

Areas of Logistics Activity. Evolution and Tendencies. Criteria and Parameters of Design to Implementation and Organization

Jose Romero Postiguillo, Jose Mar á del Campo, and Juan A. Santamera

Abstract—In the past 50 years has been developed a new organization of international markets, which directly affects the systems of procurement, production and distribution, in other words, to the supply chain. In this new configuration of trade, “Logistic Network” acquires a paramount value, positioning in the preferential step in the competitiveness of products and companies. Logistics platforms are an item that has been gaining importance, which not only act as support on the road, but provide value-added services, and configured as basic points of the supply chain. That is why this research is performed in order to obtain a rating for Spain and design parameters.

Index Terms—Areas of logistics activity, Spain, supply chain, transport.

I. INTRODUCTION

Logistics are seen as the necessary tool for partnership competitiveness in a globalized market, which means to be able to face almost-instantaneous demand from consumers as short and cheap as possible. “Just-in-time” systems are the answers to this phenomenon.

Thus, what does logistics mean? The Spanish Academy dictionary defines this term as “the complex organization and implementation that allows the movement of products from the acquisition of raw material to its consumption as finished products, as well as the flux of information which the product itself generates aiming at the proper level of satisfaction of the client under a reasonable price.”

The activities logistics depend from are mainly transport, stock maintenance, customer’s orders, shopping, product planning, package security, storing, goods management, and information data storage [1]. All these activities have their balance in the final logistic costs, being transport the most important.

A key to reduce these costs is achieved by the optimization of added value services, supported by an effective transport system and reducing the number of empty or half empty cargo journeys.

The necessary transport system is related to lineal infrastructures and nodal infrastructures, both being irreplaceable to the logistics chain. In the knot infrastructures we have the logistics platforms, which they don’t work only as a help to the very infrastructure but also

they supply added value services, and they become as basic steps of the supply chain offering the companies the capacity of performing some of the logistics activities already mentioned before, in order to match offer and demand, to optimize the supply chain and to reduce logistics costs.

The beginning of these facilities was in France with the opening of the Logistics Centre GARONOR in 1970, as in Fig. 1. It was not initially designed to improve the supply chain, but as a strategy to solve a problem originated by the Council Hall norm of not allowing heavy traffic through the city centre.



Fig. 1. Logistic centre garonor.

II. DEVELOPMENT AND TENDENCIES

The development of the term Logistics Centre and its variability is one of the factors to understand the diversity of existing typologies and hierarchies in the scientific literature. This is an old concept which appeared 50 years ago. During these years logistics have undergone a deep change.

The variety of terminology is due in part to the process of the evolution and invention of new typologies developed in the last decades, according to different authors as Kandratowicz [2], Rimiene & Grundey [3] and Meidute [4].

During the end of the 50’s Lynagh started to postulate how the physical management of distribution began to materialize in an important economic activity [5]. The concept of marketing together with the market segmentation, the electronic processing of data and other advancements improved the focus of the system and set the basis for the physical management of distribution. For more than 25 years this concept has been combined with all functions, building a more mature system and opening new ways for market surveys [3].

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The years of 1965 were characterized by a refinement in basic concepts [6], being in the final years of the 70s, when Germany and Italy joined France, in the creation of logistics centers, appearing concepts of intermodal terminals and rail services.

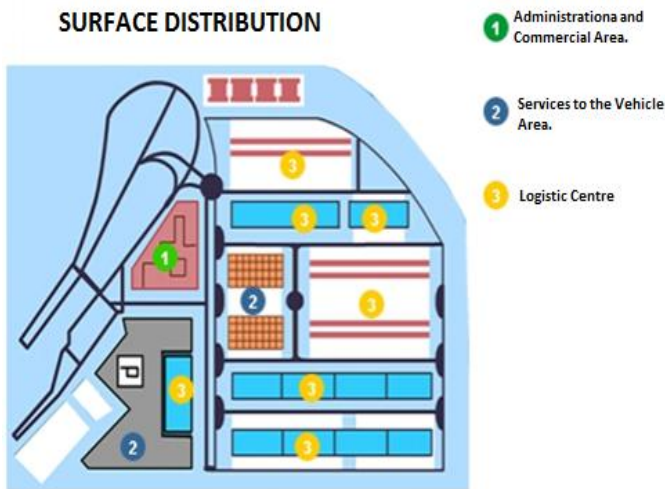


Fig. 2. Surface distribution transport centre of Madrid.

