

SUPPLY CHAIN MANAGEMENT IN AVIATION LOGISTICS PROCESSES

Melinda Hátráková - Ján Kolesár

The aim of this diploma thesis is to bring appropriate view of the use of the logistics supply chain in the technical-operational and service processes in air transport and the use of supply chain management in aviation. In the first chapter are characterized by different types of logistics chains. The next chapter focuses on clarifying issues supply chain management. The third chapter describes the logistics supply chains operating processes in aviation. The last chapter focuses on the application of supply chain management at Boeing.

Keywords: Active elements of the logistics chain, airlines, aviation, customers, logistics chain, logistics, order, passive components supply chain, suppliers, supply chain management

1 INTRODUCTION

Integral part of the transport is logistics. Logistics can be defined as an interdisciplinary science that deals with coordinating, harmonizing and linking optimization flow of raw materials, semi-finished products and services, but also information flows and finance in terms of customer satisfaction for the lowest outlay. Logistics is part of business strategy and management concept as a company, starting from the customer and is also a rationalization tool. Is a tool for customer acquisition and retention, because it provides benefits which firms that engage in logistics, acquires greater competitiveness and a higher market performance. Logistics activities are carried out through the logistics chain.

2 LOGISTICS CHAIN

A plurality of elements formed by the flow of material and information (finance) required to achieve a specific goal is called logistics chain. Logistics chain consists of active and passive elements. Active elements provide movement and manipulation of passive elements and perform non-technological operations with these elements. Among the active components include technical means and facilities for handling, transporting , storing, packaging and fixation and other auxiliary means of which is ensured by using the change of material or preserve passive elements. Passive components are subject to transport and handling operations, their movement is seen as passive as it moves through the transport and handling. Among passive components include raw materials, basic and auxiliary materials, parts, work in progress and finished goods, packaging and transportation equipment, which makes the movement of their products, parts or raw materials, unless their movements performed separately (eg as re feeder reusable) sales, as its removal (recycling , disposal) is also subject to the care of the manufacturer or distributor of goods and information, the movement (or movement of money) is a necessary prerequisite for the material motion.

2.1. Types of logistic chains and their use

Due to the diversity of businesses, there are three types of logistics chains. Traditional string type with discontinuous flux used for the commercial logistics. The

importance of this type of chain is to manage production based on forecast sales , which are compiled on the basis of periodic evaluation of sales . The hallmark of the chain with a continuous flow of the structure, which is a simplified ie. minimum storage and inventory. Chain with synchronous flow is composed solely of production, the completion and consolidation with customers and suppliers.

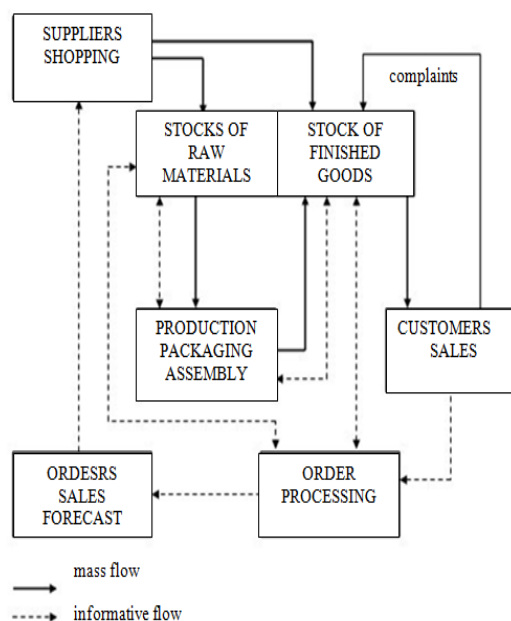


Figure 1 Logistik chain

Logistics chains are used in the operation of air operations that may be technical and operational service. Between technical and operational processes include the operations of air carriers, activities related to air transport aircraft maintenance and airport staff training and ensuring operational funds.

