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Jan Suchacek,
Head of the Department of Regional and Environmental Economics, VSB-Technical University of Ostrava,
Ostrava, Czech Republic,
E-mail: jan.suchacek@vsb.cz

LARGE ENTERPRISE BRANCHES: THE CASE OF THE CZECH REPUBLIC

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ABSTRACT. Importance of largest enterprises is steadily augmenting. In contrast to small- and middle-sized firms, their large counterparts influence individual territorial economies with much higher intensity. The Czech Republic, which represents an object of the article, is a country, where big companies traditionally played a relevant role. While headquarters of large enterprises have been subject to several solid analyses, an attention devoted to their first-tier affiliates is far from sufficient. In order to find meaningful similarities among location factors of first-tier affiliates of one hundred largest enterprises in the country, cluster analysis proved to be useful. Generally, attitudes of managements responsible for the location of first-tier affiliates turned out to be driven largely by pragmatism as a strategy to succeed in contemporary turbulent socioeconomic environment. The paper contributes to filling mainly in informational gaps.

JEL Classification: R10, R30, R39, L10, L20, L29

Keywords: location factors, first-tier affiliates, organizational structures, Czech Republic, cluster analysis.

Introduction

Large enterprises and their organizational structures can be comprehended as one of the most important determinants of socioeconomic landscape. Internal hierarchies of these companies often tend to follow existing settlement hierarchies. Indeed, when evaluating big companies, economic and geographical perspectives are of utmost importance. When these two perspectives are joined together we get a truly useful instrument for tackling large enterprises with emphasis on their organizational structures. And just the fine mixture of economic and geographical standpoints will be utilized also in this article.

Location decision-making and enterprise organizational hierarchies belong among typical themes in advanced countries. There exist ample literary resources dealing with large enterprises from economic, geographical, sociological or political perspectives. In practice, location decision-making is a difficult process since it is dependent on concrete socioeconomic context. Above contexts are strongly differentiated as to their spatio-temporal characteristics as well as prevailing economic-political paradigms.

Any larger generalizations are not desirable also due to the different nature of applied methods, differentiated sources and quality of data, peculiar features of specific branches of the economy, different institutional environment in various territories, specific targets of

individual companies etc. (see also Aksoy & Marshall, 1992; Bevan, Estrin & Meyer, 2004; Corbridge, Martin & Thrift *et al.*, 1994; Shephard & Barnes *et al.*, 2003; Suchacek, Seda, Friedrich & Koutsky, 2014 or Johnston, Gregory & Smith *et al.*, 1994).

Collocation of largest enterprises affects also territorial developmental processes, which is twofold valid for relatively small and open economies of post-transformation character, such as the Czech Republic, which provides us with appropriate material for the case study. Spatial distribution of large enterprises co-shapes contemporary socioeconomic relevance of individual regions one the one hand and helps to materialize also future socioeconomic maps of whole countries. There exists a distinct interconnectedness between politics and economy, which is officially disregarded and almost concealed.

Big companies embody one of the most important actors of local and regional development. Their stabilizing and developmental functions in relations to territorial economies are frequently being emphasized. They can also affect competitiveness and cohesion of whole territories. In contrast to their smaller counterparts they possess the capability to compete on European or even worldwide scale. Connotations related to territorial development are apparent and we are entitled to state that intra-enterprise geography simply matters.

The main objective of this paper is to analyze and assess the location factors pinpointing the location of the first-tier branches of one hundred largest Czech enterprises. Sizes of individual enterprises are embodied by their turnover. The whole issue will be captured and interpreted primarily from qualitative perspective. And, as already indicated, territorial principle will penetrate whole our study as it considerably affects the formation of enterprise affiliates. In recent years, headquarters of large enterprises lured intense, albeit yet insufficient attention (see Lyons, 1994; Meyer & Sinani, 2009 or Suchacek & Baranek, 2011).

However, local and regional studies usually get rid of affiliates of individual enterprises. Put succinctly, geographies of largest enterprises are of enormous importance and individual affiliates should not be underestimated at all. Case study brings us to the Czech Republic, which traditionally belonged among economies with strong emphasis upon industry. In this country, large enterprises always played quite a relevant role. That is why location preferences of large enterprise headquarters and affiliates in the country should be the subject of close scrutiny. The topic is relevant also from practical point of view as it comprises numerous practical and policy connotations.

