Participation of SCM Strategy in the definition of Business Strategy and its further conditions for operationalization.

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Abstract
Retrospective review from the origins through the evolution of SCM. This will permit us to determine its correct scope. Analyzing the strategic importance of SCM lead us to explore how SCM strategy participates in the business strategy. In this paper we present SCM as a business philosophy.

Key words
Supply Chain Management, Business Strategy

Introduction

We explore different approaches of SCM. In this sense, there are practitioners that consider SCM as synonymous of Logistics, meanwhile we consider SCM as a strategic approach and a philosophy of management.

This paper is structured as follows. First, we establish the origin of SCM as a concept that comes from the Operations Management field. Second, we focus on the appearance and development of SCM as a field that can be considered with the same status that OM. Then, we present the basic concepts of Strategy as a step to develop the Strategic view of SCM, and we show the link between business strategy and SCM one. We will discuss the strategic role of SCM in the organization and the importance of linking the SCM strategy to the business strategy.

From the beginnings of OM to SCM

Management history, in terms of evolution of research approaches and subjects of interest, has had its role in helping to frame the right questions to ask when teaching, researching and/or practicing (Wren, 1987).To analyze the evolution of OM we can go back to the time of the

industrial revolution, even before; in fact, (Sprague, 2007) travels a path of evolution of OM beginning in the 16th century to the present day.

Before the Industrial revolution, production was poorly organized. So, this concept was linked to agriculture, livestock and mining. It was in 16th century when Georgius Agricola wrote "De re metallica" (On the nature of metals). The book is probably the first OM textbook. The most enduring lesson from this remarkable book is the importance of systematic capture and dissemination of knowledge in OM, and it can be considered the first formal approach of management, and somehow it shows us the importance of empirical research and data collection.

Lewis (2007) goes back to 19th century to rescue the works of Charles Babbage, centering the body of his work on his book "On the Economy of Machinery and Manufactures". For Lewis, Babbage is an OM pioneer, arguing that his work is linked with Adam Smith's "Inquiry into the Nature and Causes of the Wealth of Nations", and hence he considers that Babbage played a crucial role in the development of Industrial Revolution (IR).

IR is a milestone for OM. Drucker rescue Taylor's work signaling that after 100 years having focused on tools, processing and products, indeed the industrial revolution, ending 19th century up to II World War, the knowledge moved to a new approach: Productivity Revolution.

Gilbreth and Ford were other important protagonists in the development of OM at the beginnings of 20th century; the former with the study of movements, and the latter with the assembly line; Henry Ford and Charles Sorenson developed a comprehensive manufacturing strategy by combining standardized parts with an assembly line in 1913 (Bayraktar, Jothishankar, Tatoglu, & Wu, 2007); it is well known that Ohno's Toyota Production System, rescue principles laid down by Ford. The period of 1890-1920, with the works of Taylor, Gilbreth and Gantt was later defined as ''scientific management''. However, notwithstanding the great depression in 1930s, in many ways the period from 1920 to 1960 can be considered as the "golden age" for the development of industry in the USA (Bayraktar et al., 2007).

Beyond Taylor's and Gilbreth's work focused on machinery and workers, the OM paradigm needed other explications; Elton Mayo showed other aspect of operations; while holding the focus on OM, he discovered that other factors had great influence. His experiments at the Hawthorne factory of Western Electric Company between 1924 and 1927 showed the importance of the human behavior provoking a shift in the efficiency paradigm (Brown, 1954).

After II World War, factory management and production management were the center of the development in operations. In 1959, almost simultaneously, the Carnegie foundation and the Ford foundation published two studies related to education. The conclusions of both of them were similar: the sounded education in business was not happening and business schools had to change their goals and methods. As a result the Operations Research (OR)/OM era began; industrial and production engineers began to move from engineer schools to business schools. The American Production and Inventory Society APICS, which was founded in 1957 by ''practitioners", played an important role in the evolution of OM field. Singhal & Singhal (2007) wrote that the work of Holt, Modigliani, Muth and Simon better well known as "HMMS" contributed to the renaissance of the field of OM as we know today; they show how aggregate production planning evolved to the actual concept of sales and operations. HMMS work links strategic and tactical decisions in a firm. Aggregate production planning links operation with strategy, but do more by linking operations with other areas; it also drives interorganizational coordination linking the organization outside its frontiers including in OM the concept of SCM.