An example of the logistics chain for aviation technical and operational processes is the provision of means winter maintenance at the Prague airport. Supply chain consists of the procurement process of technical equipment. Mostly most of the equipment comes from Germany. Winter maintenance equipment suppliers are Bucher, Boschung and Clearway. Another example is the procurement of funds for summer maintenance at the airport Ostrava . Equipment suppliers are companies Dagros Ltd. and BV - Technology SpA

3 SUPPLY CHAIN MANAGEMENT

SCM is one of modern management strategy to optimize all activities and systems to ensure the delivery of products and services from raw materials suppliers through their production or development through distribution channels to the end consumer. The approach is based on the idea of partial optimizations subsystems any company that does not lead to an overall optimum. Therefore, efforts to optimize the supply chain goes beyond one company. SCM is the term for systems, resources and procedures designed to coordinate materials, products, services, information and finance, which flow from raw material suppliers through the processor, manufacturers, wholesalers and retailers to consumers. The whole process starts by entering orders, their assessment and treatment, continued production and supply of goods and services and ends feedback.

The objective of SCM is to achieve efficient utilization of all resources entering the process, the timely delivery of all products and services, process speed, minimizing downtime and zero losses. Supply chain management is divided into the planning, acquisition, production, delivery and recovery. Important activity that has a great impact on resource efficiency in the supply chain planning. It is extremely important to choose the right strategy for managing all the resources that are used to satisfy the customers. Part of the determination system of instruments for monitoring the chain that operates efficiently, consuming reasonable costs and provides customers with high quality and value. Acquisition is referred to as the purchase or procurement.

Includes choosing the right suppliers of raw materials, components and services necessary to produce the product or service to create. Includes setting relationships with suppliers, including appropriate payment and delivery terms and application of appropriate criteria for the evaluation of suppliers. Processes of supply includes income from suppliers, their control, storage and supply to the manufacturing or processing services company. Production includes the processes required to transform raw materials and components to the product or processes leading to the creation of services. Part of quality control, packaging and preparation for delivery. Delivery includes group activities, which is usually also referred to as logistics or distribution. This is the receipt of orders from customers, appropriate deployment of finished product warehouses, and coordination of elements transporting goods from the manufacturer to the customer.

Part of the issue of invoices and other relevant documents. A significant proportion of the management and coordination of transport and traffic. Return to special schemes for products advertised receive from customers and their substitution products without errors. Includes Poor defective products, income returnable packaging, return defective parts or returnable packaging supplier. Is an integral part of getting feedback from customers.

3.1. Development SCM

In the history of supply chain management can distinguish five main phases of development. In the first phase called. Phase formation was first defined and used the concept of SCM. This defined the term in 1982 Keith Oliver. The basics of supply chain were based in the textile industry with rapid response and later to respond effectively to consumers in food. Due to fierce competition in the textile and apparel industry worldwide, U.S. leaders began to analyze the supply chain. In 1985, Kurt Salmon Associates (consulting firm) has been entrusted to carry out this analysis. The results of this analysis showed lead times in the supply chain (from raw materials to consumer). Supply chain lasted 66 weeks from 40 weeks, the products were in stock. Long supply chain has resulted in large losses for the industry in order to finance inventories and lack of the right product at the right place at the right time. The result of this study was to develop a rapid QR strategy. Quick strategy is a partnership where retailers and suppliers work together to be able to respond more quickly to customer needs through information sharing. The concept of SCM has acquired importance in beginning 20. century, creating a production line. For this phase is characterized by the need for major changes, processes, cost reduction in production and extension programs focus on the use of Japanese management practices.

The second phase is the phase of integration, where a basis for rapid industrial strategy adopted UPC codes and EDI. UPC is used in the food industry and EDI is a set of standards for the electronic exchange of data between companies. Traders began to install POS (point of sale) system for scanning transmission of information on sales to distributors and manufacturers. QR maximize the profitability of dollars of inventory location, where and when needed dollars on the basis of point of sale data. QR includes marketing support information, discounts and forecasts the production and distribution plan.

The next phase in the phase of globalization emphasizes the global systems of supplier relations. This period is characterized by the expansion of the supply chain across the border to other countries. The use of global resources in the organization of supply chains can be observed for several years in advance, for example in the oil industry. Companies integrate global resources to its core business. In this phase there is a globalization of SCM in society to enhance competitive advantage. Societies achieve this goal by reducing costs through global security of supply.

