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**LOCATION FACTORS OF E-COMMERCE DISTRIBUTION CENTERS IN
ZACHODNIOPOMORSKIE VIVODESHIP BASED ON THE EXAMPLE OF A SELECTED COMPANY**

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Abstract. The issue of enterprise location is one of the fundamental economic question. The problem is frequently undertaken in economists' research, especially in the context of industry and agriculture location, but there still remain numerous queries related to motives underlying location selection by entities operating in other sectors. Whereas factors underlying location of industry have been analyzed thoroughly and discussed in the literature, there still remains a lot to explore regarding factors underlying location of services. The purpose of the study was to identify factors which influenced adoption of location decision as well as comparison between Polish voivodeships in terms of elements playing a role in the decision making process related to location of an e-commerce distribution center. The analysis was based on the literature review. Moreover, the studies involved the in-depth interview technique and direct questionnaire interview. The research covered an enterprise with a foreign capital shareholding, whose business is connected with online sales. In the survey, representatives of the company's management performed a quantitative evaluation of the location factors in three Western Poland voivodeships which were taken into consideration as the location for the distribution center. Finally, the investment was located in Zachodniopomorskie voivodeship, and the analysis performed allowed identification of the factors which influenced the location decision adopted. Results of the analysis suggest that availability of workforce, technical infrastructure and cooperation with local administration representatives were of highest importance from the point of view of e-commerce center location.

Keywords: location; location factors; theory of location; distribution center; regional economy; foreign investment

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1. Introduction

In the era of globalization and technological development, sources of competitive advantages are being increasingly sought in enterprise location. Location is also an important element of the development policy; consequently, one may claim that business location is one of the most important decisions related to operation of any organization and the problem of business activity location is one of the fundamental economic issues.

The location decision is an outcome of the respective entrepreneur's location requirements and the possibility to satisfy them at the given place. Not only do characteristics of potential locations depend on geography of the place, but also on social and economic conditions prevailing in the respective area.

The location theories may be analyzed in a cognitive and normative perspective. The first approach focuses on identification of variables identifying the location, in search for an explanation of criteria followed by particular enterprises in their choices. In the normative aspect, rules of proceeding in connection with business activity location are sought (Smith 1966). Both approaches have been applied in the paper.

Actions aimed at identifying the optimum place for enterprise location may be performed at any stage of the enterprise development cycle. Location analysis is essential upon commencement of business activity, when enterprise location will contribute to successful launch, but also further development. The same applies if continuation of a specific type of business activity in the respective area ceases to be profitable and identification of a new location becomes necessary (Fierla et al. 2001, p.65).

Business entities strive to find a place which, thanks to its utility advantages, will let them satisfy their needs connected with business activity pursued. Each and every kind of business requires a different set of factors, while an entrepreneur's requirements result in different perception of the value of particular characteristics. That allows concluding that the notion of location factors may be defined as location related requirements and advantages (Budner 2004, p.27).

Nowadays, location related issues are perceived in a broader perspective; location selection involves consideration of new elements, including technological progress or population income growth. Varying rules of the economic play make investors' business location decisions dependent on a great variety of factors. New terms of companies' activity in the global economy, such as liberalization of international capital flows or new technologies have contributed to development of international enterprises in the form of corporations with different legal and organizational statuses, aimed at achieving the highest possible economic efficiency in the global scale (Tobolska 2011). In a globalized economy, location, understood as geographical location, no longer play a significant role in communication and conducting business (Nowicki 2015, Borck 2007). The decisions related to selection and acquisition of location specifications could have great effect on the ability of profiting and preserving competitive advantage play a significant role in communication and conducting business (Choo et al. 2003).

The purpose of this paper is to present location factors in the light of literature on the subject, as well as identification of the essence and importance of location factors underlying direct foreign investment (DFI), based on an example of a specific e-commerce distribution center in Zachodniopomorskie voivodeship. This paper reviews the literature about factors that drive decision-making on enterprises location. A literature review can add value to the academic discussion in several ways: it can identify gaps in the literature, reflect on dominant theories, or outline knowledge available for location factors. We compare classical theories and main approaches to location factors. The main research question for the literature review is: which factors determine foreign companies' decisions on a location?

Next to rich literature on the subject, the source base were the results of direct survey questionnaires and in-depth interviews performed at an enterprise which decided to choose Zachodniopomorskie voivodeship as the location of its business activity. In addition to the survey questionnaire, which was of a pilot nature, the study used other research tools, such as critical review of literature on the subject, as well as the induction and deduction method.