After II World War, OM immersed into an identity crisis. The applications of OR as the core of OM affected the natural evolution of the field. The field of operations lost considerable interest as its sister functions grew in size and importance both in industry and in academia (Meredith, Raturi, Amoako-Gyampah, & Kaplan, 1989). To understand what happened Filippini (1997) rescues a resume for the period between II World War and the 80's decade: first, a period comprising the 1950s decade where OM was called "Industrial Management" or "Factory Management", characterized by a descriptive approach; second, a period of two decades (60's and 70's) known as "Management Science/Operations Research" (MS/OR) that provided the scientific methodology where scholars were far from managers; finally a period "Operations Management" where OM began to be a functional field within management disciplines.

Voss (1984), in a British view of the same crisis, attempted to enlighten on the difference between Production/OM (P/OM) and OR, explaining OR as a discipline on its own right, with applications in Marketing, Finance, Personnel, Accounting as well as P/OM. The Operations Researcher is concerned with modeling and optimizing while P/OM is concerned with procedure and process and may occasionally use OR based procedures when appropriate.

The model for OM had to be changed; several researchers claimed for a necessary change in the orientation of the field. At the beginnings of 80's the work of Buffa (1980) and Miller et al. (1981) positioned OM in what it was and what it had to be. The difficult in that decade for OM to establish definitively its identity was a broken bridge between the descriptive phase that held sway in the 50's decade and the almost exclusively OM/OR established (Buffa, 1980). OM/OR gave to OM the scientific methodology; from 60's to 80' the flourishing of OM as a scientific field supported by OR put the field on the top of the management disciplines but losing identity; it was difficult to differentiate between OM and MS/OR. Chase (1980), in the same line, it claims for using more case studies and less laboratory techniques. A great advance in inventory, scheduling, aggregate planning, quality, capacity planning , mostly as isolated subsystems.

Buffa (1980) called for an OM research agenda that related to the 'practical world.' He recommended that OM researchers make their research results understandable and acceptable to practitioners. (Krajewski, 1980), editor of JOM, claimed for less OR and more empirical research; he expressed the necessity of the journal in this terms "Historically, research in operations management has trended away from realistic problems and environments… However, we must never lose sight of the purpose of theory and technique development to enable the analysis of meaningful problems faced by operations managers in practice."

With the advance of computer systems complementing OR, MRP occupied a protagonist place since 70's, and then enhanced MRP II in the latest 70's. It is through the next stage of MRP when OM contributed to the management integration of the enterprise with the development of ERP, other important milestone for OM.

In the early 70's new approaches to OM came from Japan; MRP, conceived basically as a Push system, was challenged by an opposite view. The JIT philosophy proposed a Pull system focused in quality. USA felt the invasion, especially in the automobile industry. Quickly the adaptation of the JIT philosophy to the USA's industry occupied the agenda of OM.

In 1980 both the Journal of Operations Management, voiced of the Operations Management Association (OMA]) and the International Journal of Operations & Production Management, voice of OMA-UK, were set up. Total quality management (TQM) and the so-called Japanese techniques acquired greater importance in research agendas.

The concept of just-in-time (JIT) was approached. Work on the topics of process design/technology and manufacturing strategy had attracted more attention than in the earlier period (Filippini, 1997). According to Heizer and Render, although efforts in OM mainly focused on cost reduction during early 1980s, the focus shifted to quality through collaboration of information systems and leanness, within the next decade (Bayraktar et al., 2007).

The 90's witnessed a significant and welcome change. The creation of POMS (Production and operations management society) in 1989 stated *"Our objective in publishing this journal is to improve practice"*. The beginning of the 90's represented a critical period of research in OM when empirical research started to appear in substantial quantity. This period can be seen as the "growth" phase of empirical research in OM. In fact, JOM reinforced its compromise with empirical research through Jack Meredith, editor in the period 1995-2001; Meredith had been editor of the empirical articles in his previous strep at POM.

