

**Demand Chain Management – Integrating Marketing and Supply Chain Management**

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**Date : 26th October 2004**

## **DEMAND CHAIN MANAGEMENT – INTEGRATING MARKETING AND SUPPLY CHAIN MANAGEMENT**

### **ABSTRACT**

This paper endorses demand chain management as a new business model aimed at creating value in today's marketplace, and combining the strengths of marketing and supply chain competencies. Demand chain design is based on a thorough market understanding and has to be managed in such a way as to effectively meet differing customer needs. Based on a literature review as well as the findings from a co-development workshop with marketing and supply chain professionals, a conceptual foundation for demand chain management is proposed. Demand chain management involves (1) integrating the demand and supply processes; (2) managing the digital integration (3) configuring the value system and (4) managing the cross-functional working relationships between marketing and supply functions. Propositions for the role of marketing within demand chain management and implications for further research in marketing are derived.

*Key Words:* Demand Chain Management; Marketing and Supply Chain Management; Networks and Value Systems; Customer Value Creation.

### **INTRODUCTION**

Conceptual and empirical research on the concept of market orientation has long suggested that interfunctional coordination is key to achieving the main goal of marketing, the creation of superior customer value (e.g. Jaworski and Kohli 1993, Kohli and Jaworski 1990). As a consequence, a stream of research on the relationship between marketing and R&D (e.g. Gupta et al. 1986), marketing and finance (e.g. Rajendra et al. 1998), marketing and engineering (Fisher et al. 1997) and the integration of marketing with several other functions in the formation of business strategy can be traced (e.g. Hutt et al. 1988; Kahn and Mentzer 1998). The overarching rationale of this research is that customer value is being created through the integration of areas that are not traditionally associated with marketing.

The relationship between different functions sharing the same customer focus and market commitment has always had an underlying internal competition for primacy, i.e. it is also concerned with how each of the functions add value to the company. Over the last decade, critical voices have stressed that marketing has generally not been very good at managing

out-of-the-box and across boundaries (Piercy 2002), has been complacent in its view that marketing is the function which “owns the customer” (Brady and Davis 1993), has failed to provide the coherence to corporate organisation, operations and processes that its proponents claim (Rainbird 2004), and, consequently, was outpaced by new models aimed at building value which originated mainly in manufacturing, operations or IT, but not in marketing (Doyle 1995).

One of these models, which has rapidly become a strategic priority in many companies, is supply chain management (SCM). SCM has grown in importance since the early 1990s, although the approach was introduced in early 1980 (Oliver and Webber, 1982). SCM can be defined as “the management of upstream and downstream relationships with suppliers and customers in order to create enhanced value in the final market place at less cost to the supply chain as a whole” (Christopher 1998). The synergies between SCM and marketing have been widely acknowledged (e.g. Martin and Grbac 2003; Ellinger 2000; Svensson 2002), leading some to conclude that better coordination could define competitive superiority in new ways (Piercy 2002, p. 247).

The most recently introduced approach of demand chain management (DCM) seems to capture the proposed synergies between SCM and marketing by starting with the specific customer needs and designing the chain to satisfy these needs, instead of starting with the supplier/manufacturer and working forwards (Heikkilä 2002). Such an integration between customer-facing and supply functions seems mandatory in today’s marketplace, where customers benefit from having real-time access to their accounts, making real-time changes in their customised product configuration and communicating their individual service requirements. While most DCM contributions to date stem from SCM and operations (e.g. Vollmann 1995; Childerhouse et al. 2002, Lee 2001, Lee and Whang 2001; Rainbird 2004), selected citations among marketing academics can also be traced (Baker 2003). This paper proposes DCM as a model which can stimulate new research in marketing, and thereby leverage its contribution to value creation for the customer as well as for the company.

The objectives of our paper are firstly, to show the advantages of an integration between marketing and SCM; secondly, to demonstrate how DCM can leverage the strengths of marketing and SCM and meet the challenges of customer value creation in today’s marketplace and thirdly; to suggest a conceptual framework for DCM with propositions for further research in marketing. We draw on a literature review and compare, contrast and supplement it with our findings from a discovery-orientated co-development workshop.

## **MARKETING AND SUPPLY CHAIN MANAGEMENT**

The old “mantra” of marketing success, i.e. having the right product in the right place at the right time, suggests why SCM has increasingly gained influence in areas which were originally the domain of marketing and marketing channel management. At the same time, however, it also demonstrates the synergies between both disciplines.

In SCM, much of the recent debate has centred on the ability of the supply chain to be either “lean” (Womack and Jones 1996) or “agile” (Goldman, Nagel et al. 1995). Lean supply chains on the one hand focus on doing “more with less” by reducing waste or “muda” through inventory reduction, lean manufacturing, and a just-in-time approach. A lean approach is said to be suitable for markets characterised by predictable demand, high volume and low requirements for product variety. Agile supply chains, on the other hand, are designed for flexibility, emphasising the supply chain’s ability to respond rapidly to changes in demand, both in terms of volume and variety. The market conditions in which companies with agile supply chains find themselves are characterised by volatile demand and high requirements for variety (Christopher 2000). The trend towards commoditisation in many industries today has pushed lean as well as agile SCM to the fore. In markets where customers perceive little difference between products and in which brand loyalty dwindles, timely availability becomes a major determinant of success. Still, the tempting promises of SCM, which aims at “lowering the total amount of resources required to provide the necessary level of customer service” (Jones and Riley 1985), should not disguise its limitations: SCM focuses on the efficient matching of supply with demand but does not provide answers to the customer conundrum, i.e. it does not help the company to find out what the customer perceives as valuable, and how this customer-perceived value can be translated into customer value propositions. In other words, supply chain efficiency by itself will not increase customer value and satisfaction (Rainbird 2004).

Ever since the academic debate began on the theoretical foundation of marketing, the “creation of value through exchange processes” (Sheth, Gardner and Garrett 1988, p. 201) has been widely accepted as the “raison d’être” of marketing. Today, the value orientation is more prevalent than ever before and marketing is related to customer value-creating processes (Piercy 1998, Flint 2004). In markets with shortening lifecycles and a shifting balance of power from the supplier to the customer, the informed customer dictates what they want, where and why. Customers buy products or services to solve their problems and they value their purchases according to their perceived ability to do this. Most recently, the

proactive role of the customer in the value creation process was emphasised (Vargo and Lusch 2004). The value of products or services is created by the customer using them and by applying them to their own unique needs. In using the products or services, the customer continues the marketing process, i.e. the value creating process. In this sense, the company can only make value propositions, but the customer must determine value, and participate in creating it. Two theoretical foundations, the customer value theory of the firm (Slater 1997) and the customer value theory (Woodruff 1997), emphasise the importance of a customer value process focused organisation. Marketing's strength lies in understanding the forces which affect the way in which customers perceive value (obtaining market and customer knowledge), finding out the differing needs of customer groups (market/customer segmentation), translating them into product and service packages to meet those differing needs (customised product/service development) and marketing the packages through customer value propositions (pricing, branding, communication, promotion). A key component of present conceptualisations of the strategic role of marketing is customer relationship management (CRM). CRM has been defined as a macrolevel process "that involves the development and leveraging of market intelligence for the purpose of building and maintaining a profit-maximising portfolio of customer relationships" (Zablah et al. 2004).

To summarise, whereas supply chain management focuses on efficient supply, and tends to be cost-orientated, marketing is more concerned with revenue by focusing on the demand side of the company. Evidently, together, they determine the company's profitability. Within the marketing as well as the supply chain literature, the need to link both sides has been emphasised. From a marketing perspective, Flint (2004) argues that effective marketing strategy implementation demands supply chain management, because it includes the distribution component of a marketing strategy. Similarly, Sheth et al. (2000) emphasise in their customer-centric marketing approach the need for marketing to become responsible for supply management<sup>1</sup>. They argue that in markets with increasing diversity in customer needs and wants, "companies will have to rapidly adjust their supply to meet demand, that is, practice demand-driven supply management" (p. 61). Moreover, Kumar et al. (2000) suggest that market driven firms will gain a more sustainable competitive advantage by not only offering superior customer value propositions, but by having a unique business system to support it. The business system as the configuration of activities required to create, produce and deliver the customer value proposition refers to SCM. Shrivastava et al. (1999) define CRM, SCM and new product development as the three core business processes which

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<sup>1</sup> The terms supply management and supply chain management are used inconsistently by different authors. However, supply management appears to be used more often in the context of the intra-company integration of supply functions whereas supply chain management includes intra- and inter-company integration (e.g. Bechtel and Jayaram 1997, Lambert and Cooper 2000, Cooper et al. 2001, Mentzer et al. 2001).

explicitly contribute to generating and sustaining customer value. They argue that the role of marketing is to connect these processes, yet admit that while it will have a leading function in managing customer relationships, its role in SCM is restricted to “articulation and navigation” (p. 172). Interestingly, the stream of research in marketing which recognised the move towards networks and network competition at the beginning of the nineties redefined and extended the role of marketing, but did not acknowledge the need for a closer integration of marketing and supply functions (Achrol 1991 and 1999; Achrol and Kotler 1999).

Within the SCM literature, most of the contributions which aim to define SCM refer to the importance of integrating marketing into the SCM concept. For example, Cooper et al. (1997) and Lambert and Cooper (2000) define SCM as the integration and management of key business processes across the supply chain. They outline three marketing-related business processes: (1) CRM, (2) customer service management and (3) demand management. The demand management process, in particular, must balance the customer’s requirements with the firm’s capabilities and use key customer data to reduce uncertainty and provide efficient flow throughout the supply chain. Mentzer et al. (2001) also build their model of SCM on the interfunctional coordination of key business processes spanning supply and marketing-related functions. They conclude that the question of how these functions can be effectively coordinated needs to be researched. Similarly, Bechtel and Jayaram (1997) suggest a research agenda for SCM and emphasise the need for the supply chain to begin with the customer. They propose that “a better term would be seamless demand pipeline, where the end user and not the supply function drives the supply chain” (p. 18-19). Fisher (1997) links the integration of marketing into SCM to the concept of the supply chain’s “market mediation role”. Within this role the supply chain needs to ensure that the “variety of products reaching the marketplace matches what consumers want to buy” (p. 107). Min and Mentzer (2000) emphasise the important role that marketing orientation and relationship marketing play in the implementation of SCM. Finally, the Efficient Consumer Response (ECR) approach is another area which emerged within the logistics community and clearly addresses the interface between marketing and SCM (e.g. Alvarado and Kotzab 2001).