The paper consists of several sections: the second section describes main classical location theories. In Section 3 we present theoretical background of location factors. Sections 4 and 5 refer to the research methodology and research findings. Finally, the last section provides the results of the empirical study.

2. Fundamental classic enterprise localization theories

For many years now, the problem of enterprise location has been one of the fundamental economic issues. Most of the theories are developed explicitly from a microeconomic perspective: individual firms or establishments seek to reach an optimum, usually defined as a profit-maximizing or cost-minimizing function (Dube et al. 2016). Discussion on the location theory has continued in the economic debate since the 18th century. Its foundations were laid by Smith and Ricardo – creators of the classical economic theory. Precise definition of the location theory may only be referred to since the times of von Thünen, who in 1826 presented a model of spatial agricultural production organization (Capello 2014). Basing on the theory of land rent, von Thünen pointed to the relation between reduction of the rent and growth of an agricultural farm's distance from the sales market and related transport costs. The theory of circles states that more efficient production directions are located near large city sales markets. According to von Thünen, in conditions prevailing in the first half of the 19th century horticulture and dairy farming, followed by silviculture, crop and livestock farming developed closest to the sales market, namely the city (Brdulak et al. 2014). The theory was based on a number of simplifying assumptions, which led to the conclusion that the heaviest and least durable agricultural products ought to be produced closest to the market, while the graphical model was reduced to a system of zones (circles) of agricultural business types around a centrally located market (Rokicki et al. 2018). The system of agricultural business around a central city which is expected to constitute a consumption center still constitutes a stimulating starting point for research in this field. Guided by von Thünen's agriculture location theory, Weber built his theory of the location of manufacturing industry, first published in 1909 – *Theory of the location of industries*. The theory had great influence onto all subsequent studies Predohl (1928). Weber continued the studies of Launhardt, who had already dealt with the problem of optimum location of an industrial enterprise earlier. The author based his analysis on the assumption that consideration concerns location of a single enterprise, which manufactures a single product in a specific quantity, location of the places of consumptions and sources of raw materials is known, costs of transport are proportionate to the weight of goods and distance, technical coefficients remain fixed, optimum location is based on an aspiration to achieve minimum costs of transport (Rokicki 2018, pp.14-22). As a result of the assumptions made, the author identified three factors influencing location of industrial plants, i.e. transport factor, labor factor and agglomeration factor, where optimum location is established as the lowest sum of multiplication products of weight and transport distances of all raw materials and semi-finished products to the plant and of finished goods to the point of sale; therefore, the point in space which ensures the most beneficial location is a point with minimal transport costs (Budner 2004, p.57). Weber calculates the transport cost based on the weight to be transported and the distance to be covered. All other factors connected with transport costs are recalculated into weight and distance with the use of additions or deductions from actual weights and distances. This is why location of the manufacturing process would be determined by the lowest number of ton-kilometers (Zarębski 2012). Weber observed that the ratio of product weight to the weight of all raw materials used was different in various industries. On this basis, he identified three possible situations influencing location (Budner 2004, p.58):

1. Raw material orientation – from the economic perspective, it is justified to locate a plant at or nearby the raw material source in order to minimize raw material transport costs;
2. Market orientation – due to economic aspects, it is justified to locate a plant nearby the sale market, with a view to minimize the transport costs of finished goods which are characterized with higher weight than raw materials;
3. Neutral orientation – from the economic perspective, locating a plant nearby the raw material source or sale market is neutral, as distances to those places have minimal influence onto the amount of transport costs.

Just as Weber explains the point of the lowest transport cost with the use of weight and distance, he correspondingly uses weight and distance to explain the influence exerted by a favorable workplace onto the manufacturing process. On the one hand, he confirms that the attraction of a favorable work center depends on the relation of labor cost in the manufacturing industry to product weight: he calls this the “labor cost index”. On the other hand, he claims that the manufacturing industry’s ability to change the location depends on the weight to be transported throughout the manufacturing process. This he calls the “location weight”. Moreover, he states that whether or not the industry is actually relocated depends on both these factors jointly (Zarębski 2012).

Another factor which makes company location more remote from the point of minimal transport costs are agglomeration benefits, which originate from concentration of manufacturers and consumers in a respective area. The benefits may compensate for increased labor and transport costs at the respective location (Budner 2004, p.60).

