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Olena Korohodova
Ph.D., Associate Professor
ORCID ID:0000-0003-2338-365X

Kateryna Onopriienko
ORCID ID:0000-0002-8779-9171

Daniela V. Kuzhel
ORCID ID:0000-0002-3574-0717

National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute"

THE INTERACTION OF TRANSNATIONAL CORPORATIONS WITH STARTUPS IN INDUSTRY 4.0

ВЗАЄМОДІЯ ТРАНСНАЦІОНАЛЬНИХ КОРПОРАЦІЙ ЗІ СТАРТАПАМИ В УМОВАХ ІНДУСТРІЇ 4.0

The article considers the principles of the interaction of transnational entrepreneurship structures with start-ups in the conditions of the Fourth Industrial Revolution. The main tendencies of startup project functioning in conditions of uncertainty and risks are highlighted. It is noted that startup projects are one of the forms of implementing innovations and represents an important factor in strengthening the innovative component of the economy's development. The need for new scientific approaches to determining the development strategy of startup projects in the conditions of Industry 4.0 is indicated. The factors of rapid growth and scaling up of a startup project are given. It is noted that due to the need to develop startups with significant resources and a network of customers, newly established enterprises do not have, in contrast to the powerful structures of the transnational type of business, the ideas of economical and lean production, implemented through the form of startup projects. It is emphasized that this type of startup promotes experimentation as an iterative process to reduce uncertainty, attract stakeholders and promote collective learning at relatively low cost. The advantages of cooperation between startup companies and multinational corporations were identified. It is noted that due to the need to develop startups with significant resources and a network of customers, newly established enterprises do not have, in contrast to the powerful structures of the transnational type of business, the ideas of lean production, implemented through the form of startup projects. It is emphasized that this type of startup promotes experimentation as an iterative process to reduce uncertainty, attract stakeholders and promote collective learning at relatively low cost. The advantages of cooperation between startup companies and multinational corporations were identified. It was noted that the speed of product scaling is increasing under the conditions of the Fourth Industrial Revolution, especially this statement is true for new products in the field of information and communication technologies. The main

elements of the startup ecosystem in cooperation with a multinational company in the conditions of Industry 4.0 are given. The difference between newly created companies and startups is highlighted. Possibilities of cooperation between structures of transnational type and startup companies are considered on the example of Österreichische Mineralölverwaltung AG (OMV), an Austrian integrated oil and gas company with headquarters in Vienna. The key performance indicators of the multinational company OMV are presented, and it is stated that the digital transformation of the entire group of companies combines numerous initiatives for advanced analysis, cyber-security, process digitization, automation, communication in the development of elements of Industry 4.0.

Keywords: startup, multinational company, Industry 4.0, startup ecosystem, Fourth Industrial Revolution

У статті розглянуто засади взаємодії структур транснаціонального типу підприємництва із стартап-компаніями в умовах Четвертої промислової революції. Висвітлено основні тенденції функціонування стартап-проектів в умовах невизначеності та ризиків. Зазначено, що стартап-проекти є однією з форм реалізації інновацій, що представляє собою вагомий чинник зміцнення інноваційного складнику розвитку економіки. Вказано необхідність у нових наукових підходах до визначення стратегії розвитку стартап-проектів в умовах Індустрії-4.0. Наведено чинники швидкого зростання та масштабування стартап-проекту. Окреслено темпи зростання обсягів стартап-індустрії у світі. Зазначено, що через необхідність розвитку стартапів за допомогою значних ресурсів та мережі клієнтів, які у новостворених підприємств відсутні, на відміну від потужних структур транснаціонального типу підприємництва, виникають ідеї заощадливого та економного виробництва, реалізованого через форму стартап-проектів. Акцентовано увагу на тому, що зазначений тип стартапів просуває експерименти як ітеративний процес для зниження невизначеності, залучення зацікавлених сторін та просування колективного навчання при відносно низьких витратах. Визначено переваги співпраці стартап-компаній із транснаціональними корпораціями. Зазначено, що рівень швидкості масштабування продукту в умовах Четвертої промислової революції зростає, особливо це твердження справедливо для нових продуктів в галузі інформаційно-комунікаційних технологій. Наведено основні елементи екосистеми стартапу в межах співпраці із транснаціональною компанією в умовах Індустрії 4.0. Висвітлено різницю між новоствореними компаніями та стартапами. Розглянуто можливості співпраці структур транснаціонального типу підприємництва із стартап-компаніями на прикладі Österreichische Mineralölverwaltung AG (OMV), австрійської інтегрованої нафтогазової компанії, штаб-квартира якої знаходиться у Відні. Наведено основні показники діяльності транснаціональної компанії OMV та зазначено, що цифрова трансформація в масштабах усієї групи підрозділів компанії об'єднує численні ініціативи з розширеного аналізу, кібербезпеки, оцифрування процесів, автоматизації, зв'язку в умовах розвитку елементів Індустрії 4.0.

