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**The demand chain and
response management:
New directions for operations
management?**

By

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ABSTRACT: Supply chain management would appear to be at the end of its lifecycle. Customers of all types are expressing preferences based upon some degree of product-service differentiation and not simply on cost. The growing interest in mass customisation and product platforms is evidence of these developments. Supply chain devotees argue that it (the supply chain) is capable of adequate response to these changes while others suggest the demand chain better serves the current market place. This article suggests that while the supply chain is by no means obsolete it can be argued that it is obsolescent and should be replaced by a more proactive response system. We explore demand chain analysis and demand chain management and show how “response management” is a worthy successor to the supply chain and a possible way to integrate the facilitating technology now available with a dynamic marketplace.

KEY WORDS: *Value chain; demand chain; supply chain; response management*

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1. Introduction

As the supply chain matures and the demand chain assumes increasing importance as a concept it raises interesting questions about how an organisation responds. This paper discusses recent contributions to Demand Chain thinking and how it aligns with traditional notions of Marketing. It explores the premise that a product or service needs not only to be attractive to a customer but also viable for the stakeholders of the firm that produces it. The old “adage” that “the customer is always right” in fact disguises a series of direct and indirect negotiated outcomes where what is feasible for the customer and what is viable for the firm is settled.

In practice this means that not only does a firm need to analyse demand chain drivers, but also to manage them. This paper proposes a model for how this occurs in the context of *Response Management*. It is contended that ultimately a firm’s Value Chain will be driven by how well this tension between Demand Chain analysis and its response is handled. We argue that the value chain is an integration of *demand chain analysis + response management + response management*.

2. Exploring the demand chain

Godsell et al (2006) have pursued a demand strategy model that comprises a marketing component - *demand definition and creation*- and also a supply chain component - *demand fulfilment*. Their approach offers an integrated demand chain/supply chain with a number of activities.

(1) *Demand chain objectives* are based upon the organisational needs to address revenue generation and cost reduction holistically. A *market strategy* (2) identifies a “relevant basis for segmentation that is meaningful not only to sales and marketing but also to the supply chain.” This is followed by (3) *linking market strategy to supply chain process strategy*, whereby appropriate supply chain strategy processes are aligned with customer value drivers; it is influenced by patterns of demand flow and the extent of customisation. *Process enablers* (4) facilitate implementation of the supply chain process. These are suggested to be organisational design, a performance management system that measures and motivates individual and organisational activities, and, relevant information systems that drive the overall process.

This model is an attempt at identifying the role of downstream processes in transaction channels in creating customer satisfaction. However care should be exercised with its implementation as there is a suggestion that the demand chain objectives are aligned with relevant business unit strategies. This may not be strategically sound.

Godsell et al suggest there has been a shift in the last few years from prescriptive models of supply chain strategy to more embracing frameworks that accommodate a range of different approaches. However, there has been a tendency for these models to differentiate by product type, rather than reflecting buying behaviour which they claim would be more effective. Their research found that there is currently little evidence of such alignment in practice. There was a marked absence of proactive “management” of the supply chain, and a lack of alignment within the demand fulfilment process itself, and between the demand fulfilment and creation processes (including new product introduction). Performance measures were used to optimise functional performance at

operational levels within a supply chain rather than the performance of the supply chain as a whole.

Mentzer (2006) assumes a similar role for demand chain management. He argues that *demand management* is the creation, across the supply chain of a coordinated flow of demand. Marketing should create demand opportunities for various products but promotional activities are often not shared with other stakeholders be they intra or inter organisational partners. Mentzer suggests that the role of demand management may well be to *decrease demand* because the opportunity that has been identified cannot be met profitably. Demand management should assess the profit (and cash flow impact?) of alternative products and customers referring to capability and capacity constraints. In terms of the current “push” and “pull” strategies (see Brown and Hagel below), “pull” activities are emphasised where capabilities and capacity exists and lessened where they are constrained.

Mentzer is also suggesting another role for demand management – the relationship management aspects of supply chain management. Here the suggestion is that demand management is well suited to working both downstream partners to agree performance measures (and rewards) and also to coordinate a matching process in which inter-organisational capabilities and capacities are coordinated in an attempt at achieving optimal market and financial performance. Mentzer discusses the interrelationships between *sales forecasts* and demand suggesting that a sales forecast projects the future of expected demand given a stated set of environmental demands and organisational capabilities and capacities.

The organisation’s response is an *operational plan* that details response processes and plans designed to meet the sales forecast through the implementation of procurement, production and logistics plans. He makes a significant point by suggesting that sales force remuneration should be geared to the capacity and capability constraints detailed by the operational plan. The authors recall an example of how the lack of such controls led to a large increase in overtime costs to service an increased customer order because of a salesman’s uncontrolled enthusiasm. The trends towards global business suggests such controls are becoming essential.

It is becoming increasingly apparent that supply chain coordination is not efficient without an adequate understanding of demand; the issue for management is how best to address the problem. Godsell et al are suggesting this be achieved by defining “demand chain objectives that align with the relevant business unit strategy”; while it is claimed that “these objectives provide all employees in the demand chain with an aligned set of objectives and measures”. It also assumes the strategies are relevant. Perhaps their model would benefit from a “market opportunity analysis” process that explores opportunity on a more extensive scale.

