REGIONAL CONSTRUCTED ADVANTAGES – CASE OF POMERANIAN REGION IN POLAND

JOANNA KUCZEWSKA
MACIEJ KRZEMINSKI

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Abstract
Regional competitiveness is the crucial area of research in modern economics. The European Union uses the regional competitiveness and divergences studies in creating the European Member States economies competitive advantages. Regional competitiveness determinates also the enterprises competitiveness advantages and plays the crucial role in creating their competitiveness position. The importance of the regional competitiveness increases in the knowledge-based economy circumstances, where competitiveness depends on the ability to use knowledge, skills and attitudes of entrepreneurship. Regions are the leaders responsible for these resources mobilization so identification of their strengths and weaknesses allows to indicate the crucial growth tools. In terms of traditional concept, competitiveness is based on the classical theories of absolute advantage by Smith, Ricardo’s comparative advantage to the first theory of Porter’s competitive advantage. Modern knowledge-based economy creates a new approach to regional competitiveness researches – from the advanced Porter competitive advantage theory to the dynamic concept of constructed advantages. The key element of constructed advantages theory is an eclectic approach that combines a variety of different concepts such as Regional Innovation Systems, Triple Helix-concept and public-private partnership. They are characterized by multi-directional and multi-dimensional interactions between the actors of the economy.

The objective of this study is a preliminary analysis of the constructed advantages of Polish regions on the example of Pomeranian region.

Key words: regional competitiveness, constructed advantages, Triple Helix, labour market

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Contact information
* Joanna Kuczewska, PhD
University of Gdansk, Faculty of Economics
ul. Armii Krajowej 101, 81-824 Sopot
mail: ekojku@univ.gda.pl

** Maciej Krzemiński, PhD
University of Gdansk, Faculty of Economics
ul. Armii Krajowej 101, 81-824 Sopot
mail: m.krzeminski@univ.gda.pl
Introduction

In a learning economy, which is also knowledge-based economy, the crucial point in building the competitive advantage is to exploit the unique resources and competences of the main actors of the economy: companies, R&D institutions and governmental authorities. There have been perceived by the EU and regional policy makers (e.g. Regional Technology Plan, Regional Innovation Strategies and Regional Innovation and Technology Transfer Strategies) the need of constructing the regional advantages, develop the endogenous capacity of firms and regions to innovate, absorption and diffusion in an increasingly more knowledge intensive globalizing learning economy (Asheim B., Coenen L., 2005). An important and strategic point of the global economy is that knowledge-based economy is based on competitive and constructed advantages, where multi-directional and multi-dimensional interactions between the actors of the economy give the opportunity to develop the unique resources and competences.

The objective of this study is a preliminary analysis of the constructed advantages of the Pomeranian region in Poland. The economic potential and unique resources of that region will be described. The survey carried out among the Pomeranian educational institutions and actors of the labor market will be also applied. The “constructed” relationships will be diagnosed.

1. Concept of constructed advantage

Adam Smith (1776) launched the term of “absolute advantage”. According to that, nation should produce and trade products in which it has “absolute advantage” over other nations. Economists use the term of “absolute advantage” when comparing the productivity of one person, firm or nation to that of another. Three parts of Smith’s model were the most critical: there are no new products, technology does not improve and supplies remain constant. As a consequence he described the supply side as the static part of the economy. Parallely demand side was missing, implying also a static view of demand (Costa S., Madureira R. M., Werther W. B., 2008; Mankiw N. G., Taylor M. P. 2011).

Almost a half century later David Ricardo (1817), inspired by Smith’s book, launched new “comparative advantage” term as an extended view of absolute advantage. Ricardo argued that absolute advantages are not necessary condition for two countries to benefit from trade with each other. Differences in opportunity cost and comparative advantage create the gains from trade therefore country should focus its resources on production of goods in which the relative opportunity cost is the lowest. Despite that, the supply was still static in Ricardian model, it introduced the necessity of demand analysis and presented demand side as dynamic (Costa S., Madureira R. M., Werther W. B., 2008; Mankiw N. G., Taylor M. P. 2011).

