

KNOWLEDGE AND ENTREPRENEURIAL SKILLS IN THE STARTUP ECOSYSTEM — THE CASE OF GEORGIA

WIEDZA I UMIEJĘTNOŚCI PRZEDSIĘBIORCZE W EKOSYSTEMIE STARTUPÓW — PRZYPADEK GRUZIJI

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ABSTRACT

Georgia, despite the country's specific and complex geostrategic position, continually tense political environment, diverse views on economic development among its society and many other issues, nevertheless resolutely strives towards an overarching national idea: liberation from Russian occupation, unification of the country, formation of a knowledge economy and European integration. Crucial for this idea is economic development, which in turn hinges in part on innovation. The pace and scale of innovation are shaped primarily by scientific research and entrepreneurial achievements. Robust economic development therefore requires universities to increase entrepreneurship and initiate change in the areas of science, technology development, and new technology start-up support in economic and social terms. In this article, we examine the strong relationship between the development of an appropriate ecosystem for start-ups and support for the process of new business formation in Georgia. Academic centers form one of the essential components of the ecosystem for start-ups in Georgia; their development guarantees access to knowledge and the ability to manage entrepreneurship, and the development of new companies, including innovative ones.

Key words: university knowledge, innovation, start-ups ecosystem

ABSTRAKT

Gruzja, pomimo specyficznego i złożonego położenia geostrategicznego kraju oraz wciąż napiętego otoczenia politycznego, zróżnicowanych poglądów na rozwój gospodarczy społeczeństwa i wielu innych kwestii, zdecydowanie dąży do nadrzędnej idei narodowej: wyzwolenia spod rosyjskiej dominacji, zjednoczenia kraju oraz ukształtowania gospodarki opartej na wiedzy i integracji europejskiej. Kluczowy dla tego pomysłu jest rozwój gospodarczy, który z kolei zależy po części od innowacji. Tempo i skalę innowacji kształtują przede wszystkim osiągnięcia naukowo-badawcze i przedsiębiorcze. Dynamiczny rozwój gospodarczy wymaga zatem od uczelni zwiększania przedsiębiorczości i inicjowania zmian w obszarach nauki, rozwoju technologii oraz wspierania start-upów nowych technologii pod względem gospodarczym i społecznym. W tym artykule przyjrzymy się silnemu związkowi między stworzeniem odpowiedniego ekosystemu dla start-upów a wsparciem procesu powstawania nowego biznesu w Gruzji. Centra akademickie stanowią jeden z podstawowych elementów ekosystemu dla start-upów w Gruzji, ich rozwój gwarantuje dostęp do wiedzy i umiejętności zarządzania przedsiębiorczością oraz rozwój nowych firm, także tych innowacyjnych. Przykład ekosystemu tworzonego dla start-upów w Gruzji jest doskonałym przykładem porównawczym dla dalszego rozwoju polskich ośrodków wsparcia biznesu, w sytuacji coraz mniejszych środków przeznaczanych na wsparcie rozwoju parków naukowo-technologicznych, inkubatorów, centrów transferu technologii i centrów innowacji w Polsce w porównaniu z poprzednimi latami.

Słowa kluczowe: zarządzanie wiedzą na uczelni, innowacyjność, ekosystem start-upów

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Introduction

The purpose of this article is to analyze the elements of the innovation ecosystem in the country of Georgia, such as knowledge and entrepreneurial skills, in relation to support for the process of new business formation. The article is both theoretical and practical in nature. The basic research method involves analysis of the subject literature, agenda-setting documents of Georgian government agencies, business support and development institutions and statistical information. The findings may be useful in the economic practice of institutions supporting science, as well as the development of knowledge-based companies.

In recent years, Georgia has made significant reforms to develop its national economic innovative ecosystem, although its impact on the

economy is still negligible. The discussion on a startup ecosystem for the formation of an innovative economy in Georgia focuses on the forms of cooperation between universities and businesses, the main "drivers" for generating and promoting innovative ideas and on identifying the main obstacles and trends for these relations.

