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Beyond the supply chain: An operations response system as an efficient means of implementing a “customer-centric” market response

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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 an “operations response system” is a worthy successor and a possible way to integrate the facilitating technology now available with a dynamic marketplace.

KEY WORDS: *Supply chain; demand chain; operations response system.*

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1. Introduction

As the Demand Chain matures as a concept it raises interesting questions about how an organisation responds. This paper traces some of the evolution of 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 an Operations Response System. It is contended that ultimately a firms Value Chain will be driven by how well this tension between Demand Chain analysis and its Operations Response Chain is handled.

2. Background - New success factors and the supply chain

Perhaps it is the domain of only a few “sages” who predicted the extent of changes to market structures in what is now often referred to as the “new economy” (Tofler: 1970, Band: 1991, and Davidow and Malone: 1992).

These changes of necessity have resulted in and been reflected in business structures. Ashkenas et al (1995) compared the critical factors that influenced organisational success for most of the twentieth century with those that are seen as necessary for the future:

Old success factors	New success factors
Size	Speed
Role clarity	Flexibility
Ability to respond	Agility
Specialisation	Integration
Control	Innovation

While sheer size and the ability to vertically dominate a market led to the emergence of the cartels of the first half of the twentieth century and to the conglomerate multi-nationals of the second half, size by itself became almost a liability in markets where *Speed* in response to customer requirements and to the ‘time-to-market’ aspects of new product development became critical.

Similarly the larger the organisation the more important it was to develop hierarchical structures with clear role definition. Again this often became a liability when rigid workforces could not adapt to change and success was more often found in firms with *Flexibility* in multi-skilled work forces, the ability to take on new skills and an ability to move to new locations as well as service new customers in new ways. Similarly customer response needed to take on a new dimension of *agility* implying *more rapid and more focused responses*.

While clearly *specialisation* in many senses is more importance than ever, it needs to be seen more in the context of developing relevant processes and less on specialist production. Instead the critical ability becomes being able to identify, locate, and source resources and then collaborate with the resource owners to create an *integrated* value offer.

Certainly *Control* and with it stability similarly remain important corporate attributes, but it is important that such control does not stifle *Innovation* particularly in periods of rapid change. Indeed the new corporate success stories are those more likely to create innovative networks, processes and products and organisation structures and transactions systems that stimulate creativity.

There is perhaps one more attribute to new corporate success that Ashkenas and his co-authors imply but do not spell out and that is *coordination*. It is the characteristic binding Speed, Flexibility, Agility, Integration and Innovation together – attributes that might otherwise spin an organisation apart rather than focus it into a successful holistic structure. It is an essential skill, or perhaps role, that results in sustainable competitive advantage.

Many of these new success factors have been manifested in the development of process focused supply chain management thinking which has increasingly been part of the debate on change and indeed the need for change. Many of the corporate success stories of the early 2000’s have seemingly been supply chain driven. Low cost carriers such as Ryanair and Soutwest have significantly changed the dynamics of the airline industry by undercutting traditional full service legacy carriers – to the point where no blinds on windows and seats in fixed positions save on fitting and maintenance costs.

This focus on supply chain management can however be misleading where it simply become a single minded focus on reducing corporate costs (Rainbird: 2004) and as such limited in its usefulness as an effective planning model: “...Supply chain efficiency is mistaken for effectiveness, with undue short-term emphasis on cost reduction at the expense of contribution to broader goals”. The Ryanair model for example is not just about low operating costs and therefore cheap tickets, but as one executive noted “Someone once said we might have the lowest fares, but we have the most expensive sandwiches in the world...” (Kellerman 2006)

3. The emergence of demand chain thinking

Perhaps beginning with Fisher (1997) the limitations of a uni-dimensional, cost focused supply chain are now well explored. Some authors have taken the argument a step further however and suggested that the whole concept of the supply chain has changed through evolution so that:

"It could be argued that it (supply chain management) should be termed 'demand chain management' to reflect the fact that the chain should be driven by the market, not by suppliers." Christopher (1998).

However simply changing the name is unlikely to change behaviour.

Another perspective comes from Tierney (2003) quoting Lee in depicting a triangle with customer demand at the pinnacle and supply chain and demand chain management at the bases. He cites the success of 7-Eleven Japan, whose stock prices kept rising despite Japan's recession for the past 10 years. The secret of its success is demand-led management, which led it to identify sales patterns and customer preferences and to match those by reengineering its category management and store product layouts resulting in increased sales and profitability.

Holmstrom et al (2000) add emphasis to the argument a pure supply chain focus is inadequate if we are seeking to add value for customers. They suggest: the supply chain as a 'customer service-led' process.

Langabeer and Rose (2001) take the argument a step further by looking at the demand chain as an entity in its own right suggesting a simultaneous standardisation and differentiation in consumer preferences for products (the demand chain), and the second is a continued emphasis on cost minimisation in manufacturing supply chains. Unfortunately, these two are often at odds with each other. This is an interesting differentiation between the supply chain and the demand chain and between demand management and demand chain management. They define the demand chain as: *“The complex web of business processes and activities that help firms understand, manage, and ultimately create consumer demand.”*

They emphasise the point that demand chain management attempts to analyse and understand overall demand for markets within the firm's current and potential product range. Supply chains, by contrast emphasise the efficiencies in the production and logistics processes, while the demand chain emphasises effectiveness in the business. A very useful point in their argument is that demand chain analysis and management helps to improve an organisation's processes by aligning the organisation around a common plan, improves coordination within the supply chain by using forecasts and plans, and exploits the commercial processes by understanding consumer demand and by selecting those markets that best meet an organisations, owned and/or 'leased', skills and resources.

This introduces the notion that an effective approach to demand chain management first requires the organisation to understand its current and potential markets and second to identify the essential (or core) processes and capabilities that are required for success.

