

**DRIVE  
YOUR  
KNOWLEDGE  
BE  
A  
SCIENTIST**

**19/4/2012**

**8th International  
Bata  
Conference**

for Ph.D. Students  
and Young  
Researchers

[www.dokbat.utb.cz](http://www.dokbat.utb.cz)

 **Tomas Bata University in Zlín**  
Faculty of Management and Economics

DRIVE  
YOUR  
KNOWLEDGE  
BE  
A  
SCIENTIST  
19/4/2012



Tomas Bata University in Zlin  
Faculty of Management and Economics

8th International  
Bata  
Conference  
for Ph.D. Students  
and Young  
Researchers

[www.dokbat.utb.cz](http://www.dokbat.utb.cz)

Published by the Tomas Bata University in Zlin, First Edition, 2012.

## Sponsors

 Tomas Bata University in Zlín  
Faculty of Management and Economics

 **Zlínský kraj**

**Barum**   
**Continental** 

 Tomas Bata University in Zlín

8th International Bata Conference for Ph.D. Students and Young Researchers  
is financed from funds of Internal Grant Agency TBU Zlín

ISBN: 978-80-7454-013-4

# DIFFERENT LOGISTICAL METHODOLOGICALS OF CHOOSING PREMISES<sup>1</sup>

*Szeverin Ékes*

## **Abstract**

In this research interprets the success of the enterprise's thesis as an example of an international multi-site company. It identifies the success of the corporate site selection's criteria, based on the traditional theories, but using the new practical methods of the international and regional abundance of success. The study recommend a coordinated method - setting up a model -, which allows detailed information to company management and their use can precisely define the methodology of strategically and cost-effective appropriate site selection. It analyzed countries and regions by institutional and social changes, in order to explain the differences of success. This dissertation highlights the fact, that for the decision-making, which competitiveness indicators would be desirable to be used. Furthermore it shows how the quality of social environment and social capital influences the decision-making. Of course it do not dispute, that there can be direct economic reasons of the success of the location choices, but in the model it complemented (refined) this aspect with a detailed correlation analysis and assessment of the variables representing the regional competitiveness. The inference, which can be deducted from the regions' analysis is, that the results of the current methods, which are used for the selection of premises, do not imply enough information for the companies' management for optimal decision-making.

*Keywords: premises, logistical methodicals, social influences, economic reasons*

## **1. INTRODUCTION**

With the strengthening of market competition between companies on the international and global markets, in the squeeze of the economic crisis, every micro- and macro environmental factor comes into the foreground, that to competitive advantage and may assist the market players to keep the competitive advantage. The competitive advantage and the ability of keeping the competitive advantage define companies' market strength fundamentally.

In this research we looked for an answer, that those companies who take part in the international trade, which national and regional environmental factors are important for them during forming their business network? With what kind of weight does the social environment figure in the decisions? How much the regional environmental factors influence the corporate function – the sophisticated strategy and the quality of microeconomic business environment? How much do the local competitive advantages help to reach the success of the national- and global markets? To prove the statements, we made a comparative analysis of the national- and regional competitiveness indicators and we revealed the data deficiencies. We analysed in detail the competitiveness positions of the countries affected in the company's logistic spectrum and we proved with a correlation analysis the decision paths following from the differentiation of the regional inequalities.

---

<sup>1</sup> This research was supported by the European Union and co-financed by the Europea Social Fund in frame of the project "TALENTUM - Development of the complex condition framework for nursing talented students at the Univesity of West Hungary" project ID: TÁMOP - 4. 2. 2. B - 10/1 - 2010 - 0018.

## **2. GOALS AND HYPOTHESES**

In this research interprets the success of the enterprise's as an example of an international multi-site company which has had premises in different countries. During the scientific work we could formulate the following questions:

- Choise of location can support the acquisition of new competitive advantages and can preserve existing competitive advantages
- Indicators based on currently known the location of countries and regions how to be competitive and the extent to which it have taken indicators of competitiveness.
- How was the location of the premises been logistically optimal
- Shall we offer favourable solution for the companies in studied regions

### **Hypotheses**

In our essay, we made analyses through a company, that in its own industrial branch a European market-leading company and it owns premises in many countries. We looked for an answer that the countries and regions of depots how competitive, based on the indicators known currently and how much it was taken into consideration factors defining competitiveness.