The authors of many academic studies emphasize that knowledge and entrepreneurial skill play a significant role in building different management concepts of regions and entities operating in the regional market, offering innovative ideas and knowledge and intellectual property that are mechanisms in building competitiveness of enterprise (Etzkowitz, 2000, pp. 313–330; Lundvall, 2002, pp. 147–165; Nowakowska, 2010, pp. 129–159; Ornowski, 2010, pp. 161–166). The pace and scale of regional development depend on the pace of innovation development. The latter are shaped primarily by scientific and research achievements and opportunities for their diffusion in the local environment (Markowski, 2009, pp. 97–104). Kjellberg et al. indicate that the central role in the innovation process is played by the institutionalization of new knowledge (Kjellberg et al., 2015, pp. 4–12). Through technology transfer, universities support innovation of enterprises and thus contribute to economic growth in the region (Trzmielak et al., 2016, pp. 49–54). Nowakowska (2010, pp. 223–236), analyzing the territory as a place for building competitiveness of economic entities, indicates that the development of territories strongly highlights the relationship between the pace of change and the characteristics of the territory and interactions between the various entities (actors) occurring in the region. Gibson et al. (2012, pp. 35–50) argue that creative and innovative regions build relationships between specific actors — visionaries and leaders of innovation in the region from the three spheres of science, business and local government.

Knowledge and Entrepreneurial Skills at Universities and Ecosystem Impact

Recent literature has paid increasing attention to knowledge as a factor responsible for the socio-economic development of the most developed countries (Świadek, 2021, pp. 85–95). The innovativeness of countries and

their institutions is mainly reflected in the fact that the companies systematically implement new scientific and technical solutions and introduce new technologies and products to the market and within their organizations (Szopik-Depczyńska, 2018, pp. 22–23). Nonaka (2007, pp. 162–171) argues that the innovative capacity of enterprises is directly proportional to the efficiency of knowledge creation. The knowledge and entrepreneurial skills are associated with the effectiveness of knowledge creation, which is then transformed into new technologies. These two key factors that underlie the idea of this article are created and collected in scientific (academic) centers. There are different ways of systematizing the knowledge and entrepreneurial skills impact on the start-up ecosystem. We would like to emphasize the relationship between the development of knowledge and entrepreneurial skills acquired in scientific (academic) centers and the socio-economic and cultural elements of the ecosystem (Thore & Ferrao, 2002, pp. 277–290). Knowledge and technology should be understood as a kind of wealth that influences the economic, social and cultural status of an entrepreneur, a region or a country. Technological innovation stimulates productive capacity and competence, but technology must be linked to commercial needs. Therefore, skills are needed to manage know-how, knowledge and technology transfer, and applied research in order to successfully implement a commercialization strategy. This enables rapid adaptation to market changes. When considering the implementation of R&D activities and their success, factors related to efficiency, effectiveness, productivity and profitability must also be considered (Mallak, 1999, pp. 3-37-3-44; Trzmielak, pp.79–85).

The role of universities and research centers in creating new ideas, transforming them into technologies and new solutions, is also emphasized in the theoretical and practical considerations, innovation system, and innovation culture operating in academic research centers support the links between the science and business. Albers and Hidalgo (2007, pp. 3–17) and Christensen and Eyring (2011, pp. 20–24) emphasize that universities are a key element in the ecosystem for innovative companies because their "DNA" consists not only in not only the similarity of institutions, but also in their high stability, which has evolved over hundreds of years. The replication of that "DNA" occurs continuously because each student and doctoral candidate, as a subject of the ecosystem, can be replaced by

a person checked against the very same criteria that were applied to them. At the same time, the way knowledge and skills are built is not the performance of the tasks by individual preferences, but by institutional procedures written in a general code.

