



Behavioral Supply Chains

John Gattorna examines the influence of consumer behavior on supply chains, arguing that adequate responses to the wide array of challenges facing supply chains must take account of the particularities of human behavior. Gattorna spells out a range of observed patterns of consumer behavior. These include the existence of a finite number of consumer behavior patterns in any given market, the fact that the dominant behavior pattern can change temporarily in response to external pressures, more permanent changes in consumer behavior are internal to the consumer, and more than one kind of customer behavior can be observed within single corporate structures. All these observations clearly carry implications for supply chain configurations. Gattorna goes on to identify four kinds of buying behavior: collaborative, transactional, dynamic and innovative.



Dr. John Gattorna
UTS University of Technology
Sydney

This paper is designed to provide a more granular perspective than the traditional aggregate view that economists take of supply chains. In particular, I want to add a behavioural dimension, and introduce a more dynamic methodology, capable of addressing the increasingly volatile operating environments that are likely to pervade future trading conditions within and between countries, whether developed or developing.

The objective of this paper is to develop a toolbox of creative methodologies that will add insight to what we already know about supply chains and point the way towards improved navigation of the cross-border movement of trade flows. From the outset, let us deal with some of the terminology

issues. In my view, there is no difference between the terms supply chain and value chain, because supply chains done well equals value chains.

Regarding the term networks, these develop from local to regional to global, with correspondingly increasing complexity. The important thing to realize is that you should attack this growing complexity from the outside in, not from inside out as per conventional practice. Of course, the ultimate solution selected will be a combination of both.

Fundamentally, people, their respective behaviours, and the decisions they make in particular circumstances propel products and services along supply chains, so it is vital

The optimal result is obtained when all parties along specific supply chains, approach a degree of “alignment” in the way they think and act.

that human behaviour is factored into all future value chain designs. This is non-negotiable if the objective is to achieve a finer alignment between buyers and sellers and a necessary precondition if we are to take operational and financial performance to the required next level. Understanding human behaviour is the elephant in the room but, unfortunately, too many executives are in denial about its pivotal influence, presumably because they do not know how to factor it into the performance equation.

And people are spread out along supply chains, in the form of customers, intermediaries, staff and management inside suppliers and the enterprise itself. The optimal result is obtained when all parties (including outside influences such as government) along specific supply chains, approach a degree of “alignment” in the way they think and act.

Thus, looking at the operation of supply chains through the narrow prism of economics is not sufficient. Human behaviour must be factored in, just as the eminent economist, Robert J. Shiller, Professor of Economics at Yale University commented in the aftermath of the 2008 global financial crisis. He was acknowledging the human effect on the economy. See Shiller (2009).

Indeed, simply observing macro-flows of goods and services across or within country borders, hides the important detail beneath, and blunts the search for more predictive supply chain business models. In such situations, the emphasis is on reactivity, but there is a limit to reactive designs because of the premium cost attached to this modus operandi.

If we are going to work from the outside-in, we need a meaningful way of grouping customers into economically viable segments and then reverse engineering back into the enterprise from there. Most, if not all, conventional methods of segmentation used by the marketing discipline are flawed when used for the purpose of supply chain design. The only method that will adequately inform supply chain design is behavioural segmentation, grouping customers, consumers and users with similar buying values (and corresponding behaviours) according to the product

and service category under consideration.

Through our empirical work in companies drawn from many industries, and across numerous geographies in the period 1989–2012, we have found discernible patterns in the way customers project their demand for products and services. These conclusions are summarized as follows. See Gattorna (2010).

