Regional Strategic Groups as A Tool of Enterprises Localization Analysis on Automotive Industry in the European Union

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An increase in complication of decision making process regarding the enterprises localization implies the necessity to search for new tools facilitating monitoring of changes in an enterprise environment and a reduction of potential location pool. This especially concerns large-scale enterprises with diversified spatial structure. Currently, an enterprise localization analysis constitutes not only an element of strategic management of enterprises, but it should also be a subject of activity of regions willing to look for investors in an active manner. On the one side, business entities search for locations that meet their needs. On the other side, regions offer investment areas to accelerate regional development. Local authorities do not decide on an enterprise localizations, but they can create operating conditions to a certain extent (e.g. equipment with technical infrastructure or labor force for entrepreneur and investor's needs). Therefore, there is a need for application of new solutions or at least modification of localization management methods.
Here, we present the study on an application of modified McKinsey matrix for spatial analysis using an original concept of regional strategic groups. The regional strategic groups constitute the cluster of regions with similar sector attractiveness, as well as competitive position or potential. The objective of the study was to create a new methodological model in an enterprise localization analysis, based on regional strategic groups. Also, we demonstrated application options of the proposed tool in management of enterprise strategic options for automotive sector in NUTS 2 level regions in the EU.

Keywords: *Regional Strategic Groups, Enterprises Localization, Automotive Industry, Localization Management, Competitive Strategies.*

Introduction

For enterprises and regions, localization analysis constitutes very significant issue. The selection process of enterprises localization is subject to complications due to enterprises, markets, and regions internationalization. Enterprises participating in the globalization process require new instruments enabling the comparison of various regions as potential business locations taking into account the potential partners for creation of cluster structures. Therefore, we demonstrate the opportunities created by an application of McKinsey matrix for spatial examinations.

Also, localization analysis is important for regions which drive their marketing policy in an active way and which should be familiar with localization needs of their potential clients. Therefore, enterprises and regions need new tools enabling comparison of investment attractiveness of potential locations, distribution of enterprises from given sector and economic results of business entities at various

locations. The McKinsey matrix, adjusted for the needs of spatial analyses, represents a tool that takes into consideration all abovementioned needs.

The objective of the study was to create (i) a new methodological model for an enterprise localization analysis based on regional strategic groups and (ii) presentation of application options and restrictions of the proposed tool in enterprises strategic option management for automotive sector in NUTS 2 level regions in the EU. We were trying to find answer to the question how the concept of regional strategic groups can be used in the management of automotive sector enterprises localization in the European Union. The study addressed an attempt to verify the following research hypothesis: is it valid to transfer the McKinsey matrix hitherto used on microeconomic level to mesoeconomic level.

The attempt at transferring solutions to microeconomic level reflects real solutions used at the level of local authorities, e.g. SWOT analysis[1], risk management (Peptenatu

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[1] In Poland, SWOT analysis is used at mesoeconomic level in almost all territorial units (voivodeships, provinces, communes) to construct Development Strategies. SWOT analysis in economic reality is also used to create:
- branch development strategy (Development Strategy of Zachodniopomorskie, 2010),
- clusters' development strategies (Koszarek, 2009; Sulzycki, 2009).

- SWOT analysis is also used in research literature concerning:
economy branches (Goranczewski, & Puciato, 2010; Kozioł & Krzywon, 2014),
- and clusters (Baldan & Ungureanu, 2011; Moszkowicz & Bembenek, 2008).

et al., 2011; Jastrzebska, 2013; Romaniuk, 2012; Mlodzik, 2012; Walenia, 2013), marketing management (Godlewska-Majkowska & Komor, 2014; Gralak, 2010), territorial marketing (Bagautdinova *et al.*, 2012; Florek, 2003; Szromnik, 2002; Rumpel & Siwek, 2006; Ladysz, 2013; Makarski & Kuzniar, 2009; Żbikowski, 2012), budgeting management (Kozun-Cieslak, 2010; Kozuch, 2012; Szolno, 2014; Lukomska-Szarek & Wloka, 2014).

The use of the modified McKinsey matrix for spatial analyses may constitute a source of benefits both for enterprises as well as regions, which want to adapt their activities to localization needs of enterprises. The McKinsey matrix is one of the portfolio analysis methods and it was used primarily for diagnosis of SBU (Strategic Business Units) with determined objectives and well defined products and consumers. The McKinsey matrix was applied for presentation of diversified enterprise operations, thus active in several sectors. This study proposes modification and adjustment to the McKinsey matrix for spatial analyses in study on an investment attractiveness of regions:

- single enterprise was replaced with collective investment undertaking, i.e. group of companies from the same sector operating in a given region,
- The SBU were replaced with different locations (regions).

The presented concept of regional competitive groups constitutes an original proposal of an application of regions' investment attractiveness valuation for an analysis of strategic options in global enterprise management. The regional strategic groups may be related to particular regions or sectors (Godlewska-Majkowska, 2013a). Here, we discuss the business model of automotive sector. This sector selection represents a globally-perceived industry that is significant for the EU economy.

