

The innovation environment in Bulgaria – opportunities and challenges

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Abstract: The paper comments on Bulgaria's penultimate position in the Global Innovation Index 2024. This position provoked the authors' scientific interest in analysing the innovation environment in the country. The results of the analysis are considered according to individual indicators of the innovation environment, with the emphasis on the difficulties and problems facing the development of innovations. Innovations are a strategic factor for the development and competitiveness of small and medium-sized enterprises. On the basis of our own research with managers of industrial enterprises, conclusions about the opportunities and challenges for the development of innovations are formulated.

Keywords: INNOVATION ENVIRONMENT, REGULATORY REQUIREMENTS, TECHNOLOGICAL INNOVATIONS, FINANCIAL CHALLENGES, GREEN INNOVATIONS.

1. Introduction

The innovation environment is an extremely important factor for functioning and development of industrial enterprises in Bulgaria. Its dynamic change creates a number of opportunities and challenges for the business. According to European Innovation Scoreboard 2024, Bulgaria is in penultimate place in Europe regarding the country's innovation performance and falls into the emerging innovator category – i.e. with an innovation performance below 70% of the EU average. The other countries in this category are Croatia, Latvia, Poland, Romania and Slovakia [1, 2]. This information arouses the scientific interest of the authors to conduct research in a specific sector of the industry and show the real problems in the field of innovation.

The purpose of this work is to highlight the challenges and opportunities of the innovation environment in Bulgaria. Based on our own research, the following tasks were solved:

- A literature review of contemporary sources dedicated to innovation process management was made;
- The methodology of the conducted own research was indicated;
- The results obtained were processed and analyzed and conclusions from the study were formulated.

The methods used are: literature review, observation, semi-structured interview and data processing.

2. Discussion of Findings

The literature review shows that a number of contemporary authors are challenged by the significance and relevance of the problem related to the essence and meaning of innovations, the innovation process, innovation management and innovation projects [3,4]. The book Innovation Management Effective Strategy and Implementation is of interest with its practical approach to the implementation of innovation strategies, describing a number of case studies from the practice of the manufacturing companies [5]. The analysis of contemporary publications shows the new understanding of the essence of innovation in modern reality. Nowadays, innovations are not seen solely as the introduction of new products or services, but require a new business philosophy, including a comprehensive review of organizational structures, strategies and corporate culture. The analysis of the Bulgarian Industrial Association (BIA) titled Bulgaria Retains its position in the Global Innovation Index 2024 - good news or real lagging behind indicates that our country's position in the Global Index remains unchanged from the previous year - 38th place [6]. (Fig. 1).

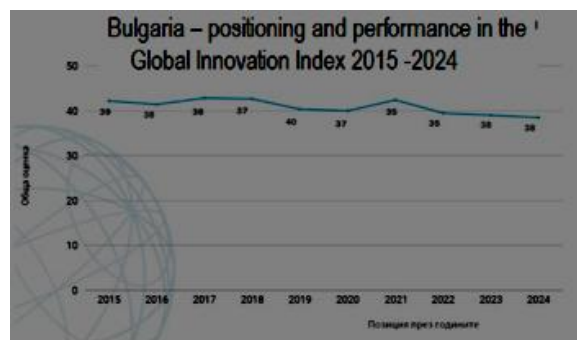


Fig. 1 Bulgaria's Positioning in the Global Innovation Index, Source: BIA, 2024

The BIA analysis indicates the main characteristics of the innovation environment, as well as the respective positions that Bulgaria occupies in the individual innovation pillars. In Table 1, we present the country's positions in 2023 and 2024 in some of the innovation pillars (Table 1).

Table 1: Positions of Bulgaria according to four pillars of innovation

№	Pillar of innovation	2023	2024
1.	Institutions	66	83
2.	Human capital and research	66	62
3.	Infrastructure	28	22
4.	Market sophistication	60	50

The final finding in the BIA analysis is that our country's position in the Global Index remains unchanged from the previous year - 38th place, but unlike most countries that improve their performance in the various dimensions of the index, Bulgaria reports a deterioration in its performance [6].

This conclusion is the reason for the research on the main challenges and opportunities of the innovation environment conducted by the authors. The study was carried out in twenty-seven enterprises in the sector Rubber & Plastic Product Manufacturing in Bulgaria. This sector represents a significant component of the manufacturing industry, which includes a wide variety of products - from car tires to various plastic products. The survey was conducted in the period January 2024 - January 2025. The main research method was a semi-structured interview with respondents who are managers of enterprises. The questionnaire covered two groups of questions. The first group of questions is related to determining the profile of the participants. The second group of questions was related to the implementation of the research

tasks. The analysis of the survey results makes it possible to compile the profile of the respondents as follows:

- Age group (years) - 30 – 40 – 20%; 41 – 50 – 50% and over 51 – 30%;
- Gender – 90% - male; 10% - female;
- Education – higher education – 100%;
- Experience in innovation management - 1 - 5 years - 10%; 6 - 15 years - 80%; over 15 years - 10%.

The questions from the second group, on which the semi-structured interview was conducted, as well as the percentage distribution of the answers, are shown in Table 2.

Table 2. Questions and percentage distribution of answers obtained as a result of a semi-structured interview

№	Innovation environment – challenges and opportunities	%
1.	Regulatory and environmental requirements	89
2.	Price volatility and access to raw materials	85
3.	Technological innovation and automation	70
4.	Competition and globalization	67
5.	Financial challenges	59
6.	Changes in consumer behaviour	59

The respondents' answers are distributed in accordance with the regulatory documents related to the sector under study. [7,8].

- Regulatory and environmental requirements - the imposition of increasingly higher environmental standards, corresponding to the increased requirements for reducing plastic waste and increasing recyclability, as well as the introduction of bans on certain types of plastics (e.g. plastic utensils and packaging) put serious pressure on small and medium-sized enterprises (SMEs) in the Rubber & Plastic Product Manufacturing sector to adapt their production processes and change their product portfolio.
- Price volatility and access to raw materials - the extraction and price fluctuations of petroleum derivatives (the raw material for plastic production) as well as access to alternative recycled materials, are directly dependent on global energy markets and the ever-increasing demands for a circular economy.
- Technological innovation and automation - investment and adaptation of production processes to use biodegradable and alternative materials is severely limited due to limited access to financing and technological know-how.
- Competition and globalization - the lack of a policy of protectionism and the expansion of competitors from emerging markets (especially India and China) create price pressure on local producers.
- Financial challenges - in addition to the above-mentioned limited access to financing for investments in equipment modernization, SMEs in the sector are experiencing difficulties related to galloping energy and logistics costs, directly corresponding to an increase in production costs.
- Changes in consumer behavior - The ever-growing awareness of environmental issues is making consumers aware of their personal responsibility for solving the problem of plastic pollution and their gradual orientation towards environmentally friendly packaging and products.

Analyzing the above, we should conclude that SMEs in the Rubber & Plastic Product Manufacturing sector have the following strategic approaches for adaptation and maintaining competitiveness:

- Investments in innovative, biodegradable and recyclable materials;

- Digitalization, automation and robotization of production;
- Product diversification and reduction of dependence on petroleum derivatives;
- Transition to a circular economy and building green strategies and marketing.

Sustainable or green innovations are a key tool for addressing global challenges related to climate change, resource depletion and environmental pollution. They aim to develop products, services, technologies or business models that reduce negative environmental impacts while creating economic and social value.

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