

## COSTS RELATED TO THE FUNCTIONS OF COMPANY LOGISTICS

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**Abstract:** 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. Therefore, an efficient logistic system is built by starting from a clear definition of its objectives with regard to service. The production of services which logistics is addressed to is not conveniently accomplished unless the aims have been previously set forth. (JEL: L80, D61, O21)

**Key words:** company logistics, logistics services, logistics costs, costs in company logistics.

### Introduction

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. (see figure 1).

The first four action priorities of those previously mentioned essentially influence the level of the services suggested to clients.

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

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 (see figure 2). Therefore, an efficient logistic system is built by starting from a clear definition of its objectives with regard to service.

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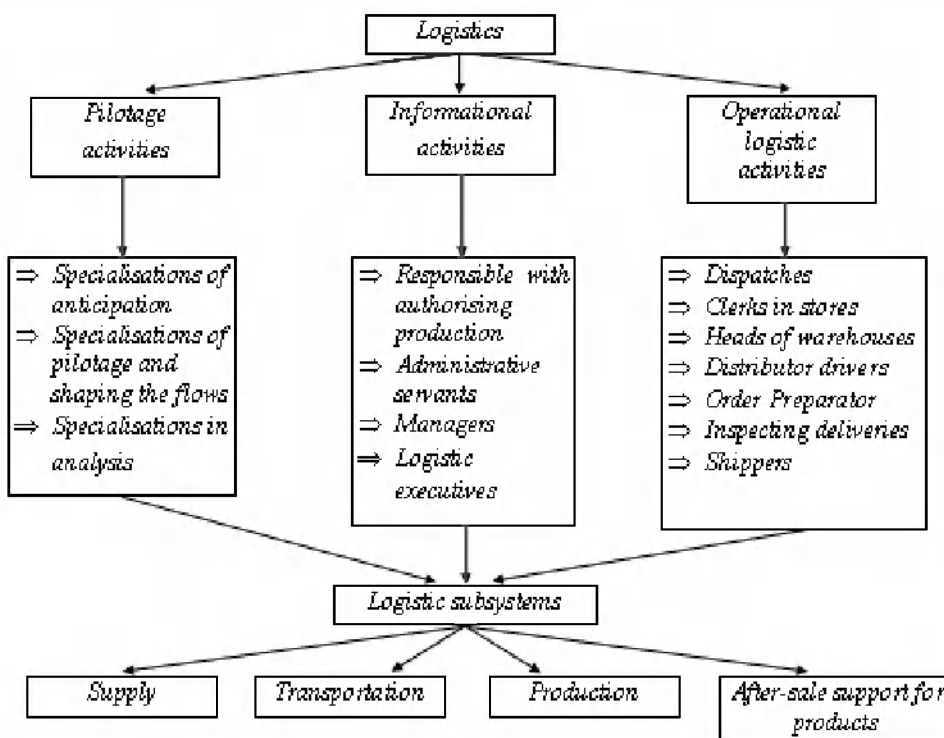


Figure 1. Typology of the participants at logistic activities

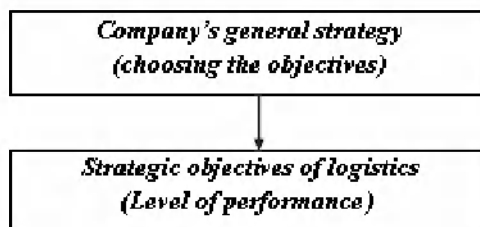


Figure 2. Positioning the logistic aims

For this, it is necessary:

a) 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) (see figure 3).

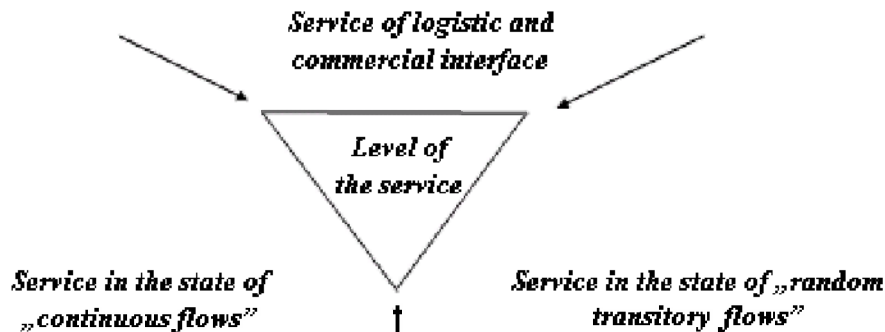


Figure 3. The three dimensions of the logistic service

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 (figure 4). 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.