Concurrently, as proven by scientific research and investors opinions examination, this is the sector in which the competitiveness meets numerous barriers in the EU (Godlewska-Majkowska & Komor, 2013). Based on the pilot study conducted with the cooperation of the Polish Chamber of Automotive Industry, we can point that two factors, i.e., an excessive production capacity as well as economic and financial crisis, constitute currently, together with the danger of euro zone destabilization, an equally important limitation for automotive market development in Europe. Other dangers for the market development in the European scale include the reduction in population purchasing power (this especially concerns the middle class) with high fuel prices, unprofitable demographic tendencies, fluctuating market conditions, migration of large companies from Europe in order to achieve higher financial profits, reduced production forecasts, investments postponing, as well as closure of some automotive industries (Godlewska-Majkowska & Komor, 2013). Therefore, there is a need to provide the tool allowing to evaluate the investment attractiveness, competitive position, and their changes in various considered or already existing localizations.

The relationships between localization and competitiveness strategies are presented in the first part of the paper, and special attention was paid to the issues concerning investment capital migration in the large regions of the world. The cognitive needs of automotive sectors resulting from the

most often realized competitiveness strategies are presented in the following part. The next part of the article presents an original concept of regional strategic groups and their analysis for automotive sector in relation to selected European regions. The key for selection of the regions was due to the fact that these regions contribute more than 1 % share to the number of enterprises registered in this sector in the EU. The possible differences between entrepreneurship and automotive sector spatial concentration and localization value of the regions were also demonstrated. The final part presents the advantages and disadvantages of this instrument and further directions of the works related to its utilization.

This study involved the results of the studies concerning automotive sector competitiveness in Europe conducted in the Warsaw School of Economics (Godlewska-Majkowska, 2013b), as well as the EUROSTAT data and reports of companies representing the automotive sector listed on the stock exchange. Moreover, the long-standing scientific research on regions investment advantages conducted in the Warsaw School of Economics by a team led by H. Godlewska-Majkowska were used for analytic purposes.

Localization and Competitive Strategies

New problems related to the formation of economic activity profitability are observed in the global economy. Since the processes of value creation occur in an international environment, there is a high complexity in designing, purchase, production, and distribution. The entire order process, including stock replenishment and production decisions, occurs in an international environment. This requires the coordination of decisions on different processes occurring simultaneously in numerous localizations. An international enterprise forms very complex organization-spatial structures in order to limit the costs and concurrently fulfill international demands on offered goods and services. Customer service, inventory management, and utilization of production abilities should be considered in an integrated manner.

The question of the choice between global and regional/local organization option appears due to the complexity of an enterprise management. The provision of raw materials and semi-finished products may be affected by the local characteristics and regional resources. This raises the issue of centralized or de-centralized organization of the provision, based on specialized internal suppliers or external supplies.

Also, making or breaking the decomposition of the overall production strategy of the global enterprise is an important issue. The international production strategy of the enterprise as the whole should be divided and reflected specifically for each of the plants included into an international enterprise. It is difficult to make a decision about the power decentralization range and to ensure consistency within the overall strategy of international production. The situation is complicated by the interactions occurring between the enterprises and other market participants. Therefore, it is important to incorporate increasingly complex localization issues to the business management sphere (McGrath & Bequillard, 1989; Meijboom & Vos, 1997).

The activities undertaken in relation to the localization affect the competition between the enterprises, since the location chosen by the enterprises may affect the local competitors. It is important to emphasize that the models do not usually consider the spatial dimension of the localization choice. By 1990, the geographical dimension of localization was absent in the conceptual framework of internationalization (Colovic & Mayrhofer, 2009).

Only the increasing globalization of production and rapid technological changes have challenged the theory of comparative advantages of countries and regions in the world, and thus strongly affected the perception of location sources of enterprises competitive advantages. Exposed to an increasing competitive pressure from foreign cheaper locations, the enterprises from the developed countries and/or regions with high operating costs have started to implement several strategies to survive, maintain and/or improve their competitiveness. These are the following strategies[2]:

- sufficient reduction in production costs and product sale price,
- increase in productivity and effectiveness by a development and/or implementation of new, innovative production technologies and processes,
- production or other activities transfer from high costs localization to cost-effective ones,
- implementation of product innovations (e.g., elaboration and introduction of new products and services, as well as improvement of quality and upgradation of existing ones).

Each of these strategies may be supported by regulation of the localization or correction of spatial relationships of the enterprises with its business network (Lejpras, 2012).

Therefore, the decisions of localization arrangement require individual decisions undertaking by particular enterprises based on supply chain examination. The examination of delivery chain and decisions undertaking, are thus based on an analysis of localization options considered in terms of transaction costs[3] and outsourcing profits. Thus, the localization in which relations between them are satisfactorily is opted. In case of vertical integration strategy adaptation, the localization should result from relatively high transaction costs and low outsourcing attractiveness.

