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CONDITIONS FOR IMPLEMENTATION OF LOGISTICS INTO COMPANIES OF CHEMICAL INDUSTRY IN CZECH REPUBLIC

Vladimíra VLČKOVÁ
Department of Economy and Management of Chemical and Food Industry,
The University of Pardubice, CZ–532 10 Pardubice

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Status quo in implementation of logistics into companies of chemical industry in the Czech Republic is presented. The reasons that inhibit quicker assertion of logistics into these companies are discussed. Recommendations for a successful implementation of logistic system are given. Unfinished privatization and the therewith related frequent changes in ownership in this branch of industry was identified as the most significant problem.

Introduction

Insufficient attention is given to the development of logistic conception within the scope of present method of management of Czech companies of chemical industry. Logistics does not struggle so significantly as in other branches of industry. Practically no examples of application of logistic concepts in companies of chemical industry can be found in the scientific literature dealing with logistics either. A better situation is, for example, in companies of other industries as ma-

Table I Research focussed on logistics realised in Czech companies of chemical industry

Phase of the research	Title of the research	Method of the research	Questioning	Aim of the research
I. phase 1999 – 2000	Organizational set-up	Written questioning, completed with phone and personal questioning	46 companies from all 3 aggregations of chemical industry	1.To describe up to now development and status quo in implementation of logistics. 2.To analyze organizational set-up. 3.To identify activities falling within department of logistics cognisance
II. phase 2000 – 2001	Analysis of conditions for implementation of logistics	Personal questioning	Manufacturing company	4.To describe and analyze conditions for implementation of logistic management. 5.To identify barriers and impulses of logistic management
2000 – 2002			Trading company	
III. phase 2002	Creation of logistic conception	Personal questioning	Trading company	6.Recommendation for further process of creation and implementation of logistic conception
IV. phase 2002 – 2003	Trend of the logistic management in Czech companies of chemical industry	Written questioning	42 companies from all 3 aggregations of chemical industry	7.To describe status quo in implementation of logistics 8.To find out organizing support of logistic management 9.To identify methods of management, functions and competency of logistic department 10.To identify barriers and possibilities of the enforcement of logistic management in company.

chinery, electronics, printing and mainly car industry.

The aim of the realized research in Czech companies of chemical industry was to identify the specifics of Czech chemical industry, which inhibit or slow down the process of implementation of logistics into companies of this industrial area. Knowledge and understanding of the role of these specifics should contribute to the speeding and increasing the quality of the process of the logistic concept formation and to its implementation into companies of chemical industry.

Aims of the Research

Practical research was realised in four phases. Forms of the individual parts of the research and their aims are given in Table I.

Results and Discussion

Different concepts of logistics can be found in different companies. Logistics is described in scientific literature by many definitions, which are permutated and supplemented in agreement with new findings and experience from practice [1]. The conceptual apparatus is broadened and in this branch contentual aspect is changed for well-established terms. A common feature of all definitions is that logistics concerns with system management, optimization, coordination and synchronisation of all essential activities (which create value) in chain in such a way that defined aims (effects) bent on satiation of needs and desires of customer are achieved with maximum flexibility and efficiency.

Logistics was reduced only on distribution sector in the first phase. All basic functions in the company are already covered in the second phase. But logistics is applied separately, only in the scope of separate functions or their corresponding subdivisions. Our research stated that logistics occurs in these phases in a majority of Czech companies of chemical industry [2].

In the third phase emphasis was put on the integrity, and integrated logistic chains are going to be created and systems interconnected with suppliers, distributive and trading network down to final customers. Horizontal integration of logistic chains takes place. Effort to fulfil expectations of the market is typical for conception of logistics in 1980s and early 1990s. This means the ability to react on already incurred requirements, to do that planwise and to minimize logistic expenses, i.e. to compete with price [3]. Logistic system of a company has a position of tactical executor of marketing dispositions: how to deliver the right ware at right destination in the right amount, quality and time limit with the minimum expenses [1]. Rising of the level of customer services became the tool of competitors fight in the following years. Therefore the vertical integration, i.e. connection and logistic alignment of production with development, creation of the strategy and marketing, takes place as well. Thus company functions starting from operative up to strategic level are harmonized [1]. Majority of companies in countries with advanced market economy occurs at present time in this third phase.

