ANNOTATION
prepared for the dissertation degree of Doctor of Philosophy (PhD)
in the field "8D04110 – Economics"

KANASHAYEV DAULET YESSENBAYULY

TITLE: ORGANIZATIONAL AND ECONOMIC MECHANISMS OF IMPROVING INNOVATIVE ACTIVITY IN THE CARPET INDUSTRY ENTERPRISES BY DIGITALIZATION OF TECHNOLOGICAL PROCESSES

Relevance of the research topic. Carpet-making is an ancient craft, yet the advent of digitalization has created new opportunities for introducing innovation into the industry. The use of digital technologies to elevate carpet production to a new level offers unique and creative possibilities.

Currently, countries around the world are placing significant emphasis on digitalization as a key driver in the development of industrial sectors. This is because investments in digital technologies play a crucial role in maintaining competitiveness.

In his 2024 Address to the People of the Republic of Kazakhstan, President Kassym-Zhomart Tokayev emphasized the importance of digitalization and innovation, stating: "Kazakhstan must build on its achievements in the field of digitalization. Artificial intelligence technologies should be actively integrated into the 'e-government' platform. Kazakhstan must become a country that extensively applies artificial intelligence and develops digital technologies. This is one of the Government's top priorities. I invite members of Parliament to contribute to this effort."

Therefore, in the context of digital economic integration, the development of methods and mechanisms for organizing the activities of carpet-producing enterprises undergoing digital transformation of their production processes is of particular importance.

The relevance of the dissertation topic is determined by the high importance and economic feasibility of measures for implementing digital technologies, the necessity of developing mechanisms for their effective application during the implementation of digital production technologies, and the need to establish appropriate methods for evaluating the economic efficiency of such measures.

Degree of Scientific Research. The issues of innovation-driven development have been addressed in the works of many Kazakhstani and international scholars. In particular, the foundational theoretical and methodological principles for the development of innovation processes have been formulated in the works of renowned scientists such as T. Brian, J. Bright, F. Valenta, M. Porter, B. Santo, B. Twiss, M. Todaro, M. Hucek, E. Chamberlin, I. Ansoff, F. Hayek, J. Schumpeter, and others.

The assessment of a company's innovative potential has been explored in the works of Russian researchers including A. Fedonin, A. Yudanov, V. Zhukovskaya, L. Fedulov, A. Grinev, S. Ilyashenko, G. L. Azoev, N. Krasnokutskaya, S. Alyabyev, D. Goloshchapov, V. Klintsov, A. Y. Pashkevich, I. V. Ryabov, O. N. Melnikov, and

others.

In Kazakhstan, the degree of study on enhancing innovation activity can be observed in the scientific contributions of M. B. Kenzheguzin, A. Esentugelov, A. Kh. Yerali, K. E. Yertaev, R. S. Karenov, A. K. Koshanov, Zh. S. Rayymbekov, O. S. Sabden, A. A. Satybaldin, R. K. Niyazbekova, E. B. Zhatkanbayev, A. S. Aben, and U. B. Baymuratov.

It is important to note that the issue of innovative renewal of production resources—specifically, fixed capital and the physical and intellectual labor resources of personnel—has been addressed only to a limited extent in the works of Kazakhstani researchers.

Moreover, despite the growing attention currently being paid to both theoretical and practical aspects of innovation development management, a number of conceptual and methodological dimensions of this issue remain insufficiently explored at the level of carpet manufacturing.

The purpose of the research is to develop methodological recommendations for enhancing the innovative activity of an enterprise through the application of digital technologies in carpet manufacturing.

Research objectives. In order to achieve the stated purpose, the following scientific tasks were addressed in the research:

- to theoretically substantiate the industrial renewal of the carpet industry through technological process digitalization under the conditions of global economic integration;
- to identify the main factors influencing the efficiency and development of the use of innovative potential at carpet enterprises;
- to conduct a study on the issues of enhancing innovative potential in the carpet industry of the world and the Republic of Kazakhstan;
- to analyze the activities aimed at increasing innovation activity and digitalizing technological processes in the carpet industry;
- to propose effective directions of government support for the digital integration of processes in the carpet industry based on a SWOT analysis of innovation activity in the carpet sector of the Republic of Kazakhstan;
- to develop proposals aimed at stimulating innovation activity through the internal restructuring resources of carpet industry entities.

Object of the study – the first domestic carpet manufacturing factory in Kazakhstan, Bal Textile LLP.

Subject of the study – economic relations at the enterprise based on the introduction of digital technologies in carpet production.

The theoretical and methodological basis of the study includes the scientific works of domestic and foreign economists on the regulation of the carpet and carpet products market in Kazakhstan, the laws of the Republic, decrees of the President, resolutions of the Government regarding issues in the carpet market, and official data from national statistical agencies.

The conclusions and conceptual propositions of the study are grounded in the application of research methods such as comparative analysis, data processing, statistical analysis, and economic and mathematical forecasting.

Normative and informational base of the study: Legislative acts of the Republic of Kazakhstan regulating the operations of carpet manufacturing enterprises during the implementation of digital technologies, including normative legal acts of the Government of the Republic of Kazakhstan and the Ministry of Industry and Trade of the Republic of Kazakhstan, Kazakhstani and international publications related to digital economy development and Industry 4.0 programs.