Another important change it can be seen in the evolution of research in the service field. In the period from 1992 to 1998 nearly 75% of published articles were production oriented whilst the 1998 to 2006 period was witnessed of equilibrium between service and production focused articles. Until the middle of 90's the empirical research was focused on specific and stand-alone topics. The potential exists in the interfaces between OM and other areas such as accounting, finance, human resources management, information systems, and marketing. With the growth in SCM networks, not only interdisciplinary but inter organizational research is necessary for analyzing real-word operations management problems (Gupta, Verma, & Victorino, 2006).

Figure 1 shows the OM history, it represents a reference view centered on topics, methods, journals, researchers, schools. Probably it is not the unique way to reconstruct the history but it shows how researchers viewed and proposed OM was and what OM is.

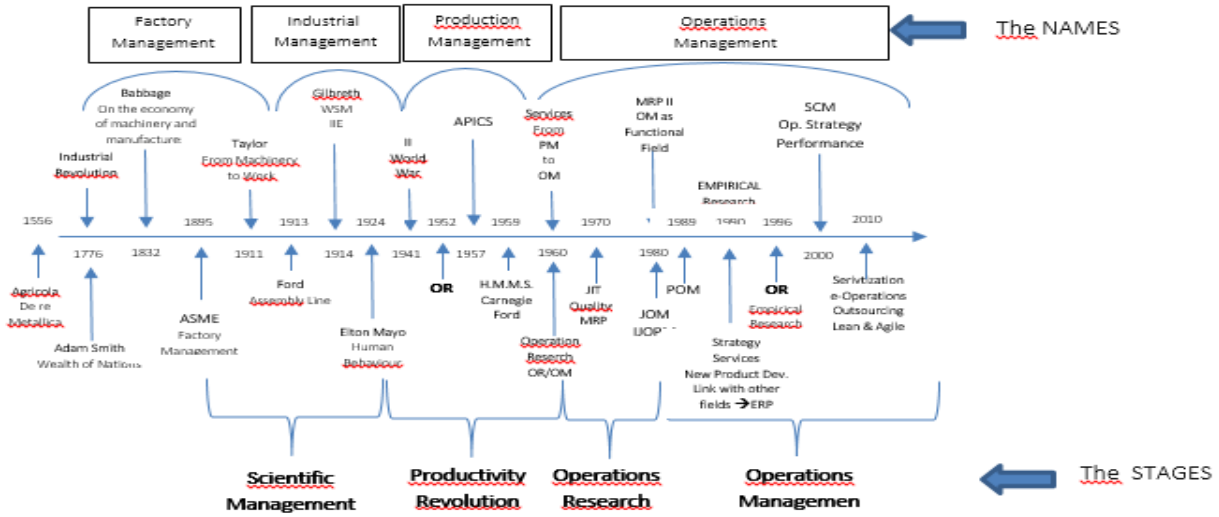

Figure 1. Stages in the journey across the OM history.

Definitively the research in OM finally made a shift to those topics that were indicated since 1980 and 1990 as of substantial importance to the development of the field. Arriving to these days and based on the analysis of more than 300 articles form the International Journal of production management (IJOPM) the great focus is put on Supply Chain Management,

Operations Strategy, Performance Management, Service operations, Lean management, Resource Planning Systems, Quality Management and Product Design/Development (Taylor & Taylor, 2009). The same article shows the predominance of empirical research; about 50% of the articles' methodology is based on case study and surveys. In reference to this point it is important to counterbalance the tendency; we cannot deny the great importance of OR/OM and it's extremely value contribution to actual OM.

A study between 1980 and 2006 found that the intellectual structure of the field made statistically significant changes between the 1980s, the 1990s, and the 2000s and evolved from a pre-occupation with narrow, tactical topics toward more strategic macro topics (Pilkington & Fitzgerald, 2006). Along the OM evolution many have been the elements that, to the extent that appeared as new trends, were knitting the threats of what is known as SCM.