We presupposed that the national- and regional competitiveness influence and the company's decisions facilitating statistical datas do not stand for its provision in all cases. In many cases it is not suitable for comparative analysis; because they do not manage identical data content and their standing for the provision are not homogeneous in space, neither in time. The companies prefer the metropolitan regions, also then when so the decision making is subjective, furthermore the international and regional competitiveness consist in a tight context with each other. Moving away from the centre places the insecurity is proportional to the regional differentiation and inequalities. All this newer, multiplied creates regional inequalities. In the course of the depot choice the corporate decisions logistic expense basis and the companies do not take the competitiveness indicators into consideration, at the same time provable, that the human development and the value judgement of confidence become increasingly more important.

## **3. CHOOSE OF LOCATION**

„In the first instance theories of sites are concentrated on spatial distribution of economic activities examination and medelling of behavior of the actors.” (Lengyel, Rechnitzer [2004] 90. o.)

Minimalization of transportation costs and spatial structure of the country market have tested by companies. The choice of location have benn a result of complex economic decisions which contain financial, logistical and infrastructural elements.

Spatial location of enterprises and micro-organisms have explored and explained by sites selection theories. In generally it is not possible to deduct regulaties because specific studies are needed that any kind of questions and problems are going to be come into view. We could talk a conscious method of choosing premises when we choose acceptable options and ake into consideration basics of business calculations. (Benkó [2002]; Káposzta [2002])

### 3.1. Methodology of choosing premises

In the following methods the human, the logistical and the indicators of regional development and competitiveness have come up.

The following methods were written up:

1. Scoring method
2. Central gravity method
3. Component-based object comparison for objectivity
4. Triangulation method
5. Harmonised method

During the study we have dissected two manner at large. First of all the central gravity method was analysed which only focus on the logistical aspects. On the other hand the scoring method was concentrated by us because it have infiltrated the human and competitiveness elements too. Using this method the companies can be supported preparing of strategic decisions but we can not lose sight of perfection of questionability methodical in the immediate future. So always we suppose to have a crow to pluck with other affecting factors of decision.

### 3.2. Scoring method

The scoring method is used when we have to consider the factors that influence the selection process of full time. A number of factors do not always available in objectively at our disposal. The method of applying the factors to be considered in order to highlight a fact that the properties which are better locations. To the factors should be added point values, so that we can filter out the less important and the most important ones. (Chikán [2006])

#### 1. skip: Scoring method

$$A = \sum_{i=1}^n t_i * s_i \quad M = \prod_{i=1}^n t_i^{(s_i/100)}$$

i: anumber of factors taken into account  
A: additiv way  
M: multiplicative way  
t: current factor  
s: weight rate of factor

Source: Chikán Attila [2006]: Vállalat gazdaságtan, AULA, Budapest

### 3.3. Central gravity method

In the central gravity model we can known the locations and quantities what is also important for the company, which would like to choose a new premises. In this case we used historical delivery datas. Answers of the survey responses are so important because in the future the company wants to expand different countries, it will help for them to decide next to the optimal solution. If the datas are known we can determine the appropriate location by the formulas. In this model the space is conceived as a coordinate system. All opportunities which take contact our company has an x and an y coordinates. We can define the new premises the following formulas: (Chikán, [2006])

## 2. skip: Central gravity method

$$x = \frac{\sum_{i=1}^n x_i * D_i}{\sum_{i=1}^n D_i} \quad y = \frac{\sum_{i=1}^n y_i * D_i}{\sum_{i=1}^n D_i}$$

i: number of factors taken into account  
x<sub>i</sub>: company' s x coordinate  
y<sub>i</sub>: company' s y coordinate  
D<sub>i</sub>: company related to material prices

Source: Chikán Attila [2006]: Vállalatgazdaságtan, AULA, Budapest

### 3.4. Component-based Object Comparison for Objectivity)

The methodology of "COCO" (Component-based Object Comparison for Objectivity) a recently developed Hungarian, Linear Programming based context-free similarity analysis method. The method investigates the connection between the independent variables and the depending variable as regression, but with a new idea. A certain variable in this method has not got only one constant multiplicative weight in the approximating formula, but the weight is a staircase function of the variable value. The Linear Programming based methodology constructs this staircase functions depending on the approximating formula type (linear, polynomial, multiplicative, mixed, etc.) the error minimization type (linear or nonlinear least squares, etc.) and other parameters (number of the steps in the staircase, etc.). This datamining method can handle evaluation, benchmarking, forecasting problems from diverse fields. (Pető [2006], Pitlik [2000a], [2000b], [2000c]).

