

COSTS INCURRED BY DESIGNING AND IMPLEMENTING THE LOGISTICAL PROJECTS IN THE ACTIVITY OF COMPANIES

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ABSTRACT

Under the conditions of the current economic-social development within the industrial company's management, there occurs a new function that of logistics which has a decisive influence on the company's other functions. Thus, the industrial company's logistics is systematically approached, emphasising its elements, namely: production logistics, commercial logistics, operational logistics, sales support logistics, pilotage logistics. These costs can be deemed as being total costs that depend on the total quantity that is subject to the logistical process. Any activity of logistics within the company can be analysed by means of a questionnaire called Logitest.

KEYWORDS

Logistic Costs, Activity of Logistics, Logistic, Inductive Cost, Induced Costs

INTRODUCTION

By using the quantitative and qualitative analysis, as well as the comparative theory, it may be noted suppliers have ultimately changed the distribution, even imposing special rules, being triggered by the change in the clients' structure. The structure of the scientific demarche is:

Full recomposition of the physical distribution structures

From a logistical point of view, the physical distribution structures are subject to three types of changes, such as: geographical redistribution of its physical entities; expansion of the physical entities; specialisation of the physical entities. A stronger integration of the distribution infrastructure into the production operations leads to positive results. For their most important clients, suppliers can therefore suggest the implementation of an advanced storage for responding thusly to the fragmentation of the supply batches. These storages replace the supplier's warehouse of finished products and that of client's components. The storage shall have a dual role and namely: adjustment role between the supplier's production and client's consumption and repartition role between the client's various consumption points.

A more severe management of logistic costs

The interest for each product line is thusly attained, even separately for each product of imputing it the related logistic costs.

FIGURE 1
CORRELATION STRUCTURE OF COSTS – POSSIBILITIES OF DISCOUNT

	<i>Structure of costs</i>	<i>Possibilities of discount</i>
General expenses	5%	(size) 3
Logistic expenses	20%	(size) 1 Cost elements with great possibilities of short-term discount
Expenses with purchased materials	75%	(size) 2 Cost elements the discount of which has already been broadly reviewed

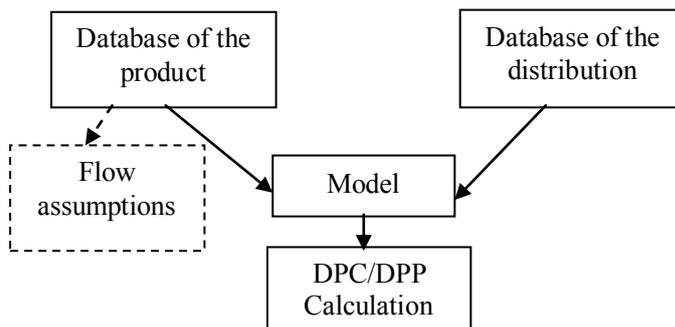
The resources and means are often common, although their use differs according to each product. The calculation of the “Direct product profit” of agencies in the great distribution and of the suppliers is significant for attempting to find different solutions from one product to another.

The structure and evolution of a distributor’s tasks are factors determining a thorough study of the logistic costs elements (fig. 1).

Three more important cost items are basically discovered and namely: general expenses 5%; logistic expenses 20%; expenses with purchased materials 75%. For this, the calculation of the indicator is necessary: Direct product cost (DPC) and Direct product profit (DPP).

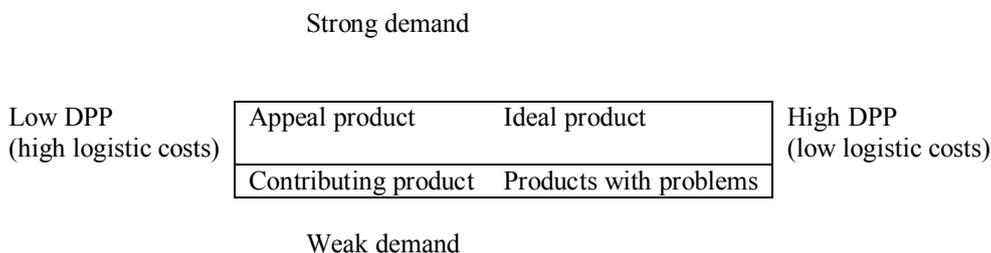
The evaluation of the logistic cost to be imputed to a product needs two types of initial databases: the database of the product (weight, size, packaging type, features of the selling unit etc.); database of the distribution (the range of operations, the cost of operations etc.) (fig. 2).

