Vasil Kikutadze, Murtaz Kvirkvaia, Natia Daghelishvili,

Givi Gujaraidze, Tamar Tavkhelidze

THE STUDY OF COOPERATION BETWEEN HIGHER EDUCATION INSTITUTIONS AND EMPLOYERS IN GEORGIA

Tbilisi, 2022

The main participants of the project:

- Vasil Kikutadze - project manager;
- Murtaz Kvirkvaia – coordinator;
- Natia Daghelishvili – researcher;
- Givi Gujaraidze - researcher;
- Tamar Tavkhelidze - researcher.

Editor: Slava Fetelava

Doctor of Economics (PhD),

Associate Professor at Grigol Robakidze University.

Head of Economic Competition Protection Department

at Georgian National Competition Agency

The presented monograph **„The study of cooperation between higher education institutions and employers in Georgia"** is reviewed and recommended for publication by the scientific research center of Grigol Robakidze University (Conclusion #01-18/174, 21/12/2021).

The views expressed in this publication are those of the authors and do not necessarily reflect the official position of the Foundation.

უაკ (UDC) – 378 (479.22)
კ-49

Contents

Editor's Page

The present research was prepared at Grigol Robakidze University within the framework of the grant funding provided by the Shota Rustaveli National Science Foundation for fundamental research.

The grant research project was implemented and a monograph was prepared under the guidance of a group of experienced researchers and with the involvement of young researchers: Vasil Kikutadze, Doctor of Economics, Affiliated Associate Professor at Ivane Javakhishvili Tbilisi State University (Project Manager), Murtaz Kvirkvaia, Doctor of Economics, Affiliated Associate Professor at Kutaisi International University (Project Coordinator), Natia Daghelishvili, Doctor of Business Administration, Affiliated Associate Professor at Grigol Robakidze University (Researcher), Givi Gujaraidze, Affiliated Assistant at Grigol Robakidze University (Researcher), Tamar Tavkhelidze Affiliated Assistant at Grigol Robakidze University (Researcher).

The prepared document/monograph, The Study of Cooperation between Higher Education Institutions and Employers in Georgia, deals with a specific issue and, in our opinion, it will occupy a prominent place among modern research papers. It outlines the problems of cooperation between educational institutions and employers in Georgia and offers specific recommendations and conclusions in the direction of mutually beneficial cooperation.

There is no dispute over the fact that the highly qualified specialists who are in high demand in the relevant markets are the basis of the country's economic development. This is achievable in the presence of an education system that meets modern standards (preparation of the specialists who meet the requirements of employers). Clearly, the transition from a planned to a market economy, which began in Georgia in the early 1990s, along with a number of other important processes, put the need to reform the Soviet education system and introduce a new staff training system on the agenda. Consequently, since the need to reform the education system was recognized by the government of the country from the very first days of gaining independence, the practical realization of this process is still going on continuously. However, as the study shows, the competitiveness of graduates of higher education institutions in the labor market of the country is still low. It is therefore necessary to modernize the higher education system in accordance with modern requirements (approximation of theory and practice) in order for the system to respond to the needs of the market in a timely manner.

The first part of the study, which deals with "Conceptual foundations of cooperation between higher education institutions and employers" and "Problems of relevance between higher education and the competencies required for employment," thoroughly reviews the relevant scientific literature. Scientific opinions of researchers who are well-known in this field (Teichler, Abreu, Grinevich, Hughes, Kitson, Koria, Salimaki, Sotamaa, Etzkovic, Rakowska, Pavlin, Melink, Radovic, Djuraskovic, etc.) and their assessments on cooperation between universities and the business sector are studied. Examples of innovative, well-functioning, and successful cooperation between academia and business, such as the famous Silicon Valley case, collaboration between Microsoft, Cisco and Intel with the University of Melbourne, the case of Aalto University (Finland, Helsinki) on the formation of a new scientific-practical environment; partnership between IBM and Zurich Higher School of Technology, cooperation between British Petroleum and the US Energy and Bioscientific Institute and others are focused on and highlighted. The process of introducing and developing a widely used model of triple cooperation (the Triple Helix model) among universities, businesses, and government is described. The mismatch between labor demand and supply is discussed, and the results of a study conducted in the southern Balkan countries in this direction (horizontal and vertical discrepancies) are presented. In addition, to identify the areas of skills mismatch, the study conducted

by the European Bank for Reconstruction and Development and the World Bank in 2010, covering 21,000 companies in 29 countries in transition economies is analyzed. According to the study, "problems are below average but still severe in Croatia, Georgia and Turkey." Finally, this part of the study shows that if private companies and universities work in tandem to push the frontiers of knowledge, they become a powerful engine for innovation and economic growth and have a positive impact on teaching and learning.

The research objective and, accordingly, the research task and the focus groups are determined in the second part of the study. In addition, mechanisms for collecting data are outlined and the methodology for statistical processing of the received data is presented.

