Organization Integration of the Supply Process

Integrácia organizácie dodávateľského procesu

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Abstract

This paper evaluates the importance of procurement towards reducing costs of industrial production. It gives review of Supply Chain as organizational concept and it's parts. Degrees of development are presented through evolution of organization integration procurement process.

Keywords: supply chain, supply chain management, participants in the supply chain

Abstrakt

Tento článok hodnotí dôležitosť zamerania sa na znižovanie nákladov v priemyselnej výrobe. Dáva prehľad o dodávateľských reťazcoch ako o organizačnom koncepte a jeho súčastiach. Jednotlivé stupne vývoja sú uvedené prostredníctvom vývoja procesu zamerania sa na integráciu organizácie.

Kľučové slová: dodávateľský reťazec, manažment dodávateľských reťazcov, účastníci v dodávateľskom reťazci

1 Introduction

During sixties at 20th century world of computers is introduced in world economy. Development of information and communication technologies starts to be reachable for everybody. Availability of precisely and swift information through internet became standard. Internet starts to be economical usual way of transactions and potential way of B2B (business-to-business). Over '90 unstoppable globalization process brings global competition in reality [1]. It requests merge of enterprises into alliance with the purpose of reducing costs, increase quality, higher protection of environment and social rights of employers.

In every industry, production's and service's procurement is very important. One of very important part of alliance is affiliation of supplying departments. It is beginning of every industrial production. Material costs in industrial production can reach 40-80% of total production costs [2]. This costs need to be reduced and supplying organizational units can help in that through providing of raw or semi finished products with lower or acceptable price.

Alliance in Supply Chains (SC) enables provision of goods with lower prices and more important with accurately delivering on time. These advantages are presented as a result of competition between providers in Supply chain what result in lower price and increasing of product's quality. Concept includes an effective net with purpose of business improvement and elimination of duplication of work [3].

Today, respectable number of global companies have own Supply chains and list of own providers. Suppliers have to fulfill their orders on time if they like to stay on that list. If they become unsecured, company put them on ″black list″. Suppliers which coming on ″black list″ they will back on normal list really difficult, once.

Today supplying process has some differences with previous one. Previous supplying process has only function to collect the orders. Supplying today is expanded with ecology demands, market research, stock reduce demands, transportation and warehousing problems.

2 Supply chain

In early nineties at 20th century average company's time to produce and to deliver the final products from warehouse to customers was 15-30 days, sometimes even longer [1]. Using of standardized forms in a process, from orders till delivery to the costumer, with manual or computerized systems was typical scenario. When something going wrong and warehouse is without stocks, production would break, it will cause the total time of delivery will expand and will resulted with loosing of orders.

If everything going fluently the average time of delivery was long. To compensate long delivery time it's became usual to concourse of stock. Costs of stock were big and good practice was to avoid them. On the other side stocks has to exist because unforeseen situations because can effect on SC and bring system to collapse (e.g. bad forecast, mass ordering...). Intention is to stocks need to be optimized or absolute removed.

Mass change happened as result accessibility of information. On first view, Supply Chain can be misty concept, because exist internal and external parts of Supply chain. Additionally, is not clear till what limits in supplying process are involved the external suppliers and where internal part of supply chain started. For the most managers Supply chain have big effect on elimination of duplicate activeties [3].

2.1 Supply chain

Supply chain is concept which is used to initialize organization and information integration of supply processses in company (internal part of supply chain) and their connection with processes from outside which are included in creation of values (external part of supply chain), with aim to optimize the process (materials, products...) and increase the new value [4].

Supplying processes include external suppliers of materials, different company functions (procurement, construction, design, production, sale, logistics) forwarding, trades and buyers. All together make virtual process organization. In supply chain tasks of planning, developing, supplying, producing and distributing are to adjust material and services flow with information and financial transactions. Key processes of supply chain are processes of supplying, producing and distributing.

