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CONFIGURING SUPPLY CHAINS OF THE FUTURE

5 Building Blocks to Enable Dynamic and Structural Flexibility



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A critical challenge for the supply chain (SC) is its response to increasingly volatile demand; its ability to be customer responsive or demand driven. This has been associated with the need for dynamic flexibility across the supply chain to cope with fluctuations in demand within the current supply chain configuration. It is commonly associated with the concept of agility. The reality is that today's volatile environment demands not only responsiveness within the current supply network configuration, but the ability to be able to re-configure the global supply network to respond to changes in demand and supply. This is referred to as structural flexibility¹ (refer to figure 1).

There are 5 key building blocks to developing a SC strategy that is both dynamically and structurally flexible. These are the need to build for business alignment, the role of segmentation to enable flexibility through stability, the role of analytics in developing real-time data driven decisions, a 'real option' approach to network design to enable rapid configuration and the shift towards greater economies of scope and more distributed approaches to manufacturing. Each will now be discussed in turn.

1. Build for business alignment

Supply chains are now truly global and one of the key challenges facing business is to know where to position its supply chain assets. Historically, these assets were limited to factories and the decision was one of factory location. Driven by the desire to harness the low labour costs in more developing economies, manufacturing shifted from localised production supporting localised demand to more centralised regional or global production

that served many markets. As advocated by the forefathers of manufacturing strategy these manufacturing strategy decisions were linked back to the business strategy, albeit a strategy of cost reduction. Roll forward to 2014. The need to build for business alignment has never been stronger. This requires the development of a congruent business strategy where the mechanisms for demand creation and alignment are aligned. This is made more complicated for businesses, as they increasingly need to meet the challenges of cost reduction today whilst building capability for growth in the future. Businesses historically associate the responsibility for growth to the product and marketing function, and cost reduction to the supply chain. Business alignment requires congruence between the product, marketing and supply chain strategies and for them to be mutually reinforcing. The lowest cost supply chain is one that responds to a stable demand pattern. This is because no costly buffers (e.g. inventory, work in progress, spare capacity) are required to protect against uncertainty. Often marketing in an attempt to stimulate customer demand undertakes promotional activities, which introduce demand instability and increase supply chain costs. This is an example of a business strategy that is not congruent. In contrast, the new generation of low cost food retailers (e.g. Aldi) have more congruent business models. They do not promote their everyday products. They keep the demand pattern as stable as possible and pass this stable demand signal onto their local and regional suppliers. To create consumer interest they promote highly coveted, themed items (e.g. ski-wear, garden, cycling) on specific days of the week (e.g. Thursday and Sunday) at extremely competitive prices on a when-its-gone-its-gone (WIGIG) basis. These sales