The appearance and development of SCM

Travelling across the literature of OM and specifically of SCM it seems to be difficult to find a connecting thread. We mentioned before that we can trace this new field in the work of HMMS who brought as cited by Singhal & Singhal (2007) two paradigm changes: unrelated and non-managerial individuals functions emerging as part of an integrated systems of managing production; aggregate production planning as the central role of OM by linking it with Supply Chain (SC) and internal integration.

Another milestone in the development of the actual concepts of SCM is the systemic approach of the organization resulting in a more integrated view, "Systems Dynamics" gives way to a more holistic comprehension of the factors involved and the interrelation inside and outside the frontiers of the organization (Forrester, 1958)

Pannirselvam, Ferguson, Ash, & Siferd (1999) examines the status of OM´s academic research in the 1990s, to compare current research trends with past research directions in terms of topics and methodologies that are applied in practice.

Between 1982 and 1986, there was an increase in product design, strategy and Quality confirming in a way the predictions of Miller and Graham, though the Amoako-Gyampa and Meredith work shows a 70% of publications on Inventory control and scheduling.

Amoako-Gyampah & Meredith (1989) signaled new topics areas based on the 17 issues classification presented by Chase, SCM appears for the first time. These new areas are new product development, technological management, technology choice, environmental concerns and SCM; nevertheless in 1997 SCM is not in the OM agenda as we can observe in the work of Filippini (1997) which compares the status of the 17's topics leaving outside the new topics, SCM among them. Other characteristic of the work is the use of the term Supply Chain referring to an evolution of purchasing. When listing new issues in OM, it mentioned the interaction with customers and suppliers; though he didn't mention SCM referring to it.

A conclusion form IJOPM between 1994 and 2003 is that emerging subjects within the field include SCM, lean management systems, theory building from quantitative data and sustainable resource limits to capability. The hot topic of the 1990s –Manufacturing Strategy – lost the most interest in the 2000s, while all the other topics that gained interest between the 1980s and 1990s continued to gain interest, especially Supply Chains and Quality. "Appears to be moving away from the more tactical interests of OM such as inventories, processes and

measurements, and even cutting back its interest in strategy, in favor of more strategic and macro issues such as supply chains and research methodology" (Pilkington & Fitzgerald, 2006)

The work of Taylor indicates a strong presence of SCM in the researchers' agenda. As they cited…" *To summarize, the three prior studies suggest that several topics are at the forefront of the OM research agenda, especially SCM, operations strategy, performance measurement, and possibly lean systems"* (Taylor & Taylor, 2009).

It can be appreciated the emergence of SCM between 1980 and 1990. Several events in the evolution of OM triggered for the appearance of the SCM concept:

- Internal alignment, the importance of coordinating the different functions inside the organization trying to view the whole management system (Amoako-Gyampah & Meredith, 1989; Buffa, 1980; Chase, 1980; Filippini, 1997; Larson, Poist, & Halldósson, 2007; Meredith et al., 1989; Miller et al., 1981). Inter organizational research is necessary for analyzing real-word OM problems (Gupta et al., 2006).
- Logistics as an important matter for management. A more integrated view of the typical OM's issues like Inventory, Supply and Distribution. The internal alignment links logistics under the integration paradigm (Larson et al., 2007).
- Purchasing, many times related to Supply, then as a semantic game both in the academia as in the professional world treating Supply Management and SCM as synonymous. "Is important to understand the relation between Supply and SCM, still a supply oriented view of the incipient Supply Chain Management discipline" (Filippini, 1997).
- Time compression (Beesley, 1996; La Londe & Masters, 1994; Rachel Mason-Jones & Towill, 1998).
- Bullwhip effect; inventory efficiency in the chain (Lee, Padmanabhan, & Whang, 1997).
- Collaborative practices, Vendor management Inventory [VMI], Cooperative Planning, Forecasting and Replenishment [CPFR], Customer Relationship Management [CRM], Supplier Relationship Management [SRM].
- The strategic view of operations that shows the necessity of interacting with other stakeholders, especially but not exclusive with customers and providers.

The origins of SCM are mostly supported on the logistics reality. This is how SCM is strongly identified with logistics although they are not the same, hence strategic view, internal integration, relation beyond the enterprise frontier represent the building blocks of SCM.

