respect - [M7]; (24) **Team building through joint activities** – “we both need to get on the team bus!” [M4] [M6]; and (25) **Trust** – to facilitate the relationship in terms of sharing information [M6] [M4].

(26) **Utilisation knowledge** - how you can use it based on the visibility it gives you of the supply chain [M3] [M4] [R1]; and (28) **Understanding information role** – what can the information do for you [M3].

Inhibitors (code ZAY) – Retailer and Manufacturer

Twenty information exchange inhibitors were identified in the relationship between the retailer and the manufacturer, (see Table 26 above) as follows: -

(1) **Access to the technology** – linked to the right people having access to the shared information – [R2]; (2) **Commercial sensitivities of suppliers and customers** – prevents information exchange [M11] [M7] and regarding promotions, customers work with the

manufacturers competitors, which prevents the flow of information [M10] - prevents an open culture to fully support information sharing [M11]; (3) **Multiple data standards** – leads to lack of usage [M1]; (4) **Multiple product description codes** – causes confusion and slows the process [R1]; and (5) **Multiple systems standards between customers** – leads to limited value of the information received, and lack of return for work involved [M3] [M5].

(6) **Mutual trust** - do not trust customer to do as agreed which causes lack of usage and increases uncertainty [M10]; (7) **Information validity** - Do not trust information received, which leads to lack of usage [M10]; (8) **Getting the right information to the right people** – increases the usage and relevance of the information [R2]; (9) **Having people who can use the technology** – leads to less affective decisions [M10]; and (10) **Information only relates to percentage of total volume** – does not support usage and decision making [M3] [M4] [M8] [R2].

(11) **Lack of compatible systems** – corporate firewalls hampers the sharing of information [R2] [M11]; (12) **Lacking sufficient trust in supplier or customer to share information** – prevents the sharing of information [M4] [R2]; (13) **Not having information on real-time basis** – reduces the effectiveness of the information [M4] [R2]; (14) **Not understanding decision implications** – not utilising potential of shared information [R2]; and (15) **Perceived relevance of the information** - leads to lack of usage [R2].

(16) **Perception of immediacy** – leads to unrealistic expectancies of decisions [R4]; (17) **Perceptions of trustworthiness of suppliers** – based on what suppliers say about other customers – [M10]; (18) **Supplier's ability to use information** – depends upon the information being in the right format [R1]; (19) **The right Manufacturer's people having access to the shared information** – delays the process and reduces the effectiveness of the shared information [R2]; and (20) **Understanding the context specificity of information** – knowing when and how to use the shared information [M8].

Enablers (code YA) - Manufacturer

Six information exchange enablers were identified within the case study manufacturer, as follows (see Table 27 below): -

(1) Changing “Heart and Minds” – developing an information culture [M3] (2) Creating internal visibility – processes, stock locations etc [M4] (3) Utilisation knowledge - ensuring the receivers of the information have the skills to use it, otherwise it is pointless and the information is often not used [M3] (4) Time/Resource Commitment - investment of time and resources in terms of supporting joint activities [R2] (5) Process visibility - recognising the ongoing process, this is not just a short term activity [R2] (6) Supporting technology in place – enable people to use the information more effectively, i.e. saving time with data entry, processing, interpretation etc [M3] [M7]

Inhibitors (code YA) - Manufacturer

Seventeen information exchange inhibitors were identified within the case study manufacturer as follows (see Table 27 below): -

(1) Gaps in information flow – a break in internal communication causes confusion and prevents information flow [M10]. (2) Timeliness of information - delayed information receipt prevents decision-making based on real-time [M11]. (3) Multiple systems standards – leads to lack of usage [M11]. (4) Information validity/mistrust - do not trust information received, which leads to lack of usage [M10] [R2]. (5) EDI inflexibility – suffers from lack of flexibility, and to some extent cost, particularly for connecting to smaller suppliers [M2].

(6) Information overload – it becomes counter-productive [R4] – it simply ends up being stored without anything being done with it [M3] – people do not know how to interpret the exchanged data [M8] [M10]; (7) Lack of availability of information in systems – limits the potential for exchanging information with suppliers [M2]; (8) Lack of systems integration - prevents the uninterrupted flow of information [M5]; (9) Process integration - missing process linkages prevents the uninterrupted flow of information [M3] [M1]; and (10) Technical capability - not having the right systems in

place leads to delays in processing information and not being able to spread visibility across the organisation [M3].

Table 27: Enablers and Inhibitors of Information Exchange (YA) Manufacturer – Internal

Information Exchange	Code	Enablers	Inhibitors
Manufacturer	YA	<ul style="list-style-type: none"> • Internal Visibility • Right Technology • Information Culture • Time/Resource Commitment • Process visibility • Utilisation knowledge 	<ul style="list-style-type: none"> • EDI inflexibility • Gaps in information flow • Inability to use information • Information availability • Information Overload • Information validity/mistrust • Misinterpreting the role of information • Misinterpreting the role of technology • Multiple standards (systems) • Ownership of data • Process Integration • Production drivers & capacities • System integration • Technical Capability • Technology driven • Timeliness of information • Willingness to share

(11) Not understanding **role of information** – leads to limited use [M3]; (12) Not understanding the **role of new technologies** – leads to limited use [M2]; (13) **Inability to use information** - not understanding what to do with it leads to it only being used for re-assurance purposes, nothing else [M3]; (14) Too much focus on IT systems - leads to being **technology driven** [M10]; (15) Unclear **ownership of data** – delays the sharing of information [M2].

(16) Understanding **production drivers and capacities** – leads to enhanced frustration [M10]; and (17) **Willingness to share** – despite having technology [M2] – part of the negotiating position [M2] - internal resistance from people to sharing data which requires significant effort to overcome [M8] – a functional culture with a traditional mindset of not sharing information [M9].

Enablers (code YCX) – Manufacturer and Packaging Suppliers

Eight information exchange enablers were identified within the case study relationship between the manufacturer and the packaging suppliers, as follows (see Table 28 below):

(1) A **proactive customer** – a customer that looks to see what benefits can be potentially realised from sharing information that it has [CBS2]; (2) **Accurate Information** – sending inaccurate information merely is propaganda [PLS1]; (3) **Honesty and openness** - being open about mistakes, there is no point hiding mistakes as this can build resentment in the relationship [PLS2] [CBS2]; (4) **Good personal relationships** – can make or break the business relationship [PLS1] [GS2] [PCS1] [CBS2]; and (5) **Non-complacency** - not taking each other for granted, being professional about the relationship [PLS2].

Table 28: Enablers & Inhibitors of Information Exchange (YCX) Manufacturer – Suppliers

Information Exchange	Code	Enablers	Inhibitors
Manufacturer & Paper Label, Glass, Plastic Closure and Corrugated Board Supplier	YCX	<ul style="list-style-type: none"> • Good personal relationships • Honesty • Information accuracy • Information relevance • Information timeliness • Non-complacency • Openness • Proactive customers 	<ul style="list-style-type: none"> • Communication Breakdown • Confidentiality/Sensitivity • Immediacy perception • Inability to use information • Inconsistent information • Inconsistent Sharing • Information validity/mistrust • Misinterpreting technology's role • Misinterpreting the role of information • Reciprocal trust • Relative % of Total Volume • Right information • System incompatibility • Timeliness of information

(6) **Timeliness of exchange** – sending information when it is needed, or at the most appropriate time in terms of its usage [PLS1] [PLS2]; and (7) **Understanding the need for relevant information** – instead of just sending everything you have [PLS1] [PLS2]

Inhibitors (code YCX) – Manufacturer and Packaging Suppliers

Fourteen information exchange inhibitors were identified within the case study manufacturer as follows (see Table 28 above): -

(1) **Breakdown in communication** – causes confusion and prevents information flow [M10]. (2) **Commercial sensitivities** – limits the opportunity to share information [M2] [M9]. (3) **Reciprocal trust** - do not trust customer to do as agreed, which causes a lack of usage and increases uncertainty [M10] [PCS1]; (4) **Information only relates to percentage of total volume** – does not support usage and decision making [GS2] [PCS1]; and (5) **Inconsistent information sharing** – delays the process, reduces reliability and trust [PLS2].

(6) **Lack of compatible systems** – corporate firewalls hamper the sharing of information [PLS2] [M10] – have not been able to set up all possible options that would support the sharing of information [GS2]; (7) **Not providing information in timely manner** – diminishes the value of the information shared [PCS1] [CBS2]; (8) **Not understanding role of information** - leads to lack of usage [M10]; (9) **Not understanding what information to exchange** – limits the potential to jointly improve the supply chain [M2]; and (10) **Perception of immediacy** – leads to unrealistic expectancies of decisions [CBS2].

(11) **Validity of the information** – in terms of its quality, which leads to lack of usage [GS2]; (12) **Suppliers do not know what to do with shared info** – leads to under-utilisation [M10]; (13) **Understanding the role of EDI** – need to be clear about the continuing role of EDI [M2]; and (14) **Variability of the information** - leads to lack of usage [GS2].

Enablers (code CX) - – Packaging Suppliers

Three information exchange enablers were identified within the case study relationship within the packaging suppliers, as follows (see Table 29 below): -

(1) Changing “heart and minds” – developing an information culture [CBS2]; (2) Supporting technology in place – enable people to use the information more effectively, i.e. saving time with data entry, processing, interpretation etc [PLS2]; and (3) Understanding how to use information - how you can use it based on the visibility it gives you of the supply chain [PLS2] [PLS1] [GS2] [PCS1] [CBS2].

Table 29: Enablers and Inhibitors of Information Exchange (CX) Suppliers – Internal

Information Exchange	Code	Enablers	Inhibitors
Paper Label, Glass, Plastic Closure and Corrugated Board Suppliers	CX	<ul style="list-style-type: none"> • Information Culture • Right technology • Utilisation knowledge 	<ul style="list-style-type: none"> • Culture (not to share) • Immediacy perception • Information Overload • System incompatibility • Willingness to share

Inhibitors (code CX) – Packaging Suppliers

Nineteen information exchange inhibitors were identified within the case study relationship within the packaging suppliers as follows (see Table 29 above): -

(1) **Information overload** – too many e-mails, which end up not getting read [PCS1]; (2) **Lack of compatible software** – results in not being able to link to customers systems [PCS1] [PLS1]; (3) **Lack of culture based on communication** – does not support the exchange of information [PCS1]; (4) **Lack of inclination to share information** – resulting from the traditional approach [CBS2]; and (5) **Perception of immediacy** – leads to unrealistic expectancies of decisions [CBS2].

7.5 Case Analysis Summary

This chapter has presented the analysis of a large number of in-depth semi-structured interviews undertaken with multiple respondents across the case study supply chain organisations. The interviews were used to explore the issues of supply chain relationships and information exchange.

For both issues a large number of enablers and inhibitors have been identified in the case study supply chain. The enablers and inhibitors have been identified at various

positions (i.e. retailer, manufacturer, and packaging suppliers) and levels (i.e. strategic, tactical and operational), in accordance with the sub-unit of analysis, the SCIIOR model as detailed in Chapter 4.

In the following chapter, the results of the analysis are discussed in terms of the extent to which the research objectives as set out in Chapter 3 have been met.

CHAPTER 8:

RESULTS AND CONCLUSIONS

8.1 Introduction

This chapter summarises the major highlights in the research data, which form the basis of the research conclusions, and the development of the framework for evaluating supply chain relationships and information exchange.

It is worth re-visiting the objectives in order to consider to what extent they have been met by the fieldwork undertaken. The objectives of this research were as follows: -

- Objective 1:** To explore the concept of supply chain relationships in terms of their inhibitors and enablers, with specific reference to the UK Grocery sector.
- Objective 2:** To explore the concept of information exchange, as a sub-set of supply chain relationships, in terms of their inhibitors and enablers, with specific reference to the UK Grocery sector, and
- Objective 3:** To explore the inter-relationship between the exchange of information and collaborative supply chain relationships.

The remainder of this chapter is structured as follows: firstly, the enablers and inhibitors of collaborative supply chain relationships are considered and where appropriate discussed in terms of the literature. Secondly, the enablers and inhibitors of information exchange are considered and where appropriate discussed in terms of the literature. Finally, the inter-relationship between the exchange of information and collaborative supply chain relationships is discussed.

For both supply chain relationships and information exchange the enablers and inhibitors have been identified at the various positions (i.e. retailer, retailer-manufacturer, manufacturer, manufacturer-packaging suppliers, and packaging suppliers) and levels (i.e. strategic, tactical and operational). These are presented in a tabular format, comprising (1) the enablers and inhibitors that have been identified in the case study supply chain and that have been recognised in the literature; and (2) the enablers and inhibitors that have been identified in the case study supply chain and have not been recognised in the literature.

It is also worth noting that the enablers and inhibitors identified in the case study supply chain for the four packaging suppliers and the relationship between the manufacturer and the packaging suppliers have been amalgamated for the sake of clarity. Due to the relatively limited number of interviews undertaken within the packaging suppliers this amalgamation was considered the most feasible way of presenting the results.

8.2 Supply Chain Relationships

This section presents the enablers and inhibitors of collaborative supply chain relationships. Following this, the enablers and inhibitors are illustrated in terms of their position in the supply chain by reference to the sub-unit of analysis contained in Chapter 4.

8.2.1 Collaborative Supply Chain Relationship Enablers

A total of eighty-three enablers were identified in the case study supply chain, of which fifty-three were recognised in the literature and thirty enablers, which were not. The complete list of enablers can be found in Table 30. The enablers that were cited by interview respondents as being important or critical to the collaborative supply chain relationship are now discussed, including where they are recognised in the literature. The enablers identified, and that are not recognised in the literature are also discussed in terms of their context and impact on the collaborative supply chain relationship.

(A) Board-to-Board Dialogue

In the case study there is the perception held by the retailer (at a senior level) that the manufacturer is a poor supplier on the basis that the two parties' trading strategies are misaligned (the manufacturer trades on a five-day basis, compared to a "24x7" basis for the retailer). The misperception arises as a result of infrequent dialogue between the retailers and manufacturers boards of directors. The reality is that generally, at a tactical and operational level, both the retailer and manufacturer see themselves as having a very collaborative and positive relationship. The enabler of a more collaborative relationship closer here is an **ongoing board-to-board dialogue** between the retailer and the manufacturer, in terms of maintaining lines of communication. This issue is more significant in terms of its importance in light of another enabler "Senior

Management Commitment” as highlighted by Ellram and Edis (1996). Such commitment is likely to be difficult to maintain due the poor perception of the manufacturer resulting from the lack of the ongoing board-to-board dialogue.

(B) Collaborative/Information-Based Culture

If organisations are to develop closer relationships with their trading partners (customers and/or suppliers) then there is a need to develop a **collaborative or information-based culture** (Stank *et al.* 1999b). Such a culture seeks to utilise wherever possible information to reduce uncertainty in the supply chain. The culture is one where the organisation recognises the **mutual interdependency** with its trading partners (Monczka *et al.* 1998) (Hogarth-Scott 1999). In terms of the supply chain relationship it appears that both organisations would share similar philosophies with regard to their attitude to sharing and utilising information for the purpose of improving the co-ordination of their combined supply chain activities.

(C) Common Goals/Objectives

If organisations are to develop and maintain closer relationships with their trading partners (customers and/or suppliers) then sharing **common goals** and/or objectives is a key enabler. If organisations do not share common goals and/or objectives then they are likely to be acting in conflict with one another, and not achieving a common direction (Ellram and Edis 1996).

(D) Communication Related Enablers

According to Stank *et al.* (1999b) communication is “*the glue that holds the supply chain together*”. A broad range of communication related enablers were identified in the case study supply chain. Ellram and Edis (1996) suggest that “*excellent communication cannot be emphasized enough*”. The communication related enablers include:

- (1) The need for a **broad communication interface**, rather than the more traditional buyer-supplier single point of contact;
- (2) clearly **identified direct communication channels**, enabling opposites in the partnering organisations to talk directly to each other;
- (3) both **internal and external communication**, with equal importance.

Focussing on external communication alone is often done at the expense of the internal communication leading to a lack of internal integration (Stank *et al.* 1999a); (4) preemptive communication in the form of **advanced problem notification**, which Stank *et al.* (1999b) suggest is a way to better manage a supply chain in a volatile environment.

And finally, (5) organisations must **mean what they say**, for example, upon receipt of a request from their customer; if they say “yes” they must mean “yes” and not be merely trying to please their customer. Additionally, when communicating with a supplier, the organisation must stand by what it has promised; otherwise failure to do so will undermine or destroy any trust between the two partners. .

(E) Behavioural Related Enablers

A broad range of behavioural related enablers were identified in the case study supply chain. These include: (1) **mutuality**, in terms of benefits (Whipple and Frankel 2000), commitment, compromise, honesty, recognition, respect, trust [Lee and Billington (1992) Whipple and Frankel (2000)], understanding, agreed processes; (2) extending the mutuality theme, **joint replenishment decisions and jointly defined processes** (Spekman *et al.* 1998); and (3) **sharing of key performance indicators (KPIs), personnel and finally, and possibly most importantly sharing information.**

(F) Information Sharing Related Enablers

A broad range of information sharing related enablers were identified in the case study supply chain, as follows:

(1) **Openness** in terms of sharing information that is required to maintain and develop the relationship, in terms of developing respect in the relationship, and sharing information concerning processes with the view to enabling simpler and easier to operate processes; (2) **capability to share**, in terms of being able to collect data and information, a means of physically sharing the data/information and presenting the data/information in a usable format. Inability to do any of these will become an inhibitor to the relationship requiring the sender to utilise a less effective method.

(3) **Information accuracy** (Monczka *et al.* 1998), in terms of facilitating the development of trust and improving subsequent decision making; (4) **sharing future plans** helps to develop relationship commitment; (5) the **timely exchange of information** (Daft and Lengel 1986). It was recognised by the manufacturer and the retailer that data and information is time sensitive and therefore minimising the delay in exchanging information maximises its usefulness; (6) **integrated supply chain planning**, in the sense of collaborating with a supply chain partner to produce joint forecasts and planning [Boddy *et al.* (2000) Stank *et al.* (1999b)]; and finally, (7) **reporting design changes**, and by doing so making it easier to manage promotions in a volatile trading environment (Stank *et al.* 1999b).

(G) Other Emerging Supply Chain Relationship Enablers

In addition to the enablers that are recognised in the literature, a further thirty enablers were identified in the case study supply chain. Of these, the enablers that were cited by interview respondents as being important or critical to the collaborative supply chain relationship are now discussed, as follows:

(1) **Customer implants**, who are also referred to within the manufacturers as ‘customer service co-ordinators’, whose role is to act as both an informal information channel and an advanced contact point for the customer in the event of problems. The ‘implant’ (employed by the manufacturer) spends a couple of days a week in the offices of the retailer. Access is also given to the retailer’s information systems enabling detailed data gather concerning the manufacturer’s products, in terms of sales, promotional activities, inventory levels and service performance. An interesting issue here is that the ‘implant’ has unrestricted access to the retailers information systems, whereby in theory they could access information pertaining to the manufacturer’s competitors. This potential ‘corporate spying’ does not occur (at least so far as the retailer is concerned) due to the significant level of trust that has developed between the retailer and manufacturer. If it were to happen, then the trust would be destroyed and the relationship seriously damaged.

(2) **Joint training programmes** help to create both unity between the supply chain organisation's employees, and a shared understanding of supply chain issues. (3) **Individual chemistry** is seen as important for relationships to flourish, and can quickly become an inhibitor to the relationship. (4) **Regular supply chain meetings** involving representatives from all the organisations in the supply chain help to facilitate a shared understanding of supply chain issues and how to solve them.

And finally, (5) **creating understanding** across the supply chain (for an organisations suppliers and customers), in terms of: buying behaviour, demand aggregation, information requirements, the role of people, and supply chain dynamics. The literature review highlighted over-ordering behaviour as a source of demand amplification in the supply chain (Lee *et al.* 1997a, 1997b). Additionally, the buyer, particularly in the case of the manufacturer is seen as having a pivotal role in developing closer relationships with the packaging suppliers. Finally, an important enabler, and one that that is seemingly obvious, is understanding the **information requirements** at the various positions in the supply chain, not only for the supply chain, but also for within an organisation. All of the enablers that are not recognised in the literature can be seen in Table 30 below.

Table 30: Collaborative Supply Chain Relationship Enablers

Supply Chain Relationship Enablers				
	Code	Enablers	Recognised in Literature	Source
1	ZBY E(01) YDX E(02)	Advanced Problem Notification	Yes	(Stank <i>et al.</i> 1999a 1999b)
2	ZBY E(02)	Board to Board Dialogue	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
3	YDX E(03)	Broad Communication Interface	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
4	YDX E(01) YDX E(28) YB E(06) ZBY E(15)	Capability to Share Information	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
5	YDX E(04)	Clear Communication Channels	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
6	ZB E(02) ZBY E(48) YB E(11) YDX E(34) YDX E(13)	Collaborative/Information-based culture	Yes	(Ellram 1990, 1991) (Christopher 1992) (Cooper & Ellram 1993) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a, b) (Lee & Whang 2000)
7	ZBY E(25)	Common Objectives and Goals	Yes	Ellram & Edis (1996), Stank <i>et al.</i> (1999b), Whipple & Frankel (2000) (Dowling & Robinson 1990) (Gattorna

Supply Chain Relationship Enablers				
	Code	Enablers	Recognised in Literature	Source
				& Walters 1996) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999)
8	ZBY E(03)	Common Philosophies	Yes	(Cooper & Ellram 1993) (Hogarth-Scott 1999) (Whipple & Frankel 2000)
9	ZBY E(05) YDX E(24)	Communication	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
10	ZBY E(06) YDX E(05)	Communication Mechanisms	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
11	DX E(27)	Design Change Reporting	Yes	(Heide & John 1992) (Stank <i>et al.</i> 1999a) (Boddy <i>et al.</i> 2000)
12	YDX E(07) YDX E(11)	Direct Communication Channels	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
13	YDX E(08)	Direct Factory Relationships	Yes	Ellram & Edis (1996), Hoyt & Huq (2000)
14	YDX E(12)	Good Personal Relationships	Yes	(Hunter <i>et al.</i> 1996) (Whipple & Frankel 2000) Liedtka <i>et al.</i> (1996), Stank <i>et al.</i> (1999b)
15	ZBY E(12)	Identifying Communication Channels	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
16	YB E(05)	Information Critical Mass	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
17	ZBY E(10) ZBY E(13) ZBY E(38)	Information Quality	Yes	(Daft & Lengel 1986) (Ellram 1990) (Ellram 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Lee & Whang 2000)
18	ZBY E(18)	Integrated SC Plan	Yes	(Gardner & Cooper 1988) (Ellram & Cooper 1993) (MacBeth 1998) (Stank <i>et al.</i> 1999a, b) Mohr & Spekman (1994), Boddy <i>et al.</i> (1998), (Boddy <i>et al.</i> 2000).
19	ZB E(03)	Interdependency recognition	Yes	(Ellram & Cooper 1990) (Hogarth-Scott & Parkinson 1993)
20	YB E(07)	Internal Communication	Yes	Stank <i>et al.</i> (1999a), Stank <i>et al.</i> (1999b)
21	ZB E(04)	Internal understanding	Yes	Stank <i>et al.</i> (1999b)
22	ZBY E(19)	Joint Replenishment Decisions	Yes	(Stank <i>et al.</i> 1999a, 1999b) (Lee & Whang 2000)
23	ZBY E(20)	Jointly Defined Processes	Yes	(Stank <i>et al.</i> 1999a, 1999b) (Lee & Whang 2000)
24	ZB E(05) YDX E(16)	Long-term Commitment	Yes	(Dion <i>et al.</i> 1992) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) Ellram & Edis (1996), Spekman <i>et al.</i> (1998), Boddy <i>et al.</i> (2000), Hoyt & Huq (2000).
25	ZBY E(22) YDX E(17)	Mean What is Said	Yes	(Dion <i>et al.</i> 1992) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b)
26	ZBY E(21) YDX E(18)	Multiple Level Relationships	Yes	Hogarth-Scott (1999)
27	YDX E(19)	Mutual Benefit	Yes	(Crewe & Davenport 1992) (Sparks 1994) (Ellram & Edis 1996) (Boddy <i>et al.</i> 1998) (McIvor & McHugh 2000) (Whipple & Frankel 2000)
28	YDX E(21)	Mutual Commitment	Yes	(MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b)
29	ZBY E(24)	Mutual Compromise	Yes	(Ellram & Cooper 1990) (Hogarth-Scott & Parkinson 1993)
30	YDX E(20) YB E(04)	Mutual Honesty	Yes	(Dwyer <i>et al.</i> 1987) (Spekman 1988) (Ohmae 1989) (Anderson & Narus 1990) (Ellram & Edis 1996) (Gattorna & Walters 1996) (Aquilon 1997) (Monczka

Supply Chain Relationship Enablers				
	Code	Enablers	Recognised in Literature	Source
				<i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999a, b) (Hoyt & Huq 2000) (Popp 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001)
31	ZBY E(26)	Mutual Recognition	Yes	(Ellram & Cooper 1990) (Hogarth-Scott & Parkinson 1993)
32	ZB E(06) ZBY E(27)	Mutual Respect	Yes	(Ellram & Cooper 1990) (Hogarth-Scott & Parkinson 1993) (Ellram & Edis 1996) (Stank <i>et al.</i> 1999b)
33	YDX E(22)	Mutual Trust	Yes	(Dwyer <i>et al.</i> 1987) (Anderson & Narus 1990) (Forrest & Martin 1990) (Heide & John 1990) (Lee & Billington 1992) (Ellram & Edis 1996) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Popp 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001).
34	ZBY E(28) YDX E(23)	Mutual Understanding	Yes	(Ellram & Cooper 1990) (Hogarth-Scott & Parkinson 1993)
35	ZBY E(23)	Mutually Agreed Processes	Yes	(Lee & Whang 2000) Spekman <i>et al.</i> (1998)
36	ZBY E(30)	Ongoing Partner Education	Yes	(Ellram 1990, 1991) (Christopher 1992, 1997) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
37	ZBY E(31)	Ongoing Trust Development	Yes	(Dwyer <i>et al.</i> 1987) (Spekman 1988) (Ohmae 1989) (&erson & Narus 1990) (Gattorna & Walters 1996) (Aquilon 1997) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Popp 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001)
38	ZBY E(32) YB E(09) YDX E(25) DX E(01) ZBY E(33)	Openness	Yes	(Dwyer <i>et al.</i> 1987) (Spekman 1988) (Ohmae 1989) (&erson & Narus 1990) (Gattorna & Walters 1996) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Popp 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001)
39	ZBY E(34)	Opportunism .v. Collaboration	Yes	(Hogarth-Scott 1999)
40	ZBY E(36)	People Relationship Skills	Yes	(Hunter <i>et al.</i> 1996) (Whipple & Frankel 2000)
41	ZBY E(37) YDX E(27) YDX E(29)	Proactive Approach	Yes	Bhote (1987), Clark (1989) Hogarth-Scott (1999), Stank <i>et al.</i> (1999a)
42	YB E(10)	Problems Not Symptoms	Yes	(Hogarth-Scott 1999), (Stank <i>et al.</i> 1999a)
43	ZBY E(39)	Relationship Commitment	Yes	(Forrest & Martin 1990) (Dion <i>et al.</i> 1992) (Lee & Billington 1992) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b)
44	ZBY E(40)	Relationship Manager	Yes	(Boddy <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998)
45	ZBY E(41)	Seeking Industry Best Practise	Yes	Stank <i>et al.</i> (1999a)
46	ZB E(07) ZBY E(42)	Senior Management Commitment	Yes	(Dion <i>et al.</i> 1992) (Ellram & Edis 1996) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Whipple & Frankel 2000)
47	ZBY E(44)	Share Future Plans	Yes	(Dowling & Robinson 1990) (Spekman <i>et al.</i> 1998) (Heide & John 1992), (Stank <i>et al.</i> 1999a).
48	ZBY E(45)	Shared KPIs	Yes	(Stank <i>et al.</i> 1999b)
49	YDX E(32)	Sharing Personnel	Yes	(Krause 1995) (Ellram & Edis 1996) (Stank <i>et al.</i> 1999a, b) (Lee & Whang 2000).
50	YDX E(33)	Supplier compliance Measures	Yes	Stank <i>et al.</i> (1999a), Hoyt & Huq (2000)
51	YDX E(37)	Timely Information Exchange	Yes	(Ellram 1990, 1991) (Christopher 1992, 1997) (MacBeth & Ferguson 1994) (MacBeth 1998)

Supply Chain Relationship Enablers				
	Code	Enablers	Recognised in Literature	Source
				(Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a, b) (Lee & Whang 2000) (Daft & Lengel 1986) (Monczka <i>et al.</i> 1998), (Hogarth-Scott 1999) (Boddy <i>et al.</i> 2000) (Hoyt & Huq 2000).
52	YDX E(39) ZBY E(52) YDX E(40)	Understanding Partner's Issues	Yes	(Ellram & Cooper 1990) (Hogarth-Scott & Parkinson 1993)
53	ZBY E(55) YDX E(43)	Willingness to Share	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
54	ZB E(01)	Benefit Demonstration	No	
55	ZBY E(04)	Communicable Strategy	No	
56	ZBY E(07)	Context Dependent Relationship	No	
57	YB E(01)	Creative Thinking	No	
58	ZBY E(08) YB E(02) YDX E(06) ZBY E(43) DX E(02)	Customer Implants	No	
59	YB E(03)	Customer Team Clusters	No	
60	YDX E(09)	Dual Sourcing	No	
61	YDX E(10)	Early Supplier Involvement	No	
62	ZBY E(11)	Full Process Review	No	
63	ZBY E(14)	Individual Chemistry	No	
64	ZBY E(16)	Integrated Relationships	No	
65	ZBY E(17)	Integrated SC Operations	No	
66	YDX E(14)	Issue Identification	No	
67	YDX E(15)	Joint Training Programmes	No	
68	YB E(08)	Maintain Current Information	No	
69	ZBY E(29)	Ongoing Board Level Dialogue	No	
70	ZBY E(35)	People Relationship Facilitators	No	
71	YDX E(30)	Realistic Supplier Communication	No	
72	YDX E(31)	Role of Self-Billing	No	
73	ZBY E(46)	Solving Operational Issues	No	
74	ZBY E(47) YDX E(35)	Supply Chain Manager	No	
75	YDX E(36)	Supply Chain Meetings	No	
76	ZBY E(49)	System Enabled Processes	No	
77	ZBY E(50)	Understanding Buying Behaviour	No	
78	YB E(13)	Understanding Demand Aggregation	No	
79	ZBY E(51) YDX E(38)	Understanding Information Requirements	No	
80	ZBY E(53)	Understanding Role of People	No	

Supply Chain Relationship Enablers				
	Code	Enablers	Recognised in Literature	Source
81	ZB E(08)	Understanding Role of suppliers	No	
82	YDX E(41)	Understanding SC Dynamics	No	
83	ZBY E(54) YDX E(42)	Vendor Managed Inventory	No	

8.2.2 Collaborative Supply Chain Relationship Inhibitors

A total of forty-five inhibitors were identified in the case study supply chain, of which thirty-four are recognised in the literature and eleven inhibitors, which were not. The complete list of inhibitors can be found in Table 31 below.

The inhibitors that were cited by interview respondents as being important or critical to the collaborative supply chain relationship are now discussed, including where they are recognised in the literature. The inhibitors identified, and that are not recognised in the literature are also discussed in terms of their context and impact of the collaborative supply chain relationship.

(A) Behavioural Related Inhibitors

A number of behavioural related inhibitors were identified in the case study supply chain, including: (1) a lack of trust between the supply chain organisations was cited as a key inhibitor to the supply chain relationship. This inhibitor manifested itself in the form of not trusting the other party to do what they had said they would do (Noteboom *et al.* 1997, Spekman *et al.* 1998, Dyer 2000); and not trusting information received from the other party.

(2) Lacking senior management commitment, in terms of the pressures on senior managers to deliver short term 'wins' in the form of cost reduction, and counterbalancing this with the more longer terms benefits of the collaborative relationship (Whipple and Frankel 2000).

(3) Mechanistic relationship behaviour, arising from the retailer having to deal with large numbers of suppliers "We have to deal with between 4,000 to 4,500 suppliers, I'm

not sure how many exactly” (Retailer respondent, R2), and not being able to commit sufficient time to each supplier. Ellram and Edis (1996) suggest that ‘sufficient time’ is actually the “*required intensity of the relationship*” in terms of what is required by both parties to commit to the relationship. (4) The packaging suppliers perceived that there was reluctance on the part of the manufacturer to **share future production plans** with them. Such reluctance led to the packaging suppliers having to rely on their own forecasts of the manufacturer’s orders upon them. Spekman *et al.* (1998) suggest that ‘collaborating supply chain partners would share their future plans on the basis that they see the strength of the supply chain as the only the strength of the weakest partner, i.e. the packaging suppliers, in the case study, having to rely solely on their own forecasts.

(5) As a result of the difference in trading strategies between the retailer and the manufacturer, at a strategic level, the retailer **perceived** that the manufacturer’s performance made them a **poor supplier** relative to other suppliers whose trading strategies were more aligned with that of the retailer. (6) **Too cost focused** – in terms of thinking about costs at a functional or organisational level rather than at a supply chain level (Stank *et al.* 1999b, Hoyt and Huq 2000).

(B) Communication Related Inhibitors

Ellram and Edis (1996) suggest that a lack of communication is the most common inhibitor to supply chain relationships. In terms of the case study supply chain, a number of related inhibitors were identified, including: (1) due to the **inaccuracy of information exchanged**, for example, the manufacturer shared production plans with one of the packaging suppliers, which were based on forecasted demand rather than actual demand, gave rise to service problems when shortfalls occurred.

(2) Due to the previous predominantly adversarial relationship between the manufacturer and its packaging suppliers the amount of time and effort, in terms of **managing the change**, has proved a substantial barrier to the development of a closer more collaborative relationship. Whipple and Frankel (2000) suggest that the greatest cost to relationship development (or alliance development) is ‘people’ costs that arise

from both partners modifying traditional habits and beliefs while adopting new ways of conducting business.

(3) Within the manufacturer and between the manufacturer and the packaging suppliers a strong lack of understanding of the **role of EPOS data** was identified in the case study supply chain. Whilst the EPOS data provided by the retailer was being used by the manufacturer to improve its service performance, there was an apparent difficulty in translating the EPOS data into something meaningful for the packaging suppliers to benefit from using it. This suggested difficulty is supported by Lee and Whang (2000) who cite instances of manufacturers requesting EPOS data from retail customers and then not being able to utilise it in their decision-making processes.

(C) Technical Related Inhibitors

A number of behavioural related inhibitors were identified in the case study supply chain: (1) the retailer and manufacturer have developed a particularly successful approach to managing promotions (on an exceptions basis), however translating this approach to incorporating the packaging suppliers has proved to be a real barrier. The main reason for this has been the lack of **availability of promotional related information** (Lee and Whang 2000). Prior to developing this joint approach to managing promotions, the retailer and manufacturer suffered from what Stank *et al.* (1999b) suggest is the impact of uncoordinated promotional activity, i.e. poor service levels, perceived volatility and excessive inventory stockpiling.

(2) **Poor forecast quality** in terms of inconsistencies and accuracy (Stank *et al.* 1999b), and a perceived lack of commitment to entering data into the joint forecasting mechanism developed by the retailer and the manufacturer.

(D) Other Emerging Supply Chain Relationship Inhibitors

In addition to the inhibitors that are recognised in the literature, a further eleven inhibitors were identified in the case study supply chain. Of these, the inhibitors that were cited by interview respondents as being important or critical to the collaborative supply chain relationship are now discussed, as follows:

(1) **Collaboration slippage**, in terms of not doing what had been previously agreed, i.e. in the case of the retailer, not entering information on the jointly developed collaborative planning system (CPS). (2) **Differing trading strategies** – already cited above as a potential contributor to perceptions of poor supply performance between the retailer and the manufacturer. (3) **Functional management style** that simply serves to reinforce a functional silo mentality.

(4) **Organisational size** in terms of adding pressure to the efforts to co-ordinate supply chain activities, and leading to inevitable duplication of work, (5) **Poor in-house logistics** – the retailer started publishing the performance of its suppliers in terms of deliveries to its distribution centres, but inadvertently published its own in-house performance in terms of distribution from its distribution centres to its own retail outlets. Such admission, albeit inadvertently, placed considerable pressure on the retailer to improve its own performance.

(6) **Prior capital investment** – where packaging suppliers have already invested significant sums of money in their own technology it was difficult for the manufacturer to convince the packaging suppliers to invest yet further capital; and finally (7) **Staff turnover** – in terms of the culmination of employees leaving both sides of the relationship between the manufacturer and its packaging suppliers, pressure is placed on maintaining the relationship at a personnel level.

The complete list of inhibitors (both those recognised and not recognised in the literature) can be found in Table 31 below.

Table 31: Collaborative Supply Chain Relationship Inhibitors

Supply Chain Relationship Inhibitors				
	Code	Inhibitors	Recognised in Literature	Source
84	ZB I(01)	Adopting a "Customer" Mentality	Yes	(Hogarth-Scott 1999)
85	ZBY I(02)	Commercial Pressures	Yes	(Hogarth-Scott 1999) (Lee & Whang 2000)
86	ZBY I(03)	Cost Focused	Yes	(Boddy <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b)
87	ZBY I(04)	Cultural Differences	Yes	(Ellram 1990, 1991) (Christopher 1992) (Cooper & Ellram 1993) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999a, b) (Lee & Whang 2000) (Whipple

Supply Chain Relationship Inhibitors				
	Code	Inhibitors	Recognised in Literature	Source
				& Frankel 2000).
88	YDX I(02)	Customer Over Forecasting	Yes	(Lee & Whang 2000)
89	YDX I(03)	Design Change Reporting	Yes	(Heide & John 1992) (Stank <i>et al.</i> 1999a) (Boddy <i>et al.</i> 2000)
90	YB I(01)	Forecast Driven DC	Yes	(Stank <i>et al.</i> 1999a)
91	YB I(08)	Forecast Driven Production	Yes	(Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a)
92	ZB I(04)	Functional based Teams	Yes	(Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000)
93	ZB I(03)	Functional Silo Mentality	Yes	(Spekman <i>et al.</i> 1998) (Hoyt and Huq 2000)
94	ZB I(05)	Increasing Competitive Environment	Yes	(MacBeth 1998) (Hogarth-Scott 1999) (Hoyt & Huq 2000)
95	YDX I(07) ZBY I(06)	Information Exchange Accuracy	Yes	(MacBeth & Ferguson 1994) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a, b) (Hoyt & Huq 2000) (Lee & Whang 2000)
96	YB I(04)	Information Overload	Yes	(Lee & Whang 2000)
97	YB I(05)	Information Starved	Yes	(Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999a, b) (Hoyt & Huq 2000).
98	ZBY I(07)	Joint Initiative Resources	Yes	(Ellram & Edis 1996) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b).
99	YDX E(22)	Lack of Trust	Yes	(Dwyer <i>et al.</i> 1987) (Anderson & Narus 1990) (Forrest & Martin 1990) (Heide & John 1990) (Lee & Billington 1992) (Ellram & Edis 1996) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Lee & Whang 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001).
100	ZB E(07) ZBY E(42)	Lacking Senior Management Commitment and Support	Yes	(Dion <i>et al.</i> 1992) (Ellram & Edis 1996) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Whipple & Frankel 2000)
101	YB I(06) YDX I(08)	Managing Change	Yes	(Boddy <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Whipple & Frankel 2000).
102	YDX I(09) YB I(09)	Managing Promotions	Yes	(Stank <i>et al.</i> 1999a)
103	ZB I(07) ZB I(06)	Mechanistic Relationship Behaviour	Yes	(Ellram & Edis 1996)
104	ZBY I(08)	Misunderstanding Decision Implications	Yes	(Stank <i>et al.</i> 1999a)
105	YB I(02) YDX I(01)	Not Sharing Future Production Plans	Yes	(Dowling & Robinson 1990) (Heide & John 1992) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a).
106	ZB I (09)	Panic Buying Behaviour	Yes	(Lee & Whang 2000)
107	ZBY I(09) ZBY I(10)	Perceived Supplier Performance	Yes	(Ellram & Edis 1996) (Monczka <i>et al.</i> 1998) (Hoyt & Huq 2000) (Whipple & Frankel 2000)
108	ZBY I(11) YDX I(06)	Poor Forecast Quality	Yes	(Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b)
109	ZBY I(12)	Poor Personal Relationships	Yes	(Liedtka <i>et al.</i> 1996) (Whipple & Frankel 2000).
110	ZBY I(14)	Product Lead-Times	Yes	(Stank <i>et al.</i> 1999a)
111	YDX I(12)	Promotional Information Availability	Yes	(Stank <i>et al.</i> 1999a, b) (Lee & Whang 2000)
112	ZBY I(15) YB I(10)	Role of EPOS	Yes	(Lee & Whang 2000)
113	ZBY I(16)	Short-term Focus	Yes	(Ellram & Edis 1996) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Hoyt & Huq 2000)

Supply Chain Relationship Inhibitors				
	Code	Inhibitors	Recognised in Literature	Source
114	YDX I(14)	Supplier In-exclusivity	Yes	(Lee & Whang 2000)
115	ZBY I(17)	Technology Incompatibility	Yes	(Boddy <i>et al.</i> 2000) (Lee & Whang 2000)
116	YB I(11) ZBY I(19)	Timeliness of Information Exchange	Yes	(Dwyer <i>et al.</i> 1987) (Monczka <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a) (Hoyt & Huq 2000) (Lee & Whang 2000)
117	ZBY I(18)	Underestimating the scale of change required	Yes	(Boddy <i>et al.</i> 1998) (Hoyt & Huq 2000)
118	ZBY I(01)	Collaboration Slippage	No	
119	ZBY I(05) YDX I(04)	Differing Trading Strategies	No	
120	ZB I(02)	Functional Mgmt Style	No	
121	YB I(03)	Information Location	No	
122	YB I(07)	Organisational Size	No	
123	YDX I(10)	Perceived Lack of Confidence	No	
124	ZB I (10)	Poor In-house Logistics	No	
125	ZBY I(13)	Poor Strategic Relationships	No	
126	YDX I(11) DX I(01)	Prior Capital Investment	No	
127	YDX I(13)	Staff Turnover	No	
128	YDX I(15)	Traditional Industry Views	No	

8.2.3 Collaborative Supply Chain Relationship Enablers and Inhibitors

The supply chain relationship enablers and inhibitors are presented in their particular contexts, in terms of the positions across the supply chain at which they were identified, and the levels within the relationships and organisations, i.e. strategic, tactical and operational (see Figure 84 and 85 below).

In terms of the supply chain relationship enablers and inhibitors, these are presented in Figure 84 and Figure 85 respectively, by way of the enablers and inhibitors that have been identified in the case study supply chain and are recognised in the literature, and those enablers and inhibitors that have been identified in the case study supply chain but not recognised in the literature. The enablers and inhibitors have been overlaid on the sub-unit of analysis framework (contained in Chapter 4). The sub-unit of analysis framework has been presented in terms of encompassing the three tiers of organisations in the case study supply chain, i.e. retailer, manufacturer and packaging suppliers. The enablers and inhibitors, in terms of those cited by the case study respondents as of importance have been discussed previously in Section 8.2.1.

In Figure 84, it can be seen that the vast majority of the enablers appear in the inter-organisational relationships between the retailer and the manufacturer, and the manufacturer and the packaging suppliers. This generally supports that proposal in Chapter 6 that the manufacturer is, in this supply chain evolving into the role of the supply chain integrator. It can also be seen that an even greater majority of the enablers are focused around the tactical level in the case study supply chain.

In Figure 85, it can be seen that the vast majority of the inhibitors appear in the inter-organisational relationships between the retailer and the manufacturer, and the manufacturer and the packaging suppliers. This generally supports that proposal in Chapter 6 that the manufacturer is, in this supply chain evolving into the role of the supply chain integrator. It can also be seen that an even greater majority of the inhibitors are focused around the tactical level in the case study supply chain.

Figure 84: Supply Chain Relationship Enablers

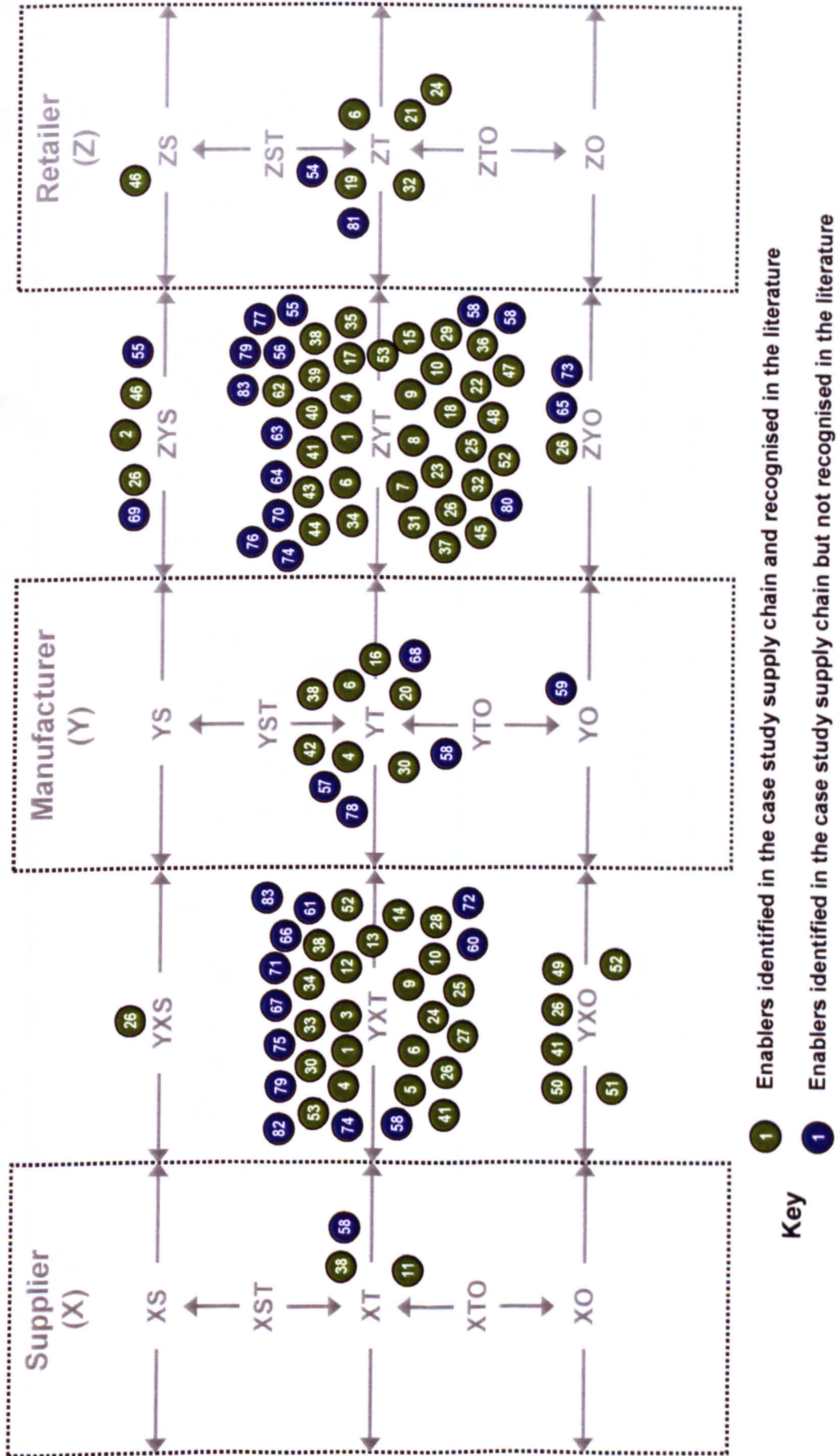
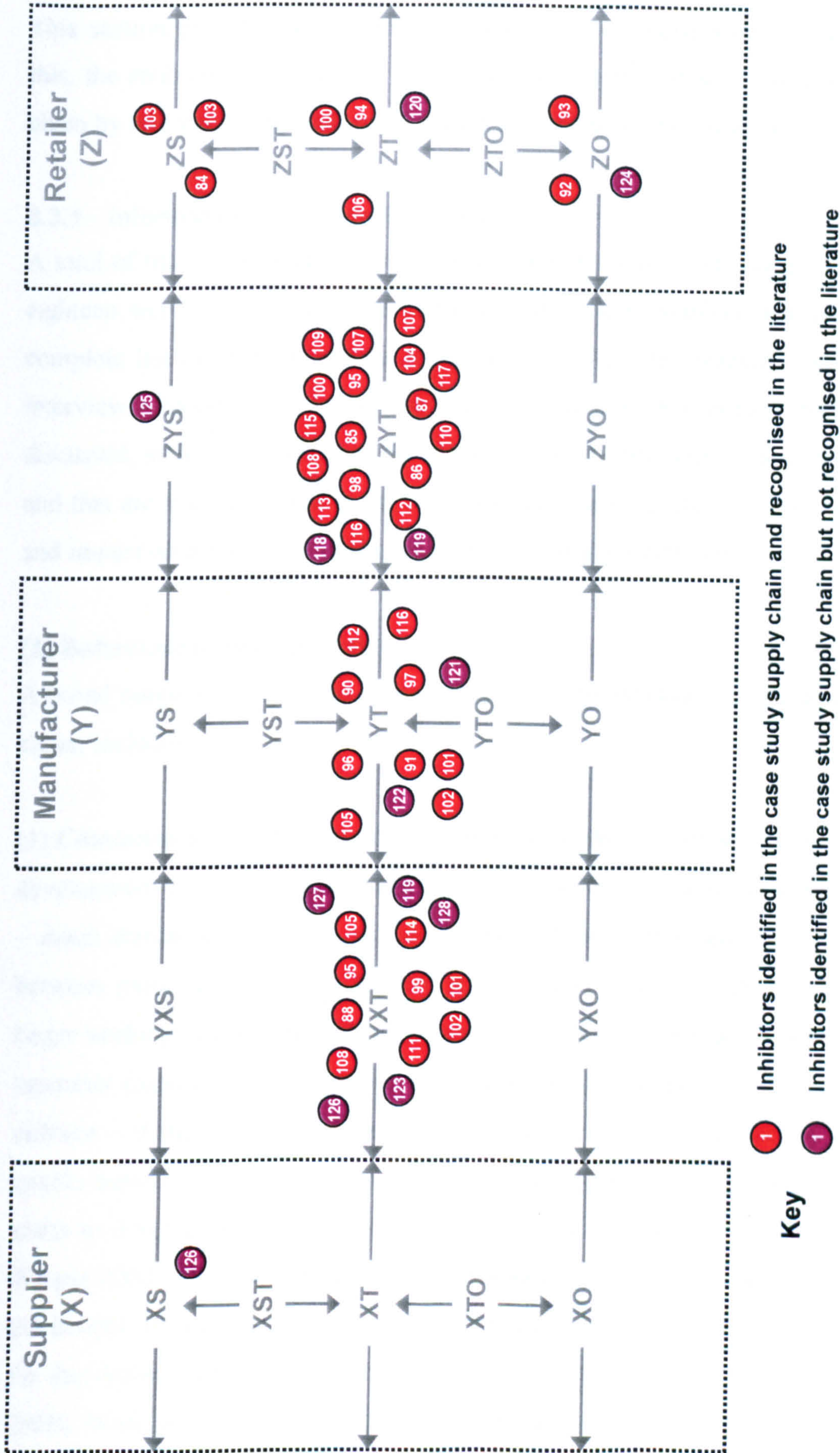


Figure 85: Supply Chain Relationship Inhibitors



8.3 Information Exchange

This section presents the enablers and inhibitors of information exchange. Following this, the enablers and inhibitors are illustrated in terms of their position in the supply chain by reference to the sub-unit of analysis contained in Chapter 4.