Supply chain includes four fundamental processes:

- acceptance customer order
- procreation of goods
- production
- delivery

It can include suppliers of suppliers. Producers ensure the raw materials, parts and services. Distributors pack the products and deliver them to the customers, who have their requests on price, on quality, on delivery and service. If necessary, it can include customers of the customers.

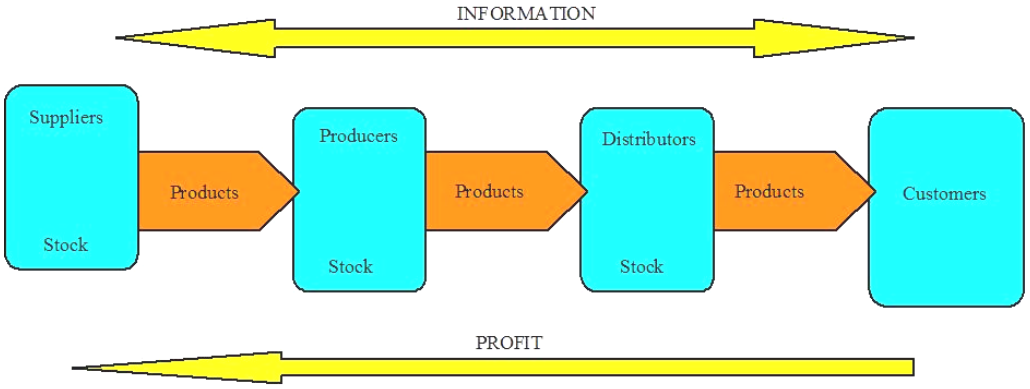

Fig. 1 *Schematic display of Supply chain*
Obr. 1 *Schematické zobrazenie dodávateľského reťazca*

2.2 Evolution of organizational integration of supplying process

There is four degree of evolution of organizational integration of process of supplying [5].

On first degree, can be talk about supply chain as entire process. Care about supplying handle every function separately. In present conditions, starts from the market request. Following these demands makes the production plan within technical and economical capabilities of the enterprise. Then proceed with development of the product, with exact functionality and level of quality specified in production processes, and materials follows the sketch of the product. Then introduce the algorithm which defines the sort and quantity of materials and terms of manufacturing. This algorithm is computer program named **Material Requirement Planning (MRPI)**. On production demand, supplying function makes the strategy and operational plans for supplying. Every functions leads care about processes inside their borders what cause that supply of some functions going to be bellow optimum.

On second degree of integration, perform functional integration supply process of materials and their use in production. Systems for material planning (MRPI) have supplement with programs for production planning, stock control and planning working facilities. With this program it's possible to control supply and production with customer orders. This planning is named **Manufacturing Resource Planning (MRPII).** With MRP II is conducted only functional integration of flow of material. There is capability to reduce the material flow's time, still. In this purpose, all functions have to make better relationship. A logistical connection develops internal integration of supply process with production and distribution processes.

When these processes relates with financial and design affairs, and implementation of information and communication technologies as support, Manufacturing Resource Planning begins with third degree in integration development supply process named **Enterprise Resource Planning (ERP)**.

On fourth degree, integration of supplying process, planning system and resource planning exceed the company borders. In this phase occurring the network of virtual companies. This is net of independent companies which are integrated for limited time, with purpose to makes common supply tasks in processes of transformation which some products coming thru, from raw material to final product. At the same time procurement decisions have crucial purpose to increase the efficiency of all production process. Procurement's decision effects on design of product, on logistic, on production and sale. Interdisciplinary team work has to decide aims and strategies of supplying process, to create the flow of material and to decide which software will be used in purpose to optimize the supply chain.

Aim is synchronization of production processes and delivery with minimal material flow's time and optimal stocks, minimal production's time and better usage of capacity. Is necessary to be planned and to be controlled all processes in supply chain with regard to chain of making value. Here is word about Supply Chain Management, SCM and Value Chain Management, VCM. Value Chain Management and Supply Chain Management are organizational concepts which have small differences but they follow the same aims. Supply Chain Management put accent on logistical aspects and Value Chain Management put accent on value [1].