The whole article is organized in the following way: after introductory section, the significant aspects of the geography of enterprise are debated. Next subchapter delves into materials and methods used within this paper. It deals mainly with cluster analysis, consistency of evaluation battery as well as basic characteristics of the object of our research, i.e. contemporary Czech Republic. Fourth part of the article is devoted to main results and discussion. Individual subchapters concentrate upon consistence of evaluation battery, ranking of individual location factors, cluster analysis for enterprise affiliates as well as other relevant aspects of the location of the first-tier branches in the country. And the last part of the paper describes research findings and conclusions.

1. Several notes on the importance of the geography of enterprise

As already suggested, organizational hierarchies of large enterprises should be treated seriously as mainly their headquarters constitute decisive economic nods (see for instance Massey, 1995; Holland, 1976; Markusen, 1985; Fothergill & Guy, 1990 or Frobel, Heinrichs and Kreye, 1980).

At the same time it should be reminded that if there would be no affiliates, head offices would typically barely exist. That is why location factors delineating collocation of affiliates do matter.

It is far from surprising that world literature (see Aksoy & Marshall, 1992; Lyons, 1994 or Maier & Tödtling, 1997) generally devotes higher attention to headquarters. Nonetheless, standard literature is not devoid of affiliates. Thus, spatial divisions of labour (Massey, 1995), demography of firms creating a parallel, sui generis, to the traditional science dealing with population issues (van Dijk & Pellenbarg, 1999) or conception of mesoeconomics (Holland, 1976) got an attention they deserve. One cannot omit other authors dealing with questions of large enterprises and their spatial implications (Vanhove & Klaasen, 1987 or Dunning & Lundan, 1994). In any case, we feel safe enough to claim intra-enterprise hierarchies attract increasing attention of both academicians and practitioners.

As for previous researches related to large enterprises and their spatial implications in the Czech Republic, they concentrated almost exclusively on headquarters of largest enterprises (see Suchacek & Baranek, 2011 or Suchacek & Baranek, 2012). These analyses brought several interesting findings, such as confirmation that biggest companies in the country still emphasize traditional hard location factors in their location decision-making processes. These factors include mainly infrastructure, geographical location, quality of entrepreneurial environment, proximity of suppliers and customers as well as quality and availability of the labour. While the most important factors brought no surprise, the least important factors were represented by sport and cultural facilities. These results are not in compliance with generally perceived move from traditional hard location factors to their softer counterparts. Phenomena observed are explainable by less sincere attitude of top and middle managers that answered the questionnaire. In reality they do take into consideration also soft factors of location but these are not directly involved in enterprise productivity (for more information see for instance Suchacek, 2015a). In the light of previous information it will be interesting to compare the results of this paper with researches that were already accomplished (Suchacek & Baranek, 2011; Suchacek & Baranek, 2012; Suchacek, 2015b or Beniskova & Urminsky, 2015).

2. Materials and methods

In the eminent world literature, the spatial distribution of head offices of five hundred biggest firms in the country's territory is perceived as the indicator of the concentration of economic power (Lyons, 1994). Size of the enterprise is most frequently measured by its turnover. Taking into account the small availability of relevant data as well as the size and the character of the Czech Republic, this research will concentrate upon the geographical distribution of one hundred largest enterprises – in terms of their turnover – in the Czech Republic.

The analysis itself is based upon annually published top 100 databases. Basic sample for qualitative part of this research consisted of 190 companies. This was caused by their iterative presence in top 100 databases as well as by the fact that some of them went bankrupt. On the whole, 53 valid questionnaires returned to the research team, which means rate of return reached roughly 28%. At the beginning, the questionnaire was addressed to top and middle managers of individual companies by means of e-mail. In case, the manager of enterprise did not respond, he or she was contacted via telephone call and after an explanation of the research purpose he or she received questionnaire through e-mail again.