Strategic view of SCM

Which is the correct approach to the SCM concept? During the last 20 years or more we could assist to a variety of definitions and concepts of SCM normally linked with logistics or purchasing. There exists a tendency to relate SCM with the fact of managing the flow of products or services, but this is not the essence of SCM.

Forrester (1958), who introduced a theory of distribution management, recognized the integrated nature of organizational relationships. He is, probably, the first in analyzing the interaction among firms; it appears that Forrester identified key management issues and illustrated the dynamics of factors associated with the phenomenon referred to in contemporary business literature as Supply Chain Management (Mentzer, DeWitt, Keebler, & Min, 2001).

Is real the relation between SCM and Logistics as well as the relation between SCM and OM. In fact, in many firms, there is a misunderstanding of both concepts and it is common that they are used as synonymous. Focusing on a Logistics view of SCM we can realize that we are in an operational field of the SCM; but if we try to confine SCM into the OM's world we leave out strategic relations with areas outside the OM, which are fundamental for a complete strategy of SCM. This misalignment around the relation between Logistics and SCM is presented by Larson who identifies four conceptual practitioners' perspective: a *traditionalist* where SCM is part of logistics; a *re-labeling* where SCM replaces logistics; a *unionist* where logistics is part of SCM and an *intersectional* where logistics and SCM are related and have commonalties (Larson et al., 2007). The intersectional approach of SCM is where the ultimate goals of SCM will be reached; in this perspective it is where the strategic focus is present. Some essential areas of research, that could clarify managers when and how could be more suitable for their companies to align SCM strategy with business strategy are still fragmented and uncompleted.

How to operationalize these strategies, such as SCM practices and success factors for their implementation, is sometimes disconnected from the strategy. To obtain the results SCM promises we should consider SCM in three hierarchical dimensions: a SCM strategy linked with business strategy that is SCM as a management philosophy, establishing the basis or strategy; SCM as a set of activities to implement this management philosophy is the tactical level of the SCM; at last SCM as a set of managing processes is the operationalization of this SCM philosophy (Mentzer et al., 2001)

As a management philosophy SCM is directly associated with a *system approach* where the focus is the whole chain, not an organization in particular; *cooperation* as the core of the strategic view; a strong *customer orientation*. Around these three fundamental topics SCM strategy has to be oriented; there is no doubt about the business nature of these conditions, hence the absolute necessity that both strategies, Business and SCM are strongly linked and thus the participation of the latter in the former strategy is imperative.

What identifies SCM it is the coordination that the whole chain needs with the purpose of achieving the overall performance. Normally the whole chain involves more than one organization, the level of vertical integration in a chain can affect the implementation but not the SCM concepts.

This efficiency has to be obtained through multiple areas within the organization and through the chain. Consequently, to reduce the SCM to a full coordinated logistic approach including vendors and customers is a narrow view, far from what SCM purport to be. SCM concentrates upon relational factors rather than transactional ones (Cavinato, 1992) and includes areas such as R&D, product design, plant location (Ferdows, 1997; MacCormack, Newmann,Lawrence James, I.,II, & Rosenfield, 1994; Mentzer, 2008) and other areas that have to be coordinated with the objective of making the final product or service a lesser cost and/or giving a better service level to final customer. There is a need for the integration of business operations in the supply chain that goes beyond logistics.(Cooper, Lambert, & Pagh, 1997)

We adopted the 1994's definition of "The International Center for Competitive Excellence" because of the clearness and specificity that shows: "Supply chain management is the integration of business processes from end user through original suppliers that provides products, services and information that add value for customers." (Cooper et al., 1997). Hence, the participation of the SCM strategy in business strategy is core for a successful implementation.

The strategic SCM approach considers integrated (internal and external) behavior, sharing information among the members of the SC, sharing risk and rewards, integration of processes, same goals and partnership for long-term relations under the *cooperation* and *system approach* umbrella; a view of SCM as it is seen in this paper is presented in the framework from (Mentzer et al., 2001) where principal conditions to a correct SCM strategy are present: internal and external coordination through a systemic view.