Scientific novelty of the research results is as follows:

- The necessity to enhance innovation activity in the carpet industry was substantiated based on the study of the global carpet market situation and the dynamics of its innovative development;
- The key factors influencing the innovation activity of carpet manufacturing enterprises and improving production efficiency in a competitive environment were identified;
- The development dynamics of the global carpet market, as well as the current state and innovative development trends of the light industry in the Republic of Kazakhstan — including the carpet sector — were analyzed; the interrelation between the innovation and investment activities in carpet production was examined;
- A regression analysis was conducted, enabling the assessment of the impact of technological process digitalization measures at the enterprise level in the carpet industry;
- A model of government support measures aimed at enhancing innovation activity in the carpet industry of the Republic of Kazakhstan was proposed;
- Mechanisms for implementing innovation activity and a framework for enhancing innovation activity in the carpet industry of the Republic of Kazakhstan were proposed.

Main conclusions proposed for defense:

- The state of development of the global carpet market and the global dynamics of innovation activity based on technological digitalization in carpet production;
- Factors of innovation activity in carpet enterprises and their impact on improving production efficiency in a competitive environment;
- The development dynamics of the global carpet market and the current state and development trends of the light industry sector in Kazakhstan, including carpet production, as well as a diagram illustrating the interrelation between innovation and investment activities in carpet production;
- Analysis of the impact of digitalization measures of technological processes on labor productivity at Bal Textile LLP through the implementation of a specialized program based on an integrated ERP system;
- A model of government support measures aimed at enhancing innovation activity in the carpet industry, developed based on a SWOT analysis of the innovation activity in the carpet sector of the Republic of Kazakhstan;
- A diagram of measures aimed at increasing innovation activity in the carpet industry.

Theoretical significance of the research lies in expanding scientific knowledge about the digitalization of production processes aimed at developing enterprises

through the integration of digital technologies that ensure operational efficiency.

Practical significance of the research lies in the potential application of the measures developed during the research in carpet-manufacturing enterprises during the implementation of digital technologies.

Approbation of the research results: The main results of the scientific work have been implemented into the technological processes of "Bal Textile" LLP and confirmed by an official act of implementation from the enterprise.

Structure and Volume of the Dissertation:

The Introduction substantiates the relevance of the dissertation research topic, outlines the degree of its study, formulates the scientific goal and objectives of the research, identifies the object and subject of the study, and reveals the scientific novelty and practical significance of the research.

The first chapter, titled "Theoretical Foundations for Enhancing Innovation Activity in Carpet Industry Enterprises", defines the essence and concept of innovative activity in an enterprise.

The second chapter, "Analysis of the Current State of Innovation Activity in Carpet Industry Enterprises of the Republic of Kazakhstan", analyzes the factors influencing the level of innovation activity in carpet enterprises. It also examines methods for assessing the level of innovation activity in industrial enterprises.

The third chapter, titled "Effective Directions for Increasing Innovation Activity of Carpet Industry Enterprises", proposes methods for evaluating the level of innovation activity in enterprises and develops an algorithm for assessing the innovation activity of industrial enterprises. A schematic of measures to enhance innovation activity in the carpet industry is also presented.

In the Conclusion of the dissertation, the research results are summarized, and the main conclusions and proposals are formulated.

Publication of research results. Based on the dissertation research, 7 scientific publications with a total volume of 3.8 printed sheets have been published.

Description of the PhD Candidate's contribution to the preparation of publications. As part of the dissertation research, a total of 7 scientific papers were published, amounting to 3.8 printed sheets, including:

- 1 article in a foreign journal indexed in the international citation database Scopus;
- 4 articles in journals recommended by the Committee for Quality Assurance in the Field of Science and Higher Education of the Republic of Kazakhstan;
- 2 articles in international scientific-practical conferences.

The PhD candidate's contribution to each publication is as follows:

1) "Organisational-economic mechanism for increasing the innovative activity of carpet industry enterprises in the digitalisation of technological processes". This article substantiates the increase of investments in research and development in the technological sector aimed at integrating digital and modern production technologies. The article was co-authored by the doctoral candidate with other researchers. Total volume: 0.5 p.s.; Author's contribution: 0.15 p.s.

2) "Digitalization assessment features in the carpet industry of Kazakhstan". The article analyzes the impact of digitalization rates on the domestic carpet industry

of Kazakhstan and presents the overall structure of carpet enterprises. Written under the guidance of the academic supervisor. Total volume: 0.69 p.s.; Author’s contribution: 0.138 p.s.

3) "Organisational and economic foundations of digitalization of carpet industry enterprises". The article highlights the economic foundations of organizing digitalization in Kazakhstan’s carpet industry. Written under the guidance of the academic supervisor. Total volume: 0.375 p.s.; Author’s contribution: 0.125 p.s.

4) "Mathematical methods for assessing innovation activity in carpet industry enterprises". The article presents approaches to applying mathematical methods for rational use of available resources in conditions of limited production and financial capacities. Written under the guidance of the academic supervisor. Total volume: 0.81 p.s.; Author’s contribution: 0.26 p.s.

5) "Digitalization as a factor of increasing innovation activity in carpet industry enterprises". The article explores how to maximize the use of innovative technologies to enhance the competitiveness of carpet enterprises in the market and mitigate the adverse effects of the pandemic. Co-authored with other researchers. Total volume: 0.69 p.s.; Author’s contribution: 0.23 p.s.

6) "Innovative opportunities in the agro-industrial complex in modern realities". The article emphasizes the necessity of measures for innovative modernization of processing industries. Written by the doctoral candidate under the guidance of the academic supervisor. Total volume: 0.31 p.s.; Author’s contribution: 0.15 p.s.

7) "Global digitalization as a driver of economic growth of Kazakhstan". The article reveals the importance of global digitalization for Kazakhstan's economic growth. Written by the doctoral candidate under the guidance of the academic supervisor. Total volume: 0.44 p.s.; Author’s contribution: 0.22 p.s.