Overall, it appears as if the supply chain community has considered the integration of marketing more openly than the other way round. Min and Mentzer (2000) even argue that “the marketing concept, market orientation, relationship marketing and SCM are not separate but inextricably intertwined” (p. 782). Other authors state that the SCM concept aims to reintegrate marketing and logistics, which initially were closely linked but drifted apart over

time (Svensson 2002)<sup>2</sup>. Our literature review suggests that the number of contributions addressing the interface between SCM and marketing within the SCM field outnumber those from the marketing field (e.g. Emerson and Grimm 1996; Murphy and Poist 1996; Morash et al. 1996; Ellinger 2000; Christopher and Peck 2003). Even for the most obvious interface between logistics and marketing channel management, Alvarado and Kotzab (2001) state that “marketing academics have been slow to rise to the occasion of combining logistics research into their studies of channel systems” (p. 184).

Despite these strong arguments for an integrated approach, in many businesses, the supply side still seems to be disconnected from the demand side and supply chain managers have only a faint idea of the drivers behind customer demand. In a benchmarking study of more than 400 companies, Mentzer (2004) found that demand management, as well as the concept of demand itself, are not well understood by the supply chain community. He concludes that many companies have failed to realise that supply chain coordination is not possible without an adequate understanding of demand. In another global survey among 249 executives across 28 countries, Deloitte (2002) find that only a minority (17%) of all companies have effectively linked their supply chain and customer operations. Not surprisingly, these integrated companies have outperformed their competitors on a range of performance criteria (sales growth, market share, customer service and return on assets).

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<sup>2</sup> We acknowledge that SCM is more than the integration of logistics processes across organisations (e.g. Cooper et al. 1997), yet logistics processes are an important part of SCM.

The different levels of marketing and supply chain integration can be depicted with the help of the following matrix:

		Supply chain advantage	
		Low	High
Marketing advantage	Low	<b>Market Losers</b>	<b>Supply Chain Specialists</b>  <i>Viable Strategy:</i> Cheap Generics  <i>Potential Problems:</i> <ul style="list-style-type: none"> <li>- lack of product and service differentiation</li> <li>- ineffective product and service delivery</li> <li>- suboptimal product development</li> </ul>
	High	<b>Marketing Specialists</b>  <i>Viable Strategy:</i> Expensive Brands  <i>Potential Problems:</i> <ul style="list-style-type: none"> <li>- underdelivery</li> <li>- overdelivery</li> <li>- lost share of customer opportunities</li> <li>- excessive supply costs of products</li> </ul>	<b>Market Winners</b>  <i>Strategy:</i> Differentiation on product and process  <i>Advantages:</i> <ul style="list-style-type: none"> <li>- satisfying different customer needs with differentiated supply chain capabilities</li> </ul>

Figure 1: Levels of marketing and supply chain integration (adapted from Piercy 2002, Deloitte 2002, and Lee 2001)

Whereas market losers have neither marketing nor supply chain strengths, supply chain specialists have a distinct capability in managing the supply-related functions. This enables them to reduce time and costs in manufacturing, procurement and distribution and to

accelerate the change in asset turnover. Companies with a supply chain advantage usually place a strong emphasis on activities such as strategic sourcing, collaborative planning, forecasting and replenishment (CPFR) and inventory reduction (e.g. just-in-time). Rainbird (2004) reports that an Australian supermarket chain has achieved major cost savings through its supply chain excellence, which could then be reinvested in lower selling prices. Still, as Piercy (2002) argues, a supply chain strength that is not linked to marketing differentiation usually limits the company to competing on price and availability; a strategy followed, for example, by cheap generics providers. Competing through supply chain excellence hence assumes that price is a major determinant of competitive advantage. Moreover, Lee (2001) emphasises the problems of supply chain management acting independently of marketing management. Differentiated demand for products and services is a key input to SCM. If both sides are separated, supply will view demand as exogenous and will fail to recognise that demand was influenced by the company's customer facing functions. Also, if consistent and timely information does not flow from the customer facing functions, the company will not be able to respond to differentiated needs of individual customers and customer segments. Among the consequences are suboptimal product and service development, a lack of product and service differentiation and ineffective product and service delivery.

Marketing specialists have a strength in identifying unique customer needs, managing customer relationships and/or in developing strong brands. In particular, the recent trend towards Customer Relationship Management (CRM) has enabled many companies to capture customer contact and purchasing data, to segment their customer base, to personalise the value propositions and to integrate marketing channels (e.g. Day and Van den Bulte 2002; Zablah et al. 2004). Using their extensive customer knowledge also enables them to apply marketing instruments in a more cost-effective way. However, superior marketing strength combined with a lack of supply chain strength leads to a high cost base and slow delivery; problems which can only be compensated by an extremely strong brand (Piercy 2002). A company which is unable to deliver the promises made in the individual customer relationships due to a lack of support capabilities will lose credibility and customer satisfaction will decrease. Typical problems are under delivering and over delivering, or lost share of customer opportunities if the company cannot capitalise on the differentiated customer needs (SAP 2003).

Companies which effectively link their customer and supply chain operations gain competitive advantage by differentiating not only the products and services, but also the underlying delivery processes. They have the capability to satisfy different customer needs

with differentiated supply chain capabilities and, as a consequence, can lower prices on offerings that are of great value to the customer. Based on a thorough understanding of the total supply costs on a customer-by-customer basis, supply chain managers know which orders should get preferential treatment and can develop service packages geared towards customer needs and the value they bring to the company (Deloitte 2002). By closely linking the supply chain with different customer segments, these companies can more proactively address emerging and changing customer needs, reduce the time-to-market, and improve the product and service lifecycle management.

In summary, the argument for combining marketing and SCM strengths is compelling. The fact that still only a minority of companies appear to have effectively linked their demand and supply activities could be influenced by the complexity of the tasks involved. A smooth information flow from the front-end customer interaction back into production is necessary, but on its own is not sufficient. Instead, the influence of marketing activities on supply, and vice versa, have to be understood and coordinated (Lee 2001). For example, pricing, promotion, as well as product mix efforts influence delivery times and supply chain costs. Conversely, supply chain costs dramatically impact on product profitability, and therefore the volume-driven supply chain costs have to be considered in the customer value propositions. Moreover, a comprehensive integration combines not only the activities within one company but rather across the entire supply chain. Integration across the supply chain leads to the development of customer-centred supply chains (Kuglin 1998). In a customer-centred supply chain, differing needs of the company's customer base are considered and met through the alignment of all value creating processes within the organisation and across the activities of suppliers and distributors. Developing such a customer-centred supply chain is the main goal of the demand chain management approach.

## **DEMAND CHAIN MANAGEMENT**

Despite the fact that DCM is a relatively new concept, it has already been defined in different ways. Most importantly, a wider and a more restricted view of DCM can be distinguished. In a broader sense, Selen and Soliman (2002) have defined DCM as "a set of practices aimed at managing and co-ordinating the whole demand chain, starting from the end customer and working backward to raw material supplier". Similarly, Vollmann and Cordon (1998) stress that DCM starts with the customers, working backward through the entire chain, to the suppliers of the supplier. Hence, everything that is moved, handled or produced should ideally be in response to a known customer requirement. Equally, Baker (2003) stresses that

managing a demand chain is fundamentally different from managing a supply chain. It requires turning the supply chain on its head, and taking the consumer as the starting point, rather than its final destination. Treville et al. (2004) criticise these broader views because they imply that the term demand chain could effectively replace supply chain, a change in nomenclature which they see as undesirable. Hence, they propose a more narrow definition of DCM. Based on the distinction between the efficient physical supply and the market mediation roles of supply chains proposed by Fisher (1997), Treville et al. suggest restricting the term to market mediation supply chains. In these responsive demand chains for products with innovative demand, supply chain efficiency is traded off for customer service. Rainbird (2004) also maintains the distinction between the demand chain and the supply chain. He sees them as two distinct entities and proposes the term value chain as the overarching concept which comprises both the demand and the supply chain (p. 242). However, when he defines demand management as “an understanding of current and future customer expectations, market characteristics, and of the available response alternatives to meet these through deployment of operational processes”, he merges the demand and supply chain aspects.

We share the concern over potential confusion, if the term supply chain were to be replaced by the term demand chain. However, countering the argument of Treville et al. (2004), we hold that even in markets where supply chain efficiency is the basis for competitive advantage, demand should always be linked with supply. In line with Rainbird (2004), we acknowledge the fact that demand and supply processes are overlapping but can still be distinguished. Therefore, we suggest that demand chain management is the concept which aims to integrate demand and supply orientated processes. Demand processes are all processes at the customer or market interface, aimed at responding to customer demand through value creation. Traditionally, these processes are allied to the marketing discipline. Supply processes comprise the tasks necessary for fulfilling demand (Christopher and Payne 2002). Furthermore, we suggest viewing DCM as a macrolevel process which includes all activities that companies undertake in their quest to create *and* deliver needs-based customer value propositions. In practice, this may mean that in order to meet the differing customer needs, a differentiated approach to the demand chain has to be considered. As a consequence, demand chain management is not restricted to one supply chain which is more closely linked to demand, but can rather be described as a system or network of relationships within, and even among, the partners in the demand chain. Demand chain management thus involves creating and managing customer value through responsive networks.

So far, most contributions to DCM have been based on best practice examples (e.g. Lee and Whang 2000; SAP 2003; Deloitte 2002; Langabeer and Rose 2002) and lack a conceptual foundation. In order to develop a demand chain management framework and derive the roles of marketing within DCM, we conducted a co-development workshop to generate additional practitioner input.

