Title: Use of the SCOR framework in service industries: an exploratory research

ANDRÉS EDUARDO VON SIMSON
Centro Paula Souza – SP – Brasil
andres@lkmsimson.com.br

Profa. Dra. ELIANE SIMÕES
Centro Paula Souza – SP – Brasil
eliane@iqeduc.com.br

Prof. Dr. GETULIO AKABANE
Centro Paula Souza – SP – Brasil
getulio@akabane.adm.br

Profa. Dra. HELENA GEMIGNANI PETROSSI
Centro Paula Souza – SP – Brasil
posgraduacao@centropaulasouza.sp.gov.br

Abstract
This paper aims to verify the possibility of using the SCOR model (Supply Chain Council), in service companies. It is essential to produce reference models that lead effective results and differentiation in the services sector. Therefore this paper elucidates the feasible way of applying the framework in the services environment.

Keywords: SCOR, framework, services

Introduction:
Beside the main context we also seek to further verify the synergy of the SCOR framework with the model proposed by Porter (1989) called value chain. The paper consists of three parts as follows: the first part presents the structure and terminology of the SCOR framework. In the second part we seek to show the key success factors in service operations and forms of measurement. Finally, in the third part, elucidate the feasible way of applying the framework in the services environment.

The SCOR Framework:
The framework SCOR (Supply Chain Operations Reference Model) used as reference for supply chain operations management, uses benchmarking tools and metrics to improve operational performance in Supply Chains. This framework contains the definitions of standards processes, terminologies and metrics associated with the supply chain
processes, showcasing best practices of managing supply chains. The framework is designed to assist the learning process of companies in relation to internal and external processes to their field of expertise (Stewart, 1997).

According to Stewart (1997), the first trials on the SCOR was developed by Pittiglio Rabin Todd & McGrath (PRTM) and Advanced Manufacturing Research (AMR) in 1996, along with a group of senior operators, producers and managers SC (Supply Chain) and many enterprise leaders. We can say that all together, were responsible for creating the SCC – Supply Chain Council, entity that created the SCOR model, first functional framework for evaluating and improving the performance and management of SC.

The concepts used in the framework are the business process, but according to the Supply Chain Council (2011), these concepts address the business process reengineering, benchmarking and measurement of structure-functional operations. According Huan et al (2004) these concepts are: description of patterns of management processes; structure of relationships between processes patterns; standard indicators to measure process performance, management practices that produce the best performance and alignment patterns for features and functionality of ERP’s software’s.

The SCOR model is recognized by more than 800 member companies of the SCC as an effective tool to ensure strategic advantage to partners of a SC. Studies have shown that managing integrated supply chain achieves the following results: 25-50% reduction in total cost of SC; 25-60% inventory reduction, 25-80% accuracy in projected goals; 30-50% improvement in service of the order cycle (SCC, 2010).

The SCOR framework allows companies a complete analysis of all aspects of their supply chains, providing a set of SC performance indicators and industry best practices, appropriate software applications and provides users with a framework for understanding where improvement is needed. The framework is constantly evolving and in recent years had an average of one new release per year. The SCOR enables companies, as Stewart (1997) the following advantages:

- Effective evaluation of their processes;
- Compare your performance with other companies;
- Specification of competitive advantage;
- Use of benchmarking information and best practices to improve their activities;
- Quantification of benefits in implementing change;
- Identification of the best software to meet their specific needs.

The SCOR version 11.0, was designed based on five core management processes: plan, source, make, deliver and return, as shown in Figure 1.
Being originally created by manufacturing industries has a particular format, sometimes mistaken for exclusive use in the manufacturing industry. However, its configuration can also be useful in the service industry. SCOR uses similar concepts also used by Porter (1989), as seen in Figure 2. For value generation all production processes are analyzed from purchase of raw materials, the receipt, processing or value addition and deliver it to the client. The SCOR framework also includes the planning (plan) and management parameters (enable).

The five SCOR processes can be described as (SCC, 1996):

a) Plan - the scope of planning and management of supply and demand process as a reference has to: definition of resources and demand, inventory planning, distribution, production and capacity planning;
b) Source - purchase of raw materials, qualification and certification of suppliers, quality monitoring, negotiating contracts with vendors and receiving materials;

c) Make - manufacturing of the final product, quality testing, packaging, process changes, product launch and ownership;

d) Deliver - order management and credit, warehouse management, transportation, shipping and customer service. Creating database of consumers, products and prices;

e) Return - Return of the raw material, the finished product, maintenance, repair and inspection. These processes extend to giving after-sales customer support.

The objective of SCOR framework is to improve the alignment between the market and the strategic reaction of a Supply Chain through indicators that enable the management of five key processes in order to achieve superior performance.

The structure of SCOR comprises three managerial levels. The first part of the strategic level processes. The second level includes the tactical processes and finally the third level meets the operational processes (Figure 3).