The concept of competitive advantage is associated with work of Michael Porter since the strategic management has been strengthen as the important academic discipline. Early Porter’s analysis (1980, 1985) introduced the new approach to the supply side, where all circumstances became dynamic. Firstly he discussed the impact of industry structure on competitive performance, than used the value chain model as the tool for analyzing opportunities resulting from internal companies’ resources to reach competitive advantage. In 1990 he published his most important contribution to the advantages theories The Competitive advantage of nations. His new theory presented new competition model where: markets were segmented,
products and technologies are differentiated and appears the economics of scale. Porter described four national forces which create the game place for all national industrial organizations - diamond of national advantages. These forces are the following: demand; supply; strategy, structure and competition among enterprises and supporting industries. Later, the diamond model was updated by Porter who added two new forces: chances and government and by Dunning (1992) who paid more attention on transnational companies cooperation. The early Porter’s concepts launched the supply side dynamism but the demand side was still static and connected only with internal, national markets. Parallely neoclassical Sollow’s growth theory (1956) was reviewed by new theories of Romer (1986, 1993), Lucas (1988) and Grossman & Helpman (1991) where endogenous models underlined knowledge spill-over as the most important growth determinant. Since the concept of knowledge-based economy became the most popular, Porter’s diamond model started to be criticized and updated by himself and other authors. Generally the strategy in Porter’s model should be more dynamic (Porter 1991, Markides 1999, Warren 2002, Yip and Johnson 2007, Anderson 2006 and others). Demand side should be analyzed more precisely because of the new globalized economy and dynamic customers behavior (Ander and Zemsky 2006). Since then, constructed advantage theory – suggested by literature on economic geography – has presented a new approach to advantage for the 21th century, following absolute, comparative and competitive theories (see Figure 1).

Figure 1 Evolution of “advantage” analysis approaches

![](chart.png)


The key element of constructed advantages theory is an eclectic approach that combines a variety of different concepts such as Regional Innovation Systems, Tripple Helix-concept and public-private partnership. They are characterized by multi-directional and multi-dimensional interactions between the actors of the economy.

The concept of constructed advantage reflects a focus how to achieve and promote regional competitiveness. It is very emerging but still unclear concept. It appeared when Best (2001) defined “new competitive advantage” which highlights regional...
development economies, the dynamics of which draws upon constructed advantages. Then evolution of regional innovation systems (Maskell and Malmberg 1997), Porter’s clusters analysis (Porter 2000, 2001, 2003) and Triple Helix concept (Etzkowitz and Leydesdorff 2000) which emphasizes the role of interactions between business, universities and government created the background of knowledge-based economy development. The knowledge-based economy requires new development in various directions (Cooke, Leydesdorff 2005, 2006; see also: Skokan K, Rumpel P. 2007):

- Economy – regionalization of economic development; “open systems” inter-firm interactions; integration of knowledge generation and commercialization; smart infrastructures; strong local and global business networks;
- Governance – multi-level governance of associational and stakeholder interests; strong policy – support for innovators; enhanced budgets for research; vision-led policy leadership; global positioning of local assets;
- Knowledge infrastructure – universities, public sector research, mediating agencies, professional consultancy etc. have to be actively involved in structural puzzle-solving capacities;
- Community and Culture – cosmopolitanism; sustainability; talented human capital; creative cultural environments; social tolerance.

That new dynamism of innovation and competition was also recognized by Mothe and Mallory (2003) who underlined that one possible way to explore this dynamism leads through the notion of constructed advantages – “constructed advantages is both a conceptual approach to the governance of economic growth and activity and a strategic approach of utility to local businesses and policy makers”. Constructed advantage based on regional innovation systems is becoming the model of choice for achieving accomplished regional economic development (Cooke P., Leydersdorff L., 2006; Coenen L., Asheim B., 2005).

A regional innovation system can be conceptualized as a regional cluster surrounded by supporting knowledge organisations (Asheim B., Coenen L., Moodysson J., Vang J., 2005). In the knowledge-based economy circumstances, where competitiveness depends on the ability to use knowledge, skills and attitudes of entrepreneurship, regions are the leaders responsible for these resources mobilization. They are perceived as the mezzo level between macro and micro level, which is seen as very important base of economic coordination. “The region is increasingly the level at which innovation is produced through regional networks of innovators, local clusters and the cross- fertilizing effects of research institutions” (Lundvall B-L. and Borras S. 1997, 39; Cooke P., 2001). There are three functions of innovations systems: knowledge exploration, knowledge exploitation and organizational control. Knowledge exploitation is associated with the reuse of existing competences while knowledge exploration is associated with creating new alternatives. Parallely the organizational control mechanisms (e.g. economic polices) have indirect influence on economic exchange relations and indirectly affect knowledge exploration and knowledge exploitation (infrastructure, clusters programmes) (Lengyel B., Leydersdorff L., 2010).

