

# **Supply Chain Management and the Role of Inter-Organisational Relationships in Service Organisations**

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## Abstract

Despite the growing importance of SCM, the absolute majority of research deals with the management of the *tangible*, or physical supply chains. This paper explores the application of the SCM service organisations. It proposes a generic framework for conceptualising SCM in the broad service sector, drawing concepts from the extant SCM and Service Management literatures. Considering the significance of Inter-Organisational Relationships (IORs) that are developed with the exchanges of services, empirical research examines the extent by which the relationships that are developed between actors in a service network are affected by the context in which the exchange takes place

## *Introduction*

In the last 15 years there has been an intense interest in academia and among business circles about SCM issues. Several researchers have investigated the concept of SCM (see for example Houlihan, 1988, Womack *et al.*, 1990, Christopher, 1992, Lamming, 1993, Hines, 1995, Ellram, 1991, Harland, 1994) establishing its theoretical and operational bases as we know them today. It has been claimed that with product life-cycle shortening and technologies becoming increasingly imitable, SCM as a management concept could be a major source of competitive advantage, offering to the companies that are involved in such an management approach:

- ✓ Major Cost Reductions or Profit Growth
- ✓ Improved Speed & Flexibility
- ✓ Better Quality
- ✓ Improved Product Development
- ✓ Customer Retention & Loyalty

However, academic and practitioner textbooks in the field of SCM frequently base their observations and advice on the notion that companies have much the same type of structure and utilise the same resources and operational processes as one might expect in manufacturing firms and especially large automotive companies (Slack and Bates, 1997). It is true that these companies provide a rich field for research and development of theories in business management, however as Table 1 illustrates, the success of these models in contexts such as the supply and delivery of services has not been tested thoroughly.

### **See Table 1. Research Gaps in the field of SCM**

Service industries have replaced industrial markets in the role of economic growth as service activities represent two thirds of the national products in developed countries and at least 50% of the final value of a manufactured product is made up by services In the EU over 60% of the workforce and over 76% in the USA is engaged in services (World Development Report, 1983). Furthermore the increasing phenomenon of *servitisation* of manufacturing companies, which include services in their offerings as well makes research in services of substantial importance.

Given these challenges the objectives of this research are:

- I. Reviewing the Service Management literature to conceptualise SCM in the context of the supply and delivery of services.
- II. Considering the significance of IORs that are developed with the exchanges of services, to examine how the context in which the exchange takes place affects the relationships between actors in a network in terms of their strength and their behaviour across the supply chain.

The paper is organised in four sections:

In the first section it is demonstrated why the topic is important and worthy of study within the broader context of the SCM discipline, by reviewing the extant SCM and the peculiar matters of Service Management literatures. Given the lack of SCM research in service exchanges, a generic analytical framework for conceptualising SCM in the broad service sector is developed in the second section, by associating the previously discussed literatures and drawing insights from the IORs, the Resource Based View of the firm and the Network Theories literatures. On the basis of this model a set of hypotheses for testing is raised. In the third section the empirical research design and the methodology for testing the hypotheses are presented. In the fourth section the results of the empirical research are presented followed by a discussion on the managerial implications of the research. Finally, in the fifth section potential extension of the research in the interested field is discussed.

## 1. The Existing Literatures

### 1.1 The Supply Chain Management Problem Domain.

SCM issues have been examined so far from different perspectives encompassing a multidimensional field of research and there is not a clear understanding yet of the meaning of the concept. Earlier literature reviews identified that SCM entails something more than logistics management (Cooper et al., 1997). It concerns different levels of analysis – *Dyadic, Chain and Network* - (Harland, 1996) and involves the exchange of *Assets, Information, Knowledge* between companies that are inter-linked in the provision of an offering from its inception to the final consumption as well as the management of *IORs* that are developed between these companies (Croom et al, 2000). The underlying objectives that are predicated within these different streams of research involve either:

- ✓ The **Synthesis** of the businesses and resources networks
- ✓ **Synergy** between the actors of a supply network
- ✓ **Synchronisation** of the activities and operations (Giannakis & Croom, 2000)

See **Table 2.** The 3S (Synthesis, Synergy, Synchronisation) Analytical Model for SCM

As an overall conclusion from the literature review in SCM, it is observed that the level of attention paid to purchasing and supply in academia and among practitioners increases and the research work in this field tends to become more strategic in emphasis, focusing more on issues such as managing *IORs*, rather than ordering and replenishing routines.