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
<th>Schematic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Top Level (Processes)</td>
<td><img src="image1" alt="Top Level Schematic" /></td>
</tr>
<tr>
<td>2</td>
<td>Configuration Level (Process Categories)</td>
<td><img src="image2" alt="Configuration Level Schematic" /></td>
</tr>
<tr>
<td>3</td>
<td>Process Element Level (Decompose Processes)</td>
<td><img src="image3" alt="Process Element Schematic" /></td>
</tr>
<tr>
<td>4</td>
<td>Implementation Level (Decompose Process Elements)</td>
<td><img src="image4" alt="Implementation Level Schematic" /></td>
</tr>
</tbody>
</table>

*Figure 3 – Supply Chain Council, 2005*
The versatility of SCOR enables the creation of process, the assignment of metrics for the three levels of company managers (strategic, tactical and operational) and the choice of best operating practices in accordance with the strategic positioning of the performance attributes of level 1, which are reliability, responsiveness, flexibility, cost and asset management. The level 1 attributes reflect the strategic positioning (Figure 4). For each of these attributes you must choose which metrics will be used.

![Performance Attributes and Level 1 Metrics](image)

For each of the attributes has to be chosen strategically the level of competitiveness relative to the market. The SCOR has three categories, Superior: differentiated positioning, segment leadership with advanced level of maturity in the use of best practices; Advantage is one where the differentiation in relation of the market is slightly ahead of competitors and Parity, when the attribute performance is positioned at the same level of competition. The positioning, same as Porter's Value Chain (1989) model, defines also the strategic positioning of different supply chains.

The Plan processes approach and suggest how the company should conduct their internal planning processes, from global strategic planning, supply planning, production planning, distribution planning and reverse logistics planning.

Management processes (enable) define business rules, data management control, process management, asset management, contract management, inventory management and interrelationship of processes.

Besides SCOR, there is another framework widely discussed in academic circles proposed by GSCF - Global Supply Chain Forum (Cooper, Lambert & Pagh, 1997). This model is based on the value chain model presented by Porter (1989) and an approach to process management, and apparently its adherence to services appears to be greater.
The Service Industry:

For Correa (2002) manufacturing operations have received increasing attention in terms of its strategic management, but generally the service operations are still treated simplistically. One can find numerous prescriptions in the literature about what to do (like "delight the customer"), but little about how to do, considering the technological, human and information resources - strategic in nature - used in the process of performing services.

The service sector is a major contributor to the Brazilian economy, considered as one of the drivers of economic development in the country, in recent years the industry has helped to increase internal and external competitiveness, generated thousands of skilled jobs and accelerated technological progress (IBGE - Brazilian Geography and Statistic Institute, 2011).

The services are present in the lives of Brazilians and the tertiary sector accounts for almost 70% of Gross Domestic Product (GDP) - the sum of everything the country produces - and more than 75% of formal employment, according to IBGE Brazilian Geography and Statistic Institute (2011).

Only the Brazilian retail sector consists of more than 1.4 million companies (or 80% of them), with total revenue of about U.S. $ 1.6 trillion. Have a wholesaler and vehicles account for 17% and 10%, respectively (IBGE - Brazilian Geography and Statistic Institute, 2011).

Additionally, the importance of the services sector to the Brazilian economy has steadily grown over the last few years, therefore requiring a more pragmatic strategic management approach.

In the analyzed period the number of companies in the service sector increased by
65%, while employment increased by 107%. The main cause of this rise is the process of outsourcing, another segment that can be highlighted is the services provided to families. The domestic market growth explains the expansion of this segment.

Correa (2002) presents some strategic tools that can help analyze service operations meet their competitive priorities. The author addresses the growing importance of services in the Brazilian and world economies. He also presents a model for excellence in services management and common services typology.

Another approach is about quality management in service structures and customer loyalty, the formation of customer expectations, recovery of dissatisfied customers and measuring customer satisfaction.

Correa (2002) also propose a pricing model and the establishment of prices for services, aligned with the strategies of Porter (1998) strategy.

Other items discussed by the author is the quality management in the service support activities. Cost management and efficiency in services and the management of human resources is a topic of utmost importance.

Correa (2002) presents the Flow Analysis Process Service (FPS) - The client's perception about the service quality is formed in each of the moments of truth that make up the duty cycle. Moments of truth are each of the times when a contact is established; whatever, local or remote, between the company and the customer service, while the client is evaluating the service in relation to the objectives or performance criteria that he considers priority.

Thus, it is essential to evaluate the relative importance of the various moments of truth in order to identify key or critical moments. The key moments are those in which the most important competitive criteria are at stake, i.e., are apparent to be evaluated by the customer (Correa, 2002).