The main aim of the accomplished survey was the analysis and assessment of factors standing behind enterprise first-tier affiliates location. Our survey has been executed by

means of exploratory research in 2011. The whole research was of qualitative character and particular data were gathered via electronic and telephone questioning.

The survey was accomplished by means of structured questionnaire. Likert scale ranging from -3 to +3 turned out to be the most appropriate for our needs. The higher value means the higher intensity of the phenomenon concerned. Thus, for example -3 denotes full disagreement, while +3 full agreement and 0 is a mediocre value. This scale was used in the majority of questions. Some of the questions in the framework of questionnaire were formulated as open, which enhanced obtaining certain specific information. Last but not least, applied methods as well as rate of return influence the results of our research.

2.1. Cluster analysis and inner consistency of evaluation battery

Cluster analysis belongs among multivariate statistical methods that can be used for the classification of objects. The sense of cluster analysis lies in the maximization of the similarity of objects in the framework of individual clusters and at the same time maximization of mutual dissimilarity among individual clusters.

Cluster analysis facilitates the reduction of the amount of objects. The number of objects is smaller than original amount of objects (Rezankova, 2006). Our paper is underpinned by hierarchical cluster analysis. This method is tightly connected with the inner consistency of questions in the framework of our questionnaire.

Part of the questionnaire, on which this paper leans on, was created by evaluation battery containing 22 items or location factors. The battery was focused on factors, which location factors were determining for the collocation of large enterprise affiliates. Individual items within the battery were accompanied by seven degree ordinal symmetric scale of Likert type ranging from -3 denoting 'no influence' to +3 marking 'absolutely decisive'.

Inner consistency of questions assessed within the battery can be quantified via usage of Cronbach's alpha. This statistics explains dependence among individual items of the battery of questions having the same ordinal scale of values. That is why Cronbach´s alpha statistics epitomizes rate of inner consistency of this battery. Value of Cronbach´s alpha pinpoints to what degree are the values of each item in the battery similar or dissimilar (Kreidl, 2004).

Cronbach's alpha can range between 0 and 1. Small values, when Cronbach's alpha is smaller than 0.5 indicate low consistency or high heterogeneity of assessed items. Contrary to that, values higher than 0.9 signify a strong internal dependency among single items of the battery. This value does not necessarily mean all items have comparable values but that all evaluators have similar or comparable preferences.

Cronbach's alpha is defined in the following way:

$$\alpha = \frac{k}{k-1}\left(1 - \frac{\sum_{i=1}^{k} s_i^2}{s^2}\right), \qquad (1)$$

where s_i^2 are variances of concrete items of the battery, s^2 is variance of total score of the battery, i.e. sum of values of all items, and k marks an amount of items in the battery.

For the application of hierarchical cluster analysis it is recommendable that Cronbach's alpha is neither too small nor too high. The value 0.7 is generally perceived as

pertinent one. If it is the case, individual items are mutually well distinguishable and simultaneously, the variability of the assessment of all items is comparable.

2.2. Hierarchical cluster analysis

Hierarchical cluster analysis belongs among multivariate statistical methods suitable for finding relatively homogeneous clusters from the researched set of objects. Multivariate characteristics are concomitant to these objects. The distances between objects should be measured when generating clusters by means of this method (Rezankova, 2006).

Distances in the framework of hierarchical cluster analysis can be quantified in different ways. In this article, Euclidean measure was applied, which is expressible in the following way:

$$\text{distance}(x,y) = \sum_{i=1}^{n} (x_i - y_i)^2, \qquad (2)$$

where $x(x_1, x_2, ..., x_n)$ and $y(y_1, y_2, ..., y_n)$ are multivariate objects.

The procedure of clustering can be described in the following way: first, the distance is measured and calculated between all initial clusters. Initial clusters are usually represented by individual objects, i.e. the number of objects and clusters is the same.

Second, two most similar objects are joined into one cluster and all distances among individual objects are recalculated by selected distance measure. In that way we join more and more objects together and create clusters, which are increasingly large. This procedure is repeated until all objects are linked into one cluster. In other words, our intention is to shrink the amount of clusters at each step until all objects are joined together as one cluster.