## **The Study**

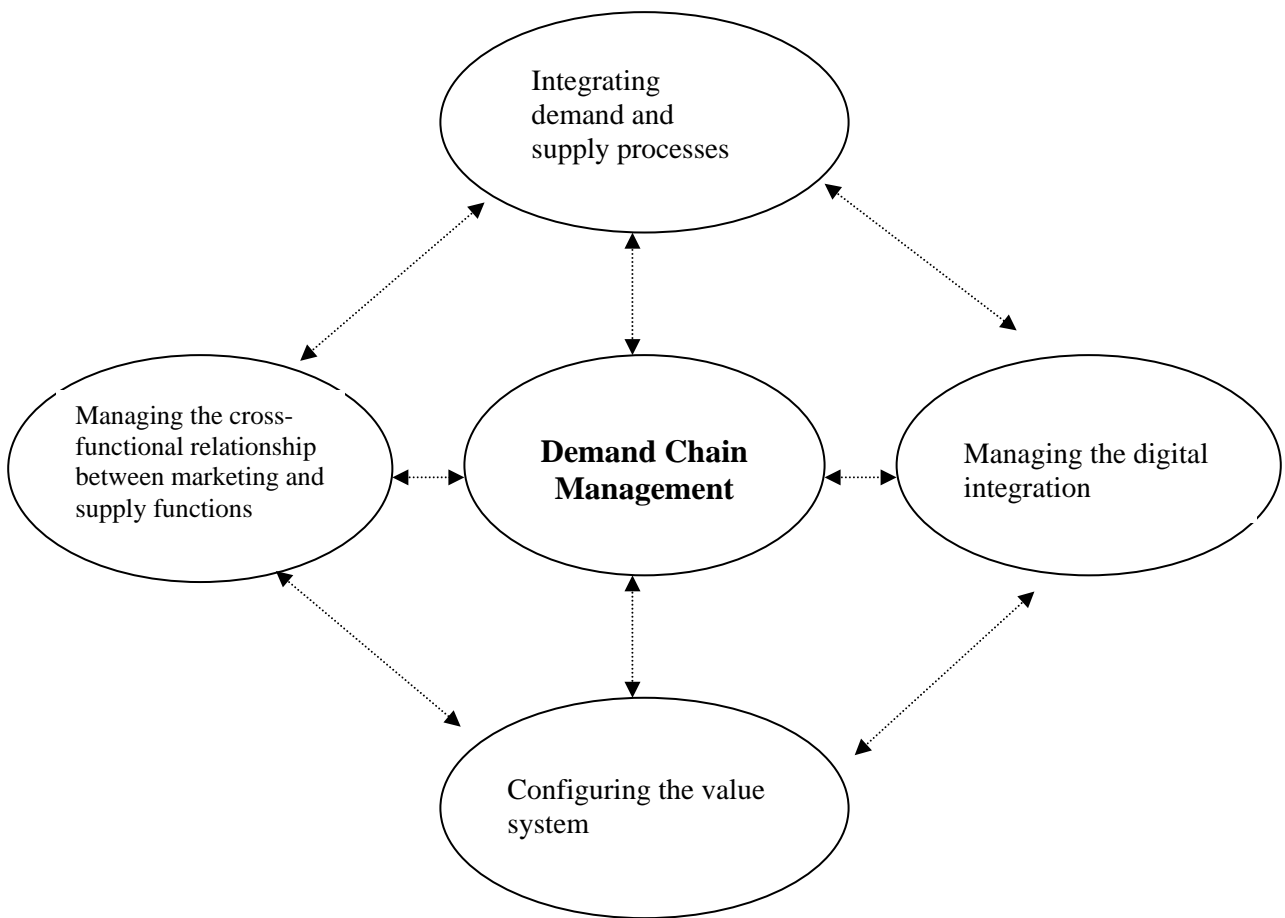
Collecting data for a cross-functional study is difficult, but cross-functional *and* interorganisational data collection seems almost impossible. Thus, while most of the literature agrees that the biggest value creation potential lies in the integration across all organisations within the supply chain, we have restricted our focus to DCM from a company perspective. This does not necessarily exclude suppliers or distribution partners; however, the viewpoint from the company controlling the demand chain is taken. Our perspective is consistent with the “firms in network” level proposed by Möller and Halinen (1999). Those studies reporting current best practice examples also suggest that demand and supply integration starts internally and that the full potential of leveraging it across all supply chain organisations has not yet been tapped (SAP 2003; Deloitte 2002). Supply and demand integration issues can only be captured if representatives from both sides within the same company are involved. Our initial intention was to conduct paired interviews in selected companies. After the completion of a trial set of interviews, we noticed the limitations related to the methodology. Rather than gaining knowledge on the elements of DCM, the interviewees elaborated on the barriers and problems, often making the other function responsible for integration failure. Therefore, we decided to involve both parties simultaneously, and to facilitate constructive discussions through a co-development workshop.

The co-development workshop involved eight companies with representatives from supply and demand functions within each company (marketing, sales, logistics and SCM). We could have involved more companies with only one representative from either marketing or supply functions, but at this stage, we opted for the quality rather than the quantity of the sample. The companies were chosen on the basis of proven expertise and interest in DCM. They represented a range of different industries, from oil and cosmetics to a manufacturer of personal care products and a photoprinting technology provider. The workshop lasted one day and was run by Synectics, a consulting company which specialises in running such workshops. Synectics applied a creative problem solving process which captured the

different mindsets of both functional representatives but then sought convergence. The process utilises brainstorming techniques, with an objective of leveraging both present knowledge and future potential. Its structure, with rigorous projective exercises, tools and techniques, enables the participants' thinking to be shaped and developed. As researchers, we acted as so-called "problem owners", which enabled us to choose the prominent topics, while leaving the process responsibility to the professionals. The rich data from the workshop was captured through notes and an extensive number of flip charts. Overall, we recognise the limitations of the data collection through the workshop; however, given firstly, the nature of the problem, secondly, the early state of development and thirdly, our purpose of building a grounded conceptual framework rather than testing hypotheses, we believe that the workshop was a rewarding and suitable method. It allowed us to tap the "mental maps" and experiences of demand and supply representatives within the same companies, and was a suitable, discovery-orientated and practitioner-based approach (Zaltman et al. 1982).

## **A CONCEPTUAL FRAMEWORK FOR DEMAND CHAIN MANAGEMENT**

Based on the data from the workshop as well as the literature review, a conceptual framework with four fundamental elements of DCM emerges: (1) integrating the demand and supply processes; (2) managing the digital integration; (3) configuring the value system and (4) managing the cross-functional working relationships between the marketing and supply functions. Each of the elements will now be outlined and the propositions for further research in marketing are derived.



*Figure 2: A conceptual framework for demand chain management*

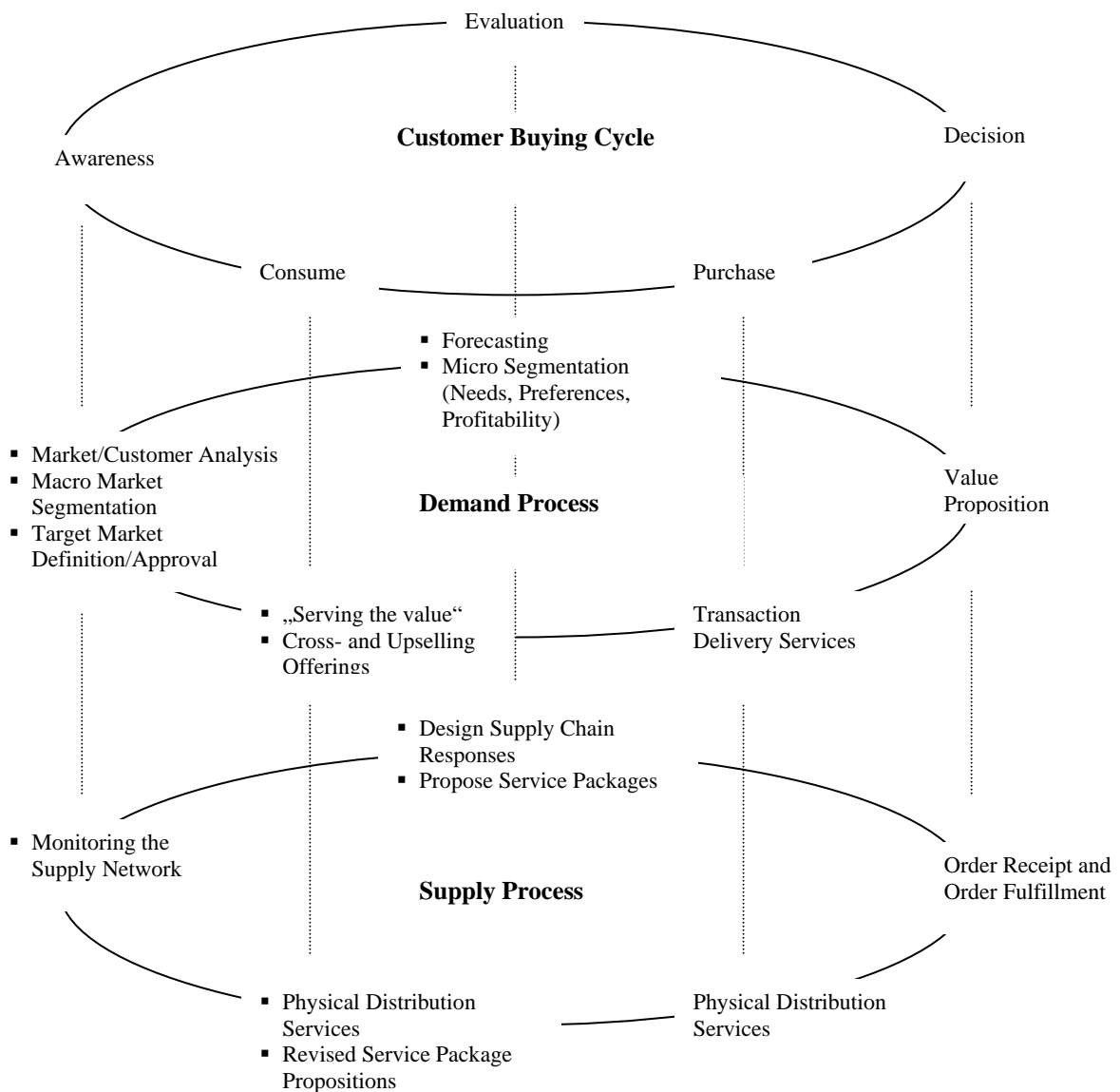
### **Integrating Demand and Supply Processes**

As noted above, demand chain management as a concept aims to integrate supply and demand processes in order to ensure customer value creation and delivery. According to Langabeer and Rose (2001), DCM helps to improve an organisation's processes by advancing the coordination between the supply chain and demand driven activities such as consumer demand analysis or the selection of markets which best meet an organisation's capabilities. The pitfalls related to a lack of integration are illustrated in the case of General Motors. While GM, like many other automotive companies, has placed a strong emphasis on supply chain excellence, the automotive supply chain processes still did not fully meet customer-driven requirements. The products were too complex and the design cycle time was too long to properly respond to the marketplace. Through process integration, the

customer would be enabled to configure their own vehicles, add options, select colours and understand how these decisions impact on price and financing (Koudal 2003).

