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# TOPICAL ISSUE OF INNOVATIVE DEVELOPMENT

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## THE ASSESSMENT AND FACTORS OF INCREASE IN INNOVATIVE COMPETITIVENESS OF LATVIAN REGIONS

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*Latvia's participation in the process of integration and globalization within the European Union creates a need to improve tools of competitiveness and management assessment of the country's regions. It also requires the development of common approaches to selection criteria, competition indicators and assessment tools at the micro-, meso-, and macro-levels. This study identifies the development stage of Latvia's regions and considers methods as well as experience of evaluation and improvement of the competitiveness of Latvia's regions. The authors describe priorities and tools for regional innovative development and analyze conditions affecting regional development in the country. This work takes into account the current priority of the European Union — innovation and development of socioeconomic activity aimed at enhancing the competitiveness and attractiveness of European regions.*

*This study sets out to evaluate the competitiveness of Latvia's regions using a method developed by the European Commission. An expert survey based on the analytic hierarchy process identifies priority areas and instruments for their innovative development.*

**Key words:** region, innovation, competitiveness, clusters, technology, marketing territory

In 2007—2013, a third of the total EU budget — 313 bln euros — is to be allocated to solving three major problems (convergence, regional competitiveness and employment, and European territorial cooperation). Let us consider the issues of regional competitiveness using Latvia, a new EU member state, as an example.

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## The analysis of Latvian regions' development level

This research work employs the unified system of regional territory division recognised in the EU — NUTS (Nomenclature of Territorial Units for Statistics). According to the EU classification, Latvia exhibits the third level of regional development (NUTS-3) with a regional population of 150—800 thousand people. It consists of five regions (Riga, Kurzeme, Vidzeme, Zemgale, and Largale), which makes it possible to carry out more accurate diagnostics of regional problems. The Riga region embraces the city of Riga and the adjacent districts (Pieriga). In case of Latvia, performing such an analysis is a complicated process because of the actual division of Latvia's regions into two bigger regions *according to their economic potential*: Riga and all other territories, or in geoeconomic terms, the “centre” and the “periphery”. The official statistics show that 2/3 of the economic potential of the country is concentrated in the Riga region, which accounts for 66.8% of the country's GDP (7—10% in case of the ‘other regions’ group), 64% of the national industrial output (the other regions — 7—15%), 69.0% of the country's non-financial investment, (the other regions — 6—12%), 48.6% of permanent residents (10—15% in case of the other regions) [1]. The national economic activity also concentrates in the Riga region (table 1).

Table 1

### The economic activity of businesses, % of the total number of the industry's enterprises (2009)

Enterprises according to economic sectors	Latvia	Region				
		Riga	Vidzeme	Kurzeme	Zemgale	Latgale
Agriculture, forestry, fishery	100.0	<b>56.8</b>	10.6	13.3	8.9	10.4
Industry	100.0	<b>52.8</b>	11.7	14.6	10.9	10.1
Environment and energy	100.0	<b>69.8</b>	6.7	10.3	7.6	5.6
Construction	100.0	<b>64.3</b>	6.6	9.5	8.0	11.6
Trade	100.0	<b>71.7</b>	6.4	8.7	6.8	6.4
Services	100.0	<b>80.0</b>	3.5	8.6	3.7	4.1
Finance and insurance	100.0	<b>70.8</b>	0.0	4.2	16.7	8.3
Public administration	100.0	<b>62.1</b>	4.9	12.7	10.8	9.5
Education	100.0	<b>52.0</b>	10.6	13.1	11.0	13.3
Healthcare	100.0	<b>55.2</b>	10.9	12.0	11.9	10.0
Other	100.0	<b>51.2</b>	14.9	9.6	4.0	20.3

Source: [1].

Therefore, the Riga region is recognised as the “centre” due to its high concentration of national socioeconomic activity in a separate territory — a more active, in comparison to the rest of Latvia, use of new technologies (information, financial, industrial and managerial ones); a higher income level;

a high specific weight of investment contributing to further development of the region and a higher level of socioeconomic and sociocultural capital.