They offer a useful comparison of the two approaches:

Supply Chain	Demand Chain
<ul style="list-style-type: none"> • Efficiency focus; cost per item 	<ul style="list-style-type: none"> • Effectiveness focus; customer focused, product-market fit
<ul style="list-style-type: none"> • Processes are focused on execution 	<ul style="list-style-type: none"> • Processes are focused more on planning & delivering value
<ul style="list-style-type: none"> • Cost is the key driver 	<ul style="list-style-type: none"> • Cash flow & profitability are the key drivers
<ul style="list-style-type: none"> • Short term oriented, within the immediate and controllable future 	<ul style="list-style-type: none"> • Long term oriented, within the next planning cycles
<ul style="list-style-type: none"> • Typically the domain of tactical manufacturing and logistics personnel 	<ul style="list-style-type: none"> • Typically the domain of marketing, sales and strategic operations managers
<ul style="list-style-type: none"> • Focuses on immediate resource and capacity constraints 	<ul style="list-style-type: none"> • Focuses on long term capabilities, not short term constraints
<ul style="list-style-type: none"> • Historical focus on operations planning and controls 	<ul style="list-style-type: none"> • Historical focus on demand management and supply chain alignment

Source: Langabeer J and J Rose (2001), *Creating Demand Driven Supply chains*, Chandos Publishing, Oxford

Godsell et al (2006) take the debate further and 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 and; (4) Process enablers 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 customer satisfaction. However care should be exercised with its implementation as there is there is a suggestion that the demand chain objectives are aligned with relevant business unit strategies. This may not be strategically sound.

Chandler’s (1965) study of strategy and structure suggested that structure follows strategy: in the world of the virtual organisation we should extend this and assume that both strategy *and* structure are dependant upon market opportunity and that this is now driven by the share of *market added* value that is available. An example of this orientation is given by Fonterra; the New Zealand based dairy processing company.

Fonterra is a cooperative comprised of supplier/shareholders (dairy farmers) who can influence Fonterra strategy as well as being its major suppliers of inputs. Fonterra pursues a market added value strategy by being both supplier of inputs to large organisations such as Nestle *and* a partner in markets where there is an opportunity to expand into consumer markets. The supplier/shareholders “shareholding” is based upon the volume of their individual inputs (i.e. shares purchased and owned based upon KG weight). The “dividend” or *payout* is based upon the earnings generated in excess of those that would have been earned from the sale of milk as a commodity. The emphasis is shifted away from trading milk as a bulk commodity and towards identifying, isolating and purifying individual components of the milk which may in turn be used as key ingredients in the global food industry. The value of the output is calculated by an outside organisation (an internationally known accounting services company) and the added value is the difference between outputs and inputs and is allocated on a per share basis. Fonterra have pursued a strategy of expanding their branded products and this has had mixed success. They clearly would create problems for themselves by competing along side their ‘input customers’ such as Nestle. However, not to expand into differentiated products would leave the entire organisation dependent upon internationally set commodity prices. To date Fonterra have been moderately successful in the consumer business has some of the world's best-known dairy brands, including [Anchor](#), [Tip Top](#), [Peters & Brownes](#), [Anlene](#), [Anmum](#), [Chesdale](#), [Fernleaf](#) and [Mainland](#). The interesting aspect of this model is that it identifies two distinct demand chains; one that focuses on a B2B structure and the other a B2 C structure; in turn the supply chain responses are also very different and require quite different approaches.

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 process (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 the 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 with both downstream partners to agree performance measures (and rewards) but 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.

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.

4. 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.

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 is 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 a 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. Perhaps then the new critical success factors for a firm in the new economy identified by Ashkenas et al (1995) require yet another factor – organisational structures and a management environment that encourages negotiated outcomes.

5. Changes that are redirecting strategy and business model structures: Interactions

This broader notion of the demand chain becomes even more relevant when you consider the concept of ‘interactions’, as introduced by Butler et al (1997) who suggested they account for over a third of economic activity in the US. Building on these Johnson *et al* (2005) discuss the expanding influence of intra and inter-organisational interactions.

Interactions may be classified as: *Tacit interactions* are knowledge based, requiring experience and judgement typical of decision making roles. *Transactional interactions* include not just administrative roles and accounting tasks but also the tasks that are increasingly becoming automated by the application of software packages. *Transformational interactions* are the “production” related tasks in which raw materials are extracted and processed into finished products. Johnson et al argue that interactions are an integral part of strategy, organisational structures and operational implementation. Skilfully used interactions can enhance strategic and operational responses to market opportunity.

The increase in interaction efficiency is increasing the number of businesses working together as networks and it will also increase the application of network applications within businesses. Butler and his colleagues provide examples of intra-organisational networks such as Caterpillar who are now linking designers, distributors and technicians with customers as it builds a global parts service network. They also contend that as interaction costs decline so too will transaction costs resulting in more market information transparency.

An interesting aspect of all of this is the impact that it will have on traditional intermediaries, who traditionally exploited the lack of transparency. Their role as providers of market information is being undertaken by “informediaries”, organisations that provide search facilities across markets. Clearly such changes have implications for business organisation. Internet ‘interactions’ now facilitate both customer and supplier relationship management. Product customisation will become easier, faster and less costly as interaction facilities increase in cost efficiency and communications can become more closely targeted, frequent and accurate.

6. Operational and strategic outsourcing

A parallel but related influence has been the response by many organisations to outsourcing. Gottfredson et al (2005) discuss capabilities from a strategic sourcing perspective and argue that:

“Now globalization, aided by rapid technology innovation, is changing the basis of competition. It is no longer a company’s ownership of capabilities that matters but rather its ability to control and make the most of critical capabilities, whether or not they are on the company’s balance sheet. Outsourcing is becoming so sophisticated that even core functions can and often should be moved outside. And that, in turn, is changing the way firms think about their organizations, their value chains, and their competitive positions”.