Integrated logistic systems will be optimised as a whole in the fourth phase. Development is approaching the stadium when the whole supply chains will compete instead of individual companies. These chains must find out how through shared information they can create a higher value for the customer with lower expenses [4]. This change in position of logistics is indicated in the present

definitions which characterize logistics as follows: time-based placing of sources (ware, but also manufacturing and development capacity, workers and information) or strategic management of integrated chains (it involves purveyance, production, distribution but also waste disposal, associated transport, stocking and information technology) [3,5,6].

Logistic management can be understood as alignment of company management on specific logistic aims and tools. Other aims of the company are not eliminated by this way but are completed. It is evident that a modern management of a company must be understood in an integrated conception, i.e. not only principles of marketing, total quality management and environmentally orientated management but also logistics must be applied simultaneously. Application of principles of logistics thus improves management of a company to a qualitatively higher level.

Our research showed that owners and management of majority of the monitored companies feel not only the need but also the necessity to operate company in the logistic way. However, they are not successful in implementation of logistics in conception of integrated management of mass flow and therewith connected other flows. The results give evidence of worse situation in chemical industry in comparison with other branches of industry. Situation is better in companies with foreign management as these companies have predetermined system and direction of their development. Companies oriented to the production of pharmaceuticals are a certain exception; their logistics is at higher level than that in other companies of chemical industry.

The overall state of logistics in Czech chemical industry still can be characterized as a rather initial stage of implementation of logistic concepts into management. Even if in some companies the departments of logistic are created, they have in majority of companies responsibility only for partial activities without combining all of them. Logistics is restricted in these companies only to certain functions or activities (most often transport, furthermore, distribution, purchase and stocking) or it already covers all fundamental functions of the company but it is applied separately. This results in isolated treatment, and from point of view of the whole company, sometimes even incorrect treatment instead of resulting in a synergistic effects.

In spite of the fact that 60 % of 46 companies monitored within 1999 – 2000 had their independent department of logistic, an integrated logistic system has not yet been created in any of them. Departments of logistic originated only since 1991 and at different levels of management. There is not sufficiently qualified attention given to the dilemma of creation of logistic organising structure within the companies. Therefore, suitable conditions for the so-called activity-supporting approach for fulfilment of wishes and requirements of customers have not been yet created. We can see some changes in organising structures, establishment, interruption and eventually reestablishment of departments of logistics. Their new,

better organising integration and their suitable contents are sought. In many cases, for example, a department ensuring transport, stocking or distribution was renamed "department of logistics" only. Their tasks, methods of management, communication and competence remained practically unchanged. The same can, unfortunately, be said about the level of knowledge of their workers about logistics applied in companies. Also the departments on which extraordinary requirements were laid in the given time (such as those connected with a change of orientation of the company to the world market) were renamed "departments of logistics". Another reason for creating such departments was job cuts ordered by owners of the companies. This resulted in changes in organisational structure dictated by effort to extend some activities and tasks outside of frame of existing departments, and/or to fuse some departments etc. The titles of these departments did not correspond to actual tasks and they were renamed, for example, "department of marketing and logistics" and/or simply only (inaccurately) " department of logistics". Thus they were not newly established departments whose aims would be coordination, synchronisation and optimisation of mass fluxes and other therewith related fluxes within the whole company. In connection with this fact it is worthwhile to say that the processes (not the organization or its departments) should be reorganized in accordance with logistic principles. Companies reorganize the work of people, which they do within the departments, and not their departments.

Thus the existence and activity of logistic departments in companies of Czech chemical industry are not generally in direct correlation with the systemic concept of logistics in the company.

On the basis of further experience from the researches, the following conclusions can be made about the reasons of the situation of logistics and conditions for their implementation into companies of chemical industry in the Czech Republic.

The companies monitored struggle with the same problems as the majority of Czech companies. These problems have their roots in the past, when companies of chemical industry in this country were mainly orientated on domestic and east markets and on high self-sufficiency in key products of raw materials character. This resulted in broad assortment and large tonnage products. However, in comparison with worldwide companies in the chemical industry these are actually low tonnage productions and the savings from bulk production is lost. The products produced by Czech companies are therefore often on the limit of economic carrying capacity. Low productivity of labour of ordinary workers as well as the efficiency of top management deepens this problem.