**FIGURE 2
THE CALCULATION DPC/DPP**



The model represents a formalisation of all logistic stages the product passes through and is completed by calculating the following DPC indicators – the assembly of logistic costs likely to be affected to a certain segment in the logistic chain, generally the distributor of a product or commercial references; DPP – gross contribution of DPC to the result of a distribution entity, for a product or commercial reference.

**FIGURE 3
CLASSIFICATION OF PRODUCTS BY DEMAND/DPP CRITERION**



Depending on the volume of demand and DPP obtained, the commercialised products are classified into four categories: by taking into account the great volume represented by appeal products, the company accepts to bear the logistic costs proportionally risen by the gross margin obtained; at each sold unit, the ideal product generates an important direct large profit; the product contributing to logistic costs sufficiently low for generating an interesting direct profit, but in lower volumes; the product with problems is in too low volumes and implies very high logistic costs (fig. 3).

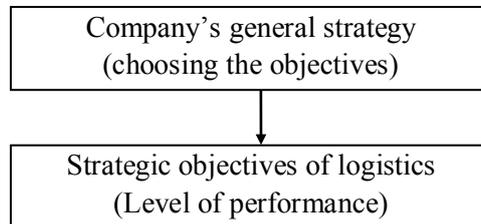
ACTIVITY OF LOGISTICS WITHIN THE COMPANY AND THE COSTS IT OCCURS

The studies performed regarding the hierarchy of the logistic priorities have highlighted that these are: compliance with the contractual terms; improvement of the transportation competitiveness; development of the computerised exchanges; deliveries faster than those of the competition; competitiveness in the domain of stocks, decrease of costs with warehouses; development of a sub-treatment policy etc.

For accomplishing a good performance level, there are basically needed two activity directions, which form the bases of the logistic system of the company such as:

- *Level of the company's logistic service*

**FIGURE 4
POSITIONING THE LOGSITIC AIMS**



Derived from the orientations of the company's general strategy, logistics focuses its generic orientations in compliance with the aimed performance level. The levels of services must be especially defined by integrating not only the market expectations, but also the performances of the competition (fig. 4). Therefore, **an efficient logistic system is built by starting from a clear definition of its objectives with regard to service.**

For this, it is necessary: *to state the three dimensions of the logistic service.* The pertinence of the logistic service levels is as much higher as this gravitates around the exhaustive nomenclature of logistic services. This nomenclature is featured by three dimensions, such as: **dimensioning the service in a state of "continuous flows"** (which covers the assembly of "normal" daily activity, which may be well known in anticipation and imposes engagements referring to framing in terms, reliability, homogeneity of providing services, capacity, availability, compliance of the pursuit documents, control and administration); **dimensioning the service in a state of "random or transitory flows"** (which is actually connected to the activities of unpredictable nature or supply of services which are the task of logistics and are directly integrated to the commercial relation company/client, being applied to the continuous flows as well as for the transitory or random ones, being overlapping the other two dimensions); *b) To set forth the level of the logistic services.* In order to successfully accomplish this issue, it is recommended to use, at a large scale, a **questionnaire** for better understanding the clients' expectations. This questionnaire informs on clients' exigencies regarding the level of the service expected of the logistics. The results thusly obtained correspond to the elaboration of the tender book in compliance with that part of the global tender where logistics plays the main role. This definition of the tender book **Services** is even more necessary as it varies from one activity sector to another, from one family of clients to another. By means of such a tender book, it is necessary to evaluate the service aims and to ensure their dynamic ascendant, meaning the evolution in time; *c) To delimit the objectives of the tender book.* A level of services is not susceptible to be reached unless it is interpreted by the company involved in its accomplishment, at all stages. The global level of services suggested to clients arises from the plurality of the objectives by sectors. Once the strategic orientations of the company are fixed, and the logistic ones are determined, the chart of the strategic orientation may be filled in by defining the orientations by logistic subsystems.

