ABSTRACT
of the thesis for the degree of Doctor of Philosophy (PhD) on the specialty «8D04105 – Innovation management» of
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“Features and mechanisms of managing the formation of digital hubs in Kazakhstan”

General characterisation of the work. The dissertation research is devoted to the study of managing the establishment of digital hubs, its features and mechanisms in Kazakhstan.

Relevance of the topic of research. Digitalization and its main processes have touched many aspects of life, including social and economic aspects. Today in many countries, including Kazakhstan, there is an emphasis on digital technology. Kazakhstan is assessed as medium in its digitalisation level, and has opportunities to increase its level and enhance its competitiveness at the global level. This requires the adoption of comprehensive needs to establish processes, implement measurements, and define directions in order to produce focused regulations, implement state programmes, and create national growth strategies to successfully accomplish the desired goals. Since 2017, the programme “Digital Kazakhstan” was implemented for 2018-2022, which aims to accelerate the development of the country's economy and improve the living standards of the population through the use of technological innovations in the near future. Additionally, the programme seeks to establish favourable circumstances for transitioning the economy of country towards a completely new growth path, ultimately resulting in the establishment of a futuristic digital economy in the long run. Currently, the portal e-government is functional throughout the country. Kazakhstan's aspiration to become a digital hub in the Eurasian region was emphasised by the head of the Republic, Kasym-Jomart Kemelevich Tokayev, in his message to the population in 2021 from the date of September. Since then, the Concept of digital transformation, development of information and communication technologies industry and cyber security for 2023 - 2029 years was accepted.

Exactly in order to make the interaction between citizens and the state comfortable, simple, accessible and understandable the concept of e-government was developed. It is vital to establish digital conditions and factors that include: strengthening of the role of information and communication services in the world market and support of domestic enterprises and companies engaged in production and export of information services to improve the competitiveness of the information industry and economic modernization of our country. Also, a crucial element in digital development of the state are the issues of teaching people digital skills, access to the Internet, the availability of devices and equipment for connecting to the Internet and others. World practice has shown that successfully functioning digital hubs are actively developed and managed in an economy built in an environment of innovative receptivity and continuously developing innovative production. Involved stakeholder cooperation in digital or technology hubs promotes innovation and competitiveness.

The purpose and tasks of research. The purpose of this thesis research is to determine the theoretical and methodological basis and provide tangible suggestions for enhancing management of the establishment of digital hubs in regions of the Republic

of Kazakhstan.

In according with the purpose of research, following tasks are completed:

-to investigate the concepts and models of digital hub creation by systematising theoretical perspectives;

-to consider global experience in regulating the management of the advancement of digital hubs, taking into account adaptation to the conditions of Kazakhstan;

-to substantiate the methodological basis for the creation of digital hubs;

-to assess the current state of digital hubs located in Kazakhstan;

-to analyse the digital potential of regions of Kazakhstan;

-to identify the problems of established digital hubs;

-to provide mechanisms of management and fundamental directions for the establishment of digital hubs

-to propose model pillars, criteria, and scale for management of the growth and establishment of digital hubs in Kazakhstan.

The object of research. The object of study is established digital hubs in Kazakhstan, the functionality of these entities, in conjunction with their influence on the evolution of digital infrastructure and the regional economy.

The subject of research. Subject of the study is management relations in the process of formation, development, and integration of digital hubs in the country's regions, including their role in increasing the level of digitalization and economic growth.

Theoretical and methodological base of research. The theoretical and methodological basis of the research consists of the conceptual foundations of digital hub establishment management, research of foreign and domestic scientists on the issues of digital hub management.

The dissertation research was carried out on the basis of system and structural approach with the use of the following quantitative and qualitative methods: generalisation, systematisation, comparison, historical and logical - to study the economic essence of the concept of management of digital hubs establishment (paragraph 1.1), analysis of foreign experience of digital hubs establishment (paragraph 1.2, 1.3), research methodology (paragraph 1.4); statistical analysis, calculation of economic efficiency of Astana-hub (paragraph 2.1, 2.2); correlation-regression analysis to assess the impact of ICT costs on digital hub members, test (paragraph 2.2) method of integral index to identify the uniformity of indicator values across regions (paragraph 2.2); identifying existing problems and conducting a survey among undergraduate students to assess the percentage of future specialists in ICT and digitalisation (paragraph 2.3); proposing recommendations and mechanisms for managing the creation of digital hubs in the regions (paragraph 3.1); proposing a methodology for evaluating the performance of digital hubs on a five-point scale and criteria based on D-Best model (3.2).

SMART PLS-4, Microsoft Excel programmes were used to process statistical data.

Information base of the research. The information base of the dissertation research was primary and secondary data.

Sources of primary data: case study of the stage hubs, questionnaire survey of bachelor's degree graduates. Sources of secondary data: statistical data of the Bureau of National Statistics of the Agency for Strategic Planning and Reforms of the Republic of Kazakhstan, analytical reports of the Ministry of the Republic of Kazakhstan, financial reports of Astana-hub, dissertations of foreign and Kazakhstani scientists, international

scientific databases DOAJ, Scopus, Academia, Sci-Hub.