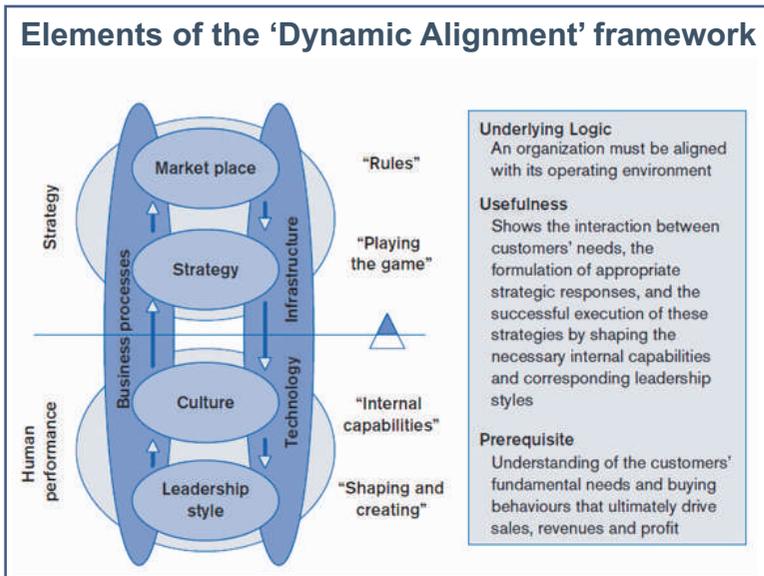
1. Customers always exhibit a small but finite number of dominant buying behaviours for any given product or service category, usually no more than three, but four at most (to give an 80 per cent fit to the market).
2. The preferred dominant behaviours exhibited by customers can change temporarily under the pressure of changing (operating) conditions such as lifestyle changes, government regulatory action, or the product life cycle itself. But behaviours usually return to the preferred position when conditions return to “normal”.
3. Where there is a permanent change observed, it is usually associated with a change in the customer's own internal decision-making group.
4. Finally, it is not unusual to observe more than one kind of buying behaviour inside a large corporate customer, where different groups are involved in buying different product or service categories.

These observations explain two phenomena:

1. That customers can exhibit more than one buying behaviour, under varying conditions, and hence more than a single supply chain configuration is required to cope with this plurality; and,
2. That such changes can be brought about for many reasons, including government regulatory actions – this is the connection between supply chain designs based on customer behaviour, and the impact of different government policies (such as tariffs, customs duties, wages, and development incentives) which can either help or hinder product and service flows.

We can now say with some confidence, that the most common buying behaviours and behavioural segments observed in the marketplace are the following four types: Collaborative, transactional, dynamic and innovative solutions.

What is also very significant is that as we look at how customers buy certain products and services in different countries across the world, the only thing that changes



is the mix of the originally-identified buying behaviours. We put this down to the influence of national cultures superimposed on individual or business unit buyers, see Gattorna (2010).

We can set up the same supply chain configurations around the globe, and they will be just as relevant from one country to another.

This is a particularly important finding because it means that we can set up the same supply chain configurations around the globe, and they will be just as relevant from one country to another. Of course, the prevailing government regulations and competitive activity could influence things in specific locations, but it is unlikely any fundamentally new segments will suddenly emerge out of nowhere. This is good news for multinational companies as they design their regional and global value chain networks. It is also good news for the future work of the WTO.

At the enterprise level, in reviewing regional and global markets, there are really only two appropriate methods open to companies to surface the underlying demand patterns. These are:

Indeed, the more accurate term these days would be value networks.

1. Using a shortened version of the well-known conjoint analysis market research technique, where a sample of customers are interviewed (qualitatively and quantitatively) face-to-face and by telephone. A draft "straw man" segmentation is prepared as a result, and this is then validated with further direct

contact with customers in the field; and,

2. Of perhaps more relevance in the case of aggregate flows of product important in trade flows between countries is the demand variability analysis otherwise known as the coefficient of variation. The methodology is as follows:

a) Profile the total demand, by-customer or source, by-year for say two to four years to understand overall patterns. Demand should be broken down by major product categories,

b) Then calculate the co-efficient of variation (CoV) by customer or product category in a few sensible time buckets, such as monthly or quarterly, over the selected period. This will give a perspective on the relative variability of different customer's demand,

c) The CoV is a method of comparing the variability of different data sets. It is calculated by dividing the standard deviation by the mean, expressed as a percentage. By setting some business rules, it is possible to distinguish between volume flows with lower variability (base load or lean), compared with volume flows which has a higher variability (agile).

The term "supply chain" was first coined by Keith Oliver at Booz Allen1 in 1982. I have long been uncomfortable with this term but have chosen instead to continually redefine its scope over time, rather than introduce new terminology, which in turn just adds to the semantic confusion.

Indeed, the more accurate term these days would be value networks, as argued in my book, Dynamic Supply Chains, see Gattorna (2010). And networks they are, spreading from local to domestic national trading environments, becoming regional as more countries are involved in strategic sourcing and/or distribution strategy, and ultimately, global. The complexity of these "networks-of-networks" increases exponentially as the geographic scope widens, and the number of links (both transport and electronic transactions) and nodes (facilities of all types and activities within) increases. 📌