### 3.5. Triangulation model

In this case, primarily the placement of more points to be solved. (Kovács [1998]) Available for: material intensity matrix and equilateral triangles. Our goal is that the objects of the material flow connection is placed so that power requirements of material flow is to be minimalised.

Application of the principles are:

1. material flow intensity of the three strongest points is to be in the corners of a triangle
2. a fourth point should be located where the movement of performance of the material is minimal
3. and so on the last point is taken to its placement

### 3.6. Harmonised method

The essence of the method lies in the fact that the gravity of the Central and the method of scoring in a formula, merged into the new coordinates, which have not only delivered, weights and distances, but the country also takes into account competitiveness points. A good working method had to be used in the mathematics known as convex linear vektorkombinációt. This means that we have so far been used in the coordinates vektorokként. In addition, a lambda variable. Which in this case, it can be interpreted as a weight the scoring and the gravity of the values. This is the lambda to move between 0 and 1. If you add a value of 0, then only the gravitational method, so the distances and is based on the quantities delivered. If the value is 1, then only the scoring, the competitiveness on the basis of the values to calculate the exact coordinates of the site.

### 3. skip: Harmonised model

$$x = \frac{\sum_{i=1}^n [\lambda a_{pi} + (1-\lambda) D_i] X_i}{\sum_{i=1}^n [\lambda a_{pi} + (1-\lambda) D_i]} \quad y = \frac{\sum_{i=1}^n [\lambda a_{pi} + (1-\lambda) D_i] Y_i}{\sum_{i=1}^n [\lambda a_{pi} + (1-\lambda) D_i]}$$

$i$  = a figyelembe vett tényezők száma

$a_{pi}$  = additív pontérték

$D_i$  = kiszállított súlymennyiség

$X_i$  = az adott kiszállítási hely x koordináta

$Y_i$  = az adott kiszállítási hely y koordinátája

Source: Szalay–Horváth [2008]: Matematika II, egyetemi jegyzet, Sopron

### 4. DYNAMIC PREMISE CHOICE MODEL

In the dynamic premise choice model we try to sum all that, what we would like to examine and we set the way how we prove our hypotheses.

