the theory behind the method
A three-step method to understand, describe and review your supply chain strategy

“Supply Chain Roadmap” is not a new type of supply chain strategy. “Supply Chain Roadmap” is a method supported in the most important and recognized theories and practices about supply chain strategy, its contribution resides in the development of a simple and easy method to characterize and identify the relevance of the supply chain strategy with business framework of an organization by a three-step method: Understand, Describe and Review.

“Supply Chain Roadmap” method is supported in two main pillars, the characterization method and the gap analysis, which compares any supply chain strategy with five reference supply chain models.

“Supply Chain Roadmap” is not a quantitative method with a unique or predefined solution, “Supply Chain Roadmap” is a method where supply chain strategy could be gathered and reviewed in a systematic and organized approach supported by several team discussions where is analyzed current supply chain strategy compared against reference supply chain models, in order to define gaps and/or inadequate alignment between supply chain strategy and business strategy.
1. Supply Chain Roadmap Fundamentals

An overview of Supply Chain Strategy

Competition in diverse industrial and service sectors has increased to unimaginable levels in the past years. Factors such as product technological maturity, a greater number of suppliers in the market, free trade agreements and the advantage of scale that competitors with global reach have, are approximating diverse industrial sectors to product “commoditization” (loss of differentiation).

In order to face this challenging competitive environment, organizations are developing several approaches for the business strategy, such as innovation, advantages in costs, the development of value-added services or a mix thereof, among others. At the same time, in the last ten years, the Supply Chain function has become a key element for competing and differentiating itself in the markets given that within its functional role it is in charge of coordinating the flow of information, products and money from the suppliers, passing through the manufacturing and transformation processes to then reaching the Customers, thus strongly affecting the organization’s competitiveness factors such as product cost, working capital, the speed with which it reaches the market and service perception, among others. The importance of these competitiveness factors has garnered the attention of many authors in respect of how one can approach organizations’ supply chain strategy so as to adequately support the business strategy and propose generic supply chain models, in accordance with several criteria.

The first approach to these supply chain strategy design models was developed by Hill (1995), who focuses on the manufacturing field and introduces concepts such as order qualifiers and order winners and on which the proposal to define an organization’s manufacturing strategy is based, a work which he later perfected and evolved, but maintaining his approach towards manufacturing (Hill & Hill 2009). The first widely recognized proposal of a segmented model for a supply chain strategy arises from Fisher (1997), who in his classic article “¿What is the right supply chain for your product?” suggests that the design of the supply chain must be being defined with respect to the product type: for functional products he recommends efficient chains and for innovative products he recommends agile chains. Martin Christopher (2000, 2002), adds the lead-time criteria to Fisher’s product type criteria for the selection of the supply chain model by developing a 2x2 matrix and introduces agile, lean and lean agile supply chain concepts. Alongside, Lee (2002) develops the “uncertainty framework” concept, in which starting from the interaction between the uncertainty of demand and the uncertainty of sourcing, he introduces four types of supply chains as follows: Efficient, Agile, Rapid Response and Risk Coverage. Later, Christopher and Gattorna (p 119 2005) define the concept of “alignment of supply chains with the Customer’s needs” and introduce four generic supply chains: Collaborative, Efficient, Rapid Response and Innovative. Gattorna (2006) subsequently evolved this concept to “dynamic supply chains”, where he presents four types of supply chains: Agile, Efficient, Continuous Replenishment and Flexible. In the interim, the “Best Value Supply Chain” (Ketchen & Hult 2007) arises, which a hybrid approach combining elements of the generic chains is proposed previously by other authors. It is important to highlight that the authors use similar terminology for naming the generic supply chains, but develop different concepts in the modus operandi and in these generic chains’ applicability criteria, constituting a first element of confusion, thus making it difficult for supply chain professionals to understand concepts so they can correctly select and align the adequate supply chain model to their own business reality.
Several approaches to business strategy

There are different approaches about the strategy, some of them focused on the competitive positioning based on the understanding of power of external forces governing competition in an industry, as Porter’s approach, which is classified in the “positioning based view” model –PBV-. Others focused on competences and capabilities of the organization, as “Resources-based view” - RBV- approach, where company capabilities are intangibles as reputation, know how, culture, innovation process, among others, are capabilities very hard to imitate for competitors, and based on them, companies could create competitive advantage.

A newest oncoming about collaborative relationships and networking as a basis for business strategy has been introduced in more recent years, where synergy among partners in the value network could create competitive advantage that is inimitable for other value networks.