Another economist dealing with the enterprise location theory was Lösch. He based on a hypothesis on spatial variability of sale prices and adopted maximization of profit as the optimum location criterion (Brdulak et al. 2014). The place which meets this criterion is a point ensuring maximum sales at minimum manufacturing costs (Szymańska et al. 2014). According to Lösch, an enterprise will locate itself as close as possible to a sufficiently receptive sale market (Brdulak et al. 2014). Lösch introduced the demand factor into his location considerations, basing the market analysis on the classical demand curve identifying the relation between the price and demand, as well as a new dimension – distance (Budner 2004, p.61). This approach took into account at the same time distribution costs, market area and demand volume, claiming that locations of different kinds of business activity would not be distributed evenly. Economic benefits of specialization and mass production cause concentration of companies within a region. The number of enterprises within a region is limited and, consequently, they will disperse to a certain extent with transport costs playing an important role in this phenomenon (Brdulak et al. 2014).

Based on the theory created by Lösch, studies of the subject area of location were pursued by the American researcher Isard, who defined the role of transport outlays, defining them as transport of a unit weight per unit distance (e.g. ton-kilometer). Transport efforts are a set of services needed to move production factors (Brdulak et al. 2014). In the manufacturing process, transport efforts are treated equally with other production factors (land, capital, labor, entrepreneurship). Moving goods from one point to another involves delivery of a certain quantity of transport effort. Change of the destination of two efforts, assuming unchanged sources, is considered by Isard as substitution of transport efforts of different goods. One may distinguish substitution between transport efforts and expenditures and revenue in production, substitution of different sources of the same goods and substitution of destinations where the goods are sent. Substitution of different production factors enables substitutions of areas as manufacturing locations. In this manner, Isard presents the overall balance model whose solution determines an optimal enterprise location as well as optimal combination of the quantity of efforts used to the results obtained (Budner 2004, p.65).

Several years ago a group of researchers realized that although there is a vast literature of papers and books in location theory, a common theory is still missing (Nickel et al. 2005).

The first regional development theories undertook an attempt to explain the location of manufacturing – both agricultural and industrial – in a spatial perspective. Transport costs and access to sale markets were assumed as the main factors of manufacturing location. Along with evolution of views onto spatial manufacturing planning, attention began to be paid not only to costs, but also to demand and potential profits of the enterprise. Also tax incentives have become an efficient tool to attract firms in some location, especially in depressed areas (Mayer et al. 2017). Development of new technologies of manufacturing, transport and information flow resulted in changed perception of manufacturing space (Zarębski 2012).

None of the classical location theories concerned enterprises conducting service activity. In the field of services location theories only few researchers have covered this topic (Jirásková 2013). Nonetheless, service industries have received more attention in the past decade of research but still not enough in proportionality to the real world (Brown 2011). One ought to emphasise, however, that any kind of manufacturing activity contains elements which may be characterized as service activity.

Services seem to be driven by different determinants compared with the manufacturing sector. The specific nature of services make location decisions to be primarily affected by market-seeking motives. By contrast, manufacturing is likely to be driven by efficiency-seeking motives as well, as manufactured goods are potentially exposed to international price competition. Hence, seeking for sectoral differences might be important for analyzing location factors at the aggregate level. (Riedl 2010).

3. Location factors - theoretical background

New trends in the location theory are based on the assumption that non-economic factors also play an important role in selecting the location. In fact, location decisions include a material element of uncertainty and risk which ought to be treated as a kind of costs borne by entrepreneurs (Godlewska 2001, p.41). The changes having been appeared in economy, described as a transition from Fordism to post-Fordism, from economies of scale to economies of quality, from mass and standard production to flexible production, from cost to quality competition, from a reliance on basic raw materials to knowledge as a key factor, required a new look at the location factors of economic activity (Olejniczak 2005). Locational attractiveness is the use value of a region as a place to locate a company, which consists of hard and soft factors. The total of these factors creates the value of the region as a place to locate a company. The totality of these factors creates a picture of the conditions in terms of business location decisions (Leśniewski 2012).

Each and every enterprise strives to find an optimal location for conducting its activity, allowing the best possible satisfaction of its business related needs. Advantages of the specific region are of significant importance in locating a given kind of business activity. One ought to bear in mind that other enterprises located in the area also influence the quality and kind of such advantages (Szymańska et al. 2014).

