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AIR CARGO LOGISTIC SERVICE QUALITY CRITERIA

Abstract

Quality management treats primarily the preventive measures with the basic goal of assuring logistics quality i.e. realization of logistic tasks within the organization and fulfilment of the requirements with minimization of costs. This understands the adjustment of the logistics service level with simultaneous consideration of the logistics costs. The service in general represents a category of products, non-material product, realized as the result of the production process. The general characteristic of each service is reflected in its impossibility of warehousing, complexity and individuality. Logistics services are determined by means of qualitative and quantitative parameters, depending on who evaluates and from which aspect the service is evaluated, what indicates the bipolarity and ambiguity in evaluation. Due to its specific characteristics in air cargo handling, a large number of participants are involved who are outside the airport control system, and each one of them has significant influence on the quality of service which requires good coordination among all the participants and good knowledge and respect of the specific international rules in air transport. In this paper basic criteria and their sub-criteria for assessment of quality service in air-cargo transportation were shown.

1. INTRODUCTION

The quality as a factor of success in the developed industrial countries has always traditionally occupied a significant place in the hierarchy of corporate goals. With the introduction of *ISO 9000* standard, as well as those that followed later on the world market the problem of quality has been raised to a much higher level first of all by certifying the quality management system of an organization, as well as by a more serious approach to this issue.

The basic quality management requirement consists in considering the requirements of the customers i.e. service users and maximal satisfaction of their requirements as the most significant goal of the organization. In other words, quality management treats primarily the preventive measures with the basic goal of assuring logistics quality i.e. realization of logistic tasks within the organization and fulfilment of the requirements with minimization of costs. This

understands the adjustment of the logistics service level with simultaneous consideration of the logistics costs.

For the company to realize the set goals, a whole series of interconnected activities of the quality management system is necessary. The quality management system encompasses all the measures and structures that are related to the activities of planning, implementing and controlling the quality in an organization.

Due to its specific characteristics, a substantial number of participants participate in air cargo handling outside the airport control system, and each of them has significant influence on the quality of service which requires good coordination among all the participants and good knowledge and respect of the specific international air transport rules.

2. LOGISTICS SERVICES GUIDELINES

The service in general represents a category of products, non-material product, realized as the result of the production process. The general characteristic of each service is reflected in its impossibility of warehousing, complexity and individuality.

Consequently, the logistic service represents the function of interdependence of all the individual services in the "producer-customer" system, and the most significant element in the marketing of the material product. This dependence makes the logistic service a very complex one and refers to the obligation, in the evaluation, to simultaneously consider the service from several aspects.

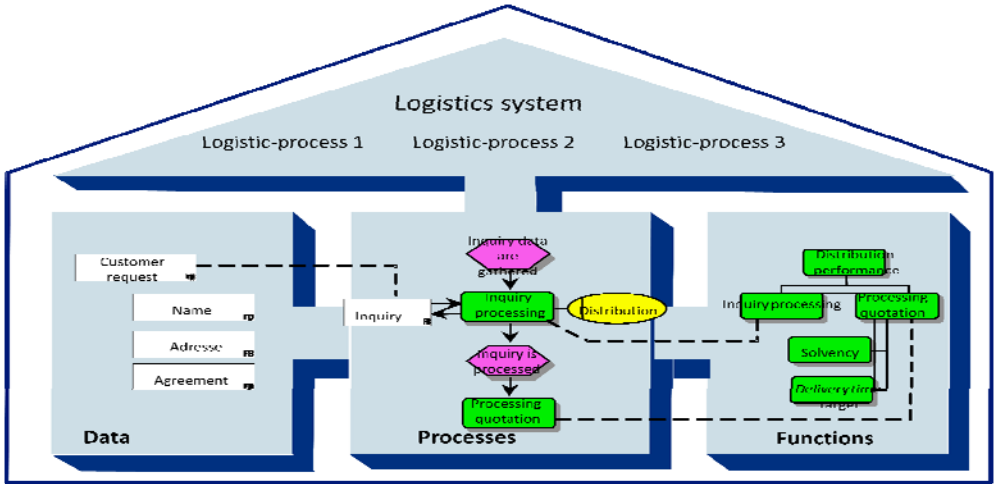

Figure 1: EPC (Event Driven Process Chain Diagram) presentation of process approach to considering the logistics system

Figure 1 shows the logistics system with process approach in which the request is the starting event and the final logistics service is the result of system functioning. The decomposition of individual logistics processes of the system according to the given elements (data, processes, function) allows identification of the crucial zones of influence of the system itself.