3. Demand chain management: A new role for marketing?

An important step is common to each of these contributions; it is to re-validate the notion of the demand chain as a separate entity from the supply chain.

To this end the following definition of *demand chain analysis* may add some direction:

“An understanding of current and future customer expectations, market characteristics, and of the available response alternatives to meet these through the deployment of operational processes.”

This is not simply another re-statement of the marketing concept. Marketing is a philosophy, stressing the customer centric goals of an organisation. The demand chain is a practical description and analysis encompassing all those processes within the firm that adopt and apply that philosophy. Perhaps an example here will help. Dell Computers operate a demand led customer response supply chain. Their business model is an example of Bucklin's postponement (as opposed to speculation) channel model of some years ago. The Dell model reflects the emphasis on financial performance as a criterion and as such the Dell business model is very cash effective.

An interesting way of viewing this is to apply the model developed by MacMillan and McGrath (1997) who suggest that the customer life cycle, or the consumption chain, is a means by which firms: "... can uncover opportunities to position their offerings in ways that they and their competitors would never have thought possible". "Mapping the Consumption Chain" captures the customer's total experience with a product or service. Such a process identifies numerous ways in which value can be added to a product or service.

The mapping process to identify the consumption chain comprises a series of questions aimed at establishing aspects of behaviour that occur. The answers to these questions identify opportunities to add value and determine the shape of both the demand chain and of the required supply chain responses. From an analysis of the answers it then becomes possible to identify the different process drivers, some of which can be categorised as demand driven and some as supply driven are all essential to motivate customer expectations and subsequently purchase decisions. An *efficient* supply chain alone provides only half the solution, as does an *efficient* demand chain. The answer is suggested to be an *effective* demand chain that encourages a strategic approach to market response. See **Figure 1**.

The demand chain and response management

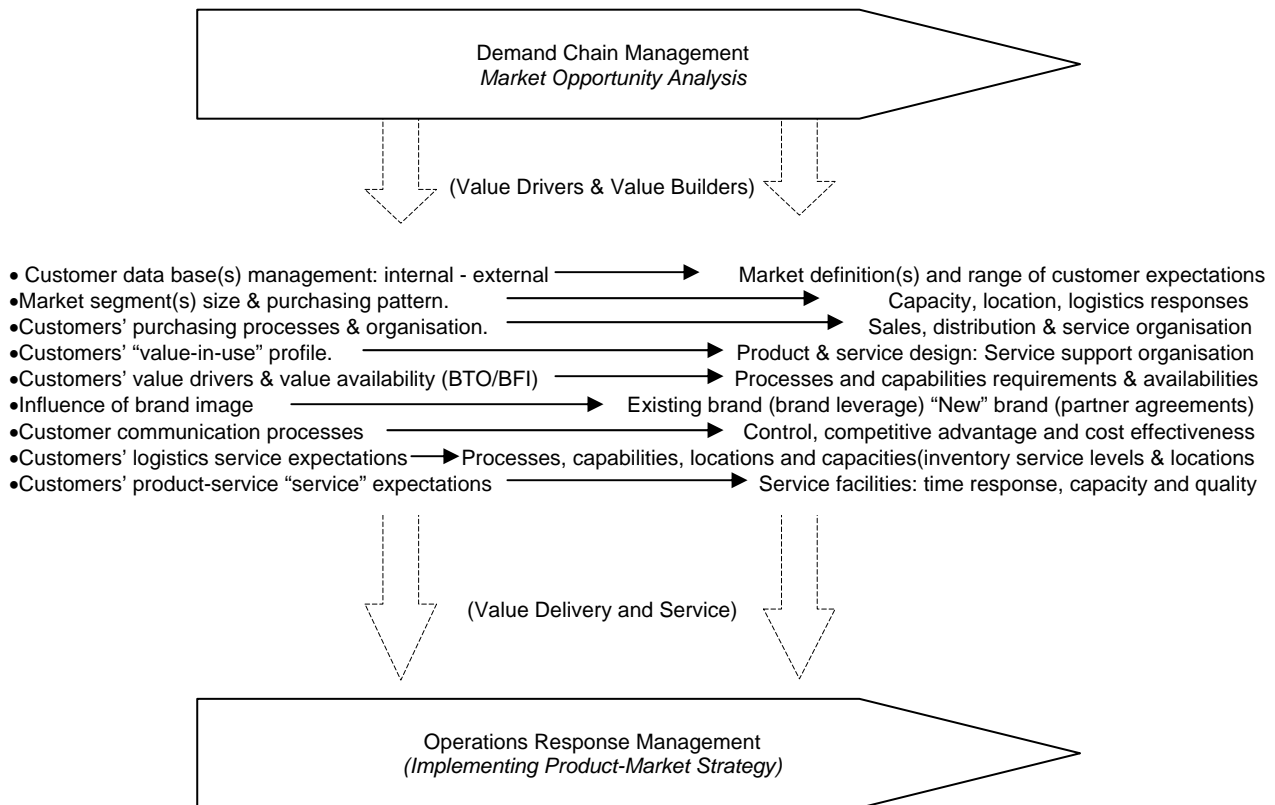


Figure 1: The demand chain offers an approach to value chain positioning decisions

