



ENTREPRENEURIAL UNIVERSITY - MODERN STAGES OF DEVELOPMENT
OF PRIVATE HIGHER EDUCATION INSTITUTIONS

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Abstract. This article examines how universities are transforming into key drivers of technological innovation and economic development as their role in society expands. This shift leads to a new trajectory in university evolution. The transition to an entrepreneurial university requires establishing a strategic direction, maintaining a commitment to the knowledge generated within the institution, and ensuring its application, primarily on a regional level. Entrepreneurial universities enhance traditional research universities by fostering stronger connections with society. They integrate education, research, and industry, leveraging real-world challenges to help graduates address unemployment. Uzbekistan's Higher Education Development Concept until 2030 sets the goal of ranking among the top 50 countries in the Global Innovation Index by 2030. In this context, the significance of entrepreneurial universities is emphasized as a key factor.

Keywords: entrepreneurial universities, IPO system, spin-out, spin-off system, university 4.0, innovation, educational transformation, research skills, commercialization, creative approach.

**TADBIRLIK UNIVERSITETI — XUSUSIY OLIY TA'LIM MUASSASALARI
RIVOJLANISHINING ZAMONAVIY BOSQICHLARI**

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Annotatsiya. Ushbu maqolada universitetlarning jamiyatdagi roli kengayib borishi bilan texnologik innovatsiyalar va iqtisodiy rivojlanish manbai bo'lgan muassasa qiyofasi prognoz qilinmoqda, natijada universitetni o'zgartirish trayektoriyasi yuzaga keladi. Tadbirkorlik universitetiga o'tishda strategik yo'nalishni belgilash, undan so'ng o'sha universitet doirasida ishlab chiqilgan bilimlarga sodiqlik, undan asosan hududiy asosda foydalanish zarurati tug'iladi. Tadbirkorlik universiteti tadqiqot universitetini takomillashtirish bo'lib, u jamiyat bilan aloqani birlashtiradi, tadbirkorlik universitetlari ta'lif, fan va ishlab chiqarish integratsiyasiga moslashgan bo'lib, bitiruvchi talabalarning ishsizlik bilan bog'liq yechimlarni izlashda sanoat va jamiyat muammosidan foydalanadi. Oliy ta'lif tizimini 2030-yilgacha rivojlanishirish konsepsiyasida O'zbekiston Respublikasining 2030-yilga borib Global innovatsion indeks reytingi bo'yicha jahonning 50 ilg'or mamlakati qatoriga kirishiga erishish vazifasi qo'yilgan bo'lib, bunda tadbirkor universitetlarning ahamiyati muhim ekanligi yoritilgan.

Kalit so'zlar: tadbirkorlik universitetlari, IPO tizimi, spin-aut, spin-off tizimi, universitet 4:0, innovatsiyalar, ta'lif transformatsiyasi, tadqiqot ko'nikmalari, tijoratlashuv, kreativ yondashuv.

**ПРЕДПРИНИМАТЕЛЬСКИЙ УНИВЕРСИТЕТ - СОВРЕМЕННЫЕ ЭТАПЫ
РАЗВИТИЯ ЧАСТНЫХ ВЫСШИХ УЧЕБНЫХ ЗАВЕДЕНИЙ**

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Аннотация. В данной статье представлен имидж вуза как источника технологических инноваций и экономического развития по мере расширения роли университетов в обществе, что приводит к траектории университетской трансформации. При переходе к предпринимательскому университету необходимо определить стратегическое направление, затем использовать знания, полученные в этом университете, и использовать их преимущественно на региональной основе. Предпринимательский университет является усовершенствованием исследовательского университета, он интегрирует связь с обществом, предпринимательские университеты адаптированы к интеграции образования, науки и производства, используют проблемы промышленности и общества в поиске решений, связанных с безработицей студентов. В концепции развития системы высшего образования до 2030 года поставлена цель войти к 2030 году в число 50 передовых стран мира по рейтингу *Global Innovation Index*, в котором важность предпринимательской деятельности выделены университеты.