Therefore, the reclassification of manufacturing programme takes place in many companies of chemical industry. Profitability of particular productions and products is reevaluated. There is an evident tendency to change over to small tonnage specials, which would be manufactured on flexible, multipurpose

production units, which would make it possible to change flexibly the range of products. *These changes already create, or they will create pressure on logistic management of companies of chemical industry.*

All these changes require investment. However, a large portion of this capital was directed to ecology after 1990. Many companies of chemical industry do not have enough capital until now. They do not have their own research and development department, they have old-fashioned technology and equipment, many of them struggle with pending claims and thus with secondary insolvency. *Thus mainly the financial demands of investments exceed the economic capacity, and the high energy requirements are the most important limiting factor of further development of chemical industry in the Czech Republic at these days.*

Unfinished privatisation of chemical industry and the accompanying frequent changes in ownership play a negative role as well. They result in frequent changes in management even at key positions, in changes of organizational set-up of the company according to ideas of the owner(s), disturbance of continuity in management. Proprietary instability and sometimes even non-transparency of proprietary relations entails, besides difficult attracting of new customers, eventual loss of present customers, also difficult acquisition of high tech and attracting of freign capital in general. This causes nervousness, instability, low motivation and downgrade of firm culture within the company itself. The situation is further worsened by extensive staff reductions, which in many cases are done without any deeper analysis. Particular competences and responsibilities are not clearly determined and the system of remuneration does not support systemic, cooperative way of thinking. Very often there only persists *thinking within a given department and a given function*. Lack of communication is very common.

Proprietors must be personally interested in long-term prosperity and they must have enough time for realization of intended changes in the company management. Creation of logistic system took from 5 to 10 years in companies of advanced countries [6]. The transition from functional to procedural structure is the condition of logistic management. Frequently changing managements does not have conditions and thus even willingness to do such long-term and fundamental changes in operative work, which are required by the implementation of logistics. From our research we can make a conclusion that it is impossible, in conditions of very frequent and in many cases not conceptual changes, to create a logistic system.

Therefore, logistics in its modern conception is not a priority at present, not only in the manufacturing and trading companies monitored but in many other companies as well. For companies it seems to be more important to have a stable proprietor, completed destructuralisation of the company and its range of marketable products than to have an implemented logistics. However, it is obvious that companies will not have any range of marketable products without a first-rate logistic management. It is useful to keep in mind that not only products alone but

the supply capabilities created by the whole logistic chain are decisive for competitive advantage at present.

An insufficient knowledge about present conception of logistics in a company is a further barrier for implementation of logistics. *A high quality system of education focused on logistics mainly for top managers is missing.* Managers usually indicate the lack of money as the reason why education in logistics is not realized, but the cause is the above-mentioned unwillingness to implement logistic management. *Insufficiency of time of top managers and therefrom resulting unwillingness of self-education* is another problem. The head of department of logistics is therefore usually sent to participate in training. These heads of departments are most often only at 3rd level of the management and thus they have only partial logistic activities in their competency. They do not have power to enforce radical changes which are connected with logistic management, and they usually do not manage to get the support from top management for these changes. Companies are often *busy with problem solving at tactically operative level or with fulfilment of legislative precaution*, for example, in the sphere of environment pollution and work with hazardous substances. This point is taken in some companies as the reason why logistics cannot be implemented. Why should logistics be implemented when there are enough problems to comply with legislature?

The *unwillingness to realize changes* necessarily brought about by logistic management results from the above-given facts [7]. Any interference into the run-in system of management causes changes in many processes within the company and, therefore, it is in a way risky.

The fact that time is not considered as important source of competitive advantage, is a further barrier for implementation of logistics. Mainly workers with technical education still sometimes insist on product itself and not on the customer's wishes and requirements.

High-quality information systems to support decision-making on the level of process as well as structure are missing in the majority of companies. Information system SAP R/3 is most frequently introduced into companies but without the modulus for logistics. Information systems thus fulfil mainly only informative and checking functions.