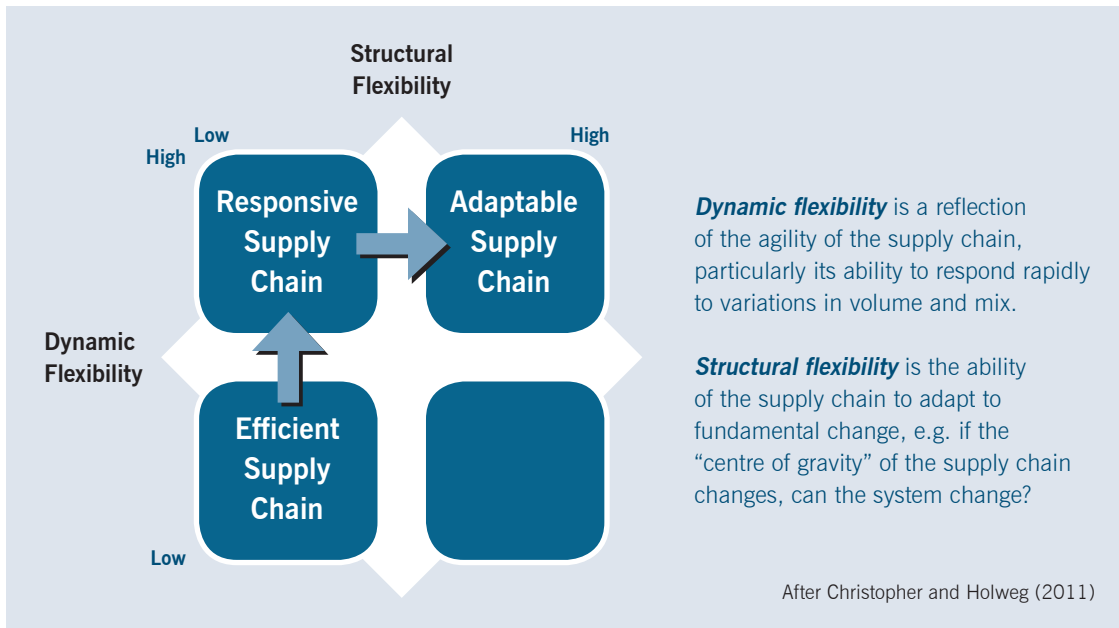


Figure 1: Illustrating the importance of both dynamic and structural SC flexibility

are planned well in advance. They are typically ordered in full container loads from the Far East and are sourced on a one-off basis at extremely competitive prices. In this way the retailer meets the dual objectives of driving sales growth by creating consumer interest whilst minimising supply chain cost.

2. Segmentation: flexibility through stability

At the heart of the aforementioned retailer business strategy is the concept of supply chain segmentation. What enables the congruent business strategy is the separation of the underpinning stable demand (the everyday products) from the more variable demand (the special sale items). In this way the retailer can then develop the most appropriate supply chain response for each of the different demand types. Stable demand (‘steady state’) is much easier to manage, as it requires minimal management intervention. These are products that are best forecast statistically, they can be manufactured in a repetitive and stable way with a focus on cost and quality, and the stable demand passed onto the supply base. They run on ‘auto-pilot’. Despite the apparent increase in demand volatility, steady state typically accounts for 70–80% of demand in most organisations as illustrated in figure 2.

It is important to be able to identify, isolate and develop processes to deal with this stable demand on ‘auto-pilot’ to enable managers to ‘focus’ on the 15–20% of demand that is driving growth and profit for the business. This is the demand that requires more careful management, as these are the products for which demand is more variable, where promotional activity may take place, or new products launched and they require responsiveness. Hence dynamic flexibility is created within the organisation through a bedrock of stability. Simply put, flexibility through stability. There is a third category of demand, ‘noise’. This was affectionately called the ‘panicking for peanuts’ category by one organization. It typically

accounts for 10–15% of demand, and is characterised by low volume and high volatility. These products need to be culled or developed into one of the other categories.

3. Role of analytics:

Real-time data driven SC decisions

Although SC segmentation is a concept that dates back to the 1990’s, it is still a hot topic today and is commonly featured in consultant publications and SC practitioner conferences. Whilst organisations intuitively see the benefits of SC segmentation they have struggled to find the best approach for implementation. As with its marketing counterpart SC segmentation is a data driven process. Until recently the paucity of accurate, timely and holistic demand data at the individual stock keeping unit (SKU) level has been a major inhibitor. As organisation’s Enterprise Resource Planning (ERP) systems mature, and the Internet era has provided more distributed data solutions, good quality real time data is increasingly available. This data is the bedrock upon which more holistic supply chain decisions (including segmentation) can be made. The economist John Maynard Keynes famously advocated that ‘it is better to be roughly right, than precisely wrong’ but it could be argued that this is because he did not have the data available to be precisely right. The strategic initiative to review German Manufacturing strategy, Industrie 4.0 suggests that the:

“ICT-enabled convergence of technological and business processes will usher in a new era for (German) industry”²

It will enable real time decisions to be made that are potentially ‘precisely right’, based on a combination of data and management insight, thus operationalizing the combination of system 1 (fact) and system 2 (intuition) based thinking as advocated by Daniel Kahneman³. Such approaches will enable more informed decisions about SC segmentation, to enable dynamic flexibility through stability. In addition, they will also provide a more holistic