Constituting the “periphery”, the other four Latvian regions exhibit the opposite patterns: a relatively large area with a low population density; a low level of information and other modern technologies; low-paid jobs; a relatively low investment inflow; a lower level of socioeconomic and sociocultural capital. How do all these affect the regions’ opportunities for innovative development? Experts of the World Economic Forum (WEF) identify three major levels (principal stages and their criteria) of regional development. They single out some intermediate stages [2, p. 16]:

1. *Factor-driven stage*; the main growth factor is the mobilisation of all productive factors ensuring the stability of macroeconomic environment. GDP per capita is lower than 2,000 USD. The intermediate stage between the factor-driven and efficiency-driven levels is observed when GDP per capita reaches 2—3 thousand USD.

2. *Efficiency-driven stage*; the main growth factor is efficient use of world technologies in domestic production. GDP per capita is 3—9 thousand USD. The intermediate stage between the efficiency and investment-driven ones is observed when GDP per capita reaches 9—17 USD.

3. *Innovation-driven stage*; the main growth factor is not import of technology, but the development of unique technologies on the basis of a high level of education. GDP per capita exceeds 17 thousand USD.

Latvian regions can also be classified according to the WEF economic development stages (table 2).

Table 2

### Stages of the economic development of Latvian region (2009) [1]

Regions of Latvia	GDP per capita, lati*	Economic development stage
Riga	12 234	Innovation-driven stage
Vidzeme	4 503	Efficiency-driven stage
Kurzeme	5 579	Transition from the efficiency to innovation-driven stage
Zemgale	4 378	Efficiency-driven stage
Latgale	3 936	Efficiency-driven stage
National total	7 144	Transition from the efficiency to innovation-driven stage

\* 1 LVL = 2 USD.

Therefore, in accordance with the WEF competitiveness assessment methodology, only the Riga region can be considered competitive on external markets [3, p. 19—38], since it has reached the investment-driven development stage, whereas all the other regions are either efficiency-driven ones (Vidzeme and Latgale), or are in transition from the efficiency to innovation-driven ones (Kurzeme and Zemgale).

## The methodology and practice of assessing the competitiveness of Latvia's regions

A number of Latvian researchers have already attempted to assess the competitiveness of the country's regions. Different analysis methodologies have been proposed — the diamond approach, the Latvian development index, and some others [4, c. 131—141; 5]. The development of integrated regional competitiveness indicators for comparative assessment poses a crucial problem, since there is a need to reduce the different indicators to some common basis from the perspective of market economy. For medium-developed economies of the EU such as Latvia, the regional competitiveness indicators can show the level of income and labour efficiency as the ratio of the value added generated by the economy to the number of the employed and the employment rate. In our opinion, it rather accurately reflects the state and dynamics of regional competitiveness. A similar understanding is suggested by the corresponding report of the EU European Commission [6] and the analysis of competitiveness of Lithuanian regions published in 2009 [7, p. 79—84]. Thus, the present research work employs a simple but reliable assessment method of the level and dynamics of regional competitiveness using *the regional competitiveness index* elaborated on the basis of certain indicators. This index makes it possible to assess the competitiveness of Latvian regions. All types of indicators are of general nature, each of them characterises a certain property, or factor of regional competitiveness. These indicators are, in their turn, characterised by a group of other indicators in accordance with the methodologies presented in research literature [8, p. 23—28].

The European Commission suggests that GDP per capita be considered the principal competitiveness indicator [6, p. 75], which, in its turn, depends on productivity, employment rate, and the share of working population:

$$\frac{GDP}{population} = \left( \frac{GDP}{ER} \right) \times \left( \frac{ER}{WP} \right) \times \left( \frac{WP}{population} \right)$$

where *GDP* stands for gross domestic product, *ER* for employment rate, *WP* for working population; *population* for the total population of a country, or a region.