2.3 Supply Chain Management

Supply Chain Management (SCM) includes flow of material and flow of information thru supply chain with synchronization of all parts.

Traditionally, every part stay aside, focused on own aims. Today it is not enough. It is necessary to combine the capacity of all parts to reach the aim. Aims are customer satisfaction, delivery of quality product on estimated time with minimal price. Some enterprises try to control supplying within vertical integration, but when is not enough this measure they buy the suppliers. When buy the suppliers, they buy and their problems and risks (stock inventory). Acquisition is adequate only when supplier is monopolist or has significant market share. Then, company will increase own position on the market.

Supply Chain Management became more important in conditions when manufacturing integration are reduced because companies are orientated on their key affairs. As consequence new structures became to generate – virtual companies, strategic alliance and network companies. In this situation, importance of integration process increase, same as the importance of supply chain. A partner has to anticipate needing and requests of users. For this reason they use common knowledge bases, integral organization solutions (code systems) and electronic data interchange (EDI). These solutions help them to bring adequately business decisions and coordinate supply processes in real time. All participants in supply chain are important end influence on final result. This is win-win business. There is not rationalization of cost on partner's back. In supply chain all suppliers hold own commodity on own stock and minor

volume stock on user storage. High volume commodity delivers to customer just in time (JIT).

Components, with long period of production, are ordered accordingly to forecast of selling terms. Calculation and paying process in supply chain are change (using of purchasing card and collaborative defray of all transactions: Billing portals). All above mentioned exist to optimize **Financial Supply Chain Management (FSCM)**. Supply Chain Management solutions generate the competition advantage because of security, delivery accuracy and reduced material cost. Independently about sector of industry and size of company, with SCM can be reached 40% enlarge of delivery deadline respect and delivery time to be reduced for 30 %. Average production time is reduced for 10%, and stocks are reduced for 20%. At the same time capacity utilization is improved for 10% with saving costs in procurement for 8-10% and in sales for 3-5%. These improvements are not visible only in account and shareholder value, but they are important parts of improvement strategy to reach business excellence and to improve the competetiveness [6].

Essence of Supply chain is affiliation of all parts and to share common risk. Members of SC has to communicate, to share the information, to make close collaboration and trust each to others.

2.4 Information in SC

Information is core of connection between all parts of Supply Chain. Utilization of information technologies enable:

- centralization and coordination of information flow
- integration of transport, distribution, ordering and production
- direct access to global, regional transport and distribution channels
- placing and tracking each object within SC
- adjusting of all demands against suppliers
- access to all information inside and outside of each enterprise
- data sharing
- updating of stock's data in real time

Actual information technologies which SC uses are:

- electronic business (e-business)
- electronic data interchange (EDI)
- barcode
- internet
- intranet and extranet

Electronic Business replaces physical process with electronic one. Transactions between Supply Chain members are performed by electronic media. This enables us to reduce the transaction costs, to reduce the transaction's time and bigger assortments for customers.

EDI (electronic data interchange) exchange the business documents between two computer's terminals. In the past was organized through LAN or WAN, today via Internet.

Barcode contain information about product. His description, source, destination, handling, price... When reading the barcode we take the raw material information into computers and allow us to all members of SC be informed about data of raw materials, stock condition... It's possible to mark all kinds of raw materials, package, cars and etc.

3 Participants in the Supply Chain

In simplest form, Supply Chain is composed from enterprise and its suppliers and its customers, Figure 2. This is the key group of members whish creates a **simple supply chain**. **Extended supply chains** contain additional participants.

First, there is the supplier's supplier or ultimate supplier at the beginning, and then there is the customer's customer or ultimate customer at the end of an extended supply chain. Finally, there is a whole category of companies who are service providers to other companies in the supply chain. These are companies who supply services in logistics, finance, marketing, and information technology. In any chosen Supply Chain there is some combination of companies which perform different functions. There are producers, distributors or wholesalers, retailers, and companies or individuals who are the customers, i.e. the final consumers of a product.