### Accomplishing the logistic product

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.

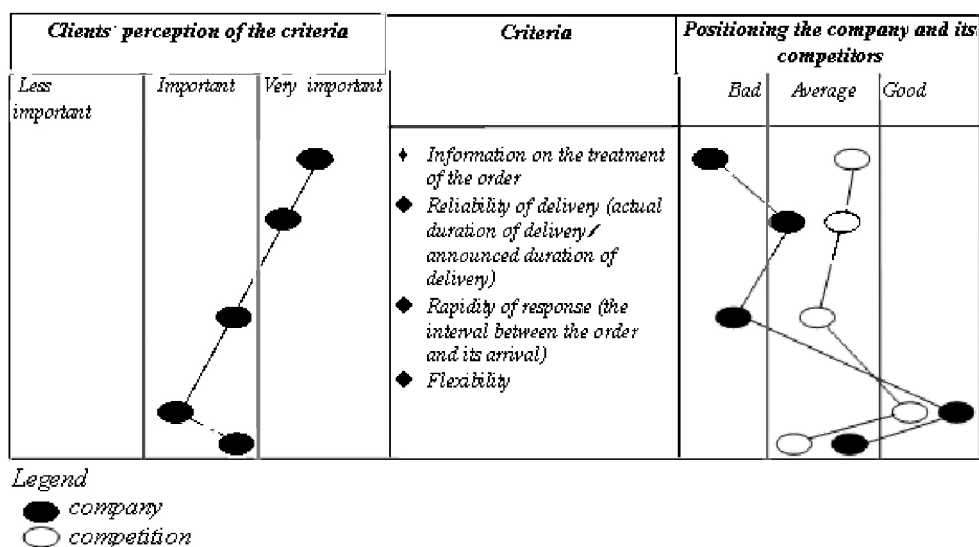


Figure 4. Comparative representation of the service levels

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.

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.

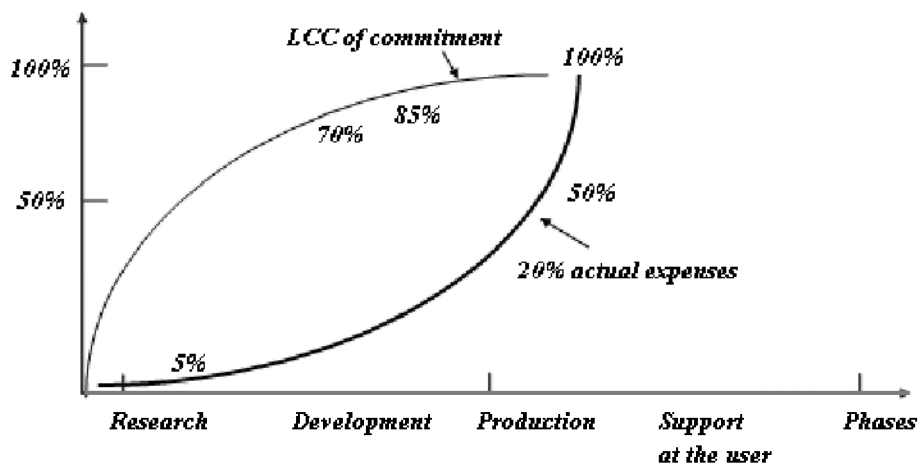


Figure 5. Scheduling the support costs and commitment L.C.C.

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 (figure 6) Generally, they are costs of physical distribution which are best identified and isolated. Such costs are: previsual costs, sales management costs, supply management costs, warehouse costs, transportation costs, customs costs and fees, costs with the informational logistic system etc.

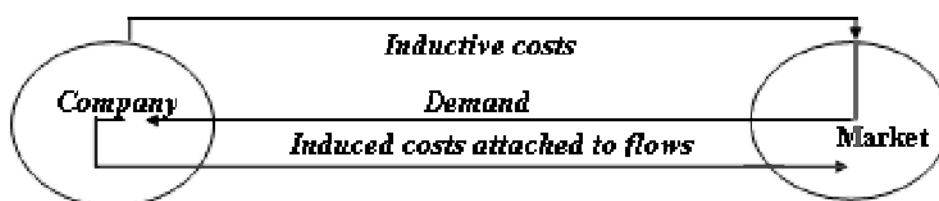


Figure 6. Correlation marketing costs – logistic costs

b) Implementing the integrated logistic support

It supposes going over three successive phases (see figure 7) 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.

$$e_{cc/c} = LCC \quad (2)$$

where:

$e_{cc/c}$  represents the global cost at the purchaser.

