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THE NEW SUPPLY CHAIN MANAGEMENT NEWSLETTER

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Joinet NEWS

In this issue:

The optimization of business performances necessarily comes from a proper and prompt analysis of the information shared with one's production chain

The development of technology to transmit information allows to share an ever greater bulk of data within the 'extended-company', and this is done every day more easily and at smaller costs.
Such data often are not analyzed and, as a consequence, are not used as they would deserve. This prevents companies to start processes to improve their performances. The longer the production chain, the more important these processes are.
Therefore, in case 'information integration' systems were started with one's suppliers, it would be strategic to be capable to analyze the data feeding them, and to correlate them to different situations. This way, it would be possible to dispose of the proper cognitive tools to optimize processes and the whole production chain with regard to efficiency.
Today, when production chains are longer, distortion phenomena are generated. These are linked to different elements (demand's scarce visibility, modes of orders' generation inconsistent with global performance goals, ...), which strongly affect the whole system and create behaviors and inefficiencies no firm can today allow.
The articles in the Joinet NEWS section are dedicated to this subject.

Enjoy your reading!

Fabio Rossi • CEO, Joinet S.r.l.

Exchange of information as a tool to improve performance

by Andrea Zanoni, full professor of business management at the Faculty of Engineering of the University of Bologna.

In the latest years growing interest was showed in the availability of information on market data to improve the definition of supplying and production schedules. The development of technologies to elaborate and transmit information, by making the related activities easier and less expensive, has boosted the realization of evolved forms of inter-company communication. Researchers' attention to this phenomenon can be summarized in three main periods:

1. the origin dates back to 1958 with Forrester study. With an approach based on industrial dynamics, he determined the amplification of demand variations on the inventories of the organizations at the source;
2. some experimental studies followed. These can be referred to the science of decisions, in which choices of inventory reorder and measurement are simulated to check their consequences in the production chain;
3. finally, on the basis of evidences coming from Procter and Gamble production chain, Lee and others in 1977 provided a mathematic model for the phenomenon and supported it by determining its causes.

These three contributions, although starting from different ends and assumptions, all lead to a univocal definition of the dynamics of a 'multi-echelon' system. This is made up of four independent organizations, which can represent a supply chain. The typical elements of this dynamics are fluctuation, amplification and bad timing. Virtually, when an unexpected increase in demand occurs, the source organizations' response is amplified, and they get prepared to face this phenomenon with increased production. This leads to a growth in undesired stock on hand. Its reduction depresses the size of orders and once again the effects return cyclically. The decisions' time sequence at the various stages of the production chain and the delay with which information are transmitted generates bad timing among the inventories' peaks in the different stages.

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The distortion effects which follow can be ascribed to four main causes:

1. When real demand's visibility lacks, the actors interpret the order received as a 'sign' on the course of future demand. The order extent thus mirrors a distortion, which is amplified climbing back the chain, adding the real increase in demand but also the part restoring the inventory safety level, which dropped because the increased demand had been dealt with.
2. The second driver comes from the mode with which orders are generated at the various stages of the production chain. This is affected by criteria of local advantage. For example, actors pursue economy when issuing orders by unifying their needs and limiting the number of orders. Alternatively, they can follow the rhythms imposed by MRP systems. Such a behavior, however, brings an irregularity, in which peaks and lacks of orders alternate. The real demand does not know such irregularity and this leads to its distortion.
3. Third, the purchase behavior of the various actors is not based on the dynamics of the single final demand. Promotional activities prompt wholesalers and retailers to purchase earlier than the real demand, thus bringing an additional distortion effect.
4. Finally, gaming behaviors can occur. The purchaser can suspect imbalance between demand and supply and, thinking that only a part of his order can actually be filled, he will probably overestimate it. The sum of these opportunistic behaviors leads to distortions when the producer has to determine the extent of real demand.

The lengthening of production chains, which occurred in the latest years, has emphasized the importance of the phenomenon described so far. As a matter of fact, the possession of reliable and prompt information on the sales' course and on the flows of materials from the various actors of the supply chain has become a success factor.

The adoption of tools and modes to achieve evolved exchange of information also leads to other possible consequences on the organization and management of the relationships between customers and suppliers. Such instruments could allow real time monitoring of the supplier's performance and of the dynamics of the purchaser's demand, thus favoring more efficient forms of contracts. Thinking of a more advanced hypothesis, then, they could ease the determination of innovative metrics to evaluate the performances of the firms in the supply chain, thus creating new modes to distribute the value created at the various stages.

Supplier's logistic performance: prospects for improvement based on the analysis of orders and forecasts' structure

by Bruno Mussini, Partner and Cofounder of Joinet

Since 2001, Ducati Motor has been using MaNeM, the product developed by Joinet to manage suppliers through the Internet. Besides MaNeM operative advantages, since 2004 Ducati has also appreciated its capacity to store an extraordinary and unusual bulk of data during normal use. As a matter of fact, the application records the history of orders and consignment schedules sent to suppliers. MaNeM database collects orders, orders' variations and forecasts, which Ducati has sent its suppliers for years.

Ducati has always committed to realizing forms of collaborative relations and integrated models in supply chain management. One goal is the full exploitation of the supplier's potential in production management and optimization.
The Ducati management (like that of many other manufacturing firms) perceived, and still does, the great importance of the information quality the supplier receives on its logistic performance. However, although it can be deductively understood that sending to a supplier stable orders with long consignment time leads to a high logistic performance and vice-versa, such a perception had nonetheless never been followed by numeric measurements.