Scientific novelty. In the course of the thesis research the following scientific results defining its scientific novelty were obtained:

1) The author's vision of the concept of ‘digital hub’ from the point of view of innovation management is shown and substantiated;

2) The impact of ICT expenditures on various indicators related to the establishment of digital hubs was thoroughly analyzed. The findings indicate that while ICT expenditures do not significantly affect the level of innovation activity of enterprises and the number of universities, they do have a substantial impact on the number of research organizations, as well as the number of active small and medium-sized enterprises and enterprises overall;

3) The digital potential of the regions of the Republic of Kazakhstan for the establishment of digital hubs in these regions has been assessed by calculating integral index method;

4) Management mechanisms for the establishment of digital hubs in Kazakhstan are proposed: structural and technological, innovation, investment, institutional and social;

5) Based on the results of the survey conducted on the management of digital hub establishment, an estimated percentage of graduates intending to pursue careers in the field of digitalisation was determined;

6) The current status of digital hubs activities is analysed;

7) The main elements of the model of management of the establishment of digital hubs in Kazakhstan are proposed;

8) Recommendations for improving the management of the establishment of digital hubs in Kazakhstan were developed.

The main scientific provisions for defense:

1) The concept of a digital hub is defined as a centre that drives activities focused on the implementation of the "triple helix" model, which encompasses the collaboration between government, academia, and business to foster innovations and startups through the application of digital technologies. Participants and partners of the digital hub include universities, R&D organisations, research institutes, laboratories, technoparks, incubators, accelerators, public administration entities, and other stakeholders. The concept is substantiated and presented as a critical component of the innovation ecosystem;

2) To determine the level of development of digital hub management, a methodology is proposed to evaluate the performance of digital hubs according to a scale and criteria calculated on five points. According to this methodology, the level of development of hubs is average;

3) The employment of the integral index in the study enables a thorough evaluation of Kazakhstan's regions' digital potential. This evaluation encompasses the multidimensionality of key indicators, including the utilization of digital technologies, the digital literacy of the population, and the contribution of ICT to the economy. The method employed provides an objective ranking of regions, reveals disparities in digital development, and substantiates strategic measures to eliminate digital inequality;

4) The following mechanisms have been scientifically substantiated and developed for the development of digital hubs: the structural and technological mechanism, the mechanism of innovation, the investment mechanism, the institutional mechanism, and the social mechanism.

5) An online platform is proposed in the form of a website with a map of the hubs located across the Republic of Kazakhstan, including digital and IT hubs.

Theoretical significance of the results of the study. The theoretical significance of the study lies in the addition and clarification of the concept of digital hub, the definition of functions and existing contradictions of management of the creation of digital hubs. The theoretical basis was formed by scientific works of domestic and foreign scientists, practitioners, devoted to the development and creation of digital hubs, the development of conditions and ICT-industry in the field of innovation management. Theoretical and methodological justification for the development of mechanisms and processes of management of the establishment of digital hubs, as well as the justification of recommendations for the implementation of mechanisms and directions to the development of digital hubs in Kazakhstan. The results obtained in the course of the dissertation research are important for the development of theoretical and methodological foundations for the study of digital hub establishment management. In the course of the research new knowledge about the methodology of evaluation of digital hubs establishment with the help of five-point scale and criteria has been obtained. The results of the dissertation research can become the basis for setting new research tasks.

Practical value of the results of the study. The practical significance of the study lies in the substantiation of recommendations for the development of mechanisms and directions in the management of the establishment of digital hubs in Kazakhstan. The thesis materials can be used in reading courses: "Innovation management", "Technology transfer and mechanisms of its regulation", "International technology transfer", "Features of digital economy management", "Commercialisation of intellectual activity results", "Strategic innovation management" at universities of economic profile. Also, the practical significance of the study lies in the fact that the proposed mechanisms, directions and methodology for assessing the performance of digital hubs can be applied in the process of establishment of digital hubs in the Republic of Kazakhstan (Annex A).

Relation of this work with another research works. The dissertation research was carried out within the framework of the projects "Priorities and mechanisms of inclusive regional development of Kazakhstan in the context of overcoming economic recession" (grant of the Ministry of Education and Science of the Republic of Kazakhstan, AP09259004-OT-23, 2021-2023), "Investigation of the influence of economic, social and environmental factors on the relationship between urbanization and greenhouse gas emissions", (grant of the Ministry of Education and Science of the Republic of Kazakhstan, AP19576071, 2023-2025), "Strategy for the development of regional potential of Kazakhstan: assessment of socio-cultural and economic potentials, development of roadmap, models and development scenarios" (grant of the Ministry of Education and Science of the Republic of Kazakhstan, BR18574240, 2022-2024).

Approbation of the research results. The main provisions of the dissertation were discussed at scientific and methodological seminars of the Higher School of Economics and Business of the Kazakh National University named after Al-Farabi and Institute of Economics of the Committee of Science of the Ministry of Science and Higher Education of the Republic of Kazakhstan.

The main results of the dissertation research were reported and presented at the international scientific conference of students and young scientists "Regional economy and vectors of demographic and socio-economic development" (Almaty, Kazakhstan);

international scientific-practical conference “Economics and Management of the Emerging Market Innovation Space” (Moscow, Russia), “Paradigm of Sustainable Economic Development in the Context of Global Change: Challenges, Consequences, Opportunities” (Almaty, Kazakhstan); “Science: theory and practice” (Astana, Kazakhstan).

Publication of the research results. The main provisions and conclusions put forward for defense were reflected in 10 scientific papers, of which 1 was published in a journal with a non-zero impact factor and included in the international information resources Scopus and Web of science, 5 - in scientific editions recommended by the Committee for Quality Assurance in Education and Science of the Ministry of Education and Science of the Republic of Kazakhstan, and 4 reports in the proceedings of international scientific-practical conferences.

Structure and volume of the thesis. The structure of the thesis reflects the logic, the order of the research and the algorithm of solving the set tasks. The dissertation consists of the content, notations and abbreviations, introduction, three chapters, conclusion, list of references and 23 appendixes. The volume of the dissertation research is 215 pages, including 17 tables, 35 figures, 4 formulas, 174 references.