The authors suggest that “forward thinking” organisations are using “capability sourcing” to make their value chains more flexible. They also suggest that this approach questions whether all activities should be outsourced. They identify a number of companies who have focused on brand strength as the basis on which to continue to build their businesses. Companies such as Virgin and Nike are offered as examples.

Capability sourcing is based upon a rigorous assessment of an organisation’s capabilities to determine which match the requirements of an identified opportunity and where there are “capability gaps”. They argue:

“Greater focus on capability sourcing can improve a company’s strategic position by reducing costs, streamlining the organisation and improving quality”.

We would argue that there are other factors to consider. For example a capability sourcing audit may reveal that access to a process may offer exclusive differentiation that in turn offers an opportunity to become a significant force in a growth market segment.

The authors provide ample evidence in support of their argument that by the 1980s the basis of competition shifted from “hard assets to intangible capabilities”. Wal-Mart are cited as moving away from traditional retailing capabilities towards a proprietary approach to relationship management within its supply chain. The US automotive industry responded to the growth of market share of its Japanese competitors by moving design, engineering and manufacturing work to specialist partners. Strategic sourcing relationships were established for complex assemblies with agreement to sharing cost accounting data *and* cost savings. American Express outsourced its transaction-processing to First Data, a new organisation in 1992. Gottfredson et al make an interesting and very significant point with this example: American Express realised that while this process was core to their business it was becoming commoditised and therefore declining in its importance as an element of competitive advantage. With the

processing outsourced to a reliable partner they were then able to focus on the card issuing aspect of the business.

7. The interactions/outsourcing interface

Butler et al (2001) identified the importance and impact of interactions. Their purpose appeared to be to bring an awareness of interactions and to “create an agenda” for others to explore. Beardsley et al (2006) did so by expanding on the original research by Butler et al and beginning a typology. They argue that “tacit interactions” are the increasingly collaborative and complex aspects of many tasks. They suggest they are; the exchange of information, the making of judgements requiring the use and exchange of “multifaceted knowledge” with co-workers, customers and suppliers and those interactions are increasingly a part of the standard model for companies operating in the developed world. Because of the large proportion of the labour force this represents the authors argue that increasing the productivity of “interactions” will have a significant impact on financial performance. Furthermore there are major implications for enhancing competitive advantage.

Butler’s initial work gave a theoretical underpinning to the approach of Rayport and Sviokla (1995) who argued that physically based products become electronically based. Rayport and Sviokla suggested the traditional ‘marketplace’ (the interaction between physical buyer and physical seller) is becoming replaced by the “marketspace” (in which physical product content becomes replaced with information content, product context becomes an electronic channel or product/service outline and service/infrastructure is computer based and replaces physical and institutional networks). The extensive range of systems based products for healthcare management and supply chain support is evidence of this. Earlier Day (1997) later referred to the move from a “marketplace” to a “marketspace” perspective by suggests this as a new emphasis not only on marketing communications, but also on product-service characteristics and transaction payment systems. The marketspace removes the need for dominant location; “...customers can shop across the globe or country, dramatically cutting the advantage of local presence that is the mainstay of many retailers.”

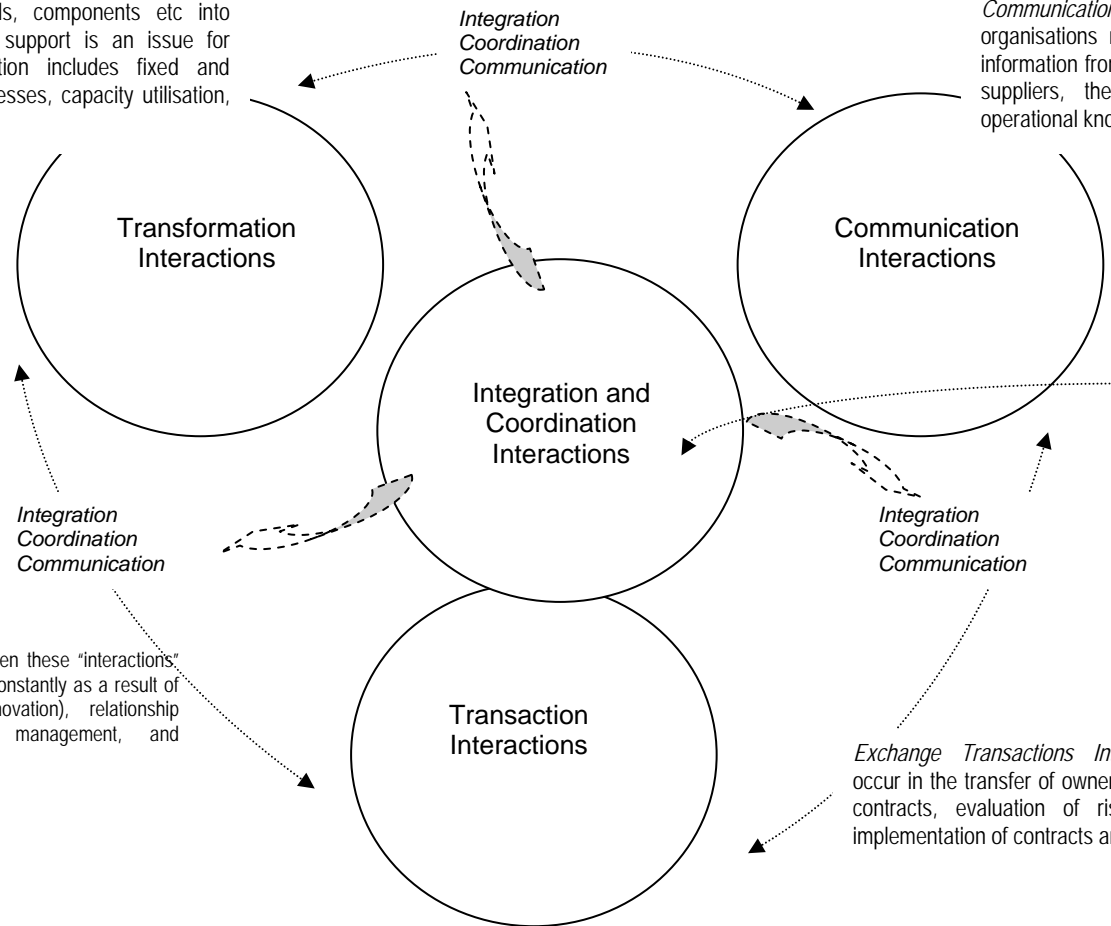
Beardsley and his colleagues argue that typically organisations increase the efficiency of *transformational* and/or *transactional* activities by adding (or substituting labour) with capital solutions. They argue further that the boundaries between transformational, transactional and tacit interactions are not static; they are changing constantly as a result of innovation. Furthermore increasing the productivity of tacit interactions is not a simple task; rather it is about avoiding standardising interactions and adopting an approach that fosters change, learning, collaboration, innovation and shared values. They are suggesting that productivity increases when mutual confidence and trust exist are, and extends beyond traditional organisational boundaries; this occurs when tacit interactions are allowed to emerge rather than be “engineered” by senior management. Intra and inter organisational communication and collaboration have been observed as beneficial to the increase in the productivity of interactions. Essentially Beardsley and his colleagues are suggesting that the effectiveness and efficiency of interactions is increased by taking advantage of the benefits offered by developments in; knowledge management, technology management, process management and relationship

