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## INSIGHTS INTO UKRAINE'S INTERNATIONAL COOPERATION IN R&D FOR ICT SECTOR DEVELOPMENT

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The integration of innovations and the latest technologies in the post-war reconstruction and development of Ukraine is crucial not only for efficient rebuilding but also for fostering economic growth, enhancing resilience, improving quality of life, ensuring sustainability, and positioning Ukraine as a competitive player in the global arena. Despite the war, international tech companies are increasingly looking to Ukraine to open R&D centres, which underscores the importance of improving the intellectual property and innovation protection system to attract and support their expansion initiatives [1].

Intellectual property (IP) plays a pivotal role in fostering innovation and driving the development of new technologies, making it a cornerstone of economic growth and competitiveness for countries like Ukraine. Firstly, robust intellectual property protection serves as a catalyst for innovation by incentivizing creators, inventors, and entrepreneurs to invest time, resources, and expertise into developing new ideas and technologies. Secondly, the protection of IP rights encourages foreign investment and technology transfer, as it ensures protection against infringement and unauthorized use, thereby enhancing technology diffusion and knowledge sharing, facilitating the adoption of the best global practices. Thirdly, a robust IP system promotes healthy competition and market dynamics by preventing unfair competition and unauthorized innovation exploitation, thus encouraging businesses to innovate, differentiate, and improve product quality, leading to increased productivity and economic growth. Fourthly, IP rights are valuable assets for commercialisation, technology commercialisation, and international trade through licensing, franchising, and technology transfer agreements, generating revenue and enhancing Ukraine's international competitiveness and economic integration. In accordance with the listed advantages, the IP

Office [2] held an IP&I marathon on a wide range of IP commercialisation issues: Ukraine's innovation landscape, the interaction between science and business, foreign patenting, intellectual property rights acquisition, commercialisation of copyright objects, Ukrainian Startup Fund opportunities, and the role of intellectual property valuation in enterprise innovation processes, etc.

As a R&D location for IT companies, Ukraine has advantages and disadvantages. One of the key advantages is its strategic geographical location. Situated in Eastern Europe, Ukraine offers easy access to major European cities, allowing for convenient travel to and from R&D centres without exorbitant costs. Furthermore, the time difference with most European countries is minimal, facilitating smooth coordination of business hours and effective communication across time zones. Another compelling factor that makes Ukraine an attractive destination for IT companies is the high level of education among its workforce. Additionally, a significant percentage of IT professionals have proficient English language skills, reducing the risk of miscommunication and ensuring a high standard of professional expertise. In terms of cost-effectiveness, Ukraine offers competitive hourly rates for IT services, with the average salary for an IT engineer standing at 1,600 USD per month. Moreover, rental rates for office spaces in Ukraine are relatively inexpensive compared to major Western cities, making it a cost-effective choice for setting up operations.

However, despite its many advantages, Ukraine does face certain challenges and potential investors and businesses should consider. The ongoing geopolitical tensions in the region, particularly the ongoing war unleashed by Russia against Ukraine, pose a risk to stability and can impact business operations. The resilience of Ukraine's IT sector in the face of these challenges is commendable, but the situation remains fluid and unpredictable. Additionally, Ukraine grapples with legal issues such as corruption and inadequate measures for information protection. While efforts are being made to address these concerns, the overall regulatory environment (framework, legal basis) may present obstacles for businesses seeking a transparent and secure operating environment.

As of the first quarter of 2024, there are 90 R&D centres of international tech companies in Ukraine (by 20 less than in 2019), with a predominant concentration in Kyiv, Lviv, Odesa and Kharkiv [3-4]. Furthermore, the significant number of R&D offices opened by tech companies from the US, the UK, Germany, Denmark, Estonia, and Poland highlights the diversity of foreign investment in Ukraine's ICT sector. As for staffing statistics, Samsung Electronics is the biggest employer – 5,001-10,000 employees,

followed by Bosch and Dell Technologies – 1,001-5,000 employees, as well as Avenga, Ericsson, Lifecell, Huawei, SAP Ukraine, Sitecore, Materialise, Playtech, Teleperformance and Netcracker – 501-1,000 employees.