Enterprise location is determined by location factors, which act as location stimulators, because they attract and stimulate specific kinds of business in the respective area (Budner 2011, p.241). Location factors are the result of accumulation of theoretical concepts and findings of industry specific independent studies done over many years. These factors are classified in different ways in different literatures so as the numbers; definition and the importance of factors. Also these factors are interdependent and can be attained at divers degrees at different locations and so subjective judgments and attitudes of entrepreneurs become important factors in the location decision-making (Towhidur Rahman 2019, Cissé et al. 2020).

One may observe a variety of perspectives and definitions of location factors in the literature, both Polish and foreign. In Polish literature on the subject, an attempt to define a location factor was undertaken by Fierla and Kuciński (2001, p.65), who considered a location factor to constitute unique and specific characteristics of particular places, which directly influence the development of costs and prices of manufacturing processes conducted at such places. Godlewska (2001, p.54) defines a location factor as specific characteristics of particular places, which have direct influence onto development of investment outlays during construction of a company's facility and net profitability (sales and capital) of business activity pursued at such places. Pakulska (2005), in turn, defined location factors as specific characteristics of particular places, which impact development of costs and prices of current and future production conducted under a corporate business strategy.

An important aspect of the location analysis is division of location factors and assessment of their influence onto location decisions. One of the primary divisions applied is differentiation among hard factors (measurable, objectively identifiable), such as: transport costs, labor costs, taxes, and soft factors (subjective, difficult to measure), such as: attractiveness of the place of residence, security, favorable social attitudes (Tobolska 2011).

In the synthetic perspective, Budner (2004, pp.28-29) distinguishes the following location factors:

- environmental – resources of the geographical environment, namely the total of natural conditions in the given area, influencing business activity, e.g. mineral resources, waters, soil;
- economic – connected with the social and economic situation in the area, including economic stabilization, level of inflation and prices, labor costs, etc.;

- spatial – factors including the shape and size of the area, distance, accessibility and location towards other areas;
- social and cultural – factors related to awareness of the community residing in the area, its attitude and opinions on social and economic transformations, activity and level of entrepreneurship, aspirations, level of education and culture;
- political – factors determined by the character of the authorities and opinions represented by them, competences, manner of exercising power and political stability of the country;
- legal and administrative – factors closely connected with political factors and activities of the administration governing company establishment procedures, accounting rules, etc.;
- technical and technological – factors originating from scientific and technical progress which is demonstrated in technical and organization innovations.

Performed analyses of factors and modifications of classical location theories, which contained significant simplifications, revealed certain deficiencies. It was impossible to create a universal set of factors influencing the enterprise location decision. With time, factors which had not been taken into account before became included in the studies, which also got to consider completely new factors, emerging with technological development, frequently accompanying new forms of business activity (Szymańska et al. 2014).

In the contemporary perspective, location factors may include: quality of human and social capital, access to information, capital of knowledge and creativity, business services and advantages of the surroundings which – next to natural environment – include the social capital and local authorities' policy. Access to information becomes particularly important. The flow of information is inextricably linked with development of contemporary economy and information society (Szymańska et al. 2014). Traditional cost and demand factors have material influence onto location decisions, but other economic and non-economic factors may play an important part in certain circumstances. The assumption of profit maximization is too restrictive to analyze location decisions. Nowadays, most empirical studies refer to the theory that companies choosing the optimal location, are motivated by the criterion of maximizing the value of the profit stream, the value that is influenced by the characteristics of regions where business activity is located (Cieślik 2007).

In order to understand the process of business activity location, one should take into account some other preferences next to the aspiration to maximize profits only (Pilewicz et al. 2018). Mueller and Morgan (1962) emphasise that the scope of studies on the location factors should take into account not only the cost and market perspective, but also the non-financial perspective (e.g. quality of schools, personal preferences) as well as factors which influence costs and revenue indirectly, but cannot be easily expressed in terms of quantity (e.g. business contacts, business environment). Based on studies and analyses related to the location factors, Dziemianowicz stated that their evaluation depended above all on specific characteristics of the enterprise and of the persons adopting the location decision, while the location factors were not fixed and did not constitute a finite set. Growing importance of new factors may be observed over years (Dziemianowicz, 1997).