How then should we view this broader notion of the demand chain? Possibly a first step is to reinforce the point that both supply chain management and demand chain management are about *process management*. This has been defined in a number of ways. One relevant to this discussion is offered by Trinca (2003) and is particularly useful in that it addresses the need to consider both suppliers and customers: “*It’s a systematic way of improving internal processes as well as the way you work with suppliers and customers...*”

The second step is to re-validate the notion of *demand chain analysis*. Demand chain analysis should identify customers’ expectations that are the *feasible customer/market options* – those options that are within the scope of things the customer will accept; on the basis that customer demand is indeed elastic and flexible to some degree. It then becomes the role of the operations group in the organisation to establish the *viability* of those options in terms of their acceptability to the firms stakeholders – principally whether they will be profitable, but also whether they can be achieved within regulatory frameworks and other social parameters. (Walters and Rainbird: 2006).

This means that a third step is necessary. Given the financial pressures on organisations to perform, the cost minimisation emphasis on supply chain management needs to shift towards one of cost optimisation in which (feasible) customer expectations are met as are the (viable) expectations of other stakeholders. This suggests an holistic approach to market opportunity analysis *and* the response structures to meet the identified

opportunities. It also suggests that the market opportunity analysis *and* the response are subject to financial appraisal.

It is interesting in this context that an essential role for Menzter's demand chain management is to "negotiate" with down stream partners, *and possibly more importantly*, with customers when the *feasible* and the *viable* are far apart, remembering that neither are absolutes but that there will be ranges within which the customer will accept something as feasible and the firm as it being viable. This element of negotiation in the interaction between customer demand and operational viability is perhaps not well recognised. The classic definitions of the marketing function and the sales function within an organisation take little account of this. However certainly in most B2B business environments the "salesperson" has as an integral part of their role, whether it is explicitly in their job description or not, of ensuring negotiated outcomes between the customer and the firm. Few if any large capital purchases or provision of complex services are truly "off the shelf" and in fact involve explicit and detailed negotiation that almost inevitably involves some degree of compromise from both parties. The firm's ability to engage in that negotiation and drive the compromises within the boundaries of what is viable for the firm may be notionally called "sales" but that misstates the actual processes involved. Even in a more commoditised FMCG environment the "marketers" often assume the persona of the consumer and "negotiate" on their behalf internally in terms of product characteristics and price.

4. The changing structure of business models

Another perspective on how firms are responding to market changes comes from Seely Brown and Hagel III (2005) who discuss *process innovation* and the shift from business models dominated by "*push*" philosophy towards "*pull*" models.

"Push" systems typically work on core assumptions, demand is anticipated and the traditional process of mobilizing resources is the most efficient and reliable way to meet it. Efficiency in push systems is expensive, they require organisations to specify, monitor, and enforce detailed activities and tasks. By contrast "pull" systems adopt a more flexible approach to resource management mobilising assets, processes and capabilities from outside the organisation, as and when they are needed, to *meet "real" identified* demand.

Being more versatile and far-reaching, pull systems extend beyond production and, indeed, beyond the enterprise itself and are now found not just in manufacturing and supply chain operations but also in activities as diverse as pharmaceutical R&D and the media. These early pull models, are driven by changing strategic and operational needs and facilitated by the Internet. The authors give examples of exponents of the "pull" model:

"Li & Fung, a Hong Kong-based apparel producer and distributor that works with 7,500 business partners, in 37 countries, can call on any number of specialists to manufacture everything from high-end wool sweaters to synthetic slacks. The company, one of the new model's most sophisticated practitioners, has rewritten the rules of supply chain management. Traditional supply chain managers focus on limiting the number of partners and on creating tightly integrated operations—the Wal-Mart approach. Orchestrators like Li & Fung are rapidly expanding the range of participants

in order to gain access to more specialized skills, as well as nurturing and developing relationships that help all parties build their capabilities more quickly. Li & Fung sits at the hub of a network of specialist enterprises that pull in resources in different combinations and configurations, depending on the nature of demand.”

And:

Compal and Quanta Computer, (Taiwan) offer equally compelling examples of distributed product innovation. These ODMs (original design manufacturers) creatively pull together highly specialized component and subsystem suppliers in order to generate ideas for delivering higher performance at lower cost in a broad range of digital devices, including digital still cameras, mobile telephones, and notebook computers. Instead of designing products in detail from the top down, ODMs specify ambitious performance targets and then rely on this diverse network of technology partners to find new ways of meeting them.

Knudsen et al (2006) present another aspect of value delivery suggesting:

“All too frequently, marketers’ responses to proliferation undermine consistency, coordination, insight, and decision making. New brand, channel, and segment groups focus on increasingly disparate parts of the market and often poorly integrated with the rest of the sales and marketing organization. Also, they give rise to unintended consequences, such as channel conflict, rising marketing costs, convoluted IT systems and other kinds of infrastructure (italics are this author’s), and an inability to allocate marketing dollars consistently to the most valuable opportunities.”

