



ANALYSIS OF SUPPLY CHAIN IN PRODUCTION OF STEEL INDUSTRIES

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Abstract The purpose of this paper is to present the relationship between steel industries and supply chain orientation and supporting technology as moderating that relationship. The term can be used to describe either functional management or project management- leading technical professionals who are working in the fields of product development, manufacturing, construction, design engineering, industrial engineering, technology, production, or any other field that employs personnel who perform an engineering function. While offering a number of benefits, this approach also possess a different set of supply chain for increasing production by reduce lead time and prepare an active role in organizing and coordinating the planning of production.

Key words: - Supply chain, Production, industries.

Introduction

Today, integrated planning is finally possible due to advances in Information Technology (IT), but most companies still have much to learn about implementing new analytical tools needed to achieve it. They must also learn about adapting their business processes to exploit insights provided by these tools. The primary objectives of SCM are to reduce supply costs, improve product margins, increase

manufacturing throughput, and improve Return on Investment (ROI) [1]. In many companies, however, the scope and flexibility of installed ERP systems have been less than expected or desired, and their contribution to integrated supply chain management has yet to be fully realized. Each function in SCM has its own objectives, so they strive to achieve their goals without considering the effect they will have on the other functions and lack an integrated plan for the enterprise [2]. Essential components of these systems are optimization models, which can unravel the complex interactions and ripple effects that make supply chain management difficult and important. They are the only analytical tools capable of fully evaluating large, numerical databases to identify optimal, or demonstrably good, plans. The application of

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an optimization model in a company requires the construction of an optimization modeling system. A key element in such a system is the supply chain decision database, which is derived from, but significantly different than, the company's corporate databases. It is constructed from aggregate descriptions of the company's products, customers and vendors. Finally, it combines data inputs with outputs from model optimizations in creating graphical mapping representations of the company's current and future supply chain structure and activities. Principles of supply chain decision database and modeling system implementation will be illustrated by many successful applications. The applications will be concerned with analyzing business problems at strategic, tactical, and operational levels of planning. In recent years, the number and scope of successful applications of models and modeling systems have grown significantly. Companies selling ERP systems have added modeling modules to their offerings to help customers determine effective supply chain plans based on transactional data collected and managed by their systems. Throughout, it will use the term optimization to indicate that the company seeks to render its supply chain as efficient, flexible and responsive as possible for the purposes of achieving competitive advantage. Improvements may be realized by making obvious changes in faulty business procedures, by strategic investment or divestment of assets, by better allocation of company resources, or by numerous other means.

Chen *et al.* [6] analyzed the effects of forecasting, lead time and information sharing on BWE and quantified it as ratio of demand variances of two consequent stages of simple SCN system. They showed that the order variance in the upstream echelon will be amplified if demand decision of upstream echelon is changed using the monitored values of the predecessor downstream echelon order periodically. Cachon *et al.* [7] observed contrary to understanding of BWE that demand variability does not always increase as one moves up through the SCN stages due to manufacturer's production smoothing attitude which arises due to marginal cost and

seasonality. Kimbrough *et al.* [8] studied SCN and BWE from a different perspective, analyzed effectiveness of artificial agents in a beer game simulation and investigated their ability of mitigating BWE through the system. The study showed that agents have the effective ability of playing beer game. Zsidisin [9] provided a grounded definition of supply risk. The study focused on the sources of supply risk, emanating from individual supplier factors and market characteristics, and the outcomes of supply risk events, which involved the inability of purchasing firms to meet customer requirements and threats to customer life and safety. Jüttner *et al.* [10] clarified the concept of supply chain risk management. The existing literature on supply chain vulnerability and risk management was reviewed and compared with findings from exploratory interviews undertaken to discover practitioners' perceptions of supply chain risk and current supply chain risk management strategies. Norrman and Jansson [11] reported that supply chain risk management (SCRM) was of growing importance, as the vulnerability of supply chains increased. The main thrust of this article was to describe how Ericsson, after a fire at a sub-supplier, with a huge impact on Ericsson, had implemented a new organization, and new processes and tools for SCRM. The approach described here tried to analyze, assess and manage risk sources along the supply chain, partly by working close with suppliers but also by placing formal requirements on them. This explorative study also indicated that insurance companies might be a driving force for improved SCRM.

Deficiency of SCM

In order to fulfill the demand that asks by Production Line, analysis the strength of Logistic need to be not done because of that, the problem occurs:

- Managers do not know what the data in the company's transactional databases imply about how to integrate their activities with the supply chain activities of other managers in the company, and with those of the company's vendors and customers.
- Logistic Department can't guarantee to supply the demand that ask by Production

Line if the demand is increasing suddenly in any number.

