

MODELS OF RELATION IN SUPPLY CHAIN – LITERATURE REVIEW

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Abstract: Considering relationships in supply chain it is important to analyze the exact level of performance and relations between partners in particular supply chain to find where is the supply chain in its development, through tracking the progress and to make plan where the supply chain “want to be” therefore Author presents literature review of supply chain relation models.

Keywords: supply chain, collaboration models

The idea relationships and collaboration with suppliers made an appearance in the literature several decades ago [1]. Since then the idea has re-emerged under a variety of names including: co-makership [2]; reverse marketing [3]; supplier alliances [4] and partnership sourcing [5]. Variations have also appeared within the marketing domain under the title of relational or relationship marketing [6] as well as within the strategic management field as strategic alliances. At the same time, the idea of cooperative relationships has been extended from immediate suppliers to encompass the wider supply chain [7].

The traditional supply chain relation description is purchasing-based view where SCM was to leverage the supply chain to achieve the lowest initial purchase prices whilst assuring supply, and was characterized by: multiple suppliers; supplier selection based primarily on purchase price; arm’s length negotiations; formal short-term contracts; and centralized purchasing.

Speckman, Kamauff and Myhr [8] conceptualize the transition from traditional purchasing-based view to collaboration as a continuum, noting that the cooperation and coordination stages are necessary but not sufficient to reap the benefits of effective collaboration (figure 1).

This popular view is not without its critics, and a balanced approach to collaboration gives a picture of the determinants of successful SCM. The authors also note that the road from open-market negotiations to collaboration is a long one and should not be traveled by every buyer–seller relationship.

The technical committee of the Supply-Chain Council presents three levels of collaboration. Ranging from lower to higher levels, these were:

1. Data exchange collaboration where partners (internal or external) exchange information as required, principally to complete day-to-day transactions. Data exchange can be one way or two way.
2. Cooperative collaboration where partners (internal or external) share systems and tools so that all have access to information simultaneously.

3. Cognitive collaboration is the highest level requiring “joint, concurrent intellectual and cognitive activity between partners.” This level embraces information sharing to reach joint decisions.

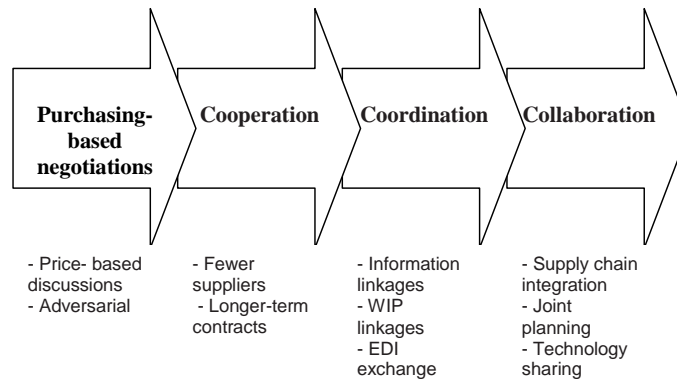


Figure 1. The transition from purchasing negotiations to collaboration [8]

Collaboration within supply chain demands a business transformation in which managers attempt to mitigate uncertainty and exploit opportunity through the creative use of both suppliers and customers by evaluating who best supplies value and then leveraging that expertise or capability through the entire supply chain.

Considering relationships in supply chain it is important to analyze the exact level of performance and relations between partners in particular supply chain to find where is the supply chain in its development, through tracking the progress and to make plan where the supply chain “want to be”.

The great help in this process can be supply chain maturity modeling. Thank to the models the managers can estimate the development of their supply chain and to make a map of SCM improvement.

For example, we can use Poirier SCM maturity model, that consists of following four levels [9]:

1. Sourcing and logistics — characterized by functional excellence and programs like supplier reduction, inventory reduction, cost reduction.
2. Internal excellence — use of activity-based costing and process management.
3. Network construction — development of differentiated processes across the enterprise and cooperative planning with partners.
4. Industry leader — wide use of technology tools, demand–supply linkages and a global perspective.

For these four levels, Poirer’s model has nine factors that help its user define a particular level. These include executive sponsorship, benefits, types of projects, tools used, financial targets and alliances. Poirer’s model is a good representation of how a company might develop excellence within its departments and then move outward, using its “network,” or supply chain, to achieve industry leadership. At Level 4, the model argues for wide use of information technology to tie the supply chain together.

The second model is similar to Poirer’s one. The consulting firms PRTM and the Performance Measurement Group (PMG), both of which are active in the Supply-Chain Council, have also developed another four-stage model [10].

Its stages are the following:

1. Functional focus — department level activity with functional measurement.
2. Discrete supply chain processes are well understood and documented.