The authors introduce the notion of a *Commercial Operating System* that integrates company processes and market interactions. Market interactions identify the roles and tasks that are undertaken *with customers* in the marketplace and act as a focus for the commercial operating system. A review of the market interactions suggests a strong presence of logistics activities and it follows that for this model to become *effective* rather than just *efficient*, integration of these processes into more comprehensive *response management system* is a logical decision.

While they consider logistics as an important issue in their model, Knudsen and his co-authors have not included the high costs of working capital items such as inventory and accounts receivable or the fixed capital implications of operational responses such as flexibility and agility. A number of organisations now find that the ability to evaluate the financial impact of order response, inventory allocation and customer credit of alternative market opportunities (regardless of how well it is assumed the market situation is understood) offers the opportunity to explore alternative *value delivery options*, often including partnership arrangements that might otherwise have been overlooked. The coopetition being developed in the pharmaceutical industry whereby former competitors cooperate with each other in the manufacturing, selling and logistics processes is an indication of the potential effectiveness and efficiency of an operations response system model

5. A response management approach

We have argued that viewing supply chain management in isolation as a purely mechanistic approach entirely driven by *cost efficiency* needs to be replaced with a broader view of overall *effectiveness* (Rainbird: 2004; Walters and Rainbird: 2006). It is interesting to recall a comment by Porter (1996) concerning the mistakes that can be made by confusing *operational efficiency* with *strategic effectiveness*. Porter is suggesting that the attraction of the cost-efficiency offered by the increasing range of logistic and production techniques has directed management towards short-term profitability at the expense of increased strategic advantage gained from understanding customer value expectations.

So how does this all come together? An approach is given by **Figure 2** in which the overall view of the process and its component activities are presented. Central to the entire process is the knowledge driven linkage between the demand chain and the operations response system. Identifying the relevant questions (and sources) is crucial and mistakes here can be costly.

Given an understanding of the *customer value drivers* these may be used to identify the planning areas that need to be addressed when constructing the operations response system. An obvious place to start is to identify the processes that generate value for customers. Slywotzky and Morrison (1997), in their “customer-centric” approach suggest the “things that are so important to customers” are the customers’ value drivers and the important value drivers are those adding *significant* value to customers. Within the context of the value chain (*Demand Chain Analysis + Response Management + Demand Chain Management*), value drivers assume a two-fold significance. One is clearly that of adding value for customers; the other is the ability to differentiate the value offer such that it creates competitive advantage.

Five questions emerge:

1. What is the combination of value drivers required by the target customer group?
2. What is the customer group’s order of priority?
3. What are the implications for differentiation decisions? Are there opportunities for long term competitive advantage?
4. What are the implications for cost structures?
5. Are there opportunities for trade-offs to occur between value chain partners that may result in *increased* customer value (and stakeholder value) or *decreases* in the value system costs or the costs of the target customer group?

The demand chain and response management: New directions for operations management?