Competitiveness is defined by the EU EC experts in terms of GDP *per capita* and consists of two components, which altogether define its level. It is the ratio of GDP to the employment rate, which reflects labour efficiency (as the ration of value added generated by economy to the number of the employed), and the ratio of the total number of working people to the working-age population, i. e. the employment rate. High regional competitiveness requires both a relatively high level of labour efficiency and a significant number of jobs.

The interconnection between labour efficiency and employment is rather complex and is associated with a number of hidden factors. For instance, an increase in labour efficiency is sometimes considered an indicator incom-

patible with increasing employment. It might hold true in a short-term perspective, for example, for the regions that undergo restructuring. In a long-term perspective, these indicators will complement each other. For instance, in the regions with a high growth rate of labour efficiency, the conditions for creating and attracting investment are more favourable and, thus, there are trends towards further economic development and the creation of new jobs. Moreover, hidden factors can affect a certain component more strongly than others. So, the development of capital-intensive and high-tech production facilitates an increase in productivity. At the same time the development of an innovative, high-tech knowledge-driven economy and more qualified staff can contribute not only to an increase in productivity, but also widen employment opportunities for qualified labour force. In the present study, Latvia's regions are analysed with the help of all indicators used in the formula. For the purpose of comparison, we carried out an integral assessment of indicators, as well as their indexing (*max* value 1.00; *min* value 0.00) (fig. 1).

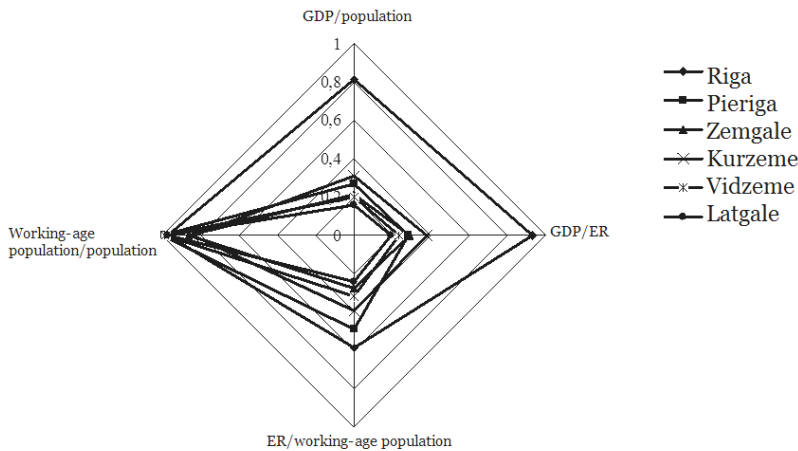


Fig. 1. Comparative competitiveness of Latvian regions (2009) [1]

The results of the analysis show a relatively stable dynamics of assessment ranking of Latvian regions' competitiveness after the country's accession to the EU: the Riga region ranks first (the city of Riga and the adjacent districts); the southern rural region of Zemgale and the eastern region of Latgale occupy the two lowest positions. It is indicative of persistent problems in a balanced development of competitiveness of all Latvian regions due to significant disparities between "centre" and "periphery" in the socio-economic and sociocultural potential.

**The management of regions' innovative competitiveness: priority factors and increase tools**

Economic development and an increase in the innovative competitiveness of Latvian regions require support for three types of activities exhibiting the features of "regional multipliers" — a) production of goods and services giving rise to the creation of new organisational, economic, and production

chains; b) production of goods and services with a high added value that find stable marketing outlets outside the region; c) the formation of business environment which is attractive to international and domestic investors and, at the same time, corresponds to the regional geographical features. The main lines of improvement of Latvian regions' competitiveness ("growth points" and "regional multipliers") can be supplemented by the following three.

*Firstly*, it is an increase in the regions' economic productivity on the basis of clustering. Latvia demonstrates a trend towards the growth of the economic efficiency coefficient; it should be developed sustainably on the basis of industrial clusters. Their significance in increasing economic competitiveness is well known and has been explored in theory and practice [9, p. 14—20; 10, p. 9—32]. For example, in Latvia, several clusters (forestry, transport, logistics and medical tourism) operate only in two or three regions, but these clusters lack close interregional ties, unlike the model proposed by the author (fig. 2).