In order to visualize connections among all objects it is appropriate to use a hierarchical tree called dendrogram. The condition must be fulfilled that individual clusters are linked according to the growing degree of dissimilarity. When creating the dendrogram it is necessary to keep certain linkage rules. In that way we are able to determine whether two different clusters are similar enough to be grouped together.

In this paper Ward's linkage method was applied. Since this method is based on analysis of variance it is dissimilar with other methods of that ilk. Ward's linkage method minimizes the sum of squares of any two theoretical clusters, which can be generated at every step of clustering (Ward, 1963). Generally speaking, Ward's method is treated as rather efficient and taking into account the size of data sample, we are entitled to utilize it.

2.3. Basic facts related to the Czech Republic

The country we focus on is the Czech Republic and that is why it is useful to mention several basic facts related to its territory. The Czech Republic is a landlocked country in Central Europe bordered by Germany to the northwest and west, Austria to the south, Slovakia to the east and Poland to the northeast.

Its territory covers 78,866 square km and the population is at about 10.5 million. As for current GDP per capita the country occupies 39th position in the world and as to HDI its ranking is even higher at 28th position. It should be reminded that due to the recent history, the country still finds itself in post-transformation stage of its development.

Societal transformation in post-communist countries in 1990-ies consisted in the transition from totalitarian to democratic political regime and from centrally planned to the market economy. Moreover, these governmentally directed changes were accompanied by

more spontaneous move from extensive forms of development to the intensive ones, which corresponded to the post-fordist modernizing trends in practically all developed countries.

While western economies coped with these modernizing trends two or three decades, post-transformation economies are exposed to the modernization categories in much shorter, compressed period (Suchacek, 2012 or Suchacek, 2013). In spite of these peculiar features, during transition period, the country's economy underwent certain qualitative transformations.

The country can be characterized as a small open economy, which is concentrating on the export. It is the economy, where large enterprises always played a tangible role. Industry is still of large – albeit declining – importance within country's economic branches. An important year was 2004 when the country joined the European Union. So far, the Czech Republic retained its national currency.

3. Results and discussion

3.1. Consistence of evaluation battery from analytical perspective

As already indicated, in the framework of the questionnaire, data from 53 large companies were obtained. The battery served to finding, which location factors were determining for the location of enterprise affiliates. As noted previously, individual location factors were assessed via seven degree scale of Likert type. Further questions concerned the course of location processes, satisfaction with final collocation or the rate of congruence with the territory, where the branch is located.

Cronbach's alpha proved to be useful for finding the internal consistence of evaluation battery. Appurtenance of single items into assessment battery was expressed by means of correlation coefficient of the item concerned with the summary of the whole battery.

Large degree of the consistence of the battery applies to affiliates of largest companies in the country. The respective Cronbach's alpha was 0.895. Correlations among single items within the battery and the sum of the whole battery were positive and concerned all cases. Thus, statistical significance applies to it. The values related to individual location factors shaping affiliates location ranged between 0.312 and 0.667.

All of these indicators confirm high inner consistence of opinions for the battery. This means managers evaluated single factors of location with a high degree of resemblance. On the other hand, Cronbach's alpha is lower than 0.9, which enables us to distinguish among individual items of the evaluation battery. These facts entitle us to the application of cluster analysis. Cluster analysis will be used for searching items or location factors with similar assessments of their significance.

3.2. Hierarchisation of location factors according to mean value

Mean values for individual location factors decisive for enterprise affiliates facilitate their ranking. Although we deal with ordinal scale, we concentrate upon items of the very same battery on the scale of Likert type and that is why we are entitled to use arithmetic mean and to compare these items (Norman, 2010).

Table 1 provides us with hierarchisation of location factors determining the collocation of first-tier affiliates of largest enterprises in the Czech Republic. Mean values of individual location factors gotten on the basis of questionnaire were used as a criterion for that hierarchisation. The most important factors were as follows: geographical location, infrastructure, nearness of suppliers, agglomeration economies and advantages, proximity of customers, quality of the labour as well as entrepreneurial milieu. What do they these factors

have in common is their traditional character. Very often, these factors are called hard location factors.