Walters & Rainbird

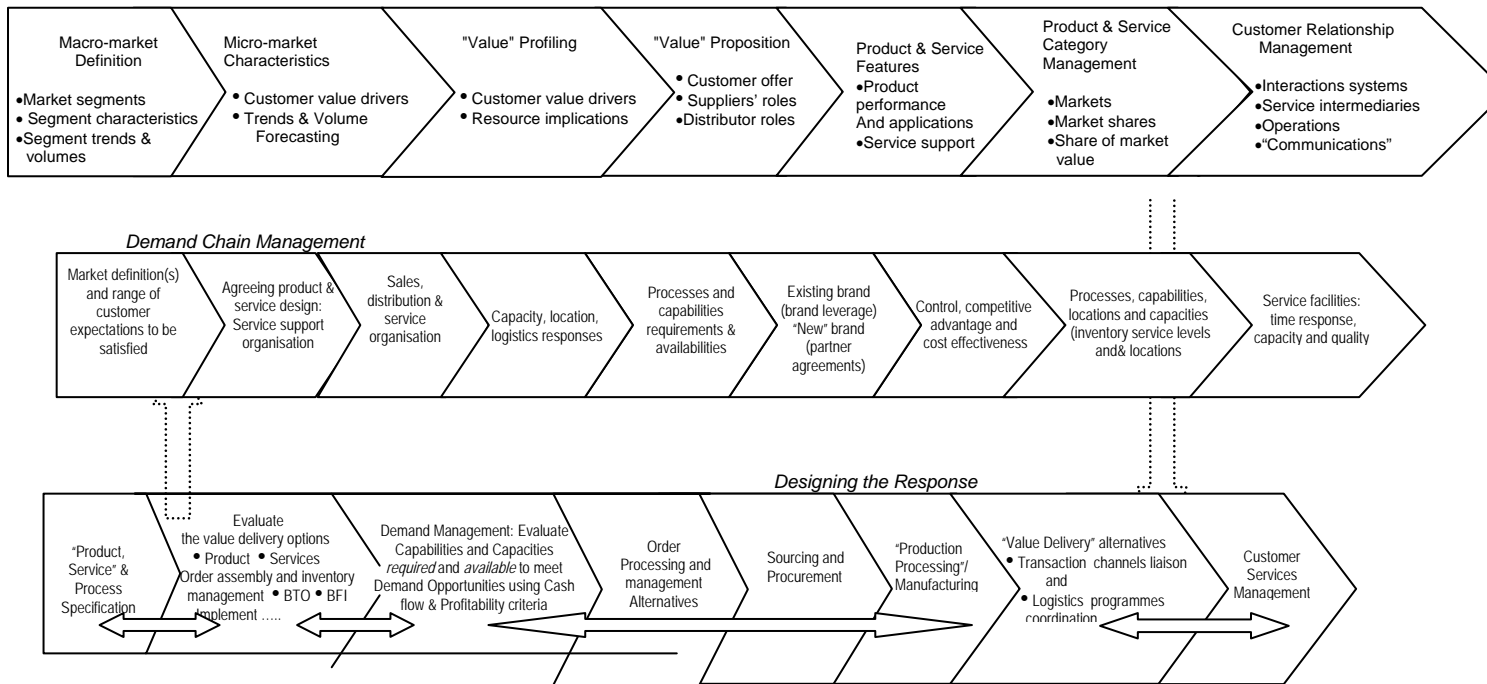


Figure 2: Designing and managing the operations response system

Figure 3 suggests how these questions are now being addressed in what Seely Brown and Hagel III identify as "pull" organisations. Li and Fung and the Taiwan computer ODMs know and understand the implications of customer value drivers on the operations response system processes. Identifying these relationships at an early stage provides early input into the structure of the operations response system – the essential "customer facing processes" the critical processes that create "things that are so important to customers" are identified at an early stage of the planning, those that are "in-house", that is available within the existing structure, can be evaluated for capability and capacity suitability, and system modifications made where necessary. This initial analysis extends the response decision beyond *competitive necessity* towards developing *competitive advantage*, perhaps into a position of *sustainable competitive advantage*.

There are also two other influences that need to be addressed. One concerns the increasing level of financial accountability that is being placed on management and the other is the impact of resources conservation awareness.

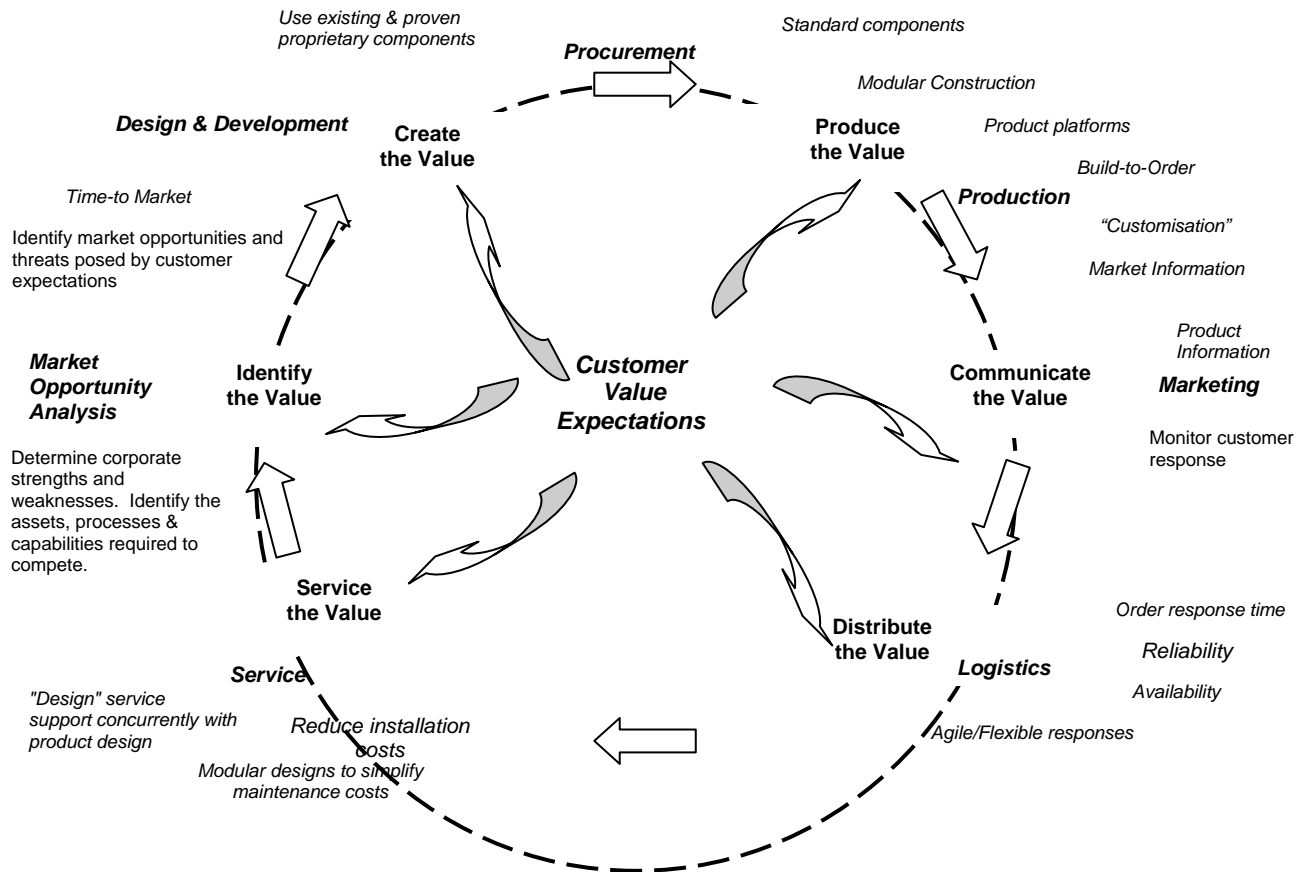


Figure 3: Identifying customer facing processes and process alternatives is an important feature of adding customer value