The accomplishment of the "logistic" product consists in making it so effective as to be possible to be integrated into the flow, including the assignation of all components necessary to its further pilotage. The product is imagined not only in its industrial dimension (with preoccupations of intrinsic technology and production technique), but also with a certain logistic dimension.

For these reasons, the following are necessary:

- a) Use of logistics even since the phase of imagining the product*

This supposes:

- 1. An additional diversity of the service brought to clients.*

As any dimension of logistics, the logistic support is a producer of services expected by the client. Badly conceived for a sold product or system, this contribution expected by the client influences his/her future decisions of purchase. In its broadest approach, connected to the high technology products, the integrated logistics support affects all flows starting with making the product available, meaning: the means of practically using a product; maintenance; equipments for tests and repairs; technical documentation; supplies of parts; training the operators and maintenance

personnel; rejection of products.

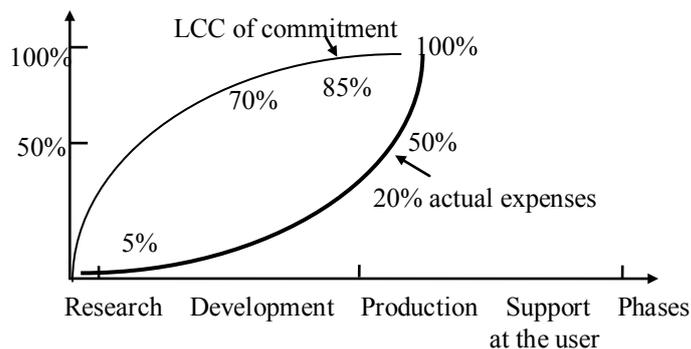
2. A profitable source of considerable incomes

The evaluation of their effort needs the introduction of the notion Life Cycle Cost (LCC), meaning the Cost of the Life Cycle or Global Cost:

$$LCC = C_d + C_a + C_u + C_l \quad (1)$$

where: C_d represents the development cost;
 C_a – purchase cost;
 C_u – cost of use (operating cost + cost of support);
 C_l – cost of dissolution.

FIGURE 5
SCHEDULING THE SUPPORT COSTS AND COMMITMENT L.C.C.



Those situations are frequent where the support cost for certain products is at least equal to that of purchase for the client.

The phases of development of a product promptly emphasise the level of support costs that shall be further attached. For a product the use cost of which (essentially support cost) represents 50% of the cost of the life cycle, the diagram in figure 5 shows that practically it is not possible anymore to act on them since the LCC engagement is done in a ratio of 20% at the end of the research phases and of 92% at the time of starting to use that product.

It must therefore be anticipated even since the phase of imagining the product driven for decreasing the support costs reaching the desired levels of performance.

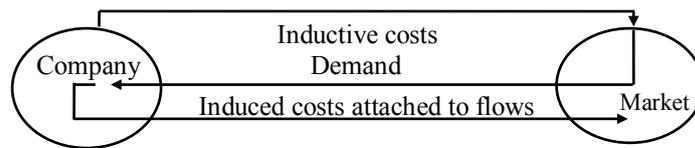
Such a demarche of integrated logistic support was formalised and used not only for the very technical products or systems (armament, computer etc.), but also for any type of product, including the commercial ones.

The comparison of the logistic costs to the turnover forms a first stage in setting the order of the operational management.

The availability or non-availability in this domain is revealing with regard to the company's capacity of identifying and keeping under control the logistic costs or not. If the costs generated by the marketing activity are inductive costs of the demand registered on the market that may be determined or evaluated, the logistic costs are made by the circulation of raw materials and finished products. A response of the marketing induction is found in the induced costs of logistics (fig. 6).

Generally, they are costs of physical distribution which are best identified and isolated. Such costs are: previsional costs, sales management costs, supply management costs, warehouse costs, transportation costs, customs costs and fees, costs with the informational logistic system etc.