The innovation ecosystem may or may not motivate scientists to prepare projects of new technologies aimed at implementation in industry, obtaining funds for scientific research and creating technology companies, especially academic firms (spin-off or spin-out). The culture of innovative entrepreneurship is also shaped by legal regulations related to intellectual property (Trzmielak, 2012, pp. 54–66). The experience and skills contribute to maintaining a close relationship between the demand and supply side of new technologies. As Jolly points out (1997, p. 15), building links between the commercialization process and the entities involved in it is crucial because the entities involved in technology transfer may have different objectives. A failure to accumulate knowledge, experience and skills can lead to a distortion of the technology transfer process. It may not culminate in the introduction of a product or service to the market in such a way as to be considered a successful product or service. Knowledge must be expanded and replicated, keeping it current and accessible to an ever-increasing number of users. This is a fundamental factor in the development of enterprises in the era of R&D products. Gierulski et al. (2020, pp. 16–17) point out that the practical use of knowledge in enterprise operations is linked not only to entrepreneurial skills but also to competencies. The latter are created when scientific and research centers become involved in the creation of new technological companies. Generally, the support for startups should include the transfer of knowledge and skills from academic centers to enterprises and the creation of relationships between research centers — enterprises — business support organizations for the creation of competencies in enterprises during their operations.

Kozmetzky et al., (2004, pp. 39–48) argued that the implementation of new technologies results from a high level of science, and factors such as knowledge and innovation must result from the integration of social entrepreneurship. Knowledge and technology created in scientific centers are often the basis for the creation of new products and services and provide an opportunity for sustainable economic development and enterprises. The basis of new companies (often academic) can be the results

of research, know-how and technologies created in scientific centers. However, the most important task that the ecosystem has to fulfill is to enable business formation and development. Modern universities provide many opportunities that are absent on the knowledge market, skill in terms of a multiplicity of technology and market niches, and multiplicity of emerging start-ups and their supporters (Thore, 2020, pp. 39–48). Therefore, Kozmetsky calls knowledge and entrepreneurial skills the wealth of the organization (the future organization). The knowledge and skills built at the universities must be supported by appropriate innovation policies, entrepreneurial culture and business-related infrastructure. Manion and Cherion (2009, pp. 71–85) indicate that "fresh opportunities", new opportunities for entrepreneurial "actors" are the most important thing to improve the quality of life and operation of entities. New firms (start-ups) are relatively poor in resources, and in particular lack experience and understanding beyond the fields of their new technology and products (van Geenhuizen et al., 2015, pp. 145–164). For these reasons, entrepreneurial knowledge, skills and competencies, and the ability to build market competencies are important and perhaps even crucial in building an ecosystem to support start-ups.

The Startup Ecosystem in Georgia

Among the many challenges facing modern organizations, one of the most crucial is the need to increase their innovativeness (Kamińska, 2020, pp. 71–85). In the broader economic world, the European Union, and more specifically in countries such as Georgia, innovation is seen as a key factor contributing to the growth of competitiveness of organizations and economies. As indicated in the previous chapter, the DNA of innovation is knowledge and skills created and obtained from scientific centers. Various scholars argue that the key to building a knowledge-based economy in 2022 and beyond will be the sustained growth of start-ups based on knowledge transfer from research, academic centers and business support organizations.

Georgia does indeed have the basis for such development — a claim that is supported by various data. Among the ten indicators the World Bank

uses to evaluate the economy, Georgia scores highest in terms of starting a business. The country has made significant progress in reviving its economy (PricewaterhouseCoopers Georgia, 2020). As a result of the reforms implemented, the Georgian economy has made significant progress in recent years (Table 1). Georgia's ranking in the Ease of Doing Business 2020 among the 190 countries (World Bank Group, 2020. p. 5) covered by the World Bank Group annual report is 7th, with a score of 83.7 points. According to the Global Competitiveness Index (p.18), Georgia lags slightly behind its neighbors but according to the index of economic freedom, it has a much better indicator (Georgia — 75.9 points, Azerbaijan — 65.4 points, Armenia — 67.7 points) (Miller *et al.*, 2019, p. 18). Georgia is also ahead of its neighbors in the Global Innovation Index. According to the data for 2019, Georgia was among the 50 most innovative countries in the world and took 48th place (*Global Innovation Index 2019*, xxxiv). In addition, Georgia has a favorable tax system. According to the Global Competitiveness Index of the World Economic Forum 2018, Georgia ranks 8th in total taxes (16.4%) (World Economic Forum, 2018).