Figure 4 identifies the importance of demand chain analysis in initiating the response. The demand channel profile identifies the potential market and the segment(s) that are relevant to the organisation. The potentially significant segments may be evaluated by considering the resource requirements (the assets, processes, capabilities and capacities) necessary if a viable market is to be established. The efficacy of the various alternatives can be assessed by comparing the revenues and costs that each will generate (see below for a discussion on performance metrics). Clearly this initial evaluation is likely to eliminate some of the alternatives, either on the basis of unacceptable financial and/or marketing performance, or because the “control” characteristics distance the company from the ability to make and implement major decisions in supply markets or in downstream distribution and end user markets.

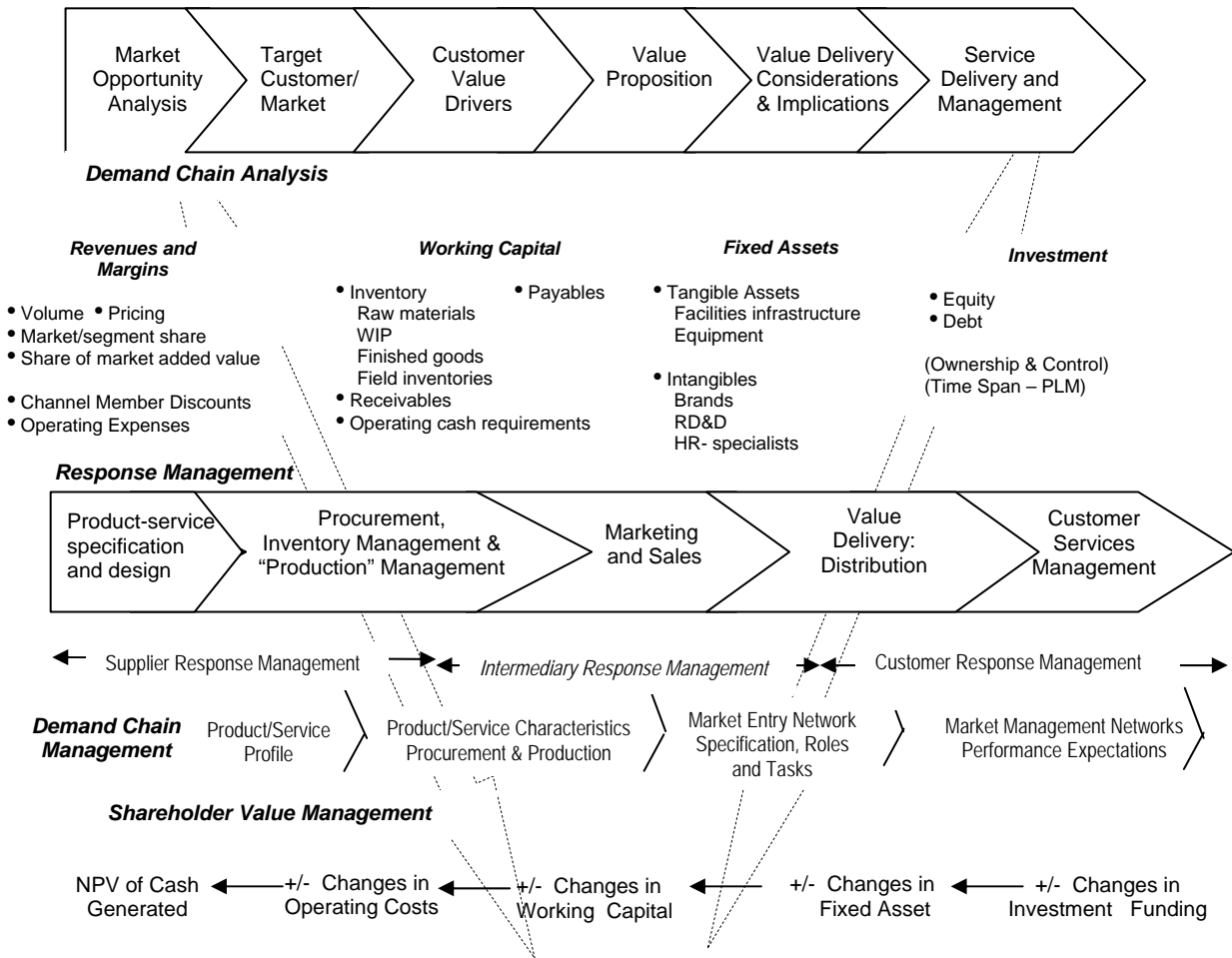


Figure 4: Response management enhances both short-term and long-term shareholder value

Response management comprises both product-service and production process design; decisions here determine procurement and supply chain processes. This practice is increasing in the apparel industry; Li and Fung (Seely Brown and Hagel (op cit), and (www.lifung.com) implement their retailer customers' product - service design programmes by carefully selecting materials and process suppliers that are relevant to the customer market positioning. In the context of New (2000) his *variety, inventory and quality* trade-off decisions may be addressed; however the choice is no longer *which-* but rather a combination of *who?, how?, where?, and when?* as organisations become virtual networks.