It should be emphasized that the activities of large and dynamic organizations today are increasingly linked to the international and global environment (Matejun et al. 2013). According to Wierzbicka (2015), there have been changes in the perception of enterprise location factors. The importance of "situation" has decreased, as there has appeared the "place" defined as a set of development conditions not connected directly with transport and labor costs, but with the local quality of life, level of education and efficiency of local elites. The place of quantitative location criteria has to a large extent been taken by qualitative criteria, among which one may refer to workforce qualifications, efficiency of administration or differentiation of the economic structure.

Similarly to the authors referred to above, Płaziak and Szymańska (2014) confirm in their studies that the decision making process related to business activity location involves a complexity of factors influencing the final decision. What is more, the weight of particular factors is different, depending on the kind of activity, enterprise size and stage of the decision making process.

4. Research methodology

Different approaches and multiplicity of location factors in the literature on the subject constituted a significant challenge in empirical study preparations. There could be numerous factors that might be taken into consideration while making the location decision, but only a few of them can constitute an actual difference. At the same time, it is impossible to recognize and evaluate all possible locations suitable for a firm according to chosen criteria. For this reason, the process of making the location decision is intended to be limited to the most important factors for the most likely locations while making sure all viable alternatives are considered (Vlachou et al. 2015).

Critical analysis of literature on the subject resulted in development of an original questionnaire used in the pilot study conducted to evaluate the location factors in Poland's three voivodeships – Zachodniopomorskie, Wielkopolskie and Dolnośląskie. The study concerned an enterprise with the share of foreign capital, which was considering selection of the above voivodeships to locate its e-commerce distribution center. The company's analyses and considerations resulted in selecting Zachodniopomorskie voivodeship as the location of the undertaking. In spite of a very limited sample, the intended research carried out, considering it as a start for further research activities.

The purpose of the study was to identify factors which influenced adoption of this decision, as well as comparison between the above voivodeships in terms of elements which play a role in the decision making process related to location of an online sales distribution center. Empirical analysis of the essence of location factors in decision making by entrepreneurs with respect to online sales distribution centers was performed by way of direct marketing study. Moreover, the studies involved the in-depth interview technique and direct questionnaire interview.

The interview questionnaire contained a list of location factors most often referred to in the literature. The substantive base was the company location attractiveness evaluation form, developed by Godlewska-Majkowska (2001, pp.160-165). For the study, the form was adapted – location factors were modified and factors which did not appear in the original version were added. Based on direct interviews with experts in the field of operation of online sales distribution centers, the authors extended the list of location factors with items which could materially impact the location decisions. Moreover, to ensure greater data legibility, certain location factors proposed by Godlewska-Majkowska were expressed in a more precise manner.

The study applied a five-step scale to evaluate importance of a specific factor in each of the voivodeships: “5” – very important, “1” – least important, while “0” meant that the respective factor was not considered at all in connection with investment location. What is more, the study anticipated the possibility to mention other location factors, which were important from the point of view of the company's representatives replying to the questionnaire questions. The approach followed to collect information on location factors enabled quantitative evaluation thereof as well as comparison in terms of occurrence of factors which may be essential to locating an e-commerce distribution center. Also, weight of evaluations obtained for all factors belonging to the same group as compared with the maximum possible evaluation in the group was determined. The weight was calculated as percentage share of the sum of evaluations obtained in the maximum possible sum of evaluations, i.e. “5” multiplied by the number of factors in the respective group.

The survey study involved grouping of the list of location factors. The questionnaire contained 102 factors included in 16 main groups. Members of management of the enterprise taking part in the study were asked to evaluate importance of particular location factors which influenced the decision to select the specific place within the business space as the target location of the distribution center.

The conducted survey allowed to identify the factors which played an important part in the process related to selection of the given location and those whose importance was negligible.

Interesting results of empirical research comparing to theoretical studies are worth publishing. Obtained results are not sufficient to make theoretical generalizations. They will be verified in further research studies.

5. Research results

Research results are being presented in Table 1 make reference to weights of location factors for selected voivodeships. Based on results of the survey, one may conclude that:

1. a significant share of the location factors listed was not taken into consideration by the company at the stage of making the decision on location of the e-commerce center. Factors which the enterprise considered insignificant (the respective factor/group of factors was not considered in connection with selecting the location in any of the voivodeships) include: sales market, natural environment, availability of materials and energy, technical infrastructure, local financial environment and costs of running the business;
2. the most significant part was played in selecting the location by the following factors: human factor, transport, local material capital, cooperation with local administration and local legal regulations;
3. among the groups of factors which were important in selecting the location, these factors were more important in Zachodniopomorskie voivodeship than in Wielkopolskie and Dolnośląskie voivodeships.