Ключові слова: стартап, транснаціональна компанія, Індустрія 4.0, екосистема стартапу, Четверта промислова революція

Introduction. Startup projects are gaining more and more weight in creating an overall competitive national economy. Innovative development is

an actual part of strengthening the Ukrainian economy. However, the issue of interaction between startup companies and powerful structures of transnational type of entrepreneurship remains important. Particular attention is paid to this problem in the context of the Fourth Industrial Revolution, based on the unification of production-distribution technologies, exchange and consumption in a single system of data exchange.

Many scientists and entrepreneurs have been involved in the study of these issues, in particular, S. Blank, B. Dorf [1], S. Prashantama, K. Kumar [2], S. Solntsev [3], O. Zozulyov [3, 4], S. Voitko [5], N. Boken, Y. Snigur [6], I. Moroni, A. Arruda, K. Arauyo [7] and others.

Setting objectives. The purpose of the study is to identify the main areas of interaction between startups and transnational companies in the conditions of Industry 4.0 development. It is necessary to analyze the existing scientific approaches to the evaluation of the ways of interaction of transnational structures with startups. It is also an important task to assess these opportunities using the example of a certain company. This should be reflected in the creation of new principles of interaction between transnational companies and startups in Ukraine in the conditions of Industry 4.0.

Methodology. The information base for the conducted research is scientific articles, materials of periodicals, official data of national and international statistics, analytical reports of companies. The methods used are: dialectical method of cognition; logical and formal-logic methods for evaluating the above theoretical foundations for defining startups and startup ecosystems. Comparison, generalization, synthesis, tabular and graphical description methods were used to systematize the data.

Research results. The startup is a newly established company, whose activities are based on innovative technologies. The startup is at the first stage of company's life cycle and needs to attract external resources. As noted in [8] “An organization with high innovative competence and strong technological base, which has the faculty of an accelerated growth and maintains through time. The max lifespan should be of 10 years”.

S. Solntsev, O. Zozulyov [3] noted that "any innovative activity that provides for profit is nowadays called a startup among practitioners. It is difficult to identify a simple new enterprise (after all, it is a new direction of activity for its head) and an innovative project within the limits of existing enterprise, especially if the enterprise brings an overwhelming innovation to the market".

As noted in [9], a startup is an enterprise, and not just a product, so it needs a new type of management which is adapted to the conditions of uncertainty.

With regard to uncertainty, it is noted in [10] that due to the uncertainty of the startup environment and the novelty of business, the companies are

faced with significant problems in the beginning of their existence. The authors suggest that the management of startup companies should try to develop innovative creation not only from the side of product or process formation, but also try to apply creative approach in the process of improving the company's management mechanism.

Every startup company expects to generate a product that will be quickly demanded by the market. A startup product is an innovation. The special need for an innovative product is a challenge for growth in sales and expansion of a startup. The rapid development of the project is due to the following factors:

1) production of goods or services that consumers potentially want to buy;

2) the ability to satisfy every customer regardless of their location.

The first factor determines the mass sales of the product of the newly created idea. The degree to which a product is distributed in mass depends on the specifics of the startup's functioning and the specifics of its area. If a startup works in a highly specialized area, the mass usage of its product will be limited to that area. The second condition means that a new product must be universal and very practical in use. The logistics of a product or service must not interfere with various physical and legal restrictions and must be accessible to its consumer.