The development of *mass customisation and product platforms* has led to 'low cost differentiation' in a number of industries. *Cooperation* amongst competitors (*co-opetition*) in the automotive industry has resulted in dramatically reduced R D & D costs and equally dramatic increases in customer satisfaction. It is arguable that these changes would have occurred without the philosophies that accompanied the "New Economy". Furthermore, an acceptance by business that free cash flow is a more realistic measure of financial success than simply profitability has widened the strategic planning perspectives of many organisations who now embrace the concept espoused by Normann (2001) that managers should be more concerned with managing assets rather than owning them

This leads us into considering performance measurement. As **Figure 4** suggests the ultimate criterion of a successful business and of an individual project is the net present value of the anticipated free cash flow either will generate. Given a ‘network approach’ to business structures, together with the view that they are not permanent and are in existence only for as long as they serve a viable commercial purpose, NPV analysis ideally serves the purpose of objective evaluation. Furthermore by setting quantitative and qualitative performance expectations the alternative operational response chain structures can be explored. See **Table 1** below.

Quantitative Performance

Customer Response: Planned & Actual)

- Order frequency • Order value(s)
- Loyalty: Longevity of relationship(s)
- Perceptions of Services (CSI trends)

Financial Performance (Operational)

- Gross Margins • Inventory Productivity
- Operating Margins • Receivables Productivity
- Growth Rates • Payables Productivity
- Share of Market
- Added Value

Financial Performance (Strategic)

- ROA (Tangible & Intangible Assets) • ROCE
- Capital Utilisation • ROE
- Capital Intensity
- Operational Gearing • Financial Gearing
- NPV Anticipated Free Cash Flow

Qualitative Performance

- Conformance: supplier adherence to working conditions and pay
- Sustainability
- Environmentally ethical

Table 1: Performance criteria for an operational response chain

Increasingly we are beginning to see the importance of qualitative performance requirements as these become significant features of consumer choice criteria. Li and Fung *op cit* are very clear concerning their view by membership of the Business for Social Responsibility www.bsr.org and they also support the principles of the Global Compact www.unglobalcompact.com. We adopt a [Code of Conduct](#) for all our vendors.”

Table one also suggests that sustainability and environmental issues are incorporated into the evaluation criteria. Increasingly these are issues that assume global importance.

6. Concluding comments

To conclude we use **Figure 5** to summarise the processes involved when the demand chain processes and the response management system are integrated. **Figure 5** shows three stages. The first is to ask; what are the *response management system information requirements*? Clearly, when significant investment may be required to meet a market

opportunity successfully questions concerning the opportunity to use design capabilities to meet customer expectations, service requirements and the influence of other 'variables' such as the range of applications the product (or service) may be used for, locations and conditions, etc.

Another concern for response management is how, who, and where the 'product' will be produced. This will involve the evaluation of a range of alternatives and questions to resolve the optimal solution starting with a review of the organisations resources and matching these to market expectations *and* constraints. The required result from this exercise is a 'structure' that can be managed to meet both the customers' expectations and those of the organisational partnership network. Service support is critical for success. As suggested service has become an integral component of the product and the impact of poor service on customer productivity (downtime etc) should be considered at the design stage. An important consideration here is for the organisation to consider the 'knowledge requirements' of service organisations; by creating a knowledge base that details product applications and product and service problems they (the problems) may be addressed during the design stage of the product-service development processes, and, where necessary by procurement and production.

Demand Chain Analysis can answer these questions. Its primary role is to provide a value proposition for both the customer and the stakeholder partners.

Response management requires information input to enable it to reach decisions concerning *design and development* of product, support services and production processes and support requirements. In addition it makes decisions on *procurement and productions planning*, information identifying volume, the range of product characteristics and the levels of service support are necessary if the capabilities and capacity requirements are to be met. *Service support* decisions are made on the basis of information concerning product application, where the product will be "working" (ease of access to service facilities etc). Clearly at this stage of planning decisions can be flexible and servicing difficulties may best be resolved at the product design stage.