During the 80's and 90's the number of logistics Centres in France, Italy and Germany grew in a great quantity and this phenomenon rapidly spread along the Netherlands, Belgium, United Kingdom and Spain [7]. In Spain the first Transport Centre was planned in 1987, The Transport Centre of Madrid, as in Fig. 2. During these years, Jones and Riley [8] defined the concept of **Supply Chain Management** as a tool to handle the stocks in order to obtain competitive advantages.

Along this time, the concept of these centres has changed according to what Bolten [9] has identified as the three phases of the development of logistics centres. Modern Logistics Centres play a widely important role in today's global market. Following these phases, traditional department stores have evolved towards 3 and 4 PL logistics service suppliers [3], [9]. The ways developed to manage the supply chain for logistics service suppliers rest on new service practices to the consumers and on the merchandise management and inventory, and all that supported by new technology development [3], [9], [10].

On the other hand, traditional storehouse managers have moved to the 3 and 4 PL logistic services suppliers. A 3rd Party Logistics is an enterprise which directly or indirectly adds value to the cargo owner's supply chain, providing a range of logistic services beyond the simple cargo transportation [11]. These enterprises have been created as a result of a logistic market originated by tendencies as the supply chain management. Also, delivery systems "Just in Time" offer a wide range of services and added value functions such as a specific supply chain, time and costs, or a greater reliability, instead of services related to the physical characteristics of the goods [12].

However, as Rodrigue [12] points out that the limits of service suppliers have been blurred with the new sorts of operations and activities which have arisen as a result of the varied necessities of logistics, which have given rise to what can be called logistic 4^o companies, or 4PL business enterprises. Basically, the 3PL companies keep their own

fleet and operate as tertiary actors, but 4PL enterprises are seen as supply chain managers who focus on reshipment, planning and logistic services consulting.

The most used term in the scientific literature makes reference to the generic term *Logistic Centre*. Viewing the Logistic Centre literature it is clear that there is no any agreement for typological classification, neither over denomination nor functions.

Some terms have been imprecisely defined in order to address centres such as **freight hub, freight gateway, inland port, inland terminal, dry port and freight villages**. These definitions open to varied types of roles and scales, from terminals with simple tasks up to facilities with more complex relationships to be developed, joined in formal institutions including logistic areas and common management structures. [1].

There are even more differences among countries which call the same facilities with different names. As an example, Tsamboulas and Dimitropoulos [13] point out that a nodal centre of goods is called as *freight villages* in United Kingdom, "**plateformes multimodales o logistiques**" in France, **interparty** in Italy, "**centros integrados de mercancías**" in Spain, and "**gueterverkehrszentren**" in Germany.

Different reasons are raised to explain this lack of criteria when classifying and defining logistic centres. Three main reasons are studied by most present literature.

Firstly, intermodal logistic studies belong to a recent area of research. According to Rimiene and Grundey [3], "logistic researchers have poorly made efforts to build a unified concept for a logistics centre..." These scholars assert that the history of theoretic and empiric development of unifying the term of logistic centre is rather insufficient if comparing with other disciplines. This can be claimed to the progressive evolution of goods freight and logistics, and the short history of management theories of supply chains [3]. The assessment of logistics centres in scientific literature is rather insufficient. The lack of standardized methodology in work criteria seems to be a common characteristic.

