



UNIVERSITY MODELS IN INNOVATIVE DEVELOPMENT: AN INTEGRATED APPROACH

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Annotatsiya: Mazkur maqolada innovatsion taraqqiyot talablari doirasida oliy ta'lim muassasalarining tutgan o'rni, ularning bosib o'tgan va hozirgi zamonaviy modellar orqali rivojlanish tendensiyalari hamda integratsiyalashgan yondashuv asosida ta'lim, ilm-fan va ishlab chiqarish sohalarining o'zaro integratsion tahlil qilinadi. Universitetlarning innovatsion markazlar, startap inkubatorlar va texnoparklar bilan integratsiyalashuvi natijasida yuzaga kelayotgan yangi imkoniyatlar ko'rib chiqiladi. Shuningdek, O'zbekiston oliy ta'lim tizimida kuzatilayotgan islohotlar va global tendensiyalar asosida milliy universitetlarning innovatsion faoliyatini kuchaytirish bo'yicha amaliy tavsiyalar ishlab chiqiladi.

Kalit so'zlar: Innovatsion taraqqiyot, universitet modellari, integratsiyalashgan yondashuv, tadbirkor universitet, Triple Helix modeli, texnopark, ilm-fan va ishlab chiqarish integratsiyasi, oliy ta'lim, startap.

Abstract: This article analyzes the role of higher education institutions in the framework of the requirements of innovative development, their development trends through past and current modern models, and the integration of education, science and production based on an integrated approach. New opportunities arising as a result of the integration of universities with innovation centers, startup incubators and technoparks are considered. Also, practical recommendations are developed to strengthen the innovative activities of national universities based on the reforms observed in the higher education system of Uzbekistan and global trends.

Keywords: Innovative development, university models, integrated approach, entrepreneurial university, Triple Helix model, technopark, integration of science and production, higher education, startup.

Аннотация: В статье анализируется роль высших учебных заведений в рамках требований инновационного развития, тенденции их развития в прошлом и настоящем на основе современных моделей, а также интеграция образования, науки и производства на основе комплексного подхода. Будут рассмотрены новые возможности, возникающие в результате интеграции университетов с инновационными центрами, инкубаторами стартапов и технопарками. Также будут разработаны практические рекомендации по

усилению инновационной деятельности отечественных вузов с учетом реформ и мировых тенденций, наблюдаемых в системе высшего образования Узбекистана.

Ключевые слова: Инновационное развитие, модели университетов, комплексный подход, предпринимательский университет, модель «Тройной спирали», технопарк, интеграция науки и производства, высшее образование, стартап.

Introduction

Innovative development in modern society requires a radical renewal of every sphere, in particular, the higher education system. In the globalized era, digitalization and technological innovations require universities to become not only places of knowledge, but also active participants in research, innovation and production processes. This situation requires a new, progressive and integrated approach from higher education institutions. Since the classical model of universities can no longer fully meet the demands and needs of a diverse modern education, integrated models such as universities specializing in entrepreneurship, digital educational institutions, and the "Triple Helix" (university-industry-state) are being formed worldwide. This article analyzes the role of universities in innovative development, their modern models and approaches, and the integration of this process into the national system in the case of Uzbekistan.

Methods

Innovative development means the qualitative growth of society based on new technologies, advanced scientific achievements and creative ideas. The role of universities with scientific potential, which can effectively organize research activities and work in close cooperation with production, is invaluable for the sustainable development of this process. Universities are becoming not only centers of knowledge, but also sources of new ideas, startups, technological solutions.

Evolution of university models Universities have historically developed in the form of classical (only educational), research-based and currently widespread entrepreneurial models. Especially in the 21st century, the "Triple Helix" model - a model of integrated cooperation between universities, industry and the state - has become relevant. This model forms universities as independent innovative entities, turning them into active participants in the economy. The Triple Helix model was developed in the 1990s by American scientists Henry Etzkowitz and Loet Leydesdorff. This model is the basis for understanding innovation, emphasizing the collaborative relationships between academia, industry and government. The collaboration of these three sectors shows the potential to contribute to economic and social development, as well as to the creation and effective dissemination of knowledge. Digital universities, distance learning systems, and artificial intelligence-based platforms are also offering new approaches to higher education.