The argument for demand and supply process integration is not without precedent in both marketing and SCM. In the marketing field, the three core processes of CRM, SCM and new product development identified by Shrivastava et al. (1999) reflect the demand and the supply side. While the authors emphasise that the processes need to be integrated, the integration is not discussed. Similarly, Payne and Christopher (2002) argue that CRM and SCM processes have to be integrated in order to “provide high levels of product availability and variety, yet which are low cost and reliable...” (p. 501). While they provide guidelines for both processes independently, the integration is depicted at a highly abstract level. Those contributions conceptualising SCM from a process perspective have also stressed the need to integrate the key business processes within and between organisations (e.g. Cooper et al. 1997; Lambert and Cooper 2000; Mentzer et al. 2001). A wide range of business processes are suggested by different authors, including, among others, demand and supply-related processes. Still, the integrative frameworks proposed are developed to stimulate new research rather than guiding the specific issue of demand and supply integration. In this sense, Mentzer et al. (2001) suggest the investigation of how the processes can be effectively coordinated within a company and across the supply chain as an area for future research (p. 20).

The recent study by Rainbird (2004) is the only work we found which explicitly suggests a process fusion model for demand and supply process integration. He distinguishes between eight supply processes, ranging from order receipt/entry to delivery options, as well as seven demand processes, e.g. macro-market definition and CRM. Rainbird argues that the “fusion” or linkage between these processes can be achieved through either management, specific organisational capabilities or technology. With the help of the “consumption chain”, which looks at the “total experience” from a customer perspective, the need to integrate the activities is demonstrated. Building on this work as well as the findings from our co-development workshop, we suggest a three layered process integration model, comprising the customer buying life cycle and the demand and supply processes (see figure 3).



*Figure 3: Demand and supply process integration*

The three layers of the model stress firstly, the integration of the customer into the value creation process as proposed by Vargo and Lusch (2004). Secondly, in line with the conceptualisations of relationship marketing and CRM, the buying cycle acknowledges the dynamics in customer relationships (Zablah et al. 2004). Thirdly, by linking the activities in the demand process with those in the supply process, guidance to implementing the process integration can be derived. Any process can usually be divided into subprocesses and activities and therefore, the level of abstraction is arbitrary. In our model, the activity level was selected to match the phases in the customer buying cycle, and, furthermore, to illustrate those activities whose integration is fundamental for DCM.

Awareness expresses the customer's recognition of a need which can trigger a value creation process for the company. In this phase, activities in the demand and supply processes are geared towards the preparedness and "housekeeping" within both areas. Demand tasks comprise market analysis, macro market segmentation, as well as the definition of target markets, or, in the case of repeat purchases from existing customers, target market approval actions. On the supply side, the existing supply network has to be monitored against the market information provided by the demand process. This will compromise common activities such as a supplier evaluation based on the supply requirements derived from the market positioning of the company.

Once the customer is considering buying from the company within the evaluation phase, the accuracy of forecasting and demand planning is increased. In addition to the quantitative forecast, in the demand process customers are microsegmented based on needs, preferences and likely profitability. The supply process uses the information on customer segment-based delivery needs in order to plan the specific supply chain responses. This will comprise a range of common supply chain activities such as materials requirement planning, capacity management or production planning and scheduling. As we will outline below, here, the integration of demand and supply activities involves consistency between customer and production or logistics based segmentation. Moreover, on the demand side, value profiles are developed by quantifying for each segment the "ideal" customer value model, including the benefits, costs and value imperative drivers (Rainbird 2004). On the supply side, important inputs into the potential customer value models are, for example, pipeline costs or delivery options. Therefore, integration into the demand process is facilitated if the supply side proposes service delivery package options as input into the value profiling.

In the decision and purchasing phases demand and supply integration is put to the proof. Simply stated, all the marketing effort which has been put behind the product or service will fail if it is not available when the customer requires it. The relevant supply tasks are captured in the physical distribution service concept developed by Mentzer et al. (1989) with its three dimensions of availability, timeliness and delivery quality. The authors argue that recognition should be given to the fact that each individual customer's needs along these three dimensions may vary. Moreover, from a demand chain perspective, the objective is not primarily to make the sale, but rather to maintain a portfolio of profitable customers. Therefore, the goal is neither to generally serve customers better, nor to serve them cheaper, but to sell and deliver on the basis of a thorough understanding of customer needs, profit

potential and supply capabilities required. Close integration should ensure that the company profitably meets different customer needs with differentiated supply chain capabilities.

Finally, from a customer perspective, the value creation phase starts once the customer consumes or uses the product or service. Rainbird (2004) thus summarises the marketing activities as “serving the value” (p. 239) and refers to any supporting activities, ranging from installation, financing, or warranty to simply providing information and advice. Since the supply activities have to support customer service, demand and supply tasks overlap. For example, offerings such as product return, exchange or disposal tasks are typically carried out by supply functions. Moreover, and consistent with the CRM philosophy, an important objective of the post-sale phase is to “build” the relationship through cross- and upselling offerings. Renewed awareness and consideration of the cross- and upselling offerings on behalf of the customer will close the buying cycle. In order to build the customer relationship profitably, feedback on over- or underdelivery, as well as information on customer profitability enables supply functions to develop revised service packages. For instance, customers who contribute less to profitability can be migrated to more appropriate service packages, for example, longer lead times or reduced after sales support.

In the co-development process, delegates stressed the importance of a process-driven business culture in order to achieve demand and supply integration. Delegates from one company reported that functional heads were only willing to redefine their functional responsibilities when a board member called for commitment to cross-functional processes. In the literature, it is suggested that marketing plays a vital role in process coordination (e.g. Min and Mentzer 2000; Shrivastava et al. 1999). However, our findings from the workshop also suggest that many marketing departments do not appear to be fulfilling this role. In most of the workshop companies, marketers are often preoccupied with revenue stimulation regardless of the implications for supply functions. Thus, both areas operate independently. Even the well-known problems related to uncoordinated promotions were mentioned. Demand and supply coordination, as outlined above, was only experienced within venture projects. The supply chain representatives in particular appeared resentful because they felt dependent upon marketing's willingness to trigger the process coordination through the dissemination of customer and market information. In this sense, the critical role of marketing in demand and supply coordination was confirmed.

Based on our literature review and the tentative empirical findings from our workshop we suggest the following propositions relating to the role of marketing in demand chains:

*Proposition 1:*

The role of marketing within demand chain management is to facilitate process integration by disseminating customer and market information.

*Proposition 2:*

The role of marketing within demand chain management is to consider the effect of marketing activities from an integrated process perspective.

## **Managing the Digital Integration**

The term “digital” highlights that demand and supply processes are linked through information technology (Koudal and Wellener, 2003). Information management and technology is thus a key enabler of the process integration. The design of information systems should be derived from the integrated demand and supply process requirements, and, at the same time, support that integration. In practice, this is an exceedingly challenging task. The literature, as well as the findings from our workshop, supports the notion that information systems are often a result of the evolution and serving of discrete needs of functional lines rather than the key business processes. Therefore, IT solutions can reinforce “walls” between functions rather than helping to overcome them (Korhonen et al. 1998).

From a DCM perspective, information systems have to support tasks such as identifying for each order, whether an item is purchased via catalogue, call centre, direct sales force or the website. In addition, customer information such as sales history and profitability needs to be available along with product availability for their specific requirements. This implies the coordination of procurement, manufacturing and logistics data with multi channel customer interaction data. The underlying CRM systems on the demand side and SCM tools on the supply side are available, yet rarely integrated. On the demand side, CRM technology is what propelled relationship marketing to the forefront, enabling firms to collect and store unprecedented amounts of customer data and then feed the knowledge back into customised offerings, product improvements as well as sales and marketing campaigns (Zablah et. al. 2004). Although the impact of technology on CRM has been questioned, there is still no doubt of its enabling role for the demand process (Bose 2002). Similarly, the role of information systems in SCM integration is widely acknowledged (see Gunasekaran and Ngai 2004 for a review). SCM applications typically have a number of functions, among them a forecasting functionality, analytics tools to calculate operational costs as well as collaboration tools to connect parties in the supply chain. These components aim to increase the

information flow and thereby improve the visibility throughout the pipeline (Christopher 1998). Without the ability to “see” actual demand and subsequently to manage replenishment, ideally in virtual time, the supply chain will depend on inventory.

Managing the digital integration within DCM goes beyond the disconnected functionalities of CRM and SCM tools. The demand and supply process integration suggests further IT requirements: information technology must support the company’s capability to serve differentiated customer segment based requirements by providing the ability to search for and develop alternative supply scenarios. Two case studies from General Motors and Nokia illustrate the undertaking.