By observing the data available on MaNeM, in autumn 2005 the Ducati management decided to launch a special project to measure the phenomenon described above. Another aim was to answer the question: how much Ducati orders' possible instability affects the supplier's logistic performance from a quantitative point of view?
This project was realized between autumn 2005 and summer 2006. The actors involved were Joinet, Ducati and the University of Bologna C.I.E.G. (economic-management engineering study center). The work team was made up of Mr. Paolo Barbieri of C.I.E.G., Mr. Elio Roversi, Ducati planning manager and Mr. Domenico Biondi, Joinet technical manager. Prof. Andrea Zanoni, C.I.E.G. director and Mr. Bruno Mussini, Joinet partner, participated and supervised the project.
The project dealt with the definition and calculation of innovative metrical systems. The work plan focused on the following aspects:

- Definition of indicators to measure the quality of suppliers' logistic service. This aspect was definitely the easiest. There is a great experience in this field. Ducati already disposed of several indicators, partly calculated by elaborating the data automatically recorded by MaNeM, and partly by exploiting the management database. For example, MaNeM has several reports allowing to measure suppliers' punctuality, reactivity and flexibility.
- Definition of indicators to measure Ducati schedules' and orders' stability. This aspect, on the other hand, proved to be the most complex. There was extremely limited experience. The C.I.E.G. carried out a survey, which showed that in the world there is short significant experience in this field, and all of it is in the USA. Therefore, about ten new indicators were created, all of them from the data automatically recorded by MaNeM.
- Definition of the mathematic model allowing to check the existence (and in that case, the extent) of mathematic correlations between the two different groups of indicators. That was the most important effort with regard to research.

What defined above was then applied to 12 months of data on 657 item codes, which Ducati orders to 65 suppliers, and which cover the 80% of Ducati turnover of purchases from those suppliers.
The project final results were surprising. The mathematic correlation is unequivocal. A certain value of orders' instability corresponds to a certain value of suppliers' logistic performance. Therefore, a certain improving in orders' stability could evidently lead to a precise and predeterminable optimization of the logistic service quality coming from suppliers. Today Ducati is studying the best possible use of these results, and that is why they are kept secret at the moment. Ducati, Joinet and C.I.E.G. are available to supply more information on the methods used.

Bringing the Supply Chain to the firm core: Brevini Riduttori centers the target with MaNeM

Brevini Riduttori, established in Reggio Emilia in 1960 by the brothers Renato, Luciano and Corrado Brevini, today operates on the international scene. Its core business is the production and distribution of 'epicycloid' reducers, one of the most advanced technological solutions in Power Transmission.
The company has always stood out for its 'innovative' approach, not only towards its products' development, but especially with regard to processes like how to realize solutions, the techniques and materials employed, costs rationalization, lead time cut.

brevini riduttori
PLANETARY PARTNER

The increasingly important role of the supply chain within the total company production chain drove the company to structure a supply chain responding to criteria of maximum integration and coordination.
The creation of a new selected 'vendor list' of qualified partners capable to manage more than a single working step or to supply finished products led to the definition of a core of approximately 30-35 Italian suppliers out of the 170-200 moving around the firm. Brevini aims at strongly integrating with these selected suppliers in order to enhance its whole production process.

As Gianpaolo Berghenti, Brevini General Director, points out, 'one of the main needs was to get equipped with supports, which could on the one hand remove all manual operations related to the management, updating and filing of documents, such as orders and order lines. On the other hand, the need was to allow the greatest sharing of all data flows in view of a rationalization and complete harmonization of inter-company processes'.

The first steps towards these goals were the adoption of the management platform JDEdwards, brought to the company in 2000, and the project to create a technical portal as a support to exchange information on the technical documents among the different actors involved in the supply chain.

Fabrizio Lasagni, Director of Purchases in Brevini, tells: 'in 2003, again aiming at harmonizing the different production activities both inside and outside the firm, Brevini Riduttori chose MaNeM, the on-demand software developed by Joinet. Although the existing portal did ease inter-company communication, the need remained for a platform better supplying an integration interface and a single mode of operation capable to connect and allow communication among the different suppliers'.
It was thus essential to put at the users' disposal a solution not disrupting the logic and methods used so far, but rather proving easy to employ and not invasive. In addition, the company saw in MaNeM a tool capable to generate real 'value added', allowing to continue and improve a path, which had already witnessed the partial autoimmunization of some procedures, such as purchase orders' forwarding.

Today MaNeM is used by 28 suppliers – some of them belong to the Brevini group – to manage the whole order cycle. The company from Reggio Emilia has involved new users and extended MaNeM employment also to manage bills of lading. Finally, the company is considering the possibility to employ MaNeM platform for invoicing and quality modules.

Villan Caleffi, Manager of 'MaNeM project', explains: 'its capacity to generate and spread new information unknown deductively was strategic in order to monitor the ongoing activity and to strengthen the supplying system and purchasing activities'.

Brevini Riduttori considered MaNeM easy implementation, its full integration with the management program used and its architecture being flexible and open to new evolutions as key elements in stimulating the partner firms towards a full and fervent growth and evolution path of its management processes in an integrated view.

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