

# POSSIBILITIES AND RESTRICTIONS IN FORMING AND DEVELOPMENT OF THE INNOVATIVE POTENTIAL OF THE ENTERPRISES IN BULGARIA

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**Abstract:** *The realization of technological transfer and forming of innovative potential of the enterprises is of great significance for their development and progress in the dynamic modern business environment.*

*The purpose of the present article is to show some possibilities and restrictions related to the realization of the technological transfer, forming and development of the innovative potential of the enterprises in Bulgaria. Some basic trends are emphasized related to the realization of the technological transfer, forming and development of the innovative potential of the enterprises in Bulgaria.*

**KEYWORDS:** INNOVATIVE POTENTIAL, TECHNOLOGICAL TRANSFER, INNOVATIONS

## 1. Introduction

The demand and finding of new resources of growth for the enterprises is the basis of high and growing necessity of response to the dynamics and the indefiniteness of the business environment. The managers' challenges in this environment get such dimensions that sometimes is even difficult to divide and prioritize them. Undoubtedly one of the most important among them is implementing and developing effective politics in the field of innovations.

Despite that, the main part of the efforts in this direction needs to be focused towards development of Small and Medium-Sized Enterprises (SME). They are a main factor for the country economics, its growth and competitive power, for forming and development, as well as the continuous improvement of the infrastructures for innovations and technological transfer.

## 2. Exposition

The struggle for growth and competitive power of the enterprises has always been at one of the first places. Nowadays it is even stronger and it is one of the most important and significant questions that are seeking answers.

The development of the new generations of technologies including the invasion of digit technologies, the growing digitalization and forming of digital environment leads to new challenges for the enterprises as well as new possibilities [7, 14, 18, 19, 21].

In this environment the innovative potential of the enterprises can be defined as a main power of development [3, 4, 6, 20]. As a result of it the increasing of the economical indexes in the countries' economics that have enterprises with high innovative potential is a fact. This defines the main role and respectively the merit of the innovations especially

organizational and marketing innovations in 2010, are 31,1% from the Bulgarian industry, including sectors B, C, D and E, and the enterprises with technological innovations including the enterprises with product innovation, with process innovations and the enterprises with uncompleted and discontinued innovative activity are 22,3%. In the service sector, including H and K, and sections 46, 58, 61, 62, 63 and 71, the innovative enterprises are 22% and the enterprises with technological innovations are 11,9%.

The quotation from NSI presented on 29.06.2018 shows the following [8]: The innovative enterprises including the enterprises with technological innovations are 31,6 and the enterprises with technological innovations including the enterprises with product and process innovations are 24,9% (no matter if they have organizational or marketing innovations).

nowadays in the constantly changing characteristics of the business environment.

The possibilities of development of the innovative potential of the enterprises are connected and they depend on many factors. First – creating suitable conditions on the one hand and second – on the other hand – once these conditions are created they need to be adequately used, third – at what extent the built and existing structures contribute for their adequate usage and fourth – at what extent the forming and development of innovative infrastructures contributes for creation and spreading of knowledge and technologies.

The answers of those questions affect a number of trends including the innovative politics and the strategic frame of the enterprises that corresponds to the contemporary market conditions [2, 3]. Next is searching possibilities of Research and Development activity (R&D) and the close connection of business with such activities. A well as the search of weak spots of development of infrastructures for innovations and technologic transfer for their improvement, respectively the functions that they perform or are supposed to perform.

In their bigger part, the trends mentioned above, connected with the development of the innovative potential of many SMEs, are beyond their possibilities and they can hardly be achieved without external support. The above mentioned area of the enterprises determines the high risk exposure.

It is known that one innovative enterprise in Bulgaria is opposed to four or five innovative enterprises in the countries in EU. This shows very limited possibilities for competing with these enterprises.

Based on National statistical institute (NSI) data [8], the innovative enterprises including the technologically innovative enterprises, as well as the enterprises with

In the service sector, including sectors H, J and K, and sections 46, 71,72 and 73, the innovative enterprises are 22,1% and the enterprises with technological innovations are 14,1% [8].

These results show insignificant change in the results of the enterprises in the country from 2010 onwards, which is presented from the European comparative analysis of the innovations for 2017 of the European Commission (EC).

### 2.1. The technological transfer as an innovative engine for economic development and growth of the enterprises

The contemporary business environment, especially in the conditions of the ongoing Fourth Industrial Revolution

(Industry 4.0), creates many possibilities as well as many challenges for the enterprises and the way of performance of their production/operations capacity [10, 11, 12, 17, 19, 21]. It becomes more and more difficult to keep the dynamic balance between the way of functioning of the enterprises and the requirements and the characteristics of the business environment and achieving competitive privileges at the same time. The concomitant risks achieve such dimensions that is often difficult to be prognosticated and controlled.

Because all that the attention needs to be focused towards the demand of bigger complex of processes and activities so we can react to the dynamics of the business environment. This additionally impedes achieving the goals of the enterprises.