The challenge of digital integration within GM was that the company had highly advanced, yet disconnected supply side and customer facing tools. For instance, on the demand side, 150 websites, 63 call centres, and 23 customer databases and dealers with their own communication tools and databases were all set up to increase customer service. On the supply side, the information flow had been focused on a range of efficiency improving projects. Overall, the company had 7000 discrete information systems, leading a senior manager to conclude that “instead of having an information highway, we had country roads because they were all independent and not linked together” (Koudal et al. 2003, p. 7). The digital integration was achieved by restructuring the organisation. A cross-functional matrix of process information officers (PIOs) and chief information officers (CIOs) was introduced. PIOs are responsible for the design, development and implementation of major business processes in product development, production, sales, service, marketing and the supply chain to drive common solutions across those units. For these key processes, the CIOs identify and implement the information technology necessary to support them. The matrix structure, with business processes and supporting IT, enabled the company to improve its existing systems and technology infrastructure. The vast number of information systems were consolidated into a few key systems with standardised inputs and outputs, data formats, standard software and hardware application architecture and communication interfaces. Most importantly, it enabled a demand driven definition of the information flow.

Nokia, as a manufacturer of cellular phones with increasing product variety and shortening product life cycles, sees information technology as a basis for its flexibility in serving all major markets in the world (Korhonen et al. 1998). The information flows are structured into two key processes; a planning process information flow and an execution process information flow. The planning process captures the view of market and customer demand in order to plan and implement the required capacity and capability to meet demand. The execution

process is customer order pull-driven rather than focusing the execution of plans. The objective is to achieve responsiveness by supply flexibility through the reallocation of global sources in line with market and customer demand at any given time. Similarly, in the GM case, the integration of both processes enables a demand-based steering of the information flow.

The information solutions sought in both case studies would not have been possible without the Internet. In this sense, Frohlich and Westbrook (2002, p. 729) state that “we have known about the benefits of DCM for many years, making it work in practice was typically impossible before the Internet”. The authors have conducted a survey to explore the current level of web-based demand and supply integration. Interestingly, among the 949 companies in the sample, less than 10% practice web-based demand and supply integration, compared with around 20% practicing demand integration and 20% practicing supply integration. Not surprisingly, those manufacturing companies practicing demand and supply integration outperformed all other groups. The authors conclude that DCM is currently the most powerful web-based integration strategy that manufacturing companies can adopt.

In our co-development workshop, one company used process reengineering and technology to synchronise its marketing and procurement. Both delegates from the company information confirmed the benefits of a strong IT-based customer and supply chain integration for demand forecasting, order scheduling and targeted marketing. The other delegates bemoaned the multiplicity of rigid and inflexible systems in their companies, which prevents a demand-driven information flow across the functions. However, rationalising initiatives were under way and led one delegate to conclude that the number of systems rationalised through IT infrastructure integration in his industry resembled those of the supplier rationalisation programmes about ten years ago.

Overall, the literature on the role and use of information technology within the demand and supply chain area is vast. In SCM, increasing the visibility of materials flow, inventory and demand information throughout the pipeline has long been acknowledged (e.g. Christopher 1992). On the demand side, the promise of CRM tools to build a loyal and profitable customer base through customer intelligence has led to immense IT investments across many industries. Still, from a DCM perspective, there is a void of literature on the supporting role of IT for the demand and supply process integration. Moreover, as the survey by Frohlich and Westbrook (2002), as well as the findings from our co-development workshop suggest, not many best practice companies can yet be cited. From our discussion we can

conclude that the idea of DCM is based on the principle of using demand instead of supply as the factor integrating the information needs in the demand chain.

Based on our literature review, as well as the tentative findings from our co-development workshop, we would therefore suggest the following proposition related to the role of marketing in DCM:

*Proposition 3:*

The role of marketing within demand chain management is to foster a demand rather than a supply based integration of information needs.

### **Configuring the Value System**

While the term “chain” could imply a neat sequence of value-adding stages, the demand chain is more accurately described as a system or network of lateral and horizontal inter-linkages, reverse loops or two-way exchanges within and among the partners in the demand chain. Since the demand chain is primarily concerned with customer value creation from start to finish, the demand chain is by its very nature a value system.

Normann and Ramirez (1993) were among the first to stress the notion of companies competing within value-creating systems, i.e. systems within which different actors work together to co-produce value. Since then, the concept of value systems has been adopted by several authors. Wehrli and Jüttner (1994) suggest that the goal of configuring the value system is to raise the total value of the system and thereby value derived by the individual parties. Likewise, Carson et al. (1999) define the value system as “the system that delivers value” (p. 116) and Ehret (2004) and Al-Mudimigh et al. (2004) see the value system as the context within which companies in today’s markets have to develop and maintain a structure for continuous value creation.

Value systems have to be designed in such a way as to meet the needs of different customer segments, and to respond to the desired level of customisation. Thus, the triggering mechanisms for the structure of value systems are the increasingly complex value propositions which have to be delivered to establish and maintain customer relationships. DCM seeks to match the level of differentiation required in the customer value propositions with the level of differentiation in the value system. Empirical support for this view is provided by a study of six customer relationships in cellular network building by Heikkilä (2002). His

findings suggest that the crucial task for a supplier is to design the demand chain architecture according to the needs and characteristics of distinct customer needs and situations. This involves the development of a “modular” demand chain structure. The need to design the demand chain architecture according to customer needs is also supported by a case study on General Motors “Digital Loyalty Network” (Koudal et al. 2003). Whereas the industry traditionally had a generic, one-size-fits-all supply chain model, market research revealed that customers had widely varying expectations on various order fulfilment attributes such as lead time and delivery reliability. As a consequence, a differentiated supply chain response for each customer segment was sought.

The need to develop market-specific supply chains based on segmentation has been emphasised earlier. Initially, the focus was on tailoring logistics to match individual customer or customer segment needs (e.g. Fuller et al. 1993; Murphy and Daley 1994). The argument that logistics needs to be differentiated to fit specific customer needs has recently been supported empirically (Mentzer et al. 2004). Within a SCM context, the case for product or market specific supply chains was first argued by Fisher (1997). Based on a distinction between functional or innovative products on the one hand and physically efficient or responsive supply chains on the other hand, a matrix with viable product-supply chain combinations was proposed. More recently, this initial segmentation was extended by Christopher and Towill (2002) and Childerhouse et al. (2002), who propose extended taxonomies comprising criteria such as: product (standard or special), demand (stable or volatile), lead times (short or long), volume (high volume or low volume) and time windows for delivery (short or long) as a basis for market specific supply chain development.

While most of the contributions to date are of a conceptual nature, Godsell and Harrison (2002) have conducted a case-based empirical study exploring the alignment of functional segmentations within a manufacturing company of cleaning products. Interestingly, they find that while the manufacturer applied three approaches to segmentation: a customer, a production and a logistics approach, none of them were linked. Figure 4 illustrates the different segmentation approaches applied:

<b>Customer Segmentation</b>	National Accounts 70% of sales 10 accounts	Field Services 30% of sales 200 accounts		
		Neighbourhood Retail	Discount Sector	Pharmacy
<b>Production Segmentation</b>	Promotional Products (Make to order)		Standard Product (Make to Stock)	
<b>Logistics Segmentation</b>	Quick Response (Same Day)		Standard Response (3 – 7 days)	

*Figure 4: Lack of alignment between functional segmentation approaches (Godsell and Harrison 2002)*

Like many companies in today's world of key account management and CRM, the manufacturer segments the customers on the basis of the value to the company of the customer accounts. In addition, a secondary classification by channel type is applied to the long tail of field sales. The authors argue that such a segmentation is not suitable to develop a customer behaviour-driven supply chain configuration. Furthermore, the production and logistics segmentations are independent, which is reflected by the internal organisation structure that separates manufacturing and logistics activities. Whereas manufacturing makes some distinction between promotional and standard products, at subsequent stages within the supply chain, the products are treated exactly the same. The logistics segmentation between quick and standard response is derived from the logistics strategy which offers customers these different services. However, at the time of the study, only three accounts used the quick response service. Finally, the segmentation approaches applied within the external supply chain, for example at the sourcing level, are entirely different again. These sobering results lead the authors to conclude that the challenges of reflecting

customer segmentation in internal supply chains are substantial and that the problems of alignment across the external supply chain could be too great.

Our own findings from the co-development workshop confirm both the need for aligning customer and supply chain segmentation as well as the difficulties involved in implementing it. Only one company had experience in aligning customer needs with supply chain responses. Within the company manufacturing photoprinting technology, the development of a new product was recognised to require a supply chain approach different from the company's current approach. As a consequence, a cross-functional venture team was set up which comprised marketing as well as supply functions. Both representatives confirmed that the co-ordination enabled the company to identify the target markets for the new product and at the same time develop the supply chain to compete in those markets. Interfaces between both functions were mapped through processes, and a capacity planning model was used as a facilitator. The venture team was a forum within which the drivers of marketing and supply strategies communicated and, as a delegate remarked: "the spirit of a small business could be captured". With regard to segmentation in particular, the delegates agreed that a shift from a functional approach to an overarching management approach to segmentation was needed.

The dynamics relating to customer value perception are a further hurdle for a customer needs-based value system configuration. Customers constantly change what they value, making customer value perceptions moving targets. As a consequence, decisions about when and how to integrate or disconnect relationships in order to change and optimise the structure of the whole system need to be made. In the empirical study by Heikkilä (2002) mentioned above, a further finding was that the importance of efficiency as a DCM objective increases when the network building stage matures and the growth of the network stabilises. Interestingly, his findings suggest that a certain level of maturity in the value system's structure is a precondition, not only for optimising it, but also for developing the capability to respond to new end-customer value propositions. One explanation could be that more stable networks coincide with higher levels of trust and information sharing between the partners, which in turn could facilitate cooperative attempts to improve the value system's performance (Handfield and Bechtel 2002). Moreover, in order to disseminate a market sensing capability, processes need to be institutionalised, which is more likely to be the case in a more mature value system.

