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INNOVATIVE WAY OF GERMAN ECONOMIC DEVELOPMENT. THE ROLE OF TECHNOPARKS IN THE DEVELOPMENT OF GERMANY A LEADING ECONOMY

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Abstract: The aim of the work is to study the activities of technology parks, their features and role in the economy of Germany. The current state of the world economy proves that the level of development of the innovation sphere: science, new technologies, high-tech industries and companies - provides the basis for sustainable economic growth in society, determines the role and position of the state in the system of international relations. Studying the experience of Germany in this case is advisable, because today it is one of the innovatively developed countries.

Keywords: Technoparks, innovative economy, innovative policy, Silicon Valley, SEZ, high-tech zones, industrial zones, science park.

I. Introduction

Today, Germany is a state that can be proud of its highly developed economy, and the country is also one of the world leaders in many spheres of the world economy. In fact, today the products of the German economy are synonymous with quality for buyers all around the world. The aim of the work is to study the activities of innovation centers, their features and role in the innovation policy of Germany.

II. Literature review

At present, in the scientific community, much attention is paid to the study and analysis of German innovative development, in particular, on the example of technology parks and research centers. The activities of science and technology parks in Germany with an emphasis on the development of science and innovation, as well as the study of the innovation policy, are to some extent affected in scientific works on the world economy, on the economy of foreign countries by such Russian economists as: Christophilopoulos Epaminondas and Manzanakis Stavros, Shevtsova Natalya Alekseevna , Kolesnikova Tatyana Vasilievna , Komissarova V.V., Fayzullina N.G., Ter-akopov S.G., Pecheritsa V.F.

Also important for our study are the works of foreign scientists, in which attention is focused on the study of innovation policy and innovation development in Germany: Thomas Farole Gokhan Akinci, Patcharee Pakdeenurit, Nanthi Suthikarnnarunai, Wanchai Rattanawong.

III. Research methodology

During the research, methods such as analysis and synthesis, induction and deduction, cause and effect, space and time, systematic approach, traditional methods of financial and economic analysis when the relationship between result and factors are functional, economic-mathematical and statistical when the relationship between them is stochastic methods were also used.

IV. Analysis and results

Through the analysis, the following tasks were solved:

- the concepts of “free economic zones and technology parks” and “innovations” were studied;
- analyzed the dynamics of the innovation indicator of Germany in recent years;
- the activities of science parks and research centers in Germany were assessed;
- the relationship between research, innovation and economic growth was revealed;

If we look at the evolution of economic development in Germany, the basis of today's economic potential was created in the post-Cold War period. The economy of the Federal Republic of Germany, hailed as a "miracle of growth" in the 1950s, became the engine of European growth in the 1960s and 1970s. Despite slowing growth during the 1980s, it remained Europe's strongest and most innovative economy, transforming its unique brand into a social market economy, a role model that combines technological innovation, international openness and industrial competitiveness with an extensive welfare system. In addition, many factors have influenced this process, although some deadly things, such as two world wars and some political changes, are the globalization of the economy, technological changes, local competition, demographic pressure, constant mass unemployment and the financial burden of reunification with East Germany - pressured for institutional reform.

In addition, the German government could achieve a “growth miracle” by adding important new directions and implementing the achievements of science in economics along with perfect economic policy. Moreover, productivity growth in

Germany obviously does not depend on what innovations come first, but rather on a technological infrastructure that helps private companies seamlessly apply any new technology that becomes available in the context of existing industries. One of these areas was innovation, on which all areas depended heavily. Indeed, the current German political discourse is concerned with the need to embed more entrepreneurial effort into the economy, in line with the formation of a knowledge-based economy. This focus on reform also influences the discussion about innovation: the main challenge is to restructure the German innovation system towards an entrepreneurial approach that combines institutional flexibility in research and education systems with the encouragement of entrepreneurship in both start-ups and existing companies, while providing sufficient risk capital and workforce. Thereby, innovation in Germany reflects a broader institutional change that turns Germany's post-war coordinated "social market economy" into an institutional hybrid whose form is not yet clear, except that it becomes decidedly more entrepreneurial.

The success story of innovation centers in Germany began in 1983. Today, there are more than 300 centers for innovation, technology and business incubation, as well as science parks and similar institutions in the Federal Republic of Germany.

As noted above, the history of innovation centers and related areas began in 1983, and since then the German government has treated this area as the main direction of economic development. And along with this, the government tried to centralize everything in the field of innovative development and organized BVIZ.