Table 1. Scores ranking innovation in the Georgian economy

| Country | (Doing Business 2020) | (Global Competitiveness Index 2019) | (Index of Economic Freedom 2019) | (Global Innovation Index 2019) | (Human Development Report 2019) |
|---------------|-----------------------|-------------------------------------|----------------------------------|--------------------------------|---------------------------------|
| Georgia | 7 | 60.6 | 75.9 | 36.98 | 0.780 |
| Ireland | 24 | 75.1 | 80.5 | 56.10 | 0.938 |
| Israel | 35 | 76.7 | 72.8 | 57.43 | 0.903 |
| Costa Rica | 74 | 60.2 | 65.3 | 36.13 | 0.794 |
| Ukraine | 64 | 57.0 | 52.3 | 37.40 | 0.751 |
| Turkey | 33 | 62.1 | 64.6 | 36.95 | 0.791 |
| Armenia | 47 | 61.3 | 67.7 | 33.98 | 0.755 |
| Singapore | 28 | 84.8 | 89.4 | 58.37 | 0.932 |
| Azerbaijan | 34 | 62.7 | 65.4 | 30.21 | 0.757 |
| Estonia | 18 | 70.9 | 76.6 | 49.97 | 0.871 |
| Great Britain | 9 | 81.2 | 78.9 | 61.30 | 0.922 |

Despite these achievements, unemployment and poverty remain the main problem for the country's economy. Activation and development of

entrepreneurial activities requires improvement of the startup ecosystem, access to business finance, and successful cooperation between the universities and the business sector. Since 2014, Georgia has created several programs and agencies that promote the entrepreneurial ecosystem in the country and try to create more opportunities for start-up or existing businesses to access finance and knowledge. One of the main players on that field is the Georgian Agency for Innovation and Technology (GITA), which offers start-ups different programs. These programs are focused on innovative and high-tech projects, whose aim is to stimulate the use of innovations and technologies in various fields and to commercialize innovative, high-tech products in the international market.

In 2016, GITA opened Technoparks in Tbilisi, Zugdidi and Telavi. Then in Batumi, Kaspi and Gurjaani, which are high-tech space and allow start-ups to access technological infrastructure. GITA's mission is to form of an ecosystem which improves all kinds of innovations and technologies in the country, to promote a commercialization of knowledge and innovations, to stimulate using them in all fields of economy, to create an environment for the growth of innovations and high-tech products, and develop high-speed internet nationwide.

GITA currently provides the following grants for the implementation, prototyping and co-financing of innovative ideas: Small grant for organizing events. The project finances the organization of workshops to promote innovation and technology development, exchange of information, share experiences and strengthen the local innovation ecosystem (maximum amount GEL 5,000 — approx. 1,500 EUR):

- Small grant for prototyping. The project finances the creation of a prototype of an innovative product/service with commercial potential, testing, revision and/or improvement of an existing prototype (maximum amount GEL 5,000);
- Co-financing grants for startups. Their aim is to stimulate the emergence of innovations and innovative enterprises through the development-assimilation and commercialization of innovative products and services with international potential. The grant is intended for the start-ups, private and small enterprises, less than two years after

registration. Funding is intended for maximum one-year projects and does not exceed 90% of the project budget or 100,000 GEL (approx. 30,000 EUR).

To date, a total of 534 start-ups applied for the program, of which only 65 applications were accepted in the competitive procedure (12.2%). In order to support the development of entrepreneurship, in June 2014 a joint program of the Ministry of Economy and Sustainable Development of Georgia and the Ministry of Agriculture was launched — the state program known as "Produced in Georgia." The program aims to develop and support entrepreneurship, to encourage the creation of new enterprises, and to increase export potential in the country. Its goal is to improve the business environment, develop the private sector, popularize Georgia's investment climate, and promote exports. The "Produced in Georgia" program combines three components: local production, exports, and investments. Since 2014, "Produced in Georgia" has supported up to 12,000 beneficiaries in starting and developing a business. To address the economic challenges posed by the spread of the novel coronavirus (COVID-19), the agency has made changes to its program and added 6 new economic activities to its list of priority areas. These include creating computer games, hospital operations, general practice, specialized medical practice, dental practice, and purchasing and renting of film production equipment.