We conclude that a first area for further research relating to the value configuration element of DCM is to investigate how the customer segments within companies can be linked with

segment supporting, responsive supply chains. Compared with the traditional approach to market segmentation, the role of marketing requires the integration of an “external” customer-facing and an “internal” value system perspective on segmentation. While the increase in available information enables companies to respond to individual customer needs or to microsegment them into smaller and smaller groups, from a demand chain perspective, this granularity can cause problems. Tentative knowledge suggests that going too far in individualising offerings is likely to cause a lack of integration between a production-driven supply chain and a customer-driven value definition. Especially in companies where rich sources of information on buying behaviour has led to “database” segmentation rather than market segmentation (Baker 2003), balancing customer satisfaction with supply chain efficiency is a major challenge.

Secondly, more research is needed which looks at how companies can translate their market sensing skills and the ability to develop new customer value propositions into structural adaptation requirements for the value system. In a network context, some authors have suggested that marketing will be concerned with marketing cultures, values and an overall customer orientation, rather than functional departments (e.g. Webster 1992; Achrol 1991). Therefore, the role of marketing could be widely defined as managing the intra- and interorganisational relationships which will ensure the value system’s response capability. However, Piercy (1995) rightly draws attention to the risk that marketing structures can disappear and marketing responsibilities dissipate if marketing is “everyone’s job implemented by no one”. Now, more than ten years after the recognition of networks in the academic marketing literature, marketing still operates from functions and departments, and we believe that the role of marketing within DCM is strengthened if it is defined from a functional perspective. Heikkilä (2002) also suggests that the decisions about how to serve customers and to react to changing customer needs cannot be the responsibility of a function alone, but needs to be defined in the corporate strategy. The marketing function will have an important and essential contribution, but will not be the only contribution.

Based on our literature review and tentative empirical findings we suggest the following propositions relating to the role of marketing in demand chains:

*Proposition 4:*

The role of marketing within demand chain management is to link external, customer-value segmentation with internal, segmentation of production, logistics and sourcing.

*Proposition 5:*

The role of marketing within demand chain management is to obtain knowledge about changes in customer needs as a basis for structural adaptation requirements of the value system.

### **Managing the Cross-Functional Working Relationships between Marketing and Supply Functions**

A lack of integration between marketing and supply functions appears to be widespread in many companies, and can be seen as a major barrier to implementing DCM. The need to manage the interfunctional relationships has already been emphasised within SCM (e.g. Mentzer et al. 2001); however, the growing need for customer-value based segmentation is likely to further increase its importance within demand chains. Thus, cross-functional working relationships are critically related to the company's ability to prioritise customers according to the internal supply capabilities of the company. Furthermore, studies have shown the positive effect of cross-functional cooperation on perceptions of customer perceived value and customer service (Fisher et al. 1997). Managing the relationship between demand and supply functions involves creating incentives for all parties to help manage the flow of customer and demand information.

Within the literature, only a small number of empirical studies of the relationship between marketing and supply functions can be traced. Ellinger (2000) finds empirical support for the hypothesis that marketing and logistics cooperation has a positive impact on distribution service performance, i.e. the ability to customise service offerings to customer needs. His findings suggest a positive association between effective marketing and logistics interdepartmental relationships and distribution service performance. Effective interdepartmental relationships are found to be influenced by the evaluation and reward system. However, the results also indicate that the relationships in the more than 300 companies surveyed were not particularly effective. As a consequence, Ellinger suggests that further research should investigate the antecedents of marketing and logistics cooperation. Morash et al. (1996) investigate empirically the cross-functional interface and overall business performance relationships for logistics, marketing, production and new product development. The findings of this CEO perception study establish that process integration across functional areas is crucial for firm performance. Next, an empirical study by Murphy and Poist (1996) analyses marketing and logistics managers' views regarding

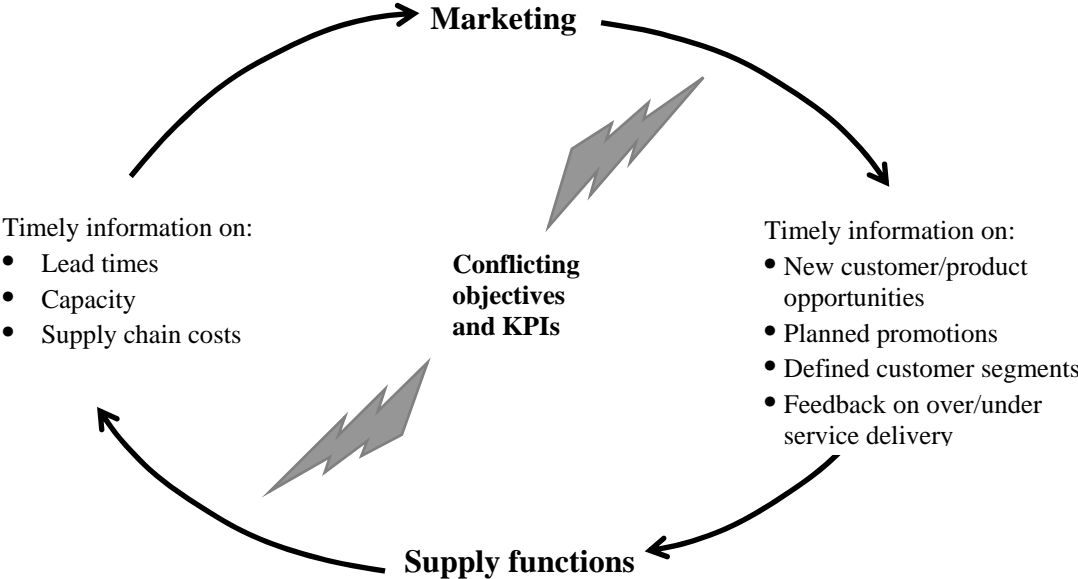
interface-cooperation. Cooperation refers to a relationship in which both the marketing and logistics functions experience a high level of satisfaction. The findings show that 53% of the logistics respondents and 49% of the marketing respondents rated the present level of cooperation between their functions to be only “slight” or “moderate”. Communication barriers were perceived as by far the major obstacle to better cross-functional cooperation. Among the most frequently used techniques to facilitate cooperation were top management support, joint projects, information sharing and attempts to instill a philosophy of cooperation. Finally, Kahn and Mentzer (1998) investigated interdepartmental integration between marketing, manufacturing and R&D managers. Their findings suggest that integration has two components: interaction and collaboration. Interaction emphasises the use of information exchange activities and has no direct effect on a range of performance outcomes (e.g. department performance, satisfaction in working with other departments). Collaboration however, which implies a mutual understanding, a common vision and collective goals, has a direct positive impact on performance.

The findings from our co-development workshop on cross-functional cooperation between marketing and supply functions are in line with these studies. For example, among the techniques used to facilitate cooperation, soft issues played a major role. Delegates used the metaphor of aligning “spin” with “fact”, emphasising that marketing stands for creativity, experimentation, uncertainty and energy, whereas the culture in supply functions is characterised by operational details, processes, workflows and data. Moreover, the mutual distrust, the thinking as “them and us”, as well as the prejudices of “number crunchers” and “box movers” versus “sales hunters who can never say ‘no’ to any customer” were discussed as barriers to cooperation. Job rotation was a further facilitator reported to be of great value in one of the workshop companies. Here, the former head of marketing moved into an operations role.

In the workshop, the critical role of communication was confirmed. Practitioners from marketing and supply functions discussed what information would need to be exchanged through cross-functional communication. Among the information sought most urgently from marketing by supply functions was new customer and product opportunities, defined customer segments, planned promotions as well as feedback on over- or underdelivery. Marketing, in turn, emphasised the need for timely information on lead time, capacity and pipeline costs (inventory carrying costs, warehousing, transportation costs) (see figure 4). In line with the study by Mentzer and Kahn (1999), delegates stressed that the information flow was a necessary but not a sufficient condition for the cross-functional working relationship. A shared understanding of the information and, moreover, the ability to act on the same

information were seen as being pivotal. Both aspects can be subsumed under the collaboration concept. Collaboration also reveals the limitations of information technology in facilitating cross-functional working relationships. For example, one delegate mentioned the limitations of enterprise resource planning programmes. Although they are designed to enable all departments to see the same data, he said it inhibits rather than facilitates the integration because the readily available data leads to uncoordinated actions.

A further barrier to cross-functional cooperation emphasised in the study by Ellinger (2000), which was also an issue in our workshop, was conflicting key performance indicators (KPIs). Among the main KPIs reported by marketers were market share, sales revenue, gross margin and furthermore problems were created by a widespread trend to increasing product diversity and customisation. For supply chain managers, performance is measured against inventory turnover and value, cost control, decreased number of stock keeping units (SKU) and customer service. Workshop delegates agreed that the drive towards functional excellence in their companies has led to an increase of functional KPIs. Especially when the reward system is closely linked to these conflicting KPIs, the coordination between demand and supply is at risk. A reduction of the number of relevant KPIs, the linkage of these KPIs to the overall business performance, as well as a certain flexibility enabling the company to adapt the KPIs to respond to market forces, were among the solutions developed to overcome this barrier to cross-functional cooperation.



*Figure 5: The Cross-Functional Relationship between Marketing and Supply Functions*

We conclude that an area for further research is to analyse the cross-functional relationship between marketing and supply functions. While this research can build on the findings from existing studies on interfunctional relationships, we agree with Kahn and Mentzer (1998), as well as Ellinger (2000), who suggest that more research is needed which identifies the *antecedents* of marketing and supply cooperation. Our literature review and tentative empirical findings suggest that a mutually satisfying relationship between both functions has two levels: a first, basic level of information exchange and communication, which is a necessary yet not a sufficient condition for the second level of collaboration. Collaboration between marketing and supply functions implies a mutual understanding and collective goals. On the first level, information exchange, more research is needed to identify *which* information needs to be shared. Our findings from the workshop (which are summarised in figure 5) emphasise that it is not the raw sales data but rather the functional knowledge which should be communicated. For the second level of collaboration, the KPI appears to be a major inhibitor or facilitator for collective goals. Our findings propose that manufacturing and supply chain managers who are rewarded on the basis of costs view customisation of products, product variety and delivery options as threats to their performance. Instead, collaborative KPIs focus on a broader set of collective company objectives rather than evaluating functions on discrete or conflicting performance measures. Finally, achieving a mutual understanding of the information is possibly the most challenging aspect of marketing and supply collaboration. One delegate reported an occasion in his company where exactly the same information was provided to marketing and supply functions, but as they interpreted it in different ways, the operational implications drawn by both functions were totally different. In the literature, the dissimilar workstyles and functional cultures are often cited as barriers to collaboration. Our own findings suggest that these rational reasons are frequently part of a vicious circle with mutual emotional resentment.