In the middle of the ranking table of location factors we can find rather heterogeneous items starting from availability of the local workforce or the availability of raw materials via price of the land or prestige/image of the place to the public administration system or national policies.

Table 1. Hierarchy of Location Factors for Enterprise Affiliates

Location factor	affiliates	
	mean	ranking
Geographical location	2.26	1
Infrastructure	2.23	2
Proximity of suppliers	1.77	3
Agglomeration economies and advantages	1.74	4
Nearness of customers	1.70	5
Local work force quality	1.64	6
Quality of entrepreneurial milieu	1.62	7
Availability of the labour	1.55	8
Availability of raw materials	1.48	9
Low wage requirements	1.40	10
Proximity of related industries	1.23	11
Nearness of competition	1.19	12
Price of land	1.17	13
Image/prestige of the place	1.13	14
Willingness of managers to move	1.11	15
National policies	1.02	16
Proximity of decisive authorities	1.02	17
Public administration system	0.87	18
Determined historically	0.40	19
Quality of environment	0.34	20
Cultural facilities	-0.30	21
Sport facilities	-0.40	22

Source: author.

Bottom of the hierarchy of location factors is occupied by cultural facilities and sport facilities as well as quality of the environment. Apparently, affiliates collocation is dependent mainly on hard location factors. Simultaneously, low ranking of soft location factors can be accounted for by less sincere attitudes of managers as these are not directly involved in enterprise productivity. That is why questioned managers talk less intensely about them, but naturally, in reality they do take into account both sport and cultural facilities of territories where their organizational units are placed. This in a way complies with previous researches devoted to headquarters of largest enterprises.

3.3. Cluster analysis for enterprise branches

As already mentioned, hierarchical cluster analysis serves well for grouping location factors into compact sets. For ordinal items, Ward method of cluster formation and square of Euclidean distance for measuring differences and similarities of items and clusters, is usually recommended. This method typically leads to the creation of clusters with comparable numbers of items. In that way, their interpretation is considerably facilitated.

In case of enterprise affiliates the dendrogram has shown the possibility of the creation of optimal amount of clusters ranging between 3 and 7. It is impossible to create 4 or 5 clusters just or the sake of the high value of Cronbach's alpha. In case we opt for 6 or more clusters we cannot avoid the creation of 'orphans' or clusters comprising merely one item. In our case two one-item clusters ('determined historically' and 'quality of environment') would be formed.

Instead, we concentrate on the formation of three clusters and these can be labeled in a satisfactory manner:

a) Geographical location, infrastructure, willingness of manages to move, quality of environment, proximity of competition, quality of local workforce, quality of entrepreneurial milieu, proximity of suppliers, nearness of customers and agglomeration economies and advantages – wider regional milieu and human resources.
b) Price of land, image/prestige of the place, national policies, nearness of decisive authorities, system of public administration, determined historically, sport and cultural facilities – place-specific attributes and political settings.
c) Low wage requirements, proximity of related industries and availability of raw materials – traditional location factors for affiliates with production functions.

Cluster analysis finally led to the creation of three clusters. While clusters marked as a) and b) comprise quite a lot of items or location factors, their counterpart denoted as c) contains only three of them.