management particularly when the intuitive response of a cooperating group is allowed its initiative

However this falls short of developing a conceptual approach to the increasing interest in interactions; to do this requires an alternative view of how interactions may be classified. Sutton (1998) introduces the notion of *market coordination* and **Fig 1** suggests how this role may be integrated into an attempt to formalise “interactions” into a useable concept. The approach suggested is to refocus *tacit interactions* (that are knowledge based, requiring experience and judgement typical of decision making roles) but that is too broad, and replace this with two; *integration and coordination* (a visionary and orchestrator role) and *communications* (an activity that pervades information transfer throughout the value creation system).. *Transactional interactions* include not just administrative roles and accounting tasks but also the tasks that are increasingly becoming automated by the application of software packages. *Transformational interactions* are the “production” related tasks in which raw materials are extracted and processed into finished products. Beardsley et al argue that interactions are an integral part of strategy, organisational structures and operational implementation. Skilfully used interactions can enhance strategic and operational responses to market opportunity.

Transformation Interactions (TrFmIC): involves the conversion of raw materials, components etc into ‘useable products’. Service support is an issue for transformation. Consideration includes fixed and variable costs, relevant processes, capacity utilisation, capabilities

Communications Interactions (ComIC): occur as organisations respond to requests for routine “search” information from customers and request information from suppliers, they occur when sharing strategic and operational knowledge inputs with partners.



Integration and Coordination Interactions: increasingly, as organisations opt for partnerships and alliances there becomes a need for a *visionary or orchestrator* role that identifies new opportunities for creating customer value by reorganising the structure of the value chain either to create more added-value for stakeholders or to improve overall

Note: The boundaries between these “interactions” are not static; they change constantly as a result of process management (innovation), relationship management, knowledge management, and technology management.

Exchange Transactions Interactions (ExTrIC): occur in the transfer of ownership. Negotiation of contracts, evaluation of risk, and successful implementation of contracts are included.

Fig 1: Interactions occur between suppliers and customers, and between upstream and downstream partners. Their importance in the exchange process is their influence on the nature of relationships within the value creation system.

8. Business models

Another perspective on how firms are responding to market changes comes from 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 of 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, 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. They suggest that:

“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.”

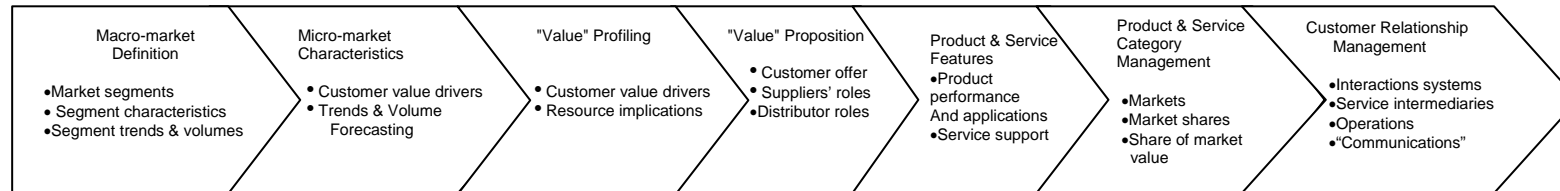
The authors introduce the notion of a *Commercial Operating System* that integrates company processes and market interactions. Market interactions identify the roles and tasks that are undertaken *with customers* in the marketplace and act as a focus for the commercial operating system. A review of the 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 operations *response system* is a logical decision.