"Start-up Georgia"¹ was established on May 11, 2016 by the Georgian Innovation and Technology Agency and the Partnership Fund, with the main goal of developing and co-financing high-tech business ideas. The amount of co-financing available from Startup Georgia is defined from 15,000 GEL to 100,000 GEL. Participation in the project is possible in cash and non-cash form; however, the applicant's cash contribution must be at least 10% of the total project budget. Start-up Georgia remains a partner of the joint venture for a period of not more than 10 years; however, the duration is individual for each project, depending on its specifics. Since 2017, more than 100 start-ups have received co-financing under the project.

In 2020, the Georgian government received \$23.5 million from the World Bank Group to develop the GENIE (Georgia National Innovation Ecosystem)² project, which has the aim of improving the innovative

activities of firms and individuals in the borrower area. Improving the innovation performance of individuals and SMEs consistently contributes to increasing business participation in the digital economy. The project should promote an integrated approach to the development of the Georgian National Innovation Ecosystem in the following components:

- Component I envisages the development of innovative infrastructure and includes: a) the development of a network of Regional Innovation Hubs (RIH) and Community Innovation Centers (CIC) in selected cities, towns and villages in Georgia; b) Broadband-for-Development (BfD) program to support the acquisition and use of large-scale Internet services and advanced information technology — by relevant households, micro, small and medium-sized enterprises (MSMEs) with a focus on rural areas; C) piloting and, if necessary, implementing the BfD program, implementing BfD payments and related training;
- Component II includes service delivery, in coordination with Innovation Centers (CICs) and Regional Innovation Centers (RIHs). It should provide training and technical assistance to develop individual digital economy skills and be tailored to project beneficiaries to support firms that receive financial assistance under various grant programs at various stages of the innovative ecosystem.
- Component III provides funding for innovation, which should support: a) providing matching grants, the selection of appropriate MSMEs to receive matching grants, and oversight; b) providing technical assistance for the preparation and implementation of authorized MSME projects; c) issuing applied research grants for selected science through the Shota Rustaveli National Science Foundation (Foundation) of Georgia³; d) providing technical assistance and related costs to the Foundation for the administration of the Applied Research Grants Program, as well as to GITA and Enterprise Georgia, to support MSME;
- Component IV provides support for project implementation and aims to implement all components of the project effectively.

In close cooperation with the relevant institutions, GITA is the central institution responsible for the implementation and coordination of the project, which serves the Ministry of Economy and Sustainable

Development of Georgia (MoESD). GITA is committed to assisting aspiring entrepreneurs and providing advice on issues such as customer concerns, product (service) overview, development stages, market size and growth, target market and segmentation, go-to-market strategies, competitive environment and advantages, financial forecasts, financials, and operational capabilities. There are also many other donors and initiatives in the country which are not systemic. The most distinctive is the 500 Startups acceleration program.⁴ This largest accelerator was introduced in the country in partnership with the Bank of Georgia and the Innovation and Technology Agency. 500 Startups is a start-up accelerator based on "Silicon Valley", which has already invested in more than 2,400 companies. Its capital today exceeds \$600 million. The accelerator portfolio includes companies that have been operating successfully on the world market for years and have a turnover of millions of dollars, including for instance "Credit Karma", "Canva", "Ipsy", "Udemy", "Gitlab" and others.

The 500 Startups — Georgia program started in early 2020, and now the acceleration program for the first stream has reached the final. The top 5 selected from the first stream are: "Nextsale", "Cargon", "Cardeal", "Phubber" and "Stack". Before the final stage, each start-up went through different types of training and masterclasses, which helped them refine their ideas. Registration for the second stream of the program 500 Startups — Georgia has already begun.