### 1.2 The peculiarities of the Service Management Literature

Defining the services exchange context is not as clear as it might seem. While it is useful to look at the supply of services separately from the supply of goods, the case is that in business exchanges very few involve purely services alone and equally very few are for the supply of goods (Bailey et al., 1994). The case is in reality an exchange of a product bundle that includes services as well as goods. Using the taxons of the analytical framework that was developed for the classification of academic works in the field of SCM (Croom et al., 2000), it is contended also that service exchanges could include the exchange of *assets* (of any type), *information*, or *knowledge* and entail the development and management of *IORs*, exactly as it is in the case of exchanges of goods. Their primary goal is to satisfy customers' needs (as it is with goods).

The context in which this exchange takes place however, is somehow different from that in goods due to some peculiar characteristics of the services. In the Service Management literature there have been attempts by several scholars to outline these definitive characteristics of services (Gronroos, 1990, Lovelock, 1983, Sasser, 1978, Normann, 1991). As Fitzgerald et al. (1992) assert, although there is debate in several approaches in terms of how many of these characteristics and to what extent an offering should possess in order to be called a service, all researchers concede that the central characteristic of services is the notion of **intangibility**, which refers to the fact that the output of many services is not something tangible. It may be a performance, a process, or an act, which does not result to the transfer of ownership. In some researches in fact it has been said that intangibility is the key to determining whether or not an offering is a service or a good (Zeithaml & Binter, 1996).

This central notion implies three additional characteristics of services:

- ✓ *Simultaneity*, which refers to the fact that the service is produced and consumed at the same time.
- ✓ *Perishability*, which refers to the fact that services cannot be stored or transported.
- ✓ *Heterogeneity*, which refers to the fact that in many cases the need for interaction between the service provider and the customer increases the possibility of varied outputs from customer to customer.

The table below (taken from Van Looy *et al.*, 1998) illustrates these different characteristics of services as opposed to goods.

**See Table 3.** Differences between services and goods.

The notion of intangibility however, does not follow a 'Boolean' either/or concept but is rather a continuum (McDougall & Snetsinger, 1990). Not all services have the same level of intangibility (a medical diagnosis for example is more intangible than logistics). In the next section we provide a scale for measuring the intangibility of services.

#### Services Management Literature Regarding SCM Issues

An illustrative example of the effect of these characteristics of services on SCM issues is the complex notion of the creation of value across the service supply chain. In manufacturing supply chains the notion of value added is easy to conceive, as it is related with the transformation of raw materials into final products. Each company in the supply chain consecutively adds value to the product by processing the materials and information that 'flow' from the upstream companies and then delivers the incomplete product to the next 'link' of the chain. In the context of services however, such a notion is not relevant, because services cannot be transformed, transported, or inventoried in the same way as manufacturing; and to a great extent they are produced and consumed at the same time.

As it was mentioned at the beginning of the paper, surprisingly enough very few researchers have been interested in the business of services as a source of value regarding SCM phenomena. The concepts of *value analysis* (Normann, 1993) and *lean service* (Bowen & Youngdahl, 1998) in a service exchange context could be included in the general SCM problem domain. There is also an abundance of researches that stress the importance of managing the *IORs* that are developed with the exchanges of services (Normann, 1991, Tyler, 1997, Paulin, 1997, Gadrey & Gallouj, 1998, Hart, 1998). These works however, concern only the downstream level of a Supply Chain from the perspective of the customer. Very few works have considered the upstream level of the supply chain focusing on the dyadic relationship between the company and its supplier of the service (see for example Gallouj, 1997, Fitzsimmons *et al.*, 1998). The management of the upstream side of the supply chain, or the management of the entire chain (or network) of services supply has been markedly absent from the literature.