Logistics services are determined by means of qualitative and quantitative parameters, depending on who evaluates and from which aspect the service is evaluated, what indicates the bipolarity and ambiguity in evaluation. Thus, e.g. service transport organizations evaluate their work by means of technical and exploitation indicators and indicators of work expressed by the coefficient of using the means of work according to: time (during the day, hour, a certain period of time, …), capacity (transit and transport capacity, vehicle productivity, …) loading capacity (level of static and dynamic usage of vehicles, level of occupancy, …) etc. Furthermore, if the service is determined from the aspect of the user the parameters are of another nature, since the customers are conditionally interested in the technical and exploitation parameters, whereas the primary interest lies on:

- time and punctuality of order realization;
- readiness for delivery;
- reliability in time of delivery;
- flexibility in time of delivery;
- obligations in the size of the order;
- frequency in giving order;
- information on the situation in the order realization;
- total costs, and others.

Considered from the functional aspect, in the realization of the logistics service there is technical and technological connection among all the subsystems of logistics (production, transport, warehousing, forwarding, etc.) which has high influence on the design of services in relation to the users' requirements.

Logistics services in general are product of a set of physical, catering and symbolic characteristics that are combined in satisfying the users requirements. Determining the harmonization of the needs of logistics service users with the criterion of the logistic costs is reflected also through *timeliness, reliability, flexibility of delivery and control of the service realization.*

3. ELEMENTS OF LOGISTIC SERVICE QUALITY

Today, when the material products are more or less standardized according to the quality, design and price, the quality of the logistics services in product delivery is imposed as the key element of market differentiation of supply and competitiveness on the market. The globalization of the

economy, production in one part of the world and consumption in the other part of the world, has been based on the quality of the logistics service and processes.

The quality in general has been defined by ISO9000:2000 standard as the level up to which the set of characteristics fulfils the requirements. It is a relative category per place, time and form, and as such does not allow giving of absolute assessment of quality even for a strictly limited time and space.

When speaking of the quality of a certain entity, the basic understanding of the concept is reduced to the confirmation of the satisfaction of the customers needs. Such acceptance is understandable when taking into consideration that the quality reflects the customers requirement, expressed either through the requirements of the standards, generally accepted standards, all the way to those users, i.e. customers who confirm the quality of a certain entity by repeated purchase or repeated request for such a service.

Like the quality being reflected in its final significance from several aspects depending on the type of entity that is evaluated, so should the quality indicators be considered from several aspects depending on the type of entity. If the quality of a certain entity is considered as a consequence, then the influencing factors can be regarded as its indicators.

The quality of the logistics service results from the quality of the flow of logistics processes and the quality of organization and functioning of the logistic systems. The organization of a logistics system defines the required data that are the stimulators of the logistics process and the functions of the activities in the process. When the processes proceed at a high quality without failures, errors and standstills, at a high organizational and technological level, then the quality of service is also satisfactory. High level of quality of the logistics processes understands harmonized flow of all the activities, without conflicts, delays, standstills and flow interruptions. The problems and the lack of quality within a single process, as a rule cause consequences and problems in the second and every following process. The logistics system is composed of its processes, and consequently, the quality of logistics system represents the resultant of the quality of service of individual logistics process. Every logistics process is composed of its data and functions, and the quality of service of the logistics process represents the resultant of the quality of each data and function that start and perform the process itself. In considering the level of quality of the end logistic service, i.e. the one based on which the level of quality of the entire logistic system can be studied, every single logistics process need to be defined, measured and analyzed.