3. Internal integration — resource management at functional and enterprise levels. There is a companywide process and data model.
4. External integration — partners along the supply chain collaborate on objectives and action plans. Common processes and data sharing occur along the chain. Management reacts to performance metrics.
5. Cross-enterprise collaboration — enabled by IT and e-Business solutions. Real-time planning, decision-making and execution to customer requirements mark this level. Multicompany business process alignment including objectives has been achieved.

I would like also to presents Cavinato model of supply chain maturity. He maintains that there is no one-size-fits-all supply chain design [11].

Table 1. Supply chain types regarding to relationships [11]

	Type of Chain/Network	Description/Characteristics	Relative Complexity
1.	No chain	Functions act freely, no strategic advantage from supply chain	Low
2.	Don't know	Mostly outsourced supply chain operations. No strategic advantage. "Blank check to outsiders," like 3rd party logistics providers.	Low
3.	Chains that tie down the firm	Internally focused. Lagging competitors, catch-up mode. Logistics-centered with measures focused on warehousing and transportation cost.	High
4.	Nano-chain	Internally focused. Focused on manufacturing efficiencies in plants requiring high utilization. Inbound and outbound processes are secondary. Examples include autos and aircraft manufacturing.	Low
5.	Micro-chain	Logistics model with integrated physical and information flows. Balances inbound, production and outbound distribution.	Low
6.	Project logistics chain	Efficient at project supply and execution. Integrates multiple suppliers to the project. Like the nano-chain except it's a project environment.	Medium
7.	Cash-to-cash cycle chain	Focused on cash flow, perhaps to detriment of suppliers. The starting point is a cash flow goal, with operations structured accordingly.	High
8.	Synergistic chain	Eliminates duplication. No competitive advantage. Seeks to leverage buying power. Common in large companies with multiple independent divisions. Focus on common commodity purchases.	High
9.	Demand chain	High collaboration often dictated by dominant customers like Wal-Mart. Interdisciplinary with sales and operations. Tailored arrangements by customer. Flexible company. Uses technology.	Medium
10.	Extended supply chain	Has a supply chain mindset. Managers developed in the supply chain role. Good processes for new products and production of existing ones.	Medium
11.	Market dominance and blocking	Enjoys a monopoly with control over market and pricing. Often illegal in developed countries.	Low
12.	Supply integration	Highly interdisciplinary, evolving from process-oriented cost reduction efforts. Complete supply chain view, platform for competitive initiatives.	Medium
13.	Speed-to-market	Emphasizes new product development. Flexible. Uses time as a metric. Seeks to tap unused capacity in the supply chain to speed roll-outs.	Medium
14.	Innovation	Network of manufacturing and logistics suppliers for flexibility. Focuses on product creation, launch and growth phases of product life cycle. Examples are high technology electronics and seasonal toys.	Medium
15.	Value chain	Chain-to-chain competition, seeking innovation throughout the chain. Shared outcome arrangements are common. Procurement coordinates. Partners invest to develop capabilities needed for their part of the chain.	High
16.	Information networks	Flexible networks with few physical assets processing a flow of innovations. Supply chain managers are network creators and leaders. Data is accessed and converted into information, knowledge, and intelligence.	High

In fact, because of current fashion, many refer to their operations as a supply chain. Yet these companies have no supply chain at all. In reality, they are a loose-knit group of departments,

perhaps like Level 1 in the models described above. Cavinato notes that there are many types of supply chain and that the supply chain must be aligned with company goals for competing. Also, under scrutiny, most companies have multiple, not just one, supply chain. This supports the idea that all companies need not pursue the same destination. Based on strategy, a company may choose any number of levels of integration internally or with its partners. Cavinato identified 16 supply chain types — a spectrum of possible models. Models presented in table 1 contains summary descriptions of each supply chain type. The table has a column describing the complexity of operating a supply chain of a particular type. These 16 models capture the realities that go with different industries and the relationships that exist in those industries. Auto manufacturing is a much different environment from that in a high-technology industry or in food distribution. These environments place constraints on how far one should or can go in implementing technology or other supply chain solutions. A solution that can be used later is to reframe the maturity model in terms of the five competencies that compose our SCM knowledge areas, not what kinds of technologies a company employs. Another reality in Cavinato's model is that, while supply chains can be a source of operating efficiencies and competitive advantage, they can also hold a company back. That is, they can be "dysfunctional" when it comes to reaching goals for growth and profits.

Presented models of the relation in supply chain can help managers to realize what kind of the relation their enterprises are involved in and what kind of relation in supply chain are the best suitable for their businesses. For the future researches it is important to elaborate clear quantitative procedures for relation level estimation.

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