THE STATUS AND DEVELOPMENT PROSPECTS OF LOGISTICS POINT AND LINEAR EXTERNAL TRANSPORT INFRASTRUCTURE AS A DETERMINANT OF A COMPANY STRATEGY – ON THE BASIS OF THE STUDY CARRIED OUT ON THE POLISH MARKET

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The main purpose of the article is to verify if there is a relationship between the state and prospects of development of linear and logistic point infrastructure of external transportation and strategic management in enterprises. The authors attempt to revise this hypothesis based on research conducted within selected Polish enterprises. The introduction to the main part is a brief presentation of the conceptual framework of linear and point infrastructure of external transportation, as well as discussion about the role of this infrastructure from the appropriate management point of view.

Keywords: Strategic management, Transport, Logistics infrastructure.

Introduction

The issues related to the strategic management of companies are undertaken by many authors. At the same time, specialist literature the literature on strategic management does not profoundly enough undertake matters related to the logistics infrastructure. The subject of technical means, methods for their use and systems of their usage that enable efficient and cost-effective sequence of operations: handling, transportation and conservation of stocks\(^1\), is being developed in the literature by numerous authors, however, it is chiefly done by the researchers involved in logistics. In numerous publications, authors usually explain the concept of logistics infrastructure\(^2\), determine its importance from logistics activities’ realization point of view\(^3\) and present the classification of that infrastructure\(^4\). Furthermore the individual components of logistics infrastructure are characterized, including inter alia: the infrastructure of internal transport, storage, packaging systems and data processing\(^5\). A set of logistics infrastructure panopticon also includes a linear and point infrastructure of external transport\(^6\). At the same time, however, logisticians do not consider the broader relationship between the state of this infrastructure and the enterprise strategic planning.

Meanwhile, based on the comparison and synthesis of the conclusions from the deliberations of researchers from both disciplines (logistics and strategic management), it seems reasonable to conclude

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that there are noticeable correlations between the mentioned kind of logistical infrastructure and enterprises’ business strategy. The query library for strategic management and logistics has led to the evolution of the hypothesis: there is a relationship between the state and prospects of development of linear and logistic point infrastructure of external transportation and a company’s strategic planning.

In the article, the authors attempt to revise the hypothesis, to develop and systematize issues related to the system of reference: strategic management versus logistics infrastructure. A theoretical basis for the considerations is the query library and an analysis of secondary sources related to the discussed matters. The empirical part is elaborated on the basis of research conducted within selected Polish enterprises. The introduction to the discussion is a concise description of the conceptual framework of linear and point infrastructure of external transportation.

Linear and Point Transport Infrastructure as a Factor Potentially Conditioning a Corporate Strategy

The term "infrastructure" is generally identified as basic, physical equipment necessary for the functioning of the state or society\(^7\). There is no doubt that this general statement, in many cases, has been an inspiration and starting point for formulating a more detailed definition of the infrastructure created for the needs of different areas of knowledge, including logistics. Logistics infrastructure can be defined in many ways and certain differences concerning the interpretation of this term can be observed among researchers\(^8\) (figure 1).

1 a subsystem of technical measures which enables, according to the ‘just-in-time’ principle, relocation, loading and storage of the goods in the supply cycles with the use of automatic identification of goods.

2 technical measures, methods of their use as well as usage systems which enable an economically efficient operation of all essential functions of logistics – handling, transport and stocks securing.

3 tangible resources, methods of their use and usage systems which are designed to meet the physical flow of goods and information.

4 technical measures and their components for the management of logistics, which enable the implementation of four essential tasks of logistics: storage of products, their movement, products’ protection and processing the information needed in the control of logistic processes.

Figure 1. Logistics definitions of infrastructure.


Figure 2 presents the structure of logistics infrastructure, together with some examples of devices belonging to each of its links.

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The classification of logistics infrastructure distinguishes five basic links, each having different tasks related to the implementation of logistics processes (figure 3).

**Figure 3.** Main features of logistics infrastructure.

The infrastructure of external transport consists of means of transportation, linear infrastructure (natural and artificial roads\(^9\) for moving vehicles, and often materials and products directly)\(^10\), as well as point infrastructure that includes the facilities along the roads of all transport branches, which are necessary to realize transport tasks\(^11\).

