

Multi-centre logistics systems for improving competitive status of logistics service suppliers in Hungary

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Abstract

The enhancement of level of logistic services may contribute in a great extent to Hungary's becoming the logistic centrum of the region. In order to reach this goal it should be established the network of national service centers.

The research group of Széchenyi College has sought the answer how would it be possible to reach the set goal by exploiting the resources of the region, together with a small undertake of role of the state. It has been elaborated such a methodology witch builds basically upon the regional fundamentals and the activity of the regional actors of economic life.

The main elements of the methodology are the development of the cooperation readiness of small and medium size enterprises, and their organizational support, as well as the exploitation of the information technology opportunities within a multiple center logistic service centrum.

On the basic of the methodology the development of some logistic centers has started so far.

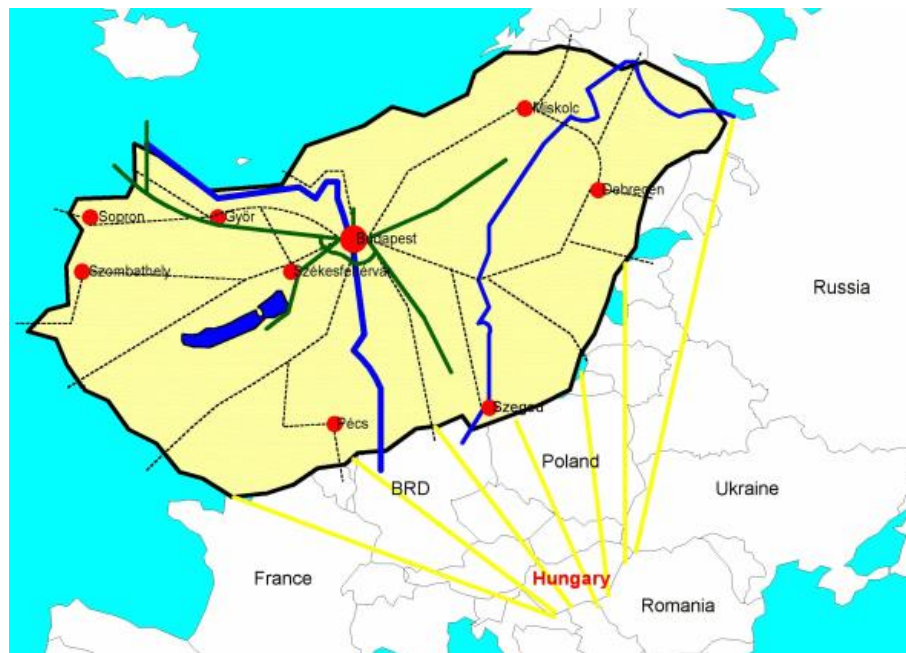
1 Background

Hungary is situated in the middle of Europe, surrounded by the European Union on the west and by Ukraine on the east. In 1990 as a result of political changes the country become a free and democratic state and that fact indicated fundamental changes in the economic structure as well. The former central planning system disappeared and market economy conditions developed. In Hungary, the political and economical situation has been rapidly changed since 1990. New approaches have been introduced; the traditional markets collapsed then significant development has taken place in other market segments. Foreign companies with highly developed technologies became relevant actors of the economic life. The international investments had favourable impacts: decreasing unemployment, foundation of supply chain with domestic companies etc. Stable political conditions, relatively developed infrastructure, not expensive but skilled labour force attract the investors.