Producers or manufacturers are organizations which make raw materials, intermediate goods or finish products. Producers of final products use the raw materials and subassemblies made by other producers to create their products. A product can also be a service.

Distributors are companies that take inventory in bulk from producers and deliver a bundle of related product lines to the customers. Distributors are also known as wholesalers. They, typically, sell products in larger quantities than an individual consumer would usually buy. Distributor delivers products when and where the customer wants them. A distributor can make function of storage, transportation and service. A distributor can also be an organization or broker between producer and customer. Then he never takes ownership of product. This kind of distributor performs mainly the functions of product promotion and sales. In both these cases, as the needs of customers evolve and the range of available products changes, the distributor is the agent. He continually tracks the customer needs and matches them with products availability.

Retailers are organizations which sell the products to customers in small amount.

Customers or consumers are any organization that purchase and use a product. Customer organizations purchase the product in order to incorporate it into another product or they resell to other customers. Customer is final end user of a product. He buys the product in order to consume it.

Service providers are organizations which offer their services to producers, distributors, retailers and customers. These are trucking companies and public warehouse companies and they are known as logistics providers. Financial service providers deliver services such as doing credit analysis, and collecting on past due invoices. These are banks, credit rating companies, and collection agencies. Some service providers deliver market research and advertising, while others provide product design, engineering services, legal services, and management advice. Still other service providers offer information technology and data collection services. All these service providers are integrated on higher or lower level into the continuing operations of the producers, distributors, retailers, and consumers in the supply chain.

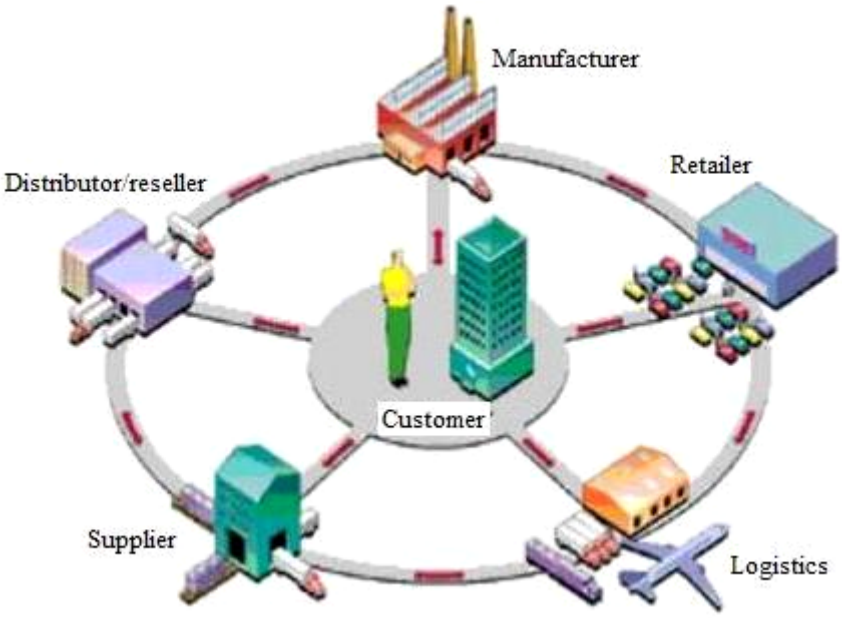

Fig. 2 *Participants in the supply chain*
Obr. 2 *Účastníci v dodávateľskom reťazci*

4 Conclusions

Alliance in supply chain ensures continuous and quality procurement. Industrial production today request production without stock apropos production concept just in time. Concept just in time can support only quality supply chain. In this paper are indicated procurement effects in reducing production costs as important factor in production. Today tendency is bigger information of procurement and making bigger competition inside supply chain to accomplished high quality level.

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