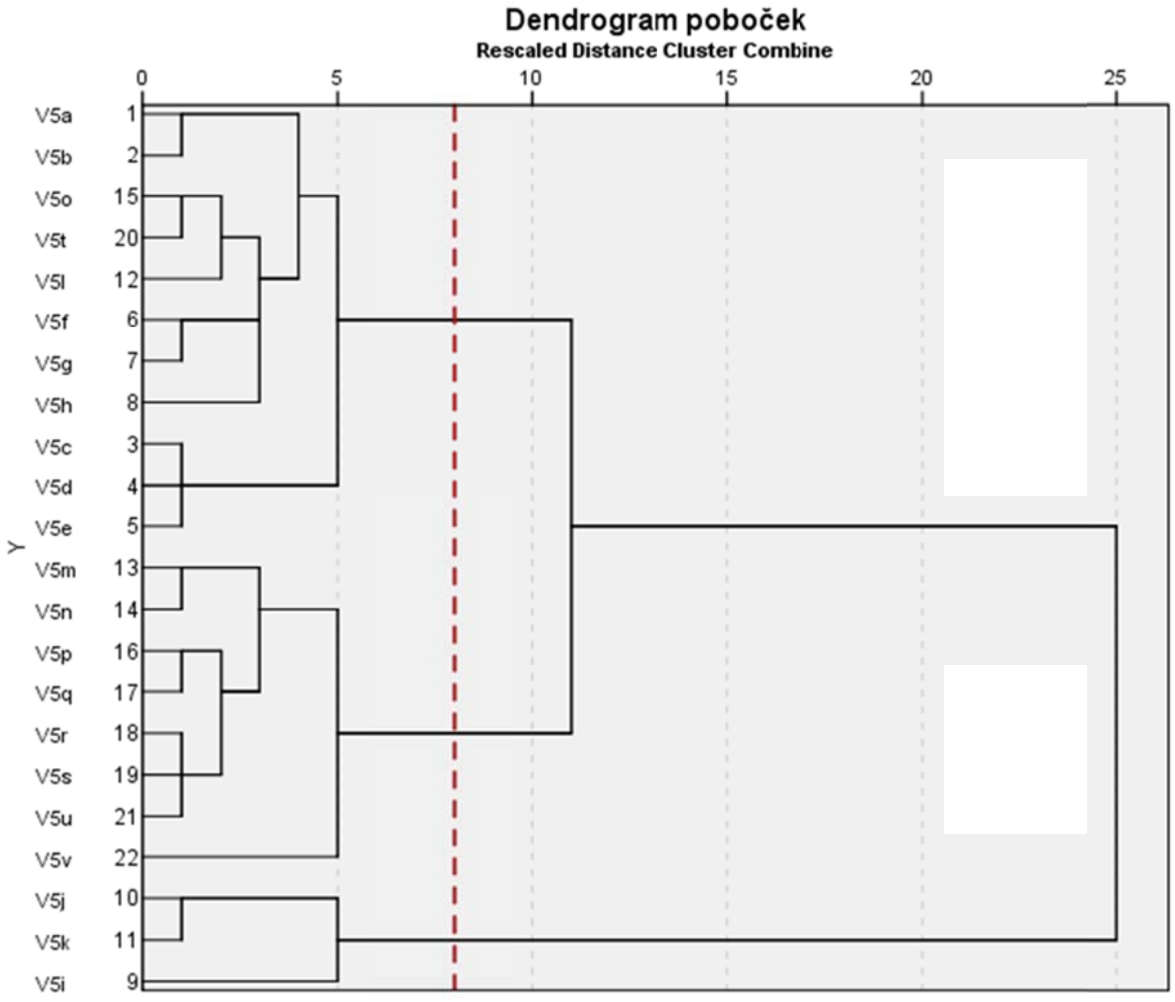

Figure 1. Dendrogram for Large Enterprise Affiliates
Source: author.

Naturally, this influences also naming these clusters. The third cluster is distinctively related to traditional location factors and that is why its name is 'traditional location factors for affiliates with production functions'. The remaining two clusters contain mostly modern location factors and therefore, they were labeled as follows: 'wider regional milieu and human resources' and 'place-specific attributes and political settings'. It has to be stated, all three created clusters are meaningful and satisfactorily embody the characteristics of individual location factors.

3.4. Some other aspects of the location of first-tier affiliates in the Czech Republic

Until now we were analyzing and interpreting location factors delimitating the collocation of the first-tier branches of one hundred largest Czech enterprises from different perspectives. However, there appeared also some other interesting information gathered in the framework of structured questionnaire.

The course of the location of the first-tier affiliates is not fully standardized yet, which is a typical symptom of post-transformation economy with frequent changes in legislation as well as relative instability of institutional milieu. One should not omit managerial as well as other customs and routines, which penetrate the practice of location quite intensely.