8.3.1 Information Exchange Enablers

A total of thirty-four enablers were identified in the case study supply chain, of which eighteen were recognised in the literature and sixteen enablers, which were not. The complete list of enablers can be found in Table 32. The enablers that were cited by interview respondents as being important or critical to information exchange are now discussed, including where they are recognised in the literature. The enablers identified, and that are not recognised in the literature are also discussed in terms of their context and impact on information exchange in the case study supply chain.

(A) Behavioural Related Enablers

A broad range of behavioural related enablers were identified in the case study supply chain, including:

(1) **Commitment** – reinforcing the commitment to the relationship helps to suppress the development of complacency (Spekman *et al.* 1998); (2) **Good personal relationships** – much formal and informal sharing of information in the case study supply chain is between pairs of individuals. If there is 'chemistry' between them this will facilitate a better working relationship; (3) **Honesty** – in terms of being realistic when dealing with customer enquiries (particularly concerning ability to deliver on time); (4) **Information culture** – if the activities of the organisation are built around sharing information to enable better decision making and reduced uncertainty, then an information culture starts to develop, whereby information sharing is seen as common practise (Lee and Whang 2000); (5) **Mutual benefit identification** – there is the need to be clear about the benefit for both parties, otherwise information sharing will lose its sense of purpose for the organisations that perceives there is no benefit in it for them (Lee and Whang 2000; Whipple and Frankel 2000); (6) **Possessing mutual respect** (Whipple and Frankel 2000) – starting the relationship on a professional basis, i.e. one of respecting

each other; (7) **Non-complacency** – in the sense that taking each other for granted may end up leading to a breakdown in the relationship. This is what Boddy *et al.* (1998) suggest is key in that organisations recognise what is needed to keep the relationship going; (8) **Time/Resource commitment** – necessary to support joint supply chain activities (Stank *et al.* 1999b; Hoyt and Huq 2000); and (9) **Trust** – in terms of facilitating the sharing of information, e.g. sharing information in return for the promise of confidentiality, i.e. not to share covertly with external competing third parties.

(B) Communication Related Enablers

A broad range of communication related enablers were identified in the case study supply chain, including:

(1) **Broad relationship interface** – having the right people talking to their counterparts within and between the organisations in the supply chain; (2) **Common vision** – in terms of having a common idea as to where the relationship and the organisations are heading; (3) **Informal information channel** – formal communication is not enough, maintaining an informal flow of information is an important addition to the formal information channels (Stank *et al.* 1999b); (4) **Information timeliness** – information is time sensitive, sending information when it is needed, or at the most appropriate time in terms of its usage is critical (Lee and Whang 2000); (5) **Openness** – in terms of admitting mistakes have been made, or in the sense giving prior warning that commitment may not be met on time as previous promised; and (6) **People relationships skills** – people need to be able to foster good working relationships both internally within the organisation and externally with suppliers and customers.

(C) Technical Related Enablers

A broad range of Technical related enablers were identified in the case study supply chain, including:

(1) **Common technologies** (Lee and Whang 2000) overcome the need for integration interfaces, e.g. the rise of XML (Extensible Mark-up Language) i.e. the successor to HTML (Hyper Text Mark-up Language), may act as a common technology language

that will virtually remove the need for specific integration interfaces; (2) **Information accuracy** – in conjunction with the information recipient trusting the reliability of the information, accurate information is critical to extracting maximum benefit from coordinated processes in the supply chain (Monczka *et al.* 1998; Spekman *et al.* 1998); and (3) **Utilisation knowledge** – in terms of understanding how to use and make decisions with the information received.

(D) Other Emerging Information Exchange Enablers

(1) **Common product codes** – the manufacturer deals with multiple customers who all use slightly different product identification codes, resulting in the need to integrate all of this information into the manufacturer's internal systems which is time consuming and prone to errors. Industry standard codes exist (e.g. European Article Numbering codes (EAN)), but organisations seem reluctant to use them; (2) **Customer implants** - dedicating people to work on a daily basis with the other party to the relationship, e.g. customers service co-ordinators in the case of the manufacturer; (3) **Information relevance** – understanding what information is required instead of just sending everything you have; (4) **Internal visibility** – identifying processes and stock locations; (5) **Joint education** – creating understanding of the supply chain; (6) **Joint team building activities** – creates a sense of unity supporting the concept of interdependency; (7) **Key information collection**; (8) **Process visibility** – a critical enabler in terms of understanding the processes in the supply chain, identifying gaps in the process in terms of information flow; (9) **Right technology** – in terms of systems that allow information received to be entered in the receiver's internal information systems; (10) **Understanding the role of information** – this enables the utilisation of information, subject to the accuracy and timeliness of the information shared; (11) **Utilisation mechanism** - ensuring that a mechanism is in place that will enable the use of the information; and (12) **Visionary leadership** – there must be someone who is prepared to try and see what happens, i.e. to consider different approaches, and to question the status quo.

Table 32: Information Exchange Enablers

Information Exchange Enablers				
	Code	Enablers	Recognised in Literature	Source
129	ZAY E(01)	Broad relationship interface	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
130	ZAY E(02)	Commitment	Yes	(Forrest & Martin 1990) (Dion <i>et al.</i> 1992) (Lee & Billington 1992) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b)
131	ZAY E(05)	Common Technology	Yes	(Fernie <i>et al.</i> 2000) (Lee & Whang 2000)
132	ZAY E(06)	Common Vision	Yes	Ellram & Edis (1996), Stank <i>et al.</i> (1999b), Whipple & Frankel (2000) (Dowling & Robinson 1990) (Gattorna & Walters 1996) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999)
133	ZAY E(08) YCX E(01)	Good personal relationships	Yes	(Hunter <i>et al.</i> 1996) (Whipple & Frankel 2000) Liedtka <i>et al.</i> (1996), Stank <i>et al.</i> (1999b)
134	YCX E(02)	Honesty	Yes	(Dwyer <i>et al.</i> 1987) (Spekman 1988) (Ohmae 1989) (Anderson & Narus 1990) (Ellram & Edis 1996) (Gattorna & Walters 1996) (Aquilon 1997) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999a, b) (Hoyt & Huq 2000) (Popp 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001)
135	ZAY E(09)	Informal information channel	Yes	Hauser <i>et al.</i> (1994) Stank <i>et al.</i> (1999b)
136	ZAY E(10) YCX E(03)	Information accuracy	Yes	(MacBeth & Ferguson 1994) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a, b) (Hoyt & Huq 2000) (Lee & Whang 2000)
137	ZAE(01)R YA E(01) CX E(01) ZAY E(12)	Information Culture	Yes	(Ellram 1990, 1991) (Christopher 1992) (Cooper & Ellram 1993) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a, b) (Lee & Whang 2000)
138	YCX E(05)	Information timeliness	Yes	(Dwyer <i>et al.</i> 1987) (Monczka <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a) (Hoyt & Huq 2000) (Lee & Whang 2000)
139	ZAY E(16)	Mutual benefit identification	Yes	(Lee & Whang 2000)
140	ZAY E(18)	Mutual respect	Yes	(Ellram & Cooper 1990) (Hogarth-Scott & Parkinson 1993) (Ellram & Edis 1996) (Stank <i>et al.</i> 1999b)
141	YCX E(06)	Non-complacency	Yes	(Boddy <i>et al.</i> 1998) (Hoyt & Huq 2000)
142	ZAY E(19) YCX E(07)	Openness	Yes	(Dwyer <i>et al.</i> 1987) (Spekman 1988) (Ohmae 1989) (Anderson & Narus 1990) (Gattorna & Walters 1996) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Popp 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001)
143	ZAY E(20)	People relationships skills	Yes	(Hunter <i>et al.</i> 1996) (Whipple & Frankel 2000)
144	ZAE(05)R ZAY E(22) YA E(05)	Time/Resource Commitment	Yes	(Boddy <i>et al.</i> 1998) (Hoyt & Huq 2000)
145	ZAY E(23)	Trust	Yes	(Dwyer <i>et al.</i> 1987) (Anderson & Narus 1990) (Forrest & Martin 1990) (Heide & John 1990) (Lee & Billington 1992) (Ellram & Edis 1996) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Lee & Whang 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001).
146	ZAE(06)R ZAY E(25) YA E(06) CX E(03)	Utilisation knowledge	Yes	Monczka <i>et al.</i> (1998) (Lee & Whang 2000)
147	ZAY E(03)	Common product codes	No	
148	ZAY E(04)	Common SC Terminology	No	

Information Exchange Enablers				
	Code	Enablers	Recognised in Literature	Source
149	ZAY E(07)	Customer implants	No	
150	YCX E(04)	Information relevance	No	
151	ZAE(02)R YA E(02)	Internal Visibility	No	
152	ZAY E(11)	Joint category management	No	
153	ZAY E(13)	Joint education	No	
154	ZAY E(14)	Joint team building activities	No	
155	ZAY E(15)	Key information collection	No	
156	ZAY E(17)	Mutual process understanding	No	
157	YCX E(08)	Proactive customers	No	
158	ZAE(03)R ZAY E(21) YA E(03)	Process visibility	No	
159	ZAE(04)R YA E(04) CX E(02)	Right Technology	No	
160	ZAY E(24)	Understanding information role	No	
161	ZAY E(26)	Utilisation mechanism	No	
162	ZAY E(27)	Visionary leadership	No	

8.3.2 Information Exchange Inhibitors

A total of thirty-four inhibitors were identified in the case study supply chain, of which nineteen are recognised in the literature and fourteen inhibitors, which are not recognised. The complete list of inhibitors can be found in Table 33 below.

The inhibitors that were cited by interview respondents as being important or critical to information exchange are now discussed, including where they are recognised in the literature. The inhibitors identified, and that are not recognised in the literature are also discussed in terms of their context and impact on information exchange in the case study supply chain.

(A) Behavioural Related Inhibitors

A broad range of behavioural related inhibitors were identified in the case study supply chain, including: (1) **Confidentiality/sensitivity** – a reluctance to share information on the basis that the information will be used against the provider (Lee and Whang 2000); (2) **Information validity/mistrust** – in terms of not believing the accuracy of the

information received (Hogarth-Scott 1999); (3) A lack of an **ongoing commitment** to the trading relationship will suppress the flow of information; (4) **Trusting customer's word** – in terms of not believing that the customer will do as they have previously said they will do; and (5) **Willingness to share** – there is still a sense that possessing data is a source power over the other parties in the supply chain (Stank *et al.* 1999; Lee and Whang 2000).

(B) Communication Related Inhibitors

A broad range of communication related inhibitors were identified in the case study supply chain, including: (1) **Communication breakdown** – unless organisations can maintain communication, the propensity to share information diminishes (Ellram and Edis 1996); (2) **Gaps in information flow** – in the sense that the information flow is interrupted as a result of the process not being integrated; (3) **Inconsistent sharing** – organisations must ensure that there is a regularity with regard to the sharing of information, inconsistency will lead to frustration and negatively impact the relationship (Stank *et al.* 1999a, 1999b); (4) **Mutual trust** – without this the parties start to withdraw from the relationship and become unwilling to share information; and (5) **Timeliness of information** – in the sense of the time sensitivity of the information, e.g. EPOS data sent a month after the date of its creation is questionable in terms of having any value other than for describing what has been sold.

(C) Technical Related Inhibitors

A broad range of technical related inhibitors were identified in the case study supply chain, including: (1) **Inability to use information** – there is little point in sharing information if the recipient is incapable of using the information; (2) **Information critical mass** – at present if the information being shared represents only 20% of the recipients total volume it will not have a significant impact on the quality of decision making. Organisations must encourage sufficient numbers of the customers and or suppliers to share information with them; (3) **Information overload** – if organisations do not understand the other organisation's ability to process information then too much information will in effect become a barrier just as no information would be; (4) **Multiple standards (systems)** – results in information not being able to be processed as

quickly as is required, or resulting in the need for multiple system interfaces; and (5) **Understanding decision implications** – this is linked to understanding the role of information, but can also diminish the perceived value of information sharing.

(D) Other Emerging Information Exchange Inhibitors

In addition to the inhibitors that are recognised in the literature, a further fourteen inhibitors were identified in the case study supply chain. Of these, the inhibitors that were cited by interview respondents as being important or critical to the collaborative supply chain relationship are now discussed, as follows:

(1) **Context specificity** - knowing when and how to use the shared information; (2) **Culture not to share** – links to the functional silo mentality and the concept that information is ‘power’; (3) **EDI inflexibility** – it is very difficult to share complex information relating to promotional activity due to its inflexibility and limited data constraints in terms of the size of EDI data fields; (4) **Immediacy perception** – when information is shared the sender expects that the receiver will act upon the information in a timely manner; (5) **Information availability** – in terms of if the information can not be extracted in a user friendly format; (6) **Misinterpreting the role of information** – leads to its limited usage; (7) **Ownership of data** – functional related behaviour supports not sharing information; (8) **Process integration** – a lack of integration diminishes the value of the information; and (10) **Right information** – not sharing the right information, i.e. not understanding the recipient’s information requirements.

Table 33: Information Exchange Inhibitors

Information Exchange Inhibitors				
	Code	Inhibitors	Recognised in Literature	Source
163	YCX I(01)	Communication Breakdown	Yes	(Ellram & Edis 1996) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a) (Whipple & Frankel 2000)
164	ZAY I(01) YCX I(02)	Confidentiality/Sensitivity	Yes	(Lee & Whang 2000)
165	ZAI(02)R YA I(02)	Gaps in information flow	Yes	(Ellram & Edis 1996) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a) (Whipple & Frankel 2000)
166	ZAI(03)R YA I(03) YCX I(04)	Inability to use information	Yes	Monczka <i>et al.</i> (1998) (Lee & Whang 2000)
167	YCX I(05) YCX I(06)	Inconsistent sharing	Yes	(Spekman <i>et al.</i> 1998) Stank <i>et al.</i> (1999a, b)

Information Exchange Inhibitors				
	Code	Inhibitors	Recognised in Literature	Source
168	ZAY I(10) YCX I(11)	Information Critical Mass	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
169	ZAI(05)R YA I(05) CX I(03)	Information Overload	Yes	(Lee & Whang 2000)
170	YA I(06) ZAI(06)R YCX I(07) ZAY I(04)	Information Validity/Mistrust	Yes	Daft & Lengel (1986) (Hogarth-Scott 1999)
171	ZAY I(05)	Multiple standards (data)	Yes	(Ferne <i>et al.</i> 2000) (Lee & Whang 2000)
172	ZAY I(06)	Multiple standards (product codes)	Yes	(Ferne <i>et al.</i> 2000)
173	ZA In(09) ZAY I(07) YA I(09)	Multiple standards (systems)	Yes	(Ferne <i>et al.</i> 2000) (Lee & Whang 2000)
174	ZAY I(08) YCX I(10)	Mutual trust	Yes	(Dwyer <i>et al.</i> 1987) (Anderson & Narus 1990) (Forrest & Martin 1990) (Heide & John 1990) (Lee & Billington 1992) (Ellram & Edis 1996) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Lee & Whang 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001).
175	ZAY I(09)	Ongoing Commitment	Yes	(Forrest & Martin 1990) (Dion <i>et al.</i> 1992) (Lee & Billington 1992) (MacBeth 1998) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b)
176	ZA In(14) YA I(14)	Technical Capability	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
177	YCX I(13) CX I(04)	Technology incompatibility	Yes	(Boddy <i>et al.</i> 2000) (Lee & Whang 2000)
178	ZA In(16) ZAY I(14) YA I(16) YCX I(14)	Timeliness of information	Yes	(Dwyer <i>et al.</i> 1987) (Monczka <i>et al.</i> 1998) (Stank <i>et al.</i> 1999a) (Hoyt & Huq 2000) (Lee & Whang 2000)
179	ZAY I(15)	Trusting customer's word	Yes	(Dwyer <i>et al.</i> 1987) (Anderson & Narus 1990) (Forrest & Martin 1990) (Heide & John 1990) (Lee & Billington 1992) (Ellram & Edis 1996) (Monczka <i>et al.</i> 1998) (Spekman <i>et al.</i> 1998) (Hogarth-Scott 1999) (Stank <i>et al.</i> 1999b) (Hoyt & Huq 2000) (Lee & Whang 2000) (Whipple & Frankel 2000) (Thoben & Jagdev 2001).
180	ZAY I(16)	Understanding decision implications	Yes	(Stank <i>et al.</i> 1999a)
181	ZA In(17) YA I(17) CX I(05)	Willingness to share	Yes	(Ellram 1990, 1991) (Christopher 1992) (MacBeth & Ferguson 1994) (MacBeth 1998) (Spekman <i>et al.</i> 1998) (Stank <i>et al.</i> 1999b) (Lee & Whang 2000)
182	ZAY I(02)	Context specificity	No	
183	CX I(01)	Culture not to share	No	
184	ZAI(01)R YA I(01)	EDI inflexibility	No	
185	ZAY I(03) YCX I(03) CX I(02)	Immediacy perception	No	
186	ZAI(04)R YA I(04)	Information availability	No	
187	ZAI(07)R YA I(07) YCX I(09)	Misinterpreting the role of information	No	

Information Exchange Inhibitors				
	Code	Inhibitors	Recognised in Literature	Source
188	ZAI(08)R YCX I(08) YA I(08)	Misinterpreting the role of technology	No	
189	ZA In(10) YA I(10)	Ownership of data	No	
190	ZA In(11) YA I(11)	Process Integration	No	
191	ZA In(12) YA I(12)	Production drivers & capacities	No	
192	ZAY I(11) YCX I(12)	Right information	No	
193	ZA In(13) YA I(13)	System integration	No	
194	ZA In(15) YA I(15)	Technology driven	No	
195	ZAY I(13)	Technology Utilisation	No	

8.3.3 Information Exchange Enablers and Inhibitors

The supply chain relationship enablers and inhibitors are presented in their particular contexts, in terms of the positions across the supply chain at which they were identified, and the levels within the relationships and organisations, i.e. strategic, tactical and operational (see Figure 86 and 87 below).

In terms of the supply chain relationship enablers and inhibitors, these are presented in Figure 86 and Figure 87 respectively, by way of the enablers and inhibitors that have been identified in the case study supply chain and are recognised in the literature, and those enablers and inhibitors that have been identified in the case study supply chain but are not recognised in the literature. The enablers and inhibitors have been overlaid on the sub-unit of analysis framework (contained in Chapter 4). The sub-unit of analysis framework has been presented in terms of encompassing the three tiers of organisations in the case study supply chain, i.e. retailer, manufacturer and packaging suppliers. The enablers and inhibitors, in terms of those cited by the case study respondents as of importance have been discussed previously in Section 8.2.1.

In Figure 86, it can be seen that as with the supply chain relationship enablers, the information exchange enablers appear at the tactical level across the supply chain. It should be noted, however, that a large majority of the information exchange enablers are found between the manufacturer and the retailer.

Figure 86: Information Exchange Enablers

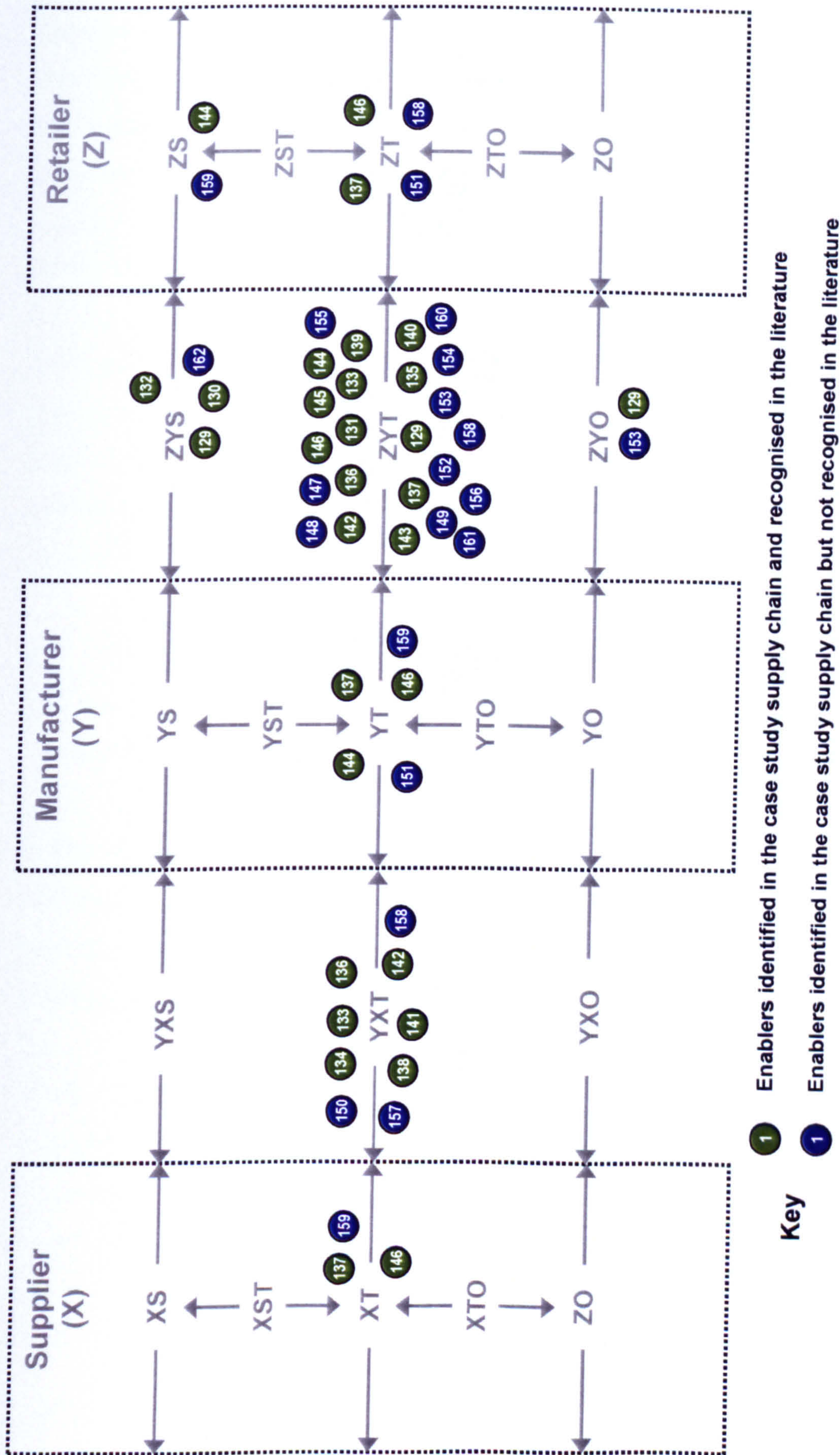
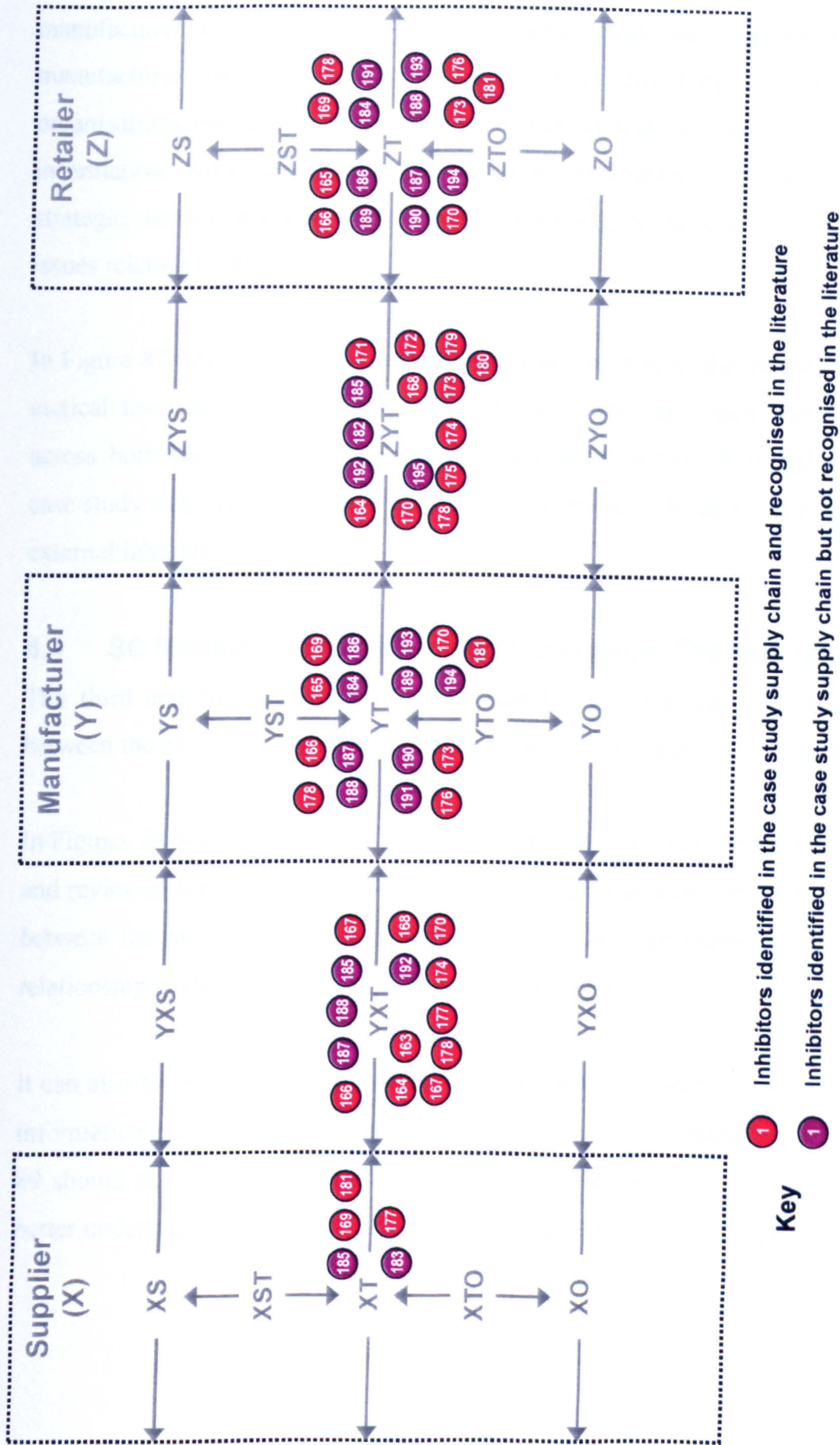


Figure 87: Information Exchange Inhibitors



This is in itself not so surprising as the relationship between the retailer and the manufacturer has been developing for longer than the relationship between the manufacturer and its suppliers. As a result of this longer relationship the two organisations may be more aware of what may or may not facilitate the exchange of information. Also there is more of a spread of enablers and inhibitors across the strategic, tactical and operational levels, again suggesting a greater awareness of the issues relating to information exchange.

In Figure 87 (above), it can be seen that the vast majority of the inhibitors appear at the tactical level across the supply chain. The inhibitors are much more evenly spread across both the inter- and intra-organisational relationships. It would appear that the case study respondents perceive the internal inhibitors to be as equally important as the external inhibitors.

8.4 SC Relationships & Information Exchange: The Inter-relationship

The third and final objective of this research was to explore the inter-relationship between the exchange of information and collaborative supply chain relationships.

In Figures 88 and 89 below, the respective enablers and inhibitors have been compared, and reviewed for any commonalities. It can be seen that there are a number of linkages between the two sets of enablers and inhibitors, where an enabler of the supply chain relationship is also an enabler of information exchange.

It can also be seen that the inter-relationship between the supply chain relationship and information exchange enablers and inhibitors is also very complex, and Figures 88 and 89 should at this time only be seen as an initial step in terms of trying to develop a better understanding of the inter-relationship between the two concepts.

Figure 88: Inter-relationship Between SC Relationship & Info. Exchange Enablers

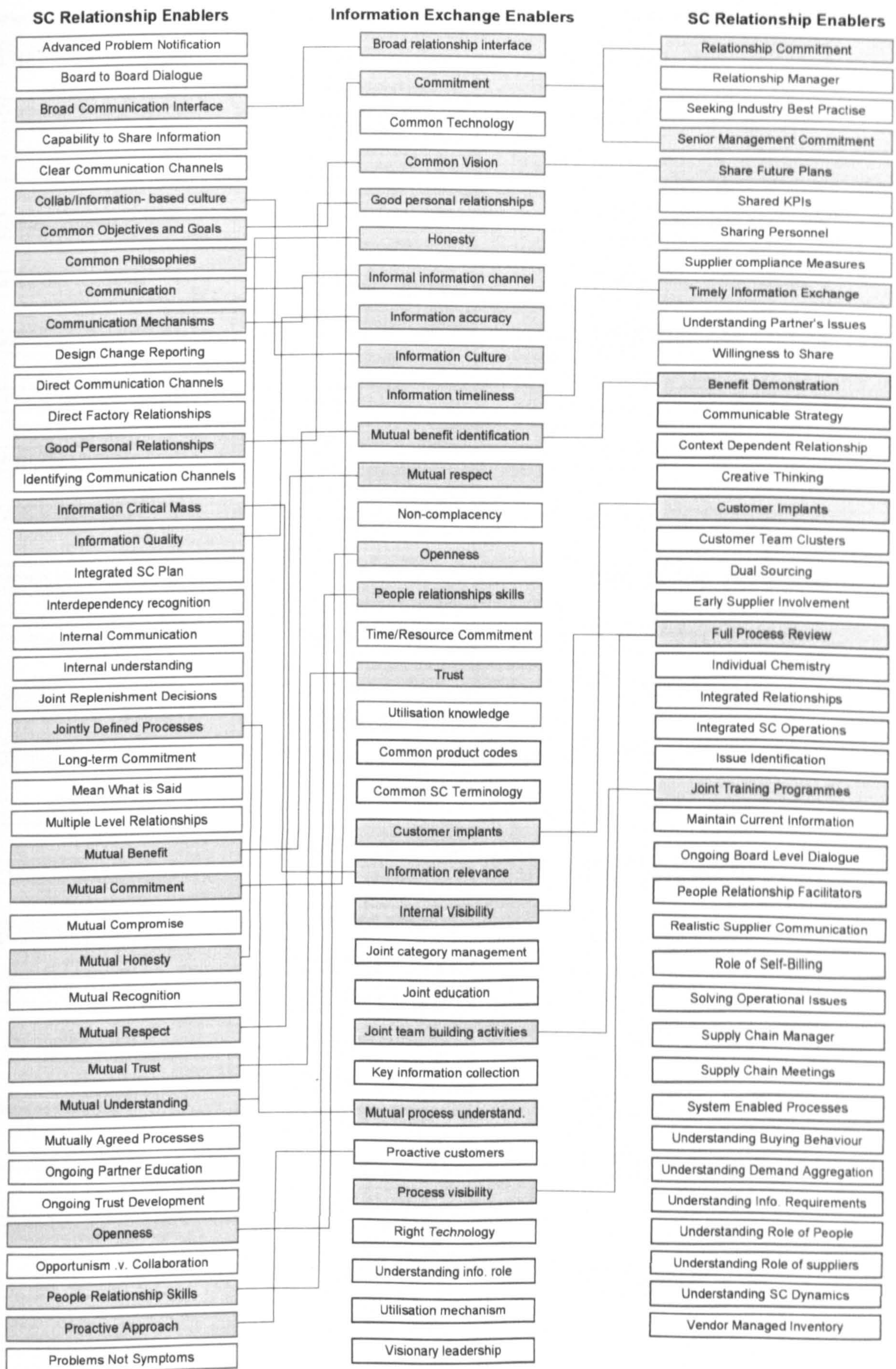
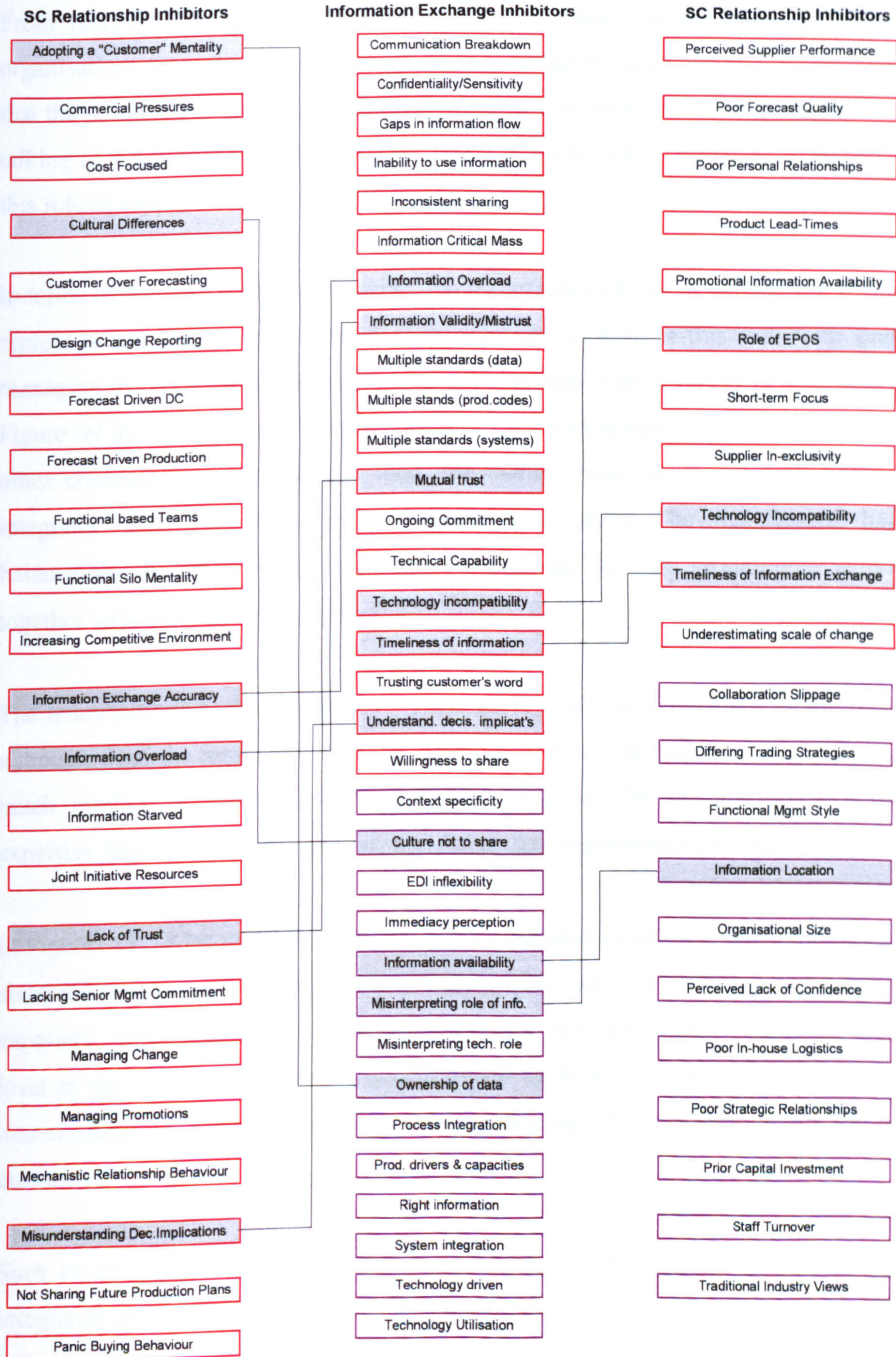


Figure 89: Inter-relationship Between SC Relationship & Info. Exchange Inhibitors



8.5 The Evolving Role of the Manufacturer as Supply Chain Integrator

From relatively early on in the case study it became apparent that although the organisations from the retailer through to the packaging suppliers were being studied, that the product was also sold to a variety of other customers besides the retailer. When talking to a key informant (in a supply chain planning role) within the manufacturer, this role of supply chain ‘integrator’ began to emerge.

In terms of the case study supply chain, the manufacturer looks to manage the retailer’s replenishment cycle, and in doing so endeavours to balance this task with that of managing the sourcing of packaging and raw materials from a variety of suppliers (see Figure 69 in Chapter 6). When the number of retail customers and customers through other channels are considered in total, the manufacturer can be seen to act as the integrator of its various customer’s replenishment cycles. The manufacturer has to balance the demands of its customers, co-ordinate its own promotional activities together with those of its customers.

The manufacturer as the “Integrator” is not a role explicitly recognised by the retailer, although from the interviews with the respondents from the retailer, the role was very much implicit in that several respondents recognised the manufacturer’s growing expertise, beyond that of the retailer, e.g. forecasting and managing promotions.

In Figures 84 – 87 it could be seen that the vast majority of enablers and inhibitors were clustered around the manufacturer in its relationships with its customers and packaging suppliers. Additionally the enablers and inhibitors were also found most at the tactical level in the supply chain, which would appear to fit with the integration role of the manufacturer in terms of planning how to manage the demands of all its retail customers.

Such an integration role is essential, it is suggested, if the supply chain is to become integrated and realise the potential benefits of SCM. The degree of success will to a large extent depend on the manufacturer’s ability to develop more collaborative relationships with key retailer customers and suppliers. In view of this “matchmaking”

role, the extent of the manufacturer's internal integration (level 3 of Stephen's (1989) supply chain integration model – see chapter 2, section 2.4) is essential.

8.6 Summary

[A] Collaborative Supply Chain Relationship: Enablers and Inhibitors

The case study has identified eighty-three enablers of collaborative supply chain relationships in the case study supply chain, of which fifty-three are recognised in the literature and thirty-one are not recognised and presented as new. The case study has also identified forty-five inhibitors of collaborative supply chain relationships in the case study supply chain, of which thirty-four are recognised in the literature and eleven that are not recognised and presented as new.

The new enablers and inhibitors are quite specific in terms of their location in the supply chain. One possible reason why these have not been recognised in the literature previously, is that past supply chain research has at best only focused on a single dyadic relationship that is just one part of a supply chain.

Whilst many hitherto unrecognised enablers and inhibitors of supply chain relationships have been identified in the case study, it is worthwhile considering these in terms of their applicability to the broader UK grocery sector and industry in general. Tables 34 and 35 represent an initial proposal of the applicability of the supply chain relationship enablers and inhibitors.

Obviously, the applicability of the supply chain relationship enablers and inhibitors to the broader UK grocery sector and industry in general must be verified through further research.

Table 34: Supply Chain Relationship Enablers (Case, Industry-Specific & Generic)

SC Relationship Enablers	Case-Specific	Industry-Specific	Generic
Benefit Demonstration			X
Communicable Strategy			X
Context Dependent Relationship		X	
Creative Thinking			X
Customer Implants		X	
Customer Team Clusters		X	
Dual Sourcing	X		
Early Supplier Involvement			X
Full Process Review			X
Individual Chemistry			X
Integrated Relationships			X
Integrated SC Operations			X
Issue Identification			X
Joint Training Programmes			X
Maintain Current Information			X
Ongoing Board Level Dialogue			X
People Relationship Facilitators			X
Realistic Supplier Communication		X	
Role of Self-Billing		X	
Solving Operational Issues			X
Supply Chain Manager		X	
Supply Chain Meetings		X	
System Enabled Processes			X
Understanding Buying Behaviour			X
Understanding Demand Aggregation		X	
Understanding Info Requirements			X
Understanding Role of People			X
Understanding Role of suppliers			X
Understanding SC Dynamics			X
Vendor Managed Inventory		X	

Table 35: Supply Chain Relationship Inhibitors (Case, Industry-Specific & Generic)

SC Relationship Inhibitors	Case-Specific	Industry-Specific	Generic
Collaboration Slippage	X		
Differing Trading Strategies		X	
Functional Mgmt Style			X
Information Location			X
Organisational Size			X
Perceived Lack of Confidence			X
Poor In-house Logistics		X	
Poor Strategic Relationships			X
Prior Capital Investment		X	
Staff Turnover			X
Traditional Industry Views		X	

[B] Information Exchange in the Supply Chain: Enablers and Inhibitors

The case study has identified thirty-four enablers of information exchange in the case study supply chain, of which eighteen are recognised in the literature and sixteen that are not recognised and presented as new. The case study has also identified thirty-three enablers of information exchange in the case study supply chain, of which nineteen are recognised in the literature and fourteen that are not recognised and presented as new. The new enablers and inhibitors are quite specific in terms of their location in the supply chain. One suggested reason why these have not been recognised in the literature previously, is that which Lee and Whang (2000) suggest is that there has been very little research into information sharing, particularly in a supply chain context.

Whilst many hitherto unrecognised enablers and inhibitors of information exchange have been identified in the case study, it is worthwhile considering these in terms of their applicability to the broader UK grocery sector and industry in general. Tables 36 and 37 represent an initial proposal of the applicability of the information exchange enablers and inhibitors.

Obviously, the applicability of the information exchange enablers and inhibitors to the broader UK grocery sector and industry in general must be verified through further research.

Table 36: Information Exchange Enablers (Case, Industry-Specific & Generic)

Info Exchange Enablers	Case-Specific	Industry-Specific	Generic
Common product codes		X	
Common SC Terminology		X	
Customer implants			X
Information relevance			X
Internal Visibility			X
Joint category management		X	
Joint education			X
Joint team building activities			X
Key information collection			X
Mutual process understanding			X
Proactive customers			X
Process visibility			X
Right Technology			X
Understanding information role			X
Utilisation mechanism			X
Visionary leadership			X

Table 37: Information Exchange Enablers (Case, Industry-Specific & Generic)

Info Exchange Enablers	Case-Specific	Industry-Specific	Generic
Context specificity		X	
Culture not to share			X
EDI inflexibility			X
Immediacy perception			X
Information availability			X
Misinterpreting the role of information			X
Misinterpreting the role of technology			X
Ownership of data			X
Process Integration			X
Production drivers & capacities			X
Right information			X
System integration			X
Technology driven			X
Technology Utilisation			X

[C] Supply Chain Relationships and Information Exchange: An Inter-relationship

From the case study supply chain there is emerging an inter-relationship between supply chain relationships and information exchange enablers and inhibitors. The inter-relationship would appear to be very complex and provides a good starting point for further research in this area.

[D] The Evolving Role of the Manufacturer as Supply Chain Integrator

Although this research focused on three tiers of a single supply chain, the manufacturer is also deeply involved with many other retail customers. A role as the supply chain integrator is emerging whereby the manufacturer balances the demands of its many retail customers with the sourcing and procurement of packaging and raw materials from a number of its suppliers. Again, the case study has provided a good starting point for further research in this area.

The next chapter presents a summary of the overall research, together with the contribution to theory, methodology and substantive justification. Following this, the limitations of this research are discussed together with areas of future investigation arising from this case study of a supply chain in the UK grocery sector.

CHAPTER 9:

CONTRIBUTION, LIMITATIONS & FURTHER RESEARCH

9.1 Introduction

This research began with a developing interest in the UK grocery sector. Initially the main focus was the investigation of collaborative supply chain relationships, and the extent to which these relationships supported the exchange of information.

A comprehensive literature review was undertaken which identified a number of potential research gaps. An early dilemma was how to investigate this phenomenon, in light of the embryonic state of the literature. A case study methodology was considered as the most appropriate approach as this would allow an in-depth investigation.

An exploratory study was undertaken to compare the findings of the literature review with the current thoughts and views of a cross section of practitioners from various roles and positions in the UK grocery sector, and to identify any further issues arising. At the completion of the exploratory study, the research questions were revised to focus on the identification of the enablers and inhibitors of supply chain relationships and information exchange.

The main fieldwork comprised a single case study of six organisations that represented three tiers of a supply chain in the UK grocery sector. A large number of enablers and inhibitors of supply chain relationships and information exchange were identified in the case study. Although the majority of these had previously been recognised in the literature, many new context-specific enablers and inhibitors previously not recognised in the literature were identified.

9.2 Introduction to Contribution

What contribution has been made in the preceding eight chapters? And to whom or what has the contribution been made? Academic contribution should involve theory, whether in its creation, testing, or extension (or development) of it. This contribution to knowledge can also embrace methodology by offering researchers another way of looking at a problem. Contribution can also be made to the substantive area in commercial (or practitioner) applications. Following the discussion of the contribution, the issues relating to reliability and validity of the research are discussed, together with

a presentation of further proposed research. This chapter begins by looking at the contributions made by this research in the areas of theory, methodology and substantive application.

9.2.1 Contribution to Theory

From a positivist's point of view, building theory involves the identification of constructs, the specification of the relationships amongst these constructs through operationalisation, and the testing of these relationships, often through attempted falsification (Doty and Glick 1994).

On their own, variables, diagrams, and hypotheses are not theory (Amundson 1998). Theory comes from the interrelation of these concepts with the purpose of explaining and/or predicting the phenomena under study (Kerlinger 1986). Wacker (1998) suggests that good theory building comes from defining the variables, specifying the domain, eliciting relationships amongst the variables, and making predictions.

Transferring the concept of theory construction to a qualitative setting, suggests good theory lies in the exploration and linking of theoretical and explanatory concepts (Richards and Richards 1994a). The building up of a hierarchical network of such linkages can represent the emerging theory (Prein *et al.* 1995). Gioia and Pitre (1990) suggest generating descriptions, insights, and explanations in order to reveal a system of meaning and structure is the goal of qualitative theory building.

When it comes to theory building, what promoters of qualitative and quantitative research have in common is the desire to seek plausible relationships among concepts and to possibly remove this set of relationships one step beyond the phenomenon it attempts to explain.

Under the realist banner, theory creation or building involves the construction of hypothetical models that may uncover the real structures and mechanisms that are assumed to produce the phenomena under question. What are the structures and mechanisms that co-exist with the phenomena of supply chain relationships and

information exchange? What gives rise to collaboration and information usage? The phenomena of the inter-relationships between the retailer, manufacturer and packaging suppliers were observed in the semi-structured interviewing phase of the case study.

The semi-structured interviews undertaken during the case study brought out both the observed phenomena previously propounded and explanations for them. The results of the interviews were triangulated with the data collected from internal company reports, historical documentation and from observation of the case study organisations. The opportunity exists to repeat this model-building process with other supply chains, and across the grocery sector as well.