There is a dilemma between the choice of activities in global and regional scale in case of international enterprises strategic decisions (Proff, 2002). The nomenclature raises some doubts. Today, an unresolved question is whether large enterprises can pursue a "global" or a regional strategy. By global, we mean an extension of home-country domestic strategy to a global context, assuming that the world is flat such that there is homogeneity in production and consumption patterns. By regional, we mean sales or asset dispersion within each of the broad triad regions of the EU, North America, and Asia. Today enterprises are required to

report their sales and assets across these broad geographic regions (Oh & Rugman, 2012).

The advantages of global strategies involve inter alia: costs reduction, maximization of scale benefits, and limitation of activities multiplication, which implies high effectiveness reaching. The advantages of local orientation are based on income maximization enabling differentiation, speed of reaction, and reaching all market niches (Buckley & Ghauri, 2004). Moreover, an attention is paid to defragmentation of the value added chain and entering the new markets, which to a minor degree participate in the financial crisis (Colovic & Mayrhofer, 2011). The result of a lack of unequivocal assessment of regionalization or globalization rationale are various options of strategies concerning production localization, marketing, as well as research and development in automotive industry involving: multidomestic configurations, regional and multiregional configurations, as well as trans-regional or global configurations (Balcet & Enrietti, 2002; Oh & Rugman, 2012; Schlie & Yip, 2000).

Geographical transformation toward global integration may be observed with respect to automotive sector over the last years (Sturgeon *et al.*, 2009). The rate of this transformation may be accelerated by economic crisis, which is accompanied by a drop in sale and profits, since the enterprises are searching for the ways to increase revenue and reduce expenditure (Global Location Strategy, 2009).

Due to geographical, cultural, and institutional proximity and low costs, the close foreign regions (near shoring) attract an interest. Interesting are also the regions/countries with fast-growing car market and developing or developed countries, with poor integration of production and basic distribution (Pavlinek *et al.*, 2009).

The effects of globalization processes in automotive sector are inter alia the changes in the organizations' ownership structure (capital concentration) and production delocalization on a global level (Dorocki, 2010). Instead, there are still some barriers of market globalization concerning insufficient offer adaptation to the specifics of particular markets, especially remote ones. In addition, the phenomena of market closing, both from inside, as a result of regional market protection, and from outside, when external decision centers operate in a given region of the world, may be observed (Rugman & Verbeke, 2004).

The competitive position of the manufacturer in the global automotive market depends not merely on traditional factors such as productivity or innovation potential. The construction of an international supply chain, i.e., the geographical distribution enabling the company to face its competitors, is also an important issue (Schmid & Grosche, 2008).

There are five main groups of decisions/strategies premises in automotive industry, concerning production transfer, or startup in a new location (Czaplinski & Stawarska, 2010; Dorocki, 2010; Global Location Management, 2005;

[2]Due to the multiplicity of approaches to the definition of the strategy, in this paper we have accepted the definition, according to which: "the strategy of the enterprise determines the long-term direction of economic entity activities, their area and range. At the same time it takes into account external (macro-environment and competitive environment) and internal(resources, competences and activities) conditions of undertaken

operations and is intended to allow for the achievement of competitive advantage, as well as the implementation of the values and expectations of stakeholders"(Dzikowska & Gorynia, 2012).

[3] "Transaction costs are a part of total costs of social-economic system functioning, which include resource expenditures incurred during all kinds of transactions closing and realization" (Stankiewicz, 2005).

Global Location Strategy, 2009; Merkisz-Guranowska & Merkisz, 2007):

- market (related to the need to maintain existing markets, exploring new, attractive, and absorbent markets, and diversification of consumer needs in different locations),
- cost (related to differences in the availability, quality and costs of resources, including human resources and minimization of transport costs),
- innovations and implementation possibility (proximity or separation of R&D from the production),
- process (increase in production process flexibility, localization in proximity of suppliers and subcontractors, or often nowadays following of components manufacturers for automotive concerns localizations),
- political and institutional (risk due to political, financial, currency related to a given localization, possibility of an elimination of barriers in import, rules of enterprises taxation, investment allowances, environment protection standards, government support, infrastructure, and institutional frameworks).

Therefore, there is a need to deepen the traditional instruments of strategic analysis, as well as strategic options analysis, of spatial topic in a way relevant to the real needs of the enterprises (Mascarenhas *et al.*, 2010).

An attempt to combine the regions investment attractiveness was only undertaken by O.W. Lenkowa (Ленкова, 2014) with respect to the competitive position of Russian regions on fuel and energy sector. The author compared the regions in terms of meeting of the requirements specific for this sector. The selected measures are sector specific. They in a good manner reflect an attractiveness of the regions for this specified sector. However, the measures of more universal character are essential knowing the current capital migrations.