The main success of a startup is an innovative idea, the novelty of the product and its fundamental differences from its predecessors or a combination of different, previously separate products. An idea that seemed impossible to implement earlier, today, due to the development of scientific and technological progress, may be one of the most progressive proposals and updates in a certain area.

Since the success of each startup depends on the idea of the project and its specific funding opportunities, the startup must be competitive in the market for goods and services from the beginning of the product's origin. As a rule, it requires significant capital to implement. Thus, a company that creates an innovative product actively seeks investors who will be interested in producing and selling the developed novelty. The essence of a startup is that it is a business entity that creates and commercializes a new idea. In fact, it is a new economic project that aims to develop emergently and generate super profits quickly as long as the startup company has a monopoly position in the new market segment. On a global scale, the startup project industry tends to grow rapidly. According to the Startup Genome, conducting annual rating of startup ecosystems, “the global startup economy continues to grow, creating $2.8 trillion in value between 2016 and 2018. This is a 206% increase from the previous period and more than double what it was just five years ago. This value creation is on par with a G7 economy and bigger than the annual GDP of the United Kingdom” [11].

Not only the number of projects is increasing, but also the overall investments in these projects. However, the development of startups, unlike the powerful structures of a transnational type of entrepreneurship, requires those resources and a customer network; newly created enterprises do not have any. Thus, the ideas of economical and lean production, implemented through the form of startup projects, arise [9] Lean Startup promotes experiments as an iterative process to reduce uncertainty, attract stakeholders and promote collective learning at relatively low costs [6].

Also, in order to attract factors of production, startups start to cooperate with corporations, which are now one of the main investors in startup projects. Large and powerful companies that operate in the market, often face certain problems, in particular, in the innovation sector, which is developing slowly through debugging and standardization of production. By contrast, startups have the highest level of innovation, flexibility in product development and dynamism in solution management. These companies are able to take risks, focusing on the fact that the winnings can generate huge profits. Thus, effective strategies of startups allow them to push out of the market the usual structures of transnational type of entrepreneurship.

This opportunity is considered by powerful companies as a possibility for cooperation in order to get innovative ideas and for monitoring products and services, which change the market situation. This additional way to new knowledge and technologies complements the own software solutions of transnational corporations. Global companies and international funds finance risk startup developments, and when new products, services or solutions are introduced to the market, they generate significant revenue. The advantages of this cooperation for start-up companies are levelling out the risks of the first phase of the product's life cycle, thanks to confidence in MNCs image, branding and established production-distribution-consumer relations.

As noted in [5], the launch of a startup is divided into stages: creation of a business product, market entry, scaling and success of a startup is determined by its increase.

It should be noted that the level of speed of product scaling in the conditions of the Fourth Industrial Revolution increases, especially this statement is true for new products in the field of information and communication technologies. In [11] are presented the main elements of a multinational company's management system and their interrelation in conditions of influence of Industry 4.0 components. Among the influencing factors are: virtual and augmented reality, cloud technologies and big data, Internet of Things, modelling, autonomous robots, additive technologies, integration and cyber security. The startup ecosystem in cooperation with a multinational company in the conditions of Industry 4.0 is shown in Fig.