There can be noticed a potential correlation between the already mentioned kind of infrastructure and enterprise business strategy. Logistics infrastructure may determine the strategy of a single company (impact at a micro level). However, strategic management theorists do not question the fact that, for each undertaking, the starting point to develop an action plan aimed at achieving specific results (it is de facto strategy) should be the recognition of the company’s potential and internal inhibiting factors, as well as determination of the occasions and constraints imposed by the environment\(^12\). As B. De Wit and R. Meyer write: "accurate investigation "what's hot "- what variables are involved and how they are interrelated is very important, especially due to the fact that strategic problems are usually not plain and simple, but complex and opaque"\(^13\). In other words, managers responsible for strategy must inter alia: get to know the resources of the company, the use of which may be included in the plan, analyze the organization's culture, management style and values shared by the employees. It is no less important to determine the impact of external factors (including infrastructure) that can help implement activities or thwart them\(^14\).

Logistics transport infrastructure can also affect the logistics meta- and macro-system. As P. Blaik states: "system approach is one of the fundamental aspects of modern logistics. Different definitions of "a new day" logistics, pay explicit attention to the systemic nature"\(^15\). A system approach in logistics means that various components and activities, participating throughout the value chain, are not analyzed separately, "but treated as a whole, as a system"\(^16\). Logistics tasks, so the planning, organizing, leadership and controlling (managing) the flow of goods and people are realized among the elements of the chain\(^17\). The systemic approach does not treat them as an individual, independent entities but a dynamic system of components, among which there are interrelationships and dependencies\(^18\).

The presence of adequate point and linear logistics infrastructure of external transport is seen as a prerequisite for the efficient functioning of logistics system both at micro, meta and macro levels\(^19\). This infrastructure seems to be one of the factors determining the reliable and smooth implementation of an important process taking place within the system. The physical movement of materials and goods from a

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\(^{9}\) Artificial roads were built from scratch by a man, whereas natural ones occurred without his larger interference (boiling down only to the delimitation of the specific pathways). Compare: T. Nowosielski. Infrastrukturalne uwarunkowania rozwoju logistyki morskiej. [In:] Funkcjonowanie systemów logistycznych. Ed. by: J. Jaworski, A. Mytlewski. Wyższa Szkoła Bankowa w Gdańsku. Warszawa 2008, p. 153.

\(^{10}\) See: K. Ficoń. Op. cit., p. 46


\(^{13}\) B. De Wit, R. Meyer. Synteza strategii. PWE. Warszawa 2007, p. 82.


\(^{15}\) P. Blaik. Logistyka. PWE. Warszawa 2010, p. 47.


\(^{19}\) Micrologistics system works within a single company. Along with other enterprises’ microsystems it creates a metallogistics system. Macrosystem is formed by micro and / or logistics macrosytems. "Inter-organizational networks are often described as systems of two or more organizations involved in a long-term relationship". See: E. Stańczyk - Hugiet. Paradygmat relacji – czy to nowa jakość w zarządzaniu?. “Zeszyt naukowy. Studia i prace kolegium zarządzania i finansów” 2012. Vol. 116, p. 163.
supplier to customer, however, cannot be done without the presence of certain technical means and appropriate routes.

On this basis, it can be concluded that the technical base of logistics, called: logistics infrastructure, determines the efficiency and reliability of the physical flow of raw materials, goods and services within the meta- and macro-logistics systems. In view of the foregoing, it can be inferred that it also determines the strategic projects being developed within a single enterprise. Logistics infrastructure can be identified as company’s resources according to theoretical considerations focused on the theory of resources\textsuperscript{20}.

The Impact of Infrastructure on the Enterprises’ Strategic Management Process – Research Findings

The problem of the impact of infrastructure on the process of strategic management in enterprises has been verified in the Ph.D. dissertation of Aleksander Pabian. The interviews conducted with the managers of thirty Polish companies allowed to reveal some general regularities regarding the relationship between strategic management in the surveyed enterprises and external transport infrastructure of the region in which they operate:

- in a vast majority of companies (80% = 24 units) it is believed that the proper functioning of the business depends on the infrastructure state of at least one branch of transport. In this group, road (automotive) transport is most often indicated. \( \approx 95.8 \% \) of respondents indicate the existence of relations between the state of its infrastructure and commercial success of the company. Nearly 70% of them consider this relationship as significant or very strong.
- 27 managers (90%) agree that the potential progress in the infrastructure of transport can provide an opportunity for their company. Also, in this case the importance of automotive transport is emphasized – it is indicated by all the people. 17 respondents also indicate the role of rail transport, and 14 of aircraft.
- the same number of people believe that adverse changes in the infrastructure (for example, price increases for the use of it) may pose a risk to the business. Almost half of them think that such a transformation could be dangerous or very dangerous (fig. 4).

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure4.png}
\caption{Do negative changes in the infrastructure represent a potential threat to the company? The survey results. \textit{Source: own elaboration.}}
\end{figure}

The Status and Development Prospects...

In 28 companies (93% of the surveyed) representatives of the managing staff express the belief that issues relating to external transport facilities are so important that they should be considered in the analysis of the functioning of the company.