The McKinsey matrix has also been considered in the study of determination of route attractiveness and resource allocation in Kenya Airways as a basis for resource allocation (Mokaya *et al.*, 2012). However, this method was only applied for the presentation of market attractiveness determined using quality-related methods based on managers' opinions, on separately prepared matrices. Fourteen partial indices, describing the sector and not regions, were considered, e.g. reliability, customer loyalty, frequency of flights, market share. Spatial aspect in turn was taken into account by creation of the matrices for particular regions. This method is very precise, but does not allow direct comparison of various localizations. Moreover, qualitative research is essential in this case.

Regional Strategic Groups: Nature and Possibility of an Application in Localization Management

Localization management in the enterprise requires an application of the methods taking into account its needs, size, structure, and activity type. Various kinds of model solutions are recommended in the literature, and they are aimed to determine an optimum localization: using localization triangle, isodapane method, and more complicated methods of linear programming based on the objective function, usually in a form of total transportation costs minimization.

Currently, this type of methods seem to be too simplistic, since localization management requires simultaneous consideration of a set of points, as well as the changes in location values for specific locations over the time. Moreover, the investors are increasingly looking for satisfactory rather than optimal location. Decision-making situation is hampered by the immeasurable nature of certain location values, as well as the need to maintain flexibility in the enterprise management, with concurrent reduction of resource wastages.

Then, the problem is to provide proper information enabling observation of regional investment markets for both demand and supply (the investment market is created by demand and supply to investment areas localized in the region). The research problem is an adequacy of enterprise localization choice accordingly to changing conditions of regional investment market. In global economy there is necessity to conduct multiple-criterion comparisons of numerous localizations, at the same time taking into account localization behaviors of various numerous participants of investment markets. Therefore, a necessity exists to create a tool which allows for multivariate analysis of regional investment markets. This issue affects both stakeholders creating demand for potential locations, as well as enterprises searching for investment areas. Presented original concept of regional strategic groups constitutes a solution allowing for conducting localization analyses for sectors or business bundles considering competition analysis in regions of various levels of statistical division, appropriately to the availability of data. Possible applications depend on the quality and availability of statistical data both offered by public institutions as well as solutions used in enterprise reporting. However, the original proposal indicates new possibilities for creating management information and its interpretation.

Therefore, it is necessary to apply the new solutions or at least modification of the methods previously recommended in the text books of management.

The concept of regional strategy groups is based on the use of McKinsey matrix, which is widely described and discussed in the literature (Bettis & Hall, 1981; Amatulli *et al.*, 2011; Wielicka, 2012, Mokaya *et al.*, 2012; Tiberio & Cristovao, 2009; Loureiro & Fernandes, 2011; Proctor & Kitchen, 1990; Baltescu, 2010; Zabinski, 2013; Stachura, 2007; Mierzwa, 2013; Bednarz, 2008). The article is an attempt to modify this approach and use the matrix for the spatial analyses . "In recent years, due to the growing importance on the world's stage of regions as economic and spatial units, many of the concepts identified traditionally with the enterprise started to be analyzed in relation to the regions. Among them one can include competitiveness, innovativeness and entrepreneurship" (Kola-Bezka, 2010).

The proposed modification of the McKinsey matrix is a new proposal in this range, being concurrently an attempt to solve the managing-related problem. The essence of the modification is to introduce the regional strategic groups to the strategic analysis, as an analogy of the strategic group of the enterprises. While in the traditional sense, microeconomic markets are subject to the analysis, and the position of the enterprises in them; in a modified form, the analysis concerns the regions examined in terms of their direct and indirect competitiveness.

Regional strategic groups constitute the clusters of regions similar in terms of sector attractiveness and competitive position or potential. Thus, only in a very small range they are an equivalent of strategic group, the term used in strategic analysis. "Strategic group is composed of competing enterprises, which have similar approach to the competitive fight on the market, i.e., (Gierszewska & Romanowska, 2003):

- offer the products comparable in terms of quality, technical level and modernity,
- use similar distribution channels,
- are integrated vertically to the same degree,
- offer comparable services, maintenance, and technical support,
- are focused to fulfill of the same customer groups' needs,
- lead advertising campaigns in a similar manner,
- use identical product technologies,
- offer the products at similar prices."

However, more generalized approach to the nature of strategic group is justified for the regions. The regions indeed lead strategic activities and their products are investment areas. In this case, we are dealing with a direct competition of the regions.

According to the original concept, the regional strategic groups may be related to the regions of different taxonomic levels, treating them as an equivalent of the enterprises. In the literature one can observe the existence of consent on spatial units treatment as analogues of the enterprise. This approach is presented, among others, by K. Kucinski (Kucinski, 2011), M. A. Lesniewski (Lesniewski, 2013), T. Pilewicz (Pilewicz, 2012). Spatial units are regarded as analogues of enterprise, solutions developed on the basis of enterprises are adapted to the needs of territorial units, thus contributing, inter alia, to strengthening their competitive position.