In his study Storper M. (1997) argued that technology, organization and territory can be considered as “the holy trinity” for regional development. “The holy trinity” is
understood not only as elements in a network but also as the result of the dynamics of these network shaping new worlds (Leydesdorff L., Dolfsma A., van der Panne G. 2004). In the triple-helix model the institutional layer and the overlay through their cooperation provide opportunities for innovations both vertically and horizontally among them (Leydersdorff L., Meyer M., 2006; Leydersdorff L., 2010). Using the triple-helix model, the common objective is to “...realize an innovative environment consisting of university spin-off firms, tri-lateral initiatives for knowledge-based economic development, and strategic alliances among firms, government laboratories and academic research groups. These arrangements are often encouraged but not controlled by government” (Etzkovitz H., Leydersdorff L. 2000). It should be also underlined that although companies play an important role in constructing the knowledge-based economy, they also compete and may be reluctant to share their respective knowledge bases. Therefore the coordination and integration of information at the structural level of an economy is required (Leydesdorff L., Dolfsma A., van der Panne G. 2004).

Based on the different approaches in literature, there has been developed model of constructed advantages using multi-directional and multi-dimensional interactions between the actors of the economy. It is a combination of three concepts: Regional System of Innovations, Triple-helix Model and Clusters theory which gives the opportunity to characterize the “constructed” potential of the Pomeranian Region in Poland. The researches emphases the relations between the R&D and company sides.

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1 See also an Estatic and „laissez-faire” models of 3H.
The Pomeranian Voivodeship characteristics

The Pomeranian Voivodeship is one of 16 provinces of Poland. The provincial capital is Gdańsk. It forms part of the Tricity of Sopot, Gdańsk and Gdynia. The province is situated in the north-central part of the country, at the Baltic Sea coast. Such location is a very strong advantage and a pro-development factor (easy access to all markets all over the world).

The most important cities are Gdańsk, Gdynia and Sopot (creating so-called Tricity), Słupsk, Tczew, Starogard Gdański. The Pomerania Voivodeship area is 18 293 km² - 5.9 % area of the country. This region is inhabited by 2,210,900 people representing 5.8% of Poland’s total population. The majority lives in urban areas (the rate of the urbanization is 68%). About one-third of the population of the province (750 000 inhabitants) lives in Tricity.

Comparing to other Polish regions, the Pomeranian is of an average size. One of its strengths is a young society – 64,6% of population is in productive age, 20,9% in pre-
productive age and 14.5% in post-productive age. The population number will increase up to 2017, especially in country-side areas. The adverse changes are up to the year 2020 - the significant population growth will take place in the retirement age and decline will take place in the number of children and teenagers. Anyhow, comparing to the others regions of Poland, rate of the births is very positive indicator (+2.7/1000 pers.) while average for Poland is 0.15/1000 pers. (Office of the Marshal of Pomorskie Voivodeship 2005) Compared to other provinces, the GDP per capita is on the average level (10 658.5 euro). The majority of that (over 50%) is generated in the Tricity (Gdańsk-Gdynia-Sopot). The Tricity, along with the surrounding cities it is the centre of developing metropolitan area. This area is about 60 km long and concentrates the productive activity directly and indirectly connected with the sea, the sea transport and special services associated with the tourism and the fishery, as well as other services (learning, education, culture, health care, media) (Pomeranian Development Agency, 2009).

Figure 3. Economic entity and employment by sectors (2008, in %)

Source: Own processing based on data of Pomeranian Development Agency - Pomorskie w liczbach, Pomeranian Development Agency, 2009.