Hungary faces the following economic challenges at the moment:

- Foreign capital inflow was one of the main factor of favourable changes in the early stages, but from the mid 90's the surrounding countries - due to economic and political changes - have been getting more and more competitive in terms of capital investment options. If Hungary intends to maintain its economic position it needs to find new solutions.
- Development was not balanced in Hungary, the western part and the capital of the country well supplied with infrastructure face relatively good conditions, in some cases the lack of labour force is experienced. The decline of heavy industry caused extremely high unemployment rate in the eastern regions that struggle for access to transportation and IT networks.
- The multinational businesses settled in Hungary maintained their own relations to their former suppliers and subcontractors - including logistics service suppliers such as distributors,

Figure 1: Hungary in Europe with transport networks



freight forwarders. In Western-Europe the concentration of logistic service suppliers has taken place, in Hungary small and medium sized businesses are the relevant actors thus the expected complexity and quality of such services cannot be achieved by Hungarians companies without external support.

In order to solve the above mentioned problems the development of logistics infrastructure is of great importance.

The development of logistics infrastructure and the logistics services is the basic condition in encouraging the further capital inflow, increasing the logistics capacity of the eastern part of the country and finally forming Hungary into global logistics centre of the Eastern-European region. By developing the logistics service supply:

- Hungary can become logistics centre of Middle-East-European area
- The capital investments can have balancing effect on the economic structure
- Domestic small and medium sized companies can prepare themselves for the European Union

One option could have been a state financed project in which the Hungarian state could have invested in transport networks extending the routes and increasing the quality and in the same time it could have offered favourable conditions for business investments by creating a logistics centre network. That could have meant more attraction than the simply offer of "cheap labour force" and could have helped the eastern region.

In the early 1990's the Hungarian government started such project, but because of the lack of financial resources the programme failed.

On the other hand new options are being considered. Domestic small and medium sized companies may represent the basis of new development. By applying innovative technologies they are able to fill the gap on the market and strengthen their strategic position.

2 Goals

Our research team intended to elaborate a system in which the missing logistics infrastructure can be formed involving and concentrating the existing resources and based on the co-operation of domestic small and medium sized businesses. The following questions had to be answered:

1. How to create logistics infrastructure in a competitive market so that the regional impacts are precisely considered?
2. How to support the independent small and medium sized companies in order that they would be able to provide complex and high quality logistics services and they still maintain their autonomy?
3. What kinds of regional synergetic effects exist that can support logistics development?

Solution

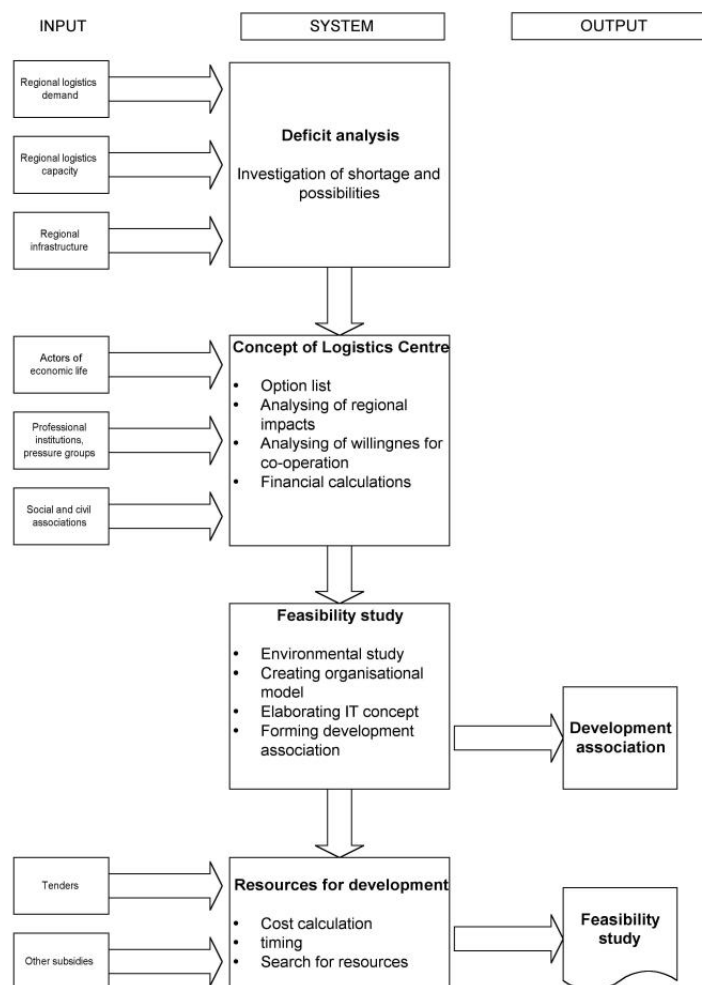
A complex model has been elaborated that proposes an algorithm by which the formation of logistics centres can be supported involving small and medium sized companies.