It is also thought that during the formulation of the strategy, the person responsible for the task should have the knowledge on the state and prospects of development of infrastructure. Depending on the industry in which the company operates, managers point to the need for access to information on all three branches (18 entities), road and rail transport (3 companies ≈10.7%), and the automotive itself (7 companies) - figure no. 5.

![Figure 5](image1.png)

**Figure 5.** Should the creators of the strategy possess the information regarding the status / prospects of development of transport infrastructure? The survey results.

*Source: own elaboration.*

A separate mode of transport, which can be considered as monitored by the companies from the infrastructure matters point of view is road transport (fig. 6). 60% of the whole set of companies surveyed are interested in the state and the prospects for infrastructure development of this branch. Not much attention is paid to both the railway (only three big companies do) and the air (again three subjects) transport infrastructure control.

![Figure 6](image2.png)

**Figure 6.** External transport infrastructure controlling in the surveyed companies.

*Source: Źródło: personal study.*
Only one of the surveyed companies carries out complex controlling: infrastructure of all branches is analyzed simultaneously (a large manufacturing and service sector enterprise). At least two modes of transport are controlled by about 21.1% of companies that carry out infrastructure research control. Others focus exclusively on road transport (14) and one on the aerial transportation. The scope of controlling in enterprises investigating the infrastructure is presented in figure 7.

<table>
<thead>
<tr>
<th>Scope</th>
<th>Frequency</th>
<th>Percentage</th>
<th>Total percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full/all modes</td>
<td>1</td>
<td>≈5.3</td>
<td>≈5.3</td>
</tr>
<tr>
<td>Two transport branches:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- automotive and rail</td>
<td>2</td>
<td>≈10.53</td>
<td>≈15.8</td>
</tr>
<tr>
<td>- automotive and air</td>
<td>1</td>
<td>≈5.3</td>
<td>≈21.1</td>
</tr>
<tr>
<td>One branch:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- automotive</td>
<td>14</td>
<td>≈73.7</td>
<td>≈94.8</td>
</tr>
<tr>
<td>- rail</td>
<td>0</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>- air</td>
<td>1</td>
<td>≈5.3</td>
<td>≈5.3</td>
</tr>
<tr>
<td>Total:</td>
<td>19</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 7.** The scope of controlling in companies that examine the state of infrastructure.

Source: personal study.

Within the organizational structure of the surveyed companies, there is generally no separate unit, dealing with the control of the state of the infrastructure (fig. 62). As expected, it is present in the organizational structures of these companies that monitor infrastructure, although it should be noted that not in all of them (6 out of their total number). Therefore, it can be concluded that other managers derive their knowledge in an individual and spontaneous way from other sources (figure no. 8).

Figure 8. A separate unit occurrence in the organizational structure of an organization devoted to the study of external transport infrastructure condition and changes taking place within its boundaries. I on the basis of the whole sample, II among companies monitoring infrastructure environment.

Source: Own studies.

The surveyed companies’ managers do not highly appreciate their competences in terms of knowledge of the state and prospects of development of logistics transport infrastructure (fig. 9).
The chart shows that the highest density of indications falls on the average level 3. 15 individuals assess their knowledge in this way, with regard to railway transport infrastructure (13 relating to road transport and 11 to air, respectively). Automotive transport infrastructure appears to be relatively best recognized. None of the managers of the surveyed companies could claim a complete lack of understanding of this issue. By way of opposition, 30% declared their full knowledge.

- only half of all surveyed entities (78.9% of these which investigate the infrastructure of at least one branch of transport) take infrastructure issues into account in any of the existing strategies (developmental, competitive, operating of financial nature). Among them, four entities deal with the problem in all three strategies (three big companies take the lead here in the number of three), 7 simultaneously in two types of strategy, the others in one strategy only - chart no. 10.

<table>
<thead>
<tr>
<th>Options</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entire/in all kinds of strategies</td>
<td>4</td>
<td>Ca 26.7</td>
</tr>
<tr>
<td>Two strategies:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>development/competitive</td>
<td>6</td>
<td>40.0</td>
</tr>
<tr>
<td>development/operational</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>competitive/operational</td>
<td>1</td>
<td>6.6</td>
</tr>
<tr>
<td>Into one strategy:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>development strategy</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>competitive strategy</td>
<td>3</td>
<td>20.0</td>
</tr>
<tr>
<td>operational- financial</td>
<td>1</td>
<td>6.6</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

At the same time 66.6% managers of these companies hide behind the unawareness or directly declare not to take into account infrastructure issues in:

- the diagnostic part of the strategy formulation stage,
- the strategy’s evolved variants,
balanced scorecard,
event scenarios.