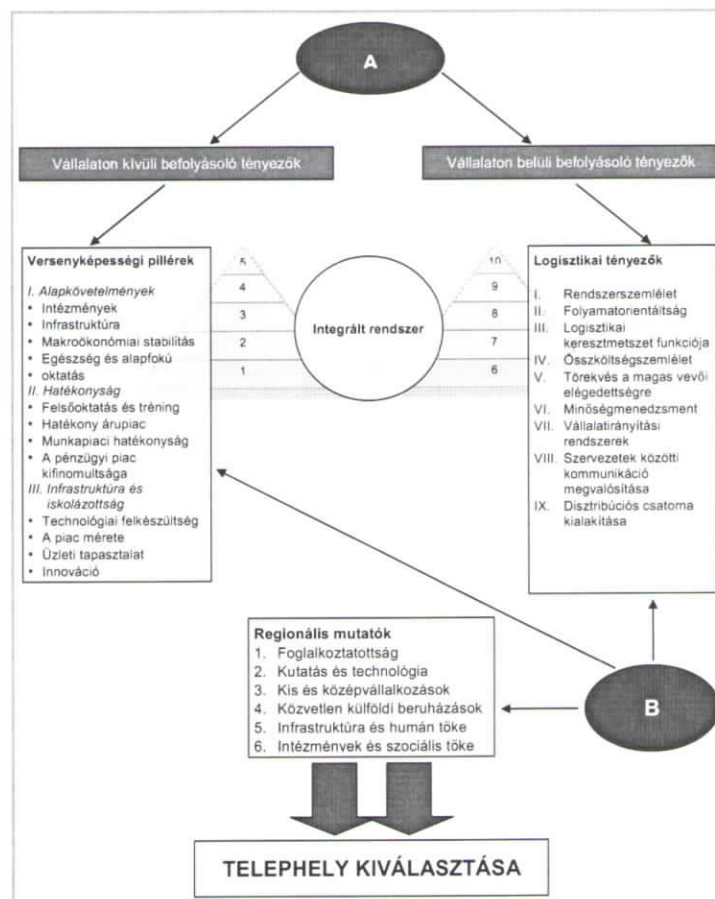


Fig. 1 – Method of choosing premises in a dynamic system. Source: (World Economic Forum [2010]: Global Competitiveness report 2010-2011, Geneva, Switzerland, European Commission [1999]: The Sixth Periodic Report, Luxembourg, Prezenszki József [2004]: Logisztika I., BME jegyzet, Budapest), (Lengyel Imre [2003]: Verseny és területi fejlődés, JATE PRESS, Szeged)

The 'A' point is the start status, an opportunity, that consist the grounds of the Porter's model. We imagined the opportunity of the selection in two dimensions, at which we examine the competitiveness and logistic elements in parallel. The companies influencing external factors are elements, which are based on the international competitiveness pillars, examining these in detail, the basis requirements, the efficiency, the infrastructure and education are taken into consideration. With this parallel the companies influencing internal factors examine the logistics and the elements being attached to it. Moving out from the opportunity through the two dimensions, we can make an integrated system, which – in attention to the earlier mentioned indicators – pursuing a consideration between the human factors and the corporate aim system.

If the integrated system and the results of the two dimension' examination stand for a provision, then with the help of the method on points to the different factors weights assigning definable, that which country, region can be considered for ideal one. If the country was selected, then with the help of the partnerships of that place – taking it as a starting point – we can select with the central gravitational method exactly where would be ideal to locate a premise. But with the help of the concerted method it can be analyzed, what would be the position of the premise. The shifts depend on the results of the concerted method and the regional indicators, furthermore on the B point, for example governmental decisions or confidence index.

These arrows manage a determining role, because the law limitations, the fiscal system opportunities and limitations and other governmental criteria, for example the confidence index - which today can already be distributed well – influence the managerial decisions significantly. We can select the optimal premise, if all analyses stand for our provision. We have to intervene in a thing carefully, if we do not weight the single factors well, we may not receive relevant data as a result. We have to pay attention those managerial and competitiveness factors, that in terms of the activity are important. **The selection should be made for each firm and leader indeed.** Selected elements dispose with bigger weight. *If we compare our calculations with the final results, we will see that the optimal choice is subjective in a great majority on decisions. The objectives are sidelined though.*

## 5. CONCLUSION, SUMMERY

Interpreted by the enterprise to be successful, our theses are an international company with more than one establishment, and as an example. Identifies the criteria for the success of the companys choosing of premises, the traditional models, based on, but using the new methods of practical and combines logistics factors the success factors for international and regional. Countries, regions and society examined institutional variables to an explanation of the differences in the successfulness. In our research we highlight the fact that the decision to which it would be desirable to use the competitiveness indicators. In addition to the extent a factor in the decision of the social environment and the quality of capital. Of course, does not discuss the reasons for the economic success of choosing of premises directly (e.g. logistics, cost-effectiveness), but this aspect has been in our model of the population of a territorial competitiveness, that represents the variables detailed correlation analysis and evaluation

### 5.1. The overall findings of the research

During the examination of corporate success, the favourable evaluation of economic variables, the fundamenteal success factors of te historical and geographical determinations,

the social, the political and institutional cultures may be sought. In almost the well-defined cultural traits, economic and social life provides a good basis of successful company.

The first group includes:

- the entrepreneurial skills
- trust in each other
- self-confidence
- personal and social reality of expectations about the future

The second category includes:

- consensual political culture
- the family's cultural and social customs
- ethnic, environment, health, pastimes
- cultural identity

The results are useful for Central and Eastern European Business which one's of that would like to establish premises.