While they do 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 cooperation 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

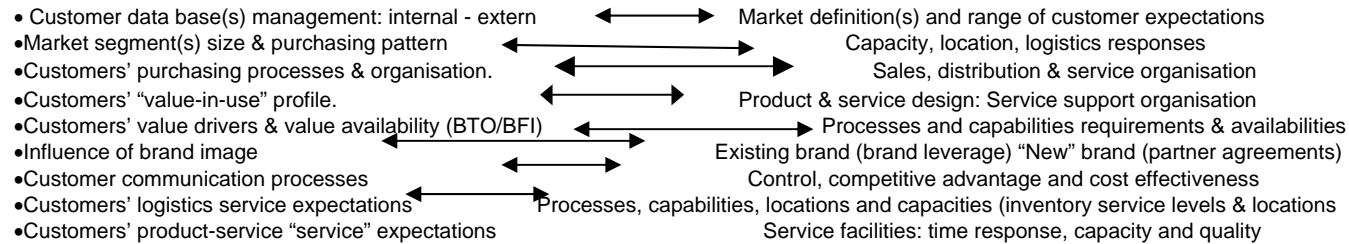
9. An “operations response system” approach

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.

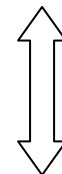
So how does this all come together? An approach is given by **Fig 2** in which the overall view of the process and its component activities are presented. Central to the entire process is the knowledge driven linkage between the demand chain and the operations response system. Identifying the relevant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



Demand Chain Analysis



← *Demand Chain Management*



Designing the Operations response system Response

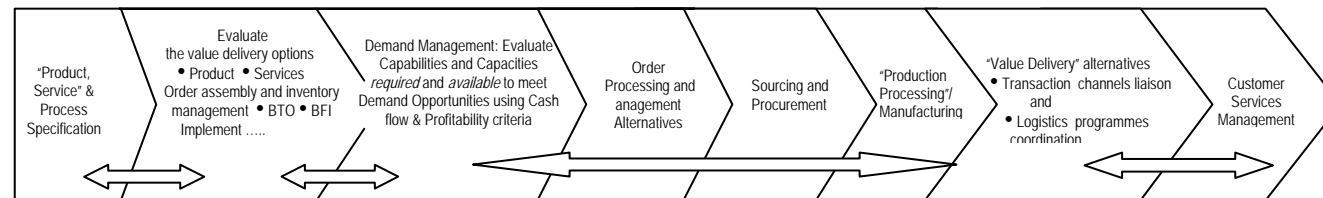


Fig 2: Designing and managing the operations response system

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 + the Operations Response System Response*), 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?
4. Are there opportunities for long term competitive advantage?
5. What are the implications for cost structures?

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?

Fig 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*.

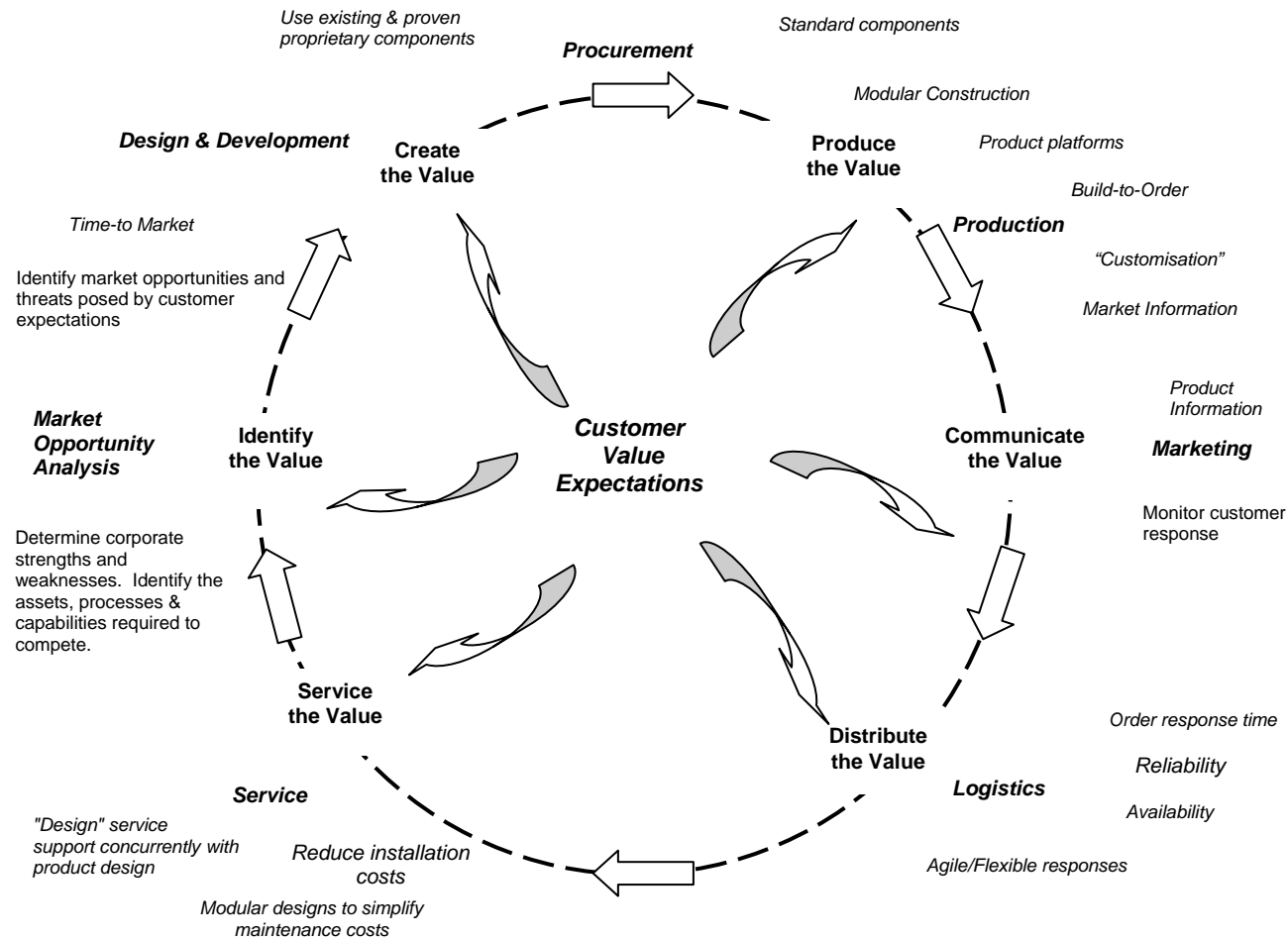


Fig3: Identifying customer facing processes and process alternatives is an important feature of adding customer value

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.