Table 1. Weights of location factors of selected voivodeships (in % of the sum of maximum evaluations of all factors in the respective group)

No.	Groups of location factors	Zachodniopomorskie	Wielkopolskie	Dolnośląskie
1.	Subjective factors	31%	14%	14%
2.	Sales market	0%	0%	0%
3.	Human factor	67%	44%	44%
4.	Natural environment	0%	0%	0%
5.	Availability of materials and energy	0%	0%	0%
6.	Transport	65%	48%	45%
7.	Other technical infrastructure elements	0%	0%	0%
8.	Local assets (material capital)	100%	40%	40%
12.	Science and education	27%	27%	27%
10.	Geographical factors	48%	40%	30%
11.	Cooperation with local administration	100%	0%	0%
12.	Local legal regulations	57%	34%	34%
13.	Local financial and economic environment	0%	0%	0%
14.	Services to residents	17%	17%	17%
15.	Special location factors and characteristics	15%	0%	0%
16.	Costs of running the business	0%	0%	0%

Source: own study based on questionnaire survey with representatives of management of foreign capital enterprise

The survey conducted suggests that factors contained in group 12. Local legal regulations, i.e. fiscal incentives, exemptions and reliefs in local charges, flexibility of legal regulations on employment of staff and factors related to transport: presence of an airport in the voivodeship, transport connections, flight connections, as well as access to schools and kindergartens played an important role in locating the e-commerce center. In all voivodeships, these factors were identified as very important.

A specification of evaluations assigned to particular factors is presented in table 2. The table only mentions those factors which were taken into account by the enterprise in evaluating the location, namely those which obtained evaluation greater than zero in at least one voivodeship. In terms of subjective factors, i.e. those connected with the investor’s previous experience, Zachodniopomorskie voivodeship obtained a better evaluation as compared with the other voivodeships.

Survey results suggest that the human factor played an important role. The enterprise particularly emphasized easy access to unskilled labor, easy team selection and participation of the community in social life as factors significant to the location.

Factors connected with transport infrastructure make another group which was a very important location element. Zachodniopomorskie voivodeship obtained a very high evaluation in this respect. Land prices and access to unoccupied manufacturing/office facilities were other factors identified as very important for selecting the location, especially in Zachodniopomorskie voivodeship. High importance was also assigned to factors linked to geographical location of the voivodeships. The survey suggests that spatial situation towards the borders, network of national roads or sales markets played an important role in Zachodniopomorskie voivodeship, although the difference as compared with the other voivodeships was insignificant.

The analyzed entity evaluated importance of cooperation with local administration as very high, especially in Zachodniopomorskie voivodeship, as well as local legal regulations. One ought to emphasise that, as a result of in-depth interview with the management, assessment of this group of factors was a problematic issue due to lack of experience in the other voivodeships; consequently, these factors were evaluated as “0” in the questionnaire. The other factors which the Company identified as important in the decision making process included access to kindergartens and schools, and good image of the voivodeship.

Table 2. Evaluation of location factors in Zachodniopomorskie, Wielkopolskie and Dolnośląskie voivodeships

Location factor	Zachodniopomorskie	Wielkopolskie	Dolnośląskie
Subjective factors			
Reputation of the place or region	1	1	1
Sense of security	1	1	1
Experiences of other business entities	3	1	1
Previous experience of the investor	3	1	1
Attitude of the community towards the investor	3	1	1
Human factor			
Labor costs	5	3	3
Work efficiency	3	3	3
Access to specialists	4	4	4
Availability of management staff	4	4	4
Access to unskilled labor	5	3	3
Easiness of staff recruitment	5	2	2
Participation of the community in public life (participation in social consultations, social campaigns, membership in social organizations, etc.)	5	1	1
Demographic structure	5	3	3
Mindset of the community	1	1	1
Transport			
Presence of an airport in the voivodeship	5	5	5
Presence of a seaport in the voivodeship	5	1	1
Presence of a railway station in the voivodeship	5	5	5
Presence of an inland port in the voivodeship	5	1	1
Transport connections – roads	5	4	3
Transport connections – railroads	1	1	1
Transport connections – flight connections	5	5	5