This research contributes to theory by extending Systems Theory in terms of its application to a supply chain in the UK grocery sector. Previous research into supply chain relationships has focused on predominantly the dyadic relationship between the retailer-manufacturer, and sometimes only one party to the relationship. This research, by adopting a systems theory perspective, i.e. a more systemic approach, exploring three tiers of a supply chain in the UK grocery sector it has been possible to identify a broad range of enablers and inhibitors specific to the position of the organisations in the supply chain. Focusing upon a more traditional dyadic buyer-supplier perspective would not have facilitated identification of the enablers and inhibitors present in the three intra-organisational relationship settings, i.e. within the retailer, the manufacturer and the packaging suppliers (see Section 8.2.1 – *Collaborative Supply Chain Relationships Enablers* and Section 8.2.2 - *Collaborative Supply Chain Relationship Inhibitors*).

A contribution has also been made in terms of the emerging enablers and inhibitors of supply chain relationships and information exchange (see Section 8.6 - Tables 34-37). The hitherto unrecognised enablers and inhibitors can most be applied to the UK grocery sector as a whole and some even further to industry in general. Validation of these proposed generic enablers and inhibitors must be undertaken in subsequent research.

9.2.2 Contribution to Methodology

In terms of contribution to methodology this research has presented an alternative way of looking at supply chain relationships and information exchange. The application of a case study methodology to explore a much broader part of a supply chain (i.e. six organisations, two inter-organisational relationships and three intra-organisational relationships – representing three tiers of a supply chain in the UK grocery sector) has contributed to developing an understanding of the context in which supply chains operate.

With regard to the phenomena's evolution, the research has made a contribution to the exploration of information exchange in a supply chain context (see Section 8.3.1 and Section 8.3.2), an area that has been considered as lacking (Lee and Whang 2000). The research has also considered the context of supply chain relationships and information exchange in terms of the multiple levels within and between organisations, i.e. strategic, tactical and operational (see Section 8.2.3 - *Collaborative Supply Chain Relationship Enablers and Inhibitors* and Section 8.3.3 - *Information Exchange Enablers and Inhibitors*).

In terms of data analysis, the primary use of NUD*IST together with some secondary manual coding techniques, whilst providing a daunting amount of data, has enabled a depth of investigation that would not have been possible with other forms of analysis (see Chapter 7, Section 7.3 and 7.4 respectively). NUD*IST has also allowed the identification of enablers and inhibitors in their respective contexts. Whilst this may have been at the expense of generalisation, the context specificity of the enablers and inhibitors may offer more focussed advice to practitioners.

9.2.3 Substantive Justification

At the commercial level, this research has sought to identify the enablers and inhibitors of collaborative relationships and information exchange between organisations in a coffee supply chain. What impact are these findings likely to have on industry? In terms of the UK grocery sector, the findings will provide a greater insight into what

activities will enable the development of more collaborative relationships, and will facilitate the more expansive sharing and utilisation of information.

The UK grocery sector can be characterised as a mass of supply chains that are interconnected by virtue of the organisations (retailers, manufacturers, packaging suppliers, raw material suppliers and third party logistics providers) trading with one another. In many instances, organisations' suppliers also trade with the organisations' competitors, and the customers also trade with the organisations' competitors. The evolving role of the manufacturer as the supply chain integrator provides insight as to how some of this complexity may be more effectively managed (see Section 8.5). The manufacturers, by virtue of their position in the supply chain, represent a key link between the retailers and the mass of raw material and packaging suppliers.

Traditional research into the development of supply chain relationships has recognised many enablers and inhibitors. Due to the general nature of such enablers and inhibitors, organisations appear to have found it difficult to develop closer relationships with their customers and suppliers. It is suggested that the context specific enablers and inhibitors may improve the ability of organisations to achieve improvements in their relationship development activities (see Section 8.2.3). The emerging enablers and inhibitors of supply chain relationships are shown in Tables 38 and 39 below.

Table 38: Emerging Supply Chain Relationship Enablers

No	Code	Enabler	No	Code	Enabler
54	ZB E(01)	Benefit Demonstration	69	ZBY E(29)	Ongoing Board Level Dialogue
55	ZBY E(04)	Communicable Strategy	70	ZBY E(35)	People Relationship Facilitators
56	ZBY E(07)	Context Dependent Relationship	71	YDX E(30)	Realistic Supplier Communication
57	YB E(01)	Creative Thinking	72	YDX E(31)	Role of Self-Billing
58	ZBY E(08) YB E(02) YDX E(06) ZBY E(43) DX E(02)	Customer Implants	73	ZBY E(46)	Solving Operational Issues
59	YB E(03)	Customer Team Clusters	74	ZBY E(47) YDX E(35)	Supply Chain Manager
60	YDX E(09)	Dual Sourcing	75	YDX E(36)	Supply Chain Meetings
61	YDX E(10)	Early Supplier Involvement	76	ZBY E(49)	System Enabled Processes
62	ZBY E(11)	Full Process Review	77	ZBY E(50)	Understanding Buying Behaviour
63	ZBY E(14)	Individual Chemistry	78	YB E(13)	Understanding Demand Aggregation
64	ZBY E(16)	Integrated Relationships	79	ZBY E(51) YDX E(38)	Understanding Information Requirements
65	ZBY E(17)	Integrated SC Operations	80	ZBY E(53)	Understanding Role of People
66	YDX E(14)	Issue Identification	81	ZB E(08)	Understanding Role of suppliers
67	YDX E(15)	Joint Training Programmes	82	YDX E(41)	Understanding SC Dynamics
68	YB E(08)	Maintain Current Information	83	ZBY E(54) YDX E(42)	Vendor Managed Inventory

Table 39: Emerging Supply Chain Relationship Inhibitors

No	Code	Inhibitor	No	Code	Inhibitor
118	ZBY I(01)	Collaboration Slippage	124	ZB I (10)	Poor In-house Logistics
119	ZBY I(05) YDX I(04)	Differing Trading Strategies	125	ZBY I(13)	Poor Strategic Relationships
120	ZB I(02)	Functional Mgmt Style	126	YDX I(11) DX I(01)	Prior Capital Investment
121	YB I(03)	Information Location	127	YDX I(13)	Staff Turnover
122	YB I(07)	Organisational Size	128	YDX I(15)	Traditional Industry Views
123	YDX I(10)	Perceived Lack of Confidence			

In terms of information exchange, many of the enablers and inhibitors are linked to relationship-related issues, such as communication, behaviour and technical capabilities. There are still some fundamental inhibitors to information exchange, such as the willingness to share information. However, the research has identified many more specific inhibitors, which, it is suggested, will help organisations develop a greater understanding of the role of information in the supply chain. The emerging enablers and inhibitors of information exchange are shown in Tables 40 and 41 below.

Table 40: Emerging Information Exchange Enablers

No	Code	Enabler	No	Code	Enabler
148	ZAY E(04)	Common SC Terminology	156	ZAY E(17)	Mutual process understanding
149	ZAY E(07)	Customer implants	157	YCX E(08)	Proactive customers
150	YCX E(04)	Information relevance	158	ZAE(03)R ZAY E(21) YA E(03)	Process visibility
151	ZAE(02)R YA E(02)	Internal Visibility	159	ZAE(04)R YA E(04) CX E(02)	Right Technology
152	ZAY E(11)	Joint category management	160	ZAY E(24)	Understanding information role
153	ZAY E(13)	Joint education	161	ZAY E(26)	Utilisation mechanism
154	ZAY E(14)	Joint team building activities	162	ZAY E(27)	Visionary leadership

Table 41: Emerging Information Exchange Inhibitors

No	Code	Inhibitor	No	Code	Inhibitor
182	ZAY I(02)	Context specificity	189	ZA In(10) YA I(10)	Ownership of data
183	CX I(01)	Culture not to share	190	ZA In(11) YA I(11)	Process Integration
184	ZAI(01)R YA I(01)	EDI inflexibility	191	ZA In(12) YA I(12)	Production drivers & capacities
185	ZAY I(03) YCX I(03) CX I(02)	Immediacy perception	192	ZAY I(11) YCX I(12)	Right information
186	ZAI(04)R YA I(04)	Information availability	193	ZA In(13) YA I(13)	System integration
187	ZAI(07)R YA I(07) YCX I(09)	Misinterpreting the role of information	194	ZA In(15) YA I(15)	Technology driven
188	ZAI(08)R YCX I(08) YA I(08)	Misinterpreting the role of technology	195	ZAY I(13)	Technology Utilisation

9.2.4 Summary

In conclusion, contributions have been made to theory, the substantive application, and to method. Systems theory has been applied to a much broader proportion of a supply chain, covering six organisations across three tiers. A number of emerging enablers and inhibitors of supply chain relationship and information exchange have been identified.

Commercial research will benefit from a greater knowledge of how to develop collaborative supply chain relationships based upon information exchange. The questions of (1) why organisations find it so difficult to develop collaborative relationships, and (2) why organisations find it so difficult to use exchanged information have hopefully been answered. The relationships between organisations across the

supply chain, i.e. the retailer, manufacturer and packaging suppliers, were examined, and the differences in these relationships were explained.

9.3 Limitations of the Research

Rigour in research is expected, whether the methods employed by the research are qualitative or quantitative. How can the quality of the research be assessed? By quality researchers mean the validity, reliability and objectivity of the work. This section will look at these issues and apply the concept of rigour to the qualitative and quantitative work carried out in this research.

9.3.1 Validity Issues

Any validity issues can be examined over three facets of the research: the method(s) chosen, the samples selected, and the data acquired. With this research the methods fall into qualitative research based methods, i.e. the semi-structured interviews. The interviews undertaken during the exploratory phase of the research offered a broad picture of the UK grocery sector, and the interviews undertaken during the case study focussed on multiple respondents from the case study organisations within the selected supply chain.

For exploratory studies, Yin (1994) suggests that construct validity is the major concern in terms of validity. Construct validity concerns establishing correct operational measures for the concepts being studied (Kidder and Judd 1986).

The data actually obtained from both stages of the research (the exploratory and case study) were satisfactory. The data from the semi-structured interviews proved to be both interesting and rewarding, with some comments being extremely useful. Yin (1994) suggests three tactics to increase construct validity: (1) utilising multiple source of evidence, (2) creating a chain of evidence, and (3) to have a draft case study report reviewed by key informants. This research, in an effort to increase the construct validity has used both multiple sources of evidence and having interview transcripts reviewed by key informants.

9.3.2 Reliability

In the qualitative phase of this research NUD*IST provides an automatic trail of changes in the analysis (Richards and Richards 1994a, 1994b; Kelle and Laurie 1995). While a PhD thesis is a solitary affair, the researcher must consider if others will understand his path and acknowledge how the conclusions were reached. Respondent feedback and peer review are crucial to this. Certainly, in terms of the interview transcripts these were returned to the key informants to be reviewed. No respondents requested any changes to the interview transcripts.

There may be a chasm between validity and reliability, especially in qualitative research. Mason (1996) has suggested research based on structured surveys overvalues reliability at the expense of validity; he goes on to suggest that:

“... most qualitative researchers see the very fluidity and flexibility of methods such a semi-structured interviews as enhancing validity, and criticise the rigidity and standardisation of structured questionnaires by contrast for lack of sensitivity to validity in favour of an excessive concern with reliability and ease of qualification in analysis” (Mason 1996, p.148).

Conversely, Kirk and Miller (1986) suggest that qualitative research has gained validity at the expense of reliability in the data collection phase. It may be difficult to resolve this balance in a work involving both qualitative and quantitative research.

9.3.3 Objectivity

The dilemma between the ‘outside’ and the ‘insider’ is at the core of the debate between those who use quantitative or qualitative methods. Quantitative researchers wish to exclude any bias from their work and remain outside and objective regarding their data. As several writers have suggested, qualitative researchers seek ‘confirmability’ instead of objectivity (Guba and Lincoln 1994). In this context, confirmability does not mean replication and substantiation but corroboration and authentication by peers and interviewees.

The use of multiple methods as in this work allows the researcher to wear both subjective and objective hats. Subjectivity is almost impossible to ignore in qualitative research, especially with a background in the industry. Objectivity in the quantitative phase requires findings free from bias. While subjectivity is necessary in the qualitative phase, it can be restricted to the acquisition of data with a neutral stance taken to whatever findings may emerge.

9.3.4 Scope of Research Investigation

Whilst the research has investigated multiple respondents across three tiers of a supply chain, there are some limitations that are worthy of mention. The research has taken a predominantly supply chain perspective, and whilst every effort was made to interview respondents beyond the supply chain function, this was not always possible.

Within the manufacturer, whilst respondents who deal with colleagues from production (in both in-bound and out-bound logistics) were interviewed it was not possible to interview any specific respondents from production. This omission could give rise to a biased view of relationships and information exchange, at the point of production. Any further studies would benefit from including a production perspective to provide a more complete picture.

It became clear whilst carrying out the research that collaborative initiatives must include not only the supply chain but also representation from the commercial departments within the case study organisations. In terms of the retailer and the manufacturer, the collaborative planning initiatives have involved significant representation from both organisations' commercial departments. By interviewing respondents from such commercial departments a broader more complete picture could be obtained.

9.3.5 Summary

In multiple method research there is a compromise between what is researched and the results. Often, what might appear invalid or unreliable in terms of one method is satisfactory with another. Qualitative research insists upon similar ideals to quantitative

work but these ideals cannot be achieved through statistical means. Those who carry out qualitative research seek peer review, corroboration between informants and with other sources of evidence, and credibility to verify their work. Qualitative researchers invite appreciation – not necessarily agreement - for the method used, data obtained, and analysis carried out.

9.4 Areas for Further Research

This section outlines areas for further research, following the identification of the enablers and inhibitors of collaborative supply chain relationships and information exchange. The objectives of this research were to explore the enablers and inhibitors of collaborative supply chain relationships and information exchange, and to explore any potential inter-relationship between them. Having identified the enablers and inhibitors within the contexts of the intra and inter-organisational relationships it would be worthwhile utilising these for a broader study of the grocery sector as a whole.

Undertaking a broader study, would give rise to a number of challenges that would have to be overcome: (1) the identification of enablers and inhibitors were based upon multiple informants within each of the case study organisations. Identifying key informants may prove difficult particularly in terms of gaining a representative sample of informants across all of the various tiers of supply chains across the UK grocery sector (this is on the basis that a survey methodology would be accepted); (2) adopting in-depth interviews for data collection would be very resource intensive, and alternatively, adopting the use of questionnaires would be less time intensive, but would be subject to gathering sufficient responses to generalise from the findings.

One of the most interesting findings emerging from this exploratory study was the evolving role of the manufacturer as the supply chain integrator. In view of the fact that it was not possible to gain access to the production department within the manufacturer, a more production centred view on the integration role would help to develop understanding of this aspect of supply chain integration.

The supply chain-manufacturing interface would also be interesting to explore further in terms of how organisations can in the future balance conflicting objectives of manufacturing (capacity utilisation and cost minimisation) and the supply chain (reduction of finished goods inventories and enhanced customer service).

Additionally, it would be interesting and insightful to study other grocery manufacturers to ascertain their views and perceptions with regard to the evolving role of the manufacturer as the supply chain integrator. Is this role particular to the case study supply chain, or does it have potential bearing for other grocery manufacturers?

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CRANFIELD UNIVERSITY

SCHOOL OF MANAGEMENT

PhD THESIS

Academic Year 2001/02

MARK A. BARRATT

**Exploring Relationships and Information Exchange in Grocery
Supply Chains: a Case Study of the Enablers and Inhibitors.**

Vol. II - APPENDICES

Supervisor: Professor Martin Christopher

**This thesis is submitted in partial fulfilment of the requirements for the
degree of Doctor of Philosophy.**

Appendix A: Interview Schedule (Exploratory Study)

Exploratory Interview Structure

Date: xx^{xx} xxxxxxxxxx 1998

Interviewee: Name & Job Title

Organisation: XXXX plc

1. Introduction - explaining the purpose of the interview

- (a) *Confirm/refute the findings of the literature review*
 - Confusion as to what supply chain management is
 - Scope of supply chain management re Integration
 - Longitudinal perspective of supply chain
 - Objectives of SC parties
 - Supply Chain Relationships
 - The Role of Information Management in the Supply Chain
 - Supply Chains or Supply Networks
- (b) *Raise issues for further study in research project i.e. case study.*
 - Potential benefits sought from relationships;
 - Expectations of supply chain partners
 - Levels of commitment required
 - Key factors for successful partnerships
 - What relationships have been established within the supply chain
 - The form of existing "co-operative" supply chain relationships
 - The extent to which existing supply chain relationships are co-operative.
- (c) Possibilities of using company for the case study.
- (d) Testing of supply chain mapping method
- (e) Brief background to the research project.
- (f) Explain the structure of the interview, i.e. general questions re SCM, some more specific questions regarding certain aspects of SCM.

NB: *For the following sections the questions re-worded depending upon whether interviewee is a retailer, manufacturer, supplier, 3rd Party Logistics Provider or Raw Material Provider.*

2. Supply Chain Management (in General)

- Q1:** There is some apparent confusion as to what Supply Chain Management implies or how it is implemented. Why do you think that this is?
- Q2:** How would you define Supply Chain Management?
- Q3:** What do you think that Supply Chain Management means to organisations?
- Sub Q3:** What does it mean to your organisation?
- Q4:** What do you think that Supply Chain Management has to offer to organisations in general?
- Sub Q4:** What do you see SCM offering to your organisation?
- Sub4a:** What do you think it is that has stimulated that awareness of supply chain management, or the opportunities that may arise from supply chain management?
- Sub4b:** Could you summarise the key benefits that supply chain management could offer to you, more in terms of specifics other than just cost reduction or competitive advantage. Is it in reduced lead times for example.
- Q5:** How can the potential benefits of an integrated supply chain management approach be achieved by organisations?
- Sub Q5:** Can such potential benefits lead to long-term sustainable competitive advantage?
- Sub Q5a:** How?
- Q6:** What do you think that manufacturers or other parties in retail grocery supply chains understand what is meant by the term "Supply Chain Management"?
- Sub Q6:** Why is this?
- Q7:** What do you think is the way forward for Supply Chain Management?
- Sub Q7:** Why is this?
- Q8:** What are the fundamental issues necessary for efficient and effective management of the supply chain?
- Q9:** What are the barriers to supply chain management?

3. Scope of Supply Chain Management (re Integration)

Q1: When considering their supply chains, how far upstream and/or downstream should an organisation consider?

Sub Q1: Why is this?

Q2: How far upstream/downstream does your organisation consider?

Q3: Would you say that your organisation has been successful at integrating management throughout the supply chain?

Sub Q3: If so why? If not, why not?

4. Longitudinal perspective of supply chain (long-term .v. short-term approach)

Q1: Are the organisation's activities planned in the short, medium or long term?

Sub Q1: Why is this?

Q2: Should organisations consider the supply chain activities in the long term?

Sub Q2: - Why is this?

Q3: What are the benefits and disadvantages of a short-term view of supply chain activities?

Q4: What are the benefits and disadvantages of a long-term view of supply chain activities?

5. Objectives of Supply Chain parties

Q1: What are your organisation's objectives from their supply chain activities?
(In terms of a Retailer, Manufacturer, 3rdLP, Raw Material Supplier, Packaging)

Q2: What are your organisation's objectives from their relationships with other organisations in the supply chain?

Q3: What benefits do manufacturers look for in their present supply chain relationships with other organisations?

Sub Q3: Are these sought after benefits being realised?

Sub Q3a: - if not, why not?

Q4: Is it necessary to have mutual objectives with your supply chain partners?

Sub Q4: Why is this?

NB: Questions re: Lead-times, reduction of inventory levels, demand driven, objectives, benefits, barriers.

6. Supply Chain Relationships

Q1: What problems do your organisation meet in their present relationships?

Sub Q1: Why do you think that these problems arise?

Q2: What types of relationships are you looking for from your relationships with your supply chain partners?

Q3: What is the basis of these relationships?

Q4: With whom do you have relationships in your supply chains?

Q5: Are organisations creating relationships with only direct supply chain partners, or should they be looking to create relationships with other possibly indirect parties further along (both upstream or downstream) the supply chain?
- With anyone else?

Q6: What type of supply chain relationships do organisations create and why?
- If organisations were to create indirect relationships, should these be in a different format to their direct relationships?

Q7: What is required from the parties involved in the relationship to make the relationships work and the potential benefits to be achieved.
- Mutual objectives,
- Openness,
- Long-term commitment,
- Sharing of information,
- Maintaining service levels,
- Reduction of costs,
- Honesty, trust,
- Senior management sponsorship,

Q8: To what extent are present relationships in the retail grocery supply chains co-operative?

Sub Q8: Why is this?

Q9: If co-operation is seen as the way forward for supply chain relationships, in what form should the co-operation take?

7. The Role of Information Management in the Supply Chain

Q1: What is the role of information technology in the supply chain?

Q2: Do you share information with you supply chain partners?

Sub Q2: If so, with whom?

Sub Q2a: What information and how is it shared? (+ Format of information)

Sub Q2b: If not, why not?

Q3: What are the present barriers with regard to sharing of information?

Sub Q3: How can these barriers be overcome?

Q4: In what ways would information sharing between supply chain partners enhances their business activities?

Q5: What are the potential benefits and disadvantages of sharing information with supply chain partners?

8. Structures - Supply Chains or Supply Networks

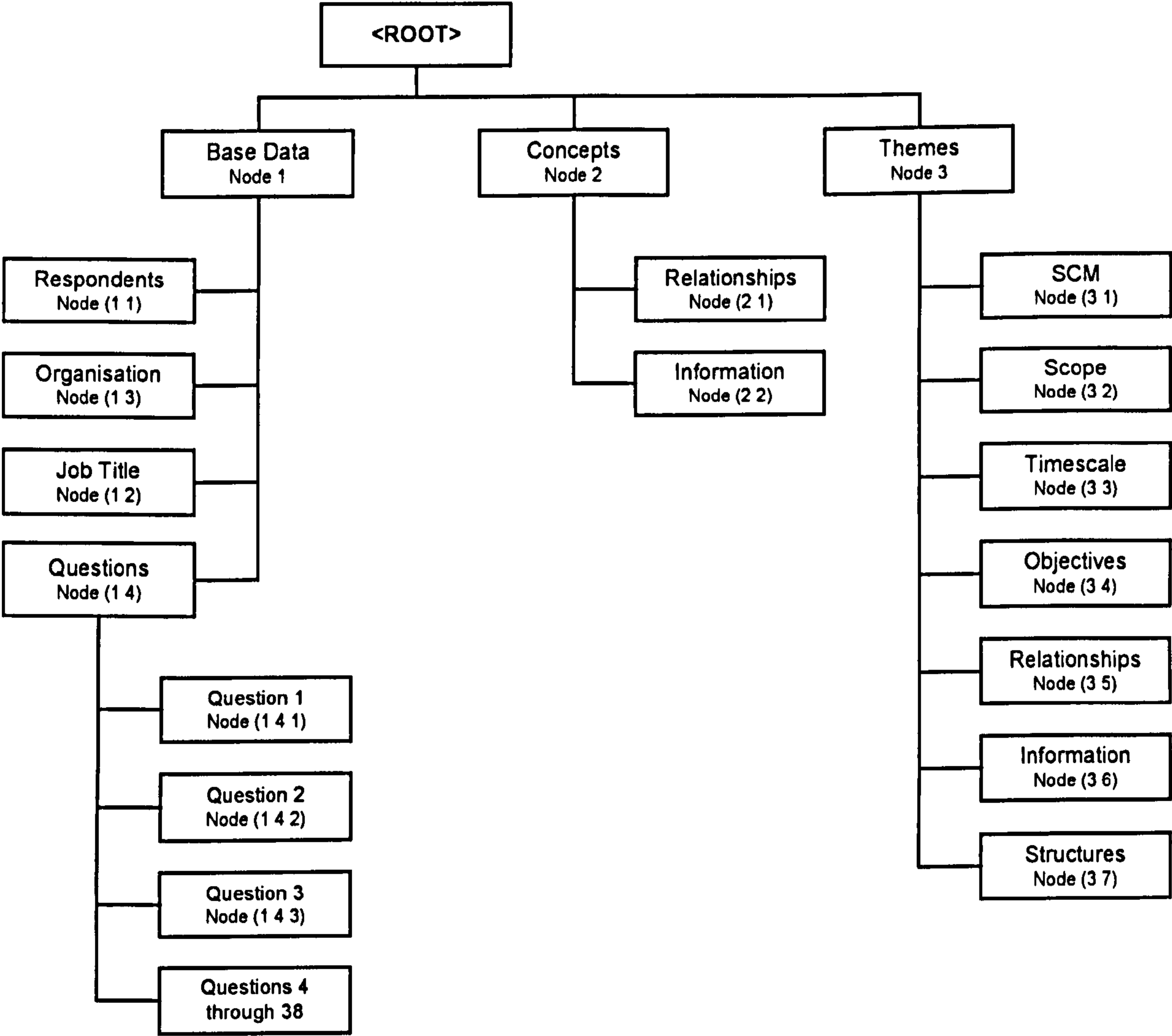
Q1: How would you describe your supply chains in terms of their structure?

Thank you for your time!

Would you like a copy of the results of the pilot study? Yes/No

Appendix B: NUD*IST Index Tree – Base Data

NUD*IST INDEX TREE - BASE DATA



Appendix C: NUD*IST Coding Hierarchy

- 1 Base Data
 - 1 1 Respondents' Names
 - 1 1 1 Dave Simister
 - 1 1 2 John Rowe
 - 1 1 3 Martyn White
 - 1 1 4 Chris Johnson
 - 1 1 5 David Hatch
 - 1 1 6 Kimberly Davenport
 - 1 1 7 Tom McGuffog
 - 1 1 8 Martin Green
 - 1 1 9 Dave Bruce
 - 1 2 0 Carl Wahlers
 - 1 2 1 David Hicks
 - 1 2 2 Carl Davies
 - 1 2 3 Rachel Jackson
 - 1 2 4 Steve Blackett
 - 1 2 5 Frank Hall
 - 1 2 6 Roy Williams
 - 1 2 7 Mark Harden
 - 1 2 8 Geoffrey Vaughan
 - 1 2 9 Chris Scholey
 - 1 3 0 Jonathan Marshall
 - 1 3 1 Jane Midgen
 - 1 3 2 Alison MacGregor
 - 1 3 3 John Galloway
 - 1 3 4 Susan Monckton
 - 1 2 Type of Respondent
 - 1 2 1 Retailer
 - 1 2 2 Manufacturer
 - 1 2 3 Packaging Supplier
- 2 Questions
 - 2 1 Q1 Confusion
 - 2 2 Q2 Definition
 - 2 3 Q3 Meaning General
 - 2 3 1 Q3a Meaning to Organisation
 - 2 4 Q4 Offer General
 - 2 4 1 Q4a Offer Specific
 - 2 4 2 Q4b Stimulated Awareness
 - 2 4 3 Q4c Key Benefits
 - 2 5 Q5 Achieve Benefits
 - 2 5 1 Q5a Benefits leading to Competitive Advantage
 - 2 6 Q6 Others SCM Perspectives
 - 2 7 Q7 Way Forward
 - 2 8 Q8 Fund Issues
 - 2 9 Q9 Barriers
 - 2 10 Additional Questions
 - 2 11 Relationship Questions
 - 2 11 1 Q10 Present relationships
 - 2 11 2 Q10a Why Problems
 - 2 11 3 Q11 Types
 - 2 11 4 Q12 Basis
 - 2 11 5 Q13 With whom?
 - 2 11 6 Q14 Direct-
 - 2 11 7 Q15 Types Created

- 2 11 8 Q16 Fundamentals
- 2 11 9 Q17 Extent Collaborative
- 2 11 10 Q17a Why Collaborative
- 2 11 11 Q18 Form of Collaborative
- 2 11 12 Q19 Add Benefits
- 2 11 13 Q20 More Synchronised
 - 2 11 13 1 Q20a More Synchronised parts
- 2 11 14 Q20b Synchronised Barriers
- 2 11 15 Q21 Synchronised Elements
- 2 11 16 Q22 Inventory Management
- 2 11 17 Relationship Additional Questions
- 2 12 Info Questions
 - 2 12 1 Q23 Role of IT
 - 2 12 2 Q24 Sharing Information in the Supply Chain
 - 2 12 2 1 Q24A Why not sharing
 - 2 12 3 Q25 Information Exchanged
 - 2 12 4 Q25A Exchanged
 - 2 12 5 Q25B Exchanged Format
 - 2 12 6 Q25C Exchanged Medium
 - 2 12 7 Q25D Information Time Sensitive
 - 2 12 4 Q26 How Information Used
 - 2 12 4 1 Q26A Why Not Used
 - 2 12 4 2 Q26B Barriers to using
 - 2 12 4 3 Q26C What needs to change
 - 2 12 4 4 Q26D Purpose Information Used
 - 2 12 4 5 Q26E Mechanisms
 - 2 12 5 Q27 Information that Should be Exchanged
 - 2 12 5 1 Q27A Why Exchanged
 - 2 12 5 2 Q27B When Frequency
 - 2 12 5 3 Q27C Should Format
 - 2 12 5 4 Q27D Should Medium
 - 2 12 5 5 Q27E Should Purpose
 - 2 12 5 6 Q27F Should Used Purpose
 - 2 12 5 7 Q27F Why Should Not Shared
 - 2 12 6 Q28 Summary of Present Barriers
 - 2 12 6 1 Q28A How Overcome Barriers
 - 2 12 7 Q29 How Exchanged Information Enhances
 - 2 12 8 Q30 Potential Benefits
 - 2 12 8 1 Q30A Exchanged Information Disadvantages
 - 2 12 9 Q31 Actual Exchanged Benefits
 - 2 12 10 Q32 Consumer Demand Penetration
 - 2 12 11 Q33 Impact of Joint Working
 - 2 12 11 1 Q33A Impact Demand Volatility
 - 2 12 11 2 Q33B Impact SC Responsiveness
 - 2 12 11 3 Q33C Impact Batch Sizes
 - 2 12 11 4 Q33D Impact Unit Costs
 - 2 12 11 5 Q33E Impact Inventory Levels
 - 2 12 11 6 Q33F Impact Lead Times
 - 2 12 11 7 Q33G Product Availability
 - 2 12 11 8 Q33H Service Levels
 - 2 12 12 Q34 Exchanged Enablers
 - 2 12 13 Q35 Demand Complexity
 - 2 13 14 Information Additional Questions

3 Case Analysis

3 1 SCM
3 1 1

Barriers

- 3 1 1 1 Information Flow
 - 3 1 1 1 1 Demand Visibility
 - 3 1 1 1 2 Shared Visibility
 - 3 1 1 1 3 Shared Communication
 - 3 1 1 1 4 Same Information
 - 3 1 1 1 5 Open
 - 3 1 1 1 6 What Information
 - 3 1 1 1 7 How to Use Information
- 3 1 1 2 Perspective
 - 3 1 1 2 1 Functional KPMs
 - 3 1 1 2 2 Functional Processes
 - 3 1 1 2 3 Functional Training
 - 3 1 1 2 4 Functional Objectives
 - 3 1 1 2 4 1 Self Interest
 - 3 1 1 2 5 Behaviour
 - 3 1 1 2 6 Organistional Structure
- 3 1 1 3 Lacking Understanding
 - 3 1 1 3 1 Decision Implications
 - 3 1 1 3 2 Supplier Issues
 - 3 1 1 3 3 Transition
 - 3 1 1 3 4 Process
- 3 1 1 4 Objectives
 - 3 1 1 4 1 Conflicting
- 3 1 1 5 Organisation Transition
 - 3 1 1 5 1 Split Personality
 - 3 1 1 5 2 Transition costs
 - 3 1 1 5 3 Managing Change
- 3 1 1 6 Technology
 - 3 1 1 6 1 Bottlenecks
 - 3 1 1 6 2 Limitation
 - 3 1 1 6 3 Fixed Costs
 - 3 1 1 6 4 Legacy Systems
 - 3 1 1 6 5 Standards
 - 3 1 1 6 6 Exploiting
- 3 1 1 7 Culture
 - 3 1 1 7 1 Functional
 - 3 1 1 7 2 People
 - 3 1 1 7 3 Organisational
 - 3 1 1 7 4 Characteristics
 - 3 1 1 7 4 1 Openness
 - 3 1 1 7 4 1 1 Inhibitors
 - 3 1 1 7 4 2 Fearing Change
 - 3 1 1 7 5 Ideas - Beliefs
- 3 1 1 8 People
 - 3 1 1 8 1 Skills
 - 3 1 1 8 2 Recruiting
 - 3 1 1 8 3 Differing Ideas

- 3 1 1 9 Relationships
 - 3 1 1 9 1 Longevity
 - 3 1 1 9 2 The Right People
 - 3 1 1 9 3 Inter-organisational Tension
 - 3 1 1 9 4 Intra-Organisational Tension
- 3 1 1 10 Communication
 - 3 1 1 10 1 Formal
 - 3 1 1 10 2 Informal
 - 3 1 1 10 3 Regular
- 3 1 1 11 Forecasting
 - 3 1 1 11 1 Approach
 - 3 1 1 11 2 Noise Creation
- 3 1 1 12 Enablers
- 3 1 1 13 Shareholders
- 3 1 2 Fundamentals
 - 3 1 2 1 Information
 - 3 1 2 1 1 Flow
 - 3 1 2 1 1 1 Speed
 - 3 1 2 1 2 Accurate
 - 3 1 2 1 3 Timely
 - 3 1 2 1 4 Leveraging
 - 3 1 2 1 5 Complete
 - 3 1 2 1 6 Understanding
 - 3 1 2 1 6 1 Distortion
 - 3 1 2 1 7 Quality
 - 3 1 2 2 Costs
 - 3 1 2 2 1 Understanding
 - 3 1 2 3 Processes
 - 3 1 2 3 1 Understanding
 - 3 1 2 3 1 1 Limitations
 - 3 1 2 3 2 Identifying
 - 3 1 2 4 Perspective
 - 3 1 2 4 1 Supply Chain Wide
 - 3 1 2 4 2 People
 - 3 1 2 4 2 1 Internal
 - 3 1 2 4 2 2 Suppliers
 - 3 1 2 4 2 3 Customers
 - 3 1 2 4 2 4 Senior Management
 - 3 1 2 5 Mutuality
 - 3 1 2 5 1 Benefits
 - 3 1 2 6 Customer Focused
 - 3 1 2 7 Leadership
 - 3 1 2 7 1 Visionary
- 3 1 3 Way Forward
 - 3 1 3 1 Processes
 - 3 1 3 2 People

- 3 1 3 3 Cross Functional
- 3 1 3 4 Co-Management
- 3 1 3 5 Technology
 - 3 1 3 5 1 Better
 - 3 1 3 5 2 Faster
 - 3 1 3 5 3 Cheaper
 - 3 1 3 5 4 Automation
 - 3 1 3 5 4 1 Systems
 - 3 1 3 5 4 2 Physical
- 3 1 3 5 Demand Driven
- 3 1 3 6 Synchronisation
 - 3 1 3 6 1 Business Cycles
- 3 1 3 7 Education
- 3 1 3 8 Understanding
 - 3 1 3 8 1 Models
- 3 1 4 General Meaning
 - 3 1 4 1 Product Availability
 - 3 1 4 1 1 Physical Activities
 - 3 1 4 1 2 Physical Delivery
 - 3 1 4 2 Focusing
 - 3 1 4 3 Responsivness
 - 3 1 4 4 Cost Reduction
 - 3 1 4 5 Customer Service - least cost
 - 3 1 4 6 Source of Competitive Advantage
 - 3 1 4 7 Cost Effective
 - 3 1 4 8 Total SC View
- 3 1 5 Definition
 - 3 1 5 1 End to End Process
 - 3 1 5 2 Physical Movement
 - 3 1 5 3 Data-Info Flow
 - 3 1 5 4 Customer Service
 - 3 1 5 5 Product Availability
 - 3 1 5 6 Cost Effective
 - 3 1 5 7 Total Performance
- 3 1 6 Confusion
 - 3 1 6 1 Total Supply Chain View
 - 3 1 6 2 Definition
 - 3 1 6 2 1 Multiple
 - 3 1 6 3 Functional View
 - 3 1 6 3 1 Lacking Ownership
 - 3 1 6 4 Understanding
 - 3 1 6 5 Scope
 - 3 1 6 6 Conditioning
 - 3 1 6 7 Lacking Skills
 - 3 1 6 8 Functional Structure
 - 3 1 6 9 Conflicting Objectives
 - 3 1 6 10 Technology
- 3 1 7 Org. Meaning
 - 3 1 7 1 Prod. Availability
 - 3 1 7 1 1 Physical Activities
 - 3 1 7 1 2 Freshness
 - 3 1 7 1 3 Customer

- 3 1 7 1 4 Consumer
- 3 1 7 2 Total Supply Chain View
- 3 1 7 3 Broad Process
- 3 1 7 4 Source of Competitive Advantage
- 3 1 7 5 Organisational learning
- 3 1 7 6 Resource Focus
- 3 1 7 7 Cross Functional
- 3 1 7 8 Specialist Resource
 - 3 1 7 8 1 New Skill Sets
- 3 1 7 9 Good Relationships
- 3 1 7 10 Purchasing
- 3 1 7 11 Customer Service
- 3 1 7 12 Distribution
- 3 1 7 13 Master Data
- 3 1 7 14 Source of Internal Competition
- 3 1 7 15 Main Corporate Driver
- 3 1 8 General Offers
 - 3 1 8 1 Match Demand-Supply
 - 3 1 8 2 Improved Customer service
 - 3 1 8 3 A Systemic View
 - 3 1 8 4 Reduced Working Capital
 - 3 1 8 5 Reduced Costs
 - 3 1 8 6 Reduced Capacity
- 3 1 9 Specific Offer
 - 3 1 9 1 Maximise Customer Service
 - 3 1 9 2 Core Business Process
 - 3 1 9 3 Lower Inventories
 - 3 1 9 4 Reduced Waste
 - 3 1 9 5 Greater Flexibility
 - 3 1 9 6 An Enabler
 - 3 1 9 7 Cost Effective Supply
 - 3 1 9 8 Opportunities
 - 3 1 9 9 Feedback
 - 3 1 9 10 Develop Suppliers
- 3 1 10 Awareness
 - 3 1 10 1 Recognised Potential
 - 3 1 10 1 1 Appointed SC Director
 - 3 1 10 2 Changing Market
 - 3 1 10 3 Pressure to Reduce Costs
 - 3 1 10 4 Need for Flexibility
 - 3 1 10 5 Senior Management
 - 3 1 10 5 1 Style
 - 3 1 10 6 Visionary
 - 3 1 10 7 Customer Power
 - 3 1 10 8 Reduce Manufacturing Costs
 - 3 1 10 9 External Perspective
 - 3 1 10 10 Customer Driven
- 3 1 11 Other Perspective
 - 3 1 11 1 Greater Control
 - 3 1 11 1 1 Costs
 - 3 1 11 1 2 Arrogance
 - 3 1 11 2 Supplier Responsibility
 - 3 1 11 3 Common View

- 3 1 11 4 More simplistically
- 3 1 12 Key Benefits
 - 3 1 12 1 Inventory Reduction
 - 3 1 12 2 Improved Customer Service
 - 3 1 12 3 Better Information
 - 3 1 12 4 Delivery plan accuracy
 - 3 1 12 5 Product Availability
 - 3 1 12 6 Minimising Costs
 - 3 1 12 7 Working Capital
 - 3 1 12 8 Product Quality
 - 3 1 12 9 Cost Effectiveness
 - 3 1 12 10 Responsiveness
 - 3 1 12 11 Increased Sales
 - 3 1 12 12 Greater Understanding
 - 3 1 12 13 Better Relationships
 - 3 1 12 14 Shareholder Value
 - 3 1 12 15 Think Differently
 - 3 1 12 16 Reduced Waste
 - 3 1 12 17 Lead-Time Reduction
 - 3 1 12 18 Reduced Administration
- 3 1 13 Competitive Advantage
 - 3 1 13 1 Supply Chain Efficiency
 - 3 1 13 2 Supply Chain Effectiveness
 - 3 1 13 2 1 Planning
 - 3 1 13 3 Responsiveness
 - 3 1 13 4 Streamlined
 - 3 1 13 5 Supply Chain Understanding
 - 3 1 13 6 Value Adding
 - 3 1 13 7 Product Availability
 - 3 1 13 8 Industry Uptake
- 3 1 14 Achieving Benefits
 - 3 1 14 1 Customer Relationship Development
 - 3 1 14 2 Supplier Relationship Development
 - 3 1 14 3 Collaboration
 - 3 1 14 3 1 Clearly Defined
 - 3 1 14 4 Process Re-Engineering
 - 3 1 14 5 Process Integration
 - 3 1 14 5 1 Marketing
 - 3 1 14 5 2 Sales
 - 3 1 14 6 General Business Education
 - 3 1 14 7 Understanding
 - 3 1 14 7 1 Costs
 - 3 1 14 7 1 1 Cost to Serve
 - 3 1 14 7 2 Stock Loss
 - 3 1 14 7 3 Using Shared Information
 - 3 1 14 7 4 Total Supply Chain Commitment
 - 3 1 14 7 5 Decision Implications
 - 3 1 14 8 Visibility
 - 3 1 14 9 People Excellence
 - 3 1 14 10 Coaching
 - 3 1 14 11 Performance Measurement
 - 3 1 14 11 1 SC Based Performance Measures
 - 3 1 14 12 System Excellence

- 3 1 14 13 Better Information
 - 3 1 14 14 Not Price Focussed
 - 3 1 14 15 Open-Minded
 - 3 1 14 16 Sharing Information
 - 3 1 14 16 1 Necessary Information
 - 3 1 14 16 2 Pre-Emptive Information
 - 3 1 14 16 3 Critical Mass
 - 3 1 14 17 Enhanced Decision Making
 - 3 1 14 17 1 Necessary Information
 - 3 1 14 18 Objectives
 - 3 1 14 18 1 Clarity
 - 3 1 14 18 2 Shared
 - 3 1 14 18 3 Concensus
 - 3 1 14 19 Identify Idiosyncrasies
 - 3 1 14 19 1 Articulate
 - 3 1 14 20 Senior Management Driven
 - 3 1 14 21 Customer Service Driven
 - 3 1 14 22 Piecemeal Projects
 - 3 1 14 23 Remove Disconnects
 - 3 1 14 24 Demand Driven
 - 3 1 14 25 Product Availability
 - 3 1 14 26 Effective Promotions Management
 - 3 1 14 27 Learning from Mistakes
 - 3 1 14 28 Total Supply Chain View
 - 3 1 14 29 Internal Integration
 - 3 1 14 30 Utilising Shared Information
 - 3 1 14 31 Involve HR
- 3 2 Relationships
- 3 2 1 Problems
 - 3 2 1 1 Lack of Co-ordination
 - 3 2 1 2 Organisational Size
 - 3 2 1 3 Information Usage
 - 3 2 1 4 Agreed Collaboration slippage
 - 3 2 1 5 Quality of Forecasting
 - 3 2 1 5 1 Forecast Variability
 - 3 2 1 5 2 Over Forecasting
 - 3 2 1 6 Product Lead Times
 - 3 2 1 7 Cost Driven
 - 3 2 1 8 Asynchronous Production
 - 3 2 1 9 Long-term forecast driven
 - 3 2 1 10 Availability of Demand
 - 3 2 1 11 Differing Strategies
 - 3 2 1 12 Signing-up Suppliers
 - 3 2 1 13 Traditional Views
 - 3 2 1 13 1 Suppliers .v. Customers
 - 3 2 1 13 2 Industry Specific
 - 3 2 1 14 Short-termism
 - 3 2 1 15 Decision Implications
 - 3 2 1 16 No Probslems
 - 3 2 1 17 In-direct contact
 - 3 2 1 18 Differing Management Policies
 - 3 2 1 19 Information Communication
 - 3 2 1 20 Design Change Reporting
 - 3 2 1 21 Fragmented Information Sources

- 3 2 1 22 Hearts and Minds
- 3 2 1 23 Time To Implement
- 3 2 1 24 Availability of Information
 - 3 2 1 24 1 Future Planning Information
 - 3 2 1 24 2 Timing of Information
- 3 2 1 25 Customer Lacking Confidence
- 3 2 1 26 Lack of Involvement
- 3 2 1 27 Commercial Considerations
 - 3 2 1 27 1 Short-term Issues
 - 3 2 1 27 2 Consumer Lock-in
- 3 2 1 28 Multiple Suppliers
 - 3 2 1 28 1 Fragmented Supplier Base
- 3 2 1 29 Mechanistic Relationships
- 3 2 1 30 Lack of Understanding
- 3 2 1 31 Managing Change
- 3 2 1 32 Managing Promotions
- 3 2 1 33 Supplier Responsiveness
- 3 2 1 34 Perceptions
- 3 2 1 35 Supplier Performance
- 3 2 1 36 Technology
 - 3 2 1 36 1 New System Bugs
- 3 2 1 37 Order Cycles
- 3 2 1 38 Lack of Collaboration
 - 3 2 1 38 1 Operational Level
 - 3 2 1 38 2 Strategic Level
- 3 2 2 Why Problems
 - 3 2 2 1 Lack of Vision
 - 3 2 2 2 Lack of Understanding
 - 3 2 2 1 1 People
 - 3 2 2 3 Size of Organisation
 - 3 2 2 4 Number of Projects
 - 3 2 2 5 Commercial .v. Non-Commercial
 - 3 2 2 6 Lacking good Information
 - 3 2 2 7 Inter-departmental Rivalry
 - 3 2 2 8 Understanding Decision Implications
- 3 2 3 Types
 - 3 2 3 1 Shared KPIs
 - 3 2 3 2 Joint Objectives
 - 3 2 3 4 Totally Integrated Bus Plans
 - 3 2 3 5 ECR Scorecard
 - 3 2 3 6 Mutual Recognition
- 3 2 4 Basis
 - 3 2 4 1 Progressive
 - 3 2 4 2 Mutually Beneficial
 - 3 2 4 3 One Party Expert
 - 3 2 4 3 1 Supply Chain
 - 3 2 4 3 2 Systems
 - 3 2 4 4 Treat as yourself
 - 3 2 4 4 1 Ethical
 - 3 2 4 5 Other Party Opportunistic
 - 3 2 4 6 Developmental
 - 3 2 4 7 Open

- 3 2 5 With
 - 3 2 5 1 Suppliers
 - 3 2 5 1 1 Glass
 - 3 2 5 1 2 Nestle
 - 3 2 5 1 2 1 Customer Service
 - 3 2 5 1 2 2 Customer Service Co-ordinator
 - 3 2 5 1 3 Plastic Film
 - 3 2 5 2 Customers
- 3 2 6 Form of Collaboration
 - 3 2 6 1 Sharing
 - 3 2 6 1 1 Data
 - 3 2 6 1 2 Information
 - 3 2 6 1 3 To create Visibility
 - 3 2 6 1 4 Knowledge
 - 3 2 6 2 Understanding
 - 3 2 6 2 1 Joint
 - 3 2 6 3 Training
 - 3 2 6 3 1 Management Exchanges
 - 3 2 6 3 2 Personnel Exchanges
 - 3 2 6 3 3 Courses
 - 3 2 6 4 Organisation Structure
 - 3 2 6 5 Management Form
- 3 2 7 Fundamental Requirements
 - 3 2 7 1 Belief in the Relationship
 - 3 2 7 2 Communication
 - 3 2 7 2 1 Direct
 - 3 2 7 2 2 Broad
 - 3 2 7 2 3 Considered
 - 3 2 7 3 Info Flow
 - 3 2 7 4 Directed Information
 - 3 2 7 5 Service Co-ordinators
 - 3 2 7 5 1 Senior Management Support
 - 3 2 7 5 1 1 From Customer
 - 3 2 7 5 2 Multi Dicipline Perspective
 - 3 2 7 6 SC Consolidator
 - 3 2 7 6 1 Demand Consolidation
 - 3 2 7 7 Partner Education
 - 3 2 7 8 Ongoing Trust Development
 - 3 2 7 9 Sharing Quality Information
 - 3 2 7 10 Forward Thinking
 - 3 2 7 11 Proactive
 - 3 2 7 12 Openess
 - 3 2 7 12 1 Reaction to Openess
 - 3 2 7 12 2 Honesty
 - 3 2 7 13 Understanding
 - 3 2 7 13 1 What Information to Share
 - 3 2 7 13 2 Shared Internal Understanding
 - 3 2 7 13 3 Partner's Business
 - 3 2 7 13 4 Mutual