In one company only (a large, private involved in production) pro-infrastructural approach in all these areas is declared.

As can be seen from the figures, the interviewed managers are convinced of the significant impact of the logistics transport infrastructure on the functioning of enterprises in which they work. At the same time, however, infrastructural issues do not occupy too much attention of people making strategic plans, because they are not considered as key factors which should be included in a strategy.

Summary/Conclusions

At the early stages of the science of organization and management, competitive advantage was pointed out as an indicator for companies to help them develop a strategy. It was believed that gaining a stronger position in relation to competitors would provide higher profitability to the company. It was considered what the source of that advantage was and how to ensure its durability. The attention was directed to the position occupied by the company in the sector21.

It was argued that by gaining a dominant position in a sector (in terms of cost and / or appropriate product positioning22) the company succeeded in obtaining more added value than its competitors did. "The erosion of the boundaries of sectors under the impact of innovation, internationalization and globalization of competition, as well as fragmentation of markets being a result of changes in the nature and structure of demand meant that in 90s the position taken by the company in a sector stopped to be perceived as a source of competitive advantage. One started to pay attention to the resources of the company, as a basis for the construction and maintenance of advantage"23. "The fundamental premise of this school was the assumption that in order to understand the sources of success of an organization, you need to understand the configuration of its unique resources and skills24. "At the same time, it was more and more clearly emphasized that the ultimate test, which the company resources and competences had to be subjected to, was its ability to generate value for customers"25.

The conviction of the necessity to take strategic actions that will lead to offer the customer the excess benefit26 is valid today as a determinant of activities undertaken by theorists and practitioners of management. Over the years researchers have come to the conclusion that the strategic management process should be de facto subordinated to the interests of customers. At the same time they were exploring whether and how the components of an organization's environment could affect the process of developing a strategy that would benefit buyers.

In their works, however, there was not broadly considered the impact of logistics transport infrastructure on management. The situation is similar in other publications in the field of strategic management. Although the theme of information and decision-making process whose aim is to rule on the substantive issues of company activities, about its survival and development is being expanded by many authors, the infrastructure issues are not directly related to.

At the same time the analysis of the results from research conducted by the authors, results in the conclusion that there is a correlation between the two areas. The status and prospects of development of logistics transport infrastructure in a specific area are factors influencing the commercial success of companies operating there. Their managers are aware of this fact. At the same time they do not take actions to optimize the strategic management process from the perspective of the challenges, the source of which is the recognition of the importance of infrastructure issues.

Such an approach is inappropriate and requires preventive action. Their starting point should be a reliable, individual assessment of the role of infrastructure in the process of building the market position of a given company. It is right to do so because there are no two identical companies. Even those present in the same industry, may materially differ in terms of their activities’ dependence on the infrastructure. For example, the state and prospects of development of linear and point elements of air transport infrastructure will be of limited relevance to the company performing transportation by land. The opposite situation arises in the case of a consortium of aviation.

In the light of the research findings (no broader interest in infrastructure in the companies), the recognition of the infrastructural issue as essential should be equivalent to taking therapeutic measures. Because the state and prospects of development of infrastructure constitute a potentially important factor in terms of opportunities to achieve commercial success for the company, such activity should take a comprehensive form, for example based on the concept of BPR (Business Processes Reengineering). This idea points to the need for fundamental rethinking and radical redesign of processes taking place in the company in order to improve the results. According to its assumptions, progress is done primarily through a redesign of the organizational structure and management system, improvement of the information system, as well as emphasis on the growth of staff members’ intellectual potential.

According to these rules, in companies dependent on the infrastructure, it is desirable to:

- set up within the organizational structure a unit or the function responsible for monitoring the status of infrastructure and its prospects of development,
- improve the information system with a view to obtaining the information on the state of the infrastructure. All the information on any developments within it should be signaled and sent directly to those responsible for the strategy,
- build an adequate organizational culture. It is often defined as all the fundamental assumptions that a given group has invented, discovered or created, learning to adapt to environmental and internal integration. One of these assumptions must become a firm conviction that the infrastructure plays an important role in the commercial success of the company. Considering it in this way should over time become a kind of pattern of behavior, inculcated to new members of the group as a proper way of thinking and acting,
- incorporate an additional stage devoted to the infrastructure analysis into the internal procedures of strategy development.

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– conduct trainings with the aim to bring closer the subject of infrastructure, as well as emphasize its importance.

It should be emphasized that the above mentioned activities should not be considered in terms of alternatives. Only the simultaneous adoption of all of them would significantly contribute to the development of the company's management, and thus to increase its competitiveness in the market.

Bibliography