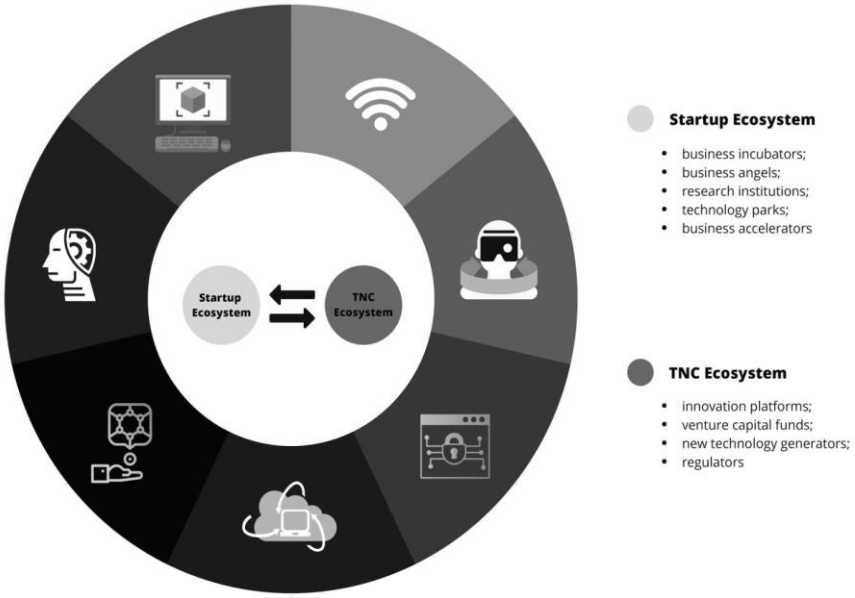

Figure – Startup Ecosystem in cooperation with a transnational company in the conditions of Industry 4.0

Source: formed by the authors on the basis of [11, 12, 13].

"Increasingly, these large platform-orchestrators — which include well-known corporations such as Apple, Facebook, Google, Microsoft and SAP — actively seek to undertake win-win collaborations with startups... However, it is no longer just IT and specifically software — corporations that are reaching out to startups; even corporations in traditional industries are doing so" [2].

The main difference of a startup is that due to the product development features, this project is designed to quickly capture the appropriate market niche. This is a crucial condition for creating each innovative project. Thus, not every newly created company is a startup. Thus, according to the World Bank, in 2017 Ukraine had 51.349 thousand newly created businesses [14], but there are only 263 startups for 2019 [15].

Unfortunately, Ukrainian companies are not represented as transnational, neither in the Forbes rating [16], nor in the Fortune rating [17]. The number of Austrian startup companies is similar to the number of Ukrainian ones (284 in Austria against 263 in Ukraine) [15], but the opportunities for cooperation with transnational companies differ significantly. Let us consider the possibilities of cooperation between structures of transnational type of entrepreneurship and start-up companies based on the example of Österreichische Mineralölverwaltung AG (OMV) [18; 19], an Austrian integrated oil and gas company headquartered in Vienna.

The history of OMV began on July 3, 1956, when the Soviet Minerals Administration (Sowjetische Mineralölverwaltung, SMV), a corporation

formed in the Soviet zone of occupation in postwar Austria, became "Österreichische Mineralölverwaltungs Aktiengesellschaft" and was officially registered in the commercial register. Four years later, in 1960, the company opened the Schwechat refinery near Vienna. In 1968 the first natural gas supply contract was concluded with the former USSR. At the end of 1987 15% of OMV was privatized, which made this structure the first in the public list of state companies in Austria [18; 19].

At the beginning of the 21st century the company opened its representative offices in Europe, acquiring about 10% of the Hungarian oil company MOL, as well as a division of the German company Preussag Energie, expanding its network. In 2004 OMV became the market leader in Central and Eastern Europe after the acquisition 51% of the Romanian oil and gas group, which was the largest acquisition in OMV's history [18; 19]. In the same year OMV increased its share capital, i.e. more than 50% of the company's shares went into free circulation for the first time. In 2006, OMV acquired a 34% stake in Petrol, a Turkish oil company. In 2007 OMV increased its stake in the Hungarian oil group MOL to 20.2%. OMV acquired the stake of Dogan Holding in Petrol at the end of 2010, increasing its stake in the company to 95.75%. Thus, this structure of transnational type of business increased the degree of its transnationalization.

In 2019, the company entered the "Fortune Global 500" for the first time as an Austrian MNC. Table shows the dynamics of the company's key performance indicators. Describing the performance indicators of this company, it should be noted that the dynamics of the profit level over the last five years is quite unstable. In 2015-16 there was a loss which is explained by the global fall of oil prices. And in 2017-18 the company's profit growth is observed, which directly corresponds to the growth of world prices for hydrocarbons. The company's assets have been showing variable dynamics over the years. Profitability of the weighted average and equity capital is very variable, which indicates the economic instability of the company's activity caused by the collapse of the oil market.