Previous works until now have assumed that the concept, analysis and praxis of SCM that was developed in manufacturing are applicable to the service exchanges as well. As has been mentioned however, the service 'offering' is intangible, heterogeneous, simultaneous, perishable and its quality measures are different than those used in goods. These peculiar matters in the production and delivery of services do not allow *a priori* acceptance of the concepts and methods of analysis that were developed for the industrial sector and make the service Supply Chain a different area of research in the field of SCM.

Despite its manufacturing origins, the service SCM is getting the academics' concern. This has been recognised by professional research institutes such as the Chartered Institute of Purchasing and Supply (CIPS web page, 1998), as well as by individual academics all over the world. However, the literature in guiding managers and transferring the principles, concepts, methodologies and tools of SCM to the context of service industries has been scarce, focusing mainly on the dyadic relationship between the service provider and the end consumer of that service from the perspective of the customer (that mainly fall within the *relationship building* and *relationship marketing* literatures. Therefore it is contended that more research needs to be done that considers other aspects of SCM in a service context.

#### The debate between manufacturing and services

There has been a lot of debate in the last 30 years on whether it is justifiable to transfer theories from a manufacturing to a service context. Many authors have argued against the validity of these models, including Davis (1983) who concluded that 'using industrial models to manage service based corporations makes as little sense as using farm models to run factories'. Other academics however, who built on Levitt's (1976) seminal article about the industrialisation of services, believe that not only it is appropriate to transfer models and concepts from one context to another, but it is an imperative.

In this research the stance of Bowen & Youngdahl (1998) is adopted, who posit that the fact that the defining characteristics of manufacturing and services nowadays have blurred and will continue to be more blur (considering the increasing servitisation of manufacturing companies), produces the knowledge for a common paradigm that will find appeal in both manufacturing and services. The challenge therefore is to identify and analyse the contingencies that exist in different contexts when a particular construct is transferred to a different setting. This has also been recognised by several researchers who have investigated the transfer of theories and methodologies from one context to another with respect to other management disciplines (Silvestro, 1997) regarding TQM in service businesses, (Sihra & Lutz, 1997) regarding group technology in services. Therefore in the case of SCM it is argued that a refined model of the existing SCM techniques is needed to describe the concept in a service context.

## 2. A Framework for Conceptualising SCM in Services

Given the lack of a descriptive tool of SCM in service exchanges, the first step of the SCM approach to services is to develop an analytical model which will outline what is implicated with the concept of SCM in services. To achieve this it was necessary to consider the different goals, meanings and levels of analysis of SCM that have been proposed as well as to explore the underlying phenomena and processes embodied within the service exchanges. In effect this model would encapsulate the evident processes and phenomena of interest with respect to supply chain researchers (Glasser & Strauss, 1967). Drawing from the **3S** model of the SCM problem domain (Giannakis & Croom, 2000), SCM in services therefore involves:

- ✓ *Corporate strategy* decisions regarding the **synthesis** of the network of interconnected companies that are involved in the provision of a service to the final consumer
- ✓ *Business strategy* decisions regarding the **synergy** of IORs between parties in the supply network and
- ✓ *Operations strategy* decisions regarding the **synchronisation** of the supply and delivery operations of the service.