Fig 4 identifies the importance of the *demand chain* as initiating the response. The *demand channel profile* identifies the potential market and the segment(s) that are potentially relevant to the organisation. The potential 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.

The *operational response chain* 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 (Roberts and Hagel (op cit), 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 (op cit) 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

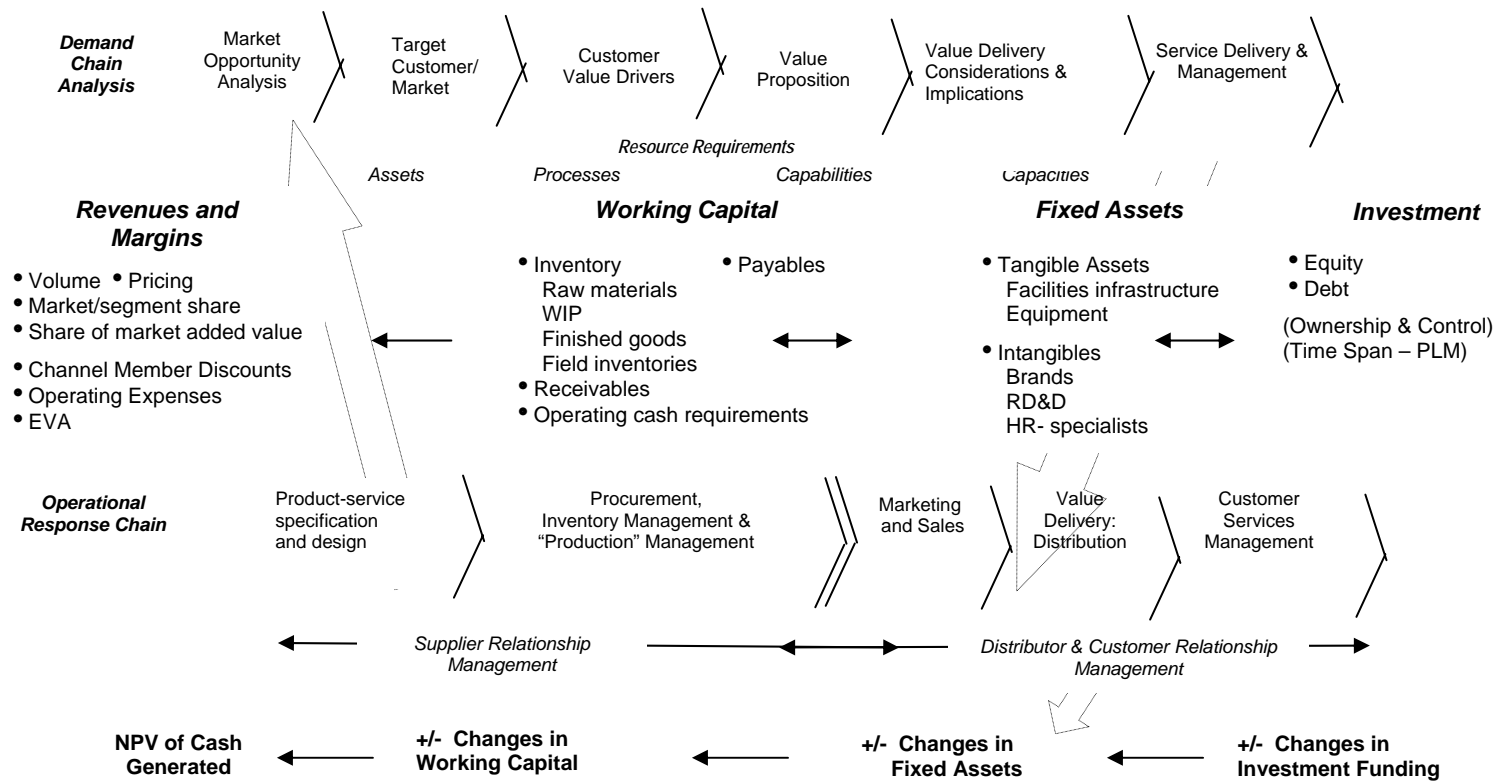


Fig 4: Effective and efficient resource application is enhanced by the operational response chain model

This leads us into considering performance measurement. As Figure 3 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.

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 we also support the principles of the Global Compact www.unglobalcompact.com. We adopt a Code of Conduct for all our vendors.”

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
- Operating Margins
- Growth Rates
- Share of Market
- Inventory Productivity
- Receivables Productivity
- Payables Productivity
- EVA performance
- Added Value

Financial Performance (Strategic)

- ROA (Tangible & Intangible Assets)
- Capital Utilisation
- Capital Intensity
- Operational Gearing
- ROCE
- ROE
- 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

Table 1 also suggests that sustainability and environmental issues are incorporated into the evaluation criteria. Increasingly these are issues that assume global importance.

10. Concluding comments

To conclude we use Fig 5 to illustrate the processes involved when the demand chain and the operations response system are integrated. Fig 4 shows three stages. The first is to ask; what is the Operations response 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 the operations response 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.

An *operations response system* 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.

Given these answers the organisation can move on to *specifying the operations response 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 an operations response 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.