The third part refers to the key findings of the research and their discussion and it includes three sections. The first one (Analysis of international experience of cooperation between higher education institutions and employers) discusses the best examples of the countries both influenced by the Soviet past (Estonia, Finland, Poland) and market economies (free from the Soviet influence) (US, UK, Germany, South Korea). While the current situation in Georgia in this regard is thoroughly reviewed in the second (Cooperation between higher education institutions and employers in Georgia) and third (The model of cooperation between employers and higher education institutions in Georgia) sections. The results of the surveys (survey of employers, survey of graduates, and survey of higher educational institutions) conducted by the authors are thoroughly presented. Based on these results, the authors conclude that "the model of cooperation between employers and higher education institutions in Georgia is at an early stage of development. The existing model is based on several aspects of poorly developed cooperation (internships, a number of joint activities, etc.) which cannot provide the positive effect that perfect cooperation can ensure." In addition, the authors based on in-depth analysis of the results of this research (the study of foreign experience, analysis of the works of Georgian and foreign researchers, and results of a survey conducted by the authors) have proposed a model of cooperation between higher education institutions and employers in Georgia.

Finally, the opinions expressed in the study and the obtained results are generalized in the concluding part of the paper (Conclusions and recommendations), where conclusions and recommendations of a practical nature are provided.

To summarize, the research style and results merit praise because their authors, based on in-depth knowledge of the issue (processing a large amount of information) and practical experience (working at the university), freely and effectively use critical thinking methods and offer important considerations based on the use of a wide range of scientific tools (literature review, survey, etc.).

Slava Fetelava

Doctor of Economics (PhD),

Associate Professor at Grigol Robakidze University,

Tbilisi, December 5, 2021

Introduction

Reforms have been permanently carried out in Georgia for the development of the higher education system and labour market and they are still being implemented. In general, any reform in this field is aimed at promoting the training of competitive and skilled workforce for the labour market. Obviously, the implemented reforms resulted in some changes to the higher education system. However, the competitiveness of graduates of higher education institutions (HEIs) in the labour market and youth employment rates are still very low. For example, in 2020 the unemployment rate in the country was 18.5%; furthermore, the unemployment rate has not changed significantly for the last ten years[1]. Therefore, it is obvious that for the Georgian population, unemployment, as well as inefficient employment of the economically active population, remains one of the most acute problems of recent decades. This issue is especially pressing when it comes to youth employment, as the unemployment rate among young people is much higher than the average unemployment rate in the country [2].

Based on the study of international experience and the studies of individual components of the labour market in Georgia, it can be noted that the horizontal and vertical mismatch between labour and jobs leads to low productivity, low wages, low level of job satisfaction and other negative effects. The solution of these problems can be facilitated by deepening cooperation between HEIs and employers. Cooperation between HEIs and employers is based on the drivers of economic prosperity, such as innovations, foreign direct investments (FDI), human capital, scientific infrastructure, intangible assets, knowledge transfer, intellectual property, etc. In modern conditions, higher education needs to be modernized to reduce the distance between theory and practice and allow the system to respond to market needs. Therefore, intensification of communication between these two sectors and encouraging joint activities in research and development (R&D) is very important. Higher education institutions represent an important factor for the economic growth and social security of the country. However, in this system, higher education represents the interests of only some stakeholders and for achieving high economic results the involvement of the business sector and the state is also needed[3].

Strategic support and stimulation of the development of a new model of collaboration with employers is considered to be one of the main challenges for the modernization of the higher education system in Georgia today. Therefore, considering the overall goals of the research, studying international

---

[1] http://geostat.ge/ - National Statistics Service of Georgia

[2] As of 2020, unemployment rate among young people aged 15 to 24 was 27.8 per cent, and 21.3 per cent for those aged 25 to 34

[3] Rakovska, N., Pavlin, S., &Melink, M. (2014). *Assessment of cooperation between higher education institutions and employers in Europe*. European Commission;

experience in a given context and sharing the best examples seems to be very interesting. Cooperation between higher education institutions and employers can play an important role in the introduction of innovations; the implementation of joint projects and research; providing continuing education, and developing educational programmes tailored to the demands of the labour market.

In Georgia, significant measures have been permanently taken for the development of the higher education system and the labour market for the last three decades. Primarily, this aims at promoting the training of a competitive, skilled workforce for the labour market, while, on the other hand, contributing to improving the compliance of the education system with the challenges of the modern labour market. However, there are still many unsolved problems and obstacles in these areas that need to be identified, evaluated and development of solution mechanisms.

Georgian legislation in the field of education requires higher education institutions to provide students with appropriate practical and theoretical education, taking into account the requirements of the labour market. However, for various reasons, this requirement is only partially implemented. Very often, educational programmes offered by higher education institutions and the number of programme graduates are not in line with the requirements of the labour market and fail to take into account the current and future requirements of the employer. The studies of separate demand components in the labour market[4] confirmed that requirements of employers are not consistent with the specialties provided by HEIs and there is no matching between the labour market and the higher education system[5].

It is unanimously agreed in Georgia that the adaptation of higher education institutions to the labour market is of high importance. In addition, it is clear that inadequate cooperation between higher education institutions and employers to some extent causes the problems associated with high levels of youth (including the graduates) unemployment, vertical[6] and horizontal[7] mismatch between the knowledge and qualifications of the graduates and job requirements, as well as the long period of time the graduates of higher education institutions need for professional adaptation, etc.