University knowledge and Georgian perspectives

The ongoing process of start-up ecosystem development has brought the issue of creating relevant innovative infrastructure in Georgian universities and developing the necessary entrepreneurial start-up skills and knowledge to the forefront. An important task for higher educational institutions in Georgia today is to unite teaching, research and entrepreneurial activities, generate income from such activities, and train appropriate personnel for certain high-tech sectors of the real economy. For a significant section of Georgian universities, the priority strategic goal

(and not an additional advantage) is the formation of the university as a center for the creation and development of innovations, as an effective part of the country's innovative economic system.

Business incubation and acceleration is one of the most effective tools for the development of this strategy, which, together with the internationalization process, gives every student and scientist the opportunity to acquire the necessary entrepreneurial and start-up skills and develop innovative ideas at the university. The universities of Georgia actively working in this direction are as follows:

- University of Business and Technology (BTU), a young university created in the "Tbilisi Silicon Valley" space — one of the most high-tech spaces in the region with a rapid pace of development. BTU operates an Entrepreneurship Center with the EFSE (The European Fund for Southeast Europe) implementing a pre-acceleration program (conducts masterclasses, hackathons, demo days). It aims to help local technology start-ups acquire the skills needed to develop and manage a business, to be able to commercialize and internationalize their own ideas;⁵
- Georgian Technical University, which is one of the oldest universities in Georgia with a strong school of applied research. Since 2014, the University has been developing the Commercialization Department.⁶ The University also operates an Innovation Center, where project proposals for innovative research and entrepreneurial work, copyright and licensing, transfer and commercialization are being developed. The Center actively cooperates with various international donor organizations. On May 28, 2020, the project idea of a university student team — "Contacting Agro-Cam" won the global project "Competition of Big Ideas 2020" within the framework of the Georgian-British program "Creative Spark". (The project is supported and funded by the British Council);
- Ivane Javakhishvili Tbilisi State University, which is the first national university in the Caucasus (1918). The University has a scientific support unit — the Center for Knowledge Transfer and Innovation. The center also includes a fab-lab for prototyping products⁷. The main goal of the center is to support the development of entrepreneurial skills and

to give each scientist and student the opportunity to develop the necessary entrepreneurial and start-up skills, to help them in the implementation and development of their activities;

- In 2020, a new International University (KIU) was opened in Kutaisi, which received the first stream of students. The University aims to become an international center for education, innovation and technology in the region and to promote innovation and entrepreneurship in the region through a cluster hub.

The need to create an innovative infrastructure, as well as to introduce and develop targeted research and entrepreneurial (business) skills in curricula, is being actively discussed in Batumi State University, Sokhumi State University, Kutaisi State University and other private higher education institutions. The main challenges on this field are the following:

- Development and popularization of vocational training. Increasing the level of knowledge in the interaction between business and education;
- Implementation of teaching methods based on modern technologies. Providing laboratory research in the field of technology;
- Deepening knowledge in the field of ICT and compliance with international standards;
- Integration of entrepreneurial and startup management skills into training programs. Raising awareness of intellectual property rights;
- Formation of pre-accelerators, accelerators and incubators on the basis of universities. The organization of events and meetings with start-ups and investors;
- Transformation of educational and research activities, the process of its commercialization into an innovative model.

Universities interested in developing start-up skills and knowledge acquisition are actively developing methods for analyzing the start-up ecosystem in Georgia, generating ideas, lean startup, KPI Analytics, strategic marketing (Customer Research and Idea Validation, Sales, Advertising and Customer Success), legal and accounting matters, investor relationship, Powerful Pitching. They organize workshops, hackathons, and demo days.

Researchers and practitioners agree that the success of small and medium-sized businesses is closely correlated with the skills and abilities of the entrepreneur. New and successful projects in the innovation ecosystem play an important role in the economic development of the country, creating new employment opportunities, improving the political and social environment, and ensuring the country's competitiveness, sustainable and inclusive economic growth.