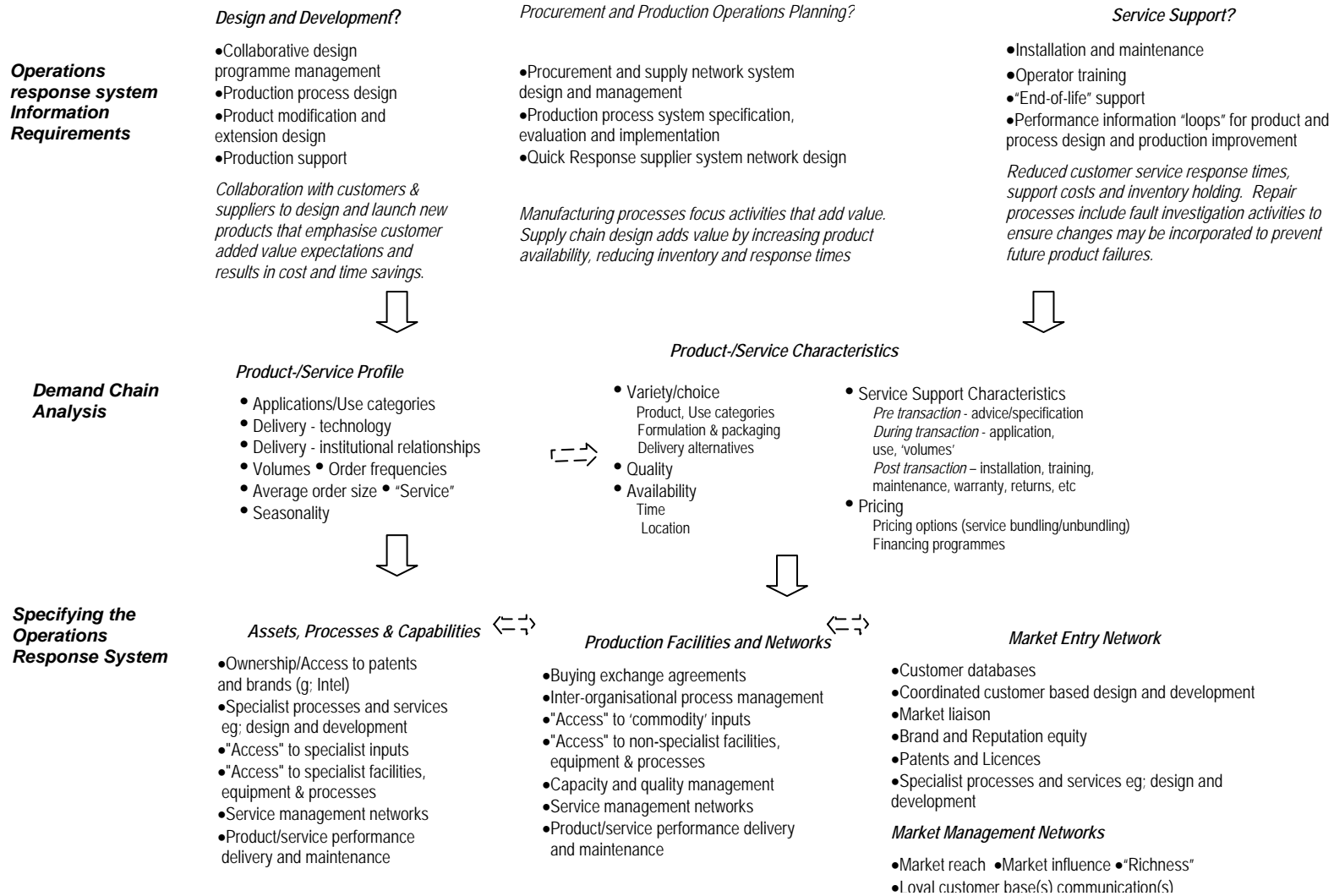


Fig 5: Using the demand chain to develop an efficient operations response system

Fig 5 summarises our argument by expanding the important issues identified in the previous paragraph. 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. The *demand chain management* roles and tasks are identified in **Fig 5**.