Supply Chain Roadmap approach

![Diagram: Supply Chain Roadmap approach](image)

Figure 1. Several approaches about strategy  
Source: Own elaboration

Supply Chain Roadmap is positioned in the middle of “positioning-based view” and “resource-based view” approaches and defines an additional element as a result of the interaction among external forces an internal capabilities: the unique value proposal, which constitutes in the competitive positioning of the company in the marketplace, supporting strategy in the understanding of external forces and internal capabilities. In addition to that, Supply Chain Roadmap introduces “collaborative relationships” as a factor of the internal capabilities. Supply Chain Roadmap approach considers than strategy is the result of the interaction of several factors covered by the three approaches: RBV, PBV and collaborative strategy.

Supply Chain Framework

The environment of the business where an organization competes has multiple components, but which of them influence the design and performance of the supply chain?

Porter’s model speaks of five forces that regulate competition in any industrial sector. Two of these forces, the power of Customers and the power of supplier, are related to the natural members of the supply chain of any company, reason why they must be considered as key elements in the supply chain design, and in addition, we must go beyond what Porter proposes and introduce some
new elements inside these forces, which are the key to supply chain management, such as, product and information flows, the relation of logistics costs on total costs and the variability of demand, among others. Substitute products or services, the struggle among current competitors and the entrance of new competitors, rather than independent forces, must be considered as components of the Customers’ power and of the suppliers’ power, given that these are elements that modify the power relationship and the desire for collaboration among the parties. This extensive vision regarding the effect of suppliers and Customers leads us to the redefinition of the concept in a broader manner and naming them as relations with Customers and relations with suppliers. On the other hand, the other fundamental force in any supply chain are the technological and economic components related to the transformation process (understood as the production process of the good or service), since they affect structural decisions related to the production process and therefore affect the design and performance of the supply chain.

**Supply Chain Profile**

The structure of a supply chain is comprised of three macro processes: Supply, Transformation and Distribution. The latter process must involve a redefinition of the traditional vision, since the growing trend of introducing value-added services that accompany the product in the companies’ value proposal, has forced developing an infrastructure inside the organizations for the production of products and for the delivery of value-added services, which leads us to reconsider the traditional supply chain structure, modifying the traditional concept of “order winners / qualifiers” introduced by Hill, to a concept that is more focused on the current value proposal, which we shall call “Product winners / qualifiers” and “Service winners / qualifiers”. This approach intends to differentiate the competencies and infrastructure that must be developed for each one of the aspects of the value proposal and ensure that both the product and the service have the importance required by the market in the organization’s supply chain strategy.

It’s important to clarify that some authors describe “product” as the combination of physical goods and services accompanying and supporting commercial transaction, but, in order to differentiate competences required under a manufacturing perspective (oriented to physical goods) and competences required under a supply chain perspective, we’ll be using “Product” concept as a definition for “Physical goods features” and “Service” as a definition of “Other features supporting company’s value proposal”.

**Supply Chain Roadmap model**

![Supply Chain Roadmap model](image)

Figure 2, Supply Chain Roadmap model
Source: own elaboration.
Figure 2 presents the roadmap for the design of the supply chain, where the “Activities related to the flow of products, information and financial transactions” interrelate with the “competitive environment”, which are “Supply Chain Framework” and “Supply Chain Profile” respectively. Based on the interaction between them is defined the “unique value proposal”. The complete model is designated as “Supply Chain Roadmap”.

In few words, Supply Chain Roadmap method understands supply chain strategy as the interaction of external forces, internal processes/capabilities and company’s competitive positioning.

2. Generic Supply Chain Models

Model is supported in two main pillars (1) a method for characterizing any industrial supply chain under several factors, and (2) characterization of five generic supply chains, which are used as reference of common practices. Factors were defined after a crossed analysis of several authors as Hill, Fisher, Lee, Gattorna, Seuring, Stavrulaki & Davis, Porter, Kaplan & Norton and Liebeck, Meyer & Abele, among others. Five generic supply chains were defined after a crossed analysis of several cases, my own experience and authors as Fisher, Lee, Gattorna, Christopher, among others.

Efficient Supply Chain

Our first model is “Efficient Supply Chain”, this Supply Chain Generic Model (SCGM) is widely mentioned by several authors, some of them called this model as “lean”, which is a very recognized term in the industry, but misused, because the “real” lean model was developed by Toyota in 1950’s and is a mix between an agile and efficient models, while an efficient model uses a “make to forecast” order penetration point, Toyota Production System uses a “Assembly to order” order penetration point. Misunderstanding could be originated because both models are oriented to lowest total cost.

“Efficient SCGM” is built based on efficient models of Fisher and Lee, and “Lean” models of Gattorna and Christopher. Main characteristics of a business framework in an “efficient SCGM” are predictable demands, long life cycle products, products/services highly representative in customer’s cost, assets utilization strongly impacts the total cost, highly competitive market with several companies fighting by the same group of markets, and principally customers oriented to low cost.

For this business framework, the focus of the supply chain profile is efficiency, which is supported in a high utilization rate of assets based on a “Make to forecast” model, in order to maintain production continuity and assure the best production sequence, reducing set up time.