- 3 2 7 14 Supplier Managed Inventory Management
- 3 2 7 15 Demonstrate of Benefits
 - 3 2 7 15 1 Achieve Buy-in
- 3 2 7 16 Full Process Review
- 3 2 7 17 The Right People
 - 3 2 7 17 1 Team-working Skills
 - 3 2 7 17 2 Influencing Skills
- 3 2 7 18 System Enabled
- 3 2 7 19 Relationship Manager
- 3 2 7 20 Problem Solving
- 3 2 7 21 Supplier Rationalisation
- 3 2 7 22 Supplier Compliance
- 3 2 7 23 Supplier Product Development
- 3 2 7 24 The Right Culture
- 3 2 7 25 Mutual Respect
- 3 2 7 26 Supplier Contribution Recognition
- 3 2 7 27 Shared Philosophy
- 3 2 7 28 Senior Management
 - 3 2 7 28 1 Analysis Starting point
 - 3 2 7 28 2 Commitment-Support
- 3 2 7 29 Commitment
 - 3 2 7 29 1 Long-Term
 - 3 2 7 29 2 Internal
 - 3 2 7 29 3 Willingness to Share Information
 - 3 2 7 29 4 Senior Management
 - 3 2 7 29 5 Mean What is Said
- 3 2 7 30 Multi-level Relationships
 - 3 2 7 30 1 Personal
 - 3 2 7 30 1 1 Corporate
- 3 2 7 31 Training
 - 3 2 7 31 1 Joint
- 3 2 7 32 Involvement
- 3 2 7 33 Integrated Technology Solution
- 3 2 7 34 Readiness to Compromise
- 3 2 7 35 Ability to Share Information
- 3 2 7 36 Shared Objectives
- 3 2 7 37 Realistic Approach
- 3 2 7 38 Give and Take
- 3 2 7 38 Advanced Notification
- 3 2 7 39 Reciprocity
- 3 2 7 40 Joint Decision Making
- 3 2 8 Concepts
 - 3 2 8 1 Trust
 - 3 2 8 2 Collaboration
 - 3 2 8 2 1 High Degree
- 3 2 9 Perceptions of other parties
 - 3 2 9 1 Retailer-Manufacturer
 - 3 2 9 2 Manufacturer – Raw Material Supplier
 - 3 2 9 3 Raw Material Supplier - Manufacturer
- 3 2 10 Benefits
 - 3 2 10 1 Enhanced Communication
 - 3 2 10 2 Focal Point of Contact
 - 3 2 10 3 Spin-offs

- 3 2 10 4 Supply Chain Development
- 3 2 11 Synchronisation
 - 3 2 10 1 Branded .v. Own-label
- 3 2 12 Presently Collaborative
 - 3 2 12 1 Developing new ideas
 - 3 2 12 2 Reciprocity
 - 3 2 12 3 Ratings
 - 3 2 12 3 1 (6 to 7)
 - 3 2 12 3 2 (9 to 10)
 - 3 2 12 3 3 (8)
 - 3 2 12 4 Large extent
 - 3 2 12 4 1 A long way to go
 - 3 2 12 5 Information sharing
 - 3 2 12 6 Bad Examples
 - 3 2 12 7 To what extent proactive
 - 3 2 12 8 Collaborative Planning
 - 3 2 12 9 Nestle's Suppliers
 - 3 2 12 9 1 Production Plans
 - 3 2 12 9 2 Process Visibility
 - 3 2 12 9 3 Very Collaborative
 - 3 2 12 9 4 Shared Media Activity
 - 3 2 12 9 5 Ongoing progression
 - 3 2 12 9 5 1 Strategic goals
 - 3 2 12 9 6 Quick Reaction to Problems
 - 3 2 12 9 7 Customer Service
 - 3 2 12 9 8 Believing Information
 - 3 2 12 9 3 Process Alignment
 - 3 2 12 9 3 Positive Culture Changes
 - 3 2 12 9 3 Common Understanding

**Appendix D: Exploratory Study Summaries
(By Research Theme)**

Respondent's Comments by Sub-theme and Issue for Research Theme 1 – SCM

Sub-Theme	Issues	Respondents
Achieving SCM Benefits	Understanding	<p>Retailer C: "Understand the total supply chain . . . and then by making a decision at one point what is the impact upstream and downstream"</p> <p>Manufacturer C "A true understanding of their cost . . ."</p> <p>Logistics Provider B "I think they've got to understand the cost and the information flows along the whole supply chain and the relative trade-offs. Until they understand them all and evaluated the relevant trade-offs they can't begin to take management decisions"</p>
	Focus	<p>RM Supplier B: "Focusing upon core competencies, whilst outsourcing other activities"</p> <p>Manufacturer B: "Focusing upon customer service"</p> <p>Retailer B: "Focusing upon the role of people in the supply chain"</p>
	Communication	<p>RM Supplier A "The true benefit is when you're open with them, you trust them and you say right, here's the source of our materials and they say here's the materials, we've got them, we know where they are, we want to sell you them"</p> <p>IT Service Provider A "And this is where some of the Extranet stuff comes in, . . . then the next step is what other information can you share, and Internet type technologies allow other types of information to be shared. And you share that information throughout the supply chain, and you get better information"</p>
	Responsiveness	<p>Retailer A: Well availability is probably a key measure, If you've got a good supply chain you'll get both of those things because you want to move products through quickly, . . . "</p>
	Relationships	<p>RM Supplier A: "It goes back to the trust in relationship with the suppliers. That way they are more efficient, they're going to charge less because they've got a back load on the haulage itself and we know we're getting the optimum price for the wheat, which includes the delivery cost because we've got that relationship with hauliers as well as merchants".</p> <p>Manufacturer B: ". . . .we're beginning to work much more closely with our customers . . . "</p>
	Mutuality	<p>Manufacturer B. ". . . we are beginning to work towards that joint objective of getting product on the shelf at the lowest overall cost, . . . "</p> <p>Retailer C: ". . . it is about people working together as a team and being accepted as equal members of those teams. . . ."</p>
	Technology	<p>Manufacturer E: "It is the interface between JDE and commercial and business systems and BPICS for the manufacturing side".</p> <p>IT Service Provider A: "And this is where some of the Extranet stuff comes in, yes a lot of people have done EDI, so in terms of our services, that's more or less there, then the next step is what other information can you share, and Internet type technologies allow other types of information to be shared".</p>
	Innovation	<p>IT Service Provider A: "I think its the first one or two that do it will get a competitive advantage. If they don't keep moving on up the, . So I think that when you get in first, you get that advantage, or maybe second, the first one has a hell of a job, the second one reaps that kind of benefit".</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 1 – SCM

Sub-Theme	Issues	Respondents
Fundamentals	Mindset	<p>Manufacturer E: I think unless you actually know what your supply chain is from end to end then you're not going to get the advantage, you're not going to be able to manage it, so you need visibility of it, you need a sharing not just of information but of responsibility across the length of that supply chain, so you don't have the situation where there are walls over which people throw problems and walk away</p> <p>Retailer A: "And then I think there's this of getting the business to understand what you mean by supply chain and what their role within the supply chain is all about, so then you start getting into the debates about breaking out of functional silos and all that sort of stuff, but it really is key, it's absolutely paramount if you're going to have an effective supply chain to do just that"</p> <p>Retailer B: "I don't think that's the reason for it, but its a good question I suppose of whether we in practice would have had to have done it that way I think that, if I was being honest about Sainsbury, I think that the people who were involved in Sainsbury before had been in Sainsbury for 15 years or so, and were very traditional, sort of this is the way that we do things, we don't talk to suppliers".</p> <p>IT Service Provider A: And if that can be done in a wonderful open forum with everybody involved, wonderful. I suspect that there are various communication and cultural step that you need to go through before that can happen.</p> <p>IT Service Provider A: And I think that there has got to be an understanding from the typically the retailer's first tier supplier that this cannot just stop at the end of the first tier So it will then be for the first tier to involve their suppliers</p> <p>Packaging Supplier A: "As with all management strategies there has got to be commitment from up top that, if there is not an attitude of mind it will never work. its a sort of hearts and mind exercise, I think that's first and foremost, the key to the door.</p>
	Understanding	<p>Raw Material Supplier A: "The knowledge of each others business Understanding from our point of view, we want to know the competencies within the suppliers that they can actually meet our needs".</p> <p>Manufacturer D: "Another element that we've seen as absolutely critical has been modelling total supply chain cost, because up to now we've had a very good understanding of the cost in our bit of the supply chain, we've done ABC analysis etc but we've had little or no understanding of costs either in our suppliers part of the supply chain or in our customers part of the supply chain, so when there is a proposal to do something in a different way which comes from for example when a customer, we haven't got a shared base of understanding about what the implications are on the supply chain cost, so at the moment we're very active and working with one of the major retailers to develop a cost model which will go from our factory through to the shelf, and we're going to have to do the same with some major suppliers, but the first priority has been to look to the customer".</p> <p>Manufacturer C: A clear understanding of what the limitations are within your processes. I think unless you have a clear understanding of what all the issues are, that are likely to create barriers to what you want to do, then I think you can't deal with this in bits, well you can actually that's not true, we can improve the supply end of it and you can improve the customer end of it individually, but you have to do it up to there and up to there and then put the two things together I think.</p> <p>Manufacturer E: "I think unless you actually know what your supply chain is from end to end then you're not going to get the advantage, you're not going to be able to manage it. . ."</p> <p>Retailer A: " So I think the people skills is all important. And then I think there's this of getting the business to understand what you mean by supply chain and what their role within the supply chain is all about,.....".</p>

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	Mutuality	<p>Manufacturer C: "What we're about is actually taking that cost out and it being mutually beneficial, because there's no taste in nothing, and if you're doing all this just for yourself and you're not saying well we should all share in this benefit, then it's not going to continue to progress, there's got to be some benefit for everybody in the way that this works"</p> <p>Packaging Supplier A: "Having said that you do have to have the right tools of the trade, and that is to do with the rapid accurate effective exchange of not just data but information and ultimately interpretation of that information, i.e., a commitment to mutual strategy as well"</p>
	Info Exchange	<p>Manufacturer E: "I think unless you actually know what your supply chain is from end to end then you're not going to get the advantage, you're not going to be able to manage it, so you need visibility of it, you need a sharing not just of information but of responsibility across the length of that supply chain,....."</p> <p>Logistics Provider B: "Information, there is no substitute for information for all the variables that can apply within it but clearly you've got to have capable people and I think that's probably been the biggest weakness over the last 10 years, there really haven't been the people with the commitment and interest to make it happen"</p> <p>IT Service Provider A: "Knowledge of what is going on, so visibility of that supply chain So that demands a certain amount of information flowing backwards and forwards So knowing where stockholdings are, knowing what the lead times are at various stages, getting things like that. That sort of visibility and therefore you can clearly identify where the bottlenecks are or the areas of clear opportunity for both parties to do something differently"</p> <p>Packaging Supplier A: "Having said that you do have to have the right tools of the trade, and that is to do with the rapid accurate effective exchange of not just data but information and ultimately interpretation of that information, i.e., a commitment to mutual strategy as well Below that you are talking about electronic commerce techniques like EDI, more effective sharing of forecasting, obviously developing more effective use of physical facilities so it about having the right sort of warehousing operation at its most base level, and deploying those resources as sensibly as possible"</p>
	Openness	<p>Raw Material Supplier B: "It's not rocket science so there's none of the technical issues that are insurmountable, the major issues are those of trust really and open information issues"</p> <p>IT Service Provider A: "And if that can be done in a wonderful open forum with everybody involved, wonderful. I suspect that there are various communication and cultural step that you need to go through before that can happen"</p> <p>Packaging Supplier A: "So its a kind of multi-layered thing, but fundamentally, its got to be about senior management's commitment to a broader and more open ended relationships"</p>
	Tools	<p>Manufacturer E: "Other characteristics that are important, that almost by definition means you need good systems to support that, systems that talk to one another, more and more I think you need competent people, I think you need access to modelling simulation technology"</p> <p>Retailer A: "Technology has an important part to play but can be over-emphasised. Technology is like a hammer or a saw to a carpenter, it's something to be used, you can give the hammer and saw to me and I'll make a right mess of it, give it to a real carpenter and he'll make you a wonderful table"</p> <p>Packaging Supplier A: "Having said that you do have to have the right tools of the trade, and that is to do with the rapid accurate effective exchange of not just data but information and ultimately interpretation of that information, i.e., a commitment to mutual strategy as well"</p>
	Senior Mgmt	<p>Packaging Supplier A: "As with all management strategies there has got to be commitment from up top that, if there is not an attitude of mind it will never work"</p>
	Time Horizon	No specific comments.

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	<p>Planning</p>	<p>Packaging Supplier A: "Below that you are talking about electronic commerce techniques like EDI, more effective sharing of forecasting, obviously developing more effective use of physical facilities so it about having the right sort of warehousing operation at its most base level, and deploying those resources as sensibly as possible"</p> <p>Packaging Supplier B: "A forecast plan, a manufacturing plan which has got to be sales or built up a sales forecast and you're balancing one up against the other, and I say the production plan because the production plan drives the MRP side, so you're then driving your suppliers which are as much an SCM function as anything else, and the price we're paying for resin and all this jazz goes right back to the price of the oil coming out the ground, it all dictates down through"</p>
	<p>Relationships</p>	<p>Raw Material Supplier A: "We then ask those suppliers which is on predominantly the wheat side to name their hauliers that they use. Haulage in the UK has got tighter and tighter and there's an awful lot of companies gone out of business and times have been tough for them. So we wanted to say look, we want to work with you but we want you to understand when you're delivering to us, these are our requirements. If you understand that and are willing to work with that, we will help you as much as we can with your transport, which is turning vehicles round very quickly so they are only on site for a small period of time, allowing them to deliver at times where they can then get back loads allowing them to deliver, so that if they like get in there a very early AM delivery so they can get 3 loads out of the vehicle so the vehicle pays for its etc etc. They came in and again they are certainly not direct suppliers to ourselves, and we ran through it with them. We listened to their issues and they listened to our issues. We took some of their issues on board and we actually changed the way that we structured the site, so we increased the window of delivery period for the week to accommodate the hauliers. There were something's that they wanted to do that we didn't and wouldn't change. We wouldn't be used as an overnight parking spot for them, we're not into that. So we don't just jump in and say oh yes we'll do everything, it's a case of it's got to be beneficial for ourselves. And then we took it even further and we said to the hauliers, OK who are your regular drivers because we know a lot of haulage companies have a high turnover of drivers but if you've got any drivers that have been with you for a while and you know who are going to stay with you, send them to site. And we had open evenings so they came to site, we had a little pack of information and said when you arrive on this site with your lorry this is what you're expected to do and move round and everything. The problem with that is there was hardly any drivers turned up because the companies didn't want to let their drivers come and see us or spend any time with us because they wanted them working for them! They weren't willing to fund it, they weren't willing to supply the transport and it had to be in the drivers own time and drivers expense, so obviously we didn't see too many drivers. But we tried. It works with some, but at the end of the day a lot of it comes back to the interest of the individual company"</p> <p>Manufacturer D: "In our thinking about we've broken this down into a number of areas, one of them is actually about relationship and we have a bit of our supply chain strategy which talks about working with customers to define the kind of relationship we intend to have, so describe what we need when we talk about an alliance to actually articulate with the customers, so that's a specific strategic element to work on, and I think without that kind of clarity, it'll be difficult to move things forward"</p> <p>Logistics Provider A: "I understand all the cost drivers and where they sit and having done that I know it's a pretty hackneyed old word but I mean you do need some sort of partnership approach with all of the players in the supply chain, and that actually isn't only with people like suppliers and logistics operators, it's actually within the major retailers as well, because I think the significant area of issue is how the retailers deal with the different economic, how they deal with the different cost structures within their own organisation"</p> <p>Packaging Supplier A: "It depends where the relationships are. A contractual relationship is a retailer with its FMCG supplier. The people who are making the tins or the labels or whatever else is much further down. And I think that there has got to be an understanding from the typically the retailer's first tier supplier that this cannot just stop at the end of the first tier"</p>

	<p>People</p>	<p>Raw Material Supplier A: "There's a lot of people out there that can talk the job very well and can talk a good contract, but that can actually achieve it, there's not that many of them"</p> <p>Raw Material Supplier B: "I think as I was saying earlier on I think that you need, because essentially we're talking about something like the philosophy of empowerment, you empowering yourselves, channels to represent you in the market and to all points down the stream. To get that, and this is where this bloody empowerment within industry goes wrong a lot of the time, is because you say you're empowered to do this that and the other, but you're not given the responsibility to do something, or you're empowered to this but you can't do it because we haven't given you the rights to sign X size of cheque or whatever. Similarly within the supply chain if you empower someone to represent you further down the supply chain, you have to give them responsibility for certain aspects of you business, you have to get them to take responsibility for things that go right, for things that go wrong, and you have to give them a framework in which they can operate, because it's stated fairly clearly in a lot of the literature, nowadays it's coming out about empowerment is that people are quite happy with and actually require a framework in which to operate, to know their limits, and that is an important thing"</p> <p>Manufacturer E: "Other characteristics that are important, that almost by definition means you need good systems to support that, systems that talk to one another, more and more I think you need competent people, I think you need access to modelling simulation technology"</p> <p>Retailer C: "I think it's quite hard to say they'll be replaced, I think there would be a natural progression that you can see which buyers are going to cope in the new world and which ones aren't, and they normally realise that and then look and then chances are they will get another job within the business, because the thing is you can't afford to lose that expertise and that experience, because you have a very high turnover of buyers anyway, and you have got to try and keep some of that, you've got to try and keep some of the expertise there, otherwise what we gain in one hand we're going to lose by not knowing what's happened in the past"</p> <p>Retailer A: "Good people. I think there's a lack of acknowledgement that it is a skill throughout that supply chain and I think people provide you with that. Technology has an important part to play but can be over-emphasised. Technology is like a hammer or a saw to a carpenter, it's something to be used, you can give the hammer and saw to me and I'll make a right mess of it, give it to a real carpenter and he'll make you a wonderful table. So I think the people skills is all important"</p> <p>Logistics Provider B: "Information, there is no substitute for information for all the variables that can apply within it but clearly you've got to have capable people and I think that's probably been the biggest weakness over the last 10 years, there really haven't been the people with the commitment and interest to make it happen"</p>
	<p>Vision</p>	<p>Packaging Supplier A: "I think it is noticeable that it is only the latter day visionaries like the Tesco's that are taking it on board to a point that there is a specific supply chain strategy directors, and that is not inconsequential that their top man, Graham Booth, is actually called (Supply Chain Strategy Development) and not just Distribution Director or what have you"</p>

	<p>Implications</p>	<p>Raw Material Supplier B: "There's a lot of OB(Organisational Behaviour) and OD (Organisational Development) type issues come into it with people"</p> <p>Manufacturer D: "We would look at supply chain management as essentially establishing a system, establishing the rules for running the supply chain in the organisation, to run the supply chain. Starting from the procurement of materials and running through to the physical distribution to our customers and the interfaces with our customers on supply chain issues"</p> <p>Manufacturer A: "And again until there is an understanding that all of this directly leads to poorer customer service, higher inventory, higher cost, more capacity, and that if you really do want to remove these things, you've got to have this more systematic approach"</p> <p>Retailer B: "So I think that we have tended to delegate it low in the organisation on the basis that it was all about controlling budgets and controlling costs, rather than looking at it strategically and try to pull the whole thing together".</p> <p>Retailer C: "Completely separate, but we've used the merger to now bring those two together, but a new term has been born with Somerfield which is logistics. So we now have supply chain operations separate, we have logistics which is supply chain planning and distribution and then we have our partnership programme which is supposedly about supply chain development"</p> <p>Retailer A: "Oh yes, absolutely, it really is pain. I mean this is changing the way people work traditionally, and have worked for goodness knows how long, I mean I've been around for 30 odd years so I've seen it, and this is changing fundamentally the way we do business"</p> <p>Packaging Supplier B: "Supply chain management for the benefit of us, downstream, that is to our customers, one would see that we are working very closely on giving them what they want and when they want, on a managed basis, to the benefit of an uphold in large stocks, and then we're able to supply easily and efficiently, but there's got to be an awful lot of trust by our customers in so much as they will know that we will deliver on the time and don't panic just because you've only got one pallet on the shop floor, it'll come there, that's not just in time, that is starting the supply chain management"</p>
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	Definition	<p>Farmer A: "That's not my field of expertise! It's basically a smooth, in my head if you like, it's to get a smooth supply from whoever is supplying you to whoever you are supplying."</p> <p>Raw Material Supplier B: "That's a big question. It's all encompassing, it's from logistics right through to the way you actually chose to satisfy your own customers, what customers you might detail as house accounts, what customers you might detail as not being of any interest at all, what ones you might say well whose would be, those who would be of interest to distributors but not to us, so it's the mix of channels that you use and how efficient they are and the appropriateness to the end user really"</p> <p>Manufacturer C: " "I think it's about managing the supply chain in the most cost effective way"</p> <p>Manufacturer B: I would define supply chain management as having a totally integrated management process starting with the consumer and working back upstream to our suppliers, raw materials and packaging"</p> <p>Manufacturer A: "So the new definition which I'm now calling the value chain model, maximising total performance and added value across the entire process by reviewing each internal and external operation and link in a systematic and standard way in order to optimise speed, certainty and cost effectiveness of response to the customer"</p> <p>Manufacturer E: "All the activities that are involved in the response to demand, the co-ordination and control of those activities and the conceptual view of them rather than looking at them in discreet functional tunnels"</p> <p>Manufacturer D: "No, we're looking at, in our strategy process, we talk about the extended supply chain as running from our material suppliers factories through to the shelves of our retail customers"</p> <p>Retailer A: "Plough to plate".</p> <p>Retailer B: "... its taking the process that gets the raw material, whatever that means through to the consumer, and so that's the scope of it. And its treating the supply chain, raw material through to consumer, as one process and managing it as one process"</p> <p>Retailer C: "From the back door onto the shelf".</p> <p>Consultant A: "Well I consider the supply chain from the cotton as a seed sitting on the ground to where the consumer is actually wearing it"</p> <p>Logistics Provider B: "...it's the management of the process that moves product and information from point of manufacture all the way through to the consumer and I take supply chain to mean getting product into the consumers own domestic home because clearly home shopping is now a prevalent channel to market and one has to regard that as an important one for the future".</p> <p>Logistics Provider A: "I suppose in a way it's the optimisation of all of the elements of the movement of really right from the raw materials through now I suppose actually to in the grocery sector the product actually getting into the house of the final consumer, so it's really integrating all of those stages in an optimum way"</p> <p>IT Service Provider A: "Its about well, I think its all about the processes that are involved, and its taking out all the waste, whether that's waste in time or in materials. Its almost trying to act as a seamless flow of information and obviously goods as well. So rather than taking business by business, so it is about processes".</p> <p>Packaging Supplier B: "Well supply chain management starts off right back to your supplier and right through to our final customer and we're sort of in the middle of the patch"</p> <p>Packaging Supplier A: "Its basically about management not just of the chain but of the networks of raw materials supply, production and retailing channel. Its about understanding what those ultimate consumer needs are, i.e. what the demand within the network of the chain and the ultimate fulfilment of that demand through a more co-ordinated approach through the various channels or networks that exist within the market"</p>
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	Implementation	<p>Manufacturer A: "For example if you simply said to an organisation which had a traditional set of functions. I want you to do supply chain management, without doing anything about putting in place a supply chain management chain with it's own organisational role, and did a similar thing in customers and suppliers, you wouldn't get very far"</p> <p>Logistics Provider A: "I think the implementation of supply chain management is patchy, whether there's confusion I'm not quite sure"</p>
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	<p>Meaning</p>	<p>Farmer A: "To our organisation it's rather peculiar in that on the sales side as you can see we're sort of contracting through various organisations to do most of the marketing for us. On the buying side, there again we're actually in a buying organisation, our raw materials if you like are things like fertiliser, chemicals, diesel, oils, seeds, and that sort of thing. We're in a buying group and it's basically done on price. So to a certain extent I suppose we're doing it out of laziness, but also out of the feeling that that is the best way to get the price"</p> <p>Raw Material Supplier B: "It sounds sort of traditional industries would look it as a rather fancy title for trucking, but that would be to misunderstand the whole concept. Well, coming from the business school background and having my head filled with all sorts of bloody fancy ideas at the business school, it could have meant quite a lot of fancy things to me, but joining British Salt it's basically a very pragmatic approach"</p> <p>Raw Material Supplier A: "We've got to make money, they want to make money, but somewhere in between there's a balance of getting the products, service etc right"</p> <p>Manufacturer D: "I think probably a lot of people think about physical distribution as being the first thing that would come to mind, and perhaps wouldn't think further back up the supply chain to what's going on in factories and how the factories are supplied"</p> <p>Manufacturer A: "We may have different ways of going about it and we've still lots of things to fight about, but I think it's pretty widely held, if you talk to Tesco's, Sainsbury's or our competitors, we might use slightly different words but we all mean the same thing"</p> <p>Manufacturer C: "I think it means corraling all the things that are sort of spinal or the core or something into one area so that they can actually either do something about them or measure them"</p> <p>Manufacturer E: "I think the supply chain at "Manufacturer E" takes into account, the length of it is from their customer – the supermarkets, the retailers, the multiples, upstream to their raw material suppliers, the second tier and again the co-ordination and all those functions"</p> <p>Manufacturer B: "It should offer and it can offer improved sales through better availability, better presentation of product to consumers and it should also offer reduced cost in terms of reduced storage, probably reduced handling cost, although not necessarily and some of that cost might reside within different parts of the supply chain in different organisations, and that's another area where you get a lot of conflict"</p> <p>Retailer C: "I think the traditional view is still very much there that suppliers feel that their job is done once they've got their product into our depot"</p> <p>Retailer A: "It means so many different things to many different people and I think it depends on the business, it depends how that business has evolved and where they are today. And in fact when I lecture sometimes to manufacturers and other retailers in other parts of the world, I do say to them be very careful because plough to plough is a really big topic and a big subject, don't try to tackle that all in one go if you're not prepared for it"</p> <p>Retailer B: "It's about availability of product at reduced cost. And I think that if you look at the end to end supply chain, you give yourself so many more levers to pull to improve the availability to the consumer"</p> <p>Retailer A: "Continuous supply"</p> <p>Logistics Provider B: "Well it's a major opportunity for us, I mean our sole activity is managing supply chains for our clients and we're interested in all aspects of the supply chain from the sourcing the product for primary and inbound activities all the way through consolidation, warehousing, secondary distribution and indeed home shopping as well"</p> <p>Logistics Provider A: "If you take a third party logistics operator, yes we see it as a means for those to things, but also I think as a means to add value and justify our existence product for primary and inbound activities all the way through consolidation, warehousing, secondary distribution and indeed home shopping as well"</p> <p>Packaging Supplier B: "A lot of them see it as the logistics of moving goods round the country, and warehousing, and balancing that side of it. I'd think that's probably the biggest impression they get"</p> <p>Packaging Supplier A: "Realistically, absolutely not, and if you talk to the more (dyed in the wool) manufacturers that would see even the current efforts at co-operation in the supply chain as just another cynically ploy by retailers to screw them in different way. Ultimately it's all about relative strength"</p>
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	<p>Costs</p>	<p>Manufacturer B: "It should offer and it can offer improved sales through better availability, better presentation of product to consumers and it should also offer reduced cost in terms of reduced storage, probably reduced handling cost, although not necessarily and some of that cost might reside within different parts of the supply chain in different organisations, and that's another area where you get a lot of conflict. There's a lot of pressure from the retailers to reduce their costs and it adds cost into our end of the supply chain. We don't mind incurring that cost as long as we get in some way compensated for it, or so long as the consumer is better off at the end of the day, and that's not always the case"</p> <p>Retailer A: "I think that under the traditional banner of supply chain retailers especially have found that there's only so far you can go to take cost out by what I'd class as traditional methods, traditional methods being effective stock control and so on, effective transportation. And to make step changes that were easier 5 and 10 years ago, because we were totally inefficient in those days, that was the easy bit. You get to a point where you're saying now gosh where am I going to get my next tranche of benefit both in availability and savings from. We then started digging and saying oh boy we need to start working differently with our manufacturers and our suppliers, then you go and talk to them and say they say exactly the same. They say to you yes we're thinking on these same lines that we don't understand your side and consequently if we work together perhaps this is tranche of savings, and I think that's where this plough to plough concept started to emerge"</p> <p>Logistics Provider A: "I think from the retailers perspective he sees it in two lights, one as a means to getting greater availability, and two as a means of reducing the total cost throughout the chain"</p> <p>Packaging Supplier A: "I think one of the down-sides to a lot of supply chain thinking is owed to much emphasis on the latter and not on the former. It's all about cost containment and delivering least cost often ignoring the maximisation of service"</p> <p>Packaging Supplier B: "But I think we're very much on a learning curve, we've had A.T.Kearney's came in and did an investigation on our logistics site, and the final thing was they said is we could save a lot of money if we got the warehousing side sorted out, I mean £1-1.5million, which he took on board, but all I think that we'd done was build our stock. But again they finished up focusing on the transport side"</p>
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	Offering	<p>Manufacturer E: "As a concept it gives benefit through the co-ordination. I'm sounding very repetitive here but it's all about that. it's about instead of looking at purchasing and isolation from supply and isolation from production and isolation from distribution. actually looking at the whole chain of events that takes place. establishing a set of rules across that supply chain that deliver customer service, lower cost, quick cycle times, flexibility, responsiveness"</p> <p>Manufacturer A: "It has to offer better customer service and therefore the ability to generate more revenue by getting to the market earlier and better and providing that service which encourages people to buy again. The key things, keeping it simple are it will improve your customer service, your response to the market place by focusing on uncertainty and reducing the uncertainty which is institutionalised and can be reduced. It will enable you to cut total cost, reduce inventory, working capital and reduce capacities that you need to meet any demand. So what it delivers is quite simple. It has the ability to help you to define what your value chain actually is, I mean not just internally but obviously right across the piece, where is value added, where is cost added, all the obvious things, but most companies don't really know what the value chain is, never mind the virtual enterprise which is the electronic version of that"</p> <p>Manufacturer D: "I think effective supply chain management can make businesses more profitable, and I think it can make them more profitable by both supporting growth, because certainly in the food industry there are some categories which have the potential to grow and within those categories the companies that work best with their suppliers and customers in the supply chain, I believe will be more successful in growing their products, volumes than the others, but it can also make companies more profitable by reducing costs, and there's no doubt that there's still plenty of waste to take out of the supply chain"</p> <p>Retailer C: "It is such a critical part of retailing which I don't think people have really recognised because in retailing all you hear about are the buying side, the buyers have the power and my personal view is that supply chain should be seen as equals to buying, because it doesn't matter how well they buy their products, if we don't supply it then it's negated, and as a buyer they need to understand the cost of some of the decisions that they make, because yes they may get a very good price for truckers or ordering in pallets but what cost is that actually adding into the business, and because the buyers are only charged on gross margin then they don't want to know, and I think you've got to take those blinkers off"</p> <p>Retailer A: "At the end of the day it really is having the most economical supply chain throughout and the end product, giving the customer what she wants when she wants it, he or she wants it. There can be nothing else. Satisfied customers. What else is there?"</p> <p>Retailer B: "Treating the whole thing as one process and managed as one, has taken a lot of the mystery out of lead times and delivery frequencies and the downtime"</p> <p>Consultant A: "Well an opportunity to gain competitive advantage I guess, and that competitive advantage would come in several different forms, first market share, by being able to provide, satisfy the consumers value equation, and that might be in terms of service, responsiveness, customisation, whatever the consumer wants, but if they can do it better than brand X or brand Y then indeed they're going to gain market share and they're going to be more competitive and thrive and last longer and be around when the other guys aren't. Additionally though by implementing efficient supply chain processes it also enables them to be more competitive because it reduces costs and increases profitability and it makes the numbers work better, it all rolls down to the bottom line and makes them much more financially viable than they might be if they were just looking at it from a hodge-podge point of view"</p> <p>IT Service Provider A: "If they do it right, it can offer them competitive advantage, wherever they sit".</p> <p>Packaging Supplier A: "At a pragmatic level, I see supply chain management as a means of co-ordinating operators efforts to meet supplier requirements, now at a manufacturing level that might mean co-ordinating purchasing with production, and distribution. At a retailing level that would undoubtedly involve the trader, the buyers co-ordinating with centralised logistics capability, so it's a co-ordinating role, but in its best manifestation it's also an influencing role that changes the nature of the relationships between trade customer and supplier. It's ultimately about service maximisation to the end consumer at the least possible cost"</p>
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	<p>Degree- Integration</p>	<p>Raw Material Supplier A: "50% There's a lot of time and effort put into it We've just lost, as a group, a very large customer, over the last 10 years we've invested heavily in supporting their business. Their business has grown dramatically and we've done a lot of research work for them and we've helped them develop, we've funded a lot of projects"</p> <p>Manufacturer D: "I think it's very early days We're doing a lot more in the continuous replenishment area with customers than we were 18 months ago We aren't so far on with our suppliers and one reason for that is quite deliberate thing that our parent organisation Company X is in the throws of looking at European-wide part sourcing of materials and we need to be quite careful about seeing what the supply network is going to be before getting too far down the track of integrating with particular suppliers, so that's a factor that's delaying some of the work in that area"</p> <p>Manufacturer E: "The commercial operation has been separate so all the sales and marketing functions have been separate with the only coming together at the top and the commercial part of the business, until a few weeks ago when <i>one of my colleagues</i> (NB changed for the sake of confidentiality) moved on and the person who has taken over that responsibility now reports into the person who previously was the top of the commercial division, so there is a linkage at a lower level than previously".</p> <p>Manufacturer B: "Part of the problem is I don't anybody has really got a vision of what the end game is, so if we don't know what the end game is we don't know how far along the track we've gone. On it's most extreme you could say the end game is a situation whereby, for example, there is little or no stock of anything anywhere in the supply chain, that's an example But how far down that track, I mean clearly you'll never get to a point where there's no stock in the supply chain but how far down it can we go, and the answer is we don't know the answer to that, we just don't know the answer So therefore we don't know how far we've got. In many senses I think we've barely scratched the surface, so I don't know, 5%, 10%, 20%, I don't know But for all I know we can't go as far as I think we could go and therefore maybe we're 80% of the way, I don't know".</p> <p>Manufacturer C: "I think in some places we've been extremely effective because we've broken down traditional thinking, but that's where you've got responsiveness at the other end If you're trying to take Christianity to the heathen, and they're not quite ready for it, other than purely in shallow terms, then it is a difficult thing, because you're trying to change your own company and in some ways in the material handling areas, you can only change it if you show them something better Now if this sort of breaks down on the other side because that element is not ready for it then these are going to put these people off completely, you're only as good as your last mistake and that's all they remember But in cases in sort of areas where I wouldn't have thought we would have been successful like the carton industry, and with frozen food which is a very difficult area because of the way that that market is at the moment, we have been extremely successful and what is good about it is that we did it and we've been refining it ever since, and it is about refinement, you've got to do it at a level and then try and refine the process to get better and better and better. In glass which was another traditional area it's easier to manage the glass that we use on a VMI basis, not entirely but it is simpler We've actually defined things, and again you haven't got a big raw materials issue you've only got to go and talk to a sand supplier, but we have actually got pretty good at it, so in pockets we're pretty good, in other areas we've still got a long way to go but I think that's more about us internally than it is externally".</p> <p>Retailer A: "Across our supply chain, I don't think that's the issue. I think execution of what you want to do becomes the issue, that's much more difficult because you are then breaking into the realms of the cultural barriers, historical barriers that exist. But there's so much more to do, I mean it's a huge topic, and believe me we're only touching the tip of the iceberg, only touching it at the moment, with all the good work that's going on"</p>
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	<p>Degree-Integration (Continued)</p>	<p>Logistics Provider A: "I think it's quite significantly. I think that if we want to talk about some specific examples I can certainly do that, for example, for a number of years now we've operated stockless system, we've operated where we are collecting about 60% of all inbound product from manufacturer where we handle inbound raw materials for manufacture, where the service that we provide the stores is tailored to suit the store requirement, so the way we pick product facilitates moving costs out of the stores back into the distribution centre So all of those things, it's a pretty well integrated supply chain"</p> <p>Packaging Supplier B: "At the moment not very well, our stocks are rising Well the last 18 months, 2 years, we've been going 2 years now, we've been focused very much on getting SAPR3, which is on 3 sites in 3 languages, with inter-company VAT because we're making goods and transferring stock between orders, between companies So things actually have, well probably not as good as they were"</p>
	<p>Perf. Measures</p>	<p>Packaging Supplier A: "I think that there are different ways of measuring that financial metric, and as I have already mentioned, the shift away from gross margin to more direct product profitability is one aspect of that"</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 1 – SCM

Sub-Theme	Issues	Respondents
Barriers	Communication	<p>Manufacturer B: "Information. I don't believe that's an issue at all. The issue is what information are you prepared to share and if you do share it how does the other party actually make use of it, which was actually the issue I was talking about on the phone just now because what we've got is three of our major customers who between them have critical mass and actually are quite prepared to share their information and give us visibility in their systems, but they're all doing it in three different ways and also they've got three different sets of definitions, so it's a bit like the good old days when EDI was first starting and there was no sorts of standards, there was no consistency. We've got that issue to overcome so I think people's hearts are in the right place but we still need to get some of the detail up and down so that when we get stock figures from Tesco's we know it's comparable to the stock figures from Sainsbury's and those sorts of issues".</p> <p>Manufacturer A: "A lack of understanding of the role of data, we don't even now after all these years, we still don't spend enough time synchronising master data, products, prices etc. before we trade, we've got to have more emphasis on that. Because if you want a supply chain to work with maximum speed and certainty, in the short term, 10pm on a Saturday night, 3am on a Sunday morning, you've got to have put your work in place in the medium term to plan it properly, to exchange plans, and you've got to have synchronised your master data and you've got to have the same definition of data elements etc".</p> <p>Retailer C: "Oh dear, how long's a piece of string! The barriers to supply chain management has got to be communication. You have got to move away from all communication coming through the National Account Manager and the buyer, and you have got to get experts talking to experts, which I think is happening, certainly it's happening within Retailer C with our partners, because obviously they're the ones that I'm closest to and that is really my role to go and break down those communication barriers, and that's not easy because you're actually getting people to communicate who have never had to communicate before, and they really are venturing into the unknown so that takes a lot of facilitation. But only when you start communicating do you actually then start realising where the barriers are and what impact those barriers are actually having. I think the other barrier is about the sharing of information, but I think that's a bit of, I'm not entirely convinced that sharing information, particular EPOS Sales which is the biggest bug? So if you spoke to a supplier they would say we need to have more information coming back from retailers, we're certainly starting to share more information, but it's not just what information you share, it's how you share it, what means you share it in but then before you start doing it saying right how is this going to impact the business. I think if you answer that question that's where a lot of the things well I hadn't really thought of that, they just all seem to have in their minds we need EPOS Sales, EPOS Sales, EPOS Sales, but haven't really thought well yes but how are you going to do it, what are you going to do with that information, because if you can come to us with a real business benefit of you having our EPOS Sales course we're going to sit and listen to you because that business benefit is going to benefit both of us. I think standardisation of terminology will help. Sharing information is about everybody understanding what they're talking about and we've got somebody is trying to create a science at the moment called supply chain management but they've not actually identified what the empirical measurements are for that. So there'll be some value in that".</p>

	<p>Expertise</p>	<p>Manufacturer D: "And another one is actually the straight forward one of skill and competence that we've got a long to go before everybody whose involved in running supply chains has a sufficient understanding to be able to do that in the most effective way, and that's something that again we're addressing as a strategic issue"</p> <p>Consultant A: And finally I'd say just the technical expertise which may come internally but often comes from external sources and that's the technical expertise when it comes to change management, human resources, demand planning, merchandise management, logistics, distribution, information technology, all these different things where you've got to have an understanding what the market place has to offer and what your trading partners capabilities are and then to be able to dive down into the detail so that those tangible working processes that work on a day to day basis.</p>
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	Understanding	<p>Consultant A: "You see clients all the time and you ask them for a number of things, they can give you reports of this, this and whatever but they don't know what they mean, they don't know what to do with them. They end up chasing their tails, we've got a big retail client right now who has implement this huge system which is an automatic replenishment system where every night every retail store looks at, on a store by store basis, it looks at what we've sold today, and there's an automatic ordering process that takes place, yet every store manager the following morning goes through, crosses out and probably manually adjusts probably three quarters of the lines there, that's not working, why because first of all he might be given the wrong information but secondly there's not the willingness on the part of the people to use the system and you know that's where you've just got that huge cultural clash I was talking about This company always figured that the store manager was god and all of a sudden the head office puts this system in and I'll be damned if that's going to happen, that's their view"</p> <p>Logistics Provider A: Barriers to effective supply chain management are I think, a lack of understanding as to what it means. . ."</p> <p>Raw Material Supplier A: "We've got to make sure that people understand what we require, in fact this is where some of the big retailers go over the top, you get so much information of what we would require that it's a case of, are you sure you really require that, are you sure that's it's not just a generic pack that you've created for all suppliers So we try and be specific to say this is what is required and this is why it's required, so the people don't just perceive, and that's what I do find frustrating, when you get people that use a generic system to say you're a supplier so you've got to jump through all these hoops and possibly 50% of them are nothing to do with what you're doing with us. So we've got to make sure that people understand exactly what we require and why we require it".</p> <p>Manufacturer D: "And another one is actually the straight forward one of skill and competence that we've got a long to go before everybody whose involved in running supply chains has a sufficient understanding to be able to do that in the most effective way, and that's something that again we're addressing as a strategic issue"</p> <p>Manufacturer C: "Here, well it's about being reactionary There are lots of reactionary forces that exist again for all sorts of historical reasons, material, management, in factories, not being pitched at a high enough level in the hierarchy, not being perceived as a big enough and important enough issue, explaining the overall needs and the requirements to the supply chain to various constituent parts of it. You put a supply chain in place and you expect everybody to jump on board just because the train happens to pass your station, unless they know that there's a good reason for doing it, and the company has gone to quite some lengths to actually explain what supply chain is all about, there are pockets where you would have to take people and say look, this is the way that we're going to do that, for these reasons, a bit like teaching children at school, you don't explain the reasons why, stop doing that, he hasn't given me a sufficient reason so I'm going to do it again, because obviously it upsets him and that's good isn't it"</p> <p>Manufacturer A: "Functional thinking, lack of understanding of the process The inability, quite often, to understand that if you do change your mind at the last minute, if you foist uncertainty on the system, you pay for it".</p> <p>Manufacturer B: "Yes, and the fact that organisational a lot of these things are really very very complicated and until you get into them you don't realise how organisationally complicated they actually are. Suddenly you know you find that you want to do something with a customer and the customer, it's not something you can do between logistics people, you find that their buyer needs to be involved, their marketing people need to be involved, their store operations people, their IT people, so you've immediately got 5 or 6 people from their side and you suddenly find from our side it's suddenly become 7 or 8 or 9 people Because anything now to do with supply chain just impacts on every part of the business. It's the breadth and the complexity and then within that you immediately get different agendas emerging and you get individuals with different perspectives. So it's that I think which makes things difficult"</p>
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	Understanding (continued)	<p>Manufacturer B: "I don't think we fully understand what the real economics are. At the end of the day it's all going to come down to the economics of it and we may be at a point where the economics are such that we just have to manufacture stuff in great big quantities, therefore we have to hold lots of stock and maybe the economics are such that we just have to deliver it to our customers in full pallets, which is what we do now, and maybe the economics are such that we can't actually change that. Now if that is the case then there needs to be a realisation that that this the case. I suspect that might be the case in some product areas and I suspect in other product areas we could operate towards a situation whereby we could have very low levels of stock at significantly lower operating costs than we have at the moment. But exactly what those areas are we haven't worked out"</p> <p>Retailer B: "Yes, well I think where people understand it it's potentially not a barrier, I think that unfortunately a lot of people do not understand it and they go in to it and they hit that pain and they don't come out the other side, they go back. And we got very close to going back at two or three points in time"</p>
	Integration	<p>Manufacturer D: "Yes, I mean the internal barriers that I mentioned earlier on of functional silos, that's another area that we've seen as a key issue, our business is quite large and complex so some of the barriers are not just functional ones they're also not even having the same processes running on different supply chains within our business where we have a number of different supply chains that have been brought together over the years into one company, but haven't always been that way. So sort of harmonising the processes internally and getting the right group of people working together across the functions is another key element of it"</p> <p>Manufacturer B: "I think there are, and there are certainly some organisational barriers that still exist, even within our retailers, even within our customers there are still significant differences of opinion between their logistics people and their commercial people, fair enough, we have the same organisational barriers within Manufacturer B. We have an issue in that manufacturing is still not regarded as part of supply chain, clearly it has to be but at the moment it paddles its own canoe".</p> <p>Retailer A: "Historical culture, divisional silos, people being in comfort zone, we've got all those in our business, it's all there don't get me wrong"</p>
	Culture	<p>Consultant A: "So if a business wants to transition to more of an outward looking organisation that uses supply chain as a broader chain, then they're going to have to ensure that they have the culture to support that and that they don't view suppliers as those pain in the neck guys there who never provide us with anything other than headaches, and they just need to recognise that".</p> <p>Raw Material Supplier B: "I think if we can persuade people that it's a good idea and persuade people that building trusting partnerships is a good idea that hopefully the benefits can be demonstrated, but again that's why it's going to take a long time to filter through I think"</p> <p>Manufacturer C: "Here, well it's about being reactionary. There are lots of reactionary forces that exist again for all sorts of historical reasons, material, management, in factories, not being pitched at a high enough level in the hierarchy, not being perceived as a big enough and important enough issue, explaining the overall needs and the requirements to the supply chain to various constituent parts of it".</p> <p>Manufacturer B: "First of all there are still some cultural barriers to be overcome, just mindsets".</p> <p>Retailer A: "Historical culture, divisional silos, people being in comfort zone, we've got all those in our business, it's all there don't get me wrong"</p> <p>Retailer B: "Then you had externally, suppliers where Retailer B had traditionally never spoken to them unless we wanted more money out of them or something. And to get them to actually work in cross-functional teams and to believe our agenda and that we were honest and whatever, was another huge change. So the big job is really a hearts and minds, it's a cultural issue".</p>

	<p>Strategy</p>	<p>Manufacturer C: "Here, well it's about being reactionary. There are lots of reactionary forces that exist again for all sorts of historical reasons, material, management, in factories, not being pitched at a high enough level in the hierarchy, not being perceived as a big enough and important enough issue, explaining the overall needs and the requirements to the supply chain to various constituent parts of it"</p> <p>Manufacturer A: "And in fact you should spend far more time and effort getting things well organised in the medium term so that the short term can flow automatically. Because if you want a supply chain to work with maximum speed and certainty, in the short term, 10pm on a Saturday night, 3am on a Sunday morning, you've got to have put your work in place in the medium term to plan it properly, to exchange plans, and you've got to have synchronised your master data and you've got to have the same definition of data elements etc etc"</p> <p>Packaging Supplier B: "Bearing in mind that we're only really getting our toes in the water and trying to find our way round it, we've got ideas and things that have got to be tested, understanding obviously, one of them, a commitment to take it on and make it work, an understanding of your industry and your customers industry, and your suppliers industry to make it sensibly work and co-operation as far as, well the key thing again is, the information you have as far as your forecast and your forward planning of the company has got to be fed up to your supplier"</p> <p>Packaging Supplier A: "Yes, I think what is very difficult for many players in the Supply Chain, and this is where senior management commitment has to be more emphatic, are the sort of performance measures that individuals are put under. If at the end of the day, you've got a set of long term goals, that represent X, but you're short term measures actually encourage Y, you will not get any change of behaviour pattern. So the message there is senior management has to adopt different performance measures as it would be appropriate for achieving goals set for X rather than Y".</p>
	<p>Resources</p>	<p>Consultant A: The third one would be resources, and that's both internal and external resources. This takes a lot of effort to implement major change in supply chain, it's not something that you achieve by putting out an email and then everybody just miraculously does it, it takes people on the ground, people talking to suppliers, people talking to all your trading partners, it also takes financial resources, and it kind of ties into the commitment bit but it's commitment of time and resources to make sure that this is going to happen</p> <p>Packaging Supplier A: "Yes, I think that's where you do get this disparity between big and small players, weak and strong players, that quite clearly some of the big brand owners whether they are retailers or manufacturers, are technologically equipped to manage those type of relationships than perhaps their smaller partner would be".</p>