Regions can be regarded as internalized corporate entities, which is used for example in the theory of clusters. Location advantages of the region (as an external factor) and the location of automotive industry companies - treated as a collective entrepreneur (internal factor) were presented in the modified matrix. Outsourcing or lean management are conducive to treatment of collective entrepreneur as the internal factor. Presentation of two variables is a valuable addition to the analysis of enterprises' localization, because it leads to minimizing the risk of localization (the ability of replacing one co-operator with the other one). Information on the level of concentration of enterprises in the regional system can be an important factor of location (the companies combine their competitive advantages with the advantages of local partners).

Treating spatial units as analogues of the enterprise gives one a posibility to assess each location using the attractiveness and market share, understood as competitive position. The indices of investment attractiveness may be applied in regional matrix in the place of sector attractiveness valuation, appearing in traditional the McKinsey matrix. These indices may be treated as elements allowing the comparison of specified locations, and its competitive position evaluation. Since the McKinsey matrix is formed on the basis of the presentation of three localization's dimensions, the competitive position of a given region, measured for example by the share of given region in the value of production sold/revenues from higher level sector's sale, may be presented on OX axis. In case of statistical data absence, it is also possible to apply the indices indirectly demonstrating the competitive position of the region or enterprises localized there, e.g. presenting the share of a given region in the whole of its economic entities, in gross value of tangible assets or investment expenditures of the reference area (e.g. European Union for international analysis, given country for domestic analysis). The size of circle may represent the entrepreneurship level, determined based on given region share in the whole of employed in specified sector. This measure demonstrates concurrently the competitive position of specified region and points an indirect competitiveness of the region.

An analysis of strategic position and determination of competing strategies in the sector may be performed based on the criteria: low, medium, and highly evaluated units.

This may be performed in analogical manner as in the classical McKinsey matrix (Table 1.).

Table 1

The GE/McKinsey Matrix

		INDUSTRY/MARKET ATTRACTIVENESS		
		HIGH	MEDIUM	LOW
BUSINESS STRENGTH	HIGH	**Invest and Grow** Seek dominance Maximize investment **(Leader)**	**Selective Growth** Identify Growth area Invest in growth **(Try harder)**	**Selective Growth** Maintain position Seek cash position **(Cash generation)**
	MEDIUM	**Selective Growth** Identify weaknesses Build on strengths	**Selectivity** Specialize Invest selectively **(Proceed with care)**	**Harvest /Divert** Pure lines Minimize investment **(Phased withdrawal)**
	LOW	**Selectivity** Specialize niche Seek acquisition **(Improve or quit)**	**Harvest /Divert** Specialize niche Consider exit **(Phased withdrawal)**	**Harvest /Divert** Attack Rivals Time exit **(Withdrawal)**

Source: The GE/McKinsey Matrix, 1971
(the cited paper of Mokaya et al., 2012).

Translating these assumptions to evaluate the investment attractiveness of the regions and their competitiveness, the recommendations concerning the strategy for growth, maintaining, or descent of the relevant geographic market may be formulated.

The enterprise can therefore get synthetic information on the geographic arrangement of the competition in specified sector, concurrently taking advantage of the two selected variables describing the competitive position of the region. Moreover, using multidimensional indices of investment attractiveness, it is possible to make an overall assessment of location advantages of the region, regardless of which EU Member State it is located.

The results of potential investment attractiveness valuation performed using the weight-correlation method worked out in the Institute of Enterprise School of Economics in Warsaw under the direction of H. Godlewska-Majkowska was used in the construction of the regional strategic groups. This index provides an assessment of enterprises' location advantages considered from the point of view of the enterprises' business objectives realization, e.g., in a form of profit maximization, assuming competitiveness increase (Godlewska-Majkowska, 2010, 2011, 2012). The method was also used for creation of the attractiveness indices on department level for dairy sector (Komor, 2012). Moreover, this method was used for the first

time in 2012 in the parameterization of the EU regions investment attractiveness-NUTS 1 and NUTS 2 (Godlewska-Majkowska, 2013b).

The method allows to minimize the effect of the author's subjective evaluation on the final results, taking into account the unequal impact of individual variables on the final index size. This correspond more so in the case of omission of particular partial variables ranks. Due to lack of data availability, the indices of investment attractiveness created for the needs of European analysis are based on a modest set of options.

The data for the Potential Attractiveness Index for European Index is taken from Eurostat database. The selected data are attached to one of the Microclimates and added to their character:

• Positive [P]: if the level of the variable arises, the potential attractiveness of a region will rise too. For instance, population density.

• Negative [N]: if the level of the variable arises, the potential attractiveness of a region will shrink. For example, unemployment rate.

Table 2 shows the variables that were used in the latest research with their characteristics and appropriate microclimate.

