



Abstract

The Role of Ukrainian Innovation Centres in the Development of the Agricultural Sector and Supply Chains [†]

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The global challenges of 2019–2023 have impacted supply chains. Global supply chains, disrupted by Russian aggression, affect countries not only in Africa but around the world. Many agricultural enterprises in Ukraine have been damaged. Therefore, Ukraine's exports have declined. Agro-food products remain the most exported goods among the sectors, representing 53% of total exports in 2022. Also, 2022 has revealed the benefits of domestic processing: companies aimed at exporting raw materials had to decrease their activities or stop them altogether due to the blockade of ports on the Black Sea and limited capacities of Ukrzaliznytsia. The availability of well-functioning logistics, access to railways and the company's closeness to western borders meant efficient production for Ukrainian companies in 2022. It is worth betting on start-ups to emerge from the crisis in Industry 4.0. The Global Industry 4.0 will generate up to \$ 1 trillion and most technological innovation will come from innovative new start-ups by 2025.

Start-ups are identified as drivers of innovation in Industry 4.0, especially in emerging technologies. Start-ups can develop new ideas and technologies faster and more precisely in emerging technology areas. In particular, start-up developers from Ukraine presented their products to entrepreneurs and investors at the Startup Grind Global 2023 conference in Silicon Valley. The scientists presented INPUT SOFT (InputSoft Inc., Kyiv, Ukraine), a platform for managing airports and airlines; FuelWell (FUELWELL, Wilmington, DE, USA), equipment that enables trucks to consume up to 20% less fuel and emit 15% less CO₂; Adminix (Adminix Solutions Inc., Kharkiv, Ukraine), a low-code platform for workflow automation; efarm.pro (Gardarika Tres LLC, Kyiv, Ukraine), an IOT navigation field assistant; Knowledgator Engineering (Knowledgator Engineering LTD, London, UK), a market, scientific and competitive analysis tool to improve R&D investment, etc. Conditions, environment and development vector are necessary for the rapid growth of startups. For this purpose, the Industry 4.0 Implementation Center was established at Poltava State Agrarian University. The Center is the regional core of Industry 4.0 competencies and one of the elements of the innovation ecosystem of the agricultural sector in the Poltava region of Ukraine. It is a scientific hub that explores topical issues of smart specialisation in agro-industry and supply chain logistics. In the scientific centre, research is carried out by teachers and students, and cooperations with entrepreneurs and communities are established. Start-ups are being developed to solve identified problems. Teachers provide training in innovation activities for representatives of territorial communities, and small-



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and medium-sized enterprises. The institution operates a laboratory where research and testing of innovative products is carried out. In particular, a development project was implemented to automate grain receiving points. A significant number of businesses from different regions of Ukraine have relocated to the Poltava region. This emphasises the importance of the Center's development.

According to Supply Chain 4.0, supply chain management is based on "Industry 4.0" innovations, namely the internet of things, robotics, analytics and big data, which aim to increase productivity and customer satisfaction. In the near future, Supply Chain 4.0 will obviously affect all areas of supply chain management. The development prospects of the Poltava region of Ukraine in the context of digitalisation of the agro-industry envisage the accelerated digitalisation of agricultural and agro-processing enterprises and export logistics. This is very important in the Poltava region, which produces the second-largest soybean and sunflower harvests in Ukraine. For this purpose, it is necessary to enhance the role of clusters and develop regional Industry 4.0 implementation centres. The University Center will take part in joint training on the implementation of industrial recovery and innovation development projects in Ukraine. The main trends in the formation of Ukrainian supply chains that will also be addressed by the Center in 2023–2024 should be the modelling and optimisation of business processes, digital transformation of supply chains, big data and management of digital platforms, IT start-ups and the future of intelligent logistics, and the further transition to "green" solutions. Ukraine requires integration into the global digital ecosystem.

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