In the Pomeranian economy the service sector dominates - employs over 61% of labour. The industry sector employs 23.4% and agriculture only 15.4%. This structure let us think positively about the further economic development, especially in relation to the expansion of the ICT sector. At present, the employment in the industry and services is generated mainly by industries traditionally strongly developed in the Pomeranian Region - the transport and the shipping (still strongly developing), shipbuilding industry (in a crisis, at present), chemical industry (including petrol industry), machinery, construction industry, furniture production. Very strong development potential is identified in energetic, electronics, IT, sea transport and the logistics, financial and accountants services, tourism, food-processing.
1.1. The labour market and the education

The unemployment rate registered in 2010 in the Pomeranian Voivodeship was 2.2%, and the employment rate was 57.8% (Public Employment Services, IV 2011). That placed Pomerania region in the 6-th place in Poland. The advantages of Pomeranian Voivodeship are high qualifications of the labour. In the region, 11% of the population share of people having has a university degree, what is the second place among Polish provinces. In academic year 2007/8 28 higher education institutions existed in the province, where total number 100 157 of students were studying. In this period, 20 180 of them had got a university degree. The most popular study fields are Economics and Management (22 253 students) and technical studies (15 576 students). Unfortunately, strong demographic decrease is being observed - in the same period only 44 114 pupils were learning at secondary schools. (Pomeranian Development Agency, 2009)

Figure 4. Number of schools (2007/2008)

Source: Own processing based on data of Pomeranian Development Agency - Pomorskie w liczbach, Pomeranian Development Agency, 2009
Figure 5. Number of students / pupils (2007/2008)

*including part – time students

Source: Own processing based on data of Pomeranian Development Agency - *Pomorskie w liczbach*, Pomeranian Development Agency, 2009

Figure 6. Number of alumni in schools types (2007/2008)

Source: Own processing based on data of Pomeranian Development Agency - *Pomorskie w liczbach*, Pomeranian Development Agency, 2009
The Pomeranian Voivodeship has a wide base of educational and innovative institutions what is a potential which can have a positive impact on a development of ICT sector. Currently a strong impulse for development of this sector are additional considerable expenditures. In years 2007 - 2013 they are supposed to reach the amount 81000 000 euro, including 42 500 000 euro financed by EU funds. (Pomeranian Development Agency,, 2009)

The most important Higher Education Schools in Pomeranian Province are: University of Gdańsk, Technical University of Gdańsk, Gdańsk Medical University and Naval Academy, all having a long-standing tradition. Of course, existence of research institutions isn't guaranteeing nor the quality of knowledge, neither transferring it to the economic development of the region. For the absorption and the transfer of knowledge, some business environment institutions are necessary. Their task is to join and to facilitate the cooperation between the education and business sectors. Unfortunately, in the Polish reality it is hard to find the traditional model of this kind of cooperation. In the times of the centrally planned economy a cooperation of this type was planned too, one should however remember that in Poland mainly a heavy industry was being developed. After an economic transformation, nobody centrally planned the economy and research any more.

Higher Schools and R&D units had to seek independently and create new ways of the interaction with the economy. This task was difficult, mainly due to lack of experience of the research sector in competing on the free market. As a consequence, during the first years of functioning of the market economy, negative trends were present. The functioning of the research sector independently and separately of the business sector became a norm. Setting up institutions which would be a connection between the education and research and the business was necessary. At present such role is being performed mainly by science and
technology parks, special economic zones, business incubators, technology transfer centers, centers of excellence and clusters.

Science and technology parks are being created in order to support the local and regional entrepreneurship, innovation in the economy and technology transfer. They enable to find in one place factors, which help the companies to develop and facilitating the cooperation with the research zone. They are places of leakage of knowledge, research, innovative economy and entrepreneurship. They have connections with scientific and research institutions, educational institutions, local authorities and operating in the region institutions of the promotion of entrepreneurship and the technology transfer and institutions of the risk funding (venture capital funds).

Business and technology incubators are separate units, providing assistance for novice entrepreneurs, implementing the innovative service or the product, in the scope of creating and the business progress. They develop close to research institutions. The stay in the incubator is limited for some period only.

Special Economic Zones are parts of territory of Poland, distinguished from an administrative point of view. They are intended to conduct business activities on preferential conditions. Entrepreneurs in SEZ’s receive tax breaks in relation to incurring costs of new investment and creation of new working places.