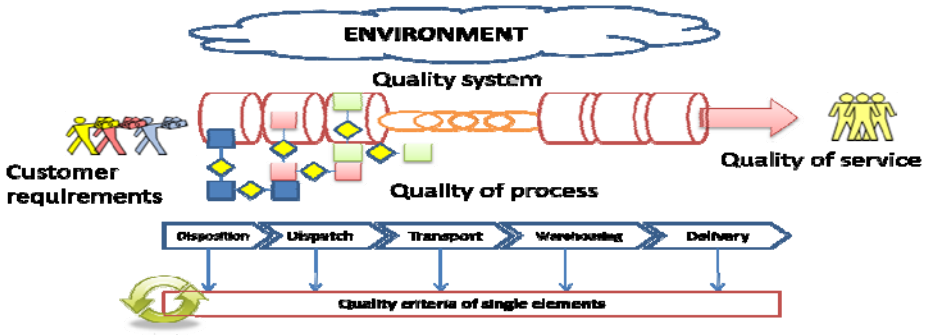

Figure 3: Quality elements that affect the total quality of the logistic service

As presented in Figure 3 the quality elements that affect the total quality of the logistic service represent at the same time the quality of individual logistics process. Thus, the elements of the disposal process quality would be: quality of the incorrectly received data, level of complexity of information, complexity of the accompanying documentation, number of incorrectly received orders, number of claims, and such. The elements of the dispatch process quality would be: quality precision, punctuality, complexity and accuracy of documentation, frequency of subsequent deliveries, number of claims, level and amount of goods damaging, delays in delivery, etc. The elements of the transport process quality would be: punctuality, frequency of transport, frequency of damaging of goods, frequency of traffic incidents and accidents, number of claims. The elements of warehousing process quality would be: number of errors in goods distribution, number of errors in commissioner activities, amount and type of goods damaging, punctuality. The elements of the delivery process quality would be: punctuality of delivery, number of errors in delivery, complexity and accuracy of shipment and documents, amount and level of goods damaging, etc.

In general, without the implementation of the process approach, the logistics service quality can be presented as a sum of the quality procedures, connections, results, intellectual capital, data, improvements. The quality element defined as the quality of procedures refers to the methodological procedure of performing, i.e. procedure of planning and managing the process in the realization of a certain task. For the realization a suitable procedure has to be selected and it should suit the purpose the parameters of which can be adapted from time to time. Furthermore, the quality of connecting represents the level of harmonization of the partial processes in the entire logistics chain including the cooperation with the internal partners and external suppliers. The quality of the results as a parameter of quality is measured by qualitative properties that are defined in logistics as logistics performances and include: structure, sizes, locations, time, cost, reliability, productivity, efficiency and ecology. Poor result is reflected in the failure to fulfil any of the qualitative logistic characteristics in accordance with the expected level of realization by the customer. For the qualitative properties the independence towards specific requirements set by the customer is very important, in that the logistic system has to be so well conceived that it may insure absolute level of quality regardless of the variable customer requirements. In order to improve the logistic service, i.e. performances a systemic analysis of the weak i.e. critical points

in the logistics chain is necessary. It is here of extreme importance to identify the real causes, and not only the symptoms. The high level of quality of improvement cannot be achieved unless suitable techniques of analysis are implemented through a systemic procedure and institutionalized process of enhancement. Furthermore, the quality of intellectual capital represents the knowledge and the skills of employees at all levels of the logistic system and the quality of data assess the availability of complete and reliable data, qualified as original and current, i.e. desired i.e. designed and actual.

Figure 4: Elements of logistic service quality, generalized presentation

4. AIR CARGO LOGISTIC SERVICE QUALITY CRITERIA

In creating a logistic system the target values of logistics performances have high influence on all the logistics processes. The process of transport, i.e. the selection of the transport mode of the goods from one location to another has a significant, if not crucial influence on the logistics performances of the system, since it stipulates the criterion of time and cost that can be emphasized as the most significant criterion of the logistic service quality. Intermodality among traffic branches greatly accelerates the flow of goods maximally using the advantages of single transport modes. Air traffic is a transport branch that offers the fastest and often the most expensive carriage, especially when considering air cargo transport. The average growth rate of 17% in the sixties and 6.4% today at times of the world recession indicates that the cost parameter is compensated by some other advantages of this transport mode. The development of Internet trading has a significant contribution to the increase in air cargo volume as well as the reductions in IRR (Internal Rate of Return) which has made it possible for the cargo sector to reduce the costs of this type of transport. Furthermore, in the market competition regarding the still higher cost of transport in comparison to other transport branches, the competitiveness of air cargo lies in the high level of service.

Compared to other traffic branches, both in the transport of passengers and cargo, air traffic has its significantly highlighted and handicapping specific characteristics such as security and safety,

and specially designed containers (ULD). The following specific characteristic is reflected in the organizationally isolated operations of cargo handling and transport. Handling is usually carried out by a cargo handling company or a company providing aircraft handling services, whereas transport is performed by an air carrier.