We offer the following propositions relating to the role of marketing in managing the cross-functional relationship between demand and supply functions:

*Proposition 6:*

The role of marketing within demand chain management is to proactively exchange information with supply functions. Specifically it should *provide* timely information on: defined customer segments; new customer/product opportunities; planned promotions; feedback on

over/under service delivery and, furthermore, seek information on: lead times, capacity and pipeline costs.

*Proposition 7:*

The role of marketing within demand chain management is to seek collaboration with supply functions by working towards a mutual understanding of the information exchanged and collective goals.

## **SUMMARY**

In today's markets, understanding the customer's situation and responding effectively to differing needs through the coordination of marketing and SCM can be a source of superior value creation. This paper has introduced DCM as a model which combines the strengths of marketing and SCM by shifting the focus to the customer and designing customer-centred supply chains. Marketing is traditionally externally focused and creates customer value, while SCM is inwardly focused and concentrates on the efficient use of resources in implementing marketing decisions. Marketing and SCM integration is between those that define demand with those who fulfill it. Until today, the concept of DCM has been addressed from SCM and operations perspectives; however, despite its clear relevance, no marketing contribution can be cited. By outlining the roles of marketing in demand chains, the paper closes this gap and proposes several important new areas for future research in marketing.

Widely cited examples of successful companies following the principles of DCM, such as Dell in the computer industry or Zara in the fashion industry (Walker et al. 2000 and Margretta 1998), lead us to believe that more companies will adopt DCM in their quest to gain competitive advantage. These companies increase profitability through product availability, delivery accuracy, responsiveness and flexibility by tightly linking customer and supply initiatives. Within DCM, marketing and supply functions work together to develop suitable relationships for different customers, develop joint customer prioritisation strategies, process accurate customer information and match value requirements with operational capabilities. Our conceptual framework suggests new roles for marketing within DCM which imply new areas for research (see figure 6).

<b>DCM Element</b>	<b>Role of Marketing</b>
Integrating the Demand and Supply Process	<ul style="list-style-type: none"> <li>• Facilitating the process integration by disseminating customer and market information;</li> <li>• Considering the effect of marketing activities from an integrated process perspective.</li> </ul>
Managing the Digital Integration	<ul style="list-style-type: none"> <li>• Fostering a demand rather than a supply-based integration of information needs.</li> </ul>
Configuring the Value System	<ul style="list-style-type: none"> <li>• Linking external, customer-facing segmentation with internal, value system-based segmentation of production, logistics and sourcing;</li> <li>• Obtaining knowledge about changes in customer needs as a basis for structural adaptation requirements of the value system.</li> </ul>
Managing the Cross-functional relationships between Demand and Supply Functions	<ul style="list-style-type: none"> <li>• Exchanging information with supply functions, i.e. providing timely information on: defined customer segments; new customer/product opportunities; planned promotions; feedback on over/under service delivery and, seeking information on: lead times, capacity and pipeline costs;</li> <li>• Seek collaboration with supply functions by working towards a mutual understanding of the information exchanged and collective goals.</li> </ul>

*Table 1: The Roles of Marketing within DCM*

The role of marketing within DCM also suggests a reevaluation of the role of marketing within companies. The marketing function has its focus at the direct customer interface, which is often said to be done to the detriment of the company's internal efforts (Barret 2004). From a DCM perspective, marketing would need to share the customer information with other departments, involve the knowledge of other departments into their decision making and redefine (and possibly limit) its responsibilities within the integrated demand and supply process. Rather than acting from the position of the function which owns the customer, marketers would need to strategise with supply functions to create new ways to go to the market, understand and translate marketing initiatives into supply chain drivers and improve their awareness of the company's operational constraints. Collaboration between supply functions and marketing needs to ensure that supply functions are involved in the marketing planning at an earlier stage, are involved in customer priority decisions and, most

importantly, need to be able to reject marketing decisions if they are not financially viable to the business. On the other hand, marketing must become more cost driven and less inclined to agree to sales that are not optimal for the business. Our findings from the workshop suggest that marketing will be resistant to changes and might blame the supply functions' lack of a market orientation for integration failure. We agree that supply functions have to focus more on the creation of output and we also see the enabling role of a market orientation for SCM implementation (Min and Mentzer 2000). Still, and distinct from former contributions on the role of marketing within SCM, we argue that the success of DCM is not only based on a market driven philosophy but on a strong functional marketing competence. Therefore, companies with strong customer and SC initiatives, as well as a process culture, are best suited to link both in an integrated DCM approach.

## References

- Achrol, R. (1991). Evolution of the Marketing organization: new forms for dynamic environments. *Journal of Marketing*, 55, (October), 77-93.
- Achrol, R. (1997) Chances in the theory of interorganizational relations in marketing: toward a network paradigm, *Journal of the Academy of Marketing Science*, 25, (1), 56-71.
- Achrol, R. and P. Kotler (1999). Marketing in the network economy, *Journal of Marketing*, 63, (Special Issue), 146-163.
- Alvarado, U. & Kotzab, H. (2001) Supply chain management – the integration of logistics in marketing. *Industrial Marketing Management*, 30, 183 – 198.
- Baker, S. (2003) *New consumer marketing*. Chichester: John Wiley & Sons.
- Barratt, M. (2004) Understanding the meaning of collaboration in the supply chain, *Supply Chain Management: An International Journal*, 9(1), 30-42.
- Brady, J. & Davis, I. (1993) Marketing's mid-life crisis. *The McKinsey Quarterly*, (2), 17-28.
- Cooper, M., Douglas, L. and J. Pagh (1997) Supply chain management – more than a new name for logistics, *The International Journal of Logistics Management*, 8, (1), 1-14.
- Childerhouse, P., Aitken, J. & Towill, D. (2002) Analysis and design of focused demand chains. *Journal of Operations Management*, 20, 675-689.
- Christopher, M. (1998). *Logistics and supply chain management: strategies for reducing cost & improving service* (2<sup>nd</sup> ed.). London: Financial Times Publishing.
- Christopher, M. (2000) The agile supply chain – competing in volatile markets. *Industrial Marketing Management*, 29, 37-44.
- Christopher, M. & Payne, A. (2002). Integrating customer relationship management and supply chain management, in: Baker, M. (ed.) *The Marketing Book*, 5<sup>th</sup> Edition, Butterworth Heinmann, 2002.

- Christopher, M. & Towill, D. (2002) Developing market specific supply chain strategies. The *International Journal of Logistics Management*, 13(1), 1-14.
- Christopher, M & Peck, H. (2003). *Marketing logistics*, 2<sup>nd</sup> edition. Oxford: Butterworth and Heinemann.
- Day, G. & Van den Bulte, C. (2002) Superiority in customer relationship management: consequences for competitive advantage and performance. Working paper, Wharton School of Economics, University of Pennsylvania.
- Deloitte Research (2002) Consumer business digital loyalty networks – Increasing shareholder value through customer loyalty and network efficiency.
- Doyle, P. (1996) Marketing in the new millennium. *European Journal of Marketing*, 29(13), 23-41.
- Ellinger, A.E. (2000) Improving marketing/logistics cross-functional collaboration in the supply chain. *Industrial Marketing Management*, 29, 1-6.
- Emerson, C. and C. Grimm (1996). Logistics and marketing components of customer service: an empirical test of the Mentzer, Gomes and Krapfel model, *International Journal of Physical Distribution & Logistics Management*, 26,(8), 29-42.
- Fisher, M. (1997). What is the right supply chain for your product? *Harvard Business Review*, March/April, 105-116.
- Fisher, R., Maltz, E. and Jaworski, B. (1997) Enhancing communication between marketing and engineering: the moderating role of relative functional identification. *Journal of Marketing*, 61, 1997, 54-70.
- Flint, D. (2004). Strategic marketing in global supply chains: Four challenges. *Industrial Marketing Management*, 33, 45-50.
- Frohlich, M. & Westbrook, R. (2002). Demand chain management in manufacturing and services: web-based integration, drivers and performance. *Journal of Operations Management*, 20, 729-745.
- Fuller, J., O'Connor, J. and R. Rawlinson (1993). Tailored logistics: the next advantage, *Harvard Business Review*, 71, (3), 87-98.
- Godsell, J. & Harrison, A. (2002) Strategy formulation in an FMCG supply chain. In Griffiths, J., Hewitt, F. & Ireland, P. (Eds) *Logistics research network*, Conference Proceedings. The Institute of Logistics and Transportation, UK.
- Goldman, S.L., Nagel, R.N. et al. (1995). *Agile competitors and virtual organisations: strategies for enriching the customer*, Van Nostrand Reinhold.
- Gunasekaran, A. & Ngai, E.W.T. (2004). Information systems in supply chain integration and management. *European Journal of Operational Research* 159,(1 December), 269-295.
- Gupta, A., Raj, S. & Wilemon, D. (1986) A model for studying R&D-Marketing Interfaces in the Product innovation process. *Journal of Marketing*, 50, 7-17.