**FIGURE 6
CORRELATION MARKETING COSTS – LOGISTICS COSTS**



b) Implementing the integrated logistic support

It supposes going over three successive phases and namely:

Phase I: defining the logistical support policies

This refers to defining the logistic support policies and consists in the optimised conception of the product and its support for minimising the related cost for the life cycle at the purchaser.

$$ecc/c = LCC \quad (2)$$

where: *ecc/c* represents the global cost at the purchaser.

At this phase, objective such as reliability, manageability and availability are aimed for. Each product must be the object of the specific studies for being able to show clients the evaluations of the performance of logistic support as well as the data referring to the technical performances. Thusly, it may be necessary to stipulate an entire assembly of indicators, such as average time between two damages and average repair time, which must be specified in the purchase contract.

Phase II: accomplishing the logistical supports

This involves material commitments referring to: making spare parts; the design and supply of repair materials; activity of conceiving and drawing up the technical documentations, including technical training of clients.

Phase III: implementing the logistic support in practice

This leads to the occurrence of some logistics attached to the initial logistics of making the product available to clients, meaning: **the logistics of spare parts** (It is generally treated separately of finished products, it reclaims an organisation and means that are of its own and is featured by the important number of variants, variety of products, service life for over 10 years parts, service exigencies at the client); **logistics of the repairer technicians** (It must be analysed under two aspects: **their availability**, meaning repairer technicians are collaborators whom cost relatively much **to optimise the stock of spare parts** existing at the repairer technicians); **logistics of changes**. (The products involving a systematic organisation of their after-sale support makes some standard replacements of some of their components. For proceeding with them, a logistics of replacing damaged parts must be applied).

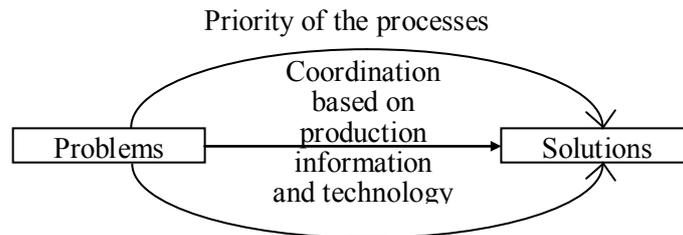
IMPLEMENTING THE LOGISTIC STUDY INTO THE COMPANY AND THE COSTS IT OCCURS

The use of the method of analysis and synthesis corroborated with the method of comparison in time and space highlights that the accomplishment of a logistic project and its implementation into the company, including the establishment of costs it creates, needs a multitude of activities which may be structured thusly:

- Activities aiming the accomplishment of an immediate profitability

Such activities are based upon three principles, such as: consideration of globalising the operations as work technique, meaning the determination of the priority of the processes in relation to their component operations; intensification of the concerns of coordinating the information with the technological operations; synchronising the immediate individual objectives with the finality of the logistic project (fig. 7).

FIGURE 7
SYNCHRONISING THE INDIVIDUAL OBJECTIVES WITH THE LOGISTIC FINALITY



a) Priority of the process in relation to the component operations

For accomplishing an efficient logistic change, it is recommended to use some questionnaires, the filling of which shall offer answers to the following questions: Do you always provide the coherence of the operational with the strategic? Do you thoroughly know the representation of the flows? Have you repositioned the functions? etc.

b) Coordinating the information with the technological operation

One of the major causes for the occurrence of the primary disfunctionality - which shall be improved and even eliminated by the logistic project - consists in the disaccord between information and technological operation, meaning not harmonising the information with the technological operation which these refer to.

c) Synchronising the individual objectives with the logistic finalities

The objectives that have an individual feature within the company are not always adapted to the specific of the logistic activity.

They often ignore the impact they have onto the client's or company's interest.

Another failure occurs when there happens a change in the composition of a full order formed by standardised products, a fact raising special problems for the product programming service.