Convenient public transport system (in terms of accessibility and frequency of bus and railway connections)	3	3	3
Transport costs	5	4	3
Local assets (material capital)			
Unoccupied manufacturing facilities (supply, price, technical condition)	5	2	2
Unoccupied office facilities (supply, price, technical condition)	5	2	2
Land – supply, price, condition and possibility of adaptation for investment purposes	5	2	2
Costs of rental, hiring or lease of properties	5	2	2
Science and education			
Presence of professional education centers for the required specializations	4	4	4
Geographical factors			
Distance from country borders	5	4	3
Situation within the network of national roads	4	4	3
Situation towards attractive sales markets	5	4	3
Proximity of cooperating entities	5	4	3
Cooperation with local administration			
Competences of officials	5	0	0
Authorities' working style – quality of service at the authorities' office	5	0	0
Authorities' working style – attitude of local authorities	5	0	0
Initiative and cooperation of local authorities	5	0	0
Local legal regulations			
Tax incentives, exemptions and reliefs from local charges	5	5	5
Time and costs connected with procedures related to adaptation of the building to suit business activity conducted	5	1	1
Time and costs connected with obtaining the building permit, connection of utilities	5	1	1
Flexibility of legal regulations related to employment of staff	5	5	5
Services to residents			
Access to schools, kindergartens	5	5	5
Special location factors and characteristics			
Good image of the region	3	0	0

Source: own study based on questionnaire survey with representatives of management of foreign capital enterprise

As emphasized above, many of the factors contained in the questionnaire were not identified by the company as factors important in the location decision process.

Table 3 presents a list of factors which were not taken into account in any of the voivodeships in connection with location of the e-commerce distribution center. These factors included purchasing power of the residents, raw material base, environmental restrictions, access to materials and semi-finished products, equipment with technical infrastructure elements, presence of universities or prices of community services.

Table 3. Factors evaluated as “0” in all voivodeships

Factors not important in all voivodeships
<p style="text-align: center;">1. Subjective factors:</p> <ul style="list-style-type: none"> - Place of origin of the investor or their relatives - Place of residence of the investor or their relatives
<p style="text-align: center;">2. Sales market:</p> <ul style="list-style-type: none"> - Purchasing power of residents (residents' income) <ul style="list-style-type: none"> - Consumption habits - Social structure of consumers (e.g. age, education) <ul style="list-style-type: none"> - Low competition from local companies - Possibility to establish beneficial cooperation with competitors <ul style="list-style-type: none"> - Presence of other leading companies of the sector <ul style="list-style-type: none"> - Good access to other markets
<p style="text-align: center;">3. Human factor:</p> <ul style="list-style-type: none"> - Health condition - Presence of trade union organizations
<p style="text-align: center;">4. Natural environment:</p> <ul style="list-style-type: none"> - Raw material base – access to raw materials, including prices of raw materials, quality of raw materials, proximity of suppliers) <ul style="list-style-type: none"> - Access to water (supply, price, quality) - Environment cleanliness, including air quality - Natural landscape advantages (esthetics) - Environmental restrictions applicable to investors <ul style="list-style-type: none"> - Liberal environmental requirements
<p style="text-align: center;">5. Availability of materials and energy:</p> <ul style="list-style-type: none"> - Access to materials and semi-finished products (supply, prices, quality) <ul style="list-style-type: none"> - Access to electricity (supply, price, supply reliability) - Access to gas supplies (supply, price, supply reliability) - Possibility to cooperate with suppliers of materials and energy <ul style="list-style-type: none"> - Availability of conventional sources of energy - Access to alternative sources of energy
<p style="text-align: center;">6. Transport;</p> <ul style="list-style-type: none"> - Transport connections – inland water connections <ul style="list-style-type: none"> - Availability of parking spaces - Technical condition of road surface and their throughput
<p style="text-align: center;">7. Other technical infrastructure elements;</p> <ul style="list-style-type: none"> - Equipment with particular elements of water supply and sewage network infrastructure (please specify the most important element or missing important infrastructure element) <ul style="list-style-type: none"> - Equipment with gas supply network (please specify the most important element or missing important infrastructure element) - Equipment with heat supply network (please specify the most important element or missing important infrastructure element) - Equipment with electricity supply network (please specify the most important element or missing important infrastructure element) <ul style="list-style-type: none"> - Access to water supply and sewage network infrastructure - Access to gas supply network infrastructure - Access to heat supply network infrastructure - Access to electricity supply network infrastructure
<p style="text-align: center;">8. Science and education:</p> <ul style="list-style-type: none"> - Presence of universities - Presence of research and development centers
<p style="text-align: center;">9. Geographical factors:</p> <ul style="list-style-type: none"> - Situation towards regional and local roads - Situation towards transport changeover points - Distance from scientific and research centers - Spatial structure of the settlement unit (spatial order, land management)

