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MODELS OF UNIVERSITY–INDUSTRY INTERACTION: EXPERIENCE OF UKRAINIAN KNOWLEDGE VALORIZATION CENTERS

In the current context of rapid technological development and globalization of the labor market, the ability of universities to transform research outputs into innovative products, services, or technologies that meet the needs of industry has become increasingly important. Knowledge valorization and technology transfer centers play a key role as a “bridge” between academic research and the industrial sector. This paper examines models of university–industry interaction through the example of active Ukrainian centers, analyzes their strengths and weaknesses, and proposes guidelines for optimizing such models.

One of the key institutional mechanisms supporting technology transfer in Ukraine is the Center for Intellectual Property Studies and Technology Transfer of the National Academy of Sciences of Ukraine (CIPTT NAS Ukraine). The center conducts comprehensive research activities in the fields of intellectual property protection, technology transfer, preparation of regulatory documents, and legal support for knowledge transfer in research institutions and higher education establishments. Additionally, CIPTT NAS Ukraine collaborates with government authorities, participates in the development and improvement of legislation in line with European standards, and maintains partnerships with international organizations focused on intellectual property rights. Through these activities, the center supports research institutions and universities in securing intellectual property rights, creating innovative products, and developing startups capable of commercialization.

Another example is the Technology and Innovation Support Center at Lviv Polytechnic National University (LPNU TISC). This center provides informational, advisory, and legal support for inventors, authors, and startup

founders working with intellectual property and innovative projects. LPNU TISC also organizes educational activities, including seminars, workshops, and masterclasses, covering technology transfer, research commercialization, and IP management. As part of the UniTECH project (2022–2025), the center develops educational modules for undergraduate, master's, and Ph.D. students, fostering an environment for innovative university–industry collaboration.

The Center for Technology Transfer at the International Scientific and Technical University named after Academician Yuri Bugai (ISTU CTT) serves as another notable example. This center facilitates the transfer of university research outputs to the business sector and industry. Its core functions include evaluating the potential of scientific developments, identifying partners, supporting commercialization, and creating conditions for collaboration among students, faculty, and industry. The center aims to act as a “bridge” between academia, business, and society, promoting innovation, high-tech industry development, and graduate employment. These examples illustrate the presence of both university-based and academic institutions in Ukraine that implement technology transfer functions, support commercialization of research results, promote innovation, and facilitate industry collaboration. In today's rapidly evolving technological and global economic environment, universities are tasked not only with training highly qualified specialists but also with transforming research results into commercially viable products and services. Knowledge valorization and technology transfer centers serve as mechanisms to bridge academia and industry. These centers perform multiple functions: intellectual property protection, legal support for innovation projects, commercialization of research, and training of academic staff and students in technology transfer.

The relevance of studying university–industry interaction models arises from the need to enhance the efficiency of technology transfer in Ukraine, optimize commercialization processes, and build a sustainable innovation ecosystem. Analyzing existing models helps identify strengths and weaknesses, uncover potential barriers, and develop recommendations to improve collaboration between academic institutions and industry. Based on the activities of the aforementioned centers, several fundamental models of university–industry interaction have been identified (Table 1).

Table 1

**Comparative characteristics of university–industry interaction models in
Ukraine**

Model	Key Characteristics	Advantages	Challenges / Limitations
IP/Transfer Center + Government Policy / Legal Support (e.g., CIPTT NAS)	Office handling legal support, IP protection, knowledge transfer, legislative lobbying, regulatory framework development	Establishes legal basis for commercialization, increases trust in transfer, simplifies legal procedures	Slow legislative changes, bureaucratic barriers, dependence on government decisions
University TISC / Startup Support Center + Educational/Consulting Services (e.g., LPNU)	Educational programs, training, IP support, consultations, patent database access, student/inventor support	Fosters innovation culture, improves IP awareness, prepares future specialists in technology transfer, engages students	Limited resources, dependence on faculty initiatives or grants, often lacks commercialization due to weak business links
University Transfer Center + Active Commercialization of Research (e.g., ISTU CTT)	Identifies promising research, seeks business partners/investors, supports projects from research to market	Direct technology implementation, business engagement, practical application, possibility of startups/spin-offs	High market entry barriers, need for funding, risk of failure, dependent on market conditions
Hybrid Model: Education + Transfer + Legal Support + Business Partnership	Combines educational, research, legal, and commercial activities; builds innovation ecosystem	Highest potential: flexibility, comprehensive approach, adaptability to diverse needs	Coordination complexity, resource demands, high management requirements, risk of effort dispersion

Analysis of these models indicates that each possesses distinct advantages and limitations that determine its effectiveness in specific contexts. Legal-focused models (e.g., CIPTT NAS) provide a regulatory framework and enhance IP commercialization security, but are often constrained by bureaucracy and slow legislative implementation. University innovation and startup support centers (e.g., LPNU TISC) demonstrate strong potential in fostering an innovation culture and preparing students for practical technology transfer. Educational activities and mentoring help develop IP and entrepreneurship competencies; however, limited funding and weak industry links may reduce commercialization effectiveness. Models emphasizing active commercialization (e.g., ISTU) enable direct market implementation and investor engagement, creating opportunities for startups and spin-offs but face high financial risks and require market adaptation of research outputs. Comparative analysis suggests that the hybrid model, combining educational, research, legal, and commercial components, holds the greatest potential. Such an integrated approach facilitates effective transformation of knowledge into commercially viable products, promotes innovation culture, and enhances university competitiveness nationally and internationally. Successful implementation requires synergy among universities, business, and government, formalized technology transfer procedures, infrastructure and financial support, and educational programs in entrepreneurship and technology transfer for researchers and students.

Centers like LPNU TISC have already established educational and advisory infrastructures, including workshops, training, and information support, raising awareness of IP and innovation. University transfer centers (e.g., ISTU) enable researchers and students to participate in real projects, developing market-ready technologies, thereby narrowing the “research ↔ business” gap. Academic centers (e.g., CIPTT NAS) provide legal and regulatory frameworks for knowledge transfer, ensuring IP rights, contracts, and collaboration with government institutions, making technology transfer more systematic and scalable. These initiatives collectively contribute to an innovation ecosystem integrating academia, education, business, and legislation, promoting sustainable development of technologies, startups, and commercial products. Ultimately, the hybrid model, combining educational, research, legal, and

commercial components, appears most effective for transforming scientific ideas into market-ready products and services.

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