Ключевые слова: предпринимательские университеты, система *IPO*, *spin-out*, система *spin-off*, университет 4:0, инновации, образовательная трансформация, исследовательские навыки, коммерциализация, креативный подход.

Introduction.

Since the late 20th century, scholars have been discussing the next evolutionary model of universities - entrepreneurial universities. The history of entrepreneurial universities dates back to the late 1940s and early 1950s in Silicon Valley, California. The mission of an entrepreneurial university is to foster and develop entrepreneurs, innovators, and integrators through cultural-educational, scientific research, and innovation-driven entrepreneurship.

In entrepreneurial universities, the innovation infrastructure consists of a comprehensive network of enterprises and organizations that provide financial, organizational-methodological, informational, consultative, and other forms of support for research activities.

Literature review.

In 1932, Harvard University (USA) professor Joseph Schumpeter, the author of the economic dynamics concept in which entrepreneurship plays a central role, formulated the "theory of effective competition." The primary function of modern universities is to train innovators. Knowledge is a decisive factor in economic growth, and entrepreneurial universities play a significant role in a knowledge-based economy (Audretsch, Keilbach, & Lehmann, 2006). The roles that universities play in society evolve gradually alongside social changes (Etzkowitz, 2004).

Schumpeter viewed universities as ideal environments for nurturing and supporting talented individuals, transforming production systems, and, ultimately, advancing national economies. The first generation of universities was primarily engaged in teaching pre-existing knowledge derived from philosophy. Following the first academic revolution, the second generation of universities emerged, focusing on acquiring, transmitting, and integrating knowledge through research activities (Salamzadeh, Salamzadeh, & Daraei, 2011). This generation saw the expansion of research across disciplines using reliable methodologies, ensuring that scientists actively contributed to fostering creativity within their fields (Etzkowitz, 2013).

With the onset of the second academic revolution, the third generation of universities emerged, incorporating new responsibilities such as economic and social development alongside knowledge dissemination (Laredo, 2007). This third mission transformed universities into key players in external economic and social research activities (Laredo, 2007), further influencing the concept of entrepreneurial universities (Etzkowitz, 2004). From this perspective, universities serve as central drivers of innovation, creativity, and economic growth (Audretsch et al., 2006; Redford & Fayolle, 2014).

In international literature, the concept of entrepreneurial universities is examined as a fundamental component of the social system, considering entrepreneurship both as a process and as an outcome (Jones-Evans, Klopsten, Andersson, & Pandya, 1999; Klopsten, 2008). This strategic approach to universities is widely applied by leading institutions worldwide and is also relevant for regional countries as a research subject (Atlantic Canadian, 2004).

According to Etzkowitz and other scholars (2000), the first academic revolution led to the expansion of education by incorporating methodologies for acquiring, transmitting, and reintegrating knowledge derived from research. As a result, research has become an essential part of the educational process, serving as both a means of disseminating and integrating knowledge (Etzkowitz, 2013).

The first academic revolution

Close integration of education and research

The second academic revolution

Active participation in technological innovations



Figure 1. Direction of the University Mission¹

In Figure 1 above, the three generations of universities, their respective missions, and two academic revolutions with their corresponding characteristics are shown. Salamzade (2011), in his scientific research, developed the model of the entrepreneurial university through a systematic approach to the IPOO (Input-Process-Output-Outcome) model using systems theory. The author stated that the model derived from this research is presented in Table 1.

Analysis and results.

When using the categorization of the IPOO model, the author defines resources, processes, and outcomes as "inputs." They are expressed as equivalents of the elements and factors included in the "black box" of the entrepreneurial university. The outcomes obtained at the end of the processes are reflected, including products, entrepreneurial human resources (such as university professors, graduates, researchers, and staff), research aligned with market needs, innovations and inventions, entrepreneurial networks, and the formation of entrepreneurial centers, all of which should shape a unified system.