Technology transfer centres function in many forms, are groups of advisory, training and information units acting without the profit motive. Their goal is to support adaptations of modern technologies by small and medium-sized enterprises operating in the region. TTC help in the cooperation between representatives of the education and research sectors and entrepreneurs in the transfer of new technologies. They may function as part of the college or as self-reliant entities in the form of the commercial partnership or company or the foundation.

In the Pomeranian Province, the most important role amongst above mentioned institutions are being performed by: Pomeranian Science and Technology Park (located in Gdynia) and Gdansk Science and Technology Park. The first one concentrat mainly on biotechnology, the environmental protection, ICT, the multimedia and the industrial design. Second puts emphasis on information technologies and telecommunications, functional materials and nanotechnologies, environmental protection, biotechnology and chemistry of the food and medicines. One should also recall other, similar initiatives, playing a significant role for the local development. They prominent part are: Kwidzyn Industrial and Technological Park, Starogard Gdański Industrial Park, Green Industrial Park in Cierznie. Moreover in Pomeranian Province are present, 2 Special Economic Zones\(^2\), 6 Enterprise Incubarors\(^3\), 4 Technology Transfer Centres\(^4\).

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\(^2\) Pomeranian Special Economic Zone and Słupsk Special Economic Zone
\(^3\) Pomeranian Innovation and Entrepreneurship Inkubator, Gdansk Entrepreneurship Incubator, Gdansk Entrepreneurship STARTER, Słupsk Technology Incubator, Entrepreneurship Incubator in Malbork, Incubator – Centre of Entrepreneurship in Debrzno, Mikroincubator of Entrepreneurship in w Sopot
\(^4\) Technology Transfer Centre, Pomeranian Technology Centre, European Centre of Innovation Transfer
Apart from High Schools, in the Pomeranian Province many other, both public and private research units function. The most important are: Centre of the Naval Engineering, Naval Fishing Institute, Naval Institute, Institute of Flow Machines you, Institute of Oceanography, Institute of the Hydroengineering. Altogether, there are 53 institutions of this kind (8th place in Poland’s voivodeships).

2. Labour market and education institutions links – building the constructed advantages in Pomeranian region

Hereinafter the results of the research “Equal on the labour market? - analysis of situation of graduates and people in the age 50 + in the Pomeranian Province” carried out by Higher Bank School in Gdańsk and the Development Center of High Schools TEB Academy Ltd. in Poznań.

Four target groups were provided with the questionnaire survey: deans of High Schools, graduates (2-3 years after graduation), employees (minimum 5 years of employment) and enterprises for entrepreneur (managers of the average and high level). The questionnaire survey was conducted in 4 modules embracing crucial entities on the Pomeranian labour market and they were carried out in the period from the October up to December 2008. Number of people asked: 57 deans, 450 graduates, 650 employees, 450 entrepreneurs. The goal of the examination was (among others): Diagnosis of the situation of graduates of higher education institutions and people over 50 - this year of age in the context of their potential and chances on the Pomeranian labour market relating to remaining employees, Identification of expectations of employers in the ability and qualifications of employees.

As one can see on the diagram (figure 9) one of the pillars, linking the R&D sector and entrepreneurs, is qualified working force on the labour market. The number of education institutions doesn't still mean that the profile of the education and working force qualifications match the needs of the labour market.
In 2008 research\textsuperscript{5} were made on this issue. During the research, analysis of the knowledge of needs of employers among the authorities of faculties were conducted. Fitting of learning programs to expectations of employers is a part of analysis too. The evaluation of the level of education and competence of employees by employers was the other part of the research. The examinations concentrated on 2 groups - graduates and people in age 50 +. Different target groups (deans, employers, employees) differences between perceiving similar issues by employers and those responsible for the quality and programs of education allowed to highlight.

**Figure 9 Evaluation of preparing graduates to work (%)**

![Figure 9 Evaluation of preparing graduates to work (%)](image)

Source: “Equal on the labour market? - analysis of situation of graduates and persons in age 50 + in the Pomeranian Province” carried out by Higher Bank School in Gdańsk and the Development Center of High Schools TEB Academy Ltd. in Poznań.

Examined deans are mainly sure, that they prepare graduates well, both in the scope of general (91%) and theoretical (95%) preparation to work. In the same examination deans confirm that practice and a learning of practical skills are a weak point of the education.