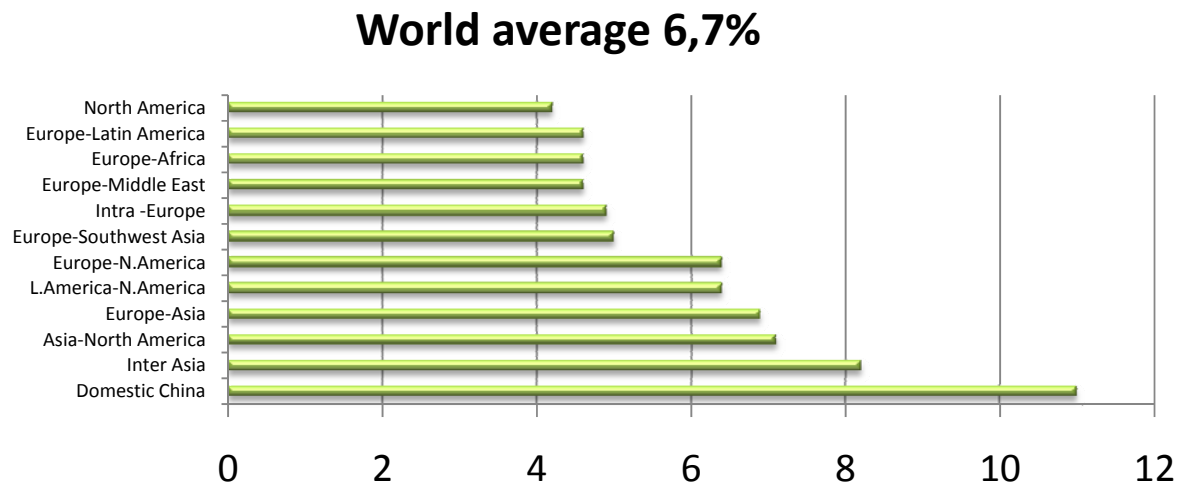

Figure 5: Forecast of cargo and post traffic growth in air traffic in the world for the period from 2001 to 2021
Source: Air Cargo Yearbook 2003

The cargo and postal handling activities in air traffic require special organization and technology of operation as well as means, equipment and qualified staff. They represent one of the significant elements of the total operation of airports with certain positive influence on their business. Furthermore, cargo and postal handling understands all the activities necessary for timely processing and preparation of the cargo and the accompanying documents for loading or unloading from the aircraft, all in compliance with adequate international and national laws and regulations.

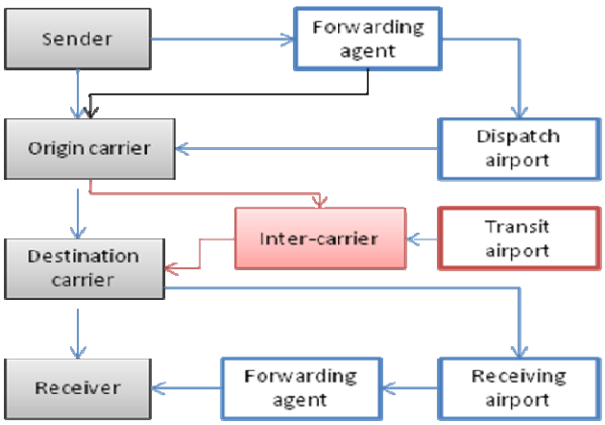

Figure 6: Flowchart of air cargo flow participants

Figure 6 shows the participants and the organizations involved in the transport of cargo in air traffic. The cargo moves from the sender to the receiver usually through the forwarding agent by means of one or several air carriers who use the services and infrastructure provided by the transit airport. The facilities of the airports are usually adapted not only to airlines but also to the forwarding agencies. Thus, many companies use the services of the forwarding agencies since this type of operation (air cargo) requires very good knowledge of the complex handling activities which are in many ways beyond the capabilities of the very sender. Examples of such activities are: determining of the optimal cargo tariff and the selection of the best combination of the traffic modes and routes, preparation of the documentation for air transport and obtaining of all the necessary clearances for cargo acceptance onboard aircraft, insurance of correct packaging of air shipments, respect of deadlines in accepting and delivering the shipments.
Due to its specific characteristics in air cargo handling, a large number of participants are involved who are outside the airport control system, and each one of them has significant influence on the quality of service which requires good coordination among all the participants and good knowledge and respect of the specific international rules in air transport. Furthermore, in the planning of logistic processes of air transport, it is important to know the level of airport mechanization as well as of the concessionaire providing the cargo handling services, as well as the rules of the airline in charge of the cargo transport.