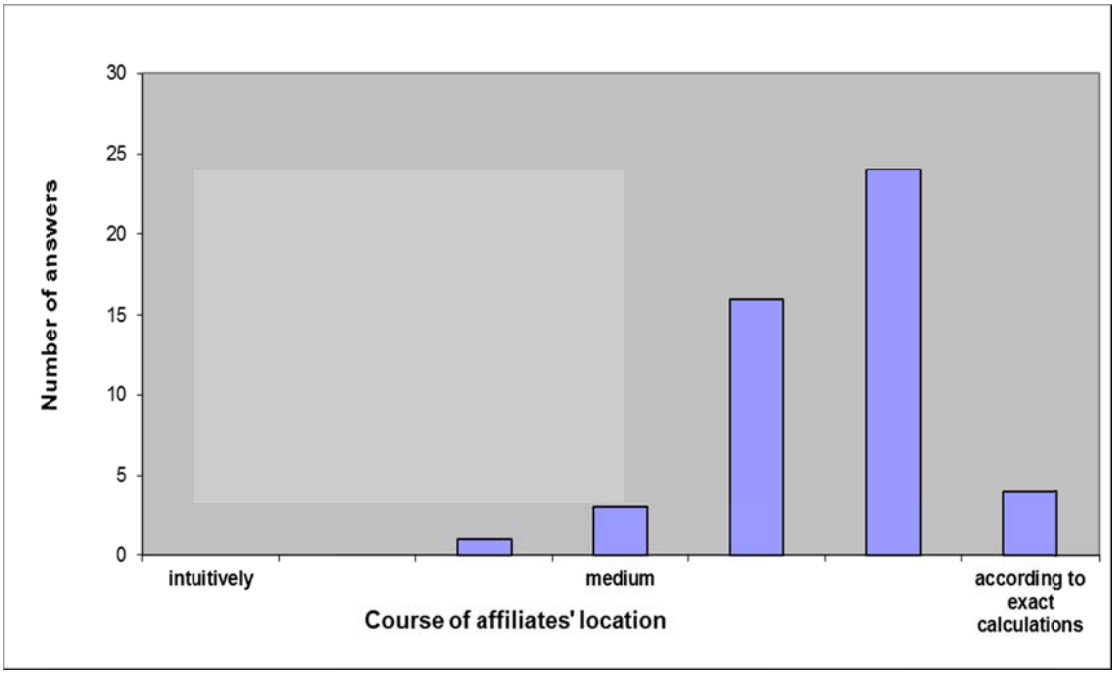

Figure 2. Course of the location of the first-tier affiliates
Source: author.

On the other hand, situation is gradually improving as in 29% of cases absolutely exact calculations led to the location of big enterprise affiliates. In 57%, rather exact calculations proved to be decisive. Contrary to that, intuition plays much less relevant role during location decision-making and applies only to 8% of cases. In other words, location procedures are getting increasingly straightforward, which can be accounted for by higher quality of spatial information covering the territory of whole states.

Further noticeable sphere is created by expectations and experience categories. We compare to what degree original expectations during the establishment and further run of the enterprise comply with the reality. In 6% of cases, roughly one half of issues was in

compliance with original expectations. In 92% of all cases, majority of issues were in consonance with expectations. Remaining 2% of managers claim that reality utterly met initial expectations. It should be mentioned that managements of large firms probably do not evaluate their own steps and activities during enterprise collocation in fully realistic way and tend to overrate their own capabilities.

Little, but noticeable difference was found out when managers answered the following questions: 'Do you feel affinity with territories, where your affiliates are located?' and 'Do you feel affinity with territory, where your head office is located?' Congruence with territories, where headquarters have their seat, was confirmed in 74.2%. In case of territories hosting first-tier affiliates, the respective value reached merely 73%. Interestingly, questioned managers were from enterprise headquarters and quite openly confessed slightly higher, but perceptible affinity with territories where their headquarters have a seat.

Previous researches (see for instance Suchacek & Baranek, 2011) also confirmed that capital city is by far the most interesting place for the location of enterprise head offices. Other regions are in a way 'predestined' to host enterprise affiliates with mostly marginal or auxiliary functions. According to questioned managers, low purchasing power and insufficient infrastructure are the factors that undermine prospects of localities and regions out of the capital city to host important head offices. They also confirmed that only largest towns and cities – as to their population – can act as magnets for headquarters of big companies (for more details see Suchacek & Baranek, 2012).