---

[4] Aroshvili, A. (2017). *Antisocial Policy in Georgia: Education and the Labor Market (part II).* Human Rights Education and Monitoring Center.

[5] Young Scientists' Union Intellect (2016). *The study of the labor market.* Batumi.

[6] A situation when the level of education or qualification is less or more than required.

[7] A situation when the level of education or qualification matches job requirements but the field of education or skills is inappropriate for the job.

Due to the urgency and importance of the issue, the aim of the research was to study the forms of collaboration between higher education institutions and employers, as well as to evaluate the results of collaboration and identify the forms and directions of mutually beneficial cooperation. The research was carried out in several stages: initially, scientific literature and studies conducted in different countries around the world were reviewed. International experience of collaboration between higher education institutions and employers was analyzed at the same stage. Surveys of higher education institutions, employers, and graduates were conducted on the next stage. At the final stage of the research, the collected data was processed and a unified database was created. As a result, conclusions were made and recommendations were developed. Quantitative and qualitative methods were used in the research process; the research area covered private and public higher education institutions, employers, and graduates of higher education institutions in Georgia.

Tables

Schemes

Diagrams

Graphs

Abbreviations

AIP	Entrepreneurship Incubators
BHEF	The Business Higher Education Forum
BIBB	The Federal Institute for Vocational Education and Training
BP	British Petroleum
CKI	Centre of Knowledge Interchange
CKTT	Centre for Knowledge and Technology Transfer
DARPA	Defense Advanced Research Projects Agency
EBI	Energy Bioscientific Institute
EaP	Eastern Partnership
GUT	Gdańsk University of Technology
HEI	Higher Education Institution
HEIF	Higher Education Innovation Fund
IP	Intellectual Property
FDI	Foreign Direct Investment
JAMK	Jyväskylä University of Applied Sciences
KAIST	Korea Advanced Institute of Science and Technology
LJMU	Liverpool John Moore University
OECD	Organization for Economic Co-operation and Development
Off-JT	Off-the-job Training
OJT	Practice of on-the-job Training
PARC	Palo Alto Research Center
PISA	International Student Assessment Program
POSTECH	Pohang University of Science and Technology
R&D	Research and Development
SKKU	Sungkyunkwan University
SPV	Special Purpose Vehicle
UBC	University and Business Collabouration
UR	University Relations
UT	University of Tartu

Part 1. Literature review

1.1 Conceptual foundations of cooperation between higher education institutions and employers

Recently, higher education institutions (HEIs) have been actively moving towards closer cooperation with employers. However, choosing the right system is the main problem in the process of such transformation. The current traditional system of collaboration between HEIs and employers usually includes the following main forms of collaboration: joint lectures and research projects, seminars and conferences, establishing joint organizations, cooperation with career development centers, attraction of graduates, financial support, etc. However, although such format of cooperation seems to include various forms, HEIs factually often fail to provide graduates with skills relevant to the requirements of the modern labour market, which is a key indicator for evaluating relationship between higher education institutions and employers. Therefore, the issue of modernization of the cooperation system between higher education institutions and employers is put on the agenda. For HEIs, this process can be considered as the Third Mission and to fulfill their mission HEIs have to make effort to achieve greater community involvement in the teaching and research processes. This process is impossible without technology transfer, interdisciplinary training, achieving synergy in business-government collaboration, a comprehensive analysis of innovation management and employment issues.

In academic literature, which studies the relationships between the university and the business sector a significant focus is made on the multifaceted role that the university plays in stimulating innovation and economic growth[89]. However, researchers and analysts believe that collaboration between higher education institutions and the business sector is still at an early stage of development in many countries of Europe and Asia[10]. According to the scientific community, the study of this relationship is significantly hampered by the lack of information (in particular quantitative characteristics) about systemic interactive relationships that the higher education sector has with other organizations[11]. In addition, there is a lack of literature that focuses on assessing and analyzing the benefits of collaboration between HEIs and businesses in various aspects. The research papers related to that topic mainly focus on analyzing the existing cooperation in terms of research and innovation and in many cases, are limited to describing the forms of cooperation. They are less active to study the

---

[8]Cosh, A., Hughes, A., &Lester, R. K. (2006). UK plc: Just How Innovative Are We? Massachusetts Institute of Technology Working Paper Series.

[9]Kitson, M., Howells, J., Braham, R., & Westlake, S. (2009). The Connected University: Driving Recovery and Growth in the UK Economy. NESTA.

[10]Healy, A., Perkmann, M., Goddard, J., & Kempton, L. (2012). Measuring the Impact of University Business Cooperation. European Commission.

[11]Abreu, Grinevich, Hughes, &Kitson, (2009). Knowledge Exchange betweenacademicsandthebusiness, PublicandThirdsector. *Research report.* UK-Innovation Research Center; University of Cambridge & Imperial Collage London. www.ukirc.ac.uk

impacts and consequences that may result from the expansion and deepening of cooperation between these two sectors (HEIs and business).