BVIZ - German Federal Association for Innovation, Technology and Business Incubators and Science and Technology Parks. BVIZ was founded in 1988 under the name "ADT - Arbeitsgemeinschaft deutscher Technologiezentren" in the former West Berlin on the initiative of the first innovation and start-up centers in Germany. Since then, the number of innovation centers has grown steadily along with the number of association members, especially in the new federal states after German reunification. Today BVIZ is the only institution in Germany specialized in initiating, supporting and supervising the start-up of enterprises in the form of organized innovation centers.

As an association, BVIZ supports its member centers in their mission of initiating and overseeing innovative technology-focused start-ups. By following this approach, BVIZ promotes the growth of the SME economy as well as innovation-oriented structural changes in all regions of Germany.

The aim of the BVIZ is to promote the transfer of technology and innovation, as well as the start-up of new enterprises and the development of enterprises. It also

seeks to further develop the importance and competence of innovation centers to support innovative entrepreneurs and present them appropriately in the public domain. BVIZ represents the interests of innovation centers and thus start-ups in public areas such as politics, industry, science and the media. Thus, as an association, it is actively involved in creating favorable framework conditions for innovative start-ups in Germany.

Currently, about 150 innovation centers and business incubators are affiliated with BVIZ, employing over 5,800 companies and over 46,000 employees. Centers have successfully outsourced over 17,400 companies.

There are also some BVIZ tasks that play a big role in achieving all the goals:

- active support of regional and national economic development
- improving the basic conditions for innovation centers and innovative business start-ups in Germany
 - continuing to develop the efficiency potential of innovation centers to support the development of enterprises in the centers
 - expanding the business base of innovation centers and innovation companies by expanding the network between centers, industrial companies, the credit services sector, consulting firms and politicians
 - facilitating the exchange of information and experience between support organizations, operators, owners and sponsors of innovation centers
 - drafting statements, recommendations for action and policy documents to support the work of the centers in relation to the federal and regional governments
 - as a lobbyist for the German innovation centers, BVIZ also represents the interests of young businesses in the centers in relation to its partners and the public
 - maintaining and expanding the national and international network of innovation centers

Young entrepreneurs are supported in the Innovation Centers in all matters related to starting their business, while at the same time they are provided with an excellent base in terms of infrastructure and services. This ideal structure provides business founders with the best conditions for rapid and successful growth. In classic incubation centers, young entrepreneurs stay for a limited period until they are old enough to compete in the market, leaving room behind for new companies to find their way to a successful beginning.

Since they are primarily aimed at innovative, technology-driven startups, the Innovation Centers are ideally located near colleges, universities, and research institutes. It is these knowledge-intensive companies that make a significant contribution to the creation of local values and the creation of new jobs. Innovation

centers as a tool for the development of regional business make a significant contribution to strengthening the economy.

The main tasks of innovation centers in Germany are defined in the following three main areas:

1. Initiation and support of startups
2. Technology transfer activities
3. Classic economic development assistance

These three main areas separate innovation centers from conventional commercial centers that do not typically provide these services. In addition, as part of their incubator function, innovation centers offer companies many additional benefits and services that contribute to optimal growth opportunities. Each center tailors its services to the individual requirements of its clientele or industry target group.

Innovation centers have become an integral part of a technology-oriented economic policy and have proven to be a successful tool for the development of regional economies.

They create favorable conditions for start-up enterprises and innovations and open prospects for the rejuvenation and development of regional economic structures through small and medium-sized enterprises, especially in regions where there is no strong economic infrastructure.

Recent years have shown that innovation centers are increasingly turning into centers of excellence, which means that they will also be able to meet future requirements even better.

Next, we analyze the role of technology parks in the German economy as the main topic. Because recently technology parks pay great attention to maintaining progress and stability. In fact, today technology parks are widespread throughout the world, and Germany, as one of the leading countries in the world, has created an identical experience in the development of technology parks. A technology park in Germany is a legal entity established for the efficient use of scientific and technological resources and thereby strengthening the region's economy. The mission of the technology park is to stimulate regional development and facilitate the implementation of commercial and industrial innovations. The activity of the technopark enriches the scientific and/or technical culture of the region, creates jobs and added value. Commercialization of developments is welcome, but when creating new technoparks, innovation, innovative characteristics, participation in research and development (R&D) are key characteristics. According to another approach, the main goal of technology parks is to increase competitive advantages

and business efficiency with the help of knowledge-intensive, convergent and innovative technologies. This is the ideology of the International Association of Science Parks.