The realization of technological transfer creates possibility for the enterprises not only to take advantage of knowledge, experience and the technical novelties but they also expedite and increase the efficiency of their innovative activity [13]. This especially creates possibilities for improving their competitive power and their adaptation and positioning in the contemporary business environment.

The realization of technological transfers and innovations puts at first place identification to be done of the respective technological fields and next analysis to be done and overall assessment (qualitative and quantitative). On this basis the technological fields will be defined and respectively "applications" with potential for innovations in the enterprises.

In the last years in Bulgaria new guidelines were presented regarding the technological and innovative development of the enterprises including The National Program for Reforms 2014-2020, the National Program for Development: Bulgaria 2020, the National Transport Map for Scientific Infrastructure (2017-2023) was updated and so on. Of course this is not enough to create that environment where specific possibilities can be realized without the support and interference from the county side. In the last years underestimating the knowledge, science and innovations are one of the main and leading preconditions for not implementing innovative politics and realization of innovative potential that will bring stable economic growth. Platforms were created and they keep being created and it is not clear how they work and if they work at all. This way of action doesn't contribute for achieving better results and just the other way around. It is of great importance to create working technological platforms including national platform that do their role as a proper mediator between the main sides in the process of technological transfer – on one side the innovation – bearer and on the other side the innovation – user, securing the mechanisms of its realization.

It is difficult for big part of the enterprises in the country to take part in activities collaboratively, especially when it is about technological transfers, innovations and so on. They don't have the experience and traditions needed in this field and this additionally impedes their development and respectively the extent of their innovative potential. This is also one of the preconditions for achieving weak results.

Increasing the collaboration between the enterprises on one side is an important condition, and that way they can help each one whenever possible. On the other side, even this is a strong connection, it will be difficult to implement any innovative activity without the help of those which create this innovation – universities, scientific units, research teams and so on. The connection between a university and a

business is not at the level needed even it is said that it exists. That's why it is necessary the collaboration between universities and business to be increased, as well as different alternatives and contemporary approaches, methods and solutions (including digital ones that are components of Industry 4.0) to be implemented – Internet-of-Things (IoT), Big Data, Digital Factories, Blockchain, Education 4.0 etc. [7, 9, 20].

## ***2.2. Innovative capacity of the enterprises.***

An important element of the whole concept is the innovative capacity of the enterprises. Each enterprise has different needs and readiness for realization of these needs especially when we are talking about technological transfer and innovations.

The category "capacity" of the enterprises for adopting new technologies characterizes their ability to recognize, adopt and use the novelties in time [1].

In spite of the fact the part of the innovative activity of the enterprises in Bulgaria in the years after the country became part of the EU has been increased, it keeps being at low level. In 2017 the expenses for research and developmental activity are 760,2 million leva which is with 3,5% more than the previous year. The intensity of R&D (measured as a percentage of the expenses for R&D activity from Gross domestic product (GDP) decreases from 0,78% in 2016 to 0,75% in 2017 [8]. For EU, the data for 2016 is 2,04% [15], which is 2,7 times more.

On a global scale Bulgaria is at 68th position for innovations with value 3,3 out of 137 countries [16].

The EU results in the field of innovations based on the database of European Comparative Analysis of innovations shows that it has been increased with average 5,8 percentage points from 2010 onwards [5].

The capacity of the enterprises is connected to and depends on the company strategies for development and respectively their realization. Precisely it will predetermine their innovative potential in the future. It depends on the enterprises themselves if they will take advantage of these conditions and if they will focus their efforts in this direction. Moreover, it will be of great importance if they are searching possibilities for development of the innovative capacity.

The realization of technological transfer is connected to the proper assessment of capacitive possibilities of the enterprises and their absorption capacity. Each enterprise needs to make correct evaluation of its possibilities and after that to proceed to realization. This is one of the serious problems that needs to be resolved. According to Velev and Atanasova [1], the results from the increase of the absorption capacity has three stages: increase of company knowledge, results of the different innovations, increased competitiveness of the enterprise. Undoubtedly this is true and the evaluation that needs to be done will contribute to determine the future possibilities regarding realization and technological transfers. They are being implemented on the basis of absorption capacity, for example enrichment and extension of the knowledge, how far and in which way the implemented innovations contribute for the company activities, development and so on.

Another important aspect with great significance is the development of the national innovative system in the country. At that moment it still shows weakness and non-balance. This affects the enterprises regarding the

innovations and their competitiveness. Our country keeps being associated with the so called "modest innovators", which means that a lot of work needs to be done in this sphere.

### 3. Conclusion

The realization of technological transfer and increase of the innovative activity in the enterprises in the contemporary business environment are in the base of their development and competitive power. This creates many possibilities and much better conditions for their proper functioning and positioning in the contemporary business environment.

The few trends that are mentioned are related to building and development of the innovative potential of the enterprises in Bulgaria. Our attention need to be focused towards some main weaknesses that were mentioned. Their solution will contribute for the improvement of the current condition and will help refining of the infrastructures for innovations and technological transfer in Bulgaria.