¹ Adapted from Etzkowitz & Leydesdorff (2000); Etzkowitz, Webster, Gebhardt, and Terra (2000); Etzkowitz (2004); Plonski & Carrer (2009); Etzkowitz (2013).

As for the "outcomes," the following elements are considered: innovation and an innovative culture, creating socio-economic value, and human development. These elements combine to form the third mission of the entrepreneurial university, based on the models of Guerreiro-Cano et al. (2006).

Table1
IPOO Model (Sooreh et al., 2011)

Context	Inputs	Processes	Outputs	Outcomes
	Resources (human, financial, informational, physical) Regulations and laws infrastructure Mission Entrepreneurial capabilities Expectations from society, industry, government, and the market	Teaching Research Management Logistics Commercialization Opportunities for students, university professors, and staff Funding and financial support Networking A multi-stakeholder collaboration process involving students, university professors, staff, industry researchers, entrepreneurship centres, and the broader community Innovation, research, and development (IR&D) activities	Entrepreneurial human resources (including university professors, graduates, researchers, and staff) Effective research aligned with market needs Innovations and inventions Entrepreneurial networks Entrepreneurship centers Incubators, science and technology parks, and spin-offs	The Third Mission

The spin-out system in entrepreneurial universities refers to the emergence of a new independent organization from a scientific or research institution. This serves as a crucial mechanism for transferring knowledge and innovations from the academic sphere to the real-world business environment. In contrast, an academic spin-off operates as an affiliated entity created by university staff or graduates, based on technologies developed within the university. The framework presented in the table above encompasses a broader approach, incorporating formal, informal, and internal data; formal, informal, and internal processes; and formal, informal, and internal outcomes. In the "Input" block, the environmental factors identified in research conducted by Guerrero Kano et al. have been categorized accordingly. Meanwhile, the "Outputs" align with the elements referenced within entrepreneurial universities, as determined through expert focus group discussions and research findings by the authors.

Research conducted by Salamzadeh emphasizes the structural composition of the model, highlighting the "Input-Process-Output" approach and the significance of the aforementioned elements. This integrated model not only accounts for the internal and external factors of the institution but also provides a detailed outline of the governance structures within entrepreneurial universities. Utilizing Importance-Performance Analysis (IPA) and the TOPSIS technique (Technique for Order Preference by Similarity to Ideal Solution), the model was developed to encompass the key dimensions of the two primary studies, as demonstrated in Table 2.

Throughout history, universities have evolved through several models. The earliest model, known as the traditional and classical "University 1.0," was primarily focused on education. In this model, the professor delivers lectures while students take notes. "University 1.0," or the "first-generation university," served solely as a place of learning, with its primary mission being the transmission of knowledge.

Table 2

IPA (Importance-Performance-Analysis) (Sooreh et al., 2011)

	Environmental Factors		Internal Factors
	Formal	Informal	
Input	Entrepreneurial policies and objectives of the higher education system Characteristics of university managers Available communication channels Business courses offered Business programs available	Potential student intentions Potential student preferences Alignment of potential students' goals Scientific considerations Academic relevance	Existing students, researchers, and staff Financial resources Information sources Entrepreneurial skills Society, industry, and market expectations University's entrepreneurial mission
Process	Organizational structure Systems and processes Identification of hierarchical levels Investments in support measures Investments in communication channels	Teaching resources Professors and lecturers Recognition of research aimed at improving environmental processes	Management regulations Teaching methods Management methodologies Logistical approaches Marketing processes Student selection methods Funding methods Networking interactions Multilateral interaction processes (among students, university professors, staff, industry researchers, business centers, industry, policymakers, and society) Innovation, research, and development activities (IR&D) Reward systems and compensation processes
Output	Entrepreneurial network systems Conglomerates and strategic alliances Marketing and convention systems	Special templates Corporate culture	Entrepreneurial human resources (including university professors, graduates, researchers, and staff) Effective researchers aligned with market needs Innovations and inventions Entrepreneurship centers (e.g., incubators, science and technology parks, spin-offs, and others)