A strong start-up ecosystem contributes to the formation of a culture of innovation in the country and, consequently, to the innovative development of the economy, as evidenced by the developed countries of the world: Israel (the world leader in the number of start-ups per capita; third place in the world in the number of start-ups in the field of artificial intelligence; exports of \$6.5 billion worth of cybersecurity products per year); Great Britain (manages the third largest techno hub in the world and the leading techno hub in Europe; third country in the world with a perfect global ecosystem); Ireland (world-class business hubs and accelerators for Fintech, Biotech, Med tech and ICT).

Conclusions

The aim of this article was to present the relationship between the use of knowledge and entrepreneurial skills within the ecosystem for start-ups in creating support mechanisms for innovation growth on the example of one selected country in the Caucasus. We conclude that greater attention should be paid in Georgia to the still inadequate flow of scientific and technological solutions into practice, resulting from an insufficiently developed ecosystem for innovation. Today Georgia is fighting the COVID-19 coronavirus together with the rest of the world, which seriously hinders the country's economic development. However, the process of forming a start-up ecosystem in Georgia has been actively ongoing for the last 9–10 years. The market is ready to finance innovative and digital solutions during this period, but at this stage the country is facing a number of problems that require further refinement:

- Given the existing business climate and human resources in Georgia, attracting foreign investment in innovation and research remains one of

the key strategies for accelerating economic growth. This strategy will encourage the creation of a high-value workforce and will also contribute to the reform of the education system. Cooperation with globally recognized global corporations will attract other corporations to enter the Georgian market and increase the country's competitive advantage.

- A safe environment needs to be created for investors. As a result, different types of international investors will come to the country, the methods of obtaining alternative financing will be diversified and expanded, and the country will no longer be so heavily dependent on government programs.
- There is a need for expert evaluation of the country's key institutional framework programs and projects to support entrepreneurship development.
- The state should not only issue various types of grants/loans, but also create an attractive environment to achieve the goal of maximum involvement of the private sector and foreign investors. It should also ensure the relationship between entrepreneurs with insufficient capital and business "know-how" and thus ensure the development and improvement of the entrepreneurial ecosystem.
- Integration and development of entrepreneurial education in the curricula and programs of universities remain relevant.
- The universities should develop human capital, provide entrepreneurial education for start-ups and provide this process with incubators and accelerators.
- Start-up Accelerators and various programs should try not only to receive financial assistance, but also engage in active mentoring, training, coaching and improving the skills of start-ups.

In parallel with building a start-up innovative ecosystem, the Government of Georgia has also been actively seeking state subsidies in recent years to develop the business development support system. However, it is important to identify the effectiveness and additional needs of the state for such activities. International and domestic surveys, as well as surveys of start-ups participating in various programs, confirm that one of the main challenges in Georgia is to receive the formal or non-formal

education necessary for the development of knowledge and entrepreneurial skills. The lack of knowledge and entrepreneurial skills are the main reason for non-financing of start-ups by investors.

For the next stage of our research, it is also very important to analyze where start-up ideas are created, how often start-ups turn to the various means of obtaining funding available, how easy it is for them to obtain funding, what challenges they face at each stage of development and how to accelerate the development and diffusion of innovation by effectively using the knowledge accumulated in academic centers.

Endnotes

¹ Start-up Georgia 2020. www.startup.gov.ge

² The World Bank. Projects and Operations 2020. <https://projects.worldbank.org/en/projects-operations/project-detail/P152441>

³ Shota Rustaveli National Science Foundation of Georgia. <https://rustaveli.org.ge>

⁴ 500 Georgia accelerator program. <https://ecosystems.500.co/500georgia>

⁵ Business and Technology University. <https://btu.edu.ge/en>

⁶ Georgian Technical University. <https://gtu.ge/Commercialization>

⁷ Ivane Javakishvili Tbilisi State University. https://www.tsu.ge/ge/research/institutes_centers/a15mmb0_jkq9b95jg/yruy3qbhaitkeiny9

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