The great size and diversity of the service sector though, makes it difficult to make generalisations concerning the management of service organisations. This complexity increases at the level of SCM where a bundle of services and goods are utilised for the production of services. For that purpose a typology that was proposed by Silvestro et al. (1992) which categorises services according to the distinctive patterns they share with respect to the purchasing and supply processes has been utilised, so that to understand these processes, the relationship with the suppliers and its implications with regard to SCM tactics. This taxonomy also generated insights in order to propose hypotheses for the application of the use of the SCM concept in services, as well as helped in the positioning of the research in the multivariate service sector. It combines many peculiar characteristics of services in different ways, such as whether the service offered is equipment oriented or people oriented, the degree of customer's presence in the exchange of the service, the degree of customisation of services, the level of discretion of the front office personnel, and whether the emphasis is what the customer buys or how the service is delivered to the customer. According to this

typology, services vary between 'routine' mass services, service shops and 'tailor-made' professional services.

- *Mass Services* are equipment focused, contact time between the customer and the service provider is short, the level of customisation and discretion is low and the product-oriented service is produced in the back-office. Examples of mass services are public utility services, transportation services and certain retail services as tobacco, news and confectionery retailing
- In *Service Shops* both people and equipment are used, the contact time and the level of customisation are at medium and both the back and front office provide the service. Examples in this category are retail banking, hotel and hospitality services.
- *Professional Services* are people and front office oriented, they require long contact time and there is high degree of customisation and discretion. Examples of professional services are management consultancies, corporate banking and legal services.

Combining the general strategic goal of SCM with the Services Management literature, the framework that is developed for SCM in services is presented below.

**See Figure 1 A Generic Framework for SCM in Services**

It is a general framework for SCM in the broad service domain that explores the effect of the of the intangible character of services (dependent variable) on the synthesis, synergy and synchronisation strategic goals of SCM (independent variables). It suggests that the level of intangibility of services affects the anatomy of a Supply Network, the strength and behaviour of the IORs between a service user and a service provider and the activities / operations involved for the provision of the service.

As in the manufacturing SCM, equally the study of the service supply chains (networks) could concern different levels of analysis, namely the dyadic, the chain and the network level. This framework focuses on the dyadic level of analysis in a supply network. Taking into consideration the entire supply chain of a service however, it is contended that it might involve the supply of various services which would not fall in the same category (according to the typology) as the service in question. In this case a combination of different SCM strategic decisions should take place in order to ensure the effectiveness of the entire chain.

The research issues are generated with this framework therefore are:

- I. *What is the impact of the level of intangibility of services on the structure of a service supply network?*
- II. *What is the impact of the level of intangibility of services on the strength of the IORs that are developed in the three different types of service exchanges*
- III. *What is the impact of the level of intangibility of services on the operations / activities that are involved in the provision of a service*

One of main challenges of this study was to find a way of measuring the complex construct of the level of intangibility in the different types of services. For that purpose a distinction has been made between the level of intangibility of the service outcome and the level of intangibility of the service production process. The intangibility attribute regarding the process dimension refers to the lack of physical evidence in the service production process. Physical evidence in the service production process refers to 'any tangible commodities (equipment, personnel) that facilitate the performance or communication of the service' (Zeithaml & Binter, 1996). The intangibility for the production of a bank savings account in that sense is higher than the intangibility of fast food shop services. As regards the outcome of the service, intangibility is measured according to the nature of the elements that are exchanged, which constitute the core service provision. Taking a Resource Based View of the exchange, the 'resources' that have been used for the definition of the service SCM are

utilised. More specifically, the elements that a service exchange could involve, namely *assets* (material, human, financial, technology), *information*, *knowledge* form a scale for this dimension of intangibility. In other words if the actual outcome of the service provision involves the exchange of assets (material, human, finance), the level of intangibility is lower than in a case where the outcome involves merely the exchange of knowledge. A typical example is the distinction between post services where the outcome of the exchange is transfer of mail and consulting where the outcome may be an advice. In Figure 2 a matrix that classifies services in terms of their level of intangibility is presented.