<p>10. Local legal regulations:</p> <ul style="list-style-type: none"> - Other economic incentives (please specify) - Membership in organizations associating local authority units - Consistence of local legal regulations with national ones
<p>11. Local financial and economic environment:</p> <ul style="list-style-type: none"> - Banks or branches thereof - Other financial institutions (please specify) - Economic and legal advisory (please specify) <ul style="list-style-type: none"> - Support from other business entities - Support from other institutions (industry unions, chambers of commerce, etc.)
<p>12. Services to residents:</p> <ul style="list-style-type: none"> - Availability of flats - Availability of health services - Availability of cultural offer - Possibilities of leisure and relaxation - Availability of law enforcement and order services (police, fire services)
<p>13. Special location factors and characteristics:</p> <ul style="list-style-type: none"> - Political factors - Social and economic activation of regions with poor economic development level <ul style="list-style-type: none"> - Availability of information on the region
<p>14. Costs of running the business:</p> <ul style="list-style-type: none"> - Rates of taxes and local charges - Prices of municipal services (electricity, water, gas) - Prices of outsourced services (e.g. accounting) - Prices of advisory and consulting services

Source: own study based on questionnaire survey with representatives of management of foreign capital enterprise

Based on the location factors of industrial enterprises mentioned in the literature and grouped in a different way, the location factors that seemed most appropriate for the distribution activities of e-commerce centers were collected and grouped. The conducted empirical study allowed for the preliminary conclusions that may have scientific value. Thus:

1. The number of factors which are taken into consideration in location decision is limited.
2. Indicated key factors are:
 - availability of infrastructure, including transport,
 - availability of labor, despite the increasing mechanization/robotization of work,
 - the existing legal regulations (including their stability),
 - smooth cooperation with local administration.

All these factors are undoubtedly a prerequisite for the success of a service venture. We can agree that the assumption of profit maximization is too restrictive for the analysis of location decisions. Albeit properly selected factors indicated in this study can significantly contribute to the reduction of operating costs and, as a result, to higher efficiency (higher profits). Based on the results obtained, it can be concluded that the scope of research on location factors should include not only the cost and market dimension, but also the non-monetary dimension, which indirectly affects costs and revenues and cannot be easily quantified.

The conclusions of the study will be subject to verification in the course of further scientific research.

Conclusions

Results of the empirical study, obtained at the selected enterprise of the e-commerce industry prove that entrepreneurs who select a specific location for an e-commerce distribution center mainly consider factors connected with access to workforce, including in particular unskilled workers. This may be caused by the character of duties performed at the distribution center. A great majority of tasks are simple activities which do

not require special qualifications. Higher evaluation of this location factor in Zachodniopomorskie voivodeship as compared with the other voivodeships considered may result from easier access to workforce in this region than in Wielkopolskie and Dolnośląskie voivodeships. One ought to remember that, in terms of economic development, these voivodeships are among the country's leaders. They house a high number of enterprises with foreign capital shareholding. This results in more difficult access to unskilled workforce and higher labor costs.

Research suggests that another important location aspect for the e-commerce industry is transport accessibility of the region and its situation towards the border. Access to the sea in Zachodniopomorskie voivodeship was an important location factor. Presence of an airport and a seaport were other factors which were important to the company surveyed, as well as access to road transport infrastructure. For e-commerce, fast deliveries to customers are among the most important business aspects; consequently, the transport aspect is one of the key factors for locating a distribution center to handle the deliveries. The survey suggests that access to an airport is another factor important from the perspective of a company with foreign capital shareholding, which is connected with necessary visits of the company's representatives from abroad.

The research allows concluding that local legal regulations and cooperation with local administration are other factors which impact the decision on locating the investment in the respective region. From the enterprise's point of view, efficient cooperation with authorities and local offices in the area of local and administrative requirements related to initiating business activity may influence selection of the region for commencement of the investment.

Summing up, one may conclude that the analyzed enterprise selected Zachodniopomorskie voivodeship to locate its e-commerce distribution center because of access to workforce, transport aspects, including in particular access to a seaport and airport, as well as proximity of the western country border and previous experience of the investor in the region.

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