The opinion that there is no reason to deal with logistics in companies of chemical industry, as the mass flows are already from he principle of chemical-technological processes continuous and given by technology, was another barrier against its implementation. Four years later no company declared this barrier.

The results of the research showed that specifics exist which are valid for Czech companies in all production branches. There are mainly specifics valid for Czech companies of chemical industry, which slow down implementation of logistics into companies of this branch, of industry.

These factors intermingle and influence thus the level of logistic

management in particular companies. Many of these factors have temporary character and none of them prevents running of a company of chemical industry in the future, in accordance with the newest trends in logistics.

The less stable is the production, the more discontinuous batchwise it is and the smaller batches are produced, the greater is the chance for application of logistics. No matter which type of production is used, logistics plays an important role during proposal and creation of production system.

Research has showed that systemic solution cannot be successfully achieved without creation of logistic conception. Companies of chemical industry have not managed yet to apply logistics in its modern version. They are able to realize only partial solutions due to the pressure of acute tasks. It was found, that the *elements of logistic management are mostly applied unsystematically in Czech companies of chemical industry, separately and without the conception of integrated logistic management.*

If companies want to implement logistics, i.e. they want to operate companies logistically, they must start from the logistic conception, develop it already on the strategic level and consistently act in accordance with this conception [8]. However, there are indications that creation and implementation of logistic concept is such a complicated and specific process not only for particular industrial branches, business branches, but even for particular products and customers. It means that no unique recipe can be given without thorough knowledge and analysis of supply chains, whose part the monitored company is. *The following steps can be recommended to Czech companies of chemical industry* on the basis of the performed analysis of application of principles of "logistic decalogue" [1], which create presumptions for successful implementation of logistic system:

- To focus on the customer, i.e. to elaborate the company's general strategy in the region of customer service and to develop system of recognition, monitoring and determination differentiated providing of their level (according to market segments, according to particular customer, according to particular products and according to life cycle of each product)
- To orientate itself on process control and not on control of departments and functions. Companies must carry out reorganization of work, which is done by people within these departments and not reorganization of their departments. To replace push systems of mass flows management by pull systems.
- To shift position of logistics as service function up to the strategic level. To formulate logistic conception.
- To keep in mind the importance of time as basic condition of success on market
- To carry out firstly the analysis of the requirements on information system and only then to implement it, not vice versa. To make use of simulation models.
- To establish very close cooperation or to come into strategic alliance with suppliers as well as customers to have the possibility of profiting from mutual

synergistic effect

- To create a system for required quantification and measurement (cohesion of technological relations mainly in the case of stepwise production and with them connected calculations appear as the problem in the case of chemical industry)
- To apply logistic controlling, which presupposes among other things to determine and to observe logistic expenses.
- To create effective training system focused on contemporary conception of logistics. Training should start from top managers and continue down to lowest level of management.

The main presumption for realization of these measures is, however, mainly to finalize privatization in this branch of industry and to stop frequent changes in ownership.

Conclusion

The aim of this paper was to point out the reasons which inhibit to speed up implementation of logistics into companies of chemical industry in the Czech Republic. But it does not mean, that all the stated factors make themselves felt in all companies and that there are no improvements. Our recent research monitoring the logistic management in the last four years revealed that departments of logistic have tendency to merge into higher organizing level. Many manufactures have obtained quality certificate ISO 9000. It resulted in individual company processes definition. Companies of chemical industry follow the program "Responsible care in chemistry". A reclassification of manufacturing programme in the direction to low tonnage specialties takes place. These specialties are manufactured on flexible, multipurpose production units, which allow quick variation of range of products.

However in observed companies logistics fulfils still the service function only. Suitable organizing order, which would support logistics management, does not exist in these companies. Furthermore, we can say that in correspondence with theoretical findings a logistics department does not have significant influence on the conception in which logistics management is applied in a given company.

In spite of these negatives, gradual growth of revenue and labour productivity occur after stagnation of chemical industry in the past years. That creates good conditions for implementation of logistics. Application of the stated principles should help to enhance the level of logistic management on the comparable level with economically developed countries.

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