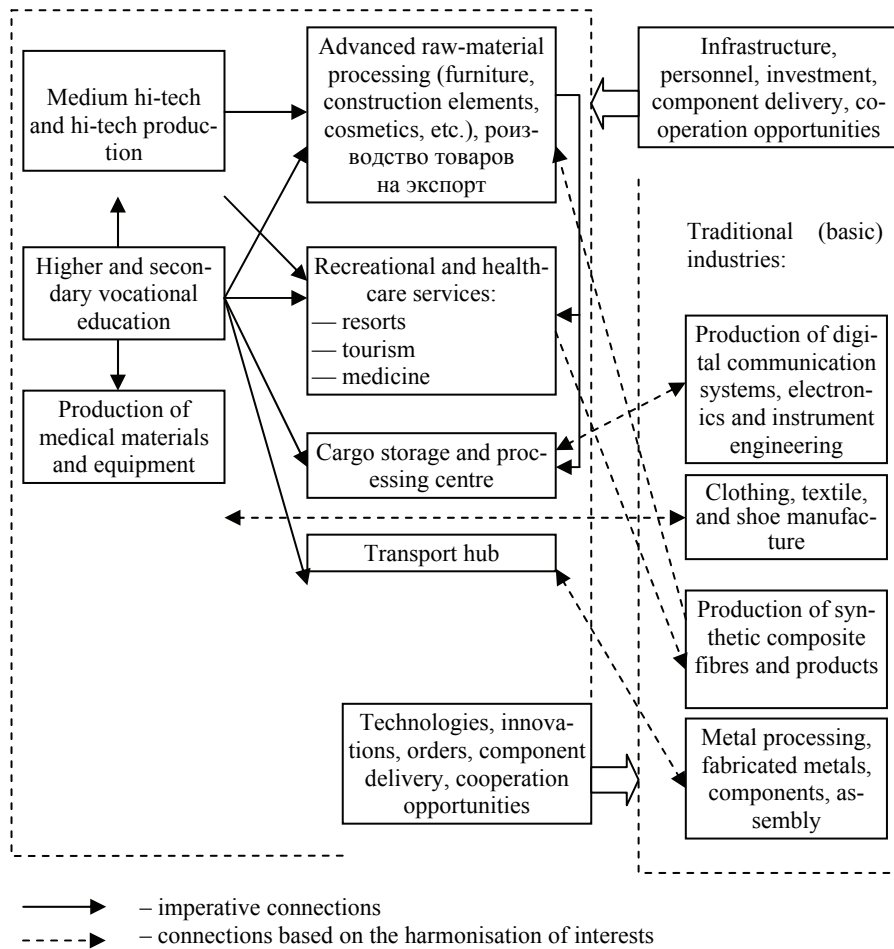


Fig. 2. A model of innovative development of Latvian regions developed on the basis of the inter-industry and interregional cluster approach

*Secondly*, it is an increase in the economy's technological efficiency. In general, Latvia lags behind the EU average in this respect and requires considerable efforts aimed at an increase in employment in hi-tech production, increase in the share of medium hi-tech and hi-tech export, and the development of knowledge-intensive technologies, etc. (Table 3).

Thus, there is a need to change the share of medium hi-tech and hi-tech industries in the structure of the real sector of Latvian regions' economy — from the current 31 % to 50 % in 2013 and, and in a long-term perspective (2015—2025), to the EU average (70 %). Today, the most unfavourable situation in terms of technological efficiency is observed in Vidzeme, and the most favourable one — in Latgale, which still maintains the potential of the once renowned industrial region of Latvia.

*Thirdly*, it is marketing as a means of increasing regional competitiveness. A modern region arouses interest as a territory of profitable investment and an attractive place for residence and business. The success of such competitiveness is determined, on the one hand, by the geographical position, climate, area, natural resources; on the other hand, by a number of factors determined by the region itself: its image, investment climate, management quality, education level, and other sociocultural factors.