In general, global practice involves three main types of foreign R&D centres: foreign-funded R&D centres (institutions established by foreign investors for research, development, and experimental activities in natural sciences and related fields, including basic, applied, and product development), global R&D centres (institutions established by foreign investors with exclusive technology platforms, ensuring progress to align with global project activities) and foreign-funded open innovation platforms (institutions set up by foreign investors to foster project-based cooperation with SMEs and innovation teams, providing facilities, equipment, and guidance while leveraging platform resources, technology, talent, and capital). As for Ukrainian case, the main forms of R&D activities by foreign ICT companies include:

(1) acquisition of local IT companies, which operate in the same R&D field, allowing immediate access to local talents, infrastructure, market knowledge, and overcoming regulatory and cultural barriers;

(2) establishment of a completely new R&D facility that involves setting up a new office, hiring local talents, and teaming up with local partners and suppliers (this approach takes more time and resources initially, it offers greater control and flexibility over the operations);

(3) formation of partnerships or collaborations with local universities, research institutions, or IT companies (it helps in accelerating innovation, sharing risks and expenses, and expanding market reach);

(4) investment or acquisition of tech start-ups to gain access to innovative technologies, talent, and market opportunities (this strategy allows companies to quickly expand their R&D capabilities and product offerings while leveraging the start-up's entrepreneurial spirit);

(5) establishment of innovation hubs or accelerators to promote collaboration with start-ups and universities, enabling rapid prototyping of new technologies and products.

Examples of the first strategy include such companies as Google, Snapchat, Amazon; the second – Samsung, Globality, Glovo, Lyft, Product Madness, Roku, Avenga, Nvidia, ABBYY; the third – Samsung; the fourth – Peoplelogic and Plai, InnoEnergy and Beholder, OTB Ventures and Kurs Orbital, etc.; and the fifth – BlaBlaCar, Solarisbank, Sift.

Additionally, business accelerators play a crucial role in nurturing and promoting innovation in Ukraine's ICT sector, thus providing tech startups with access to mentorship, funding, and networking opportunities to help

them grow and scale their businesses. As of the first quarter of 2024, there are 12 accelerators in Ukraine (mostly located in Kyiv), particularly: 1991 Accelerator, Blue Lake Accelerator, Centre for Entrepreneurship, Challenger Accelerator, Demium CEE, EO Business Incubators, iHUB powered by NUMA, Innovation Startup Entrepreneurship, IoT Hub, Seed Forum Global, Startup Wise Guys and Unicoway [3]. The activities of these accelerators contribute to the overall growth and competitiveness of Ukraine's ICT sector, fostering a dynamic ecosystem of innovation and entrepreneurship.

The support of foreign governments and companies for Ukrainian tech start-ups is quite tangible. One of the latest notable examples of foreign support for Ukrainian tech start-ups is the Seven Camp accelerator from Belgium, offering up to €450,000 in funding to Ukrainian tech start-ups in various fields, including AI, CyberSec, FinTech, IoT, Smart City, IT, and Dual-Use technologies [5]. The programme also provided resources and support services, including access to Belgian and European grants, research laboratories, prototyping facilities, mass production and procurement programs, investment assistance, and temporary relocation to Brussels. Another impactful initiative supporting Ukrainian tech start-ups is the Seeds of Bravery program funded by the European Union (offers up to €60,000 in funding for eligible start-ups), aiming to provide financial assistance to Ukrainian tech start-ups through various funding streams in categories such as Innovative Entrepreneurship, Deep Technology Incubators, Rebuilding Ukraine, and Scaling and acceleration in deep tech [6]. These targeted funding opportunities cater to different stages of start-up development and focus on areas crucial for growth and sustainability. Additionally, tech giants like Google have also been actively involved in supporting Ukrainian tech startups. Google launched a support fund for startups in Ukraine, allocating \$10 million in non-equity grants to help startups grow and develop amidst challenging circumstances such as a full-scale war [7]. The support fund has already provided grants worth \$5 million to Ukrainian startups, resulting in significant positive outcomes such as raising additional funding, increasing revenues by 100%, creating new jobs, and receiving global recognition. Google's commitment to supporting Ukrainian tech startups not only provides financial assistance but also opens doors to new opportunities and networks that can propel startups to greater heights.

In conclusion, the support of Ukrainian tech start-ups by foreign partners plays a crucial role in fostering innovation, creating opportunities for entrepreneurs in Ukraine, and driving economic growth. Finally, this partnership is pivotal for the continued success and development of the tech

sector in Ukraine, highlighting the importance of fostering strong international relationships in the ever-evolving tech ecosystem.

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