- Logistic Department does not have its capability data on supply trim part to Production Line.

Method and Materials

In building a model for specific planning problems, it might decide to examine only a portion of the company’s entire supply chain and associated costs. One can argue that total cost minimization is an inappropriate and timid objective for the firm to pursue when it analyzes its strategic and tactical supply chain plans. Instead, the firm should seek to maximize net revenues where:

$$\text{net revenues} = \text{gross revenues} - \text{total cost}$$

A company’s supply chain is comprised of geographically dispersed facilities where raw materials, intermediate products, or finished products are acquired, transformed, stored, or sold, and transportation links connecting facilities along which products flow. The facilities may be operated by the company, or they may be operated by vendors, customers, third-party providers or other firms with which the company has business arrangements. The company’s goal is to add value to its products as they pass through its supply chain and transport them to geographically dispersed markets in the correct quantities, with the correct specifications, at the correct time, and at a competitive cost.

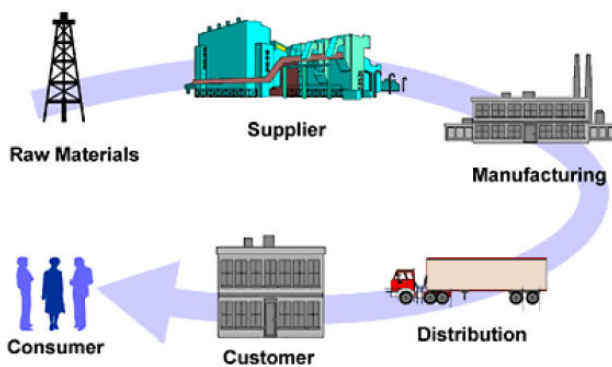


Fig. 1 SCM Roles and Flows

Strategy Formation and the Theory of The Firm

A number of important and useful concepts for analyzing supply chains from a strategic, top-

down perspective are available from the field of strategy formation and related economic fields concerned with theories of the firm and how they compete. Most thinking in these fields has either been qualitative, or theoretically quantitative in the sense that mathematical models are used to derive qualitative insights into the behavior of and competition among firms, not as templates for the collection and analysis of data and strategy.

Result and Discussion

In Supply Chain model, the concept of lead time becomes important. If the lead time from the supplier is fixed S and all demands are backlogged then that problem could be converted into an equivalent single period problem with some adjustments. The assumption of complete backlogging is critical here because the approach relies on keeping track of the system stock (rather than just the on-hand inventory). The basic idea is that one keeps track of inventory on-hand plus all orders that have been placed (but not received yet) minus any backlogged demand. The effect of orders placed in period t are felt in period $S + s$, so the approach is to consider the total demand in the next $S + 1$ periods and bring the system stock to that level. This is easy to compute for stationary and independent normal distributions since the resulting distribution is also normal. The reason that backlogging assumption is important because the state space for the dynamic program can be collapsed in to a single state (that represents the system stock) rather than having a vector of $S + 1$ variables which represent how much was delivery is expected in the next S periods in addition to the current inventory level.

Table 1 Time Taken Chart

Steel Industries	L	P	I	MA	F	V
X	M	H	Lo	Lo	M	Lo
Y	H	H	Lo	Lo	Lo	Lo
Z	Lo	H	M	M	M	Lo

Moreover, the company must revise its managerial incentive schemes so that plant managers, distribution managers, and others middle and upper middle level managers are encouraged to make decisions and pursue plans

that serve to globally optimize the company's supply chain. Creating such incentive schemes is not easy because the success or failure of global supply chain optimization in a company may involve many aspects of the company's performance that are beyond the control of the individual manager.

Conclusions

With customers becoming more demanding in their requirement of services from the suppliers, the construction of efficient and integrated supply-chain has assumed paramount importance. The contention is that considerable discipline may be imposed on supply chain management by creating modeling systems, implementing their supporting decision databases, and then adapting the organization to exploit them. While this contention may seem presumptuous, possibly even ludicrous, to someone unfamiliar with modeling technologies, we counter with the observation that an increasing number of managers in a wide range of companies are seeking to manage their supply chains based on facts, that is, data. The application of modeling systems to enhance the rationality of supply chain management flies in the face of past research into human and organizational decision making, which has shown that timeless issues of ignorance, superstition, conflict, and self-seeking behavior still abound.

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