- Handfield, R. and C. Bechtel (2002). The role of trust and relationship structures in improving supply chain responsiveness, *Industrial Marketing Management*, 31, 367-382.
- Heikkilä, J. (2002). From supply to demand chain management: efficiency and customer satisfaction. *Journal of Operations Management* 20, 747-767.
- Holmström, J., Hoover, E. Jr., Louhiluoto, P. & Vasara, A. (2000). The other end of the supply chain. *The McKinsey Quarterly* (1), 63-71.
- Hutt, M., Reingen, P. & Ronchetto, J. Jr (1988) Tracing the emergent processes in marketing strategy formation. *Journal of Marketing*, 52(1), 4-19.
- Ingram et al. (2002)
- Jaworski, B. & Kohli, A. (1993) Market orientation: antecedents and consequences. *Journal of Marketing*, 57(3), 53-70.
- Jones, T. & Riley, D. (1985) Using inventory for competitive advantage through supply chain management. *International Journal of Physical Distribution and Materials Management*, 15(5), 16-26.
- Kahn, K. and J. Mentzer (1998). Marketing's Integration with other departments, *Journal of Business Research*, 42, 53-62.
- Kohli, A. & Jaworski, B. (1990) Market orientation: the construct, research propositions and managerial implications. *Journal of Marketing*, 54(2), 1-18.
- Korhonen, P., Huttunen, K. and Eloranta, E. (1998). Demand chain management in a global enterprise – information management view. *Production Planning and Control*, 9(6), 526-531.
- Koudal, P., Lee, H., Peleg, B., Rajwat, P. & Tully, R. (2003). General Motors: Building a digital loyalty network through demand and supply chain integration, *Stanford Global Supply Chain Management Forum*, Case SGSCMF-001-2003.
- Koudal, P. & Wellener, P. (2003). Digital loyalty networks: continuously connecting automakers with their customers and suppliers, *Strategy & Leadership*, 31(6), 4-11.
- Kuglin, F.A. (1998). Customer-centred supply chain management. *AMACOM. American Marketing Association*. New York.
- Lambert, D. & Cooper, M. (2000). Issues in supply chain management, *Industrial Marketing Management*, 29, 65-83.
- Langabeer, J. and Rose, J. (2001) *Creating demand driven supply chains*, Chandos Publishing, Oxford.
- Langabeer, J. and Rose, J. (2002)
- Lee, H.L. (2001). Demand-based management. A white paper for the Stanford Global Supply Chain Management Forum, September 2001.
- Lee, H.L. & Whang, S. (2001) Demand chain excellence. *Supply Chain Management Review*, March/April, 41-46.

- Margretta, J. (1998). The power of virtual integration: an interview with Dell Computer's Michael Dell. *Harvard Business Review*, 76(2), 73-82.
- Martin, J. & Grbac, B. (2003) Using supply chain management to leverage a firm's market orientation. *Industrial Marketing Management*, 32, 25-38.
- McCarthy, F.T. (2001) Long words explained. *The Engineer*, 29 June.
- Mentzer, J. (2004) Understanding demand. *Supply Chain Management Review*, May/June 2004, 38-45.
- Mentzer, J., R. Gomes and E. Krapfel (1989). Physical demand distribution service: A fundamental marketing concept? *Journal of the Academy of Marketing Science*, 17(Winter), 53-62.
- Mentzer, J., DeWitt, W., Keebler, J., Min, S., Nix, N., Smith, C. and Zacharia, Z. (2001), Defining supply chain management, *Journal of Business Logistics*, 22, (2), pp. 1-25.
- Mentzer, J., Flint, D. and T. Hult (2002). Logistics service quality as a segment-customized process, *Journal of Marketing*, 65(October), 82-104.
- Min, S. & Mentzer, J. (2000). The role of marketing in supply chain management. *International Journal of Physical Distribution and Logistics Management*, 30(9), 766-787.
- Morash, E., Dröge, C. and S. Vickery (1996). Boundary spanning interfaces between logistics, production, marketing and new product development, *International Journal of Physical Distribution & Logistics Management*, 26(8), 43-62.
- Möller, K. and Halinen, A. (1999) Business relationships and networks: managerial challenges of network era. *Industrial Marketing Management*, 28, 413-427.
- Murphy, P. and J. Daley (1994). A framework for applying logistical segmentation, *International Journal of Physical Distribution & Logistics Management*, 24, (10), 13-19.
- Murphy, P. and R. Poist (1996). Comparative views of logistics and marketing practitioners regarding interfunctional coordination, *International Journal of Physical Distribution & Logistics Management*, 28(8), 15-28.
- Oliver, R.K. & Webber, M.D. (1982) *Supply chain management: logistics catches up with strategy*. Cited in: Christopher, M. (ed.) (1992). *Logistics – the strategic issues*. London: Chapman & Hall.
- Piercy, N. (1998). Marketing implementation: The implications of marketing paradigm weakness for the strategy execution process, *Journal of the Academy of Marketing Science*, 26, 222-237.
- Piercy, N. (2002). *Market-led strategic change* (3<sup>rd</sup> edition). Oxford: Butterworth-Heinemann.
- Piercy, N. and D. Cravens (1995). The network paradigm and the marketing organisation, *European Journal of Marketing*, 29, (3), 7-43.
- Porter, M. (1985) *Competitive advantage: creating and sustaining superior performance*. New York.

- Rainbird, M. (2004) Demand and supply chains: the value catalyst. *International Journal of Physical Distribution & Logistics Management*, 34(Issue3,4), 230-251.
- Rajendra, K., Srivastava, T. Shervani, A. & Fahey, L. (1998) Market-based assets and shareholder value: a framework for analysis. *Journal of Marketing*, 62(1), 2-18.
- Selen, W. & Soliman, F. (2002). Operations in today's demand chain management framework. *Journal of Operations Management* 20, 667-673.
- Sheth, J., Gardner, D. & Garrett, D. (1988). *Marketing theory. Evolution and evaluation*. New York.
- Sheth, J., Sisodia, R. and A. Sharan (2000) The antecedents and consequences of customer-centric marketing. *Journal of the Academy of Marketing Science*, (28)1, 55-66.
- Slater, S. (1997) Developing a customer value-based theory of the firm. *Journal of the Academy of Marketing Science*, 25, 162-167.
- Srivastava, R., Shervani, T. and L. Fahey (1999) Marketing, business processes, and shareholder value: an organizational embedded view of marketing activities and the discipline of marketing. *Journal of Marketing*, 63(Special Issue), 168 – 179.
- Svensson, G. (2002). Supply chain management: the re-integration of marketing issues and logistics theory and practice. *European Business Review*, 14(6), 426-436.
- Svensson, G. (2003) Consumer driven and bi-directional value chain diffusion models. *European Business Review*, 15,(6), 390 – 400.
- Vargo, S. & R. Lusch (2004). Evolving to a new dominant logic for marketing, *Journal of Marketing*, 68, (January), 1-17.
- Vollmann, T., Cordon, C. & Raabe, H. (1995) From supply chain management to demand chain management. *IMD Perspectives for Managers*. November.
- Vollmann, T. & Cordon, C. (1998). Building successful customer – supplier alliances, *Long Range Planning*, 31(5), 684 – 694.
- Walker, B., Bovet, D. & Martha, J. (2000). Unlocking the supply chain to build competitive advantage. *International Journal of Logistics Management*, 11(2), 1-8.
- Webster, F. (1992). The changing role of marketing in the corporation, *Journal of Marketing*, 56, (4), 1-17.
- Wehrli, H.P. & Jüttner, U. (1994) Relationship marketing from a value system perspective. *International Journal of Service Industry Management*, 5(5), 54-73.
- Womack, J.P. & Jones, D. (1996). *Lean thinking: banish waste and create wealth in your corporation*. New York: Simon & Schuster.
- Woodruff, R. (1997). Customer value: The next source for competitive advantage. *Journal of the Academy of Marketing Science*, (25), 139-153.

- Zablah, A., Bellenger, D. and W. Johnston (2004) An evaluation of divergent perspectives on customer relationship management: towards a common understanding of an emerging phenomenon. *Industrial Marketing Management*, 33, 475-489.
- Zajac, E. & Olsen, C. (1993) From transaction cost to transactional value analysis: implications for the study of interorganisational strategies. *Journal of Management Studies*, 30(1), 131-145.
- Zaltman, G., K. LeMasters and K. Heffring (1982). *Theory construction in marketing: some thoughts on thinking* (New York, Wiley).

## Biographies

**Uta Jüttner** is a Senior Research Fellow in the Marketing and Logistics Group at Cranfield School of Management. In the past ten years, she has conducted several research projects on the topic of transforming business relationships in supply chains.

She has an expertise in both qualitative and quantitative research methods and statistical data analysis. Her projects have been commissioned by government institutions and companies in England and Switzerland.

Uta regularly presents her work at international conferences in Europe and the United States and published widely in Logistics and Marketing Journals, among them the International Journal of Logistics: Research and Applications; the European Journal of Purchasing & Supply Management and Long Range Planning.

Based in Switzerland, Uta is currently working closely with a number of institutions, among them the University of Zürich and St. Gallen. She holds a masters degree in Public Administration and a Doctorate in Business Administration.

**Susan Baker** specialises in consumer marketing at Cranfield School of Management, in particular understanding consumer markets, branding and international marketing. She founded and directs the New Marketing Research Group, which works together with a consortium of client organisations to understand the impact on marketing of the New Consumer. She is the author of New Consumer Marketing, published in 2003 by Wiley.

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Outside Cranfield, she was a trustee of Consumers' Association for many years and is currently a trustee of Beating Bowel Cancer.

**Martin Christopher** is Director of the Cranfield Centre for Logistics and Supply Chain Management and also the Marketing Group. As an author, Martin Christopher has written numerous books and articles and is on the editorial advisory board of a number of professional journals.

He is co-editor of The International Journal of Logistics Management and his recent books have focused upon relationship marketing, logistics and supply chain. He has held appointments as Visiting Professor at the Universities of British Columbia, Canada, New South Wales, Australia and South Florida, USA.

Professor Christopher is a Fellow of the Chartered Institute of Marketing and of the Chartered Institute of Logistics & Transportation, on whose council he sits. In 1987 he was awarded the Sir Robert Lawrence medal of the Institute of Logistics & Transport for his contribution to the development of logistics education in Britain. He has worked as a consultant for major international companies in North America, Europe, the Far East and Australasia.