## **5.2. Detailed assessment**

We confirmed that the regional and interregional competitiveness indicators can be identified but the absence of national and regional data is only slightly influenced by the corporate strategic decisions. Although considerably more accurate and more informed decision could be taken to their knowledge, but it is currently dominated by the cost of logistics. One reason for the lack of data we can see the sharp market competition, resulting in one of these companies make obtained public information from the market. For one thing, that does not come from competing in a competitive advantage and secondly that his own position could be kept stable.

It can be shown that companies are primarily looking for capital or large city regions but strategic plans are incomplete due to lack of spatial data. In longer term the company would be willing to move away from the main urban and metropolitan areas, but this model indicators listed in the knowledge to need.

The research response the human development, the cultural environment and more important facts of trade is taken advantages of income-exchanging effects. This is evidenced by the questionnaire survey where site managers confirmed our hypothesis. Corporate success in the local economy and society is based on cooperation. The information quality improves proximity to global competitiveness. The analysis successfully confirmed our hypothesis that the international competitiveness and regional competitiveness is closely related to each other. The correlation analysis revealed not only the regional development disparities, but the correlation coefficients, standard deviation is also through to the central square from more distant regions of high investment uncertainty. The spatial differentiation of the large international companies to secure the capital city directs regions, reducing the risk, despite the fact that several cases have shown that the ideal site would be optimal in other regions.

We confirmed that the regional development and leveling a stumbling block is not the only reason national and regional statistics weakness of different data collection systems can be researched. It recommends that the corporate tax rate decisions are consistent regional level split.

The company's site selection program is used by itself, it would be difficult if it would take several factors into account and the users of the program is not only would be subject to the outcome, but also could benefit from the results obtained. The interviews have demonstrated to us that these people are not aware of the operation, only use the information received. Our proposed method is a more efficient solution as it examines and takes into account previous years' experience of delivery, assessment of the international and regional competitiveness results. Our method is to coordinate the central gravity and the scored method. The model set up and integrate variation method can help reduce logistics costs as well.

### 5.3. Further research opportunities

1. how can users and wholesalers be compared with consistency of those companies and development strategy.
2. availability may be an important quantity because it can not be worthwhile to take a decision until we will know the market potential of some regions
3. important to know what dimensions are able to perform the delivery in sight of international image, large areas, coverage advantages. The question is that you should be using external logistics service providers in countries.
4. to categorize the products you need to decide what quantities you should supply delivery
5. more detailed research can show that using of method how much save cost and make more efficiencies

### Library

1. Benkó, G. [2002]: Regionális tudomány. Budapest-Pécs. Dialóg Campus Kiadó
2. Chikán, A. [2006]: Vállalat gazdaságtan. Budapest. AULA
3. European Commission [1999]: The Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union, Luxembourg (letöltés ideje: 2010. szeptember 19.)
4. Káposzta, J. (szerk.) [2004]: Regionális gazdaságtan. Egyetemi jegyzet, Gödöllő
5. Kovács, Z. [1998]: Logisztika. Veszprémi Egyetemi Kiadó, Veszprém
6. Lengyel, I.-Rechnitzer, J. [2004]: Regionális gazdaságtan. Budapest-Pécs. Dialóg Campus Kiadó 90. o.
7. Prezenszki, J. [2004]: Logisztika I. Budapest. BME jegyzet
8. Szalay, L.-Horváth, R. [2008]: Matematika II., egyetemi jegyzet, Sopron
9. World Economic Forum [2010]: The Global Competitiveness Report 2010-2011., Geneva, Switzerland (letöltés ideje: 2010. október 21.)

### On the internet:

1. Lengyel, I. [2003]: Verseny és területi fejlődés, JATE PRESS, Szeged, 8. fejezet: A regionális versenyképesség értelmezése és piramis modellje  
[www.eco.u-szeged.hu/kutatas-tudomany/verseny-teruleti/szerk-8-piramis](http://www.eco.u-szeged.hu/kutatas-tudomany/verseny-teruleti/szerk-8-piramis), (letöltés ideje: 2010. augusztus 29.)
2. Pető, K. [2006]: Hasonlóságelemzés COCO használatával  
([https://miau.gau.hu/mediawiki/index.php/GYIK:COCO\\_Hogyan](https://miau.gau.hu/mediawiki/index.php/GYIK:COCO_Hogyan)) (letöltés ideje: 2010. június 12.)