The criteria used to assess the quality of service in air cargo transport can vary depending on the type of the offered services. The basic criteria and their sub-criteria would be:

Criteria	***Description***	***Sub-criteria***
Possibility of supply	*Refers to the existence of infrastructure for international air-cargo service.*	Adequate labour Ability to determine efficient flight schedule Ability to handle special cargo Number of international flights (route) Availability of special equipment and devices Efficient space management
Responsibility for the service	*Organization performing the cargo handling service for transport, shall have the responsibility, manage well the risks and similar (incidents, accidents)*	Ability to solve problems in case of aircraft accidents Ability to resolve claims Ability to deliver the goods at agreed time
Service tariff competitiveness	*Refers to overall costs for air cargo transport.*	Existence of tariff system Existence of tariff discount rate through cargo increase Existence of different tariffs for import and export
Management capabilities		Adequacy of ground transport system Information technology system Ability to meet carriers requirements Relations among employees Simplicity of conditions in amending or modification of carriage contract

By measuring the results of every single element of quality and by clear definition of the interval sizes, the quality criteria are determined. The quality criterion represents precisely those values that are continuously measured, those that are subject of optimization and the target values of operative and tactical levels of the logistic systems.

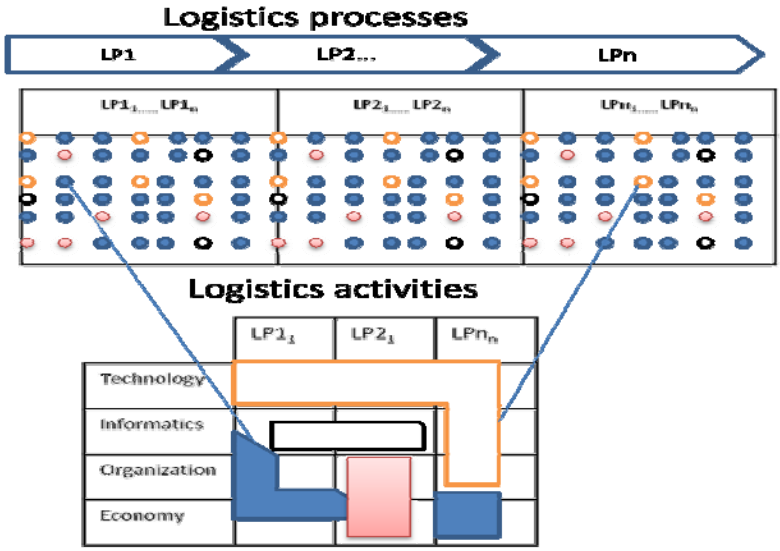

Figure 7: Breakdown of logistics processes and the including activities

Activities included in the logistics processes are subject to measurements in order to determine the quality criteria, for the analysis and finally, improvement. Figure 7 shows one of the methods of breakdown which clearly shows the complexity of criteria that affect the quality of the logistic service.

5. CONCLUSION

Logistic service is the function of interdependence of all the single services in the "producer-customer" system, and the most significant element in the material product marketing. This dependence makes the logistic service a very complex one, and refers to the obligation, in the evaluation, to consider simultaneously the service from several aspects.

High level of the quality of logistics processes understands harmonized flow of all the activities, with no conflicts, delays, standstills and interruptions in the flow. The problems and lack of quality within one process, as a rule has consequences and causes problems in the second and every succeeding process. The logistic system is formed by its processes, and consequently the quality of the logistic system represents a resultant of the service quality of every single logistic process.

Compared to other branches of traffic, both in passenger and in cargo transport, air traffic has its very significantly highlighted and handicapping specific characteristics such as security and safety, and specially designed containers (ULD). Next specific characteristic is reflected in the organizationally isolated operations of cargo handling and transport. The handling activities are as a rule performed by the cargo handling company or a company providing aircraft handling services, whereas the transport itself is done by an air carrier. Air traffic is a traffic branch which

provides the fastest and often the most expensive transport, especially when air cargo transport is considered. The development of Internet commerce has greatly contributed to the increase in the volume of cargo in air transport as well as in the reduction of IRR (Internal Rate of Return) which allowed the cargo sector to reduce the overall costs. As a result of high competition between the air carriers and aviation industry deregulation, the carriers have been forced to change their services in order to survive on the market. Aviation industry is traditionally a highly regulated sector, which has always required big efforts in introducing the changes in the services it provides. Furthermore, high pressure of the national and foreign competition has resulted in the setting of changes in the service provision as the priority of operation. Identifying the service quality elements, measuring the criteria values, and analysis of the results, and setting of target values represent the basic step in determining the steps of changes. The double experience of the quality of service, one on the part of the service provider, and the other on the part of the air transport service user, and the additional elements of the specific characteristics of air transport indicate great efforts that have to be invested in order to span the gaps between these experiences and in order to create a satisfactory quality of the logistic services in air transport.

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