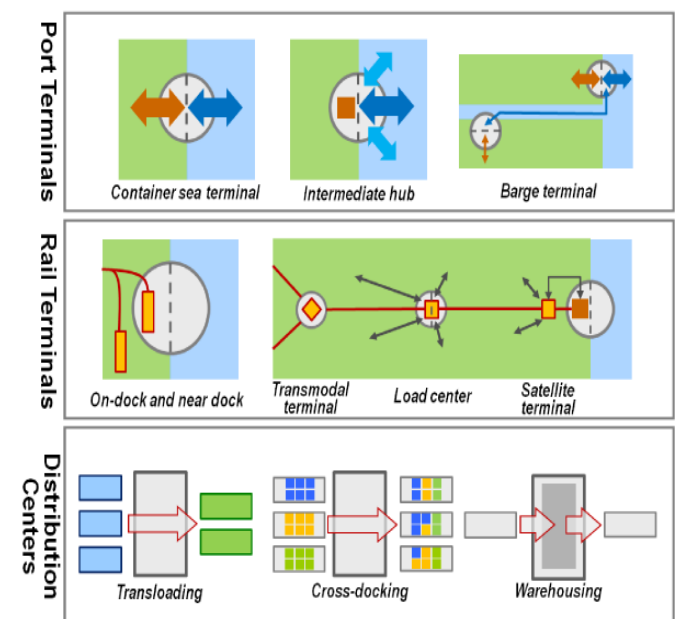


Fig. 3. Types of intermodal terminals.

This lack of theoretical research goes beyond the logistics centres, reaching up to intermodal transport studies; we can see the types in Fig. 3. Bontekonig [14] argues that the lack of collaboration among researchers, of coherence among research areas and of agreement on term definitions have been the key factors that have slowed down over and over again the progress of this area towards a more secure and consolidated path.

The consequences of these problems have been the dissimilarity of terminology and definitions used to account for the intermodal logistics centres activity.

Secondly, It is due to the own evolution of the logistic centre concept. The variation of these terms and the centres can be seen as an answer to the market evolution, while formal literature provides a fixed range of established definitions [2], [3].

Finally, confusion in logistic centre definition can be given to geographical reasons (local, regional, national characteristics), or even to semantic features.

Summarizing, the characteristics of a logistics centre are the result of the surrounding environment of every facility, and of the preferences of actors or sides implied. All of them play an important role in the design and functions in their respective areas of economic influence [11]. Following Notteboom and Rodrigue [15], every logistics centre is the result of geographical characteristics of transport in relation with availability and efficiency, the market function and the intensity, as well as the regulatory frame, and government authorities.

III. AIM OF RESEARCH

Based on present situation a thesis will be brought up with the main objectives to define the line of research as follows:

- Knowing the different terms and typologies of logistics centres in Spain and abroad.
- Understanding the reasons that create the lack of uniformity on definitions and classification of different nodal infrastructures.
- Defining a term to release the Logistics Platform term from ambiguity to any other nodal infrastructure.
- Understanding the functions and therefore the aims and specific advantages of a Logistics Platform.
- Knowing previous organization and plans of public institutions or agencies.
- Providing objective criteria for classification and characterization of Logistics Platforms in Spain.
- Providing advise to future developments of Logistics Platforms from the results of this thesis.

For that purpose fifteen Spanish Logistics Platforms have been analyzed above all on role analysis or logistics centrality ratio, intermodality, spatial concentration ratio, multifunction or sectorial specialization level and internal organization.

Next, analysis on what sort of services are offered as the most representative, how to organize kinder-garden services, "ITV" facilities (Vehicle inspection), petrol as well as gas stations, etc. have been carried out.

Preset (order) Parameters as minimum allotment, front allotment, maximum allotment building, height of building and number of stories of the building have also been studied.

Once all the previous variables mentioned before have been analyzed then the results can possibly be obtained taking into account its localization and minimum parameters for design recommendation, especially those regarding:

- Land size
- Presence of attached services
- Recommended percentages in relation to logistics area, vehicle service area, heavy transport parking, administrative and service centre, roads, parks, intermodal facilities, industrial area, and scientific-technological area.

Last, and for want of a detailed analysis of available data which allows to appreciate the aspects previously mentioned, which are the object of the doctoral thesis taking place in the Department of "Planning, Urbanism and Environment" at the Technical University of Madrid (UPM), we would like to provide a new definition of Logistics Activity Area which gathers in a more intuitive way its effective aim and assumes those infrastructures working as nodal transport point of goods and developing that function in a more effective way, that is: **"Cross-functional node or nodal infrastructures for multifunction land transport aid."**

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