Table 3

**Innovative development of Latvia, EU-27<sup>1</sup>, and Finland according to Eurostat (2009) [11]**

Indicators	EU-27	Latvia	Finland (for reference only)
<b>Employees of the medium hi-tech and hi-tech production industries,% of all employees</b>	<b>6.69</b>	<b>2.40</b>	<b>7.03</b>
Employees of the hi-tech services industry,% of all employees	14.53	11.22	16.49
<b>Share of medium hi-tech and hi-tech export,%</b>	<b>48.2</b>	<b>28.7</b>	<b>51.5</b>
Share of knowledge-intensive services export,%	48.8	37.8	26.7
IT expenditure,% of GDP	2.7	2.3	3.2
<b>Number of patents in the field of high technologies issued by the EPO, per 1 mln residents</b>	<b>114.9</b>	<b>9.8</b>	<b>247.3</b>

Thus, territory marketing is an innovative tool of regional development. The attracting force of territory marketing factors in Latvia is characterised by a high level of development and significance of these factors in the region (business opportunities, technological infrastructure, created jobs, etc.), which is understood as the actual marketing power of a certain factor. For example, the analysis and measurement of the actual marketing power of in-

<sup>1</sup> 27 EU member states as of 2011.



dividual factors which attract workforce, new businesses and investment into Latvian regions (as assessed by the residents, entrepreneurs, and municipal officials of Latvian regions) — *max* value 1.00; *min* value 0.00 — showed the importance of the following factors: “favourable geographical position” (0.64), “favourable environmental conditions” (0.43), “educational opportunities” (0.37), “a positive image of the region” (0.35), “business opportunities” (0.34), “a developed technological infrastructure” (0.32), etc. [12, p. 141].

### **The analysis of conditions determining the increase in innovative competitiveness of Latvian regions according to Thomas L. Saaty’s analytic hierarchy process**

In the present article, an assessment of the basic factors and tools of the improvement of Latvian regions’ innovative competitiveness (*economy clustering development, innovations and an increase in the technological efficiency of production, territory marketing development, etc.*), which have been described in a number of works [9; 12], will be performed on the basis of an expert survey. The results will be interpreted with the help of the analytic hierarchy process developed by the American scholar T. L. Saaty [13, c. 21—37]. The essence of this method lies in establishing the priority of factors having the greatest value on the basis of pairwise comparison of the properties under consideration, which ensures ordering priorities of the properties within the group of given parameters. Prior to the expert survey, a set of basic indicators was identified on the basis of the information veracity principle described in the works of other scholars [9; 12] (fig. 3). In the framework of the study performed in April 2011, five experts did a survey in each region on the basis of the methodology of expert selection reliability described in scientific literature [14, c. 170—180].

The assessment of the main elements of the first (*A, B, C* factors) and second level ( $a_1, a_2, a_3; b_1, b_2, b_3, b_4, b_5; c_1, c_2, c_3$  indicators) helped obtain 100 matrix solutions (20 per each of the five regions). The main and priority vectors were calculated for each region. As a result, the following *median values of factors and indicators* were obtained. Experts laid special emphasis to factor *B* (*max* value of 1.00; *min* value of 0.00) — “Innovations and production technology” — 0.47 in the Riga region, 0.47 in Kurzeme, 0.75 in Vidzeme, 0.29 in Zemgale, and 0.47 in Latgale. Factor *C* — “Territory marketing” — ranks second with the values of 0.47, 0.47, 0.18, 0.56, and 0.33. Factor *A* — “Economy clustering” — ranks last (it is of great significance in the economies of many EU countries, such as Great Britain, Denmark, Finland, and others). The corresponding values are 0.05, 0.05, 0.06, 0.07 and 0.09. At the same time, the median values of the indicators of all three factors outlined the conditions necessary for the development of certain regions and the features of managerial impact of different market actors on the increase in regional competitiveness.