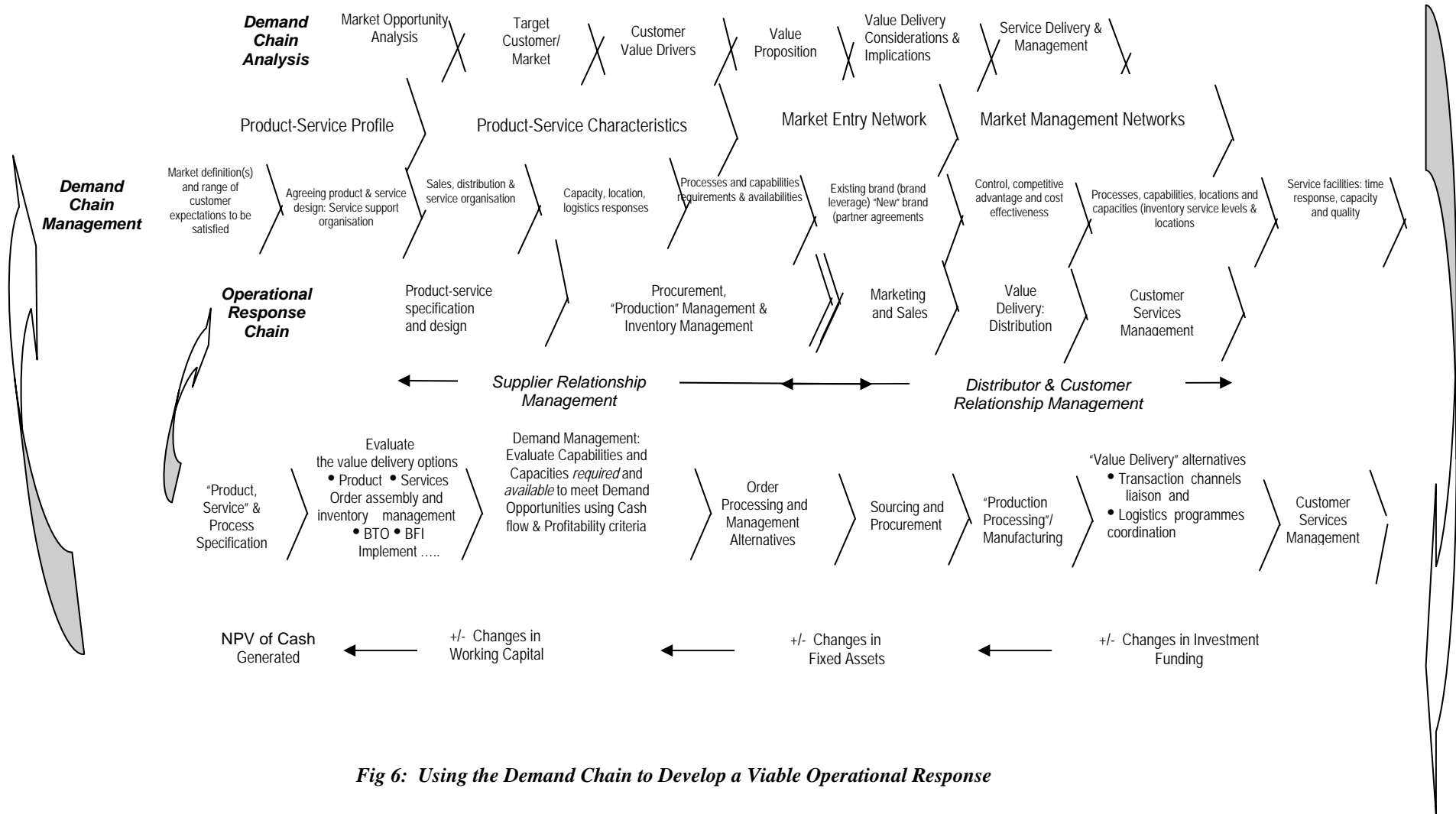


Fig 6: Using the Demand Chain to Develop a Viable Operational Response

REFERENCES

- Agarwal A, D P Harding and J R Schumacher (2004) “Organising for CRM”, *The McKinsey Quarterly*, Number 3
- Ashkenas, R D, Ulrich, J, Todd and S. Kerr (1995) *The Boundaryless Organisation*, Jossey-Bass Publishers, San Francisco
- Band, W.A. (1991) *Creating Value for Customers*, Wiley, New York
- Bovet D and J Martha (2000) *Value Nets*, Wiley & Sons, New York
- Beardsley S, Johnson B, and Manyika J (2006) “Competitive advantage from better interactions”, *McKinsey Quarterly*, Number 2
- Butler P, T W Hall, A M Hanna, L Mendonca, B Auguste, J Manyika and A Sahay (1997), “A revolution in interaction”, *McKinsey Quarterly*, August
- Chandler A (1965) *Strategy and Structure*, MIT Press, Cambridge, Mass
- Christopher M (1998) *Logistics and Supply Chain Management*, Financial Times/Prentice Hall, London
- Crowe D (2004) “Metcash feeds suppliers data”, *The Australian Financial Review*, 30 November
- Davidow, W H and Malone, M S (1992), *The Virtual Corporation*, Harper Collins, New York.
- Day, G. (1999) *The Market Driven Organisation*, The Free Press, New York
- Fisher M L (1997) “What is right supply chain for your product?”, *Harvard Business Review*, 75 2
- Godsell J, A Harrison, C Emberson and J Storey, (2006) “Customer responsive supply chain strategy: An unnatural act?”, *International Journal of Logistics*, Volume 9, Number 1 / March
- Hammer M (2001) *The Agenda*, Crown, Publishing Group, New York
- Holmstrom J, W E Hoover Jr, P Louhivuoto and A Vasara (2000) “The other end of the supply chain”, *McKinsey Quarterly* Number 1,
- Langabeer J and J Rose (2001), *Creating Demand Driven Supply Chains*, Chandos Publishing, Oxford
- MacMillan, I C and McGrath, R G (1997) "Discovering New Points of Differentiation", *Harvard Business Review*, July/August.
- Johnson B, J Manyika and L Yee (2005), “The next revolution in interactions”, *McKinsey Quarterly*, Number 4
- Knudsen T R, C Moret, and E S Van Metre (2006) “The power of a commercial operating system”, *McKinsey Quarterly*, August
- Lee H L (2004) “The triple a supply chain”, *Harvard Business Review*, October
- Mentzer J T (2006) “A telling fortune”, *Industrial Engineer*, April
- New S (2000) “Operations strategy: why bosses must dirty their hands”, *Mastering Strategy*, Financial Times/Prentice Hall, London

Normann R, (2001) *Reframing Business*, Wiley, Chichester

Rayport, J F and I T Sviokla (1994) "Managing in the Marketspace", *Harvard Business Review*, November/December.

Scott M (1998) *Value Drivers*, Wiley, Chichester

Seely Brown and J Hagell III (2005) "From push to pull: The next frontier of innovation", *McKinsey Quarterly*, Number 3

Tierney, S., 2003. Tune up for a super-efficient supply chain with a Triangle. *Frontline Solutions*, (Pan-European edition), Duluth: Jun 2003. pg.34.

Trinca H (2003) "Reconstructing Work", *Australian Financial Review: Boss*, 11 April

von Hochberg P, M Rodrigues and G Grenon (2006) "Who Manages Manufacturing", *Strategy + Business*, www.strategy-business.com/press/article

Gottfredson M, R Puryear, and S Phillips (2005) "Strategic Sourcing From Periphery to the Core", *Harvard Business Review*, February