Currently, fundamental changes are taking place in the labour market. New challenges, innovation and knowledge provided new opportunities for employment. The most obvious example of new opportunities is jobs created from the development of the Internet, and the fields of employment which did not exist before. Clearly, it can be expected that the future will see further developments, further opportunities and further jobs created. Therefore, training and education should be widely interpreted. At present, there is an urgent need for the education system to provide the skill set to enable the individual to further develop and adjust to the changing environment[12].

It should be noted that the need for cooperation between higher education institutions and employers has also become an important part[13] of the Bologna Process[14]. The Bologna Declaration was a significant step forward in achieving high quality and transparent education system across Europe[15]. However, at the initial stage, this agreement did not provide direct recommendations in the context of higher education on how to enhance students' employability and work orientation. According to Teichler[16], the degree awarded after the first cycle (bachelor programme) shall also be relevant to the European labour market as an appropriate level of qualification. According to Teichler the Declaration did not call for a stronger professional emphasis of study programmemes, but rather for some degree of professional emphasis across all levels of study programmemes. Little was said about possible curricular convergence. While a structural approach dominated at the beginning, the Bologna Process gradually moved towards curricular matters. The terms "quality assurance", "employability" and "qualifications frameworks" signal this shift of emphasis. It should be noted that in part the emphasis on similar factors was also facilitated by the enhancement of mobility, which necessarily calls for some curricular reflections and measures.

Teichler also notes that since about two decades from the beginning of the Bologna process, a fundamental change in higher education is observed, which is highly relevant for strengthening the relationships between higher education and the world of work. Obviously, it is not accepted anymore

---

[12]Majewski E. (2013). *Higher education reform: matching education to labour market needs*. European View (2013) 12: 179-188; DOI: 10.1007/s12290-013-0271-5

[13] Follow the link: http://accreditation.org/accords/bologna-declaration-1999

[14] In 1999, representatives of the Ministries of Education of European countries met in Bologna (Italy) to establish a "European Higher Education Area" based on the principles of academic independence and autonomy

[15]Follow the link: http://www.aic.lv/ace/ace_disk/2005_07/Reports/ExternalDimension-finalforconference.pdf

[16]Teichler U. (2013). *Universities between the Expectations to Generate Professionally Competences and Academic Freedom Experiences from Europe*.doi: 10.1016/j.sbspro.2013.03.097. Social and Behavioral Sciences 77. pg. 421 – 428

that scholars and students focus only on academic subject matters as such and that a pursuit of knowledge for its own sake dominates. Also achievement measurement is expected not only to determine how close the new knowledge is to the existing theories, methods and what are the theoretical results. Rather, it is expected that teachers and scholars at HEIs are aware of both their lectures, studies, papers and their impact on all sectors discussed (science, business, groups of people, etc.), and that they handle the attention of society (business) strategically to these scientific discoveries and the academic world in general.

The positive impact of university and business collaboration (UBC) on teaching and learning is clearly reflected in the academic literature. It should be noted that often companies are the initiators to establish strong collaboration with HEIs. As the mismatch between education and qualification needed for employment in the labour market is growing and competition for attracting best talent is becoming severe, forward-looking companies have realized that the new generation of workforce must be equipped with all the skills necessary to cope with the challenges of globalization and rapidly changing technological progress.

Significant emphasis is placed on how universities and especially scientific staff in the fields of science and engineering interact with the representatives of the business sector. The main objective of such relationship is to improve innovation and competitiveness. A survey of the scientific staff[17] carried out in Great Britain in 2009 showed that whilst such forms of interactions are important, there is a high degree of interaction from scientific disciplines. This indicates that academics are engaged with the public and third sectors. Statistical analysis of the results revealed that 40% of academics from all disciplines are interacting with business sector. More than three-quarters of academics from engineering interact with the business sector, while for other disciplines the level of interaction is relatively low - 40% in social relations and 30% in arts and humanities.

In addition, scientific literature increasingly focuses on the potential role the university plays in improving economic growth[18]. In addition to the important mission of teaching and research, scientific literature focuses on promoting 'technology transfer' concentrating on the commercialization of science through such mechanisms as patents, licenses, and new research directions. However, it is unfortunate that there are still many obstacles and constraints that hinder

---

[17] Abreu, Grinevich, Hughes, &Kitson, (2009). Knowledge Exchange betweenacademicsandthebusiness, PublicandThirdsector. *Research report.* UK-Innovation Research Center; University of Cambridge & Imperial Collage London. www.ukirc.ac.uk

[18] HM Treasury (2003). Lambert review of business-university collaboration: final report. URL: http://dera.ioe.ac.uk/id/eprint/16532

the effective and wide processes of knowledge exchange between the representatives of academics, private, public and third sectors[19].