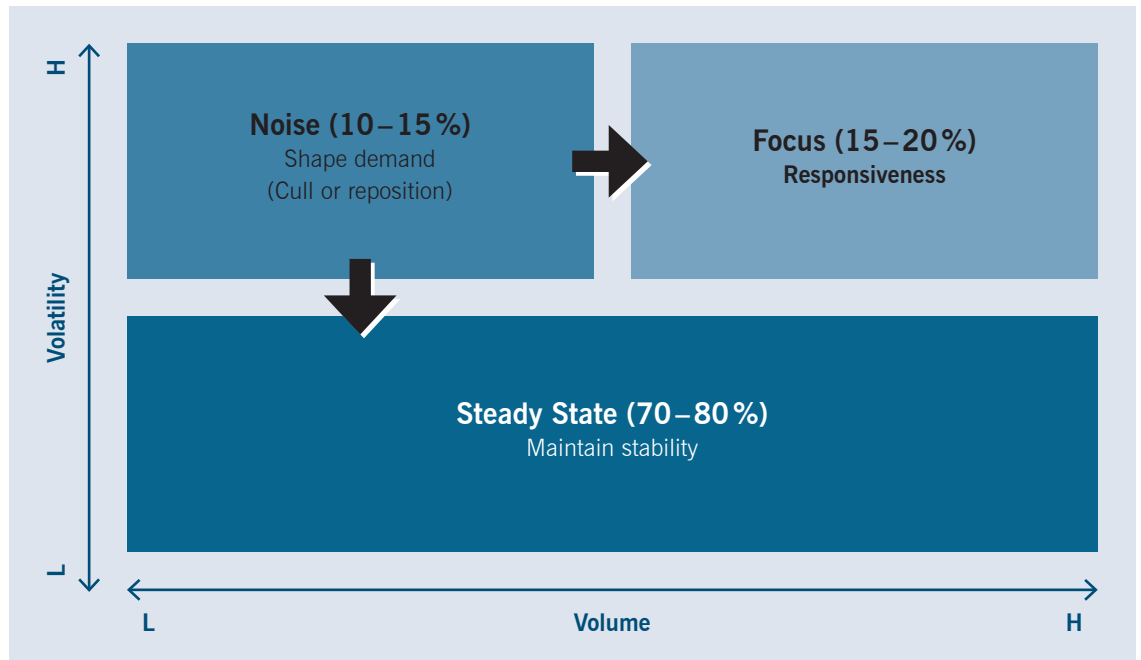


Figure 2: To illustrate SC Segmentation

view of the global supply network. This will inform the positioning of supply chain assets (locally, regionally and globally) in support of the strategic imperatives of the organisation, to enable structural flexibility.

4. Rapid reconfiguration: keeping your options open

Structural flexibility – the ability to rapidly reconfigure a global supply network to changes in supply and demand – requires a ‘real-options’ approach to decision making. If a global supply network needs to reconfigure quickly, it needs to have the infrastructure in place through which it can re-route. There needs to be an in-built level of optionality (i.e. real-options) within the network that enables rapid decision-making and reconfiguration. For example, a leading European low cost apparel manufacturer has a range of different suppliers that is approved for the manufacture of its products. They all meet the customers order qualifying criteria of cost and conformance. For each of the 5 seasons they tender for the materials and manufacture of the garments. The network for the season is then configured on lowest delivered cost across the network. This reconfiguration or structural flexibility is possible because of the inherent ‘real options’ that the pre-approval process has enabled.

5. Economies of scope: a shift to distributed manufacturing

Finally, the need for structural flexibility also challenges another economic paradigm; economies of scale versus economies of scope. Globalisation has seen the migration to large centralised factories that produce large volumes of a relatively limited range of products. These tend to work well for the stable underlying demand, but don’t have the agility to respond to more unpredictable demand. Where responsiveness is required there is a shift to localised distributed manufacturing that supports customisation. New business models where consumers are designers and

customizers and retailers become virtual business brokers will drive manufacturers to produce in a distributed small scale manner and their suppliers to be more flexible. This shift is being supported by the emergence of new technologies e.g. additive manufacturing or 3D printing. This is still a relatively new field but it is hoped that these customer driven localised business models will lead to a significant reduction on the environmental impact of fulfilment and lead to increased supply chain sustainability.

Concluding Thoughts

It is likely that consumer demand will continue to become increasingly uncertain in terms of form (what they want), time (when they want it), and place (where they want it). Sustainable competitive advantage will be achieved by the businesses with the supply chains that are able to combine the *dynamic* flexibility to respond to volatility in demand for today’s products with the *structural* flexibility to reconfigure to meet the emerging changes in demand and supply of tomorrow. Business alignment, segmentation, real-time data driven decisions, a ‘real option’ approach and the shift towards greater economies of scope are the 5 building blocks upon which dynamically and structurally flexible supply chains are configured. How dynamically and structurally flexible are your supply chains?

References

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