High opinion on preparation to work, expressed by deans is confirmed by graduates and employees. The worse opinion appears among employers, where 19-22% of the responses indicates the average level of preparation to work, and 5-6% indicates the low level of general preparation to work.(fig. 10)

This situation is even worse in case of for the assessment of practical preparations to the profession. In this study, approximately 21% of graduates and 22% of employees estimated it as low and very low. About 50% of employers evaluate the practical preparation as a medium, low or very low. Approximately 60% of employers who

\textsuperscript{5} “Equal on the labour market? - analysis of situation of graduates and people over 50 years old in the Pomeranian Province” carried out by Higher Bank School in Gdańsk and the Development Center of High Schools TEB Academy Ltd. in Poznań.
employ graduates after the completion of higher private schools, assess this preparation as medium, low or very low (fig. 11)

Figure 10. Comparison of general preparing to work (%) – deans, employees, employers, graduates

Source: "Equal on the labour market? - analysis of situation of graduates and people over 50 years old in the Pomeranian Province" carried out by Higher Bank School in Gdańsk and the Development Center of High Schools TEB Academy Ltd. in Poznań.

Figure 11. Comparison of practical preparing to work (%) – deans, employees, employers, graduates
However, in spite of convincing about the best quality the education, High Schools colleges are prone to modify learning programme. In 5 last years 95% of examined individuals made so but in addition only in the 35% it was caused by demands of companies, and in the 30% by demands of students.

This situation can be result of the limited cooperation and the lack of the flow of information among Higher Schools and the business, as well as from traditional comprehending the role of the High School as the place of broadening minds, of well-educated people, able for further self-education - rather than as places of the vocational education. Concentrating on first problem - 80% of examined deans confirms the interactions with the economy, in addition only a 17% examined shows that those interactions are mainly consultations and opinion exchanges. Basis for these contacts are vocational practices and joined projects which not have to intercourse into change and developing of learning programmes.

Opinions of deans have their reflection also amongst graduates. As many as 90 % of them is appreciate High Schools highly, from the point of view of the preparation for the profession. Simultaneously 44% shows that practical skills are a weak point. The same observations are confirmed by the employers, although one should emphasize that their opinion is even more critical. Their general opinion about preparing graduates of public higher education institutions is good (3.96 in five degree scale), but at the same time difference between practical skills and theoretical knowledge is
even bigger in their opinion (3.32 and 4.1). This evaluation is a bit worse this in case of non-public higher education institutions.

The employees too do not show the sufficient commitment to convince High Schools for amendments to programs of the education. The majority of them is even not interested in the offer of Pomeranian High Schools. Their activity in this field is limited to the criticism of employees, who do not try to search roots of problems in quality of learning. Therefore, they won’t try to establish contact with them, for the purpose of changing and adaptations, to their needs.

3. Summary

Using the multilevel and multifactorial approach of literature, describing the constructed advantages, the analysis of Pomerania Region has been made. The model based on the theories – Triple Helix, Regional Innovation Systems and Clusters has been used. Special attention has been paid to examine the relations among educational institutions and actors of the labour market.

The Pomeranian Region has a high potential in creating the knowledge based economy. In its territory, a large number of high schools and research units is located. The role of R&D sector is systematically increasing. Many interactions established between R&D and business sector: e.g. technology parks, business incubators. Such interactions encourage the development of unique resources of all market players. The high educational potential of the province induces to undertake researches on the relations and interactions between education and business actors. Appropriate relations in this sphere create an attractive and high qualified labour market. The one, through the qualified staff leads to number initiatives creation e.g. clusters. Analyzing education - business relations, there have been appeared the following conclusions:

- a quality of education was appraised highly in theoretical aspect, more poorly in practical aspect;
- certain relations exist among business and education (e.g. joint projects, research), but effects of these cooperation are not being used for the alteration of school curricula (in order to adapt the profile of educating the market to needs)
- leaders of higher education institutions do not see the need of the cooperation with companies to create the educational offer
- business, in spite of the awareness of its needs, does not affect the education institutions.

All above means, that despite the high scientific and educational potential and despite the formal connections exist between that zone and business, still the greatest weakness is a lack of needs understanding for the unique resources development and using these unique resources to build the constructed regional advantages.
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