As scholars note universities make contributions to civil society, assisting not only with economic performance but also helping to improve quality of life and the effectiveness of public services[20]. Since being established universities have contributed directly and indirectly to much of the decision-making in wider society. However, this function has not been 'core' to their mission in the same way as the first two streams of university activity – research and teaching. Now developments in this field have reached the stage where university 'Third Stream' or 'Third Mission[21]' contributions are seen as important and distinctive, deserving specific strategy and resources from the society. In other words, the 'third stream' concerns the interaction between universities and the rest of the society. The research by Abreu, Grinevich, Hughes and Kitson[22] also shows that interaction with external organizations strengthens the two core missions of science – research and teaching. 50% of the academics that are engaged with external organizations state that this cooperation has led them to changes in the methods of teaching, while 45% to changes to their course programme. This suggests that the notion of a separate 'third mission' or 'third stream" may be misleading, since universities are already fulfilling it by carrying out research and teaching missions.

The above scholars have identified the key areas where business and universities can collaborate to promote higher education. These areas include:

1. curriculum design, development and delivery;
2. development of tailored courses;
3. exchange and mobility programmes;
4. long-term education and lifelong learning;
5. entrepreneurship and entrepreneurial education.

The studies[23] conducted over the past decade also showed that for strengthening cooperation in a scientific environment, it is very important to have employees with appropriate skills to act as intermediaries or news seekers and are able to easily establish contractual and interactive

[19]Abreu, Grinevich, Hughes, &Kitson, (2009). Knowledge Exchange betweenacademicsandthebusiness, PublicandThirdsector. *Research report.* UK-Innovation Research Center; University of Cambridge & Imperial Collage London.www.ukirc.ac.uk

[20]Molas-Gallart, J., Salter, A., Patel, P., Scott, A., & Duran, X. (2002). *Measuring Third Stream Activities. SPRU*, University of Sussex.

[21] Definition: This term describes a new mission of the University, such as building a knowledge society. The university should be actively involved in addressing social needs and offer the public ways to improve in the socio-economic context.

[22] Ibid.

[23] Goddard, J. (2009). Re-inventing the Civic University. London: National Endowment for Science, Technology and the Arts (NESTA).

relationships with the business sector and manage these processes. However, these studies also show that around 40% of researchers have had some relations with business representatives (or related organizations) relevant to their specialty during three years.

According to the researchers,[24] the benefits gained as a result of cooperation between employers and HEIs are grouped into four main categories as follows:

- strengthening levels of human capital, with labour supply and employment implications;
- stimulating entrepreneurship through teaching and learning;
- knowledge exchange, aimed at promoting or stimulating product/process innovation or new pedagogy;
- raising the profile of an organization in collaboration.

Getting actual benefits (or effects) largely depends on the type of collaboration and the goals set. Scholars[25] argue that when companies and universities work in tandem to push the frontiers of knowledge, they become a powerful engine for innovation and economic growth.

The factors that have a positive impact on teaching and learning naturally emerge as a result of successful collaboration. For example, professors often join projects inside a company and researchers agree to lecture in HEIs. As a result, precondition for knowledge transfer is created and curricula are modernized. Such activities are related to improving the quality and relevance of practical training (internships, graduate employment, scholarship programmes), while sharing of know-how and innovation is related to technological advancement. Management and governance related collaborations, such as participation of companies in the university boards and the establishment of common bodies and new training/entrepreneurship centers is also highly important[26]. Silicon Valley is a successful example in this regard - a network of multilateral and long-term collaboration over five decades encouraged rapid emergence of new technologies in the region and, along with the modernization of the university's role, it has also facilitated the transformation of industries.

In addition to the well-known example of Silicon Valley, other distinctive aspects of innovative, well-functioning, and successful university-business collaborations are discussed in an international

[24] Healy, A., Perkmann, M., Goddard, J., & Kempton, L. (2012). Measuring the Impact of University Business Cooperation. European Commission.
[25] Edmondson, G., Valigra, L., Kenward, M., Hudson, R. L., & Eld, H. B. (2012). *Making Industry - University Partnership Work/ Lessons from successful collaboration*. Science|BusinessInovation Center.
[26]Rakovska, N., Pavlin, S., &Melink, M. (2014). *Assessment of cooperation between higher education institutions and employers in Europe*. European Commission

study[27] published by Science / Business Innovation Board. Depending on what was mainly focused on and what the outcome was, the cooperation cases presented in this study are grouped into four main types:

1. Partnerships that had a significant positive impact on teaching and learning methods;
2. Creation of new sources of funding as a result of cooperation for research and joint activities;
3. Redirection of research and allowing it to evolve in a new direction with the help of the business sector;
4. Establishing a collaboration that develops into strategic partnerships over time

The authors of the above study point to the collaboration between telecommunications giant companies and the University of Melbourne as one of the outstanding examples of such relationship - in 2008 Microsoft, Cisco and Intel agreed to launch a partnership with the University of Melbourne that was established to ensure transformation of education for the 21st century. Their goal was to have a significant impact on teaching methods. On the first stage it included identifying the higher-order skills that students need for success in educational institutions and in the work place and then transforming the assessment and teaching of these 21st-century skills. These skills and teaching methods were transformed according to appropriate, modern standards.