At this phase, objective such as reliability, manageability and availability are aimed for (see figure 9).

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).

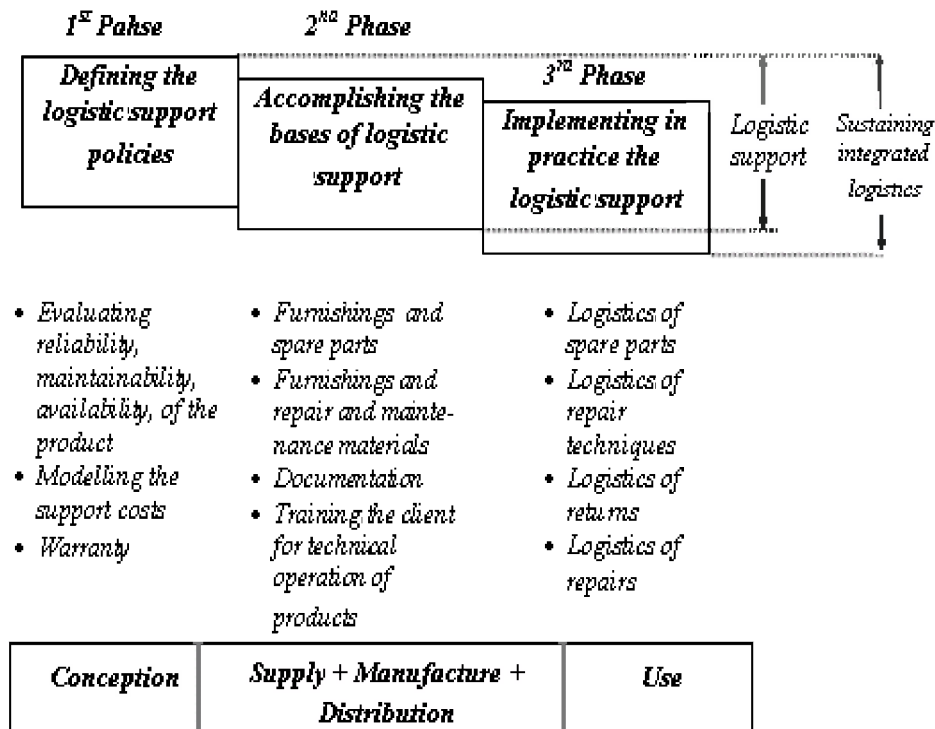


Figure 7. The phases of the integrated logistic support

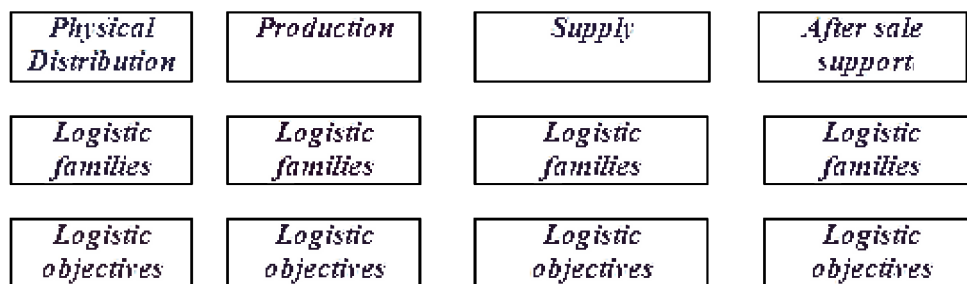
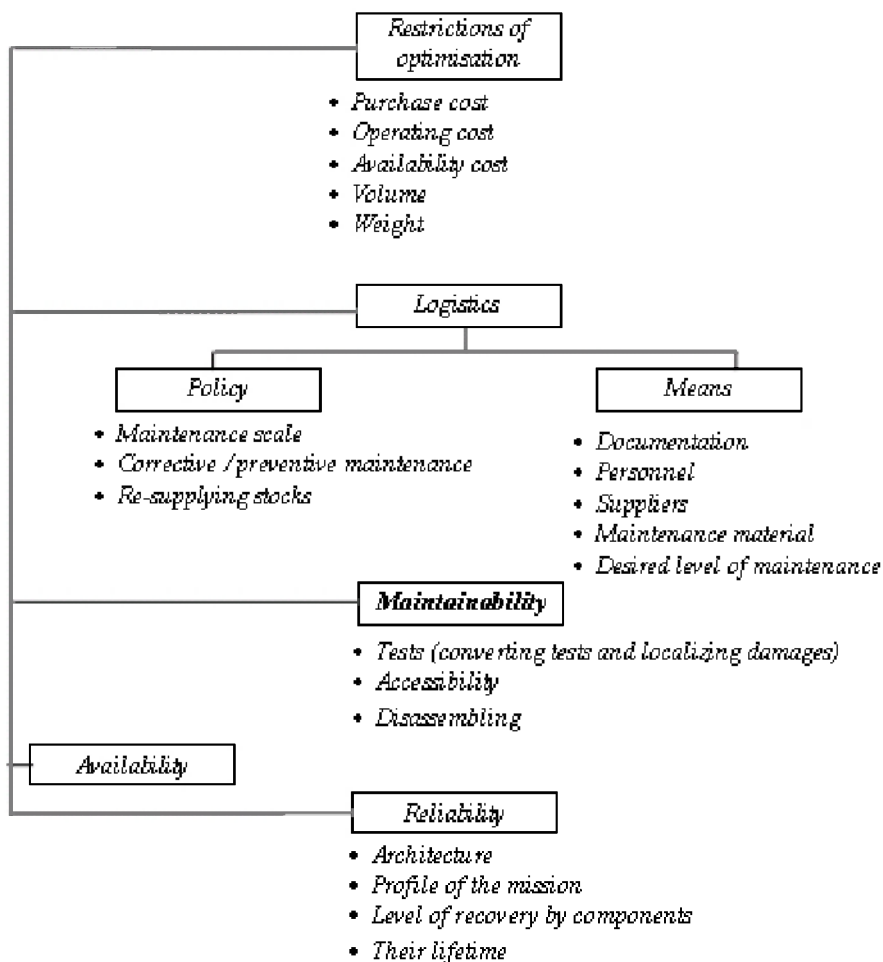


Figure 8. Positioning logistic families in the logistic support



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Figure 9. Reliability, manageability, availability in sustaining integrated logistics

### Logistic planning and pilotage

A good planning of the logistic activity implies:

a) Knowing the logistic families

The product has intrinsic logistic features, such as: physical features; technical features; storage features; order management features; distribution features (see figure 8).

At a first phase, they are set forth by logistic subsystems, by creating *logistic families of physical distribution, of production, supply and after-sale*. From the point of view of logistic treatment, they are temporarily aggregated into homogenous logistic units.



In supply as well as in distribution, these families are taken into account, in the plan of the transfer operations, which determine transporters *to create service tenders differentiated by logistic families*, according to the exigencies of the service level of the products.

b) Planning and pilotage

Once the logistic plan is drawn up, it is necessary to correlate it with the pilotage activities, by covering the following stages:

1. *Adjusting the parameters of planning* (Whatever the commercial environment may be where the company evolves, the conjugated planning of the operations of various logistic subsystems represents the “cupel” where the pertinence of most of the logistic decisions are realised and measured. Planning allows a sequential schedule of the operations in time) (figure 10).