	<p>Conceptual</p>	<p>Consultant A: "There definitely is, if you were to ask 10 people to define the supply chain you'd get 10 slightly different answers and I guess that deals with the way they define the supply chain boundaries from raw materials to consumer or some said in between but also what functions are actually contained within the supply chain. Let me give you an example, we're working with a client recently who is a major UK retailer and we asked them to define the supply chain, they did a really good job of defining their internal supply chain and their view of the supply chain starting when they received product and when it was put on the shelf, nothing going back to the suppliers, nothing going back to the raw material suppliers or anything else, and then our view, that puts them in about the 30 percentile of the chain of retailers or suppliers. On the other hand take a company like say Tesco and some of the more forward looking retailers and if you ask them to define the supply chain they'll say well, we're going to sell a jumper so there, cotton comes from India, the fabric is made in India then its brought into the company where its sewn here by the supplier, we get it from the supplier via our distribution centre, distribution centre sends it onto a consolidation centre where its then sent to a store, its put on a shelf and you can see it's a much broader definition of supply chain"</p> <p>Logistics Provider A: "I think that there's probably confusion around the definition of the roles and who is doing what, who is driving it, there may be confusion around there, I mean because essentially I would see that this is something the retailers want to drive and dictate the pace at, others may have different views but essentially that's where I see it".</p> <p>Logistics Provider B: "I think there are far too many decision points in terms of both accountability and responsibility and also information flow and I guess the major moves in terms of pioneering and pushing forward supply chain re-engineering at the retailers, the major food retailers, and in my experience they themselves have been relatively slow to actually get their organisations effectively placed. They've seen the benefit of supply chain re-engineering and recognised it 10 years ago, but have tended to be much slower in terms of getting an organisation that can effectively deliver that, so I think it's more about organisation than anything".</p> <p>IT Service Provider A: "I think there is some confusion over the definition of supply chain management itself.</p> <p>Packaging Supplier A: "So from that point of view there has been a coalescing of a whole range of academic, traditional academic disciplines, that have made up this SPLODGE that we now call supply chain management. So in that respect, supply chain management has been in the eye of the beholder, as far as the academics are concerned. That would be my interpretation of why that the current literature is largely unfocused, and it is certainly not unanimous in its viewpoint.</p> <p>Packaging Supplier A: "So from that point of view, warehousing and transport management has been seen as a peripheral, a marginal part of a bigger thing, and supply chain management has not been viewed as a strategic entity in its own right"</p> <p>Packaging Supplier B: "I don't think people understand or define what they want on logistics. You see it on the back of lorries, it's hijacked for that end of it, people talk about logistics, but really if somebody says logistics I say define logistics and what mode you're actually talking about, and as a result of this I think there's a lot of confusion"</p> <p>Raw Material Supplier A: "I think a lot of people do understand what supply chain management is, but the reason that they don't get too enthusiastic about it is they're more interested in their own issues and their own day to day activities and a degree of trust that isn't there within that chain, and proceed benefits from developing if you like, the trust within that chain, there would be an awful lot of time and effort required to do that and it's in the companies interest to actually invest that amount of time and effort when, although if you like the economy is fairly stable now and buoyant, depending on which area you're looking at, whether companies are going to be there after a period of time, and who they're developing that trust with".</p>
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	<p>Conceptual (continued)</p>	<p>Manufacturer A: "I keep arguing with Company Y about inter-organisational networking. I think just the confusion of terminology. If supply chain people, value chain people can't agree simple standard terminology then who the hell can, because we're supposed to be preaching it. But let's face it, all the universities and all the institutions and consultants have a vested interest in marketing their bit as being different and better and it isn't. It's the same. I mean lean operations, it's a useful concept in its place but when you start saying well let's supply lean thinking from the motor industry into retailing, you've got to be very careful, because what lean means is that you rigorously exclude inventory and you start focusing on just in time. I know it's more sophisticated than that. But what I say to a retailer then is well OK if you really want to be lean, why don't we trigger everything on the consumer opening the fridge and pulling the product out, why do you have things on shelves at all, that's inventory. They say, ah but if it's not on display they won't buy it. Yes but why do they have to come to a shop to buy, why don't we go really lean. Ah but we wouldn't have a business then. Well just think about that because inventory isn't all bad, capacity isn't always bad and if it's sprint capacity to meet a demand it may be good. It may be good that you hold inventory in your RDC to service your shop because you can do it better and more reliably than I can, but we need to look at that, and that's why you've got to be careful you don't carry these thoughts too far. But one of the things I've been trying to persuade Institute of Logistics, Chartered Institute of Purchasing and Supply, Institute of Operations Management and the Universities is, can we please for God's sake have a common terminology and could we please start working together to get a common view. Because if we keep doing our own thing then we actually don't get the message over and if you don't get the message over then you end up not actually having an effective national value chain. I know that's a bit pie in the sky but it's important". For example the whole basis of a relationship between a customer and supplier is normally that a sales person makes a proposition to a buyer. If you don't really understand what the processes of decision taking are within both companies, the process of communication, what information flows when to whom, and re-jig that process and look at saying well who should be communicating to whom and when, what visibility of data should there be, what sort of synchronisation of data between customer/supplier should there be, you won't get very far. For very theoretical reasons that you know about the Forester effect and the silos, so if A passes to B passes to C passes to D you get this magnification of noise and all the rest of it".</p> <p>Manufacturer E: "All the activities that are involved in the response to demand, the co-ordination and control of those activities and the conceptual view of them rather than looking at them in discreet functional tunnels".</p> <p>Manufacturer B: "I think it's a problem area and I think it's because if you move the concepts of supply chain management it immediately begins to impinge on every single part of the business and a lot of those parts of the business will have conflicting requirements. And then within the supply chain itself you've got all these well known conflicts that are always going on whereby you've got at one end customer service who want to bend over backwards to provide very high levels of service and quality to our customers and exactly what the customers want, and our customers are powerful people, Tescos and Sainsbury's, people like that. On the other hand you've got manufacturing who like to just make things in great big large batch quantities and don't want to know anything about sort of the end customer, the end consumer, it's of no importance to them that if they make a batch, it's maybe 3 or 4 months worth of inventory because that's the way they see it keeping their unit costs under control, and the business measure them by their unit costs, that's how it measures their performance. So you've got all these conflicts going on and so to actually implement supply chain management is a very difficult exercise because it treads on so many toes and crosses on to so many other peoples patch of turf".</p>
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	<p>Conceptual (continued)</p>	<p>Manufacturer D: "It's certainly not straight forward because unless you're starting with a brand new company, organisations have evolved over a period of time and I mean typically the issues of functional silos get in the way of effective supply chain management, and that's one of the complexities".</p> <p>Manufacturer C: "I think the confusion arises with all change. I don't think it's specific to supply chain management, I don't think, some people will get their heads round it, some people warm to change, other people resist change and deliberately misunderstand I think it's centred on change and grasping change, the necessity for it, I've always done it this way, why does that person want to do it this way".</p> <p>Retailer C: "I think because people have different definitions of supply chain, now what is the difference between supply chain, logistics, distribution, and I think there is no one common definition and so I could be talking about supply chain but unless you actually ask me what do I mean you actually wouldn't really know what I meant"</p> <p>Retailer B: "Traditionally, the way we have structured it has not helped people see the bigger picture, and the way we have organised to deliver cost"</p>
	<p>Power</p>	<p>IT Service Provider A: "Maybe some of the big grocers, because of the power that they wield, particularly in the UK, may have more chance of influencing not only their suppliers, but their supplier's suppliers. But I think that they have had enough trouble trying to influence the first tier, let alone pushing it any further".</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 5 – Supply Chain Relationships

Sub-Theme	Issues	Respondents
Status	Adversarial	<p>Packaging Supplier A: "I have a chart that I use, but I haven't got it with me, its one that Coopers & Lybrand use in their ECR thinking Its not quite a normal distribution at the moment, but if you regard adversarial as on the left hand side, and totally strategic on the right hand side, its probably still skewed towards adversarial, at the moment, but it is slowly, but surely, migrating towards a more strategic relationship"</p>
	Opportunistic	<p>Farmer A: "They're generally made out to be quite co-operative and they're generally not as co-operative as they're made out to be".</p> <p>Raw Material Supplier B: "An analogy of the smiling crocodile has just popped into my head there! I think they like to be seen as leaders of this new all heralded supply chain management because they're at the sharp end and they've got the info. I don't see however that, you know they regard themselves as, it's an interesting concept actually, they regard themselves probably as the ultimate customer".</p> <p>Manufacturer C: "And another thing that was said by one of our suppliers is, whether its bullshit or not I don't know, but they said because of the currency, we were talking about the currency and people were diving off overseas to take advantage of the currency, but what happened to the relationships, what happened to the partnerships, you know if you're going to jump ship simply because the currency goes against you, what value is that and why have you just done it, are you going to build these relationships with other people that you just moved to because of the currency and what happens when it swings back the other way".</p> <p>Manufacturer B: "So I guess what that means is that in terms of how much co-operation is there, yes there's quite a lot, but it's probably not really manifesting itself into any sort of big picture, yet".</p> <p>Manufacturer E: "We're just under our 10 year planning programme, we're just going through a global sourcing strategy and the idea of that no doubt, well I know, is to look at the economics of scale that an organisation is being, could use itself as a global rather than as a local purchaser can. So there will be an element of trying to use our size to give a buying advantage, so you could say there's tonnes of big brother rather than co-operative in that, although there will be very real economics of scale there that will deliver that, but I would feel there was more than that that we will be attempting to get out of it".</p> <p>Retailer A: "When you break it down to talking the way we've been talking earlier about different ways of working then I'd reduce that figure down to maybe 6-7%"</p>

	<p>Co-operative</p>	<p>Raw Material Supplier A: "We perceive we have a very good relationship with a number of companies, but that relationship is different to what we would understand as a normal relationship with other customers. On that side of it they want if you like, professional standards, professional agreements and then just get on and do it. If something goes wrong you will know about it, but you won't know about it if it just continues to go right. Well you will because you won't get any phone calls. And so that's different to what we have with other people".</p> <p>Raw Material Supplier B: "And probably the co-operation going back up the chain is less, you get less co-operation going up than is demanded in the other direction, I think".</p> <p>Manufacturer D: "I think it's interesting, co-operative is quite an interesting word that you use there because we can co-operate with different degrees of willingness and if somebody with a big stick is standing over you and says 'I'd like your co-operation', there's a fair chance that you're going to say 'yes sir', and I suspect to some extent the relationship between retailers and manufacturers has had an element of that in it. I think the sort of thing we've been talking about, particularly about trying to develop joint strategic objectives, goes a lot further than that sort of co-operation under duress and I do believe we are moving in that direction".</p> <p>Manufacturer B: "Well the situation is definitely improving, this is a bit like the question how far down the track are we. All I can say is that the level of co-operation is a quantum leap further forward than it was say 2 years ago. I think people are still grappling with what is it we actually need to do to fully co-operate and I think we've got to the stage where people jointly are probably asking the right questions, but haven't got the answers yet.".</p> <p>Retailer C: "Certainly the ones that we have are very co-operative, but it's getting the right balance because you've still got to have competition there as well, so you've got to make sure that by being co-operative you're not jeopardising your trading position, and that's one of the things you have to be aware of when you're actually choosing who your partners are".</p>
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	<p>Co-operative (continued)</p>	<p>Manufacturer E: "And how much is big brother flexing, probably there's more of that with the downstream relationship is more likely the big brother. I think upstream is more co-operative"</p> <p>Manufacturer A: "Probably about 50% of what they could be"</p> <p>Retailer A: "Co-operative and working in a total supply chain way are two different things in my way of thinking. Co-operatively I'd probably score it as high as 60% perhaps"</p> <p>Retailer B: " Now, there views are that you might think that you are working together with these people but they are bright enough to know that basically you are telling them what to do because you are a big customer, so its quite a difficult question that, I think</p> <p>Consultant A: "You've probably got three different types, the co-operative relationships are those between mature, strategic, random suppliers, and the retailers who sell their product A Johnson & Johnson and a Tesco, Unilever and Sainsbury, Kellogg's and Asda Why because they both rely on each other and you've got a mature relationship, fairly sophisticated systems and they both recognise that they need each other to survive, that's the first type. Then say you have a relationship where the retailer is king and that's basically because you have a myriad of suppliers supplying commodity type products and decisions are based on cost and margin driven, and if I'm just looking for a supplier of my private label toilet paper, there are eight companies out there who can do it. This week I'll be getting it from you, next week you come up you say you can make it cheaper, see you, and I'll got to this guy, so that is much less a win/win relationships and it's really just because it's a commodity type item Third I'd say is the flip side of that and in grocery you probably don't find this very much, where you find it would be more in electronics and supporting goods and that sort of thing, but that would be where the power of the brand is so strong, that they're dictating and it gets back to that whole in control, they're dictating terms to the retailer".</p> <p>Logistics Provider A: "I think they are generally co-operative, whether that is based on a true desire to be co-operative or it's based on the balance of power is another question".</p> <p>IT Service Provider A: "I don't think that its there yet, I think that the words are being used, but when the pressure is on people revert to type and that's difficult".</p> <p>Packaging Supplier A: "I don't think that you will ever get a completely right hand skewed (<i>co-operative relationships</i>) chart on that particular front, But clearly there is a move towards more collaborative ways of working, even if there are very very few partnerships in the markets".</p>
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Respondent's Comments by Sub-theme and Issue for Research Theme 5 – Supply Chain Relationships

Sub-Theme	Issues	Respondents
Objectives	Financial	<p>Farmer A: "We want a certain amount of continuity obviously, same old word keeps coming up, profit, profit and more profit. It's price, it's a competitive world and you go for the best you can do on the day".</p> <p>Manufacturer D: "Yes, I mean our relationship in the sense that the objective for us will be to grow our business profitably and then we would recognise that for that to make sense for our customer we've got to enable them to grow their business profitably so that would be the way the objectives would be articulated"</p> <p>Logistics Provider A: "You mean other players, other elements of the supply chain?" <i>MB: Yes!</i> Our objectives within that, much the same really, I suppose that our objective is to make money out of what we do quite obviously, but again I think our objectives as well would be to interpret the requirements of the retailers at a practical level to provide the service that they need to make their total supply chain work".</p> <p>Packaging Supplier A: "Profitable relationships, no, that's a crude way of putting it! Certainly, there is an element of financial success there. If your are not generating profitable business then the shareholders will ultimately get a little (huffy) about life, so we cant deny that there is a financial metric, to all relationships".</p>
	Service	<p>Logistics Provider A: "You mean other players, other elements of the supply chain?" (YES) Our objectives within that, much the same really, I suppose that our objective is to make money out of what we do quite obviously, but again I think our objectives as well would be to interpret the requirements of the retailers at a practical level to provide the service that they need to make their total supply chain work".</p>
	Security	<p>Farmer A: "There's also a certain amount within that, in this day and age, you go for security as well, you go to where you think you can get the money from"</p>
	Understanding	<p>Manufacturer A: "The relationships with customers are miles better than they used to be, but as I said before that's partly because all our customers now have supply chain organisations, we have one. And when you've got like minded professionals talking to each other with a new language, so that's good, that works. Our relationships with our sales people, because we've delivered and proved customer service are good, and they understand that we don't run the show but we support their show, relationships with suppliers are starting to develop quite fast and its partly getting our people to understand that within reason, within limits, the more you bring a supplier into the picture, about what our real objectives are and our real performance is, the more they can help. Because they actually know more about their machinery and their materials and packaging than we do. We like to think we know more than them but we don't They make the bloody stuff!"</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 5 – Supply Chain Relationships

Sub-Theme	Issues	Respondents
Benefits	Grow Business	<p>Manufacturer D: "It's quite interesting, we had a lot of discussion about what would we expect to be the product of supply chain initiatives and we recognise that quite often cost would decrease in one part of the supply chain and increase in another part which might well be our own, and we don't feel that it's just a simple oh we'll share the cost savings out between us because we don't think life's like that and this is maybe an issue of the power bases etc, but what we do believe is that if we help our customers to achieve their objectives to grow business profitably, then they will be much more inclined to help us grow our business, for example when we're introducing new products, that we would expect to get fast distribution of new products, we would expect if there's a range review going on that the company that has the best supply chain is going to be more favourably looked at than one's which have a less satisfactory performance."</p> <p>Manufacturer E: "We have group brands and big brands that in themselves would I think help generate some business for them, we're around for the long term so there's the stability in the relationship, financially sound, so in terms of any exposure through liabilities or anything of that nature, I think they would see us as a quality company and therefore would be confident that they could sell our products to the consumer without risk"</p> <p>Manufacturer B: "Well there are hard benefits like improved consumer availability and therefore improved sales, other hard benefits might include better promotions management and reduced invoice queries and reduced stock and supply chain and all those sorts of things, those are the hard ones".</p> <p>Logistics Provider B: "I'm looking for long term partnerships, openness in our relationships with clients, a willingness to share information, to share objectives and the ability to grow our business through providing first class service"</p>

	<p>Reduce Costs</p>	<p>Manufacturer A: "I think we have improved customer service substantially over the last few years, we've cut inventory at the same time, a lot further to go. We're starting to knock a lot of money out".</p> <p>Manufacturer D: "It's quite interesting, we had a lot of discussion about what would we expect to be the product of supply chain initiatives and we recognise that quite often cost would decrease in one part of the supply chain and increase in another part which might well be our own, and we don't feel that it's just a simple oh we'll share the cost savings out between us because we don't think life's like that and this is maybe an issue of the power bases etc. but what we do believe is that if we help our customers to achieve their objectives to grow business profitably, then they will be much more inclined to help us grow our business, for example when we're introducing new products, that we would expect to get fast distribution of new products, we would expect if there's a range review going on that the company that has the best supply chain is going to be more favourably looked at than one's which have a less satisfactory performance. So we would see the benefits of supply chain, not necessarily coming through in straight forward supply chain cost to us, but also coming through in other areas"</p> <p>Manufacturer A: "We're starting to knock a lot of money out of the supply chain back into suppliers by being more positive with them"</p> <p>Manufacturer B: "Well there are hard benefits like improved consumer availability and therefore improved sales, other hard benefits might include better promotions management and reduced invoice queries and reduced stock and supply chain and all those sorts of things, those are the hard ones".</p> <p>Retailer C: "Definitely yes, we've seen things like big reductions in stock holding because again by understanding how much stock holding the supplier has and how much we have, you put all that stock together, well how much do we need, how much stock do we need in the total supply chain and where is that stock best placed. Things like summer, critical soft drinks, well that stock is best placed in our depots because then if the weather suddenly changes we can be more reactionary than what Pepsi can, so hold that stock in our depot but we know that they've got a little bit of stock as well to support. So if we get rid of all our stock we know that on an emergency they could replenish us quite quickly. So certainly stock reductions"</p>
	<p>Improved Knowledge</p>	<p>Manufacturer C: "An understanding of why we're doing it, why we need to do it, what the issues are, they have to know what market we're in and why we have to behave like we do, so if it's a thing which creates cost you then have to address it, why is that happening"</p> <p>Retailer C: "But it's then also about by working with suppliers so that you can actually understand where all the critical paths are in the supply chain, because we do tend to make decisions and change our minds at the last minute, and what at the moment we don't understand is well where is that likely to impact the supplier and what is the severity of that impact likely to be, because what's the point in us upgrading a promotion and then ending up with a lot of annoyed customers because the supplier couldn't produce, well we need to understand that, what their capacity are, what their production schedules are, if they do a promotion, is all the stock actually manufactured before we go into promotion or is it being manufactured all the time, like if you did a promotion on Pepsi 2 litre because that it just constantly being produced, if you're doing a promotion which is a price mark pack then chances are that particular things like frozen, chances are that will be produced even before the promotion has started, and so suddenly we decide to change that promotion at the last minute they can't do anything about it, because they've used up all the packaging, their production schedules are set 6 weeks out, they won't be able to go back and produce that product. So I think it's understanding where all the critical parts of the supply chain are and then understanding if we make a decision, or a supplier makes a decision, where the impacts going to be, it's not always coming back from us, it's got to be a two way flow".</p>

	<p>Service</p>	<p>Raw Material Supplier A: "There is a cost to quality, but at the end of the day we are a new company, new in the north-west as a site, I mean Allied Mills is not new in the north-west, but certainly as a supplier to our customers they have got to know us for quality and they've got to then understand that we are there for service, quality, we are long term, they can have a relationship with us where we will support them very strongly and they can always, if you like, rely on us to support them with the right materials, the right time, and also the right price We're certainly not the cheapest out there and we don't want to be the cheapest out there, but people know if they come and buy our flour they will get good quality flour and it will be consistent and they will get a service".</p> <p>Manufacturer A: "I think we have improved customer service substantially over the last few years, we've cut inventory at the same time, but there is a lot further to go"</p> <p>Manufacturer B: "Well there are hard benefits like improved consumer availability and therefore improved sales, other hard benefits might include better promotions management and reduced invoice queries and reduced stock and supply chain and all those sorts of things, those are the hard ones".</p> <p>Retailer C: "So certainly stock reductions, seen big improvements on date codes and our on shelf availability is improving all the time, still got a long way to go but it is certainly improving and we're working with suppliers to actually always come up with new ideas on how we can keep achieving on availability. The ultimate aim has got to be to improve availability, on shelf availability, but then the issue is how do you actually measure on shelf availability, there is no measure currently available apart from somebody going into store, but they could go into store now and two hours later go back in and see a completely different picture. So on shelf availability has to be the ultimate aim which then supports the trading strategy of increasing sales which has got to be everybody's aim "</p> <p>Retailer A: "Oh gosh, they don't change really, customer service, quality, availability</p>
	<p>Products</p>	<p>Raw Material Supplier A: "One of our key success factors when starting was, we want to be recognised for quality. There is a cost to quality, but at the end of the day we are a new company, new in the north-west as a site, I mean Allied Mills is not new in the north-west, but certainly as a supplier to our customers they have got to know us for quality and they've got to then understand that we are there for service, quality, we are long term, they can have a relationship with us where we will support them very strongly and they can always, if you like, rely on us to support them with the right materials, the right time, and also the right price"</p> <p>Manufacturer E: "They would I think see us as being a prestigious company, added to the credibility as a household name. We have group brands and big brands that in themselves would I think help generate some business for them, we're around for the long term so there's the stability in the relationship, financially sound, so in terms of any exposure through liabilities or anything of that nature, I think they would see us as a quality company and therefore would be confident that they could sell our products to the consumer without risk. I believe as an organisation we're quite customer focused so I believe they would have a good relationship from an outgoing, proactive supplier, I'm sure there's others!"</p> <p>Retailer C: "So certainly stock reductions, seen big improvements on date codes and our on shelf availability is improving all the time, still got a long way to go but it is certainly improving and we're working with suppliers to actually always come up with new ideas on how we can keep achieving on availability"</p> <p>Retailer A: "Oh gosh, they don't change really, customer service, quality, availability"</p>

	<p>Standardisation</p>	<p>Raw Material Supplier B: "Slowly. I mean we've recently done a review of the sorts of channels that we want to use, we've done a review of elements of the supply chain such as product path codes, we don't want to have both 42 bags and 49 bags to a white pallet to a blue pallet and then other specials in different films as well, we think that if we only make big bags and 25's with 3 or 4 different grades of product that that wouldn't lead to too many product path combination, but it actually does if you examine it, so we're trying to cut those down and we've recently moved to the GKN pallet scheme so we're trying to get rid of white pallets and persuade our customers that's its quite a good idea to get a much better quality of pallet We've done a lot of work with GKN going round and explaining this to our customers, so it's slowly filtering through so we're doing these examinations of various elements of the supply chain, things like the product path combinations, who do we serve, who are our A, B, C customers, what our A, B, C product path combinations, what should we have in stock, what should we only be making to order, and then similarly a grade of who are our preferred channels into which end markets and how do we best serve those etc"</p>
	<p>Communication</p>	<p>Manufacturer B: "We put a lot of store by the softer benefits like we've just got improved relationships, we've got a good dialogue going, we like to think that they think we're a good supplier, we like to think we're a good supplier, so there's a lot of sort of soft, intangible benefits".</p> <p>Logistics Provider B: "I'm looking for long term partnerships, openness in our relationships with clients, a willingness to share information, to share objectives and the ability to grow our business through providing first class service".</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 5 – Supply Chain Relationships

Sub-Theme	Issues	Respondents
Types	Mutual	<p>Manufacturer D: “With customers the thing that would be the most helpful to me as the person responsible for pulling together the supply chain strategy is if I can understand what our major customers' supply chain strategies are and not just what projects they want to do in 1998 but looking out over several years, then I can make sure that inside our business we tailor our strategy to their needs.</p> <p>Manufacturer C: “Joint understanding, the relationships have got to be fairly tight, to use modern puns which I'm not really entitled to use, but they've got to understand the needs and it's that we're not just doing it because we're a big organisation who can do, it's got to be look, it's back to mutuality, it's about, we're expecting them to be responsive and to show a can do mentality, because if we can do something smart between, it doesn't half make me look smart”</p> <p>Manufacturer A: “Well we're looking for to be able to deal with a lot of these issues on a professional systematic basis that we actually mutually recognise what the value chain is, what the processes are, try and define them jointly”</p> <p>Manufacturer E: “With our suppliers we're looking for the type of relationship where we're very important to each other, where there's a mutual pain or gain, where we share the same heartbeat, when they catch a cold and we cough something like that!”</p> <p>Manufacturer B: “Well, let me paint you the ideal. The ideal would be where we had joint objectives, shared KPI's that we worked towards and a totally integrated business plan together with a fully integrated supply chain operation That's the end game What we've got is bits of that, like with one customer we do have a fully agreed business plan with joint KPI's, great stuff. Others of our major customers we haven't got joint business plans, we haven't got joint shared KPI's and we're not even holding dialogue. So it's very patchy”</p>
	Strategic	<p>Manufacturer D: “So at a strategic level one of the most important things is sharing the strategies so that we can understand how to design our business The same principles will apply to the suppliers and with suppliers there's a particularly important dimension because one thing that we need with suppliers is obviously to run the supply chain efficiently, but the other which is very important with them is that we will grow our business through product innovation and the role of the suppliers in supporting product innovation is also critical”</p>
	Broader	<p>Packaging Supplier A: “Supply Chain activity. That being said, it is part of my responsibility is to diversify that service offering. And that once we start to do that, we will have an entree to broaden out our relationship within the Supply Chain. So we will be talking less to the operators of warehouses and much more to those who are responsible for broader relationships between suppliers and retailers”.</p>
	Positive	<p>Manufacturer C: “Joint understanding, the relationships have got to be fairly tight, to use modern puns which I'm not really entitled to use, but they've got to understand the needs and it's that we're not just doing it because we're a big organisation who can do, it's got to be look, it's back to mutuality, it's about, we're expecting them to be responsive and to show a can do mentality, because if we can do something smart between, it doesn't half make me look smart”</p> <p>Manufacturer C: “And I think it's about them learning how to do it so that they can then go along to somebody else and be proactive about it and say well for so and so we do this, this and this”.</p> <p>Logistics Provider B: “And energetically driving change and facilitating change in an environment where we can maximise our profitability”.</p> <p>Logistics Provider B: “Well the ones that we've developed plans with we want a very open, progressive relationship, geared towards sharing and acting in all parts of their supply chain, openly exchanging information within in the bounds of confidentiality”</p>

	Communicative	<p>Raw Material Supplier A: "An open and honest one"</p> <p>Raw Material Supplier B: "We're looking for long term, we're looking for a lot of information interchange, those supply chain partners that can give us information about the market which we hope will help us to help them"</p> <p>Manufacturer A: "Recognise that there are certain things I'm not going to tell you and you're not going to tell me, and even if I tell you it may not be true"</p> <p>Retailer A: "Can we work together, yes we're working together pretty good at the moment but we want to work differently, we want to work on the very areas that we're not so good at, either of us. So you've got a whole raft of things on the score card that you can then work with We then say OK we don't want a one to one working relationship and you'll have heard this a thousand times before, national account manager and buyer, we want the right people talking to the right people, so that's a key determinate".</p> <p>Logistics Provider B: "Well the ones that we've developed plans with we want a very open, progressive relationship, geared towards sharing and acting in all parts of their supply chain, openly exchanging information within in the bounds of confidentiality"</p>
	Long term	<p>Raw Material Supplier B: "We're looking for long term, we're looking for a lot of information interchange, those supply chain partners that can give us information about the market which we hope will help us to help them".</p>
	Info Based	<p>Logistics Provider B: "Well the ones that we've developed plans with we want a very open, progressive relationship, geared towards sharing and acting in all parts of their supply chain, openly exchanging information within in the bounds of confidentiality".</p>
	Alignment	<p>Manufacturer A: "Well we're looking for to be able to deal with a lot of these issues on a professional systematic basis that we actually mutually recognise what the value chain is, what the processes are, try and define them jointly".</p> <p>Manufacturer B: "Well, let me paint you the ideal. The ideal would be where we had joint objectives, shared KPI's that we worked towards and a totally integrated business plan together with a fully integrated supply chain operation. That's the end game. What we've got is bits of that, like with one customer we do have a fully agreed business plan with joint KPI's, great stuff"</p>
	Commitment	<p>Farmer A: "We're looking for a certain amount of trust, they've got to be able to do what they say they can do, we're looking for security as far as getting paid is concerned, and we're looking to be hassle free if you like, we're not looking for them to come back with too many problems"</p>
	Focused	<p>Retailer C: "So that's why we carefully chose the categories that we have these relationships in and don't have them in every category. Like you wouldn't have a relationship in an ideal world with something like cigarettes, it's a declining market, but then on the other hand you say but hang on a minute, your cigarette suppliers are probably some of the biggest suppliers that you have, which is true, so you've got to keep what you've got, so then it's coming into different categories of partnership".</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 5 – Supply Chain Relationships

Sub-Theme	Issues	Respondents
Barriers	Needs	<p>Manufacturer A: “I think the first problem is that if the customer for example hasn't really thought through the role that the supplier has to play in this, if the customer for example has said to their bosses, or been told by their bosses, you will cut inventory, you will improve on shelf stock availability without understanding the role that the supplier plays in that, and for example if I'm in charge of distribution for the customer and I've promised the board I will not build another regional distribution centre, I will cut inventory by a week, and then somebody gets the idea that well if I'm not allowed to hold more inventory or I can't build another warehouse, where am I going to put the stuff. I know I'll get the supplier to store it or I'll get the supplier to deliver in a 24 hour lead time and in smaller quantities, or I will get the supplier even worse to pick store orders and cross dock, and this comes out as a sort of article of faith, then they've got no chance of realising that, because they haven't thought through the supply chain, they haven't thought through well are your objectives actually mutually achievable, never mind externally, but even internally, can you actually achieve on shelf stock availability with enough time for accurate data to flow back to a supplier, the supplier to respond, and get orders picked and cross-docked onto shelf, and the answer is no, you will not be able to achieve it. So what is the right way of doing it, so lets have a proper dialogue And maybe you've got to go back to your boss and say well, you know that thing about cutting inventory, or do you know that thing about not having a warehouse, well we were wrong, it's going to be different from that”.</p> <p>Manufacturer E: “And there was a general swell of doubt in the commercial arena that we would be able to pull it off and there was also a lot of resentment, not resentment but a doubt about the whole concept of having closing down European factories and having it all supplied from the UK and we've turned that around and there's now a high level of confidence and the markets are operating on lower stock levels than they were previously with significantly lower cost and with the high level of service than they have had previously from their local markets”</p> <p>Manufacturer D: “And that's in a sense one slightly hard measure that we can point to which showed that we had a reputation for very good service but weren't working with them as closely as they wanted. I think it was quite an important thing in our business that having previously done surveys and just looked at the good things and patted ourselves on the back and then moved on, this time that message about the customers in the future wanting us to work more closely with them has been taken very seriously and is now built in to both category and supply chain strategies”.</p> <p>Manufacturer C: “I'd say the same sort of things you would have met before Because we're explaining the need in quite a lot of detail, because we accept the mutual nature of things, you're creating a new environment so there will be something down for you as well, so that sort of breaks down barriers, it's not just take, take, take”.</p>

	<p>Technical</p>	<p>Retailer A: "I think the second thing is that the different levels of technical capabilities that retailers and suppliers have. I think there was a survey done by ECR Europe which showed clearly there was something like a 200 point difference between the capability of European retailers as against European suppliers/manufacturers, and again it's very clear that for a retailer to move further down the line, you've got to bring your suppliers with you, and I guess that was probably the big challenge that we faced".</p> <p>Consultant A: "Well you've got cultural barriers and technical barriers. Technical barriers first, my organisation speaks one language and yours speaks another, be it the spoken language, the IT language, the process language or whatever, then there's going to be a clash and you've got to get those two aligned, have a male plug and a female plug otherwise it's not going to work".</p> <p>Packaging Supplier A: "I have talked about electronic commerce and EDI communication, but even a retailer like Tesco probably only transact 80% of their business electronically, and they are still awaiting solutions for the tail end which probably represent, I do not know, another 40% of their suppliers, when all said and done, so we are still awaiting the full embracing of systems integration, as far as that is concerned. I'm sure that there are other factors as well, but it is principally to do with having the right mind set and having the right systems in place".</p>
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	<p>Culture</p>	<p>Farmer A: "The major problem if you like with our customers it goes basically back to quality again, price/quality. If they happen to buy something for slightly too much you tend to find them come back to you saying look you know this wasn't quite as good as we thought it was or whatever we're going to have to know £5 a tonne or whatever, and they tend to use that a little bit too much".</p> <p>Raw Material Supplier B: "So there has to be an understanding that we want realistic figures from our distributors, and we realise that they've got commercial pressures, we're not going to bite their heads off if they give us low figures and we can help them and examine with them and ask them why, is there any support we can give them So really it's the problems probably manifest themselves".</p> <p>Manufacturer C: "I mean I've known so called partnerships which were nothing like a partnership, it was just the jump and how high variety, and it wasn't two way it was just one way, but I'm not sure how much of that is because of the way that we behave. But you come up against the same, this sounds so simplistic but it is people relating to people, you can't make people work with each other effectively if they believe that the other one is a lying, cheating bastard, so I think well the whole thing is about people anyway, but it is about people relationships and you can't change people entirely, it still stays in there and I think it's on both sides, we haven't totally broken down the arrogance of the buyer. I've been a buyer for 30 odd years so I know how arrogant they can be, but we haven't totally broken that down, we haven't totally got the understanding or because they're human beings, when they fall down on their objectives, it's usually somebody else's fault, not the fact that you didn't do certain things in order to create, it's I think it's back to people again, it's people, change, understanding, ability to understand, ability to change, not everybody can change in the same way. All the buyers here I think and all the buyers in Manufacturer C as well are bought into the rationalisation of supply and there's a full understanding of why, but it does reduce your flexibility, it reduces your power, it changes your job, you're no longer in the sort of all powerful buyer situation, some of that has been broken down because the factories are involved, decisions are made with factories now, they're not made for factories, so you've got people in this, and it's not just you in the 60's, 70's, it's about what I did, something went wrong I'd change the supplier, it's not about that anymore so the nature of the job has changed. Now I'm sure that in certain areas even though they've bought into the whole process there would be some sort of hankering after the old days when you'd do what you like, so yes.</p> <p>Manufacturer B: "There is certainly an issue about just mindsets, a little bit, it's improving"</p> <p>Retailer C: "But also as well you are getting people to communicate who naturally would not communicate in the real world, and some of the traditional buyers do see partnership as breaking down some of their power bases, because they're used to everything coming to them and they're making all the decisions. Now if they took off their blinkers they would see that by allowing all these people to communicate, they get rid of all the crap that comes across their desk, they can concentrate on the job that they're paid to do which is to buy product and to select the right range for our consumer, and then because of all their support services are also operating efficiently, they're actually going to be 10 times more successful in their job when they are measured on sales and gross margin, but it's getting them to see and one minute you can convince them, the next day they want to go away and talk to somebody else and then, then come back saying no, no that's wrong, what are you doing, and you have to just keep going back and just repeating and getting them to buy in because it's such a completely different way of working".</p> <p>Retailer A: "The biggest one is people relationships, where you have, it comes out with the score card normally, you can actually see that you've got a buyer and a national account manager, whoever it might be, I only used that just as an example, it's really just like this, there's no co-operation going on. Now immediately you can get over that barrier and people start working in a different way and they actually can relate, you'll start to see improvements, all along you score lines, and it's so black and white it's just frightening"</p>
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	<p>Culture (continued)</p>	<p>Consultant A: "Well you've got cultural barriers and technical barriers"</p> <p>Consultant A: "That's the technical bit, but then you've got to be culturally aligned also, by that I mean you both have to go into it, recognise that we need to check our egos at the door, we need to both invest, we have to look at this from a broader supply chain perspective and not just what's in it for me, because ultimately that's the only way both parties are going to benefit from it".</p> <p>Logistics Provider B: "Once you move into, food retail is a competitive market place and I think the retailers constant, I guess it's almost in their breeding, they're actually told as small children before they move into the world that you must ask the price twice each time, value for money is all important, so we've got to be extremely efficient to survive in that environment and to continue building our business and actually create the headroom to re-engineer our business and to reinvest in it, and I think that's probably the, had we got true partnerships with people, and we have with a number who recognise that we have got to reinvest, we have got to re-engineer, and they're prepared to recognise and pay a margin for that Yes, I think the other thing is probably people have got to recognise the value of it and they've got to recognise that it can't be a one way process. Everybody's heard lots of positive statements about ECR ECR is I guess a process that's happening and at some point we'll see further progress within it but one of the key things is that all parties within the supply chain share the benefit and I guess one of the doubts I have is whether there is an even-handedness about some of the initiatives that are currently happening within the supply chain. There is a very dominant partner in the equation at the moment and that's the retailer and until they take an even-handed approach there will be suspicion from other members of the supply chain to their motives"</p> <p>Packaging Supplier A: "Well obviously, trust and attitude is one key issue there. There is an ongoing hearts and minds exercise still to go through, animals do not necessarily change their spots overnight. And that may well be an human resource development issue as well You have a generation of retail buyer in particular who have lived through the eighties, and have been used to flexing their muscles and throwing their weight around It will still take time for the newer generation of strategic thinking traders to come through who are able to embrace the matured aspects of collaborative relationships.</p> <p>Packaging Supplier B: " As far as the customer go, there is general philosophy by manufacturers who are our masters, that the customer gets whatever he wants, whereas we've achieved 98-99% customer service levels, quite happily, and maintained it, up until last year when we lost it and we haven't got the measure at present because it's changing, because you work with our customers and if you want to turn round and say, if you ring up and say I've got a fire, I've lost my stock, can you supply me, we can switch a line and be able to dispatch some film to you within about 3 hours to get you going again, and we're probably ringing up customers and saying look your only using this film at a rate of 5 tonnes a week, you've got a 20 tonne order but we're only sending you 5 tonnes, we'll get the balance to you next week, because so and so's got a problem".</p>
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	<p>Nature</p>	<p>Farmer A: "If they've over bought if you like and they've paid slightly too much for something, you'll nearly guarantee they'll get back to you saying there's a problem. Now if the markets going the other way and they've bought it right, you'll never have a quality problem. In a good year you can sell almost anything quality wise, in a bad year its got to be absolutely AI smack on, you always try to get it AI smack on but it's surprising how, on what you consider to be the same quality product, it's surprising how their views alter, and its market related, it's price related".</p> <p>Manufacturer B: "One, probably two things get in the way. One is short term commercial considerations and while most supply chain and logistics work tends to be sort of longer term in its nature because you're talking about systems and you're talking about things which are going to take minimum several months to put in place and maybe several years".</p> <p>Retailer C: "The problems that you meet is, and I fully understand this, in the end whoever does the development work is being done by an operational person which is supply chain manager or buyer or something like that, and it is very difficult for them".</p> <p>Retailer C: "So one minute they're there negotiating very hard, and the next minute they've been brought into another meeting saying right OK then, how are we developing together. And some of them feel they've got to have almost like a Jackal and Hyde characteristic to be able to cope with almost two different forms of relationships".</p> <p>Logistics Provider B: "We are, in the sense that we charge a management fee for what we do, constantly challenged with regard to what is an appropriate fee or margin, and constantly challenged, particularly in the more mature product areas with regard to the value we deliver".</p> <p>Logistics Provider A: "I think it has improved but there is still some adversarial issues and I think within the retailers as well there's a patchy acceptance of what the supply chain means and I think within that, so you've got the traditional strong relationships in the retailer has been the buying departments and those particularly adjust into, you know there's no point in buying 20 container loads of wine, you might get £1 per bottle up but when you look at the true cost of that, that's bollocks".</p> <p>Packaging Supplier A: "I think that there is a truism within the Supply Chain, that the more divorced you get from the consumer, the more cost sensitive you become and the less service aware you are".</p>
	<p>Objectives</p>	<p>Retailer A: "The biggest one is people relationships, where you have, it comes out with the score card normally, you can actually see that you've got a buyer and a national account manager, whoever it might be, I only used that just as an example, it's really just like this, there's no co-operation going on".</p> <p>Logistics Provider B: "We are, in the sense that we charge a management fee for what we do, constantly challenged with regard to what is an appropriate fee or margin, and constantly challenged, particularly in the more mature product areas with regard to the value we deliver".</p> <p>Logistics Provider A: "So I think that has tended to put a lot of strains on some of the traditional relationships and dynamic within the retailers. So I think it's not only outside the retailers but within the retailers as well that there are barriers".</p> <p>Packaging Supplier A: "I think that there is a truism within the Supply Chain, that the more divorced you get from the consumer, the more cost sensitive you become and the less service aware you are. Clearly, as a raw materials supplier, whilst you have got immediate trade customers, manufacturers and what have you, you are not as confronted with those sensitivities, and therefore it is a much more short term transactional cost driven relationships, that certainly, traditionally, you have been confronted with, and certainly, that is our experience as a business, that the further up the supply chain you go, the more sensitive they are to the minutiae of cost. So the cost of a pallet to a raw materials manufacturer is a darn sight more sensitive than a large manufacturer and certainly the bigger retailers. So I think that there is almost a crossover in service maximisation and cost sensitivity, as you go up and down the Supply Chain".</p>

	<p>Control</p>	<p>Manufacturer D: "I think it's very difficult to answer that question because there I don't think there's a relationship measure. I mean we do survey our customers and the last major survey that we did asked them what were the most important things to them now, now being at the end of 1996, what were the most important things in their view likely to be 5 years hence, so at the end of the century, the beginning of 2001 or whatever, and then how did they rank 4 or 5 major food manufacturers who were there suppliers including ourselves"</p> <p>Retailer C: "But also as well you are getting people to communicate who naturally would not communicate in the real world, and some of the traditional buyers do see partnership as breaking down some of their power bases, because they're used to everything coming to them and they're making all the decisions Now if they took off their blinkers they would see that by allowing all these people to communicate, they get rid of all the crap that comes across their desk, they can concentrate on the job that they're paid to do which is to buy product and to select the right range for our consumer, and then because of all their support services are also operating efficiently, they're actually going to be 10 times more successful in their job when they are measured on sales and gross margin, but it's getting them to see and one minute you can convince them, the next day they want to go away and talk to somebody else and then, then come back saying no, no that's wrong, what are you doing, and you have to just keep going back and just repeating and getting them to buy in because it's such a completely different way of working".</p>
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Respondent's Comments by Sub-theme and Issue for Research Theme 5 – Supply Chain Relationships

Sub-Theme	Issues	Respondents
Key Success Factors (KSFs)	Understanding	<p>Raw Material Supplier B: "Trust and a deep understanding of each others business and desires and needs, requirements, not just the commercial requirements but the wants, what our customer in our distribution channel has to understand. I guess, is how we want them to represent Raw Material Supplier B in the market because essentially it's no use if salt gets to an end user if bags are split, pallets are dirty, and it's come through maybe two parts of the distribution channel, two stages of the distribution channel possibly after it's left us, we can't say to the end user well sod you, hard luck, it's not our problem, it's got our name all over the bags of salt however. So they have to understand that it's perception that matters, obviously, in marketing terms, so they have to represent the correct perception"</p> <p>Raw Material Supplier A: "Compromise, there's got to be an understanding"</p> <p>Manufacturer A: "As I've mentioned before about a customer saying well I'm not going to hold inventory and you're going to do the store order picking, if that is not done with real thought, you then end up with problems and difficulties and this isn't going to work The difficulty with being a dominant customer is if you don't think and you don't this, then you will lose out, because there's probably 80% of your suppliers will try to avoid an argument, because they think the role of a supplier is to be seen to agree. So you have to be willing to understand a common process and develop that, you have to be willing to share plans, you have to be willing to measure performance, you have to be willing as I say to re-jig the process if necessary You also have to understand that there is no point in going beyond the bounds of reasonableness"</p> <p>Manufacturer D: "I think not just having clarity about the objectives but about having visible measure of progress towards those objectives that are available to both parties to the partnership, I think those are the sort of things that would come to mind"</p> <p>Manufacturer B: "Just the chemistry between individuals is quite important and you can find that something's ticking along nicely and then one of the key individuals moves onto another job and someone else comes in and the chemistry is just not quite the same, or the individual is singing to a slightly different hymn sheet. I think also, and part of that chemistry is people recognising that they will probably need to compromise somewhere along the line, and again it's happening more and more, we are beginning to hear stories of where retailers are actually paid extra money to suppliers to do a particular initiative, nobody has paid Nestle anything yet but you know, I'm not saying they became long term issues but you know people are just beginning to think in a slightly different way and it's, so I guess at the end it comes down to the old stuff about trust and mutual understanding and those sorts of things"</p> <p>Retailer A: "You don't buy respect, you don't get respect by just saying we're going to work together, it has to be earned, and again that's why the early work, and I've done it myself I've stood up on conference platforms and said yes we're partnership with X, it's wonderful, but it was a lot of words, we hadn't got into the real understanding of what a partnership meant, and that's why the word is now used very loosely and people start talking about working together differently rather than partnership, but that's what you have to do, and it's hard graft and it doesn't come over night, you've really got to keep going at it, because it really is difficult, and the more information you share, the more difficult it becomes"</p> <p>Retailer B: "Well, the first thing is the, I keep on using the word cultural, but its the behaviours that are used, the honesty and the trust have got to be there, and also sort of respect to some extent. I think that I know a lot of people here, when we started to say well look we are going to involve suppliers in this, it was all 'what have they got to add, we're good at it and we understand it'. So building up a certain amount of respect in terms of these people have got something to add. And its all about getting people away on workshops and talking to each other. And it doesn't really matter what they are talking about."</p>

<p>Understanding (continued)</p>	<p>Logistics Provider A: "I think trust, willingness to share information, understanding the cost dynamic right throughout the supply chain and the potential trade-offs that exist "</p> <p>Logistics Provider B: "I think that understanding each others role within the process but also what each party wants out of it, and to be constantly revisiting that relationship but constantly revisiting your own strategy within your relationship to make sure that both parties don't misunderstand".</p> <p>IT Service Provider A: "A common vision, I guess is what is needed. And, the culture fit that people of two business can actually do things together. To share your inner secrets with someone who does business with you on a commercial footing is not always very easy. I think that has held up quite a few initiatives".</p> <p>Packaging Supplier B: "To achieve that then you need a forecast system coming through so you can build a production plan which you can then work to, and you can measure against, as you achieve this internally, and we're not able at present to do the final delivery plan information at a customer service level, but at present I can measure that we are measuring customer service level by two dates, manufacturing date and delivery date and delivery date can be greater or equal than the first date, and we're doing a lot of work on that. Because we can't get second date I'm working very hard"</p>
<p>Mutuality</p>	<p>Raw Material Supplier A: "Compromise, there's got to be an understanding. If it's going to be long term they've got to be getting something out of it and we've got to be getting something out of it, that's the only reason we're doing it, is that both companies can be successful"</p> <p>Manufacturer C: "Responsiveness from both sides, removal of the brain culture – something I said before, creation of a situation where you can see it is clearly to the mutual benefit and not just something I say because it just happens to be a nice idea!"</p> <p>Manufacturer B: "I think also, and part of that chemistry is people recognising that they will probably need to compromise somewhere along the line, and again it's happening more and more, we are beginning to hear stories of where retailers are actually paid extra money to suppliers to do a particular initiative, nobody has paid Manufacturer B anything yet but you know, I'm not saying they became long term issues but you know people are just beginning to think in a slightly different way and it's, so I guess at the end it comes down to the old stuff about trust and mutual understanding and those sorts of things"</p> <p>Retailer A: "You don't buy respect, you don't get respect by just saying we're going to work together, it has to be earned, and again that's why the early work, and I've done it myself I've stood up on conference platforms and said yes we're partnership with X, it's wonderful, but it was a lot of words, we hadn't got into the real understanding of what a partnership meant, and that's why the word is now used very loosely and people start talking about working together differently rather than partnership, but that's what you have to do, and it's hard graft and it doesn't come over night, you've really got to keep going at it, because it really is difficult, and the more information you share, the more difficult it becomes.</p> <p>Retailer B: "And supplier relationships are exactly the same, its the honesty, the openness, its gaining respect for each other, and I would say that most importantly, that you do share the same philosophy. I mean that I do believe that you have got to start there"</p> <p>Retailer B: "Well, the first thing is the, I keep on using the word cultural, but its the behaviours that are used, the honesty and the trust have got to be there, and also sort of respect to some extent. I think that I know a lot of people here, when we started to say well look we are going to involve suppliers in this, it was all 'what have they got to add, we're good at it and we understand it'. So building up a certain amount of respect in terms of these people have got something to add".</p>