Based on the example of Aalto University (Helsinki, Finland), Koria and Salimäki[28] discuss a distinctive case of formation of a new scientific and practical environment. Scientists called this cooperation 'University partnership with industry for teaching and learning'. The history began in 1995 when Rector Yrjö Sotamaa from University of Art and Design Helsinki presented a curriculum that combined courses in design, technology and business to create a multidisciplinary course. The programme focused on developing innovative thinking skills among students through a collaborative, cross-disciplinary solution to a problem. In 2010, Sotamaa introduced another initiative to promote multidisciplinary learning, which is currently a fairly important platform in the Finnish industry. The latter offers companies assistance in gaining competitive advantage, while at the same time provides opportunities for students to explore the real business world. Multidisciplinary teams seek solutions to the industry problems and develop innovative solutions over a one-year programme. For the assistance, each company agrees to pay € 20,000 to the educational institution for each project.

Some other examples of university business collaboration provided in scientific literature are the cases when the business invests heavily in higher education institutions in order to support

---

[27] Edmondson, G., Valigra, L., Kenward, M., Hudson, R. L., & Eld, H. B. (2012). *Making Industry - University Partnership Work/ Lessons from successful collaboration.* Science|BusinessInnovation Center.

[28] Koria, M., Salimäki, M., &Karjalainen, T.-M. (2011). Keynote: Designingmultidisciplinarylearningfortherealworld. *IDBM papers*, pp. 20-28.

development of new technologies and knowledge and then to use them in its business activities. There are two examples of this type described in modern studies[29] that should be highlighted: the first one refers to partnership between IBM and the Zurich School of Technology, and the second one describes relations between British Petroleum (BP) and the Energy Bioscientific Institute (EBI) in the United States. In the first case, in 2011 IBM invested $ 90 million to open a nanotechnology research center at the University of Zurich. As a result, researchers from the university and the company were able to work on nanoscale structures and equipment in an environment equipped with modern technologies in the areas of energy and information technology[30]. In the second case, British Petroleum awarded the University a 10-year grant of $ 500 million. The purpose of the grant was to conduct active research on the creation of a new generation of sustainable biofuels to reduce the harmful effects of carbon dioxide on global warming. In addition to the research, with the active intervention of BP, the University began to work on the development of energy bioscience, which is a field of study combining biology, chemistry, engineering, environmental science and economics[31].

Given the existing challenges, European companies have started to introduce a new practice for the development of the workforce capable of using modern technologies. Regardless of their size, companies in the countries like Austria and Germany realize that they need experts and therefore take the responsibility for developing the talented people themselves[32]. While large companies such as Daimler, BASF and Siemens have their own training schools, smaller companies from similar industries work with educational institutions and offer their employees a dual system of vocational training. Students of such organizations are provided the opportunity to acquire in-depth theoretical knowledge and improve practical experience in a real work environment at the same time. Industrial organizations and chambers of industry are also involved in ensuring the compliance of working and training. This programme helps students to get better understanding of a real business and work environment. As a result, they learn concepts beyond some of the most complex aspects of their training courses, as they are much more likely to understand hints and usability of these concepts. As they are in the real work environment from the first day of training they can decide more easily whether they are in the right field. In addition, they are part of the real workplace and make a significant contribution to the company's operations. The introduction of this system has led to lower drop-out rates. Only 6.9% of students who study in the vocational system drop out of their courses in

[29]Edmondson, G., Valigra, L., Kenward, M., Hudson, R. L., & Eld, H. B. (2012). *Making Industry - University Partnership Work/ Lessons from successful collaboration*. Science|BusinessInovation Center.
[30]Based on the interview with Matthias Kaiserswerth Director and Vice President, IBM Research, Zurich
[31]Follow the link: http://www.energybiosciencesinstitute.org
[32] Follow the link: https://www.destatis.de/DE/Home/_inhalt.html

Germany, while the student drop-out rate at universities or conventional colleges varies between 19% and 35% depending on the field of studies[33].

The academic literature[34] clearly shows that achieving successful collaboration between academia and business requires overcoming many obstacles and challenges as well[35]. First of all, the most important thing is to find an intersection of common goals, common needs, and benefits received by the parties to encourage and drive mutual initiatives and projects. It is essential to improve communication and overcome other mental barriers such as the lack of mutual understanding, will, flexibility and resilience of cooperation. Active participation of government agencies in enhancing collaboration between HEIs and employers is also very important. In many countries, these relations are encouraged, deepened and financially promoted by various government agencies.

The triple helix model is one of the most widely used and discussed in the scientific literature among the models of collaboration between the university, business and government. This model reflects the triple coordination mechanism between the university, business and government sectors. It should be noted that the system is still undergoing the process of development as each party involved is still working on the development of their different final mission statements[36]. In future it will be possible to create a new system (forms) of cooperation as a result of synergy between universities, business and government[37].

The triple helix theory was further developed by Etzkowitz[38] based on combining long-term studies on the interaction between university and industry and hypercyclic evolutionary model of triple helix (considering the intersection of all three components involved) developed by Leydesdorff[39]. The authors largely refined the triple helix model by considering the intersection between university, industry and government. The triple helix is used as an operational strategy for regional development and a knowledge-based economy in several countries[40], for example in Sweden[41] and Ethiopia[42].