See **Figure 2.** A Scale for measuring intangibility of services

### 3. IORs in Service Exchanges

It is beyond the scope of this paper to comprehensively examine all the three levels of SCM strategic goals and their associated theories in order to describe supply chain phenomena in service exchanges. From the literature review it has been concluded that the management of IORs is critical in the study of SCM issues. Due to their simultaneity, services tend to be more relational than goods (Paulin, 1997) and the management of IORs is determining factor in the success of a service supply network, as relationship oriented firms achieve higher investment returns than transaction oriented firms (Kumar, 1999).

The explicit assumption in the research is that the development and management of the IORs in a service context are different than those developed in an industrial context due to the characteristics of services. The strength of the IORs between the service providers and their service suppliers is measured in terms of three constructs, which are considered as determinants of the strength of a relationship (these will be the dependent variables in the research). These constructs were utilised in a study that measured the relational dynamics between marketing research providers and the users of the marketing research results (Moorman et al., 1992). They are:

- The concept of *trust* defined as the ‘willingness to rely on an exchange partner in whom one has confidence’.
- The *service provider’s involvement* which refers to ‘the extent to which the users feel it is important to involve their service providers in the design, production and marketing processes of their service offering.
- The *commitment* to the relationship defined as ‘an enduring desire to maintain a relationship’.

It should be mentioned at this point that it is believed that the development and behaviour of IORs is chaotic, in the sense that there are innumerable contingencies that could influence them. The scope of the research at this stage is not to come up with a linear dependence of the development of IORs and the services context peculiar characteristics. It attempts to draw a link between the context a service exchange takes place and those relationships.

The hypotheses that are raised for examination as they are illustrated in Figure 3 are:

- H1.** The level of intangibility in terms the outcome of a service provided affects the relationship between user and provider in that the greater the level of intangibility, the stronger the relationship between the two tends to be in terms of, a) the user’s trust in the provider, b) the provider’s involvement in the user’s processes and vice versa, c) the user’s commitment to the relationship.
- H2.** The level of intangibility in terms the process for the creation of a service affects the relationship between user and provider in that the greater the level of intangibility, the stronger the relationship between the two tends to be in terms of, a) the user’s trust in the provider, b) the provider’s involvement in

the user's processes and vice versa, c) the user's commitment to the relationship.

**See Figure 3.** The Impact of Intangibility on the IORs.

#### 4. Empirical Research

The study of SCM in terms of the IORs between parties in a supply network, especially in a service context where offerings are intangible, can only result in the development of a conceptually dense model if a deep knowledge of the structure and behaviour of the processes of purchase and supply management is acquired. It is contended that the understanding of such a complex phenomenon requires a more 'phenomenological' based research that elicits knowledge through the eyes of individuals that live and act in that context (Strauss, 1989). This can be achieved only if in-depth data is collected. Given also the fact that a service is a process or a performance and that service delivery occurs through human interaction for most services, qualitative research methods are well suited to the characteristics of services and the nature of the service product (Gilmore & Carson, 1996). The research strategy therefore that has been chosen for the study is a case study method. The choice of case study as the research instrument is believed to be appropriate because it befits the 'what' research questions that have been raised, it is a systematic tool for doing qualitative research and favours the synergistic combination of quantitative and qualitative data collection techniques (see for example Yin, 1994, Eisenhardt, 1989).

##### 4.1 Research Context

The empirical research is conducted at the University of Warwick with the form of a pilot study. It involves the multiple study of three cases, each focusing on the supply of a service with a different level of intangibility, according to the framework that was developed. *Post Services*, *IT services* for the University and *Business Strategy Consulting Services* by the Warwick Business School academics. With this scale Post Services are assigned to have low level of intangibility as their outcome is the exchange of assets and the process of creation of the service involves *tangibles* as vans, airlines, human, transfer. IT services are at a medium level and Consulting at the highest level since the outcome is the exchange of knowledge and the service production process very little *tangibles* are used.

The unit of analysis is each individual manager's view of his or her relationship with the service provider correspondent manager so as to identify any variation in terms of the strength of the IORs. The reason for the selection of multiple cases as opposed to a single case is the attempt to prove that they follow a *theoretical replication* logic. That is, to examine if the different services due to different level of intangibility will produce different results in terms of the development of the strength of the IOR, as it has been proposed in the theoretical framework.