Table - Key economic indicators of Österreichische Mineralölverwaltung AG

Index	2018	2017	2016	2015	2014
Profit from operating activities (in a million EUR)	3 146	1 486	(230)	(1 909)	792
Net profit for the year (in a million EUR)	1 993	853	(183)	(1 255)	527
Total assets (in a million EUR)	36 961	31 576	32 112	32 664	33 855
Profitability of weighted average capital, %	12	6	0	(6)	3
Return on equity	14	6	(1)	(9)	4
Number of employees:	20,231	20,721	22,544	24,124	26,125
employees in Austria:	3,632	3,740	3,875	4,046	4,154

Source: Compiled by authors based on [18; 19]

The number of the company's employees is decreasing annually, which is explained by active involvement of innovative technologies in production and processing of oil products. Innovations in this direction reduce the number of employees of the company, which is observed both in Austria and abroad [18; 19].

Regarding the directions of cooperation of Österreichische Mineralölverwaltung AG with startup companies [18; 19], it should be noted that innovations and technologies are the key element in the implementation of the company's strategy. The transnational corporation OMV is always looking for innovative solutions to optimize operations, assess business opportunities and develop new business models. Investments in innovation, research, development and strategic partnerships are key to providing a long-term perspective for the business.

Thus, the main directions of OMV's innovation and technological development are:

1) Application of new technologies to continuously improve ripeness of mature fields and ensure high efficiency of oil and gas exploration and production, especially in difficult conditions.

2) Active research of new energy raw materials (e.g. production of synthetic crude oil from plastic residues), new technologies (e.g. production of hydrogen from renewable energy sources, hydrothermal liquefaction or

enzymatic conversion of CO2), and new products (e.g. modern liquid and gaseous products).

3) Close cooperation with leading international universities (e.g. University of Cambridge, Stanford University, Vienna University of Technology, University of Leoben, Johannes Kepler University of Linz, University of Natural Resources and Life Sciences, etc.) and international research institutes (e.g. Fraunhofer Society, Forschungszentrum Jülich, Austrian Institute of Technology, Joanneum Graz, etc.). Österreichische Mineralölverwaltung AG participates in a fruitful exchange with the world's leading industrial partners and research initiatives. Among these research institutions, a great number of start-ups are formed, which further develop their own ideas in the company's technological resource base.

4) The development of Innovation and Technology Centre (OMV Startups) in Ganserndorf, which was established in 2018. The Center is the base for creating opportunities for this TNC to cooperate with startups [18; 19].

Among other projects of OMV's portfolio of innovations and technologies we should mention startups cooperation within the framework of Smart Oil Recovery 3.0 program, where a certain technology was founded by students of Stanford University of Technology. They developed their own startup project, which was bought out by the Austrian corporation [18; 19]

The cooperation between OMV experts and external research institutes has yielded significant results, including improved integrity of facilities, improved production, reduced operating costs and reduced negative environmental impact. As for the impact of Industry 4.0 elements on the interaction of the TNC as examined structure, it should be noted that the digital transformation across the entire group of divisions of the company brings together numerous initiatives on advanced analysis, cyber-security, digitization of processes, automation, communication. According to the corporation's website [19], in order to promote digital transformation, OMV invests in a single digital platform and integrated data management, initiates the attraction of new talents, technological partners and cooperation with new startups in the future.

Conclusions. The study made it possible to determine that the application of cooperation opportunities between multinational companies and startups is sustainable. TNCs can even buy unprofitable startups because they can use a key resource — the intellectual talent of the startup team. As a result of an analysis of scientific work on ecosystem formation between TNCs and startups, it has been determined that cooperation between the latter is an important factor in strengthening the innovation component of economic development. The need for new scientific approaches to defining startup's development strategy in the Industrial 4.0 environment was identified, and the main elements of a startup ecosystem in cooperation with

a multinational company in the Industrial 4.0 environment were described. Possibilities of TNC`s structures cooperation with start-up companies in the conditions of development Industry 4.0 elements on the example of Österreichische Mineralölverwaltung AG (OMV) are considered.

The scientific novelty of the study is to explore the concepts of interaction of transnational structures with start-up companies and opportunities to expand their cooperation in the development of elements of Industry 4.0 in the Ukrainian economy. The practical significance of the results is to reveal certain prospects for expanding the opportunities for cooperation on the way of forming the value chain created by innovators. A prospective direction of further research is the peculiarities of formation legal relations between structures of transnational type of entrepreneurship and startup companies in the conditions of the Fourth Industrial Revolution and implementation of certain aspects in Ukrainian legislation.

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