Table 2

The Variables used in the Potential Attractiveness Index for European Regions

Microclimate	Variable	Character
Human capital	The proportion of non-working age population to 100 people of working age	Negative
	Professional activity index	Positive
	Work efficiency in terms of salary	Negative
	Long-term unemployment	Positive
	Number of working hours in the week	Negative
	The share of the population above 65 years in population	Negative
	Gross value added per employed	Positive
	Change in population 2008–2010 relative to 2008	Positive
	Salary per employed	Negative
Market	GDP per capita in Euro	Positive
	GDP (PPP) in relation to average EU per capita	Positive
	Population density	Positive
	The share of population living in the highly populated areas in total	Positive
	The number of enterprises in terms of population	Positive
Innovation	The share of population working in R&D in terms of employed	Positive
	The share of population working with high technology in terms of employed	Positive
	Expenditure on R&D [euro per capita]	Positive
	The number of employees working in R&D for 1,000 residents	Positive

Source: own elaboration on the basis of study results conducted in the Warsaw School of Economics. The research team was managed by H. Godlewska Majkowska and the project was entitled Enterprise in the development of economic regions – economic and social aspects. Poland in comparison with Europe and the rest of the world, conducted from 2013–2015.

The variables are standardized as follows:
• For positive variables:
$$x'_{ij} = \frac{x_{ij} - x_{\min j}}{x_{\max j} - x_{\min j}} \times 100$$
• For negative variables:
$$x'_{ij} = \frac{x_{\max j} - x_{ij}}{x_{\max j} - x_{\min j}} \times 100$$
where:
i -variable
j -spatial unit
x'_{ij} -normalized i-variable in j-spatial unit
x_{ij} -value of i-variable in j-spatial unit
$x_{\min j}$ -minimum of j-variable
$x_{\max j}$ -maximum of j-variable
For each microclimate, spatial unit is calculated as an average from standardized variables
$$q_{j,n} = \frac{1}{m} \times \sum_{j=1}^{m} r_n \times x'_{ij}$$

$q_{j,n}$ -evaluation of n-microclimate in j-spatial unit
M-number of variables
N-number of microclimate
r_n -correlation between each microclimate and the sum of all microclimates.

For the first estimation, r_n is assumed to be 1 for each microclimate. Then the iterations are calculated till the correlation between each microclimate and their sum becomes stable. The sum of microclimates divided by the average values for each microclimate is known as synthetic indicator.

The indices of potential attractiveness, accepting the values from 1 to 6, were formed based on the presented method. Then, they were introduced as the data describing the investment attractiveness of the regions.

An application of investment attractiveness indices constitutes the proposition related to the solutions suggested in the worldwide literature. An example of cost-effective application may be the Location Attractiveness Index, elaborated by AT Kearney (Gupta *et al.*, 2009), referring inter alia to cost advantages of particular localizations, e.g., compensation costs, infrastructure costs, as well as tax and miscellaneous expenditure. However, due to availability, it is possible to construct this kind of index on an international, and not regional level.

Therefore, the solution proposed by H. Godlewska-Majkowska and her team is used in Poland since 2008 by the government authorities (Polish Information and Foreign Investment Agency), as well as by local authorities at different levels of territorial division: local, regional, and macro-regional.

The indices of potential investment attractiveness can be analyzed over a time, provided the methodology standardization. In this way, one can determine whether and in which direction the investment profitability of the specified site changes, as well as the type of change, and its size can be determined very precisely based on a comparison with changes in any other specific area of reference (poviat, voivodeship, country, EU).

This is an original solution, which has not been previously used in the worldwide literature in this context.

European Regional Strategic Groups in Automotive Sector

Potential investment attractiveness coefficients are based on components of localization values collected on a given area (human, infrastructural, natural, cultural resources). These components correspond to strategic objectives of enterprises (Table 3).

Table 3

Strategic objectives of the selected automotive enterprises in the context of investment attractiveness microclimates

	Market	Innovation	Human capital
Volkswagen (Ideen Bewegen, 2014)	Sales increase up to over 10 million vehicles per year, Maintenance of sales profitability before taxation on a level of at least 8%,	Customers satisfaction reaching by implementation of smart innovations and technologies	Being the best employer in the automotive industry and having the most qualified, efficient, and motivated workforce capable of producing the best cars.
Volvo (The Volvo Group, 2012)	"We are among the most profitable in our industry. We are our customers' closest business partners. We have captured profitable growth opportunities"	"We are proven innovators of energy-efficient transport and infrastructure solutions".	"We are a global team of high performing people"
Ford (Sustainability 2012/13, 2013):	Aggressively restructure to operate profitably at the current demand and changing model mix Finance our plan and improve our balance sheet	Accelerate development of new products our customers want and value	Work together effectively as one team

Source: own elaboration based on: Ideen Bewegen, 2014; The Volvo Group, 2012; Sustainability 2012/13, 2013.