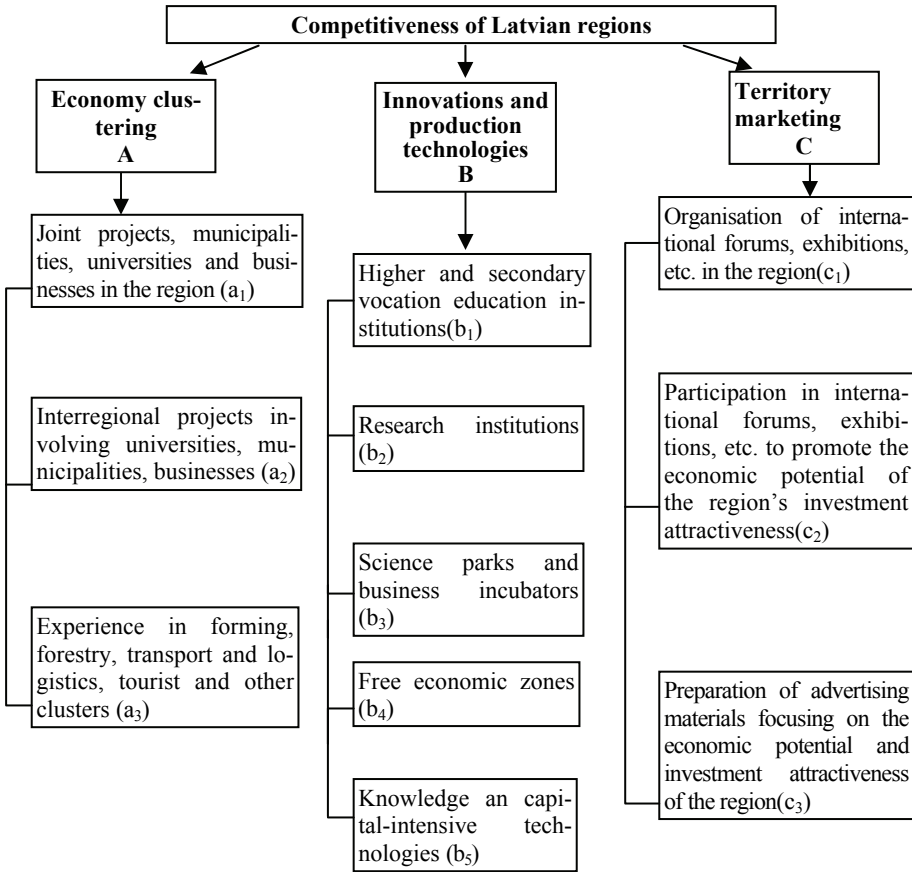


Fig. 3. The factors and indicators of innovative development of Latvian regions

As to the highest valued factor *B*, in Latgale, for example, only one of the five indicators —  $b_1$  “Higher and secondary vocational education” — had a considerable medial weight (0.33), whereas the values of other indicators were significantly lower. However, as to the lowest rated factor *A*, two out of three indicators —  $a_1$  “Joint projects, municipalities, universities and businesses in the region” and  $a_3$  “Experience in forming, forestry, transport and logistics, tourist and other clusters” — were assessed at 0.33 each. As to factor *C*, “Territory marketing”, all indicators were assessed at 0.33. These data are indicative of a need to further promote clustering in the Latgale region on the basis of innovation and production technology development, regional territory marketing done jointly by municipalities, businesses and research institutions.

In the Riga region, according to the expert evaluation, the highest valued factors — *B* и *C* — were evaluated at 0.47. However, the assessment of their indicators as priority means of increasing regional competitiveness differs from the Latgale region. For instance, as to factor *B*, two out of five indicators got higher values of 0.39 ( $b_1$ ) and 0.43 ( $b_2$ ). In the Riga region, the indicators of this factor were given very high values:  $c_2$  (“Participation in international forums, exhibitions, etc. to promote the economic potential of the

region's investment attractiveness" — 0.78) and  $c_3$  ("Preparation of advertising materials focusing on the economic potential and investment attractiveness of the region" — 0.78). As to the lowest valued factor  $A$ , one of the three indicators —  $a_3$  — was assessed at 0.78. Therefore, for the Riga region, the improvement of competitiveness is closely connected, according to the experts, with the development of science, knowledge-intensive technologies, and aggressive PR. These means are identified as priorities when harmonising the efforts of regional municipalities, research institutions, and business in the strategy for regional development.