The supply chains that are examined are illustrated in Figure 4 below.

**See Figure 4.** Sections of Supply Chains analysed

The empirical data is collected with semi-structured interviews with the administrators of the organisations. 20 interviews have been carried out so far.

#### 4. Preliminary Findings

Preliminary findings of the research indicate that the relationships that are developed between actors within each of the three types of service supply chains are different, depending on the nature of the service that is exchanged but also their position in the supply chain.

For the consulting case relationships tend to be very contingent depending on the nature of the consulting issue and on the individuals that are involved. A contract might be written

down but this is just a framework for developing a good working relationship based on trust, openness and good communication. This contract is likely to change without affecting the relationship. As stated by an interviewee 'it's one of the most customised activities of all because the relationship is more unstructured and because it is unstructured it may also be more complex and more dynamic'. Trust, Communication between the parties and involvement in the customer's operations are at a maximum level as the customer forms an integral part of the service provision.

For the IT services provision the relationship between the University and the software provider is characterised by a formal contract. The relationship is ongoing, nevertheless it does not involve so frequent communication (on special occasions, when a problem arises and on pre-appointed maintenance routines). Trust is also at a high level but is limited on the scope of the business and do not become personal. The supplier is involved highly in the customer's operations as together they design and decide the best solution for the customer's needs.

For the Post Services, the relationship is more structured and is based on a formal contract issued in the beginning. Trust patterns and communication are at a high level, they are however as in the IT case limited on the scope of the business and do not become personal. Involvement in the customer's operations is minimal focusing only on occasional informal suggestions.

### 5. Further Research

The preliminary findings of the research support the hypotheses that were raised showing an increase in the strength of the relationship that is developed between the service provider and the user. More analysis is required however to disentangle the patterns of relationship building in these processes.

Further research could examine the impact of the level of intangibility on the other two dimensions of the strategic goals of SCM, i.e. the *synthesis* and the *synchronisation* of the Supply Networks.

The behaviour of these triadic business relationships in service organisations, in terms of the perceptions of performance and requirements between the companies could be studied, extending earlier work of Harland (1996), by using the 'gap model' for a triadic relationship. At this level the aim will be to examine in a supply chain if the behaviour of relationships fluctuate across the supply chain following a similar effect as the Forrester effect that is observed in the distortion of information across the chain.

**See Figure 4.** The mismatch tool of a triadic relationship in services.

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Sectors	Exchange offering	
	Goods	Services
Manufacturing	Conventional	New Area
Services	New area	Not researched