	Long-term View	<p>Farmer A: "I don't know if I dare say it, a partnership rather than a straight sales type relationship. The supermarkets are sort of doing their best to be seen to be doing this in this sort of partnership in produce type schemes, quite how that's working I don't know, time will tell to a certain extent".</p> <p>Retailer A: "I mean I shouldn't be cynical about this but you're all of those clichés, and at the end of the day you do have to have an open relationship and again if you go back in history that doesn't happen over night, so you've got to build that open relationship which in turn if you start to build that open relationship and you start to build a little bit of trust in and you start to be more open and honest in the debates that you have on both things, things you like things you don't like, you then end up building perhaps some respect on both sides into the equation, but it doesn't happen over night, it's one of these things that you have to progress we hadn't got into the real understanding of what a partnership meant, and that's why the word is now used very loosely and people start talking about working together differently rather than partnership, but that's what you have to do, and it's hard graft and it doesn't come over night, you've really got to keep going at it, because it really is difficult, and the more information you share, the more difficult it becomes".</p> <p>Logistics Provider A: "And I think having a vision to see how to fit the thing together in some different sort of ways".</p> <p>Packaging Supplier A: "And I think at the end of the day another measure of those relationships is the ability to have a vision beyond current market beliefs, as it were. So that there is a much broader vision beyond simply servicing today's consumer, and that comes very much down to the marketing philosophy of exceeding and delighting consumer requirements, as opposed to simply fulfilling them".</p>
	Commonality	<p>Manufacturer C: "Responsiveness from both sides,....".</p> <p>Manufacturer B: "Just the chemistry between individuals is quite important and you can find that something's ticking along nicely and then one of the key individuals moves onto another job and someone else comes in and the chemistry is just not quite the same, or the individual is singing to a slightly different hymn sheet".</p> <p>Manufacturer A: "So you have to be willing to understand a common process and develop that, you have to be willing to share plans,".</p> <p>Retailer A: "Oh some clichés coming up, trust, honesty, working together, it's all there"</p> <p>Retailer B: "And supplier relationships are exactly the same, its the honesty, the openness, its gaining respect for each other, and I would say that most importantly, that you do share the same philosophy. I mean that I do believe that you have got to start at the top You don't necessarily have to start with the top people, but start at the top in terms of the analysis if you like, and make sure that philosophy is shared, and if its not then you have to agree to change it, which is where you do need to go to the top of the organisation in terms of the people"</p> <p>Retailer C: "You can't push things up. The main board, they have got to be the ones, if the two chief executives of whatever companies say yes this is right for us to have this relationship and then for them to actually review that relationship when they meet on a board to board basis"</p> <p>IT Service Provider A: "A common vision, I guess is what is needed".</p> <p>Packaging Supplier A: "And that again is very much about aligning your supply chain strategy much more closely to your analysis of consumer markets and consumer thinking. It kind of brings together the linkage between how you trade as a retailer at the store front end as against how supply that demand through the distribution system at the back end"</p>
	Financial Benefit	<p>Packaging Supplier A: "Financial success, if you are not generating adequate Return on Investment (ROI) then clearly your business is going nowhere fast".</p>
	Consumer Focus	<p>Packaging Supplier A: "So that there is a much broader vision beyond simply servicing today's consumer, and that comes very much down to the marketing philosophy of exceeding and delighting consumer requirements, as opposed to simply fulfilling them"</p>

	<p>Openness</p>	<p>Manufacturer A: "So you have to be willing to understand a common process and develop that, you have to be willing to share plans, you have to be willing to measure performance, you have to be willing as I say to re-jig the process if necessary. So if somebody says yes that's great, we'll do our best, and then for one reason or another it doesn't happen, you haven't really benefited yourself and I think, and we were discussing this yesterday, one of the reasons why some of our major customers find us a little bit annoying at times but probably actually welcome us in other ways, is if they do something we will try and give them a reasonably objective answer, well it won't be negative but we'll try and say well have you really thought about this and how would that work. Whereas 80% of their suppliers will say great and think something else".</p> <p>Retailer A: "Oh some clichés coming up, trust, honesty, working together, it's all there I mean I shouldn't be cynical about this but you're all of those clichés, and at the end of the day you do have to have an open relationship and again if you go back in history that doesn't happen overnight, so you've got to build that open relationship which in turn if you start to build that open relationship and you start to build a little bit of trust in and you start to be more open and honest in the debates that you have on both things, things you like things you don't like, you then end up building perhaps some respect on both sides into the equation, but it doesn't happen overnight, it's one of these things that you have to progress"</p> <p>Retailer B: "And supplier relationships are exactly the same, its the honesty, the openness, its gaining respect for each other, and I would say that most importantly, that you do share the same philosophy".</p> <p>Logistics Provider A: "I think trust, willingness to share information, understanding the cost dynamic right throughout the supply chain and the potential trade-offs that exist"</p> <p>IT Service Provider A: " I think that those and along with that comes the trust. To share your inner secrets with someone who does business with you on a commercial footing is not always very easy. I think that has held up quite a few initiatives which would have delivered benefit for many parties. A certain front goes up and we all know the reality behind that front is different. I have yet to come across a truly efficient business in my working life"</p>
	<p>Senior management</p>	<p>Manufacturer B: "The motherhood statements like high level support, definitely, and that means board to board dialogue".</p> <p>Retailer B: "I mean that I do believe that you have got to start at the top. You don't necessarily have to start with the top people, but start at the top in terms of the analysis if you like, and make sure that philosophy is shared, and if its not then you have to agree to change it, which is where you do need to go to the top of the organisation in terms of the people"</p> <p>Retailer C: "There has got to be main board sign on the relationship, so it's got to come from the very top down, and without that then you can't push things up. The main board, they have got to be the ones, if the two chief executives of whatever companies say yes this is right for us to have this relationship and then for them to actually review that relationship when they meet on a board to board basis".</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 5 – Supply Chain Relationships

Sub-Theme	Issues	Respondents
Co-operation	Sharing	<p>Farmer A: "It's difficult, I mean it would be nice to see a contract which is worth the paper it's written on to be honest, because for any contract that you can write a contract into, you can also write a way of getting out of it, which has got to be there for obvious quality reasons etc. it all comes down to getting some trust really".</p> <p>Manufacturer B: "So definitely information exchange, definitely knowledge and understanding. Well, it will take lots of forms. It will take the form of sharing of information and data and knowledge; it will take the form of, for want of a better term I'll call it joint understanding, and that could be training, it could be management exchange or personnel exchanges or whatever, for example we're talking to one of our customers about exchanging our graduates on a six month basis. We send a lot of our people off onto courses, for example, and we're saying to the same customer well instead of us sending our guys to this course and you sending your guys to the same course but two weeks later, why don't we send them altogether or mix them up, so those sorts of things will improve people's understanding and improve relationships. So definitely information exchange"</p> <p>Consultant A: "But then there are two pre-requisites that have to exist and the first one is that they have to share common goal, and the second is that there has to be an understanding that they're mutually dependent on each other to achieve that goal Here we're getting into some change management type stuff. There was research done at the end of the Vietnam war where at the time in the US Army there were a lot of race problems and that sort of thing and a lot of problems in the States at that time, but even in the service where you have contingents based on race or whatever and a lot of in-fighting. So there was a big study done and there was research done, and what they found as an interesting by-product was the one place where they didn't have any of those problems was when you have people sitting in a trench or hole and the enemy were coming over a hill, and all of sudden, why was that, because they shared a common goal which was survival and they were mutually dependent. Put two guys in a fox hole, one has a machine gun, one of them has the ammo, and it doesn't matter what colour they are, doesn't matter what religion they are, what part of the country they come from, they're a team and they have to work together. And the successful supplier/retailer relationships are those who can create that fox hole mentality. I've got the machine gun, you've got the ammunition, if we don't work together in this and if we don't share a common goal and understand that we are mutually dependent we're going to fail, and you'd be surprised at when all of a sudden there's that understanding of the need to do this, that things such as systems alignment and infrastructure and bickering about a percentage point here and there, those things tend to go away"</p> <p>Logistics Provider A: "Well I think it should take the form of a willingness of all parties to share on the vision and develop the vision together and to have an understanding of the potential benefits, and I think it's about sharing vision, I think it's developing trust between each of the parties and understanding that the benefit that there is some benefit for everybody"</p> <p>IT Service Provider A: "I think that what's got to happen is that when that benefit is realised that it's a shared benefit. If one party takes it all then it is not going to work thereon. So, there has got to be a recognition that not everything goes one way. One example I can think of is if through information sharing a manufacturer makes a 5% productivity gain in his factory, what we don't want is the next day is the retailer saying that (and we want that productivity gain, we know you have got a 5 per cent productivity gain and we know that's worth 1p of that tin of beans!). That can't happen, so that's got to be kept, assuming that the retailer has made some benefits as well. So I think that there has to be some balance in there, in terms of who gets the benefit and how it's shared".</p>

	Teams	<p>Manufacturer B: "There's probably some issues about organisational structure which we haven't really tackled yet, and certainly you find that our customers are moving more towards sort of multi-disciplinary management groups and we need to start thinking about the same sort of thing, so that their logistics person responsible for coffees can pick up the phone and hold a sensible conversation with our coffees logistics people. So there's definitely a big issue"</p> <p>IT Service Provider A: "In any project that you set up you need the sponsorship at a high level saying (we are going to work closely with this supplier or this retailer or whatever!) You get that sort of (lock-in) at a senior level, saying (we are going to go for this), then cross functional teams and marketing talking to marketing, sales to sales, buyer to seller, and all logistics people talking. All that's got to drop out"</p>
	Recognition	<p>Manufacturer D: "I think the co-operation is about identifying where the opportunities to improve supply chain efficiency by working together across the boundaries between enterprises, I think it's as simple as that. And it needs to be seen as being done"</p> <p>Consultant A: "First off I think both sides need to understand and agree that there is a compelling need to work together, otherwise they can fail, so both of them need to see the need"</p> <p>Logistics Provider A: "Well I think it should take the form of a willingness of all parties to share on the vision and develop the vision together and to have an understanding of the potential benefits, and I think it's about sharing vision, I think it's developing trust between each of the parties and understanding that the benefit that there is some benefit for everybody"</p>
	Organisational	<p>Manufacturer D: "And it needs to be seen as being done for the benefit of the total supply chain not for the benefit of one party to it, and not worrying about if it's at the expense of the other."</p> <p>Manufacturer B: "There's probably some issues about organisational structure which we haven't really tackled yet, and certainly you find that our customers are moving more towards sort of multi-disciplinary management groups and we need to start thinking about the same sort of thing, so that their logistics person responsible for coffees can pick up the phone and hold a sensible conversation with our coffees logistics people. So there's definitely a big issue about organisational structures as well, and it's us that needs to move on that front not the customers. And certainly our suppliers are light years away from it at the moment"</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 5 – Supply Chain Relationships

Sub-Theme	Issues	Respondents
Relationship Success	Customers	<p>Raw Material Supplier B: "But now I think they're waking up to the fact that everyone's looking at their supply chains and we have to maybe formalise relationships a bit more, but I think that's been successful because the long term relationships are there. We're fairly good but we can get better, there's a long tail of customers you know, we've certainly got an extreme retail mix of customers, our top 20 customers probably make 80% of our profit for us"</p>
	Suppliers	<p>Manufacturer C: "With our suppliers principally because that's the only thing I can comment on. A hell of a lot better than we used to be".</p> <p>Retailer B: "We have not been successful if you look at what some other people are actually doing in this area".</p> <p>Retailer C: "I think everything could always be better, but the response that we get from the suppliers that we are in partnership with is very very positive, and I think we have got it right and the fact is that we have a dedicated team to run these relationships".</p>
	Generally	<p>Farmer A: "Very varied. You go to some very large farms that are very successful and then you go to the Company Z's (<i>name changed on grounds of confidentiality</i>) of this world and people like that who are well used to dealing with supermarkets and on that sort of a scale and can do it, you go to the very small farm that is basically dealing to wholesalers all the time and you go perhaps somewhere in the middle which is perhaps where we fit in to somebody who deals through co-operative organisations and things like that to try and compete with your large outfits if you like".</p> <p>Raw Material Supplier B: Fairly successful though it's forming relationships with our various elements of our supply chain, this factory has been here since 1969, before that it was in operation in several different sites, so there's a lot of people here we've been with over 30 years which helps an awful lot. So I think we've been fairly successful in a kind of perfunctory way, before it was called supply chain management, when these were our distributors. But now I think they're waking up to the fact that everyone's looking at their supply chains and we have to maybe formalise relationships a bit more, but I think that's been successful because the long term relationships are there".</p> <p>Manufacturer B: "In patches very good and in other areas they're not poor but they're average".</p> <p>Retailer B: "If you asked me are we today where I would like to be, No! these is so much more we can do with these relationships, and the opportunities are there and you can see little pilot studies going on in other companies and things and you think that God! That's where we should be with all our relationships, and you can't believe that we are this far behind".</p> <p>Retailer C: "I think everything could always be better, but the response that we get from the suppliers that we are in partnership with is very very positive, and I think we have got it right and the fact is that we have a dedicated team to run these relationships. We have proved time and time again, without regular contact and without somebody if you like neutral facilitating those meetings, is that you can have a 2 hour meeting and end up not talking about the right things, and so the development work gets left behind, and all you end up getting dragged into is all the day to day operational stuff. So I think it's key, and I think Retailer C has learnt so much out of having those relationships, and we are very proud of the fact that we consider ourselves to be market leader in this area, and that is something that we will do anything to hold onto".</p> <p>Logistics Provider A: "I think it's mixed. I think with Company X (<i>name changed on grounds of confidentiality</i>) because we've been working with them for a long time I think we've been very successful, I think with some of the other retailers it's pretty patchy and that's partly about really people wanting to share their objectives openly and partly about the share of the benefit".</p>

	<p>Generally (continued)</p>	<p>IT Service Provider A: "Its not as good as its going to be" Our history being EDi, and EDi is a fairly tactical activity. So my view and broadly shared within this business, but not entirely is that our business has been focused on very much on the IT manager or some relatively junior person in the organisation just to get EDi in there. So its about market share, so get in their quick and get "Software A" (<i>name changed on grounds of confidentiality</i>) up and running! So we haven't been positioning the broader electronic commerce benefits sufficiently high enough. now we are!"</p>
	<p>Why</p>	<p>Manufacturer C: "We took more trouble, we got a framework for understanding. You can have very good relationships with suppliers, that's usually just about people chemistry, people who get on and make things happen. With supply chain and the needs defined and the areas for improvement defined and the objectives defined, you've got a good clearly defined framework for what to operate and where you're aiming at, and you realise that in order to do that you have to build the relationships that will support that. You can't do it by bullying people at this end"</p> <p>Retailer B: "But what we have got to remember, and I have to remember is that I would say that Retailer B were fairly late in to this, it was three to four years ago. Company W were maybe five, six years ago. So we have been a bit late, and cultural issues are very difficult to get going, I mean it takes time and there is no short-cut really".</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 6 – Information in the Supply Chain

Sub-Theme	Issues	Respondents
Role	Inventory Reduction	<p>Retailer B: "Its all about this information flow. Its people beginning to understand the importance of it in terms of it speeding up the supply chain but improving the quality of information to take costs out of the product flow, so its absolutely vital"</p> <p>Logistics Provider B: "I think it's got a very important part to play in getting the overall economics of the supply chain effectively reduced to the minimum you can achieve, no question about it".</p> <p>Packaging Supplier A: "That good timely information can actually take an awful lot inventory cost out of the Supply Chain Basically, you are replacing safety stock with certainty that is driven by better information and more shared forecasting"</p>

	<p>Functioning</p>	<p>Raw Material B: "Very important, both coming back up the chain from the market to help the manufacturer if you like to say that the manufacturer is at the top end, we certainly are in our case because we haven't got really any supplies, but the information coming back to us is to try and let us know what to produce, basically marketing or strategic marketing information. And similarly stuff going back down about lead times and product development built in so the interchange of information, the richness of information within a supply chain is what will make it work or not work,...."</p> <p>Manufacturer C: "Well nothing short of critical,...."</p> <p>Manufacturer E: "Well I'd say it's critical for start, ..."</p> <p>Manufacturer B: "Well it's one of the big areas I've just talked about as being absolutely fundamental..... We're also grappling with how they effect our business processes as well, because we find that as we start thinking about using the Internet in different ways, we've actually got to run our business in different ways as well. People can suddenly see information which they couldn't see before and people have to be more structured or more disciplined than they were before. So that effects the way in which people work, what drives them, what motivates them. It is without doubt the fundamental key enabler for making the supply chain run in the most efficient way, whatever that most efficient way is, the thing that will enable it to happen is information technology, so it's absolutely fundamental, finding what is the right information technology is what we're working on at the moment"</p> <p>Manufacturer A: "Critical, pre-requisite, necessary but not sufficient. It's like supply chain management itself, supply chain management is necessary for survival and performance but it's not sufficient. I mean nobody should kid themselves that supply chain management is the answer to the maiden's prayer, it's not a substitute for enterprise and innovation and consumer relationships. But data is as essential to supply chain management as supply chain management is essential to business success. They're both necessary but not sufficient"</p> <p>Retailer B: "And its about flowing products in one way and it about information flowing the other way. Its absolutely vital, that's what logistics is about, if you look at a supply chain as an information flow and a product flow, all these logistics departments that have grown up in the last five years. Its all about this information flow. Its people beginning to understand the importance of it in terms of it speeding up the supply chain but improving the quality of information to take costs out of the product flow, so its absolutely vital"</p> <p>Retailer C: There has to be a flow of information coming back from the consumer which actually then meets the needs of the flow of products. You've got information flowing back to allow product to flow forward, and the consumer or the shopper has to be the start point, and so it's got to be what is the forecast of that consumer, fed all the way back, and the product flow"</p> <p>Consultant A: "Well fundamentally you've got two flows in the supply chain, one is a product, the product should flow in direct response to the information that's provided about demand. And so it's one of the two critical components of supply chain management and without proper demand and the supply of information you won't have a supply chain".</p> <p>Logistics Provider A: "Well it's key because I think that you actually cannot achieve supply chain integration without an enhanced level of information and I think it's a huge area and there's a lot of work to do. There's huge issues around information, huge ones"</p> <p>Packaging Supplier A: "Without information, none of the Supply Chain would work as it currently does".</p>
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	<p>Integrator</p>	<p>Manufacturer D: "One of the things just talking within a company within a manufacturer and our own example, that over the last 8 years or so we've moved to try and integrate the processes by which we run our supply chains and one of the key enablers for that has been integration of the information that is being used to manage it, so that people are using essentially a single set of numbers right through the business, whether it's for financial planning, whether it's for planning the factories, whether it's for procuring the materials and so on. So integration that way has been very important to our business, and I think the next stage is going to be that same kind of integration in the use of information between us and our suppliers and us and our customers".</p> <p>Logistics Provider A: "Well it's key because I think that you actually cannot achieve supply chain integration without an enhanced level of information and I think it's a huge area and there's a lot of work to do. There's huge issues around information, huge"</p> <p>Logistics Provider B: "I think it's got a very important part to play in getting the overall economics of the supply chain effectively reduced to the minimum you can achieve, no question about it. And every de-coupling point within the supply chain that you hand over information there seems to be a dramatic level of inefficiency built into that step, so everybody talks about having one forecast and one piece of information but I do agree that if that can be effectively transferred up and down the supply it would be extremely useful".</p>
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	<p>Enhanced Decision Making</p>	<p>Raw Material A: "Also we've got to make sure that we understand the capabilities of what that company can do, so they're not committing themselves to something that they can't achieve had they got the resource, and they're doing something with the best will in the world to say yes we can do that and achieve it, and not being able to full achieve it to start with, and it's an understanding of both companies of what is achievable, can both companies participate in that to get the benefits required for that partnership, or relationship"</p> <p>Manufacturer C: "Now that is all about being an easier customer to deal with, so information is vitally important, and it's not just information about your plans, your immediate plans and your production plans, it's information about where the business is going to, what the issues are, what the problems are, so they know which horses to back. If they're going to make or second guess judgments, they need to know or have as much information as possible, so I think it's about your business and another strata of information about production and the immediate requirements, how far ahead they can plan knowing that those plans will change, but being able to cope with the change".</p> <p>Retailer A: "I think people tend to see information technology as just something that's going to happen and it's all going to be automated and you don't have to have people thinking anymore, and nothing could be further from the truth. Because a lot of work in supply chain is analysing information, you can use your computer to get to the numbers much more quickly, or the trends that you're looking at, but then you need to analyse that trend, you need to be looking and the computer will give you most of the information but you've got to have some form of intellect to decipher that information and then to use it to plan forward, and there's this misconception that it all happens automatically. I use the aeroplane thing as my example, everyone says oh the aeroplanes fly themselves today, but that's not strictly true is it because what happens is somebody somewhere inputs into the computer exactly where they want to go and then of course it does it. It doesn't just take off and land, and that's what I mean by having intellect, and I have a bee in my bonnet that as an industry we overlook the skill factor of what's required by people, and I think, I nearly said something then but you're taping, but I do feel very strongly that information technology is only as good as the users that have it"</p> <p>Consultant A: "The critical thing about information and the flow and the role there is that the good guys out there, the good people in supply chain management are those who can accurately, quickly and efficiently move that information, and more importantly do something with it once they get it".</p> <p>Logistics Provider B: "And every de-coupling point within the supply chain that you hand over information there seems to be a dramatic level of inefficiency built into that step, so everybody talks about having one forecast and one piece of information but I do agree that if that can be effectively transferred up and down the supply it would be extremely useful"</p> <p>IT Service Provider A: "Well information is there really to assist decision making"</p> <p>Packaging Supplier A: "But that the key trick is to make sure that the information is first and foremost accurate, that it isn't just data, it is actually information that means something"</p>
	<p>Source of Power</p>	<p>Farmer A: "Very important, it's what I said about the supermarkets, information is power, information is knowledge, knowledge is power basically".</p>

Respondent's Comments by Sub-theme and Issue for Research Theme 6 – Information in the Supply Chain

Sub-Theme	Issues	Respondents
Sharing	Demand Information	<p>Manufacturer D: "Yes, we're starting to do that already and 3 of the major customers have already put point of sale type information into their applications which we're starting to join"</p> <p>Manufacturer A: "But if you then say yes but what are you talking about, you're talking about deliveries, what have I delivered, what do I plan to deliver, what I want you to deliver. You talk about stock and you talk about production, and then there's some orders in there as well. And then ultimately if you knew what it was you would look at consumption by the consumer"</p> <p>Manufacturer D: "Yes we give our suppliers full visibility of the requirements that they're going to have and that's looking out 18 months and can change all the time as our plans change, so I suppose contrast that with the situation where the only visibility supplier would have is what's being called off them for the next week or whatever or what the contract says that we're going to buy, so that would be one example"</p> <p>Manufacturer E: "With the suppliers, these key suppliers again we're talking about the ones who are major component suppliers, we share information with them, for example the managing directors of their companies meets with us quarterly and we go through where we've been, where we think we are at the moment and where we think we're heading and we'll talk to them volumes and financial results, targets, objectives etc"</p> <p>Manufacturer A: "Transactions, how much and when, plans and performance. So all that information applies in each instance"</p> <p>Manufacturer A: "Increasingly yes. We're starting to. We're starting to change the whole way, and it's not just communicating promotional activity you start to think well at the moment the major retailers have difficulty in communicating EPOS data to us which is what is the consumer doing".</p> <p>Retailer A: "Sales, how to move information, stock holding information, availability information, we're just about at the end of this month we'll be launching a new package which is on promotions, how to manage promotions in a different way, which I think is going to revolutionise the way promotions are managed within our business"</p> <p>Packaging Supplier A: "That's a good question, I am intrigued to know what retailers have to say about that, Accurate demand information is the bottom line. Accurate demand - future forecast information, how you actually get at that is as broad as it is long"</p>
	Stock Info.	<p>Raw Material B: "So we're desperately trying to develop EDI, to develop Intranets, we have actually now got going with one of our customers, we certify their salt before it leaves the factory, it comes into them, they don't have to do any analysis on it, on reception they can dial us up and look into our computers and look at the test results, that's very nice, that works nicely and again that's with the direct large end user, it's a very short chain but that's the sort of thing we would like to develop with distributors as well, although not a lot of them are particularly sophisticated at the minute so again we're ready to go to the market or ready to go to our supply chain with these ideas, it's just a question of keep mentioning and they keep going yeah, yeah, yeah, yeah and one day they'll do it and we'll be ready"</p> <p>Retailer A: "Sales, how to move information, stock holding information, availability information,..."</p>

	<p>Promotional Info.</p>	<p>Manufacturer D: "Certainly we can see big opportunities in what's called event management, so management of promotions, management of new products, introductions, that if we can be more professional in sharing the right information we'll be able to avoid some of the mishaps that have occurred in those areas in the past".</p> <p>Manufacturer A: "Increasingly yes. We're starting to We're starting to change the whole way, and it's not just communicating promotional activity you start to think well at the moment the major retailers have difficulty in communicating EPOS data to us which is what is the consumer doing".</p> <p>Retailer A: "Sales, how to move information, stock holding information, availability information, we're just about at the end of this month we'll be launching a new package which is on promotions, how to manage promotions in a different way, which I think is going to revolutionise the way promotions are managed within our business".</p>
	<p>Forecast Info.</p>	<p>Manufacturer D: "Yes we give our suppliers full visibility of the requirements that they're going to have and that's looking out 18 months and can change all the time as our plans change, so I suppose contrast that with the situation where the only visibility supplier would have is what's being called off them for the next week or whatever or what the contract says that we're going to buy, so that would be one example. We share, I mean our service provider obviously needs our volume forecasts on a regular basis so that will be another example".</p> <p>Packaging Supplier A: "Accurate demand - future forecast information, how you actually get at that is as broad as it is long".</p>
	<p>New Prod Info.</p>	<p>Manufacturer D: "I'm trying to think where we would be sharing with customers, something that's been starting to happen much more has been very early discussion of plan new product introductions which would have been unheard of a couple of years ago, we would not have talked to our customers about new product introductions until launch presentations, now we're quite often talking to them about things that are only at a fairly early conceptual stage"</p>

Respondent's Comments by Sub-Theme and Issue for Research Theme 6 – Information in the Supply Chain

Sub-Theme	Issues	Respondents
How Shared?	Electronically	<p>Raw Material B: “So we're desperately trying to develop EDI, to develop Intranets, we have actually now got going with one of our customers. . .”</p> <p>Manufacturer D: “We haven't used EDI very much, we have put our SAP terminals into one or two suppliers so in a sense that's linking them directly into our systems, but that's one of the areas where we've certainly written into our strategy that we expect to expand in that area. There's a bit of hesitation at the moment while a number of different technical solutions get debated, so EDI versus Intranet etc, those sorts of things are bubbling around, I'm not really an expert on them but I'm aware of the debate. . . We would do most of those things down with an Intranet link and as I say several of the major customers are setting up these intranets, well I think they're called Extranets when they go to the suppliers”.</p> <p>Manufacturer A: “Yes, I mean this is still in it's infancy you know, we've worked with Tesco on this, we've worked very actively with Sainsbury on theirs, Safeway are starting to role there's out this year, it's in it's infancy yes, but it's coming. We've done a lot of EDI with customers for a number of years in terms of exchanging price files, not enough, but we've done quite a lot”.</p> <p>Manufacturer A: “And then you've got master files which you can then synchronise between customer and supplier in advance, product files, price files, and you can do that directly or you can put them on the Internet or an Extranet and share a catalogue”.</p> <p>Manufacturer B: “And the issue again is not technology, if the information is available they're in our systems, then you can drop it into the Internet and people can have a look at it”</p> <p>Retailer C: “I don't know whether you'd do it by EDI or ExtraNet or use the various packages available like information systems like EPOS something like that, there's various ways of doing it and I suppose what you'd have to do is say right well where's your data being retrieved from, what's the easiest way to retrieve it, where's it going to go and then choose the right medium, but as long as it's electronic then I think any of those solutions would be right, depending on what you're going to do with it”.</p> <p>Logistics Provider B: “Well the one thing that the retailers have done, if you take RDC Management which is the bulk of the business that we run today, they have actually installed into our networks their systems which makes everything visible. And they essentially manage that information, so it would be wrong to say we literally share out of choice, I mean it's a feature of any major advance retailers operation that he has access to the information that's associated with the network that he runs. What's proving important is that he's got more effective access to his manufacturers and suppliers stock and there's one we've collected the product when they're handling primary inbound for him, so we're actively working at exchanging that kind of information”.</p> <p>Logistics Provider A: “I think a whole lot more needs to happen though. Well, most of it's electronic, via email, via direct information links between IT systems”.</p> <p>IT Service Provider A: “Yes, that's exactly what we believe should be happening and we are talking to some of the FMCG companies, that on the basis that they are going to sign up to the IT Service Provider “Product X” service, they want something similar to be able to communicate down to their supply chain”.</p> <p>IT Service Provider A: “Yes, e-mail can be done if everyone has Microsoft exchange or lotus notes, or whatever, then you can exchange e-mails or use the Internet for that”</p>

	<p>Paper Based</p>	<p>Farmer A: "Mostly over the telephone, when we're doing direct sales to our own customers, all the things that are done through contract etc are actually done for us if you like, so we're not too close to the end buyer".</p> <p>Manufacturer D: "We're not using EDI very much so we would be mainly fax, the fax can be driven straight out of our supply chain management systems We haven't used EDI very much, we have put our SAP terminals in our suppliers".</p> <p>Packaging Supplier B: "Currently it's done between correspondence and the buyers in the companies ringing up and negotiating when they want it. One of the benefits of SCM is you cut all that away, because you know when you come to an agreement that this is it, it'll be more confirmation that this order is moving through rather than 100's of phone calls coming through negotiating, because you always say ATP is this and they say well can't you give us a better date than that, so then you've got to start trying to move it in and this is one of the problems of course, you've built yourself, you don't have a stable plan, because you don't have a stable forecast".</p>
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Respondent's Comments by Sub-Theme and Issue for Research Theme 6 – Information in the Supply Chain

Sub-Theme	Issues	Respondents
Why Shared	Generally	<p>Packaging Supplier A: “What is critical that both trade customers and manufacturers are working off the same hymn sheet. That effectively they are pooling the same prejudices if you like, and lets be honest all forecasts are wrong, it just that some are more right than others, and one would assumes that a retailer who is operating a tad closer to the consumer should be getting more right than not, as far as that goes. Fundamentally, it is about not just reflecting what is going on in the market at the moment but having an accurate model of what will be happening on a time scale by which the Supply Chain can respond And in some respects that has been a downside to retailers working on shorter and shorter lead times They have been afforded to do that because of the quality of the EPOS based sales information They have been able to make their forecasts and their orders on a much shorter time-scale, to the point where it is much shorter than the manufacturers' production cycle, so that they are still having to make to some extent to stock, a not to actual order, that being said, they know full well that the information that they are getting retailers, is a darn sight more accurate than the (wet finger) in the winds that they were previously getting”.</p>
	Visibility	<p>Raw Material B: “So that's quite a nice, apart from last winter being one of the mildest we've had in a long time, really cocked that up! Best laid plans etc, but you know we will work like that with our supply chain, with our distributors to try our best to plan ahead”</p> <p>Raw Material B: “There's maybe not, even in short supply chains like when we go direct to customers we're trying to say to them right we can monitor how much salt you've got left in your silo and we can automatically deliver, now salt being very cheap it's not one of the things that their professionally employed purchasing bastards have actually go down to the bottom of the list yet and said right we'll really shit on this, this, this, this, this, this, this and this, and screw them down in the price and get down to the bottom and salts not sort of being touched, so it's difficult to be proactive in that respect because they're just not interested”.</p> <p>Manufacturer E: “We've recently had a lot of demand for a product, it was a lot higher than was forecast, a lot higher than we've actually got capacity for at the moment, and I really had to plead to get visibility of stock so we can actually spend our capacity to make some benefit”</p> <p>Manufacturer E: “I don't know what we do, it's quite an interesting point that is actually, I don't know what we do with the retailers, but one of the things that I mentioned to you before was the barrier between Manufacturer E “<i>Department X</i>” and Commercial, I believe we should have visibility of market stocks, and markets to have the visibility of our production plan There has been some concern about that and where we negotiate to try and get visibility, but it's something that isn't ours of right, and that's a concern to me because I think it should be. We've recently had a lot of demand for a product, it was a lot higher than was forecast, a lot higher than we've actually got capacity for at the moment, and I really had to plead to get visibility of stock so we can actually spend our capacity to make some benefit”.</p> <p>Manufacturer B: “So the fact that they are now sharing information with us gives us a lot of visibility of stuff which we can think of”.</p> <p>Logistics Provider B: “And they essentially manage that information, so it would be wrong to say we literally share out of choice, I mean it's a feature of any major advance retailers operation that he has access to the information that's associated with the network that he runs What's proving important is that he's got more effective access to his manufacturers and suppliers stock and there's one we've collected the product when they're handling primary inbound for him, so we're actively working at exchanging that kind of information”</p>

	Synchronisation	<p>Raw Material A: "A vehicle arrives on site, he wants to turn that vehicle round as quickly as he can so he can go and make another deliver somewhere or go and pick a load up, or whatever, but he doesn't want to be sat with wheat on this site with that vehicle. Explaining to hauliers that if you arrive in the booking slot that we give, you will give turned around. If you arrive outside that booking slot, you're creating problems for yourself, because all that happens is, if we try and slot you in, you're going to slow somebody else down that turns up on time. And when they realise that which is going against any procedures that we have, so if we have roller shutter doors that separates each vehicle going through, we have drivers that try and beat the roller shutter door closing, or opening. And if they damage that door then we've got to call somebody out, we've got to get the door fixed, if we can't get it fixed we've got to leave it open, if we leave it open we've got the possibility of contamination from one load to the next because you can't always trust the drivers, and then they recognise that 2 hours can be lost just waiting for somebody to come out to actually repair that door, and with Health & Safety requirements now you've got to have the scaffolding and everything's got to be put up and turned round move and sorted out. And if you understand the basics like that, a lot of the time that is sufficient for the relationship. They're not interested in too much more. What they want to know is how quickly can you turn my vehicle round on your site, and explain how quickly you can turn it round if everything goes according to what they should be doing, and this is their part in it, that's normally enough".</p> <p>Packaging Supplier A: "What is critical that both trade customers and manufacturers are working off the same hymn sheet. It would be nice to think that we will get into a perfectly synchronised Supply Chain where manufacturers will make exactly what is being sold, and will make what will be sold more to the point. For some categories that highly possible, for others it will be more difficult".</p>
	Responsiveness	<p>Raw Material B: "There's maybe not, even in short supply chains like when we go direct to customers we're trying to say to them right we can monitor how much salt you've got left in your silo and we can automatically deliver, now salt being very cheap it's not one of the things that their professionally employed purchasing bastards have actually go down to the bottom of the list yet and said right we'll really shit on this, this, this, this, this, this, this, this and this, and screw them down in the price and get down to the bottom and salts not sort of being touched, so it's difficult to be proactive in that respect because they're just not interested".</p> <p>Manufacturer E: "We've recently had a lot of demand for a product, it was a lot higher than was forecast, a lot higher than we've actually got capacity for at the moment, and I really had to plead to get visibility of stock so we can actually spend our capacity to make some benefit".</p> <p>Packaging Supplier A: "Fundamentally, it is about not just reflecting what is going on in the market at the moment but having an accurate model of what will be happening on a time scale by which the Supply Chain can respond".</p> <p>Packaging Supplier A: "And in some respects that has been a downside to retailers working on shorter and shorter lead times. They have been afforded to do that because of the quality of the EPOS based sales information. They have been able to make their forecasts and their orders on a much shorter time-scale, to the point here it is much shorter than the manufacturers' production cycle, so that they are still having to make to some extent to stock, a not to actual order, that being said, they know full well that the information that they are getting retailers, is a darn sight more accurate than the (wet finger) in the winds that they were previously getting".</p>

Respondent's Comments by Sub-Theme and Issue for Research Theme 6 – Information in the Supply Chain

Sub-Theme	Issues	Respondents
Barriers	Standards	<p>Manufacturer A: “But then at the moment all that information isn't visible and available, but we now see how to do it and one of the things I've been working on is what's called simple EDI which is a whole new way of translating supply chain management into very simple data elements and messages and at the Article Number Association we've developed this and its now hopefully progressing towards a international standard, because one of the points I make is that you need to integrate supply chain management and electronic commerce”</p> <p>Manufacturer C: “The quality of it”.</p> <p>Retailer A: “The issue still is what information and how you get it there, and how it's all handled, those are big issues, things like data alignment, big issues for the industry”</p> <p>Retailer B: “I think that the third thing I think is about technical standards generally, because the supplier doesn't want to, if they want to share a bit of information about how Heinz baked beans are selling, they do not want to fire one message to Sainsbury that integrates into a different system to Tesco's and Safeway and find themselves with three messages, so there is a wholes standards thing here, and also as we begin to turn, what I would really call at the moment more sort of data flow than information flow”.</p> <p>Retailer B: “Well, I think I should be able to go through this, as I have gone through this for the last eighteen months. Its been a real struggle because not only have I been trying to get this sorted internally, but also through the ECR group I'm been fighting for the standards and whatever and I head up the group that's trying to get standards in this area”</p> <p>Retailer B: “And I can see them coming in from outside bodies, packages and stuff like that And we need infrastructure standards that say if you're compliant with this set of technology in the future you'll be a recognised supply chain package or whatever, Now a lot of the standards stuff, I am working through with the ECR group at the moment”.</p> <p>Logistics Provider B: “Well I suppose commonality of terminology I guess in the sense of when is case a case, what is a case to retailer X maybe, half a case to retailer Y”.</p>

	Mindsets	<p>Raw Material B: "Knowledge is power and wanting to keep the power"</p> <p>Raw Material A: "People".</p> <p>Manufacturer B: "Technology is not the issue, it's just whether we want to do it and whether our buyers are prepared to suddenly release information which previously they've probably always regarded as very commercially sensitive and part of their negotiating position, so again it's a mindset issue".</p> <p>Manufacturer E: "I think cost is always a sensitive issue. I don't sense anything in terms of from our point of view through the schedules we give them they have a good computer power businesses anyway, there's no point trying to hide the performance that you're having I don't see there's any advantage to us and not sharing the truth of our current demand situation with them. As a public company they've got access to financial information".</p> <p>Manufacturer B: "Really just peoples preparing us to do it. There's no technological barrier now. You can set up an Internet site with all that information in a matter of weeks. If you've got the will to do it, you can do it".</p> <p>Manufacturer A: "Yes and it depends on the people involved. I mean one of the difficulties in all supply chain management is you can set an arrangement up between two companies, thinking it's two companies, but it's also actually two sets of people and two cultures. Then the companies change, I mean most companies don't stay still for more than about a year or two, so one set of partners change, another set of partnership change, another set of partners change and then you've got to different groups of people thinking what the hell is this relationship, how did we get into this, because it's not our style. And this is quite important, and that's why you've got to do it in a rigorous, systematic way and that takes a lot of time and effort, you've got to change the process, you can't just depend on personalities, otherwise it won't last".</p> <p>Retailer B: So I would say the first thing is an internal one, about the politics of information, in terms of we had lots of debates internally as to whether we should or shouldn't be sharing sales data. Things like whether you should or shouldn't be charging for it etc. etc., so there is a big political debate".</p> <p>Retailer A: "Legal, you have to be very careful that you don't...yes legal, and again I have to fall back on my historical, cultural issue".</p> <p>Retailer B: "And you get down to who owns the data, and we got in to debates as to who owns sales value and who owns sales volume and things like that. So there one about sorting the data out first, understanding, well from my point of view anyway, that the way that we are approaching it now which is right I think, is that the data is not worth anything, its actually getting retailers and suppliers to work together on the data that makes it valuable, and so therefore we do not charge for the data. So you have got that strand".</p> <p>Consultant A: I guess it boils down to the two things again, you know the willingness and the ability of the organisations to do it.and then the willingness says that hey I'm willing to share that information, I realise that by passing on to you information about my consumer I might be giving up some information but ultimately we're both going to benefit because of it so it's the right thing to do".</p> <p>Logistics Provider B: "People I guess are going to be a feature. Well there doesn't seem to be a ready made source of good quality people with supply chain skills and understanding. We certainly find that, and of course at the end of the day systems, everybody's working on different types of system. I could argue that SAP seem to making a big play to get all the manufacturers on board, there would be some commonality then at least, if all the retailers were interfacing with the same system it might help. But that's down to the compartmentalised environments they work in which I think I said right at the beginning, retailers structures are typically one of the reasons why supply chain thinking hasn't moved forward".</p> <p>Packaging Supplier A: "But fundamentally, it is the willingness to share. It is the hearts and minds, the philosophical aspect of is it right that I give this data to Joe Bloggs, and I think that what we are seeing evidence of is the opening up and a realisation that actually what we are giving them is not so much a stick to hit us by, as a lever to enable them to perform better on our behalf. Which is again is fundamental to this philosophical change".</p>
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	Commercial	<p>Farmer A: "You've got to be careful, there again it's the chap that's buying it. if he knows it can be done cheaper then he's going to want it cheaper. It can be used against you if you're not careful so it tends not to happen too much. There are some things that you'll share as far as quality and how to get it is concerned, I mean my father went to America last year and visited some growers over there and I thought we could be reasonably secretive about what we did and how we did it. Over there they will not let a stranger walk into a field let alone a factory, and the level of secrecy is incredible and there is no information shared at all".</p> <p>Manufacturer B: "Technology is not the issue, it's just whether we want to do it and whether our buyers are prepared to suddenly release information which previously they've probably always regarded as very commercially sensitive and part of their negotiating position, so again it's a mindset issue".</p> <p>Manufacturer A: "Yes, I mean it can be abused, you've got to be careful what you share and it can be abused. I mean as I say if you were to share information with a customer about a supplier then the customer then started going to the supplier and fiddling prices you know. Yes and it depends on the people involved".</p> <p>Retailer A: "Legal, you have to be very careful that you don't...yes legal, and again I have to fall back on my historical, cultural issue".</p> <p>Logistics Provider A: "I think there's clearly some sort of commercial sensitivities on the part of the retailer, and the manufacturers as well, about sharing information. For example, you take us in the primary business and we see the volumes we see a lot of the price stuff from the same manufacturers who supply all the retailers, now there's a nervousness around what sort of volumes people are doing. So I think to get transparency is quite difficult because there's commercial sensitivity in there, so promotions, all of those things, there's an understandable commercial sensitivity around that and I don't think that will change".</p> <p>Logistics Provider B: "So there's that particular issue to address. There's a lot of concern about confidentiality but quite honestly our stock in trade is to ensure that we remain confidential, we wouldn't have any business if we quickly released to one retailer what somebody else had told us. There's a lot of comment about keeping information confidential, most retailers struggle like hell to manage with the information they're generating for themselves, I'm not sure how they have the energy or capability to actually accommodate what everybody else was producing"</p>
	Cost	<p>Manufacturer E: "I think cost is always a sensitive issue".</p> <p>Retailer B: "We are using the Internet, but I mean that the Internet is still not bad, When you go into extranets it starts to get a bit more expensive etc. So what mechanism are you going to use".</p> <p>Logistics Provider B: "It depends where the cost lies in the first place. A lot of people see ECR as a means of shoving the stock back to the manufacturer, surely in the meantime for the retailer and the retailer enjoying all the benefit. So in that scenario sharing information is going to on the one hand it might protect the market share of the manufacturer, but it might be a cost at having to carry more cost and carry the safety stock in his own network. So there isn't probably a fairness about the way in which the penalty is being carried at the moment"</p>

	Ability	<p>Manufacturer B: "Really just peoples preparing us to do it".</p> <p>Manufacturer D: "I don't see very great barriers now in that area. Certainly there's a much greater willingness to discuss sharing there. I think it's more that we are particularly organised in what we do with the information and why we're sharing it and so on and so my opinion is that there is strong recognition that we should be sharing information, but we're not quite sure what to share and maybe to some extent how to share it in terms of the technology debate but I think it's more where it's not moved forward because we're not quite sure what to do with it rather than because of the old fashioned barriers that, I mean I can remember a few years ago the retailers only wanted to share EPOS data if they could sell it and those sorts of things, but I think those barriers have gone, or largely gone".</p> <p>Retailer B: "Basically, its about how you are going to share that information, how are you going to get people together to look at it..... As we to turn it into information flow you are going to need sort of algorithms that do that within these systems. And I can see them coming in from outside bodies".</p> <p>Retailer A: "The issue still is what information and how you get it there, and how it's all handled, those are big issues, things like data alignment, big issues for the industry"</p> <p>Retailer B: So you have got that strand. And then once you have then agreed that you are actually going to share it, its the technology to share it. We are using the Internet. And in the early days because we did not have a system on the Internet or whatever, suppliers used to come in here and we used to let them see our internal MIS system, which was really archaic now when we think about it".</p> <p>Retailer C: But then of course it's not just about EPOS sales, there's all the supply chain data as well about stock holding, service levels, availability levels, all of that that's in there as well. So there's massive amounts of data which is why I have concerns about data overload, because if they're getting this back from the top 5 multiple groccers then that's massive chunks of information".</p> <p>Consultant A: I guess it boils down to the two things again, you know the willingness and the ability of the organisations to do it. Ability says you know we've got my wire fits your wire and you can receive the information I'm sending, or you have a fax machine and I have a fax machine and I know your number, that sort of thing, that's the ability to do that....."</p> <p>Logistics Provider B: "There's a lot of comment about keeping information confidential, most retailers struggle like hell to manage with the information they're generating for themselves, I'm not sure how they have the energy or capability to actually accommodate what everybody else was producing".</p> <p>Packaging Supplier A: "First and foremost the ability to capture information accurately. Even retailers are not universally capable of doing that. The ability to turn data into proper information, so actually making intelligence out the data out of the numbers that they are capturing".</p> <p>Packaging Supplier A: "Obviously the ability to send that information quickly and timely to the right place, etc., etc.,. But fundamentally, it is the willingness to share".</p>
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	<p>Understanding</p>	<p>Manufacturer A: "Now nobody has resolved all these issues yet. is to what data, in what timescale, in what form should be visible and transparent to solve the forestor effect"</p> <p>Manufacturer D: "I don't see very great barriers now in that area. Certainly there's a much greater willingness to discuss sharing there, I think it's more that we are particularly organised in what we do with the information and why we're sharing it and so on and so my opinion is that there is strong recognition that we should be sharing information, but we're not quite sure what to share and maybe to some extent how to share it in terms of the technology debate but I think it's more where it's not moved forward because we're not quite sure what to do with it rather than because of the old fashioned barriers that, I mean I can remember a few years ago the retailers only wanted to share EPOS data if they could sell it and those sorts of things, but I think those barriers have gone, or largely gone".</p> <p>Retailer A: "The issue still is what information and how you get it there, and how it's all handled, those are big issues, things like data alignment, big issues for the industry"</p> <p>Retailer B: "Basically, its about how you are going to share that information, how are you going to get people together to look at it".</p> <p>Retailer C: "I think lack of integrated systems, the fact is that there's a lot of people, there's a lot of desires out there for information but it's going back to what would be the business benefit of sharing that information, how is that going to aid the consumer, because in the end the consumer is the person we need to think about. By sharing that information is that really going to aid the consumer, and if so how is it, and what's the benefit for both of us there"</p>
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Respondent's Comments by Sub-Theme and Issue for Research Theme 6 – Information in the Supply Chain

Sub-Theme	Issues	Respondents
Benefits	Less Inventory	<p>Manufacturer D: "Well it's a simple efficiency thing because people are going to be much more likely to make sensible decisions if they're working from the same knowledge base and information base, because certainly if whoever is responsible for let's say for stock, only knows part of the stock in the supply chain, they're unlikely to make the best decisions as if they know what the total supply chain stock is and it clearly might need several people in the chain to see that, but if they have visibility together then they're much more likely to make the right decisions".</p> <p>Consultant A: "It enables the supply chain to react to consumer demand. The purpose of this whole thing is to supply and demand right here, if we don't have information here or information flow here, then these guys are guessing, and the risk is that you're going to be making too much or too little and you're going to ineffectively supply or you won't supply and demand. The benefit being the contrary. If you do flow the information then you will be able to react to those demands".</p> <p>Logistics Provider B: "That's where it typically goes wrong, only I think if there is an important relationship in terms of information exchanges that is the only one of any real consequence in my opinion. In terms of the impact of the short term availability or overstocking problems, that's where the key is in terms of getting the relationship right and the real value".</p> <p>Packaging Supplier A: "Well it actually affords a much leaner operation, and leanness in terms of retailers minimising the amount of stock holding, and similarly, as far as manufacturers are concerned, leanness in terms of their raw material supplier's requirements, but an ability to maximum use of fewer resources, and in an industry where we said right up front cost is one of the drives, its is not the only driver, but delivering that maximised service is about optimal use of the resources that you have got".</p>
	Visibility	<p>Farmer A: "If you ask your customer and as a customer you'll say yes to a certain extent. If you've got a particular crop of a particular quality and you know there's a particular person that wants it for a particular market, then you share that information quite willingly don't you, and there again if you've got a supplier who occasionally has a good deal on something that you use, it's in their interests and in yours that you do business on that type of basis".</p> <p>Manufacturer D: "Well it's a simple efficiency thing because people are going to be much more likely to make sensible decisions if they're working from the same knowledge base and information base, because certainly if whoever is responsible for let's say for stock, only knows part of the stock in the supply chain, they're unlikely to make the best decisions as if they know what the total supply chain stock is and it clearly might need several people in the chain to see that, but if they have visibility together then they're much more likely to make the right decisions".</p> <p>Manufacturer A: "Well absolutely critical. I mean something like 10-30% of the product codes ordered at the moment, even by EDI, are wrong. So if they're wrong you've got to spend a lot of time and effort getting it right, and that means there's confusion in our operation, confusion at the customers operation. It also means there's confusion at the time you come to do invoicing and all the rest of it, it also means there's delayed payments, so poor cash flow, so it ripples write through the whole supply chain".</p>

	<p>Prod Availability</p>	<p>Consultant A: "It enables the supply chain to react to consumer demand. The purpose of this whole thing is to supply and demand right here, if we don't have information here or information flow here, then these guys are guessing, and the risk is that you're going to be making too much or too little and you're going to ineffectively supply or you won't supply and demand. The benefit being the contrary. If you do flow the information then you will be able to react to those demands".</p> <p>Logistics Provider B: "That's where it typically goes wrong, only I think if there is an important relationship in terms of information exchanges that is the only one of any real consequence in my opinion. In terms of the impact of the short term availability or overstocking problems, that's where the key is in terms of getting the relationship right and the real value".</p> <p>Logistics Provider B: "I've seen quite a considerable amount of improvement in that area in the last 4 or 5 years and there seems to have been a recognition from both parties that to get that right and to get from a manufacturer to actually make sure he delivers what he says he'll deliver and for a retailer to actually give a forecast that gives that manufacturer some chance of responding, as league times have shortened, is critical".</p> <p>Packaging Supplier A: "Well it actually affords a much leaner operation, and leanness in terms of retailers minimising the amount of stock holding, and similarly, as far as manufacturers are concerned, leanness in terms of their raw material supplier's requirements, but an ability to maximum use of fewer resources, and in an industry where we said right up front cost is one of the drives, its is not the only driver, but delivering that maximised service is about optimal use of the resources that you have got".</p>
	<p>Develops Trust</p>	<p>Manufacturer C: "I don't think you're going to establish a partnership with anybody you don't trust and the only disadvantage would be if there was a lack of discretion, a lack of confidentiality. I can't actually see if you believe that information and communication is everything and highly essential to an effective supply chain, I can't believe that there is information that you shouldn't share, unless you don't trust that person. I have a perverse view that I don't like open book costing because it means that you have to look at the books to find out information and somehow it would have ?? otherwise, sorry I would prefer not to have to get down to open book costing and get to a level of trust that exists that doesn't actually take you through that process. I didn't paraphrase that, I think if you've got to get down to open book costing you've missed something somewhere, in relationship terms".</p>

Appendix E: Main Case Study – Research Proposal

Exploring Supply Chain Relationships and Information Exchange in the UK Grocery Sector

Main Case Study – Research Proposal

**By
Mark Barratt**

**Lecturer in Electronic Commerce and Supply Chain Management
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June 2000

1. Introduction to Research.

The exploratory stage of this research has revealed some interesting findings about the UK retail grocery sector in general and has also raised a number of specific issues that will be examined in this next part of the research.