The initial input of the model is based on a survey exploring the existing regional logistics capacity, transport infrastructure and demand. Comparing supply and demand deficit and possible development concept can be determined.

Relevant actors of regional economic and social life must be involved in the elaboration of development concept. The intended range of services must be outlined, regional effects are to be predicted and financial calculations and studies must be carried out. Survey on willingness for co-operation is an important element of the concept since the virtual centre is based on close collaboration of different organisations.

In the planning phase the IT system is outlined and the development association is founded. Financial verification of the project is carried out in the last phase, information about the possible sources is used as an input, and the final feasibility study is the output of the model.

Figure 2: Structure of the proposed model



The model consists of the following phases(PH):

- PH 100** Comparing transport service supply and demand Survey of regional industrial manufacturers, agricultural performance and the service sector. Analysing the qualitative and quantitative parameters of regional supply of transport, freight forwarding, warehousing, handling capacity. Comparing supply and demand, analysing shortage/surplus, setting the development targets.
- PH 200** Analysing of transport infrastructure Exploring and evaluating of existing transport / loading / material handling capacity
- PH 300** Concept of logistics centre The concept is based on the first two phases. Shortage, options and existing capacity are considered and regional development plans are also integrated. Verification of the model.
- PH 400** Feasibility concept The expert team elaborates versions detailing locations, facilities, organisational structure and management concept. The IT system concept is adjusted to the physical and organisational solutions.
- PH 500** Sources for development Costs and required capital investment are calculated. Revenue from sold options and of existing operation can be estimated. Sources for additional finance are explored.

3 Application of the model, conditions and approaches

3.1 Role of the state

The methodology does not count on direct central, governmental investment. The role of the state should be based on tendering processes in which the government can support the activity of local, regional actors in projects that match the national economic targets. The possible methods:

1. Non refund grants in case of extremely underdeveloped regions and/or poor quality of services.
2. Free of interest loans for new and extending companies when the return of investment can not cover the usual interest rate.
3. Low interest rate for supporting the domestic companies' investments.

The state should make efforts to support the practical application of up-to-date IT solutions by communicating the issues nation wide and by calling for innovative tenders. The tendering process increase the effectiveness of financial resources and encourages the regions to launch independent projects.

The only required direct state finance is the development of national transport infrastructure. The model points out the importance of transport network and its effects on logistics services, but the actual state finance methodology in this field is not investigated.

The regional efforts can be supported by active tax policy as well. In order to balance the national economy geographically such tax/subsidy system should be introduced that based on solidarity an mutual advantages.

3.2 Regional tasks

The model represents regional approach so the importance of collaboration with local authorities city councils and civil organisations cannot be overemphasised since these institutions are eager and ready for regional development.

The local authorities can give tax allowance or they can provide the necessary sites for the facilities. Civil organisations can assure the public support by communicating the plans and using their relations to other relevant actors. That is why it is very important that the probable partners have to be informed about the projects as soon as possible and they are involved in the work according to their competence.