The fourth phase is called Phase specialization. This began in the 90s of the last century. Industry focuses on core activities and specialization. Specialization includes the establishment of consultancy services, inventory management and collaboration carriers and logistics planning supplies, their performance and design. This period is characterized by the presence of changes between suppliers, logistics service providers and

customers. These changes affected the supply chain infrastructure, the establishment and maintenance of electronic communication between trading partners. The effective functioning of the company missed unimportant activities and procedures to ensure that such activities hire outside companies. This change of having to check the whole chain from above.

The last phase Phase SCM 2.0. is characterized as evolution processes, methods and tools using Web 2.0., which can be described as a trend in the use of the Internet network. This network enhances creativity and information sharing and collaboration between users. Web 2.0 . focuses on the information available on the internet. Through SCM 2.0. combine procedures, methods and tools so that business a success.

3.2. SCM in aviation

Currently, the trend is the use of digital aviation supply chain. This term originated in the media industry, but it is also used in the aerospace industry. Examples of digital supply chain management for airlines and IATA has created an e-Cargo, EMD and e-tickets. The aim is to simplify the supply chain airlines. Essential elements of the supply chain for e-tickets, airlines, global distribution systems, travel agents and passengers. Using digital technology used on board the aircraft, through which airlines can save costs. Singapore Airlines on board their aircraft instead Magazine iPad offers on-y fun and weighing 650 grams. In this way, a reduction in weight and costs in the amount of \$ 440,000 to 11.5 kg.

4 APPLICATION SCM TO BOEING

Principles of supply chain management can be applied to Boeing . Beneficial use of SCM is to reduce the cost of the supply chain . Company until 2023, plans to open new factories through which increased the number of aircraft produced 36 000 per year . Supply chain management is applied in areas related to orders , order fulfillment, facilities, customers and suppliers. The company takes its orders from airlines and leasing companies . To meet the needs of companies make use of Boeing - order process as a type of customer orders. After the establishment of the order follows the order fulfillment process. Orders are fulfilled in the period of 12-18 months , depending on the product. The company manufactures aircraft in its four major facilities in the U.S., three of which are the installation of different types of aircraft. The company's customers are airlines and leasing companies. In the manufacture of the aircraft company buys individual parts needed for aircraft. Contractors supplying components for the construction of aircraft, engines and avionics.

In the field of business each company to decide uses various tools to facilitate decision-making. Boeing's decision-making and in determining the degree of progress the company is used by the forest. The company uses this tool for the purpose of self-assessment, in which

business processes are decomposed into three main categories transformation / leadership, life cycle processes and authorization infrastructure. Decisions on important issues of the company uses the services of the consulting firm Booz, Allen & Hamilton.

The effective functioning of vital importance that the actual internal processes and business processes to the customer. In-house processes include activities such as product portfolio management, capacity planning and production and inventory planning. Between business processes to the customer include customer relationship management , demand planning , order management and sales and logistics support.

BIBLIOGRAPHY

- [1] <http://projekty.fs.vsb.cz/147/ucebniopory/978-80-248-2731-5.pdf>
- [2] <http://www.systemonline.cz/clanky/scm-supply-chain-management.htm>
- [3] <http://www.google.sk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CDkQFjAB&url=http%3A%2F%2Fwww.st-andrews.ac.uk%2Fbusiness%2Fdistance%2FLogistics%2FWorkbook%2FFurther%2520Reading%2520%26%2520Support%2FDefining%2520supply%2520chain%2520management.doc&ei=QcQiU7aXHILiywPq7YLODA&usg=AFQjCNFKXna4zYkaNjT5BF9B62FxZCrNFg&bvm=bv.62922401.d.bGE&cad=rja>
- [4] <http://www.tnooz.com/article/airline-industry-digital-supply>

AUTHORS ADDRESSES

Bc. Melinda HÁTRAKOVÁ, TUKE, Faculty of Aeronautics, Department of Aviation Engineering, Rampová 7, 041 21 Košice, SR, melindahatrakova@gmail.com
 Ing. Ján KOLEŠÁR, PhD., TUKE, Faculty of Aeronautics, Department of Aviation Engineering, Rampová 7, 041 21 Košice, SR, jan.kolesar@tuke.sk