---

[33] Majewski E. (2013). *Higher education reform: matching education to labour market needs*. European View (2013) 12: 179-188; DOI: 10.1007/s12290-013-0271-5

[34] Rakovska, N., Pavlin, S., &Melink, M. (2014). *Assessment of cooperation between higher education institutions and employers in Europe*. European Commission.

[35] Healy, A., Perkmann, M., Goddard, J., & Kempton, L. (2012). Measuring the Impact of University Business Cooperation. European Commission.

[36] Dolfsma, W., &Leydesdorff, L. (2009). Lock-in&Break-outfromTechnologicalTrajectories: ModelingandPolicyImplications. *Technological Forecasting and Social Change*, 932-941.

[37] Viale, R., &Pozzali, A. (2010*). Complex Adaptive Systems and the Evolutionary Triple Helix.* Critical Sociology, 36(4), 575-594

[38] Etzkowitz, H. (2002). MIT and the Rise of Entrepreneurial Science. London: Routledge.

[39] Etzkowitz, H., &Leydesdorff, L. (1995). The Triple Helix-University-Industry-Government Relations: A Laboratory for Knowledge-Based Economic Development. EASST Review 14, 14-19.

[40] Triple Helix Research Group at Stanford University; follow the link: https://triplehelix.stanford.edu/3helix_concept

[41] Jacob, M. (2006). Utilization of social science knowledge in science policy: Systems of Innovation, Triple Helix and VINNOVA. Social Science Information, 45(3), 431-462.

[42] Saad, M., Zawdie, G., &Malairaja, C. (2008). The triple helix strategy for universities in developing countries: the experiences in Malaysia and Algeria. Science and Public Policy, 35(6), 431-443.

While in Brazil, this model has become a 'driving' factor for setting up appropriate incubators in the context of universities[43].

For enhancing University – business cooperation, some changes need to be introduced on several levels. Modernization of education should narrow the gap between theory and practice and respond to the modern challenges of the labour market. Improved communication between the parties should stimulate joint activities, projects and effective functioning of research centers. Collaboration between university and business has to be facilitated through provision of adequate legislation framework, which in turn, can lead to appropriate and effective initiatives and allow greater flexibility of financial flows (funding, grants, etc.)[44].

---

[43]Almeida, M. (2005, January). The evolution of the incubator movement in Brazil. *International Journal of Technology and Globalisation,* 1(2). doi:10.1504/IJTG.2005.007054
[44]Rakovska, N., Pavlin, S., &Melink, M. (2014). *Assessment of cooperation between higher education institutions and employers in Europe.* European Commission;

1.2 Problems of relevance between higher education and the competencies required for employment

Higher educational institutions worldwide are grappling with how best to equip their graduates with the knowledge and skills needed to succeed in the globalized world of the twenty-first century. In addition, they are working to ensure their own relevance and standing in the global higher education market[45].

Discussions over 'employability' are always topical in academic society. Different interpretations of this term have been developed by scholars, which describe the relationship between the higher education received, the type of relevant activity and the job. For example, in this context, Teichler[46] suggests employing the term 'Professional Relevance', which refers to the constant updating of the curricula[47] of higher education institutions based on the need for constant expansion of competencies acquired by students. The author believes that this is true irrespective whether fields of study are traditionally closely linked to certain occupational areas or not, whether a more theoretical or a more applied curricular emphasis is preferred and whether one wants to adapt students to the prevailing job requirements or wants to strengthen their potentials of being change agents.

The incompatibility of graduates' education and skills with the demands of the labour market has a negative impact on the efficiency of this market and leads to an increase in unemployment. While relevance of education and skills with the requirements of the labour market, on the other hand, reduces frictional and structural unemployment and ensures filling the vacancies with the applicants with appropriate qualifications and skills. Several types of mismatch between labour demand and supply are described in the literature (see Table 1).

Table[48] 1. Types of imbalances between labour demand and supply

Types of imbalances	description / example
Vertical mismatch	A situation where the level of education or qualification is less or more than required. / A person with a doctoral degree in mathematics works as a math teacher at a secondary school./

[45] American Council on Education. (2003). International Higher Education Partnerships: A Global Review of Standards and Practices. NW Washington, DC: CIGE Insights.

[46] Teichler U. (2013). *Universities between the Expectations to Generate Professionally Competences and Academic Freedom Experiences from Europe.* doi: 10.1016/j.sbspro.2013.03.097. Social and Behavioral Sciences 77. pg. 421 – 428

[47] Academic educational programs, schedules are meant.