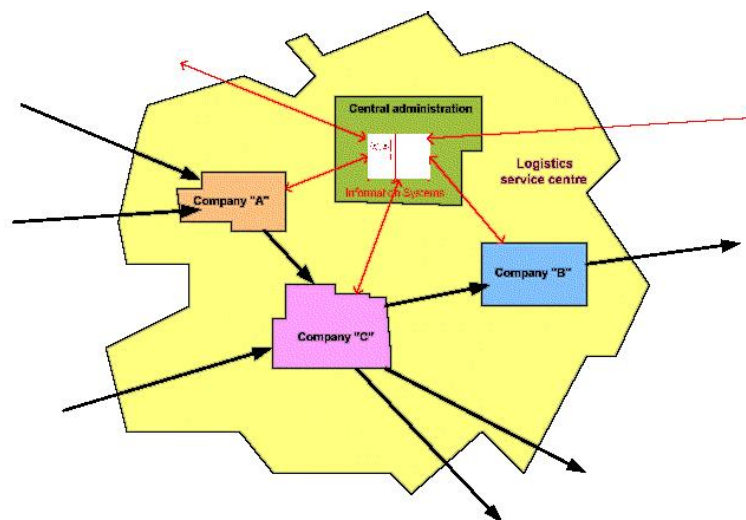
3.3 Using of existing capacities

The model pays attention to the existing logistics capacities and compares the regional supply and demand. The concept of the model is that the most effective way of covering the shortage, deficit in regional logistics capacities does not necessarily mean new investments that can increase the competition between small and medium sized businesses. Instead of that the actors of the supply side have to specialised for given services and a joint appearance on the market makes them able to provide complex, high level logistics service. The model helps to find the connection between different logistics capacities owned by independent companies.

Because the lack of financial resources a small or medium sized Hungarian logistics service supplier has little chance for extending its capacity or profile. By applying the proposed model the capital investment can be avoided and a special kind of outsourcing can be set.

From the point of view of physical facilities the solution does not mean concentration so the so-called semi-central model has to be applied.

Figure 3: Model of multi-central logistics centre



On the market the alliance is able to provide complex logistics services that have been produced only by large international companies. The realisation of necessity for co-operation makes the small and medium sized companies more competitive and strengthen their market position.

In the alliance the dominant companies have the leading role and such informatics and management systems have to be built and operated in which the inter-alliance competition can be eliminated. General model for the legal form and management structure of the alliance cannot be given since during the development significant changes can be experienced.

3.4 IT tools

The operation of proposed alliance requires new approach and means. The information is the most important strategic resource of the logistics centre, proper handling and processing of information are elementary. That is why up-to-date telematics solutions have to be applied that are based on open network concept. Since the multi central system is built up by more or less independent companies the most important issue of the joint operation is the informatics.

The appropriate open informatics system consists of three separated domain:

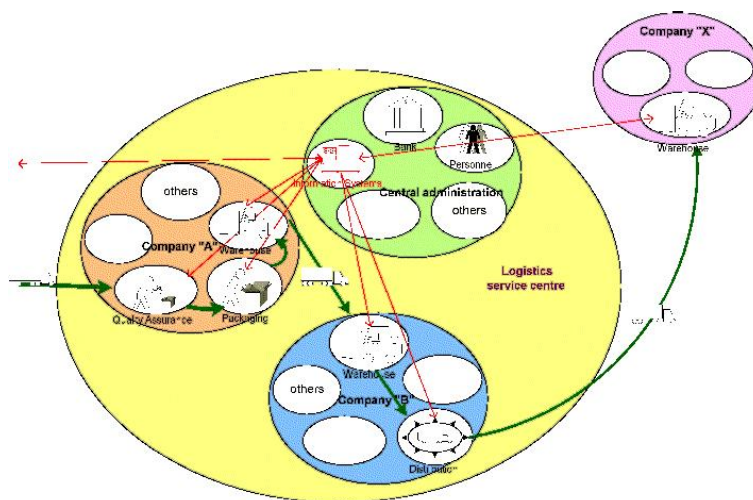
1. *Internal management and controlling* system which is an integrated system based on usual modules. It supports the internal informatics and controls the use of resources. Because the features of logistics services different mobile telematics solutions are to be applied.
2. *Management and control of logistics service centre*, in which the planning and timing of capacities are done, marketing activity and joint economic operation are served

3. *External informatics system*, that sets the connections and links to customers and other external informatics systems. It provides information about the offered capacities and services, makes dispositions and traceability possible, supports EDI, enables outsourcing.