**Table 1.** Research Gaps in the field of SCM

	Dyadic	Chain	Network
<b>Synthesis</b> Organizational Structure (Corporate Strategy)	<ul style="list-style-type: none"> <li>✓ Make or Buy</li> <li>✓ Supplier Selection</li> <li>✓ Relational Embeddedness</li> <li>✓ Transaction Costs</li> <li>✓ Partnerships / Alliances</li> </ul>	<ul style="list-style-type: none"> <li>✓ Outsourcing</li> <li>✓ Transaction Costs</li> </ul>	<ul style="list-style-type: none"> <li>✓ Outsourcing</li> <li>✓ Transaction Costs</li> <li>✓ Ownership (Vertical Integration) Vs Pure Market</li> <li>✓ Positioning in the Supply Chain</li> <li>✓ Structural Embeddedness</li> </ul>
<b>Synergy</b> Inter-Organizational Relationships Management (Business Strategy)	<ul style="list-style-type: none"> <li>✓ Supplier Management (Evaluation/ Development)</li> <li>✓ Power/Trust /Commitment</li> <li>✓ Relationship Dynamics (between actors over time)</li> <li>✓ Relationship Marketing</li> <li>✓ Interaction Model</li> <li>✓ Knowledge Transfer</li> <li>✓ Communication Processes</li> <li>✓ Capabilities Management</li> <li>✓ Organizational Learning</li> <li>✓ Collaborative Design (Guest Engineer)</li> </ul>	<ul style="list-style-type: none"> <li>✓ Suppliers Management (Evaluation/ Development)</li> <li>✓ Power/Trust/Commitment</li> <li>✓ Tiered Supply Management Model</li> <li>✓ Relationship Dynamics (across actors in a supply chain)</li> <li>✓ Social Networks</li> <li>✓ Resource Dependence</li> <li>✓ Benchmarking</li> <li>✓ Knowledge Flow</li> <li>✓ Value Chain</li> <li>✓ Communication Processes</li> <li>✓ Capabilities Management</li> <li>✓ Organizational Learning</li> <li>✓ Collaborative Design</li> </ul>	<ul style="list-style-type: none"> <li>✓ Partnership Sourcing</li> <li>✓ Trust/Power/Commitment</li> <li>✓ Lean Supply</li> <li>✓ Supply Base Integration</li> <li>✓ Social Networks</li> <li>✓ Interaction Model</li> <li>✓ Chaos</li> <li>✓ Research Consortia</li> <li>✓ Knowledge Flow</li> <li>✓ Value System Analysis</li> <li>✓ Communication Processes</li> <li>✓ Capabilities Management</li> <li>✓ Organizational Learning</li> <li>✓ Collaborative Design</li> </ul>
<b>Synchronisation</b> Activities Management (Operations Strategy)	<ul style="list-style-type: none"> <li>✓ Management of Flow of Goods</li> <li>✓ Processes/Activities Management</li> <li>✓ Production Planning /Capacity Management / Distribution</li> <li>✓ Procurement / Purchasing Management</li> <li>✓ Mgmt of Financial Assets Flow</li> <li>✓ Inventory Management</li> <li>✓ Transportation</li> <li>✓ Facilities Location</li> <li>✓ Guest Engineering</li> <li>✓ Management of Information Flow</li> <li>✓ E-Commerce</li> <li>✓ EDI / Internet</li> </ul>	<ul style="list-style-type: none"> <li>✓ Logistics Management</li> <li>✓ Management of Flow of Goods</li> <li>✓ Processes/Activities management</li> <li>✓ Distribution Channels</li> <li>✓ Value Chain Approach</li> <li>✓ Integration of Processes/Activities</li> <li>✓ Transformation Model</li> <li>✓ Mgmt of Financial Assets Flow</li> <li>✓ Structure of the Supply Chain</li> <li>✓ Reverse Logistics</li> <li>✓ Resonance</li> <li>✓ Integration of Information Flows</li> </ul>	<ul style="list-style-type: none"> <li>✓ Processes/Activities Management</li> <li>✓ Value System</li> <li>✓ Network Sourcing</li> <li>✓ Integration of Companies</li> <li>✓ Network Structure Design</li> <li>✓ Logistics Network Design</li> <li>✓ Lean Supply</li> <li>✓ Chaos</li> <li>✓ Games Theory</li> <li>✓ Management of Information Flow</li> <li>✓ E-Commerce</li> <li>✓ EDI / Internet</li> </ul>

**Table 2.** The 3S (Synthesis, Synergy, Synchronisation) Analytical Model for SCM

Services	Goods
<ul style="list-style-type: none"> <li>✓ An activity or process</li> <li>✓ Intangible</li> <li>✓ Simultaneous production and consumption: Customers participate in production</li> <li>✓ Heterogeneous</li> <li>✓ Perishable: cannot be kept in stock</li> </ul>	<ul style="list-style-type: none"> <li>✓ A physical object</li> <li>✓ Tangible</li> <li>✓ Separation of production and consumption: customers do not normally participate in the production</li> <li>✓ Homogeneous</li> <li>✓ Can be kept in stock</li> </ul>

**Table 3.** Differences between services and goods.