The exploratory stage could be considered to be a review of the broad industry patterns from a macro level. The retail grocery sector can be characterised as an industry that is going through a considerable and lengthy period of change. The role of information is becoming clearer as organisations start to see benefits from sharing information with their trading partners with a view to better synchronising their supply chains.

Supply chain relationships can be broadly divided into three main categories: some are still adversarial; some are at best described as being opportunistic; and some are moving towards being very co-operative.

This stage of the research will focus on the entire supply chain for a single product, and will look to map the supply chain, including product, information flows and the various relationships between all parties in the supply chain, *e.g. ranging from the consumer and the retailer's stores, all the way back to raw material supplier, third party logistics providers, packaging suppliers, etc.* This stage is seen as an analysis of one supply chain at the micro level, with that supply chain forming one small part of the overall retail grocery supply chain.

2. Research Aims and Objectives

Through their developing relationship with Sainsbury, Nestlé are moving to a situation whereby both parties jointly manage the process of getting products to the end-consumer. Such a development relies heavily upon the sharing of information (for example, Electronic Point Of Sale (EPOS) data, inventory and key performance indicators (such as availability) as a means of conveying true consumer demand and enhancing retailer-manufacturer responsiveness capability across the supply chain. This sharing of true consumer demand across the supply chain helps to lessen the “forrester” effect (Forrester 1958, 1961) that is present in most if not all retail grocery supply chains (Jones and Rich 1996).

Nestlé has made a number of significant developments with their management of their supply chains. In particular two such developments are Collaborative Event Management (CEM) and the provision of information relating to Nestlé's production and scheduling plans to suppliers.

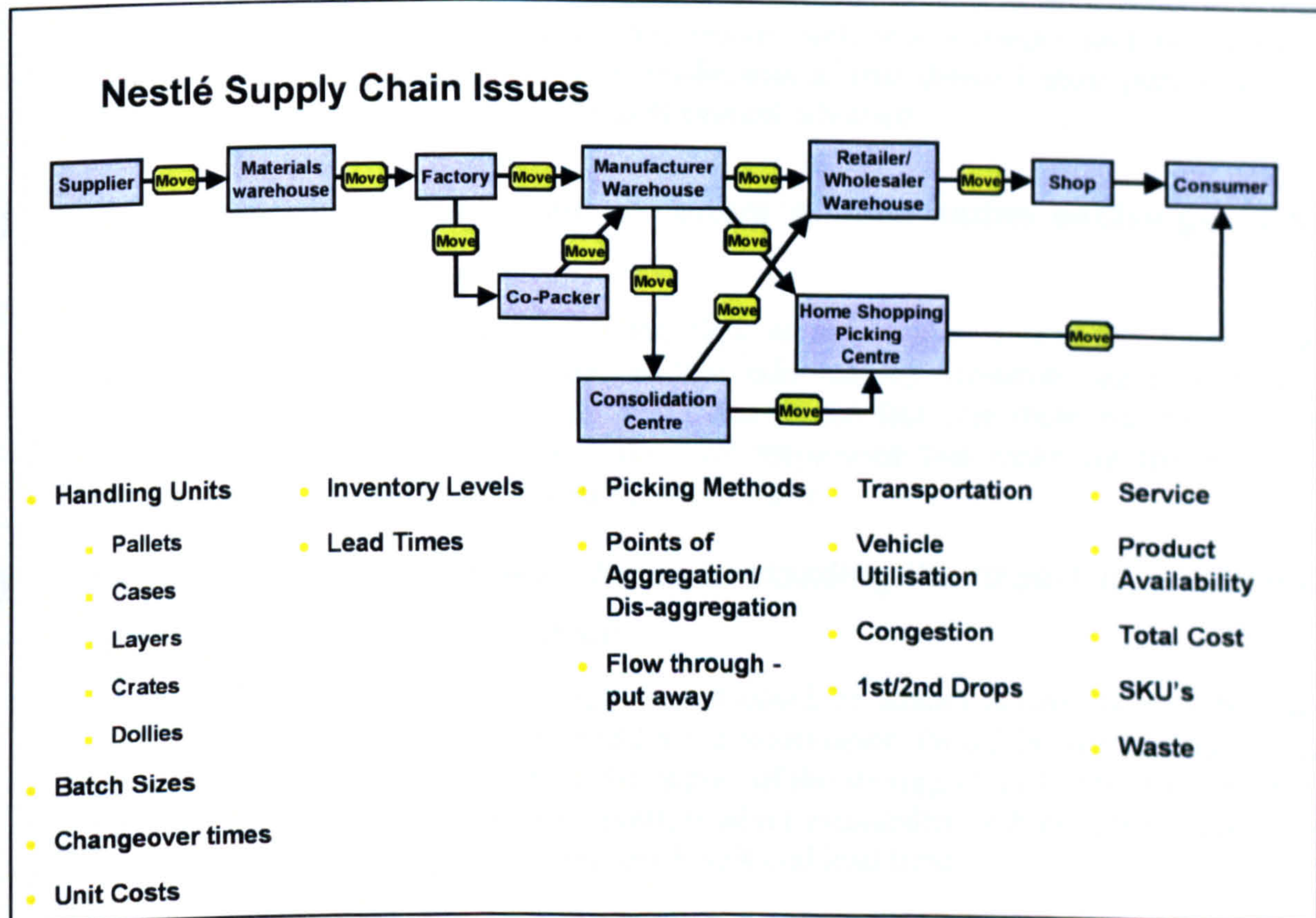
CEM is the process of managing specific events such as product promotions, new product introductions, etc. The concept has been developed through Nestlé's relationship with Sainsbury, and enabled by a collaborative planning system (CPS) “Collaborator”, developed jointly with software vendor EQOS.

Nestlé has also started to make available information relating to their production and scheduling plans to their suppliers in an attempt to better synchronise the supply and manufacturing process between the parties.

Both these projects represent significant developments towards the goal of integrated supply chain management. However, such developments lead to the next stage of supply chain integration, i.e. the need to synchronise these two initiatives, and thereby to drive visibility of true consumer demand further upstream along the supply chain.

In this context, the aim of the research is the development of a framework that will help Nestlé understand the impact of sharing and using such information (*as opposed to data*) upon a number of issues arising throughout the supply chain. These issues are set out in figure 1 below:

Figure 1: Supply Chain Issues



Research Objectives

The research objective for this stage of the research are as follows: -

a) To identify information flows in the supply chain

To explore what information is being shared, what could be shared and what are the likely benefits from sharing various types of information within organisations and across the supply chain. In this objective it is also proposed to identify how this shared information is used, i.e. in other words are the processes in place for maximising the use of such shared information.

b) To examine the nature of the relationships in the supply chain

If supply chains are to become more co-ordinated and responsive, thereby delivering maximum added value to the end consumer at least total cost, relationships between trading partners must become more open, broader, sharing common objectives. Whilst some relationships are becoming more co-operative, there are many that are still opportunistic and adversarial. It is therefore necessary to explore the current status of

these relationships and identify where there are gaps in the supply chain that need attention in order to facilitate a more co-ordinated total supply chain approach.

c) To examine the extent of information flow in the supply chain

With the rise of the concept of exchanging true demand information derived from electronic point of sale (EPOS) it is necessary to explore how far this information is penetrating up the supply chain. If visibility of demand is seen as an enabler of a more co-ordinated supply chain, i.e. more responsive, with less inventory and yet improved levels of stock availability, then such notification of true demand must penetrate much further back up the supply chain than is at present achieved.

d) To identify the enablers and inhibitors of information exchange in the supply chain

Numerous barriers exist that inhibit the flow of information across the supply chain (together with the subsequent usage of that information). However, such barriers are often unique to a particular supply chain due to the fact that there are multiple and complex combinations of organisations and employees that make up the enormous number supply chains in the UK retail grocery sector.

e) Development of a framework for understanding the impact of information sharing across the supply chain

There is a wide variety of information that could be shared across the supply chain. However, in order to better understand what information should be shared and in what format it is necessary to understand the impact of the sharing of such information upon a number of issues, such as: service levels, product availability, vehicle utilisation, points of aggregation/dis-aggregation, inventory levels and lead-times.

3. Methodology

A number of issues need to be clarified in terms of how the proposed research is to be undertaken. These relate to the choice of product; how the boundaries of the chosen product supply chain are to be established; the process mapping techniques; the information flow mapping techniques; and the various sources of information.

Choice of Product

It is proposed that the supply chain for a particular brand of breakfast cereal be chosen for the case study. Breakfast cereal has a number of interesting characteristics that support its choice, as follows:-

- Firstly the product is bulky in terms of its size, i.e. the amount of space that it takes up in terms of both the shelf space in a retail outlet, and the storage space that it requires once the manufacturing and packaging processes are complete.
- Secondly, whilst its volume is large, its weight is relatively low.
- Thirdly, its value is relatively low.
- Finally, the packets of cereal fit reasonably well onto 'dollies' used for moving the goods around.

Also it will be necessary to clarify the conditions under which parts of the supply chain are operating, i.e. whether promotional activity is being undertaken, whether new products are being introduced, or whether the supply chain is simply running on an on-going process.

Establishing the boundaries of the supply chain

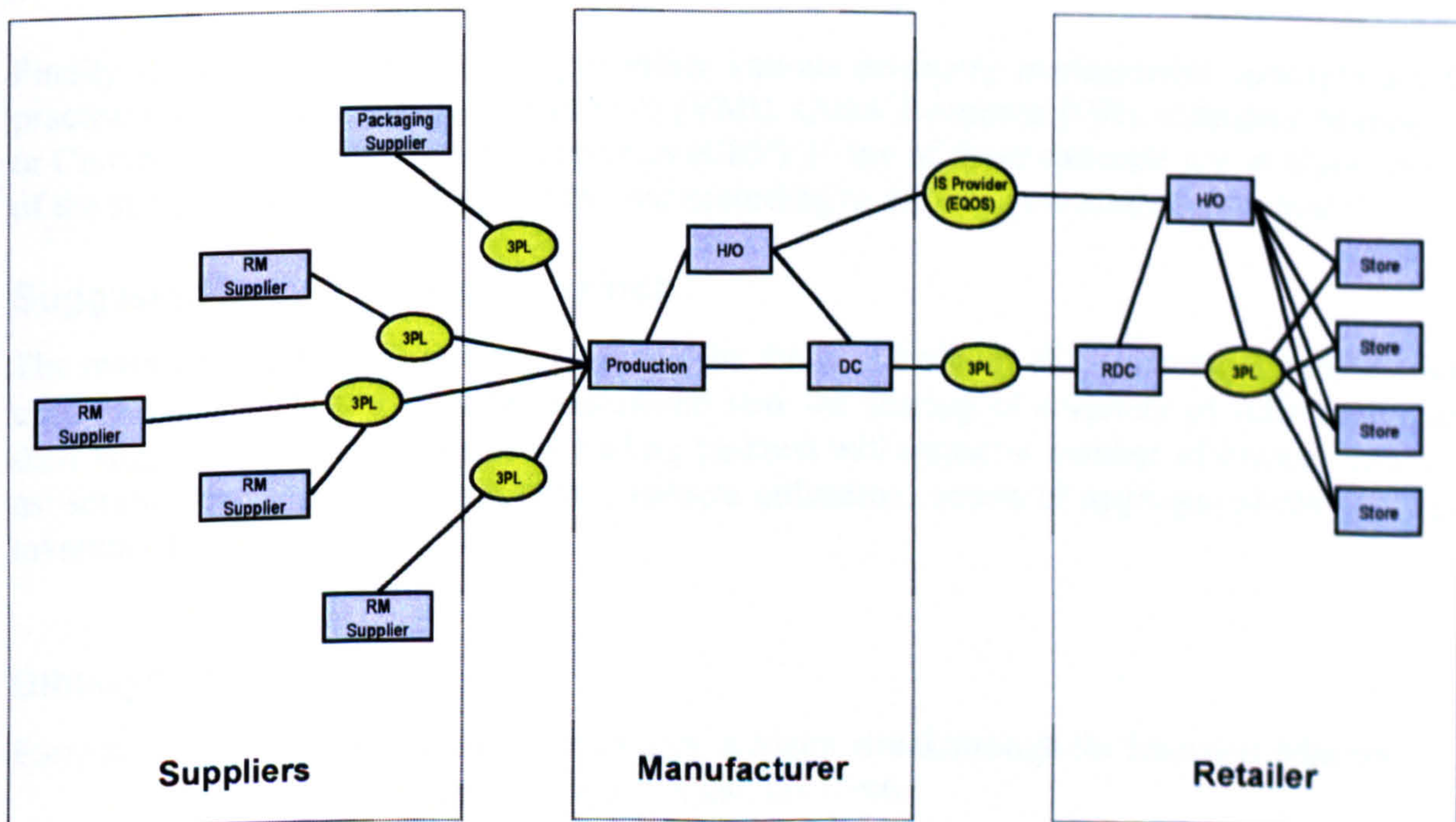
It is suggested that prior to pursuing these objectives it will be necessary to map the entire supply chain to establish the boundaries of the case study.

Theoretically, subject to the chosen product, the supply chain could be enormous and encompass many organisations. If one were to consider the full extent of a breakfast cereal supply chain, then the researcher could include in that supply chain the suppliers of seeds and the chemical companies supplying the various pesticides and substances that are sprayed on crops, prior to harvesting.

This issue was considered during the initial exploratory stages of this research where a number of the respondents suggested that they would only consider the supply chain in terms of how far they perceived their influence to extend. It was decided to adopt a pragmatic approach to this issue and to only include raw material suppliers (i.e. grain merchants in the case of breakfast cereal) in the supply chain.

With regard to packaging suppliers, again, it could be argued that the packaging suppliers' suppliers, (i.e. lumber companies) should be treated and included as such as part of the supply chain. Again it was decided to limit the supply chain to include the packaging suppliers only.

As an example of this would then be as follows:-



Process Mapping

It would be necessary to map the entire process for getting the product to market. Such process mapping would only be limited to the extent of the boundaries of the supply chain, as described

above. As a part of this process it is proposed to identify inventory levels, throughput and locations throughout the supply chain.

Information Flow Mapping

It would be necessary to map information flows in the supply chain for the chosen product. Such information flow mapping would only be limited to the extent of the boundaries of the supply chain, as described above. As a part of this process it is proposed to identify what information flows across the supply chain, how much, in what format and of what quality, i.e. accuracy, timeliness etc.

Sources of Information

When undertaking the case study, it is important to ensure multiple sources of information, i.e. interviewing a number of respondents from each organisation involved with getting the product to market.

The interview structure will be similar to the interview used in the exploratory study, but will be amended to take into account the issues arising from the exploratory study. Interviews will be carried out with multiple respondents in each organisation, at varying levels (both strategic and operational) and from varying functions covering the breadth of the supply chain relationship. Interviews could be supported by company information (*in the form of reports etc*). Data will be collected from respondents in the form of responses to a semi-structured interview, together with historical documentation and from observation of the organisations (*to satisfy the requirements of data triangulation*). Methodological ‘triangulation’ will also be adopted, by which both quantitative (*i.e. supply chain mapping*) and qualitative (*i.e. semi-structured interviews and observation*) methods will be used to collect the data.

Finally it will also be worth noting whether various inventory management concepts are being practised, i.e. Vendor Managed Inventory (VMI), Quick Response (QR), Category Management, or Continuous Replenishment Programmes (CRP). If any of these concepts are in place then parts of the supply chain may be being managed according to differing constraints processes.

Suggested Deliverables of Research

The main deliverable of the research would be the development of a framework which could be used in assisting Nestlé to better understand how the sharing of a variety of information across their supply chain with a variety of trading partners will impact a number of critical issues, such as: service levels, product availability, vehicle utilisation, points of aggregation/dis-aggregation, inventory levels and lead-times.

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This gave them common ground, but the factory people talking to the factory people out of naivety in the purest sense of the word, innocence, or whatever, lack of knowledge. They asked questions in the glass factory that we had not been capable of asking. We would be so high flown about the approach that we did not see the basics. And it solved a hell of a lot of issues. The biggest issue on quality problems with **Redfearn** and Tutbury was something called 'fused glass' where pieces of glass stick either on the inside or outside. These discussions between people at this level addressed this problem, they reached a level of understanding that sort of resulted in a number of changes. This changes the whole nature of the relationship, and I think over the last three years there have been really significant improvements in efficiency. They now have breakage targets, they have critical defects in one hundred thousand targets, which have been halved from the original, and will probably be halved again. The breakage, which if you are filling at 300 per minute, and you have a break in a filler then that is 20 minutes downtime. So that is a lot of cases lost in production.

Removing that as a major issue, has been a significant step forward. You create the environment in which everybody starts to believe everybody else, and you start to have confidence. And that is the point where it comes from, if they have confidence in the supplier, if they know it is not a supplier that has been foisted on them by some idiot in an ivory tower in **Croydon**, that's a contradiction in terms, isn't it! The belief starts, and the belief starts and they start realising that they have something worth having, and worth developing, and it breaks down all the barriers. There are no barriers now!

We are in the process of slightly changing the way glass is supplied, and **Tutbury** are fairly resistant to it, as it means having to accept a supplier that they did not have before. But that is for reasons that you do not need to be bored by.

The way that the relationship starts, it does not start here, it starts with the idea of how you approach the issue. But once the factory and the supplier form the relationship, and develop the relationship and build the confidence, then we build on that as a result.

Our Supplier Quality Assurance Programme took over after that and took it forward. That was an excellent vehicle for creating the meetings, the agenda and everything else. And the progress became self-perpetuating, it gained a momentum of its own. To the extent that once they had taken the supplier and they had developed VMI and everything else, they started to think where do we go from now. Because **Tutbury** has self-billing, they used to have hundreds of invoices per month, they now agree how much they receive during the month and ask, I mean we have plans to take this on to electronic methods, but they now just tell **Rexam Glass** as they are now to invoice them for that amount so they only get one invoice a month. All these things sound like minuscule steps but in factory terms to get one invoice per month for glass where you had hundreds before is a huge step forward. It is just mentally that the whole mental approach to supply and the supplier. And that is really what, you start it, you hope you get it right. When you do get it right, and the confidence is built, that's gives you the platform to go on to develop it. But it is really forged at that sort of level, between the user and the supplier factory.

Q17: To what extent are present relationships in this supply chain co-operative?

FH: [n/a]

Appendix F: Interview Schedule (Case Study)

Interview Structure

Date: 2nd August 2000

Interviewee: Frank Hall	Title: Purchasing Manager - Packaging
Organisation:	Nestlé UK Ltd.

FH: I am one of three purchasing managers, I'm responsible for packaging for all Nestlé products outside of CP and Friskies and Perrier, those that we tend to think of as Nestlé rather than companies owned by Nestlé. I report to the supply chain director, Peter Mayes, a main board director, and that's it really.

1. Introduction - *explaining the purpose of the interview*

(a) Brief background to the research project.

(b) Supply Chain Mapping:

Identify parties in the supply chain, supply chain processes, physical product locations, physical product flows, physical product lead-times, information flows, Identify timing of information flows.

(c) Explain the structure of the interview:-

- general questions on SCM
- specific questions regarding supply chain relationships
- specific questions regarding information in the supply chain.

NB: *For the following sections the questions re-worded depending upon whether interviewee is a retailer, manufacturer, supplier, 3rd Party Logistics Provider or Raw Material Provider.*

2. Supply Chain Management (in General)

Q1: **There is some apparent confusion as to what "Supply Chain Management" implies or how it is implemented. Why do you think that this is?**

FH: I think there are some basic levels of misunderstanding or at least supply chain management gets dressed up in a number of different guises and if you start to talk about ECR which is just an advanced form of supply chain management, in essence, then you do confuse the punters, but I think yes, I don't think everyone you talk to fully understands the concept. I think the confusion arises with all change, I don't think it's specific to supply chain management, I don't think, some people will get their heads round it, some people warm to change, other people resist change and deliberately misunderstand. I think it's centred on change and grasping change, the

necessity for it, I've always done it this way, why does that person want to do it this way.

Q2: How would you define "Supply Chain Management"?

FH: This is obviously a trick question to see if I understand it! I think it's about managing the supply chain in the most cost effective way. I mean when we're talking about developments with suppliers or we spent a couple of days at the beginning of this week talking about fitness for purpose, we were talking at optimum costs, lowest total cost, to do that you have to take a number of things out which you would have automatically put in before. When you were making this jigsaw puzzle up before it would have been 5,000 pieces, what we're trying to do is make the same picture with 1,000-piece jigsaw, if I can use that analogy.

Q3: What do you think that "Supply Chain Management" means to organisations?

FH: I think it means corralling all the things that are sort of spine or the core or something into one area so that they can actually either do something about them or measure them. I mean you've already talked to Tom McGuffog you know how much work has been done on customer relations, if you went through the history you know we were bad and we're now very good. A lot of that's to do with responsiveness but a lot of it's to do with presentation as well, how you present yourself to your customers, what you do, how proactive you are. If you take that down the other end, the good suppliers - and there aren't a huge amount, and again I'm talking in packaging terms - are proactive and tell you what they can do and what issues there are and you deal with those issues then.

Q3a: What does it mean to your organisation?

FH: [n/a]

Q4: What do you think that "Supply Chain Management" has to offer to organisations in general?

FH: [n/a]

Q4a: What do you see that "Supply Chain Management" has to offer to your organisation?

FH: [n/a]

Q4b: What do you think it is that has stimulated that awareness of "Supply Chain Management", or the opportunities that may arise from it?

FH: [n/a]

Q4c: Could you summarise the key benefits that "supply chain management" potentially has to offer to you, more in terms of specifics other than just cost reduction or competitive advantage? For example, is it in reduced lead times?

FH: [n/a]

Q5: How can the potential benefits of an integrated supply chain management approach be achieved by organisations?

FH: Can I sell you this information?! This is the meaning of life stuff! A true understanding of their cost I think again, if you look at some of the charts that Tom uses and Tom does use some charts, but this sort of staircase thing where you talk about reducing levels, taking out those levels of cost, attacking the cost drivers and all those sorts of things, this is the essence of it. I think we've done so many things in the past, it's going back to this jigsaw thing, the jigsaw before was made up like that, it's the same picture, different elements. If we can find, and I don't think we have yet, find a true way of pushing customers requirements straight back over the top, by whatever ether process you go through, I don't think we're anywhere near that, I think we glamorise it by saying we are, but we do get a lot more information and a lot of the other processes they're going through is making us understand our own products and own product deficiencies. So I think its part of a whole process of being a better supplier.

Q5a: Can such potential benefits lead to long-term sustainable competitive advantage? - How?

FH: Well I think in our terms it's by being a better supplier as a result, becoming more flexible, becoming more responsive, being able to be proactive, because you can't be proactive from a dead position. Being more streamlined, as a result you become more can do and less well I could this if I could do the other thing, it' much more, I think it's actually a greater understanding of all the processes you go through to actually achieve that goal, and if you have a greater understanding internally, which I think you need, and I think this exposes it and it takes out costs and it creates a different environment. The way that we're looking at it at the moment is if we can drive cost out of the system, then it stays out whomever you're dealing with, but the people at the far end of the chain have got to be totally integrated into the system otherwise it's not 100% effective.

Q6: What do you think that other parties in this supply chain understand what is meant by the term "Supply Chain Management"? - Why is this?

FH: Well that assumes that they understand it at all, or want to or even should. If you can sort corral your supply chain up into a very simplistic version that you do that and then I do that, I think that they believe that it's up to their suppliers, and I'm with them in this, it's up to their suppliers to actually do all those things that allows them to do the things which they clearly define they want to do. I don't think they feel particularly encumbered by involvement. That's just my personal view from a distance and I don't know...

Q7: What do you think is the way forward for Supply Chain Management? - Why is this?

Q8: What are the fundamental issues necessary for efficient and effective management of the supply chain?

FH: A clear understanding of what the limitations are within your processes. I think unless you have a clear understanding of what all the issues are, that are likely to create barriers to what you want to do, then I think you can't deal with this in bits, well you can actually that's not true, we can improve the supply end of it and you can improve the customer end of it individually, but you have to do it up to there and up to

there and then put the two things together I think. But talking about dinosaurs just now, the reason for that phone call, our suppliers are actually very responsive to what we want to do in terms of VMI and things like that which actually improve drive cost out of the supply chain, reduce working capital and things like that, you can't do that if our people internally are not switched on to the process totally, and a lot of people in material planning, for all sorts of reasons, are unable to understand anything other than 'well I've reduced my stock by keeping all the stock out of my store' but they can't actually grasp that they've just pushed the cost down the supply chain and therefore the cost still exists. What we're about is actually taking that cost out and it being mutually beneficial, because there's no taste in nothing, and if you're doing all this just for yourself and you're not saying well we should all share in this benefit, then it's not going to continue to progress, there's got to be some benefit for everybody in the way that this works.

In discussions that we have now with suppliers, they don't quite agree they sort of look as though you've just spoken in Serbo-Croat, we want to be a better customer, by that we mean that we want to be easier to deal with, we want our business to be easier to deal with, not in terms of what you have to do to meet short term changes and all that, but overall that we can enable them to take the cost out of their administration process by the way we act.

Q9: What are the barriers to supply chain management?

FH: Here, well it's about being reactionary. There are lots of reactionary forces that exist again for all sorts of historical reasons, material, management, in factories, not being pitched at a high enough level in the hierarchy, not being perceived as a big enough and important enough issue, explaining the overall needs and the requirements to the supply chain to various constituent parts of it. You put a supply chain in place and you expect everybody to jump on board just because the train happens to pass your station, unless they know that there's a good reason for doing it, and the company has gone to quite some lengths to actually explain what supply chain is all about, there are pockets where you would have to take people and say look, this is the way that we're going to do that, for these reasons, a bit like teaching children at school, you don't explain the reasons why, stop doing that, he hasn't given me a sufficient reason so I'm going to do it again, because obviously it upsets him and that's good isn't it.

3. Supply Chain Relationships

Q10: What problems does your organisation meet in their present relationships in this supply chain?

FH: If we are sticking to the area of coffee, then the answer is no! The answer by and large is no. The supply chain for coffee is relatively well developed as far as the packaging is concerned. In all sorts of elements whether it is the quality of the materials used, efficiencies, they are all on an upward trend, or a downward trend so far as waste is concerned.

The relationships with, we only have two glass suppliers now, we used to have five, and have had six at one time, and the factory relationship with the supplier that is really where most of the issues emanate from is extraordinarily good. And if you talk to **Rexam Glass** who are the principal glass supplier and will continue to be the principal supplier, of 200g glass. Tutbury would be very much against you changing their supplier. Now if I'm a born again purchasing manager, then Tutbury is a born

again factor so far as the their materials are concerned. Because the rows that we used to have over the quality of supply, were legendary, involving me withdrawing and driving off down the motorway, or at least the car park. But now, where as we used to receive 13 pages on the monthly report on quality issues relating to supply, I could show you the last one and it is less than half a side of A4. And that involves materials that we are not talking about here. So the answer is no!

Q10a: Why do you think that these problems arise?

FH: [n/a]

Q11: What types of relationships are you looking for with your partners in this supply chain?

FH: [n/a]

Q12: What is the basis of these relationships?

FH: [n/a]

Q13: With whom do you have relationships in this supply chain?

FH: [n/a]

Q14: Are organisations creating relationships with only direct supply chain partners, or should they be looking to create relationships with other possibly indirect parties further along (*both upstream or downstream*) the supply chain?

FH: [n/a]

Q15: What type of supply chain relationships do organisations create and why? - if organisations were to create indirect relationships, should these be in a different format to their direct relationships?

FH: [n/a]

Q16: What is required from the parties involved to make the relationship work and the potential benefits to be achieved?

mutual objectives, openness, long term commitment, sharing of information, maintaining service levels, reduction of costs, honesty, trust and senior management sponsorship.

FH: The biggest issue that we have had, traditionally, this is before I became a born again purchasing manager, but may have set me along the right track, we had, I think at the time it started, which was about 1992, we had five suppliers [*glass*] of 100g Nescafé, and they were all happy to be supplying it. But every year the contract was born out of confrontation, thrashing around, just adding up the numbers and coming up with the lowest total. Bearing in mind we buy 350 million pieces of glass a year, so it is huge contract, people, if people got 100 million out of it was a result. So there was a lot of competition, and if there was a problem, you simply switched out of that supplier into another supplier, and basically did not solve the problem, we were dealing with the symptoms and not the overall problem.

We had, we decided that the only way to tackle this, in a flash of enlightenment, was to hold a two-day glass seminar. Get everybody that was involved with glass, three hour presentations they were, by the three principal suppliers, which were **United Glass**, at that stage it was **PLM**, it may even have been **Redfearn**, and not **PLM Redfearn**, and **Rockware**, and they were given what the content of the presentation should be, what we were addressing, what the issues were, where we wanted to go! And we did this, I think over a period of one and a half days, we got each supplier to present. Then we analysed the presentation, then the next one presented, then we analysed that and then the third one, and we analysed that and then we analysed the whole lot together.

And out of that was born a movement. We were talking about coffee factories at the time, **Rockware** were first and were very northern, no, they were better than that, very workmanlike, and good value, but good value at a level. **Redfearn**, as they were then, came along and blew the place away, collection of “*we can do it*”, “*yes can do*”, really approached the issue very sharply, very much “*in your face*”, “*we are going to deal with this, we are going to be the best*” and all of that. And fortunately, and you do get lucky sometimes, **United Glass** came along at the end, and it was very much like after the end of the lord mayor’s show, they were serious not very good. In fact they were boring, they had just been thrown out of the Tutbury factory the day before for sending glass on dodgy pallets, and therefore unsafe loads. They did not address that in any way whatsoever. Stuck strictly to the technical and did not change the script in any way, and it was the longest three hours that I have spent anywhere.

So that was good because **United Glass** had not been performing good on the quality front, and they were all in and out, glass quality was cyclical. Who was good now, would be bad in three years time. And both the factories wanted **PLM Redfearn**. And **Redfearn** did not want to do that, because they had limited capacity, and they wanted to supply use with a total quantity which just so happened, Tutbury used or they were not too far away, so they were quite clever in the way that they presented themselves. They only wanted one factory to deal with because they acknowledged it was about building relationships. Hayes got **Rockware**, were slightly pissed off about it, and thought they should have had **PLM**. But anyway, to cut a very long story short, in fact it became a little bit of a competition and Hayes benefited in the end because **Rockware**, not by much but certainly outperformed **Redfearn** in a number of key areas. This gave us focus, and allowed all sorts of things to happen that our factories would not do before, first thing that **Redfearn** said was “well can we video your lines, do a high speed video of your lines?”. Yes they said, now we have been trying to get them to do that for ages, but they wouldn’t. And they showed they video of the high-speed lines and Tutbury said “whose factory is that?”. They said “it’s yours!”. The factory said it could not possibly be. Look at all of that going on, and all that. It was the typical problem of being so deep in the everyday that you do not see the bigger picture, or you do not see what is going on around you.

And that is true, it actually happened. This brought its own enlightenment, there were lots of exchanges of personnel, shop-floor level. Shop-floor level was in fact probably the most important. The lesson we learned is that people at the shop floor are quite to talk to anyone that wears a suit, but they do not really believe that the guy wearing the suit is listening. If they talked to a man on an equivalent level, in a different job, then they are not embarrassed to say anything, I’m not saying that they are embarrassed normally, but there is a much freer air of communication.

This gave them common ground, but the factory people talking to the factory people out of naivety in the purest sense of the word, innocence, or whatever, lack of knowledge. They asked questions in the glass factory that we had not been capable of asking. We would be so high flown about the approach that we did not see the basics. And it solved a hell of a lot of issues. The biggest issue on quality problems with **Redfearn** and Tutbury was something called 'fused glass' where pieces of glass stick either on the inside or outside. These discussions between people at this level addressed this problem, they reached a level of understanding that sort of resulted in a number of changes. This changes the whole nature of the relationship, and I think over the last three years there have been really significant improvements in efficiency. They now have breakage targets, they have critical defects in one hundred thousand targets, which have been halved from the original, and will probably be halved again. The breakage, which if you are filling at 300 per minute, and you have a break in a filler then that is 20 minutes downtime. So that is a lot of cases lost in production.

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The way that the relationship starts, it does not start here, it starts with the idea of how you approach the issue. But once the factory and the supplier form the relationship, and develop the relationship and build the confidence, then we build on that as a result.

Our Supplier Quality Assurance Programme took over after that and took it forward. That was an excellent vehicle for creating the meetings, the agenda and everything else. And the progress became self-perpetuating, it gained a momentum of its own. To the extent that once they had taken the supplier and they had developed VMI and everything else, they started to think where do we go from now. Because **Tutbury** has self-billing, they used to have hundreds of invoices per month, they now agree how much they receive during the month and ask, I mean we have plans to take this on to electronic methods, but they now just tell **Rexam Glass** as they are now to invoice them for that amount so they only get one invoice a month. All these things sound like minuscule steps but in factory terms to get one invoice per month for glass where you had hundreds before is a huge step forward. It is just mentally that the whole mental approach to supply and the supplier. And that is really what, you start it, you hope you get it right. When you do get it right, and the confidence is built, that's gives you the platform to go on to develop it. But it is really forged at that sort of level, between the user and the supplier factory.

Q17: To what extent are present relationships in this supply chain co-operative?

FH: [n/a]

Q17a: What is the cause of this?

FH: [n/a]

Q18: If co-operation is seen as the way forward for supply chain relationships, in what form should this co-operation take?

FH: [n/a]

Q19: What additional benefits have accrued from the joint management of the supply chain?

FH: The fact that, just the simple fact that it breaks down barriers and you don't have to fight to get the point made. It is a collective ownership of all the issues involved, plus the fact that when they begin to see it from the suppliers point of view, and there much more complex supply chains than this, from the suppliers point of view, they see, for example, they started to make glass a hell of a lot better on their own behalf, so therefore they threw away less, they got longer runs, and longer runs in glass manufacturing is the key to more consistent quality, because you do not have to reset everything.

From our point of view, internally in the factory, because we were not mixing glass all the time, we had failed to recognise that one basic fact, that if you, the point when we were switching from one supplier of glass to another, their glass moulds all wear at different rates, because we use one more than another, or we get them out of balance, therefore the dimensions change, therefore you are mixing dimensions on the line, so we have got away from that, as you have only supplier for, and we will continue to retain one glass supplier per line, or per size, the tools wear at the tools rate, and you are not mixing glass at any stage, and that has been a major step forward.

But it is really about breaking down the barriers, making communications easy, you believe the guy on the end of the phone, you believe that that guy is going to do what you want him to do. From the suppliers point of view, they believe that the customer is not going to be the usual pain in the butt customer, that where all the problems are yours. They are going to listen to all your problems, they are going to listen to what they have to do and do it, and that changes the nature of the thing significantly.

Q20: Are there parts of this supply chain that are more synchronised than others?

FH: Because it tends to be, if you were dealing with a more complicated product than this whose demand was more complex and the whole thing was more fragmented, then it would be a totally different issue and a totally different discussion, but this is a relatively, it is not entirely predictable because there are events which change the numbers, you are talking about a thing where the overall volume is probably right, the amount you produce it in as a supplier is probably predictable. The fact that suppliers store glass and have always stored glass, and therefore can respond. I mean occasionally it gets a bit tricky, but the single source supply, the supplier owns the territory and as a result..... Now I think that it is a relatively simple supply chain, and as a result, I think the answer is no!

MAB: Do you think that because you are in a situation where there is a consolidation of all the packaging requirements in to effectively you,

whereas the downstream parts of the supply chain are at the other end of the scale, where they are actually going out to lots of different customers, so that it is easier because you have got a consolidated view here, whereas they are having to deal with individual customers?

FH: Well on the other hand, there is nothing fragmented about the nature of 200g stock is there, providing they have got the stock, the rest is down to distribution. It is only the way that we handle these things, things like the Forrester effect, which I'm sure Tom McGuffog will talk to you about that, that complicate things, the layers of planning that still exist in organisations like this are the thing that complicates it. And that is all.

Q20a: Which parts?

FH: [n/a]

Q20b: What are the barriers to such synchronisation?

FH: [n/a]

Q21: What are the key elements of a synchronised supply chain?

FH: [n/a]

Q22: What inventory management concepts are being practised by your organisation?

FH: [n/a]

4. The Role of Information Management in the Supply Chain

Q23: What is the role of information technology in the supply chain?

FH: The enabler, the fact that this is all dealt with on an electronic basis. The way it works is that the supplier extracts the MRP. The MRP is extracted onto an Internet site, which is accessed by the supplier's own software package, and they take the information in. There are agreed stocking parameters, and they were agreed so long ago that I cannot remember. They manufacture to that and they manufacture to our known demand, again it is not a particularly, it is a relatively predictable, it is not entirely but relatively predictable volume situation that you are in. There is quite a lot of history, the suppliers know the business, probably second guess the business to some extent. As a result, it is all entirely manageable. There is nothing over complicated about it. I believe now, if you had asked me this ten years ago, then I would have said "Bloody hell! Why would you want to do that for?" But there a number of things that have happened along the way like sole supply by material, right riveting stuff, but getting acceptance that that can work in a factory, and when they buying to that and they see that it removes so many complications that they never want you to change it. And now I have forgotten what the question was!

MAB: The role of information technology!

FH: The IT, the systems, the SAP, all of that, the eventual move to where we get to self billing. It makes it so slick, and so uncomplicated, that it not only enables the material flow, and we are talking about the software here, provided that the information is there, it not only allows the information flow to happen, but it simplifies the whole process of administration.

Q24: Do you share information with you supply chain partners?

FH: Yes.

Q24a: If so, with whom? - If not, why not?

FH: [n/a]

Q25: If so, what information is exchanged/shared?

FH: That MRP information. They extract it and use it.

Q25a: Between whom? - When and how frequently?

FH: [n/a]

Q25b: In what format?

FH: [n/a]

Q25c: Through which medium (e.g. paper, verbal, electronic (either fax, e-mail or internet/intranet/extranet))

FH: They pull it of the system via the Internet. It is the MRP out of SAP, onto the Internet site.

Q25d: Is the information time sensitive? Why?

FH: It is less time sensitive in glass, because they are dealing with it some way, it is a perpetual process. The information on labels, where they are making changes or re-launching it, then yes it is very much time sensitive.

Q26: How is the information used?

FH: Quite simple! They would take the long-term view, the medium term view and the short-term view. Long terms view, they would obviously gear up their production capacity, medium term view they would use for manufacturing the run lengths that they do on glass, and that is the same on caps, it is a different situation with trays which is a much more immediate things, but in that sort of thing, a call-off for trays almost equals a production order, so you have got a very much shorter supply chain.

If you really want an exercise in looking at the ridiculous things that happen, it took a supplier to lock a project team into a hotel room, in a rather grotty hotel, which emphasises it, for an hour and a half, and would not let them out until they acknowledged, and it took them an hour and a half to come to this conclusion, that for a material with a 7 day supply chain, you do not need to hold a month and a half's

stock! Now that is the extent of the difficulty of getting through some of the issues of supply chain management.

Q26a: If not –why not? (*wrong format, unreliable, out of date*)

FH: [n/a]

Q26b: What are the barriers to using shared information in the supply chain?

FH: [n/a]

Q26c: What would need to change to make the information usable?

FH: [n/a]

Q26d: For what purpose is the information used?

FH: [n/a]

Q26e: What mechanisms are in place for using the information?

FH: [n/a]

Q27: What information should be shared?

FH: In this particular environment that is the level of information that they want, need and to plan their own, you can.. you can embellish it make it glossier, whatever, by involving them in the product direction, what is happening in the market place and all those things, which I believe should be done. It is not essential, but it cements the relationship it adds another layer, it puts a gloss on the relationship, makes the supplier more involved in what actions you are taking in the market to generate sales that ultimately will benefit the supplier.

MAB: So is that currently happening?

FH: It happens partially! Not as much as it could, and I think that there are all sorts of things that we could do, just to add another dimension to it, to make it closer, make it ... some of our successes in the product area could be publicised in the suppliers factory, some acknowledgement of their involvement and the achievements. It is done through the SQA process, but at only a relatively low level. It would be nice if we published the year's efficiency, but they do not like doing that because they don't want to give the information away. Because they are frightened that someone else is going to know, either, how efficient we are, or how inefficient we are. If the lines on Kenco ran at 85%, that's a fantasy, but, ... Nestlé would not want them to know that ours ran at something less than that. But really it could take the relationship to a new level, but you need to put more effort in to that. When time is tight, it is the sort of thing that gets forgotten, if you do not do it all the time, and you do not manage it all the time, and with things like product web-sites and things like that, we are not really harnessing that or managing that to the same degree.

MAB: So you think that the Internet would be the best way of doing it?

FH: Yes, or by setting up some sort of link that automatically gives them that information on their web site, or whatever. I just think that it is good psychology.

Q27a: Why? – And between whom?

FH: [n/a]

Q27b: When and how often?

FH: [n/a]

Q27c: In what format?

FH: [n/a]

Q27d: Through which medium (e.g. paper, verbal, electronic (either fax, e-mail or internet/intranet/extranet))

FH: [n/a]

Q27e: For what purpose should the information be shared/exchanged?

FH: [n/a]

Q27f: How would it be used? - For what purpose?

FH: [n/a]

Q27f: Why is it not shared? – What are the barriers?

FH: Just the time and effort, well time, effort and imagination. If you said it to a factory, if you said it to Tutbury or Hayes factory they would probably see the value in it and would like it done for them in other areas or even from the supplier's performance. If you say it to other people outside, they would say "glad you have got the time to do it!". And it is another step, it would be very professional, it would beI cannot think of the word, but it is another element of the relationship that confirms what is good about it.

MAB: You were saying about sharing what is happening in the market, is that derived from the consolidation of all the EPOS info you getting?

FH: No, I was thinking in simpler terms than that, you know, events, promotions and things like that, if you are sitting in a factory making glass jars, you may only concentrate on glass jars, your glass jars, you may only be interested in Rexam glass, but if you can see, for example, if you are on a line that makes coffee jars all the time, and it is for Nestlé and you see the launch of a new product out there, or somebody making a big event out of whatever the Kenco product was, which took so much of the market for a brief period of time, you need to know, and it would be nice to see that Nestlé were actually doing something about it. And that your glass, it is about the perpetuation of the idea of your glass, your product, you are extending the ownership of the product.

MAB: Do think that there is an element of there is only so much information that they need to know because things like knowing EPOS data about your sales to Sainsbury is really irrelevant?

FH: It is irrelevant in this environment. It is probably more relevant to something that is not batch produced. I mean you are talking about batch production, and it wouldn't, I think that they would struggle to find a way as to how to use it.

If it was something about on a promotion where, or seasonal for example, where cartons, you would so many, and you would need to get a feel for when you will have to produce the balance and what size that balance was going to be, but in this environment no!

Q27g: Of what use would it be? - What would enable it to flow?

FH: [n/a]

Q28: What would summarise as the present barriers with regard to sharing/exchanging of information?

FH: [n/a]

Q28a: How can these barriers be overcome?

FH: [n/a]

Q29: In what ways does/would information sharing between supply chain partners enhance their business activities?

FH: [n/a]

Q30: What are the potential benefits of sharing information with supply chain partners?

FH: [n/a]

Q31: Are there any disadvantages from sharing information with supply chain partners?

FH: [n/a]

Q31: What are the actual benefits accruing from information being shared across the supply chain?

FH: *The things that I would have described in a former life as marketing bullshit! It are things that are difficult to put a value on, and I am not entirely sure, and I would not stand up in court and that this definitely did this and definitely did that. I just know that there are things that you can do to spread ownership of the situation if you like, and too much is too much, I mean there can be too much. Acknowledging that that person, or that individual, that company, collectively is playing a part in the success or otherwise of that product is good use of information. I think it is good psychology.*

I think that the softer things if you like acknowledges that there is more value to a relationship than you just shooting that out, paying for using it, and off you go and start again. The whole nature of the relationship between Tutbury factory and Rexam Glass is, well, the nature and the quality of it is established by all the work that they put it in to it there. I you thought of it as a candy coating round the outside of it, that is what is what makes it more palatable if you like. You are working towards an end,

you see the results, and you get the feel of the thing, the feel of it, not just the physical manifestations of it. You know that the people who are using your material really value what you do, and this exchange of information at shop floor level was, it is so blindingly obvious, that when you do get around to acknowledging it you realise how stupid it is you did not see it before!

MAB: Do you think it was because people did simply not see that there was a need before. Or that they did not have the time to get people actually talking to each other?

FH: I think it was much more really about a culture, people in factories stayed in factories, they did not go out. People in factories knew what people in factories knew. A stupid statement but it is true.

Q32: How far does true consumer demand penetrate along this supply chain?

FH: [n/a]

Q33: What has been the impact of sharing information across the supply chain upon the following:-

- Demand Volatility
- SC Responsiveness
- Batch Sizes,
- Unit Costs,
- Inventory Levels,
- Lead Times,
- Points of Aggregation/ Dis-aggregation,
- Service,
- Product Availability,
- Total Cost, and
- No of SKU's

FH: [n/a]

(a) If no impact – why not?

FH: [n/a]

(b) Would you expect there to be some impact – what and why?

Q34: What are the key enablers of information sharing/exchange in the supply chain?

FH: [n/a]

Q35: If true consumer demand were allowed to drive the supply chain would this be easier or more complex than the retailer and manufacturer jointly managing this process?

FH: [n/a]

Q36: In the context of sharing of information and co-management of the supply chain both upstream and down stream. Are the data being shared

and the techniques used to manage the supply chain essentially the same?

FH: [n/a]

Q37: Is integrated planning the answer to medium term optimisation while short term planning should be essentially demand driven, whether for production or for materials supplies?

FH: [n/a]

Thank you for your time!