The classification of technology parks according to the principle of "science for business" or "business for science" is necessary. The state participates in the activities of most technoparks, so the mission and goals of technoparks largely depend on the national innovation strategy of the host state. An analysis of the features of national innovation strategies, together with the goals of technology parks, reveals the following trends: experience accumulation strategy to study and use the full range of technologies, cases, mechanisms and tools available on international markets, before creating a new unique technological system; best technology copy strategy (the most successful technological solutions are copied, production using these technologies is launched as quickly as possible; a strategy for creating and developing unique technologies with minimal use of international experience. These strategies are not mutually exclusive, as they represent the main trends in the development of innovation at the state level.)

V. Conclusion

Based on the analysis of the activities and structure of the above technology parks, the following recommendations can be made to improve the activities of technology parks in the field of science-intensive development:

- choose "input" companies that are not engaged in active R&D
- offer financial incentives to resident companies for the development of knowledge-intensive technologies
- provide resident companies with research equipment and infrastructure
- encourage the interaction of resident companies with science, education and business (including international structures) and government agencies
- actively commercialize scientific results

To ensure effective commercialization of research results and large-scale investments, the location of technology parks must meet the following requirements: availability of skilled labor; universities and other educational institutions (including secondary vocational education); international airport and rail or water logistics (it is desirable to have a transport hub).

There is no direct link between the size of the technopark and its success. Today, medium and small technology parks prevail, but this is mainly due to the high costs of maintaining a large territory. Most technoparks have state support. The architecture of most technology parks can be divided into two types: a structured

area with clear boundaries and a unified style and a chaotic type without a clear division of zones or requirements for the exterior and layout of buildings. Technoparks in structured areas have a wide range of services and more stringent criteria for resident status.

Currently, more than 300 industrial, technological and innovation centers operate in Germany, which have always had a significant impact on the economic development of the national economy. To analyze the German experience of working with technoparks, let's look at several popular technoparks in Germany.

One of the oldest and largest of these is the Heidelberg Technology Park, one of the most important centers for biotechnology research in Germany and one of the leading locations in the world. It hosts more than 90 companies and research organizations employing 2,800 people. The Technology Park, which is part of the Heidelberg University campus, also has a site in the new district of Bahnstadt.

The Technology Park offers ideal conditions for knowledge transfer and exchange between researchers and practitioners in science and business. Several leading international companies such as BASF, Merck and Roche Diagnostics conduct their research here. The technology park is the result of a joint venture between the City of Heidelberg and the Rhein-Neckar Chamber of Commerce and Industry.

The Heidelberg Technology Park works with numerous German and international research organizations, including the European Molecular Biology Laboratory (EMBL), the German Cancer Research Center (DKFZ) and the Zentrum für Molekulare Biologie (ZMBH). Other Technology Park partners that also contribute to the high reputation of Heidelberg throughout Germany are the Heidelberg University Center for Biochemistry (BZH) and the Max Planck Institute for Medical Research.

The second is the Bremen Technopark. An innovative solution with impressive results: 30 years ago (1988) the government of the state of Bremen decided to build the Technopark. The 174-hectare facility surrounding the University of Bremen has since become a center of high technology and research in northern Germany.

The park currently has about 550 companies, including OHB SE, the BEGO group and OAS. It is also home to leading research institutes such as the Center for Applied Space Technology and Microgravity (ZARM), the Max Planck Institute for Marine Microbiology, the German Research Center for Artificial Intelligence (DFKI) and the German Aerospace Center. (DLR) - with synergies generated by a wide range of disciplines providing practical ideas and concepts. The Bremen Technology Park has more than 550 high-tech companies and institutes with about

10,000 employees, while the University of Bremen also has 3,400 employees and about 19,000 students.

The next famous one is the Aldershof Technology Park. Aldershof is considered one of the largest science and technology parks in Germany, located in Berlin. The area of the technopark is 4.2 km², where:

- 1207 companies and research institutes
- approx. 22,000 employees
- approx. 6 458 students
- 5 technology centers
- chemical and physical laboratories
- clean rooms
- workshops
- offices

The Aldershof Technology Park brings together a lot of research and development.

It is obvious that Germany, with its strong economy, attracts many people, because Germany has achieved great success and has become the fourth largest economy in the world. An innovative approach and a strong emphasis on the development of knowledge-intensive industries have become the main driving forces. Technoparks, in turn, appeared and developed as new driving forces of the economy, applying science in practice.

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