Identification of the regional strategic groups for automotive industry was done based on an evaluation of sector attractiveness and competitive position of European regions. An evaluation of sector attractiveness was based on the indices of potential investment attractiveness. Due to the lack of statistical data on the level of NUTS 2 regions of the European Union, the competitive position of the region was examined indirectly based on the share in total number of enterprises operating in a given regions in total number of enterprises in the reference region, i.e., on EU area – 27 Member States. Cognitive value of such approach for the investors, include inter alia the possibility to search for the partners or to demonstrate the potential rivals, while for the regions, e.g., monitoring of entrepreneurship development. The size of the circle illustrates in turn the contribution of the region in the number of employed in the European Union automotive industry.
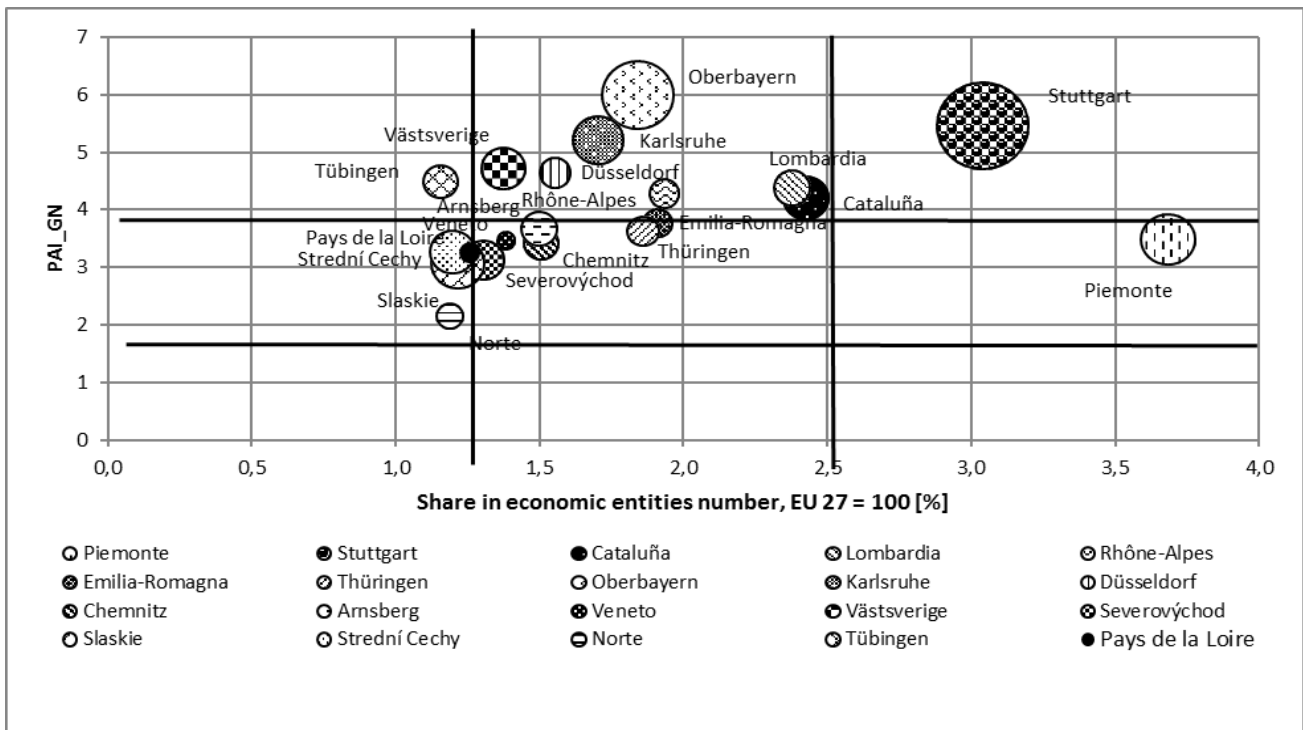
Figure1. Regional strategic groups in automotive sector in selected regions of the European Union in 2011.

Caution: surface of the circles corresponds to the share of individual regions in the number employed in the automotive industry in the European Union, EU 27 = 100 [%]

Source: own elaboration based on Eurostat data: http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database (10.09.2013.) and indices elaborated in the Institute of Entrepreneurship under the direction of H. Godlewska-Majkowska within the statutory works of the Enterprise Sciences College, Warsaw School of Economics in 2013.

Figure 1 encourages Stuttgart, which acts as a region-leader in the automotive sector. It is the result of a relatively high level of entrepreneurship development, which is important due to the assembly nature of this industry and the need for cooperation in the implementation of new quality standards. Moreover, this region is distinguished by a large share of the labor market created by the industry and the high location values, particularly lucrative in terms of demographic, economic, and research and development issues. For business development, this is a signal that the region has achieved high competitiveness, so it can use its competitive advantages and continue to strengthen them. The externalization of production appears both as a strategy for cost reduction and risk minimization, and also as a means to improve firm competitiveness through collaborative partnerships between suppliers and carmakers (Vale, 2004). The group of regions that are predisposed to the selective development based on hard work is relatively numerous. These are mainly the regions like Oberbayern and Karlsruhe. These regions are characterized by above-average rating of location values, important not only for the automotive sector but also to related sectors such as home appliances. Also attention should be paid to the significant impact of labor resources accumulated in these regions, since except the existing stock of FDI and trade openness, human capital also constitutes a significant competitiveness factor (Tun *et al.*, 2012).