- Activities which consider logistics as a means of introducing the progress into the company

Any structured representation supposes the covering of three stages, such as:

a) Choosing the logistic variables

Let us take into account the example of a central warehouse of finished products charged with supplying the regional warehouses. The objective aimed is therefore to decrease of operating costs of the central warehouse. In order to attain this objective, two elements shall be studied – which become logistic variables – such as: **flows** that shall determine the necessary human and material means of manutention at the entrance as well as at the exit; **size of stocks** that determine the necessary storage volumes and surfaces. Each of these two elements must be quantified into representative units of the real activity.

b) Patterns of costs

The patterns of costs consist in representing the cost variables of the logistic operations, by starting from the logistic elements retained as logistic variables.

The transportation costs occurred by supply, indicated in lei/t, can be theoretically represented by the straight line equation:

$$C_t = a + bx \tag{3}$$

In fact, the transportation cost is actually represented by a family of equations, each one of them referring to a certain transported quantity.

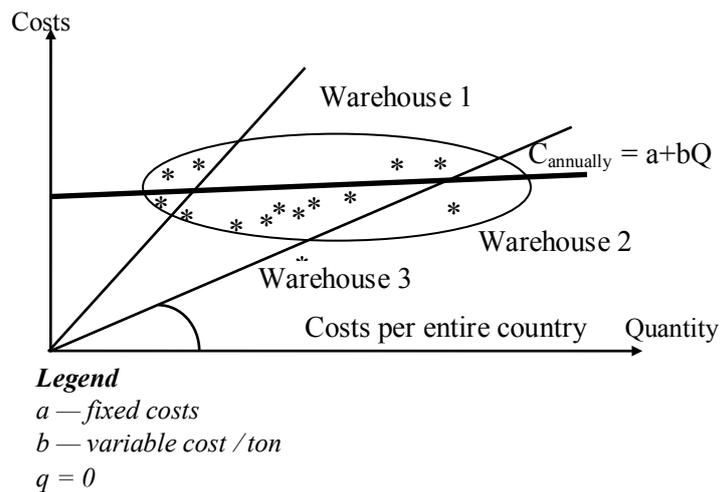
Total distribution costs. The total cost of the warehouses within a distribution system is set according to the formula:

$$C_{\text{annual}} = a + bQ \quad (4)$$

where: Q represents the annual tonnage distributed by the warehouse.

The same result is obtained by using a linear regression performed over the assembly of the warehouses, by taking into account two coordinates, such as: the quantity sold annually by the warehouse; the operating cost (fig. 8).

**FIGURE 8
THE COORDINATES OF THE TOTAL DISTRIBUTION COSTS**



The representation in figure no. 9 highlights a class of homogenous warehouses, the global costs of which are approximated by a straight-line and two “abnormal” warehouses. Additionally, it may be observed the simple study of the “cost per ton” is insufficient for grasping the particularities of these warehouses. Therefore, the accomplishment of such patterns of costs becomes an additional means of study and analysis, by highlighting the class of homogenous warehouses and by discovering the abnormal points which a veridical explanation must be found for.

The monthly cost occurred by the operation of a warehouse may be calculated with the formula:

$$C_{\text{monthly}} = A + B \cdot Q \quad (5)$$

where: Q represents the tonnage monthly transiting the warehouse.

c) Influence of representative parameters

The logistic study is influenced by the representative parameters: frequency of deliveries and price of the products. The two parameters are represented by the Histograms of orders, accomplished by volumes or weight. They influence the decision of direct delivery from the factory or through warehouses. The orders to be directly delivered (they have sufficient tonnages or volumes) represent an important part of the total tonnages or volumes, but occupy a relatively small ponderosity in the total order. Warehouses are therefore necessary, the number of which must be set and the position of which must be stipulated.

CONCLUSION

Any logistic operator must respond to two interlocutors: to a client in the logistic chain and to a certain hierarchic position. Such an evolution is attained only by the logistic demarche, which fundamentally changes the connections between various agents, the ratios with the hierarchical echelons and modalities of exchanging information. Any logistic project comprises four phases, such as: a phase for evaluating the performance level aimed for; a phase for evaluating the current performance level; a phase for defining the various scenarios of evolution; a phase for planning in time the chosen scenario. The logistic projects understood as an assembly of logistic demarches have an impact over the structure as well as over the company's culture. The structural changes have led to modifying the contents of some positions in the company and to creating new rules in the dialogue and exchanges with the logistic suppliers and providers.

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