Over time, the “University 2.0” model, or the “second-generation university,” emerged, integrating scientific research alongside education. From the 19th century onward, higher education institutions specializing in research became known as “research universities.” “University 2.0” not only generates new knowledge through scientific research but also serves as a consulting center for market participants, conducts industry-sponsored research, and lays the foundation for new technologies. The “third-generation university,” or “University 3.0,” goes beyond education and research by actively engaging in the commercialization of scientific and research-based innovations. This model fosters an entrepreneurial culture, establishing effective communication with the business sector. In such universities, technological startups are created, and patents are regularly registered. Silicon Valley in California serves as a prime example of this model. Research indicates that only 0.3% of universities worldwide meet the

criteria for a "University 3.0" model. In this regard, universities in our country have been tasked with commercializing research results by 2030, which would enable them to achieve higher rankings in internationally recognized institutional ratings. "University 4.0" encompasses all these characteristics while also being fully digitized and equipped with automated business processes. This model plays a leading role in the development of high-tech industries, shifting from mass production to delivering services tailored to individual consumer demands. In this context, "University 4.0" designs curricula and academic programs based on students' individual needs. Moreover, it prioritizes not only academic knowledge but also the development of students' social skills, ensuring a well-rounded education.

Table 3

Trend models defining the transformation of modern universities

from university 1.0	transition to university 4.0
from university 2.0	transition to university 3.0
from university 1.0	transition to university 3.0
from university 2.0 to university	It is considered the transition to university 4.0.

Source: author analysis.

Despite the existence of many models identifying the transformation of modern universities, the key trend is considered to be the transition from University 1.0 to University 3.0.

Conclusion.

Conclusion, it is important to emphasize that the purpose of this theoretical research was to analyze conceptualizations and present various theoretical models that examine the phenomenon of the entrepreneurial university. According to the definitions of entrepreneurial universities, three main characteristics have been proven: the focus on entrepreneurial activities of members (academics and professors), the emphasis on the university's contribution to the social environment, and the strategies for improvement in creating enterprises and changes in the organizational structure. As the role of universities in society expands, a new institutional identity as a source of technological innovations and economic development is predicted, resulting in the emergence of a trajectory for university transformation. In the transition to an entrepreneurial university, it is necessary to set strategic directions and then ensure loyalty to the knowledge developed within that university, mainly to be used on a regional basis. The entrepreneurial university improves the research university by combining its relationship with society, adapting to the integration of education, science, and production, and utilizing industrial and societal challenges in the search for solutions to graduate unemployment. The three models described use different theories, such as institutional theory and systems theory, which define the relevance of research in this field. Considering the third mission of modern universities, related to economic and social development and knowledge transfer, it is concluded that the systemic approach significantly contributes to the study of factors that establish interconnections. The university, seen as the cornerstone of society, represents the relationship between education, innovation, and regional development, promoting knowledge and effective changes within society.

Through the evolution of connecting traditional teaching and research functions with industry and production, and spreading entrepreneurial thinking in universities, activities that involve technology transfer helped create innovative infrastructure in organizations, thus serving as a factor with economic impact on a national, regional, or local scale. In this sense, the entrepreneurial university's focus on innovations, applying new technologies, and education methods based on globalization contributes to production, supports effective changes, fosters

positive renewals in the social environment, and serves as a higher education institution contributing to the development of national economies.

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Adapted from Etzkowitz & Leydesdorff (2000); Etzkowitz, Webster, Gebhardt, and Terra (2000); Etzkowitz (2004); Plonski & Carrer (2009); Etzkowitz (2013).

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Sooreh, Salamzadeh, Safarzadeh e Salamzadeh model Source: Sooreh et al. (2011, p. 190-191)