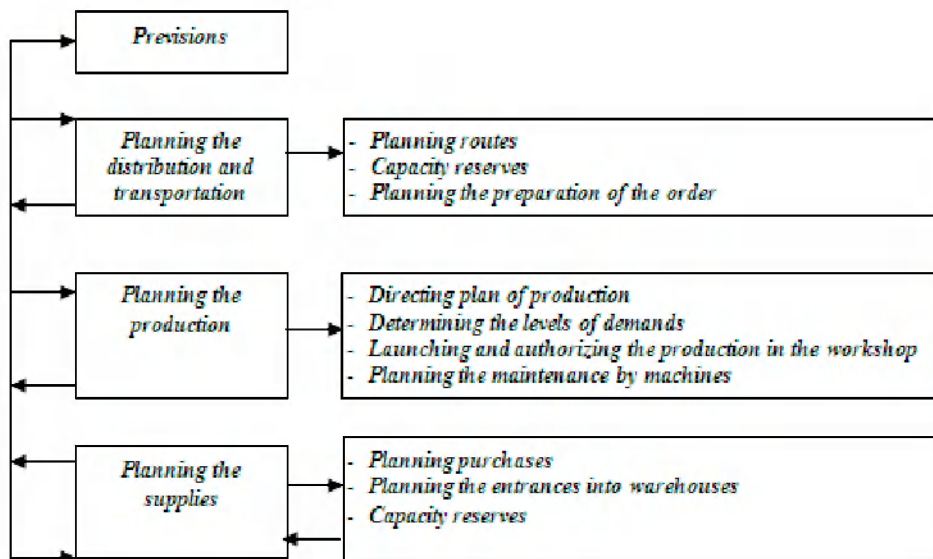


Figure 10. Sequential schedule of the planning operations

2. *Previewing activities* (It is the essential element of the operational management, and its insufficient evaluation may not offer another possibility of remedy by flexible physical means, capable of adapting to the unexpected changes of the commercial activity. As unexpectedness is very costly, the reliability of the previewing activity must be raised.)

3. *Progressive planning* (Aims the composition of the forecasts for the finished products by successive stages. Applying such planning schemes needs two conditions, such as: establishing information with its main commercial partners whom certify this type of circulation, information progressively required between client and its supplier; installing a quasi-contractual management of changes. A client's anticipations, as well as his/her supplier's, are to change in the course

of time. There also occurs the possibility for the initial commitments to be eventually changed. For example, they can break-up into three stages: automatic change, negotiated change and enforced change) (figure 11).

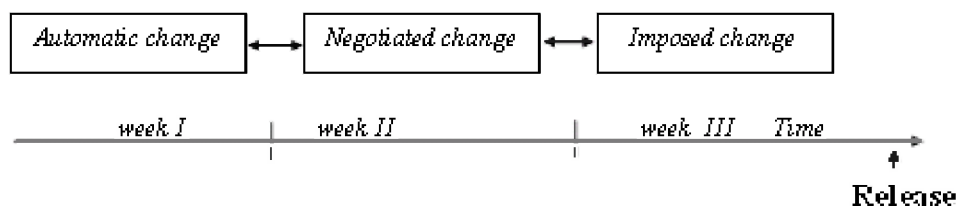


Figure 11. The structure of provisional change in time

4. *Pilotage*. (If planning allows an organisation of logistic flows in time to be anticipated, it does not mean it is sufficient, as it subsists the unexpected).

The pilotage activity is the one guaranteeing the reactivity and continuous adaptation of the flows to the market demand. For that reason, pilotage is an auxiliary indispensable to planning and needs: *the reception of stimuli; interpretation of stimuli; reaction to stimuli*. The resolution of pilotage problems makes logistics to turn to some helping tools for making adequate decisions. At a first approach of the issues which the logistic operator is confronted with, it is possible to theoretically deem two big families of basic issues, such as: issues deemed as necessitarian, where the notion of risk is not taken into consideration and which lead to combination issues (delivery term, affecting the product of the means of transport, planning the operations etc.); random issues which integrate, for example, the notion of expecting lead of a length randomly varying in time.

### Summary

The resolution of the necessitarian issues has benefited by the support of the techniques called by linear programming or dynamic programming, the method of graphs, PERT method etc. Under a certain number of restrictions, most of these methods aim at assigning resources (for example, trucks), by optimising an economical function (e.g.: cost of distribution).

The techniques used for solving the random issues take into account the notion of risk and therefore incertitude based on the variables used (time, costs, capacity, delivery interval etc.). A value is not assigned discreetly anymore to a variable, and a probability function features the attributes of the problem. The resolution is not accomplished anymore by an algorithm, but by a system of equations. The privileged domains of applying the random patterns are all issues including the theory of expectation leads (managing the workshops, managing the loading or unloading points etc.). A compromise must be therefore found

out, between the cost of expectations and that of means, as the loading of activities is only known randomly and the notion of stock is similar to the expectation lead.

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#### KOSZTY ZWIĄZANE Z FUNKCJONOWANIEM LOGISTYKI W PRZEDSIĘBIORSTWIE

**Streszczenie:** Z ogólnej strategii przedsiębiorstw wynika, że logistyka skupia się na kierunkach zgodnie z którymi ustalone są cele na poziomie wykonawczym. Poziom usług musi być szczególnie określony poprzez integrację nie tylko z oczekiwaniami rynku, ale także stosownie z wynikami konkurencji. Dlatego efektywny system logistyczny jest budowany począwszy od jasnego zdefiniowania celów w zakresie usług. Świadczenie usług powiązanych z logistyką nie jest więc łatwym przedsięwzięciem, chyba że uprzednio zostanie dobrze zorganizowane i ustalone.