### 4. References

1. Велев М, Атанасова С., Технологичен трансфер в индустриалното предприятие, първо издание, София, 2013, ISBN 978-954-334-146-7
2. Дамянов Д., Демирова С. Иновации и иновационна политика във високоавтоматизираните производства, 2019, ISBN 978-954-760-476-6 ,КОЛОР ПРИНТ – Варна .
3. Дамянов Д., Малък и среден бизнес – организация и управление..Издателство ТЕМПОРА, 2010, ISBN 978-954-91851-7-1
4. Даскалов, Х. и Колева, Н., Управление на проекти за отворено сътрудничество в рамките на "триъгълника на знанието" на локално и регионално ниво участие в 16-та международна научна конференция „Мениджмънт и инженеринг‘18“, 24-27 юни, Созопол, 2018, ISSN 1310-3946.
5. Европейски сравнителен анализ на иновациите за 2018 година, [https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards\\_bg](https://ec.europa.eu/growth/industry/innovation/facts-figures/scoreboards_bg)
6. Карев, Н., Влияние на инвестициите в технологичен трансфер върху конкурентоспособността на предприятията за производство на облекло. Юбилейна научно-приложна конференция – Предизвикателства пред индустриалния растеж в България. 12-14 Октомври, 2018, ISBN 978-619-7009-12-5.
7. Колева, Н., Методика за изследване степента на развитие на дигитализацията на производството в българските индустриални предприятия, участие в 16-та международна научна конференция „Мениджмънт и инженеринг‘18“, 24-27 юни, Созопол, 2018, ISSN 1310-3946.
8. Национален статистически институт, <http://www.nsi.bg/>
9. Andreev, O. and Daskalov, H., A Framework for Managing Student Data through Blockchain, 10th Anniversary International Scientific Conference "E-Governance and E-Communications" – Conference Proceedings, Sozopol, 2018, ISSN 2534-8523, pp. 59 – 66.
10. Andreev, O. and Peneva, G. , A Methodological Approach to Survey the Opportunities for Implementing Industry 4.0 in Bulgarian Industrial Enterprises, 16th International Scientific Conference „Management and Engineering‘18“, 24-27 June, Sozopol, 2018 ISSN 1310-3946, pp. 739 – 745.
11. Andreev, O. and Peneva, G., Problems Concerning Operations System of the Enterprise in the Context of Industry 4.0, 10th Anniversary International Scientific Conference "E-Governance and E-Communications" – Conference Proceedings, Sozopol, 2018, ISSN 2534-8523, pp. 165 – 170.
12. Andreev, O., Dakov, I. and Nedjalkov, L., Introducing Total Productive Maintenance System in a Bulgarian Industrial Enterprise, 16th International Scientific Conference „Management and Engineering‘18“, 24-27 June, Sozopol, 2018, ISSN 1310-3946, pp. 697 – 706.
13. Atanasova S , Kostova D., PRE-ASSESSMENT OF TECHNOLOGY TRANSFER OPTIONS IN THE INDUSTRIAL ENTERPRISE, [https://e-university.tu-sofia.bg/e-publ/files/1023\\_Doklad\\_S.Atanasova\\_D.%20Kostova.pdf](https://e-university.tu-sofia.bg/e-publ/files/1023_Doklad_S.Atanasova_D.%20Kostova.pdf)
14. Damyanov D., Innovations - technology, organization, management, financing, politics, 2013, Ed. Primax, Rousse.
15. Eurostat Statistics Explained, [https://ec.europa.eu/eurostat/statistics-explained/index.php/R\\_%26\\_D\\_expenditure](https://ec.europa.eu/eurostat/statistics-explained/index.php/R_%26_D_expenditure)
16. Global Competitiveness Index 2017-2018, <http://reports.weforum.org/global-competitiveness-index-2017-2018/competitiveness-rankings/#series=GCI.C.12>
17. Karev, N., A. Terzieva, Clarification of the correlation between the technological transfer and the enterprise competitiveness, Science, Engineering, Education, Volume 1, Issue 1, S, UCTM-Sofia, 2016, ISSN 2534-8507 /print/, ISSN 2534-8515 /on line/ Karev, N., A.
18. Karev, N., A. Terzieva, Analysis and assessment of technology transfer opportunities in the apparel manufacturing sector, Science, Engineering & Education, Volume 2, Issue 1, S, , UCTM-Sofia, 2017, ISSN 2534-8507 /print/, ISSN 2534-8515 /on line/
19. Koleva, N. & Andreev, O., Influence of Degree of Customer's Co-Participation on Their Assessment of Products Design and Functionality, Economic Alternatives Journal, Issue 1, 2015, ISSN 1312-7462, pp. 91-99.
20. Koleva, N. & Andreev, O., Aspects of Training in the Field of Operations Management with Respect to Industry 4.0, International conference on High Technology for Sustainable Development, 11-14 June, 2018.
21. Koleva, N., Industry 4.0's Opportunities and Challenges for Production Engineering and Management, International Scientific Journal Innovations, issue 1, pp. 17-18, 2018, ISSN 1314-8907.