Would you like a copy of the results of the case study? Yes

Appendix G: Nestlé (UK) Supply Chain Key Performance Indicators

R605 Report Name	R605 Definition(s)	Existing Name & Source
1. <i>Customer Service</i>	<p>a) Case fill (%) = $\frac{\text{Cases Deld. On Time} - \text{Cases Ordered}}{\text{Cases Ordered}}$</p> <p>b) Line fill(%) = $\frac{\text{Lines Delivered Complete on Time}}{\text{Lines Ordered}}$</p>	<p>Customer Service Currently reported from legacy systems but soon to be replaced by SAP BW. Timeliness dimension to case fill stats not currently available but planned for NUK in Phase 3 of BW project.</p> <p>Not currently reported, but planned from BW</p>
2. <i>Demand Plan Accuracy</i>	<p>Accuracy(%) = $1 - \frac{\text{Demand Plan} - \text{Actual Demand}}{\text{Demand Plan}}$</p>	<p>Despatch Planning Accuracy SCIS, as defined, except that NUK does not include unfulfilled demand arising from service failures, whereas the corporate definition does. Planned for BW in line with APO implementation</p>
3. <i>Master Schedule Attainment</i>	<p>Master Schedule Attainment (%) = $1 - \frac{\text{Production Plan} - \text{Actual Prod'n}}{\text{Production Plan}}$</p>	<p>Production Planning Accuracy SCIS as defined.</p>
4. <i>Supplier Service</i>	<p>Supplier service (%) = $\frac{\text{Lines Del'd on Time, and Accepted}}{\text{Lines Called Off}}$</p>	<p>Supplier Service NUK Purchasing KPI measure</p>
5. <i>Inter-Market Supply</i>	<p>Inter Market Service (%) = $\frac{\text{No Prod's between Min/Max Cover}}{\text{Total Number of Products}}$</p>	<p>Intermarket Service Current source is IM/SCIS Planned for BW in 2000</p>
6. <i>Stock Cover (Finished Goods)</i>	<p>Stock Cover (weeks)= Existing stock cover decremented by successive weeks of demand plan until stock is exhausted</p>	<p>Finished Goods Stock SCIS, using the standard definition and method of calculation. Planned for BW in 2000</p>

R605 Report Name	R605 Definition(s)	Existing Name & Source
7. <i>Stock Cover (Raw, Packaging and Semi-Finished)</i>	Stock Cover (weeks) = Existing stock cover decremented by successive weeks of requirements plan until stock is exhausted	<i>Packaging Materials Stocks</i> <i>Ingredients Stocks</i> Production/Supply planning systems using the corporate standard method of defining cover. To be replaced by BW in 2001
8. <i>Cost of Distribution</i>	Cost of Distribution (%) = <u>Distribution Costs</u> Net Proceeds of Sales	<i>Distribution Costs</i> Costs currently sourced from local systems in NGD and carriers. New measure to be reported from BW in 2001, in line with corporate standard definition of costs
9. <i>Cost of manufacture</i>	Cost of manufacture (%) = <u>Actual Cost of Manufacture</u> Standard Cost of Manufacture	<i>Cost of Manufacture</i> Standard costs ex-SAP,
10. <i>Cost of Consumed Raw and Packaging Materials</i>	Cost of Consumed Raw and Packaging Materials (%) = <u>Actual costs of Materials</u> Standard Cost of Materials	<i>Cost of Raw and Packaging Materials</i> NUK Purchasing measure
11. <i>Cost of Failure</i>	Cost of failure (%) = <u>Cost of Principal Failures</u> Net Proceeds of Sales	<i>Special Sales Revenue</i> Although Special Sales Revenue is one of the possible options highlighted in R605, costs are expressed in absolute rather than relative terms. Data are reported elsewhere in NUK on other aspects of Costs of Failure, eg manufacturing waste. Special Sales to be reported ex-BW in 2000, along with stock write-offs

Appendix H: Supply Chain Relationship Enablers

Supply Chain Relationships	Code	Enablers
Retailer	ZB	<ul style="list-style-type: none"> ▪ <u>Senior Management buy-in</u> – in terms of supporting the role of supplier implants [M4] ▪ <u>Overcoming internal belligerence</u> – demonstrating why the interdependency with the supplier exists [R3]. ▪ <u>Reducing internal political divisions</u> – improves internal co-ordination [R3] ▪ <u>Recognising the role of suppliers</u> – part of the culture of interdependency [R3] ▪ <u>Understanding internal issues</u> – creates a sense of unity and helps to achieve co-ordination [R3] ▪ <u>Mutual Respect</u> – internally there must be this respect [R3] ▪ <u>Demonstrate benefits quickly</u> – helps to build buy-in to the relationship [R1] ▪ <u>Developing The Right Culture</u> – take people out of their environments and get them talking to each other – helps to breakdown internal political divisions [R3] ▪ <u>Striving for internal commitment</u> – is needed to move away from previous opportunistic behaviour [R3]
Retailer – Manufacturer	ZBY	<ul style="list-style-type: none"> ▪ <u>Joint Objectives</u> - [M2] ▪ <u>Shared Key Performance Indicators</u> – [M2] ▪ <u>Totally integrated SC Plan</u> - [M2] ▪ <u>Totally integrated SC Operations</u> - [M2] ▪ <u>A Full Range of Relationship Types</u> - [M2] ▪ <u>Integrated relationships</u> – both internally and externally, across all levels i.e. strategic, tactical and operational - [M2] ▪ <u>Inline with industry best-practice</u> – via IGD and ECR initiatives - [M2] [R2] ▪ <u>Mutual Recognition</u> - [M1] ▪ <u>Jointly Defined Processes</u> – [M1] ▪ <u>Belief</u> in the relationship [M6] ▪ <u>Communication</u> – gathering information and directing it to where it is needed “<i>A funnel of information</i>” [M6] ▪ <u>Mechanisms for communication</u> – if physical communication is not possible then there must be a mechanism for communication and information flows [M11] ▪ <u>Implants</u> – supplier employees spending time at customers premises on a weekly basis, acting as information conduits [M4] ▪ <u>A clear strategy</u> – being able to communicate a clear strategy about where the customer is going and how they think they will get there – [M6]. ▪ <u>The right people</u> – to facilitate the relationship [DH-N] [M11] ▪ <u>System enabled processes</u> – idealistic but where everybody should be aiming for [DH-N] ▪ <u>Role of people</u> – people are still needed as many core processes are not integrated [DH-N]

Supply Chain Relationships	Code	Enablers
		<ul style="list-style-type: none"> ▪ <u>People Skills</u> – proactive, confident, team-working and influencing skills [DH-N] ▪ <u>A Relationship Manager</u> – to have an overall view of the relationship [DH-N] ▪ <u>Full process review</u> – you must be prepared to reveal “warts and all” to get to the most effective process [R1] ▪ <u>Understanding and identifying who needs to communicate-share information</u> – [M11] ▪ <u>A secure mechanism to share information</u> – provides the ability to share information [M11] ▪ <u>Ongoing partner education</u> – highlighting the benefits of collaboration to the customer [M4] ▪ <u>The availability of the right decision support tools</u> – e.g. sales profiling tool used in supporting promotional plans [M4] ▪ <u>Trust</u> – is a fundamental requirement for the relationship to survive [M4] ▪ <u>Quality of information exchanged</u> – without the quality the trust does not develop between the two organisations [M4] ▪ <u>Proactive-Forward thinking approach</u> – is a key to an on-going relationship [M4] [R6] [R4] ▪ <u>Service Co-ordinators</u> – resolving issues builds a trust-based relationship [R6] ▪ <u>Service Co-ordinators</u> – enable a joint process for agreeing forecasts for promotions [R6]. ▪ <u>Service Co-ordinators</u> – facilitate an on-going learning process for both organisations [R6] ▪ <u>Levels of Relationships</u> – maintaining relationships at strategic, tactical and operational levels [R6] [R4]. ▪ <u>Service Co-ordinators</u> – enable and effective communication channel [R6]. ▪ <u>Senior Management Buy-in</u> – for the role of the service co-ordinators [M4] [M2] ▪ <u>Service Co-ordinators</u> – facilitate on-going dialogue between a large number of departments across both organisations [R6] ▪ <u>Supply Chain Consolidators</u> – to further the understanding of the dynamics of the supply chain [M4]. ▪ <u>On-going Trust Development</u> – helps to reinforce the relationship, and through greater openness to improve the quality of the information being shared [M4] ▪ <u>Improving the quality of the information being shared</u> – helps to develop trust [M4]. ▪ <u>Willingness to share information</u> – a fundamental requirement for relationship development [M11] ▪ <u>Solving operational issues</u> – helps to build trust in the relationship [R6] ▪ <u>Honesty</u> – without this the relationship diminishes [R3] ▪ <u>Trust</u> - without this the relationship diminishes [R3] [M2] ▪ <u>Mutual Respect</u> – without this the relationship diminishes [R3] ▪ <u>Shared philosophies</u> – establishing an agreed philosophy, or at least how

Supply Chain Relationships	Code	Enablers
		<p>to change the existing ones. This needs senior management support to accomplish this [R3] [M1].</p> <ul style="list-style-type: none"> ▪ <u>Board to board dialogue</u> – high level on-going support is required to develop and maintain the relationship [M2] ▪ <u>Individual chemistry</u> – can determine the on-going status of the relationship [M2] [R4] ▪ <u>Recognise the need for compromise</u> – the relationship must be built around the fact that often compromise is the only way to move forward [M2] ▪ <u>Willingness to share future plans</u> – the openness helps to develop the relationship commitment [M1] ▪ <u>Mutual understanding</u> – of each other's objectives, drivers, strategies [M2]. ▪ <u>Quality of information exchanged</u> – poor information is misleading and demeans the relationship and reduces trust [M4] ▪ <u>Openness</u> – in terms of information exchange is required to maintain and develop the relationship [M7] [M3] [R3] ▪ <u>Openness</u> – in terms of information exchange with all customers, i.e. a balanced approach [M3] ▪ <u>Openness</u> – in terms of developing respect in the relationship [M3] ▪ <u>Understanding the customer's buying behaviour</u> – customers tend to over order when products are on shortage – it is a case of educating them regarding the visibility of demand and volatility of their orders [M3]. ▪ <u>Openness about processes</u> – sharing information concerning processes leads to processes that are easier to operate and improve [M11] [M1]. ▪ <u>Opportunism .v. collaboration</u> – understanding the difference between the two [M11]. ▪ <u>Understanding what information is needed</u> – there is significant difference between customers as to what info should be shared [M4] ▪ <u>Understanding each others issues</u> – creates a sense of unity and helps to achieve co-ordination [R3] ▪ <u>Mutual understanding of a common process</u> – the mutually agreed process is key to the relationship [M1]. ▪ <u>Understanding the need for realism</u> – saying yes and failing is worse than saying 'no', blind agreement, due to the perceived master/servant role, can create resentment between the parties [M1] ▪ <u>Ongoing board level dialogue</u> – part of the relationship support process [M2]. ▪ <u>Vendor managed inventory</u> – makes it easier to balance the overall supply chain co-ordination of supply and demand, and would significantly reduce order volatility [M3]. ▪ <u>Maintaining multiple level relationships</u> – relationships at operational, tactical and strategic levels [R4] ▪ <u>Distinguishing between multiple level relationships</u> – there are often differing perceptions of the other party to the relationship with the organisations at the various levels [R4]. ▪ <u>Having the right culture</u> – trust and mutual understanding, compromise and communication [M2] [R3] ▪ <u>Advanced Notification of Problems</u> – reduces the resentment derived

Supply Chain Relationships	Code	Enablers
		<p>from poor service [R4] [R5]</p> <ul style="list-style-type: none"> ▪ <u>Joint Decision Making</u> – with regard to planning promotions [R4] [R6] [R5].
Manufacturer	YB	<ul style="list-style-type: none"> ▪ <u>Communication</u> – creating visibility across all the functional areas represented in the trading activity with the customer [M11] ▪ <u>Close proximity of staff</u> – all staff involved with a particular customer are located together to facilitate communication and co-ordination [M11] ▪ <u>Trust</u> – is a fundamental requirement for the relationship to survive [M10] ▪ <u>Openness</u> – to be prepared to share information with the other organisation [M10] ▪ <u>Honesty</u> – being prepared to be truthful with a customer or supplier [M10] ▪ <u>Ability to share information</u> – the physical capability to share information with another organisation [M10] ▪ <u>Updated information</u> – ensuring all concerned received updated information on a regular basis [M6] ▪ <u>Service Co-ordinators</u> – enable the internal co-ordination of information [M11]. ▪ <u>Thinking beyond the Master-Servant relationship mentality</u> – restricts the need to be creative to solve supply chain issues [M1] ▪ <u>Understanding the need to manage the aggregated demand</u> – the ability to balance supply and demand across all customers [M4] ▪ <u>Strive to get quality information from 80% of customers</u> – is likely to be the best you are going to get [M4]. ▪ <u>Manage the problems</u> – look to deal with the problems and not the symptoms [M9] ▪ <u>Having the right culture</u> – internal trust and mutual understanding, compromise and communication [M2]
Manufacturer – Paper Label Supplier	YDX1	<ul style="list-style-type: none"> ▪ <u>Communication</u> – plays a key role in maintaining the relationship and helping to contextualise decision making [PLS1] ▪ <u>Direct Communication</u> – between those who need to be involved – not just for the sake of it [PLS1] ▪ <u>Communication</u> – gathering information and directing it to where it is needed “A funnel of information” [PLS1] ▪ <u>Being realistic with suppliers</u> – telling them how it is, with any opportunistic motives - [M10] ▪ <u>A Clear channel of communication</u> – facilitates the on-going dialogue necessary for the relationship to exist [PLS1] ▪ <u>The Right Culture</u> – having a communication based culture is fundamental [PLS1] ▪ <u>Co-ordination</u> – customer service plays a vital role in co-ordinating the relationship interface with the customer [PLS1] ▪ <u>Vendor managed inventory</u> – makes it easier to balance the overall supply chain co-ordination of supply and demand, and would significantly reduce order volatility [PLS1]. ▪ <u>Trust, Openness and Honesty</u> – to be realistic about market activities and

Supply Chain Relationships	Code	Enablers
		<p>objectives with suppliers [M10]</p> <ul style="list-style-type: none"> ▪ <u>Ability to share info</u> – [M10] ▪ <u>Mutual trust and honesty</u> – there must be two-way trust and honesty if the relationship is to survive [M10] ▪ <u>Manage the problems</u> – look to deal with the problems and not the symptoms [M9] ▪ <u>Proactive suppliers</u> – a 'can do' approach from suppliers demonstrates commitment to the relationship [M9]
Manufacturer – Glass Supplier	YDX2	<ul style="list-style-type: none"> ▪ <u>A profitable relationship</u> – the parties benefit from a price/cost perspective [GS2] ▪ <u>Dual sourcing</u> – due to the nature of the product (in terms of quality) and the demand for the product (doubtful if one supplier could supply everything) helps to focus the relationship development [M9] ▪ <u>Exchange of personnel</u> – particularly at shop-floor level helps to identify issues and builds understanding [M9] ▪ <u>Communication between the right levels</u> – the need for communication on equivalent levels removes the element of embarrassment about discussing problems and creates a common ground [M9] ▪ <u>A broad product range</u> – being able to talk about a broad range of product items is appealing to customers [GS2] ▪ <u>Understanding each others values and business drivers</u> - [GS2] ▪ <u>Understanding and identifying who needs to communicate-share information</u> – [GS2] ▪ <u>Identify the Issues</u> – having identified the issues then look to build the relationship [M9] ▪ <u>The role of self-Billing</u> – can help to build confidence in the relationship [M9] ▪ <u>Communication linkages</u> - Setting up direct linkages between corresponding people across the two organisations [GS2] ▪ <u>Being realistic with suppliers</u> – telling them how it is, with any opportunistic motives - [M10] ▪ <u>Maintaining multiple level relationships</u> – relationships at operational, tactical and strategic levels [GS2] ▪ <u>Factory to Factory Relationship</u> – a direct relationship between factories helps to sort out manufacturing issues rapidly [GS2] ▪ <u>Shared Training Programmes</u> – shared training helps to foster communication and strengthens the relationship [GS2]. ▪ <u>Service Co-ordinators</u> – facilitate the flow of information [GS2] ▪ <u>Trust, Openness and Honesty</u> – to be realistic about market activities and objectives with suppliers [M10] ▪ <u>Ability to share info</u> – [M10] ▪ <u>Mutual trust and honesty</u> – there must be two-way trust and honesty if the relationship is to survive [M10] ▪ <u>Understanding each others issues, values and drivers</u> – creates a sense of unity and helps to achieve co-ordination [GS2] ▪ <u>Manage the problems</u> – look to deal with the problems and not the

Supply Chain Relationships	Code	Enablers
		<p>symptoms [M9]</p> <ul style="list-style-type: none"> ▪ <u>Proactive suppliers</u> – a 'can do' approach from suppliers demonstrates commitment to the relationship [M9]
Manufacturer – Plastic Closure Supplier	YDX3	<ul style="list-style-type: none"> ▪ <u>Communication</u> – the availability of people to be able to communicate with suppliers [PCS1] ▪ <u>Implants</u> – supplier employees spending time at customers premises on a weekly basis, acting as information conduits [PCS1] ▪ <u>A supply chain manager</u> – with a cross-functional role supervising activities from a "total business" viewpoint, implying the need for multi-skills [PCS1] ▪ <u>Supplier compliance</u> – OTIF (On Time In Full) is the base measure of compliance [PCS1] ▪ <u>Recognising the role of the supplier in product development</u> – this can speed up the process [PCS1] ▪ <u>Being realistic with suppliers</u> – telling them how it is, with any opportunistic motives - [M10] ▪ <u>Trust, Openness and Honesty</u> – to be realistic about market activities and objectives with suppliers [M10] ▪ <u>Ability to share info</u> – [M10] ▪ <u>Demonstrating Commitment to the Relationship</u> – by both parties [PCS1] ▪ <u>Mutual trust and honesty</u> – there must be two-way trust and honesty if the relationship is to survive [M10] [PCS1] ▪ <u>Mutual Benefit</u> - there must be two-way benefit if the relationship is to survive [PCS1] ▪ <u>Manage the problems</u> – look to deal with the problems and not the symptoms [M9] ▪ <u>Proactive suppliers</u> – a 'can do' approach from suppliers demonstrates commitment to the relationship [M9] ▪ <u>Involving suppliers</u> – not involving suppliers can lead to resentment [PCS1]
Manufacturer – Corrugated Cardboard Supplier	YDX4	<ul style="list-style-type: none"> ▪ <u>Openness</u> with customers [CBS2] ▪ <u>Willingness</u> to share information [CBS2] ▪ <u>Good personal relationships</u> [CBS2] ▪ <u>Communication</u> – e-mail provides a means of informing people [CBS2] ▪ <u>Communication</u> – the most important element of the relationship [CBS2] ▪ <u>Pre-emptive Communication</u> – giving advanced warning of potential problems to customers [CBS2] ▪ <u>Broad interface for communication</u> – there are many people across the two organisations that need to be able to communicate with each other [CBS2] ▪ <u>Having the right culture</u> – trust and mutual understanding, compromise and communication [CBS2] ▪ <u>Being realistic with suppliers</u> – telling them how it is, with any opportunistic motives - [M10] [CBS2]

Supply Chain Relationships	Code	Enablers
		<ul style="list-style-type: none"> ▪ <u>Direct contact</u> – the right people talking to the right people, rather than through a third party (i.e. purchasing) saves time and resolves issues more quickly [CBS2] ▪ <u>Service Co-ordinators</u> – enable the co-ordination of information flows between suppliers and a number of departments within the customer [CBS2]. ▪ <u>Service Co-ordinators</u> – speed up the information flows [CBS2]. ▪ <u>Service Co-ordinators</u> – helps to build a closer relationship with the customer, helps to demonstrate commitment to the relationship [CBS2]. ▪ <u>Good personal relationships</u> – help to reinforce the corporate relationship commitment [CBS2] ▪ <u>Trust, Openness and Honesty</u> – to be realistic about market activities and objectives with suppliers [M10] ▪ <u>Ability to share info</u> – [M10] ▪ <u>Mutual trust and honesty</u> – there must be two-way trust and honesty if the relationship is to survive [M10] ▪ <u>Timely exchange of information</u> – minimising the delay in exchanging information maximises its usefulness [CBS2]. ▪ <u>Advanced warning of problems</u> – reduces uncertainty and to some extent strengthens the relationship [CBS2]. ▪ <u>Information Sharing Culture</u> – enables the flow of information [CBS2]. ▪ <u>Openness</u> – being afraid to share information will starve the relationship [M10] [CBS2]. ▪ <u>Supply Chain Meetings</u> – regular meeting between Manufacturer, packaging supplier and supplier's supplier strengthen the relationships [CBS2] ▪ <u>Understanding breadth of Issues</u> – for all participants in the supply chain up to the manufacturer [CBS2] ▪ <u>Understanding what information to exchange</u> – in terms of the key drivers, helps to better co-ordinate the supply chain in terms of performance [CBS2]. ▪ <u>Proactive suppliers</u> – a 'can do' approach from suppliers demonstrates commitment to the relationship [M9] ▪ <u>Understanding the Supply Chain dynamics</u> – in terms of the key drivers, helps to better co-ordinate the supply chain in terms of performance [CBS2]. ▪ <u>Security of supply reduces safety stocks</u> – due to the nature of the relationship, safety stocks can be reduced [CBS2]. ▪ <u>Manage the problems</u> – look to deal with the problems and not the symptoms [M9] ▪ <u>Mean what you say</u> – there is no point in saying one thing and doing another – this develops resentment [CBS2] ▪ <u>Maintaining multiple level relationships</u> – relationships at operational, tactical and strategic levels [CBS2]
Paper Label Supplier	DX1	<i>No issues identified</i>

Supply Chain Relationships	Code	Enablers
Glass Supplier	DX2	<i>No issues identified</i>
Plastic Closure Supplier	DX3	<i>No issues identified</i>
Corrugated Cardboard Supplier	DX4	<ul style="list-style-type: none"> ▪ Openness with suppliers [CBS2] ▪ <u>Service Co-ordinators</u> – enable the co-ordination of information flows between the organisations and its suppliers [CBS2].

Appendix I: Supply Chain Relationship Inhibitors

Supply Chain Relationships	Code	Inhibitors
Retailer	ZB	<ul style="list-style-type: none"> ▪ <u>In-effectiveness of SC from Retailer's DC to on-shelf</u> – gives rise to frustration and resentment on behalf of the supplier who achieves a significantly greater level of service than the retailer achieves [M3] ▪ <u>Traditional views</u> – the customer exhibits behaviour which creates the perception that the customer has the power in the relationship [M5] [M10] ▪ <u>Cultural resistance to changing status quo</u> – leads to a one step-forwards, two steps backwards mentality [R3] ▪ <u>Silo mentality</u> – resistance to working with others from within the same organisation [R4] ▪ <u>Perceived Poor Relationship Commitment</u> – actions speak louder than words [R3] ▪ <u>Functional Management Style</u> – reinforces the silo mentality [R3] ▪ <u>Functional teams</u> – reinforces the silo mentality [R3] ▪ <u>SC Personalities lacking</u> – leads to an undermining of enthusiasm for relationship initiatives [R3] ▪ <u>Increasing Competitive Pressures</u> – gives rise to opportunistic behaviour [M10] ▪ <u>“Customer” mentality</u> – leads to master-slave behaviour [R4] ▪ <u>Mechanistic Relationships</u> – large number of suppliers leads to insensitive approaches to decision making [R2] ▪ <u>Lacking Understanding of Supplier's Business</u> – leads to insensitivity to realities [R2] ▪ <u>Poor Perceptions of Suppliers</u> – leads to non-reinforcement of relationship initiatives [R4] ▪ <u>Managing Multiple Suppliers</u> – leads to insensitive approaches to decision making and lack of resource commitment [R2] ▪ <u>Panic Buying Decisions</u> – through a lack of visibility of current status leads to potential build-up of inventory [M3]
Retailer – Manufacturer	ZBY	<ul style="list-style-type: none"> ▪ <u>Information Usage - Timeliness of information exchange</u> [M4] ▪ <u>Information Usage - Inaccuracy of information exchanged</u> [M4] ▪ <u>Poor Quality of Forecasts</u> - leading to a perception of poor commitment to relationship [M4] ▪ <u>Collaboration Slippage</u> – not doing what had been previously agreed – not entering information on CPS [M4] ▪ <u>Product Lead-times</u> – suppliers can only support Day1 for Day3, when Day1 for Day2 is sought [R6] ▪ <u>Cost driven</u> – too much focus by customer on cost when quality is more of an issue over short to medium term [M3] ▪ <u>Under-estimating the role of EPOS</u> – customers do not appear to appreciate how useful EPOS data is [M3] ▪ <u>Differing trading strategies</u> – gives rise to negative impressions regarding the supplier's responsiveness [R1] [R6] [R4] ▪ <u>Signing up suppliers</u> – the differences in cultures makes convincing

Supply Chain Relationships	Code	Inhibitors
		<p>and bringing on-board suppliers to new initiatives very difficult [R4]</p> <ul style="list-style-type: none"> ▪ <u>Commercial realities</u> – give rise to trading conflict which is difficult for joint initiatives in the supply chain relationship [M1] [M2] [M10] [M5] ▪ <u>Short-term focus</u> – too much focus on the short-term leaves parties frustrated with each other [M5] ▪ <u>Poor understanding of decision implications</u> – leads to misconceptions of supplier service performance [M5] ▪ <u>Not enough time spent on joint initiatives</u> – leads to poor decisions and resentment [M5] ▪ <u>Cultural Issues</u> – leads to resistance to change required by relationship initiatives [M2] ▪ <u>Supplier Responsiveness</u> – leads to pressure on relationship [R6] [R4] ▪ <u>Time to Implement</u> – leads to change fatigue [R3] ▪ <u>Poor Personal Relationships</u> – inhibits organisational relationship development [R4] ▪ <u>Supplier Performance</u> – leads to poor perceptions [R4] ▪ <u>Poor Strategic-level Relationships</u> – leads to lack of endorsement of tactical and operational relationships [R4] ▪ <u>Technology Problems</u> – leads to pressure on relationship [R6] [R4]
Manufacturer	YB	<ul style="list-style-type: none"> ▪ <u>Organisational Size</u> - leading to lack of co-ordination and duplication of work [M6] ▪ <u>Openness of future production plans</u> – these need to be made available to suppliers [M3] ▪ <u>Production is forecast driven</u> – production information shared with suppliers distorts the reality as it is forecast driven and not based on actual short term demand [M3] ▪ <u>Under-estimating the role of EPOS</u> – not having enough people working on EPOS data and thereby limiting its effective usage [M3] ▪ <u>Information Usage</u> – not having the right information in the right place diminishes its usefulness [M3] ▪ <u>Managing change</u> – a time consuming process [M10] ▪ <u>Out of Information loop</u> – leads to increased uncertainty and poor responsiveness [M11] ▪ <u>Timing of information exchange</u> - leads to increased uncertainty and poor responsiveness, diminishes the usefulness of information and inhibits decision making [M11] ▪ <u>Distribution Centre is forecast driven</u> – lack of availability of demand and promotional information leads to ineffective decisions [M11] ▪ <u>Information Overload</u> – information for the sake of information leads to excessive administration [M11] ▪ <u>Managing Promotions</u> – poor availability of information leads to poor service and responsiveness [M8]
Manufacturer –	YDX1	<ul style="list-style-type: none"> ▪ <u>Inconsistent Quality of Forecasts</u> - leads to extra work for the

Supply Chain Relationships	Code	Inhibitors
Paper Label Supplier		<ul style="list-style-type: none"> supplier [PLS1] ▪ <u>Poor reporting of design changes</u> – leads to extra pressure on supplier's lead times [PLS1] ▪ <u>Fragmented information</u> – many different sources on information relating to design changes gives rise to inconsistencies and further time delays [PLS1] ▪ <u>Traditional Industry views</u> – reluctance to commit to investment to support relationship [M10] ▪ <u>Prior capital investment</u> – difficult to convince suppliers that further investment required [M10] ▪ <u>Supplier In-exclusivity</u> – supplier works for competing customers, leads to multiple "masters" [M10] ▪ <u>Managing change</u> – a time consuming process [M10] ▪ <u>Traditional Industry views</u> – contrary to SC philosophy [M10] ▪ <u>Differing Management Policies</u> – leads to conflicting actions [PLS1] ▪ <u>Communication of Information</u> – inconsistent sharing of information leads to increased uncertainty [PLS1] ▪ <u>Managing Promotions</u> – poor availability of information leads to poor service and responsiveness [PLS1]
Manufacturer – Glass Supplier	YDX2	<ul style="list-style-type: none"> ▪ <u>Accuracy of Information Exchanged</u> – Shared production plans based on forecasts rather than demand give rise to service problems when shortfalls occur [GS2] ▪ <u>Over-forecasting by customer based on previous experience</u> – Despite improvements in product availability this continues and gives rise to service problems [GS2] ▪ <u>Poor Availability of future development plans</u> – leads to delays in ability to respond [GS2] ▪ <u>Accuracy of Information Exchanged (re promotions)</u> – leads to increased uncertainty [GS2] ▪ <u>Managing change</u> – a time consuming process [M10] ▪ <u>Traditional Industry views</u> – contrary to SC philosophy [M10] ▪ <u>Poor Availability of Promotional Related Information</u> – leads to delays and inability to respond [GS2] ▪ <u>Perceived lack of Confidence in Supplier</u> – leads to over corrections and inefficiencies [GS2]
Manufacturer – Plastic Closure Supplier	YDX3	<ul style="list-style-type: none"> ▪ <u>Managing change</u> – a time consuming process [M10] ▪ <u>Traditional Industry views</u> – contrary to SC philosophy [M10]
Manufacturer – Corrugated Cardboard Supplier	YDX4	<ul style="list-style-type: none"> ▪ <u>Managing change</u> – a time consuming process [M10] ▪ <u>Traditional Industry views</u> – contrary to SC philosophy [M10] ▪ <u>Fragmented information</u> – different sources on information gives rise to inconsistencies and further time delays [CBS2]

Supply Chain Relationships	Code	Inhibitors
		<ul style="list-style-type: none"> ▪ <u>Consistency of Staff</u> – leads to constantly having to build new personal relationships [CBS2]
Paper Label Supplier	DX1	<ul style="list-style-type: none"> ▪ <u>Prior capital investment</u> – difficult to convince suppliers that further investment required [M10]
Glass Supplier	DX2	No issues identified
Plastic Closure Supplier	DX3	No issues identified
Corrugated Cardboard Supplier	DX4	No issues identified

Appendix J: Information Exchange Enablers

Information Exchange	Code	Enablers
Retailer	ZA	<ul style="list-style-type: none"> ▪ <u>Creating Internal Visibility</u> – processes, stock locations etc [M4] ▪ <u>Investment of time and Resources</u> – in terms of supporting joint activities [R2] ▪ <u>Recognising the Ongoing Process</u> - this is not a short term activity [R2] ▪ <u>Supporting Technology in place</u> – enable people to use the information more effectively, i.e. saving time with data entry, processing, interpretation etc [R4] [R6] [R1] ▪ <u>A Cost-Effective Medium for Exchange</u> – using the internet and web-related technologies to share information that would not have been possible with preceding technologies such as EDI [M8] ▪ <u>Understanding how to use information</u> – having people who know how it can be used based on the visibility it gives you of the supply chain [R1] ▪ <u>Changing “Heart and Minds”</u> – developing an information culture [R1] ▪ <u>Provide Accurate Information</u> – inaccurate information is counter-productive, mis-leading and diminishes trust [R1]
Retailer – Manufacturer	ZAY	<ul style="list-style-type: none"> ▪ <u>Education</u> – trying to educate and learn from each other [M4] ▪ <u>Spending Time together</u> – develops a greater understanding and better rapport [M4] ▪ <u>Team Building through Joint Activities</u> – “we both need to get on the team bus!” [M4] [M6] ▪ <u>Broader Relationship Interface</u> – more than one to one [M4] [M7] ▪ <u>Mutual understanding of processes and structures</u> – both sides spending time getting to understand each others processes and structures [M4] ▪ <u>Implants</u> – dedicating people to work on a daily basis with the other side, e.g. customer service co-ordinators [M4] [M7] ▪ <u>Managing the whole category together profitably</u> – work together with a common goal {<i>implies that N maybe be the category captain</i>} ▪ <u>Need to Identify the Mutual Benefit</u> – be clear about the benefit for both parties [M6] ▪ <u>Provide Accurate Information</u> – inaccurate information is counter-productive, mis-leading and diminishes trust [M7] ▪ <u>Collecting the right information</u> – only spending time collecting the information that is required [M3] ▪ <u>Start from a point of Respect</u> - [M7] ▪ <u>Creating an Informal Information Channel</u> – maintaining the informal flow of information is an important addition to the formal information channels [M6] [M4] [M7] ▪ <u>Creating an “us” Mentality</u> – developing a culture that encourages joint activities and team-working [M4] [M7] [R2] ▪ <u>Understanding what information can do</u> – what can the information do for you [M3]

Information Exchange	Code	Enablers
		<ul style="list-style-type: none"> ▪ <u>Recognising the Ongoing Process</u> - this is not a short term activity [R2] ▪ <u>Need a Business Visionary</u> – someone who is prepared to try and see what happens [M3] ▪ <u>Standardised Technologies</u> – Overcomes the need for integration interfaces, e.g. the rise of XML [M3] ▪ <u>Adopt Standard Product Codes and Descriptions</u> – everybody would then be working from the same “hymn sheet” [M3] [M4] ▪ <u>Understanding how to use information</u> - how you can use it based on the visibility it gives you of the supply chain [M3] [M4] [R1] ▪ <u>A Mechanism to Use the Information</u> – ensuring that a mechanism is in place that will enable the use of the information [R1] [M3] ▪ <u>Speaking a Supply Chain Language</u> – in terms of terminology, understanding related issues [M4] [M6] [M7] ▪ <u>Investment of time and Resources</u> – in terms of supporting joint activities [R2] ▪ <u>Good Personal Relationships</u> – can make or break the business relationship [R2] [M7] ▪ <u>Trust</u> – to facilitate the relationship in terms of sharing information [M6] [M4] ▪ <u>People Skills</u> – skills needed to foster the relationship [M6] ▪ <u>Openness</u> – be prepared to share information [M4] ▪ <u>Honesty</u> – a commitment to do what you have said you will do [M4] ▪ <u>Shared Vision</u> – having a common idea of where you are both going [M4]
Manufacturer	YA	<ul style="list-style-type: none"> ▪ <u>Creating Internal Visibility</u> – processes, stock locations etc [M4] ▪ <u>Supporting Technology in place</u> – enable people to use the information more effectively, i.e. saving time with data entry, processing, interpretation etc [M3] [M7] ▪ <u>Changing “Heart and Minds”</u> – developing an information culture [M3] ▪ <u>Investment of time and Resources</u> – in terms of supporting joint activities [R2] ▪ <u>Recognising the Ongoing Process</u> - this is not a short term activity [R2] ▪ <u>Ensuring the Receivers of the Information Have the Skills to Use it</u> – otherwise it is pointless and the information is often not used [DB-N]
Manufacturer – Paper Label Supplier	YCX1	<ul style="list-style-type: none"> ▪ <u>Not taking each other for granted</u> – being professional {objective} about the relationship [AM-W] ▪ <u>Being Honest Wherever Possible</u> – [AM-W] ▪ <u>Be Open About Mistakes</u> – there is no point hiding mistakes as this can build resentment in the relationship – [AM-W] ▪ <u>Good Personal Relationships</u> – can make or break the business relationship [JM-W] ▪ <u>Understanding the Need for Relevant information</u> – instead of just

Information Exchange	Code	Enablers
		<p>sending everything you have [JM-W] [AM-W]</p> <ul style="list-style-type: none"> ▪ <u>Accurate Information</u> – sending inaccurate information merely is propaganda [JM-W] ▪ <u>Timeliness of Exchange</u> – sending information when it is needed, or at the most appropriate time in terms of its usage [JM-W] [AM-W] ▪
Manufacturer – Glass Supplier	YCX2	<ul style="list-style-type: none"> ▪ <u>Good Personal Relationships</u> – can make or break the business relationship [JM-R]
Manufacturer – Plastic Closure Supplier	YCX3	<ul style="list-style-type: none"> ▪ <u>Good Personal Relationships</u> – can make or break the business relationship [GV-M]
Manufacturer – Corrugated Cardboard Supplier	YCX4	<ul style="list-style-type: none"> ▪ <u>Good Personal Relationships</u> – can make or break the business relationship [SM-SCA] ▪ <u>Be Open About Mistakes</u> – there is no point hiding mistakes as this can build resentment in the relationship – [SM-SCA] ▪ <u>A Proactive Customer</u> – a customer that looks to see what benefits can be potentially realised from sharing information that it has [SM-SCA]
Paper Label Supplier	CX1	<ul style="list-style-type: none"> ▪ <u>Supporting Technology in place</u> – enable people to use the information more effectively, i.e. saving time with data entry, processing, interpretation etc [AM-W] ▪ <u>Understanding how to use information</u> - how you can use it based on the visibility it gives you of the supply chain [AM-W] [JM-W]
Glass Supplier	CX2	<ul style="list-style-type: none"> ▪ <u>Understanding how to use information</u> - how you can use it based on the visibility it gives you of the supply chain [JM-R]
Plastic Closure Supplier	CX3	<ul style="list-style-type: none"> ▪ <u>Understanding how to use information</u> - how you can use it based on the visibility it gives you of the supply chain [GV-M]
Corrugated Cardboard Supplier	CX4	<ul style="list-style-type: none"> ▪ <u>Understanding how to use information</u> - how you can use it based on the visibility it gives you of the supply chain [SM-SCA] ▪ <u>Changing "Heart and Minds"</u> – developing an information culture [SM-SCA]

Appendix K: Information Exchange Inhibitors

Information Exchange	Code	Inhibitors
Retailer	ZA	<ul style="list-style-type: none"> ▪ <u>EDI</u> – suffers from lack of flexibility, particularly for smaller suppliers [R4] ▪ <u>Quality of information</u> – leads to lack of usage [R3] ▪ <u>Different systems standards</u> – leads to lack of usage [R3] ▪ <u>Different technical standards</u> – leads to lack of usage [R3] ▪ <u>Internal resistance to sharing sales data</u> – requires significant effort to overcome [R3] ▪ <u>Access to technology to share information</u> – diminishes the value of the information available by having to send by alternative, but slower means [R3] ▪ <u>Lacking ability to use information available</u> – missed opportunity [R2] ▪ <u>IT solutions look for problems</u> – leads to being technology driven [R2] ▪ <u>Inability to extract Meaningful Useful Data</u> - failure to utilise information exchanged [R2] ▪ <u>Unclear ownership of data</u> – delays the sharing of information [R3] ▪ <u>Internal resistance to sharing sales data</u> – commercial sensitivities [R3] ▪ <u>Not having the right systems in place</u> – leads to delays in processing information and not being able to spread visibility across the organisation [R3] ▪ <u>Access to the right technology</u> – failure to utilise information exchanged [R2] ▪ <u>Lacking an Extranet Strategy</u> – causes different approaches across the organisation [R4]
Retailer – Manufacturer	ZAY	<ul style="list-style-type: none"> ▪ <u>Lack of compatible systems</u> – hampers the sharing of information between organisations [M11] ▪ <u>Lack of compatible systems</u> – corporate firewalls hamper the sharing of information [R2] ▪ <u>Residual issues surrounding confidentiality</u> – prevents an open culture to fully support information sharing [M11] ▪ <u>Do not trust information received</u> – leads to lack of usage [M10] ▪ <u>Do not trust customer to do as agreed</u> – causes lack of usage and increases uncertainty [M10] ▪ <u>Lacking sufficient trust in customer to share information</u> – prevents the sharing of information [M4] ▪ <u>Lacking sufficient trust in supplier to share information</u> – prevents the sharing of information [R2] ▪ <u>Differing technical standards between customers</u> – leads to limited value of the information received, and lack of return for work involved [M3] [M5] ▪ <u>Getting both parties to work together to maximise the value of the information available to be shared</u> – delays uncertainty reduction [R3] ▪ <u>Different data standards</u> – leads to lack of usage [M1] ▪ <u>Information only relates to percentage of total volume</u> – does not support usage and decision making [M4] [M8]

Information Exchange	Code	Inhibitors
		<ul style="list-style-type: none"> ▪ <u>Information only relates to percentage of total volume</u> – does not support usage and decision making [M3] [R2] ▪ <u>Different systems standards</u> – leads to lack of usage [M3] ▪ <u>Different systems standards</u> – leads to lack of usage [M5] ▪ <u>Perceived relevance of the information</u> - leads to lack of usage [R2] ▪ <u>Not providing information in timely manner</u> – diminishes the value of the information shared [R2] ▪ <u>Getting the right information to the right people</u> – increases the usage and relevance of the information [R2] ▪ <u>Having people who can use the technology</u> – leads to less affective decisions [M10] ▪ <u>Perception of immediacy</u> – leads to unrealistic expectancies of decisions [R4] ▪ <u>Not understanding decision implications</u> – not utilising potential of shared information [R2] ▪ <u>Commercial sensitivities of customers</u> – prevents information exchange [M11] ▪ <u>Commercial sensitivities of suppliers</u> – prevents information exchange [M11] ▪ <u>Commercial sensitivities regarding promotions</u> – customers work with Nestle's competitors which prevents the flow of information [M10] ▪ <u>Commercial sensitivities of Nestle</u> – suppliers work for Nestle's competitors which prevents the flow of information [M11] [M7] ▪ <u>Perceptions of trustworthiness of suppliers</u> – based on what suppliers say about other customers – [M10] ▪ <u>Supplier's ability to use information</u> – depends upon the information being in the right format [R1] ▪ <u>Differing product description codes</u> – causes confusion and slows the process [R1] ▪ <u>The right Nestle people having access to the shared information</u> – delays the process and reduces the effectiveness of the shared information [R2] ▪ <u>Access to the technology</u> – linked to the right people having access to the shared information – [R2] ▪ <u>Understanding the context specificity of information</u> – knowing when and how to use the shared information [M8] ▪ <u>Not having information on real-time basis</u> – reduces the effectiveness of the information [M4]
Manufacturer	YA	<ul style="list-style-type: none"> ▪ <u>Information Overload</u> – it simply ends up being stored without anything being done with it [M3] ▪ <u>Not understanding what to do with it</u> – only really used for re-assurance purposes, nothing else [M3] ▪ <u>Information Overload</u> – it becomes counter-productive [R4] ▪ <u>Information Overload</u> – people do not know how to use it or how to make better decisions with it [M10] ▪ <u>Information Overload</u> – people do not understand the role of information

Information Exchange	Code	Inhibitors
		<p>[M10]</p> <ul style="list-style-type: none"> ▪ <u>Information Overload</u> – people do not know how to interpret the exchanged data [M8] ▪ <u>EDI</u> – suffers from lack of flexibility, particularly for smaller suppliers [M2] ▪ <u>Do not trust information received</u> – leads to lack of usage [M10] [R2] ▪ <u>Not having the right systems in place</u> – leads to delays in processing information and not being able to spread visibility across the organisation [M3] ▪ <u>Not understanding role of information</u> – leads to limited use [M3] ▪ <u>Different systems standards</u> – leads to lack of usage [M11] ▪ <u>Internal resistance to sharing sales data</u> – requires significant effort to overcome [M8] ▪ <u>Internal resistance from people to sharing data</u> – requires significant effort to overcome [M8] ▪ <u>Not understanding role of new technologies</u> – leads to limited use [M2] ▪ <u>IT solutions looking for a problem</u> – leads to being technology driven [M10] ▪ <u>Too much focus on IT Systems</u> - leads to being technology driven [M10] ▪ <u>Understanding production drivers and capacities</u> – leads to enhanced frustration [M10] ▪ <u>Lack of availability of information in systems</u> – limits the potential for exchanging information with suppliers [M2] ▪ <u>Unclear ownership of data</u> – delays the sharing of information [M2] ▪ <u>Willingness to share</u> – despite having technology [M2] ▪ <u>Functional Culture</u> – traditional mindset of not sharing information [M9] ▪ <u>Willingness to share</u> – part of the negotiating position [M2] ▪ <u>Delayed Information receipt</u> – prevents decision making based on reality [M11] ▪ <u>Break in internal communication</u> – causes confusion and prevents information flow [M10] ▪ <u>Missing process linkages</u> – prevents the uninterrupted flow of information [M3] [M1] ▪ <u>Lack of systems integration</u> - prevents the uninterrupted flow of information [M5]
Manufacturer – Paper Label Supplier	YCX1	<ul style="list-style-type: none"> ▪ <u>Understanding the role of EDI</u> – need to be clear about the continuing role of EDI [M2] ▪ <u>Lack of compatible systems</u> – corporate firewalls hamper the sharing of information [PLS2] ▪ <u>Lack of compatible systems</u> – hampers the sharing of information between organisations [M10] ▪ <u>Suppliers do not know what to do with shared info</u> – leads to under-utilisation [M10] ▪ <u>Do not trust information received</u> – leads to lack of usage [M10]

Information Exchange	Code	Inhibitors
		<ul style="list-style-type: none"> ▪ <u>Not understanding relevance of information</u> - leads to lack of usage [M10] ▪ <u>Not understanding what information to exchange</u> – limits the potential to jointly improve the supply chain [M2] ▪ <u>Over reliance on information</u> – leads to loss of objectivity [PLS1] ▪ <u>Commercial sensitivities</u> – limits the opportunity to share information [M2] [M9] ▪ <u>Irregular information sharing</u> – delays the process, reduces reliability and trust [PLS2] ▪ <u>Not understanding who to get information from</u> – delays the process [PLS1] ▪ <u>Breakdown in communication</u> – causes confusion and prevents information flow [M10]
Manufacturer – Glass Supplier	YCX2	<ul style="list-style-type: none"> ▪ <u>Understanding the role of EDI</u> – need to be clear about the continuing role of EDI [M2] ▪ <u>Do not trust information received</u> – leads to lack of usage [M10] ▪ <u>Lack of compatible systems</u> – have not been able to set up all possible options that would support the sharing of information [GS2] ▪ <u>Lack of compatible systems</u> – hampers the sharing of information between organisations [M10] ▪ <u>Suppliers do not know what to do with shared info</u> – leads to under-utilisation [M10] ▪ <u>Quality of information</u> – leads to lack of usage [GS2] ▪ <u>Variability of the information</u> - leads to lack of usage [GS2] ▪ <u>Information only relates to percentage of total volume</u> – does not support usage and decision making [GS2] ▪ <u>Not understanding relevance of information</u> - leads to lack of usage [M10] ▪ <u>Not understanding what information to exchange</u> – limits the potential to jointly improve the supply chain [M2] ▪ <u>Commercial sensitivities</u> – limits the opportunity to share information [M2] [M9] ▪ <u>Breakdown in communication</u> – causes confusion and prevents information flow [M10]
Manufacturer – Plastic Closure Supplier	YCX3	<ul style="list-style-type: none"> ▪ <u>Understanding the role of EDI</u> – need to be clear about the continuing role of EDI [M2] ▪ <u>Lack of compatible systems</u> – hampers the sharing of information between organisations [M10] ▪ <u>Suppliers do not know what to do with shared info</u> – leads to under-utilisation [M10] ▪ <u>Do not trust information received</u> – leads to lack of usage [M10] ▪ <u>Not understanding relevance of information</u> - leads to lack of usage [M10]

Information Exchange	Code	Inhibitors
		<ul style="list-style-type: none"> ▪ <u>Information only relates to percentage of total volume</u> – does not support usage and decision making [PCS1] ▪ <u>Do not trust customer to do as agreed</u> – causes lack of usage and increases uncertainty [PCS1] ▪ <u>Not providing information in timely manner</u> – diminishes the value of the information shared [PCS1] ▪ <u>Not providing information in relevant format</u> – diminishes the value of the information shared and requires extra work reformatting to of value [PCS1] ▪ <u>Time required to interpret data received</u> – reduces inclination to use [PCS1] ▪ <u>Not understanding what information to exchange</u> – limits the potential to jointly improve the supply chain [M2] ▪ <u>Commercial sensitivities</u> – limits the opportunity to share information [M2] [M9] ▪ <u>Breakdown in communication</u> – causes confusion and prevents information flow [M10]
Manufacturer – Corrugated Board Supplier	YCX4	<ul style="list-style-type: none"> ▪ <u>Understanding the role of EDI</u> – need to be clear about the continuing role of EDI [M2] ▪ <u>Lack of compatible systems</u> – hampers the sharing of information between organisations [M10] ▪ <u>Suppliers do not know what to do with shared info</u> – leads to under-utilisation [M10] ▪ <u>Do not trust information received</u> – leads to lack of usage [M10] ▪ <u>Not understanding relevance of information</u> - leads to lack of usage [M10] ▪ <u>Not providing information in timely manner</u> – diminishes the value of the information shared [CBS2] ▪ <u>Perception of immediacy</u> – leads to unrealistic expectancies of decisions [CBS2] ▪ <u>Not understanding what information to exchange</u> – limits the potential to jointly improve the supply chain [M2] ▪ <u>Commercial sensitivities</u> – limits the opportunity to share information [M2] [M9] ▪ <u>Breakdown in communication</u> – causes confusion and prevents information flow [M10]
Paper Label Supplier	CX1	<ul style="list-style-type: none"> ▪ <u>Lack of compatible office software</u> – results in not being to utilise simple e-mail exchange of files [PLS1]
Glass Supplier	CX2	No issues identified

Information Exchange	Code	Inhibitors
Plastic Closure Supplier	CX3	<ul style="list-style-type: none"> ▪ <u>Information Overload</u> – too many e-mails which end up not getting read [PCS1] ▪ <u>Lack of Culture for communication</u> – does not support the exchange of information [PCS1] ▪ <u>Lack of compatible software</u> – results in not being able to link to customers systems [PCS1]
Corrugated Board Supplier	CX4	<ul style="list-style-type: none"> ▪ <u>Perception of immediacy</u> – leads to unrealistic expectancies of decisions [CBS2] ▪ <u>Lack of inclination to share information</u> – resulting from the traditional approach [CBS2]