Analysis of regional strategic groups also pointed to the lack of justification for continuation of investment in the Norte Region of Portugal, due to the low ratings of investment options and negligible levels of entrepreneurship.

Conclusions

The objective of this study was to create a new methodological model in enterprise localization analysis on the basis of regional strategic groups. Also, we present application options and restrictions of the proposed tool in enterprise strategic option management for automotive sector in NUTS 2 level regions in the EU.

In this article the McKinsey matrix was modified thanks to introduction of sector represented by collective investment undertaking replacing single enterprise, individual locations (regions) were introduced into the place of strategic business units.

Also, the notion of "regional strategic groups" as assemblages of regions resembling one another in sector attractiveness and position or competitive potential was introduced.

Proposed adaptation of the McKinsey matrix for spatial analyses brings new benefits both for enterprises and regions.

Benefits for enterprises include:
- conducting comparisons of single locations (regions) as well as subsets of potential localizations of economic activity applying complex evaluations of region investment attractiveness;

- monitoring changes in the entire sector and behaviors of competitive enterprises considering spatial factor;
- indication of potential rivals within intrasectoral competition in given strategic group at given location;
- search for partners for creation of strategic alliances or establishing cooperation based on cooperention.[4]

Benefits for regions include:
- facilitating formation of specialization of regional economies and economic relations with other market participants, including competition;
- better identification of customers (entrepreneurs and investors) and their needs, as well as recognition of partners (other regions) to create integrated marketing product;
- monitoring the level of investment attractiveness and its changes in comparison to position of other regions. It may result in implementation of activities directed to increase of investment attractiveness, thanks to for example benchmarking analysis of identified regional leaders;
- Facilitating evaluation of situation of enterprises from given sector in region and implementation possible actions to improve conditions for operating companies and possible investors.

Analysis of regional strategic groups allows for proposal of possible strategic actions for both regions as well as enterprises located in them. In this context it contributes to solving the problem of management of enterprises localization and adjusting actions of local entities (regions) for developing their investment offer to the needs of business entities.

It should be however borne in mind in making strategic decisions and selecting strategic options that all statistical measures are subject to certain construction errors.

Special attention should be paid to the fact that the intra-regional scale, or NUTS 2, may not reflect actual inter-regional interactions occurring within the links of a network character forming in the space. Moreover, the data concerning entrepreneurship and employment may not correspond to actual involvement of the enterprises in various regional markets due to overtaking turns that takes place in the non-equity system. A major falsification of the analysis is also financial reporting, non-reflecting enterprises arrangement by their location in the region, only according to the head offices location.

An application restriction of the proposed tool is relevance of the available statistical data and too general character of investment attractiveness coefficient used in constructing matrix for the evaluation of attractiveness of region. Despite the fact that investment attractiveness coefficient is formulated on the basis of wide range of data it may not adequately enough reflect localization factors specific to a given sector. This defect may be neutralized with the use of coefficient adjustment consisting in taking into account additional coefficients included in it.

Taking into account all the arguments for and against, it can be concluded that the idea of the use of regional competitive groups deserves an attention and should be

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[4] Cooperentive relations consist in simultaneous occurrence of relation between cooperation and competition in relationships between rivals. Rivals cooperate in certain functions of value chain, while compete in others. Cooperentive relations may be internal-related and may occur

between individual organizational units within an enterprise. Another type is formed by cooperentive relations occurring between independent entities, which can be network-related (Bengtsson & Kock, 2000; Cygler, 2009).

developed as an element enabling the creation of information systems concerning investment attractiveness of different regions of the world, on a scale from loco-regional (LAU1, LAU 2), sub-regional (NUTS 3), regional (NUTS 2, NUTS 1), national (NUTS 0), the international groupings (global triad), inclusive.

Therefore, the research hypothesis stating that it is valid to transfer the McKinsey matrix hitherto used on microeconomic level to mesoeconomic level was verified positively. The rightness of the hypothesis stating that it is justified to transfer McKinsey's matrix used at microeconomic level to mesoeconomic level is confirmed by the fact that investment attractiveness assessments for industry are used in Polish economic reality(In Polish Agency of Foreign Information and Investment). Moreover, the total measures of market share of particular industry branches as well as their investment attractiveness assessments are used in the reports of investment attractiveness. Our solution enables to synthesize and complexly evaluate indicators that are used not parallelly but iteratively. Foreign investors operating in Poland have used our matrix as an instrument supporting decision making. In a way, it means that the hypothesis was tested by experiment.

Directions for future study on the concept of regional strategic groups include attempt to use on levels of aggregation lower than industry (which requires more precisely detailed investment attractiveness coefficients of regions), transfer from statistical to dynamic treatment in order to determine direction and strength of movements in strategic groups. An interesting issue can be found in the form of attempt to transfer to mesoeconomic level other tools of portfolio analysis which so far were used at microeconomic level.

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The article has been reviewed.