Informatics domains must be separated by IT means that are able to assure the fulfilment of safety requirements.

The IT based system is able to build up and operate logistics chains that can meet the actual needs. In the first step the informatics system set the model of logistics chain, and that chain is operated by the allied companies as a project. The offered "product" is the logistics chain, the customer buys the service of the logistics centre that operates as a virtual company. The "virtual company" uses the information system of the logistics centre and the resources of allied companies. After finishing the job the virtual company is dissolved and a new one is created for the next task.

Figure 4: The logistics chain



The allied companies can reach their strategic goals by operating such informatics and organisational model which enables them to provide logistics services flexibly in the framework of a virtual organisation.

4 Verification, practical application

The methodology has been applied in practice as well. International and domestic applications have been carried out. The most important of them was the Trans-Sped Logistics Centre located in Debrecen, the second biggest town of Hungary. The feasibility study of Trans-Sped was elaborated using the proposed model. It must be noted that Debrecen is in the Eastern, less developed part of the country where the international capital inflow has not been significant so far.

It must be emphasised that the Debrecen logistics centre was established and built successfully despite the fact that the town and the region are not connected to the national motorway/semi-motorway network.

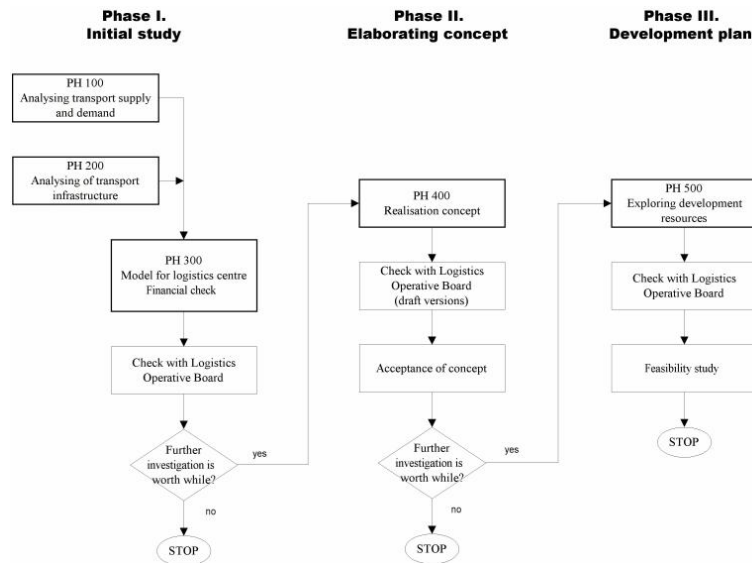
Now the Debrecen logistics centre is an operating regional centre that can provide wide range and high quality logistics services. The necessary construction works have been completed, allied companies have signed the set of contracts, the installation of IT system is under process at present.

5 Summary

Answering the questions asked in section 2. the following theses can be declared:

Logistics infrastructure can be built effectively on regional basis - without external capital investment - involving the relevant actors of regional economic and social life. Local public co-operation

Figure 5: Structure of Debrecen project



and control can assure the efficient way of achieving regional aims. Thus logistics can be significant element of regional development.

The state has indirect role, the government must act as a catalyst supporting subsidising principle.

Small and medium sized companies realises their economic interest and using appropriate methodological and technological support they are able to offer complex, competitive logistics service in a co-operative organisational structure.

Co-operation technology means IT solutions based on open network principles and they makes the foundation of virtual logistics company possible.

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