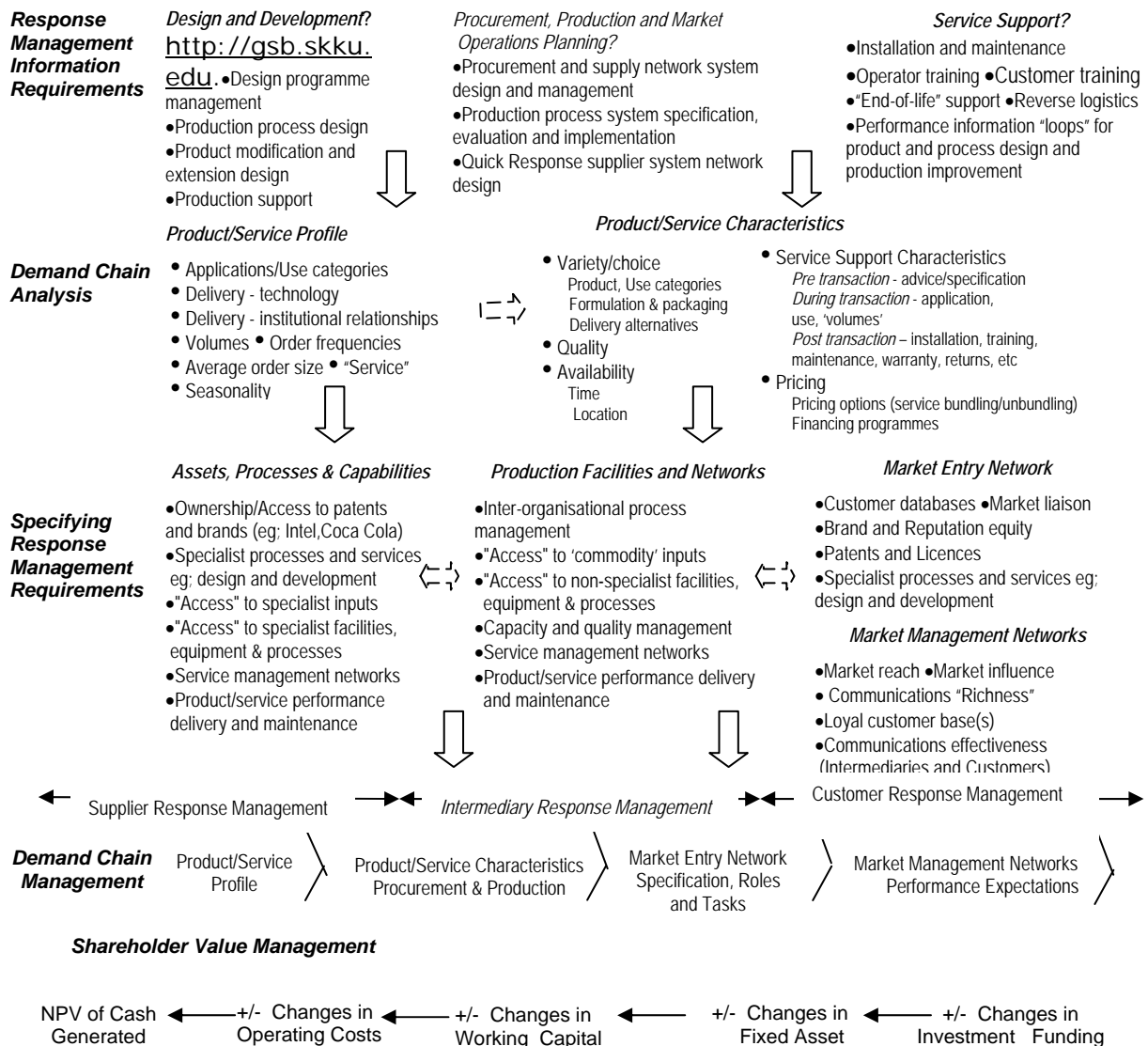


Figure 5: Using the demand chain to develop an efficient operations response system

Given these answers the organisation can move on to *specifying the response management system* and ensuring the availability (or accessibility) of the necessary *assets, processes and capabilities*, and *production facilities and networks*. The operations response system should include the planning and management of the *market entry network and market management networks*.

A comprehensive (total) approach to response management requires an evaluation of marketing and sales operations and decisions concerning appropriate a *Market Entry Network*. The increasing acceptance of *co-opetition* describes the situation in which competitors work together to meet individual objectives using mutual facilities and of *co-productivity* (a more operational role by suppliers, distributors and customers in which they undertake tasks that hitherto were the role of other channel/chain participants) has expanded the value delivery options, often adding both effectiveness and efficiency to the final organisational structure.

Market Management Networks are also important, specifically the application of developing approaches to knowledge, technology, process and relationship management. An important concern for management is the need to maintain market communications with customers, distributors and suppliers. Increasingly these are becoming as important in terms of operational response as they are from a strategic analysis and planning perspective. Markets are continuing to fragment and response demands are becoming diverse not only in terms of order response times but often for product and service expectations. Mentzer (op cit) suggested this as a role for demand management – the relationship management aspects of supply chain management.

The point has been made that a successful organisation is one that creates a positive NPV from its residual cash flow. This therefore requires the organisation to be aware of the expectations of *all* stakeholders and of the available resources. This may imply that customers' expectations (the customer ideal or *feasible solution*) may not be a *viable solution* for suppliers and investors and compromises may be required. It becomes the responsibility of management through *demand chain management* to explore alternatives with customers (the compromises) and to create an environment where negotiated outcomes can be delivered.

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