In few words, in a “make to forecast” production is performed before orders are received based on a detailed planning of production activities in order to assure focus on efficiency.

Fast Supply Chain

A Fast supply chain is oriented to create trends, based on a continuous and fast renewal of products portfolio, based on a “Make to forecast” model and short “time to market”. In a few words, a Fast Supply Chain has many of the features of an efficient supply chain, but supported in three additional competences: Fast “concept to production” process, could be supported in a pooling of suppliers in order to balance demand changes and a large quantity of SKUs, where many of them are renewed in each collection. Many people confuse a Fast supply chain with an agile supply chain.
Continuous replenishment Supply Chain

“Continuous replenishment SCGM” is built based on continuous replenishment models of Gattorna and Christopher. Main characteristics of a business framework in a “continuous replenishment SCGM” are predictable and stable demands, long life cycle products, low supply disruption risk, low market mediation cost, and principally customers oriented to process efficiency, especially low working capital.

For this business framework, the focus of the supply chain profile is collaboration, which is supported in two main features: information sharing and electronic transactions. Order penetration point is “Make to stock”, in order to assure medium-high utilization rates at high levels of perfect orders. “Make to stock” and “Make to forecast” could be understood as the same model, but the main difference between them is that in a MTF production is made according to sales expectations (forecast), in a MTS production is made for replenishing predefined stock levels. In both models high rate of assets utilizations is a key factor. In few words, a “Continuous replenishment” SCGM is a most mature model than “efficient” SCGM, and the main difference is the predictability of demand, which is highly dependent on customers collaboration.

Agile Supply Chain

“Agile SCGM” is built based on responsive/agile models of Fisher, Lee, Gattorna and Christopher. Main characteristics of a business framework in an “Agile SCGM” are unpredictable demands, short life cycle products, supply disruption risk, high market mediation cost, and principally demanding customers oriented to fulfill unpredictable demand in short time.

For this business framework, the focus of the supply chain profile is agility, which is supported in two main features: extra capacity in production and products oriented to postponement design, as consequence of this, an “Make to order –order after divergence/postponement point-” order penetration point is used, looking for reducing order cycle time, but holding opportunity to customize products in the pending processes according to customers specific requirements.

In few words, production is partially performed before orders are received based on a detailed planning of production activities in order to maintain minimum levels of efficiency, but end processes (processes after divergence point) are made according to customer orders are received. In some cases is possible that processes can’t be done before customer orders arrival, due to technological limitations of the production process or because postponement design is not possible. Delivery speed is supported in extra-capacity in processes after divergence point.

LeAgile Supply Chain

Our “LeAgile SCGM” is based on LeAgile SCGM of Christopher, which is the nearest model to Toyota Production Model, which is the real “Lean” model and is confused with an “Efficient” model by several authors. Main characteristics of a business framework in a “LeAgile SCGM” are unpredictable demands, medium level of supply disruption risk, long life cycle products, products/services highly representative in customer’s cost, assets utilization strongly impacts the total cost, highly competitive market with several companies fighting by the same group of markets and principally customers oriented to low cost and fulfill unpredictable demand in short time. It is the most demanding model, because requires agility with low cost. The most important differences between an “Agile” SCGM and a “LeAgile” SCGM are: “Agile” SCGM is MTO and extra-capacity is assigned before and after divergence point, and in some cases don’t apply postponement design, but always are used common components/materials, in the other hand, “LeAgile” model is
ATO, extra-capacity is located only after “divergence point”, processes after divergence point are oriented to assembly and operations before “divergence point” operate under a “efficient” SCGM.

For this business framework, the focus of the supply chain profile are efficiency and order accuracy, the first one is supported in a mixed model: a MTF model before divergence point and an ATO model after divergence point, the first one driven by forecast and the second one driven by customized customers’ orders. Order accuracy is a relevant factor in order to assure fulfillment of customized orders.

This model is applied in several industries as apparel, computers and automobile, where customers orders are received before assembly processes and components for assembly where manufactured based on a forecast, due to their long production time.

**Flexible SCGM**

Our “Flexible SCGM” is totally based on Flexible SCGM of Gattorna. Main characteristics of a business framework in a “flexible SCGM” are unpredictable customer needs both in quantity and features, high supply disruption risk, solutions oriented, and principally customers oriented to pay whatever if their need is solved quickly.

For this business framework, the focus of the supply chain profile is capacity/inventory pooling and/or outsourced capacity, which is supported in sharing information of capacity and inventory with suppliers, customers and inclusive, competitors. Order penetration point is variable, according to each specific case. In few words, a “Flexible” SCGM is oriented to solve unexpected events, nearly to urgencies or emergencies. A typical example of these supply chains are companies oriented to corrective maintenance as flood control, in which own equipment could be insufficient and companies must share equipment with suppliers, customers or inclusive competitors.
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