Results

Etzkowitz and Leydesdorff argue that the primary role of universities is to educate people and to conduct basic research. For this reason, the interaction between universities and industry initially revolves around these two elements. This interaction is carried out by involving



industrial managers from both sectors and university professors in the process. According to Etzkowitz, the transfer of knowledge between universities and industry is very important. It can be a continuous movement in one direction or in a completely different direction at the same speed. He cites as an example Karl Gerassini, a research director at a pharmaceutical company who continued his industrial work and joined Stanford University. However, other scholars have argued that faculty consulting can also have a number of disadvantages, such as a loss of focus on student learning and a conflict of interest, such as the use of institutional resources for commercial and industrial gain. Additional knowledge transfer between universities and industry occurs through informal dialogue, conferences, or industry interest in university publications¹

The strength of the interaction between government and universities depends on the government's overall attitude and policies towards higher education. The Etzkowitz and Leydesdorff model uses a spectrum to determine the extent of this interaction. On the one hand, when higher education is largely public, such as in Western Europe, the government is the main source of funding and has a high impact on universities and the research they conduct. Changing circumstances may prompt the government to forge closer ties with academia, for example during wartime and/or by funding strategic disciplines such as physics. For example, in the United States, the Department of Defense funded physics research heavily during World War II and the Cold War²

Discussion

The tripartite model as a tool for policy development for economic growth and regional development has been criticized by a number of scholars³ One of the main criticisms is that the theories of Etzkowitz and Leydesdorff were developed in Western developed countries, that is, they are based on a specific set of infrastructures and conditions. For example, the model clearly assumes that knowledge-intensive activities are associated with economic growth, that intellectual property rights are protected, and that the state has a democratic and market-oriented culture. Further scholarly criticism of the model focuses on the conditions that make the tripartite innovation policy possible. It is argued that the Etzkowitz and Leydesdorff model is too vague and assumes necessary conditions within the framework of their model. Therefore, according to critics, the tripartite model is not an appropriate policy development tool for developing countries that lack at least one of these conditions. However, others argue that the

¹ Etzkowitz, Henry (2008). *The triple helix: university-industry-government innovation in action*. New York: Routledge. ISBN 978-0-415-964500. OCLC 173749026.

https://en.wikipedia.org/wiki/Triple_helix_model_of_innovation

² Leslie, Stuart W. (1993). *The Cold War and American science: the military-industrial-academic complex at MIT and Stanford*. Columbia University Press.

³ Galvao, Anderson; Mascarenhas, Carla; Marques, Carla; Ferreira, João; Ratten, Vanessa (2019-10-02). "Triple helix and its evolution: a systematic literature review". *Journal of Science and Technology Policy Management*. **10** (3): 812–833. doi:10.1108/jstpm-10-2018-0103. ISSN 2053-4620. S2CID 203101066.

tripartite model is capable of describing the situation in developing countries and is useful for planning existing policies⁴

Advantages of an integrated approach. An integrated approach ensures that universities serve not only theoretical knowledge, but also the development of practical solutions. In this approach:

- a) the harmony of science and production is strengthened;
- b) students actively participate in practical projects;
- c) innovative products are created through incubation centers and technoparks;
- d) university resources and the capabilities of external partners are combined.

In recent years, great attention has been paid to innovative development in the higher education system of Uzbekistan. In particular, technoparks, startup centers, and IT incubators have been established in many higher educational institutions based on the concept of an "entrepreneurial university". Initiatives such as the "Youth Technopark", "Digital University" projects, and the University of Information Technologies are practical efforts in this regard. However, the level of implementation of scientific developments in the economy is still low, and strong scientific and practical integration is needed in this regard.

Conclusion

The role of modern universities in the process of innovative development is increasingly increasing. In addition to traditional education and research activities, modern universities are becoming an integral part of innovative ecosystems. An integrated approach - that is, an integral partnership between education, science, production and society - has become the main principle of the modern university model. Based on the Triple Helix model, it is possible to achieve sustainable innovative development by increasing the effectiveness of university-state-industry cooperation, commercializing scientific developments and supporting youth startups. It is gratifying that some higher education institutions in Uzbekistan are taking important steps in this direction, but it is necessary to fully use existing opportunities, strengthen a systematic approach and introduce advanced mechanisms based on international experience. In the future, universities should become not only a center of knowledge, but also a catalyst for innovative ideas, technological solutions and social progress. Therefore, the development of a university model based on an integrated approach should be one of the strategic priorities.

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⁴ Yuzhuo Cai (10 July 2013). "[Enhancing context sensitivity of the Triple Helix model: An institutional logics perspective](#)" (PDF). Triple Helix Conference.



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