The situation in the Kurzeme region is similar to that in the Riga region as to the expert evaluation of the highest-rated factors ( $B$  и  $C$ ). At the same time, the weight of all five indicators of factor  $B$  proved to be rather low: only indicator  $b_3$  — "Science parks and business incubators" — was evaluated at 0.23; the other assessments were lower. As to factor  $C$ , in the Kurzeme region, two out of three indicators were evaluated by the experts at 0.47 ( $c_2$  and  $c_3$ ). As to the lowest-rated factor  $A$ , two out of three indicators were estimated at 0.33 ( $a_1$ ) and 0.47 ( $a_3$ ). According to the experts, the potential for increasing the competitiveness of the Kurzeme region lags behind that of the Riga region, but exceeds that of Latgale. For the Kurzeme region, just as for Latgale, the key means to increase competitiveness is further promotion of clustering, the development of science parks, and aggressive PR campaigns done jointly by municipalities, businesses, and research institutions.

In the Vidzeme region, factor  $B$  was ranked the highest (among Latvian regions) with the value of 0.75. At the same time, three out of five indicators were estimated at 0.30 ( $b_3$  and  $b_4$ ) and 0.47 ( $b_5$ ). As to factor  $C$ , in the Vidzeme region, only one of three indicators was estimated by the experts as significant —  $c_3$  (0.65). At the same time, as to the lowest-ranked factor  $A$ , all three indicators ( $a_1$ ,  $a_2$ ,  $a_3$ ) were estimated at 0.33. Therefore, the principle means to increase the competitiveness of the Vidzeme region are the development of innovations and knowledge-intensive production technologies, as well as further clustering. These means are identified as priorities when harmonising the efforts of regional municipalities, research institutions, and business in the strategy for regional development.

In the Zemgale region, the experts placed emphasis on factor  $C$  ("Territory Marketing", 0.56). Two out of three corresponding indicators were estimated at 0.78 ( $c_2$  and  $c_3$ ). As to factor  $B$ , only one out of five indicators was considered by the experts as significant ( $b_2$ —0.64). In the Vidzeme region, as the lowest-ranked factor  $A$ , all three indicators ( $a_1$ ,  $a_2$ ,  $a_3$ ) were evaluated at 0.33. Apparently, as to the Zemgale region, the principle means to increase competitiveness are as follows: aggressive PR campaigns of regional actors aimed at attracting external investors and forming a positive image of the territory, a more efficient development of the potential of regional research institution, and further clustering.

The study results can be of practical significance for regional municipalities, businesses, and research institutions and serve as reliable indicators of the efficiency of management of sociocultural and other development in Latvian regions.

## Conclusions drawn on the basis of the study results

Firstly, the socioeconomic development of Latvian regions differs in the potential and opportunities for attracting qualified human, investment, and technological resources. Only the Riga region is at the innovation-driven stage, the other regions are at the efficiency-driven one, or undergo the transition to the innovation-driven stage.

Secondly, the main factors of the improvement of Latvian regions' competitiveness are as follows: an increase in the economic productivity on the basis of clustering, an increase in the technological efficiency of production of goods and services, the application of territory marketing tools in order to attract businesses, workforce, and investment into the region.

Thirdly, due to the significant disparities in the development of Latvian regions, all regions, except for Riga, lack conditions for effective and consistent impact of the main factors (clustering, the development of production technologies, territory marketing, etc.) on the increase in regional competitiveness. This results from the fact that the degree of development of these factors in the regions is lower than their significance according to the expert evaluation.

Fourthly, the identified priority means of improving the competitiveness of Latvian region for the benefit of efficient management require joint efforts of the government and local authorities, regional universities and businesses. At the moment, the situation is complicated as a result of the significant impact of non-economic factors on the country's development.

And, finally, the results of the study can be used in solving similar problems in the regions of the Russian Federation.

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