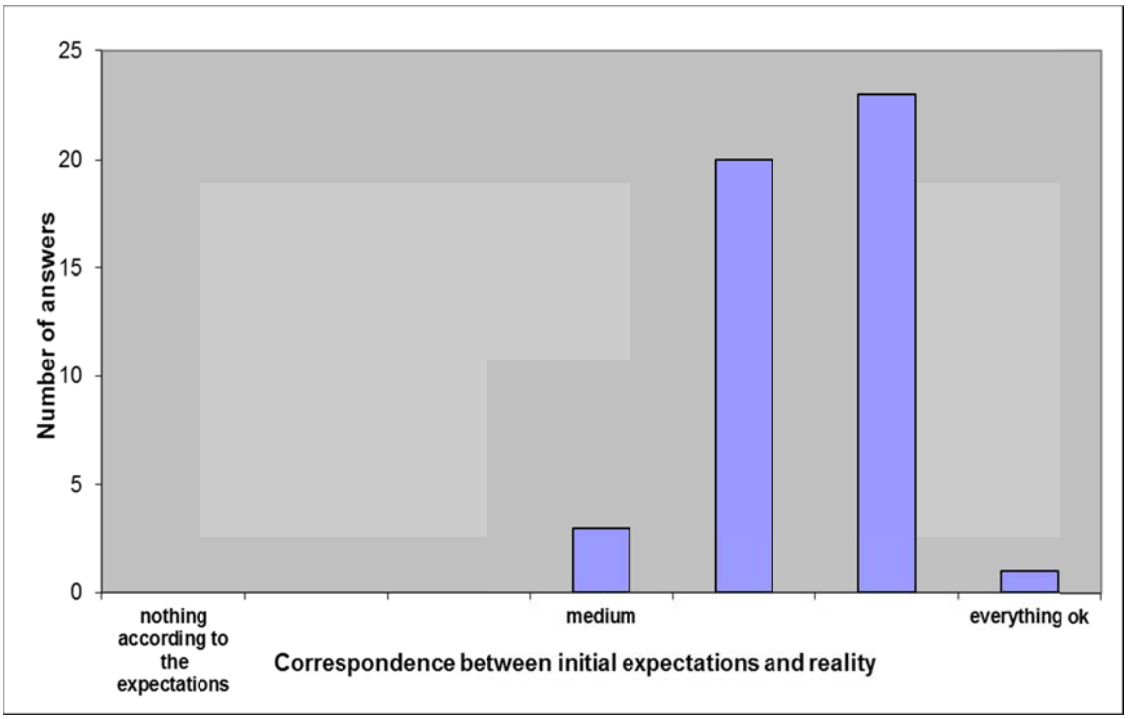

Figure 3. Locational expectations and experience
Source: author.

Last but not least, it is also worth mentioning that approximately three fourth of researched Czech top 100 companies had foreign owner. However, more detailed aspects of that issue have been discussed elsewhere (see Suchacek, 2015a).

Conclusions

Our article brought ample evidence that traditional hard location factors are of big importance for large enterprises when establishing their first-tier affiliates in the Czech Republic. Simultaneously, these firms also tend to underrate soft location factors, such as sport or cultural amenities, which are nowadays in vogue. However, the whole issue is a bit tricky one as above mentioned soft location factors are not directly related to enterprise productivity. It is plausible to assume that in that way, managers declared their loyalty to largest firms in the country, where they are employed. It is also worth noticing that questioned managers quite openly confessed their slightly higher but noticeable affinity with territories, where their headquarters are located, to the detriment of territories, where their affiliates operate. Our research also confirmed that course of the branch location is far from standardized and routines and habits play a non-negligible role during that process. At the same time, one can contemplate an increasing quality of space-related information. Cluster analysis led to quite meaningful grouping of location factors and resulted in three clusters, which are labelled as follows: wider regional milieu and human resources, place-specific attributes and political settings and traditional location factors for affiliates with production functions. Albeit affiliates of large enterprises are less debated so far, in the future they will arguably lure much higher attention.

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