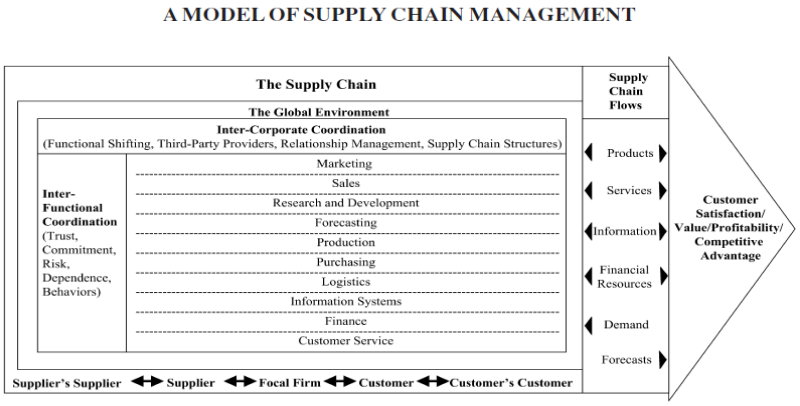

Fig. 2 A model of SCM (Mentzer et al., 2001)

Nevertheless these conditions ought to be in a SCM aligned with the business strategy, other factors derived from the cooperation paradigm play a fundamental role and should be considered. These factors derived from the SCM's nature are Trust and Commitment. Collaborative activities, such as information sharing, joint relationship effort, and dedicated investments lead to trust and commitment. Trust and commitment, in turn, lead to improved satisfaction and performance (Nyaga, Whipple, & Lynch, 2010).

Like in marketing, mostly applied to customers and products, the widely used concept of segmentation is relevant to SCM and has to be considered with special care when configuring the SCM strategy. The Supply Chain is more than a chain, is a network; not all members of the network behave the same way, have the same needs or share the same business strategies; hence understand those characteristics will give rise to the construction of different segments; thus different modes of action will be applied in conceiving the SCM's strategy toward different supply chains strategies in a "dynamic alignment" (Gattorna, 2006).

Linking business strategy with SCM strategy

Strategic definition of the business is previous to the SCM strategy; however in the strategy formation process the guidelines for SCM strategy must be present. Based on segmentation strategy the organization must define how it will participate in the different segments inside its own SCs, thus from the business strategy it will be delineated the SCM strategy.

There is no necessity of a unique strategy for SCM, it depends on the relative position and the different segments the organization occupies as customer, provider or other. In the strategy formation process different decisions have to be adopted in terms of different relative positions. The business strategy has to take in account what generic SC the SCM strategy will apply seeking to fulfill the strategic objectives. Thereby establishing the generic strategies of SC at the business level will provide the guidance for defining the strategy of SC. For example,

considering the four generic SC types defined by (Gattorna, 2006), continuous replenishment, lean, agile or fully flexible or other kind of segmentation conceived by the organization is at the business strategy level where to decide which types of SC strategies and how to manage them. The participation of the top Supply Chain management in the business strategy formation process is essential to contribute to the strategy delineation and therefore produces the natural alignment with the SCM strategy.

Once defined business strategy with the active participation of the SC manager considering the business objectives it is possible the SCM strategy, if not a SCM strategy disjoined to business strategy may not contribute even attempt against it.

Conclusion

Along this paper we propose SCM as a Philosophy of Management. Academics, as well as practitioners, have been presented different approaches around the SCM concept, many of them establishing a strong connection between logistics and SCM; this view of SCM affects negatively the internal and external integration of the firm. The presented view of SCM is a milestone in its correct development as a strategic concept as it has been emerging due to the evolution of OM.

In the first part we explore from the beginnings of SCM, the OM discipline, through its evolution, discovering those topics that given path to the birth of SCM; internal alignment, in other words, recognize the importance of coordinating the different functions inside the organization; customer orientation as a strategic consideration; the importance that integrated logistics provide to OM; time compression; the evolution of purchasing and finally the strategic view of operations that shown the necessity of interact with other stakeholders.

This discipline later evolved into a self-area of knowledge which, by the nature of what arises, is strongly related to other fields of research in management. SCM can be analyzed from different points of view. However, only a strategic approach to SCM resulting in subsequent tactical decisions and operational implementation can provide competitive advantages for the organizations.

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