As in manufacturing, the services also undergo prediction, design and facilities management for correct sizing, because it depends, in most cases, operational efficiency and results.

Correa (2002) concludes that it is time to address the management of services seriously, bringing this aspect of operations management to the importance that its impact is the generation of income and employment in modern societies.

It's time to stop emphasizing what to do (with labels and fashions often empty, as "delight the customer", "excellence", among others) to begin discussing with the pragmatic rigor how. Systematic analysis methodologies and operational and strategic management are necessary as scarce on business and technical publications management. Administration of manufacturing has deserved this systematic and technical approach there is already a century since Frederick Taylor and his followers began to organize the area - knowledge that is known today as the movement of "scientific management." As the service management approach still prevails in craft a lot of organizations (CORREA, 2002 p.58).

Fitzsimmons (2011) also addresses the importance of services in the point of view of the evolution of societies economy, experience economy. The author highlights the issue of typicality of services and classify them for strategic purposes, considering the
value chain.

Fitzsimmons (2011) and Correa (2002) suggest planning the development of services to support the competitive strategy. Propose the use of techniques Blueprint services that map both flow activities that have visibility in the attendance office as well as at the back office which are not usually seen by the client.

The subject of perception and expectation of customers is a part of what the authors nominate the challenge of delivering exceptional service quality.

Another aspect is about process improvement, which continues improvement tools are presented as well as the tools to measure productivity using data envelopment analysis. Metrics and process flows and their execution times are shown.

The issue of service management from a strategic view and manage profitability combining capacity and demand, management expects the psychological point of view is another topic explored by Fitzsimmons (2011).

Finally, Fitzsimmons (2011) shows the quantitative model for services management, such as queue management and exponential smoothing models

Lovelock (2001) presents his vision of services in the new economy in relation to aspects of globalization, regulation and technological innovation and the consequent pressure to increase productivity and maintain quality. The author presents a model of eight components to services and linkage to services marketing, operations and human resources. Shows how present processes and services, which form of scaling, studying supply and demand.

In services there is an element that differentiates on products which is the coproduction client in the process. Lovelock (2001) presents some cases evaluation of services and completes the steps in the consumer buying services.

The author also addresses the issue of value creation through services through productivity, aligning expectations of customers, as these customers evaluate services across five dimensions of quality and fault detection.

**Feasibility using SCOR for service industry:**

According to Giannakis (2010), the last 30 years discussions about the transfer of successful models in manufacturing to the service industry. Many argue the validity of these models such as Parasuraman & Berry (1993). There is a view that the concept of Supply Chain Management only applies to manufacturing. Despite these barriers, or paradigms, the fact is that it is necessary to develop supply chains for services because there are a number of emerging factors that trigger the development of models for services Supply Chains. The most common factors are:

- Coordination of processes: for effectiveness in providing services many stakeholders are involved, therefore need to be integrated, such as a department that provides services to a company.
- Increase in productivity through process optimization: as in manufacturing, structures and flows of services are equally important and exposed the inefficiencies therefore liable to improvements and restructuring processes.
- Improved customer interface: every day the client is closer to the service provider and contact these need to be measured and improved every time there is this interaction to get feedback of the quality of this contact in order to improve
processes continuously.

Giannakis (2010) propose a model called "3S":
- Synthesis - business and network resources involving supply chain processes and outsourcing decisions (or not) of products and services.
- Synergy - between the actors of the supply chain involving strategic decisions that focus on the harmonization of the interests and goals of different companies in a Supply Chain.
- Synchronization - of the relevant processes involving the production and provision of a good or service to an end customer.

Giannakis (2010) proposes to use the SCOR framework as a tool to identify the performance of service chains, which will then be used to measure customer satisfaction. The indicator for supply chains is the POF (Perfect Order Fulfillment). This indicator measures the reliability of a supplier.

The SCOR framework would be subject to an adjustment in your macro process called "make" it becomes irrelevant in the context of services, as it in its original format require the transformation of tangible goods into a final product. Services, this transformation occurs during the delivery process (deliver) services and in turn need customization as its intangibility increases, so the design process becomes a process of paramount importance.

Thus, Giannakis (2010) presents an adapted framework of the SCOR®, where the author suggests that the stage of "sourcing" the macroprocess "source" processes meet the requirements for the service, relationships with sources, administration and supplies management capabilities make right hand part of phase to further supply to the design phase and subsequent delivery to the customer, then performing the final delivery.

Figure 5 - The Service Industries Journal, 31:11, 1809-1823, 2010
Conclusion:

Using the SCOR framework for the sector of services can be made with small adjustments naming processes, but in general, its applicability becomes feasible while maintaining the conceptual basis of the framework, i.e., mapping the processes of the three proposed levels, establishing competitive attributes and their metrics, with some adjustments and finally, use of best practices appropriate to the service sector.

Bibliography