[48] European Centre for the Development of Vocational Training. (2011). *Annual report 2010.* Luxembourg: Publications Office oftheEuropeanUnion;

Horizontal mismatch	A situation where the level of education or qualification matches job requirements but the field of education or skills is inappropriate for the job. / An accountant employed in an auditing company is required to prepare a monthly macroeconomic analysis./
Overqualification	A situation where the qualification of an employee is higher than required by his/her the job. / The highway engineer has to deal with highway traffic barriers./
Underqualification	A situation where the qualification of an employee is lower than required by his/her job. / A person with only one year experience of working as an ordinary employee holds the position of General Manager./
Overskilling	A situation where an individual is unable to make full use of his/her skills and abilities in an existing job. / A highly qualified astrophysicist has to work at an observatory in a developing country, where only one outdated telescope operates./
Underskilling	A situation where a worker's skills and abilities are below those required to perform his/her job to the desired standards./ A person who worked in a car factory only with mechanical equipment, starts a similar job in another factory, which is fully computerized.
Credentialism	A situation where the level of education required to perform a job perfectly is higher than the level of education needed to perform the job at a satisfactory level. / The qaulification of a power plant engineer is required for the vacancy for installing electrical wiring in private houses./
Economic skills obsolescence	A situation where the skills needed to perform the job are either no longer required or are no longer as important as before. /In medicine, physical methods of patient examination and diagnosis are replaced entirely by special computer and mechanical equipment; therefore, teaching only physical examination methods is outdated.

It is quite common that some of the types of imbalances described in the Table occur simultaneously in various countries or regions. Scientific papers particularly focus on horizontal and vertical mismatch. In this regard, the study aiming to assess these imbalances was conducted in Western Balkans in 2016. The results of the study showed that only 48% of graduates are in a vertically well-matched job considering the university degree acquired and the skills required by the current job; 37% of the graduates participating in the survey are over-qualified, while about 15% are

underqualified[49]. About 35% of graduates are horizontally mismatched in relation to their field of study. The study also showed that only 53% of students complete their study programme and only 52% of them find a job; and of these, only 48% find a job that is well matched to their level of education. The statistics shows that of every hundred new students entering the HE systems of Western Balkans in any one year, it can be expected that only thirteen will eventually graduate and find a well-matched job. This indicates the low level of efficiency of the higher education system in the region to provide future students with the skills they need to find a stable and relevant job. It should be noted that the inefficiency of the labour market is also caused by the lack of suitable jobs and inadequate development of various sectors of the economy.

Scholars argue that the incompatibility of education with the qualifications required by employers has a negative impact on the productivity of the work performed and the remuneration received. One more acute problem is often discussed in this regard. This implies providing the skills by the education system that are no longer needed in the labour market. The study[50] aimed at analyzing the trends of skill mismatch in transition economies of Eastern Europe and Central Asia showed that 'even when people hold the correct qualification for an occupation, they may not necessarily have the skills needed to effectively perform the job and satisfy employer expectations. Rapid technological and economic change makes it difficult to predict what types of skill will be needed in the near and more distant future, and what kinds of new jobs will appear'. Moreover, it is obvious that as a result of structural changes, incompatibility of labour skills with labour requirements is becoming an ever-increasing phenomenon in transition economies. The latter, in turn, leads to high level of long-term unemployment, which means that as people age the mismatch between workforce skills and job requirements dramatically increases. This is largely due to the fact that middle-aged and older people in developing countries have less opportunity to take proper training courses or acquire new skills/qualifications.

Employers in different countries point out that incompatibility of skills with the qualification required for the job is a significant problem. This is especially true in Eastern European Partnerships countries and transition economies. The area of skills mismatch can be identified from BEEPS"[51] conducted by the European Bank for Reconstruction and Development and by the World Bank. The study conducted in 2010 covered 21,000 companies from 29 transitional economies. Research data show

---

[49]Bartlett, W., Uvalic, M., Durazzi, N., Monastiriotis, V., & Sene, T. (2016). *From University to Employment: Higher Education Provision and Labour Market Needs in the Western Balkans.* EUROPEAN COMMISSION

[50]Bardak, U., Sabadie, J. A., Fetsi, A., & Zaman, C. (2011). *Labour Markets and Employability Trends and Challenges in Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine.* Luxembourg: Publications Office of the European Comission. DOI:10.2816/14590.

[51]BEEPS stands for Business Environment and Enterprise Performance Survey. Follow the link: https://openknowledge.worldbank.org/handle/10986/20469

that many companies face inadequate levels of education, which is a serious obstacle for their business. The results showed that two-fifths of companies in Ukraine and Moldova have similar problems with workforce education. On the regional level, around one-third of companies face a problem with the skills of their employees. According to the study, the severity of the problem is lower the average; although it remains a serious factor in Croatia, Georgia and Turkey (more than one-fifth of firms report so).

As we noted above, the problem of mismatch is a particularly crucial issue for the Eastern Partnership countries[52]. At the beginning of the complex changes (refers to the changes that took place in the post-socialist countries in the 1990s), these countries were represented by highly skilled human capital, however, the quality of the latter deteriorated due to the multifaceted transformation processes despite some improvements observed in the level of education achieved by the population[53]. Scholars consider that the reasons for the mismatch between the higher education and labour market in the region are to be found in the current education system, which does not have the capacity to keep pace with the social and economic transformations developing rapidly in the period of significant changes and, at the same time, be constantly in line with ongoing development processes at the international level. In addition, some of the significant economic barriers in the Eastern Partnership countries (EaP) were lack of financial resources in the field of education and a limited number of jobs with high qualification requirements. This all made it impossible to maintain and gradually improve the qualifications of the labour force in these countries.

Skills mismatch is an acute issue for Central European countries as well. In 2014, Rakovska, Pavlin and Melink[54] conducted an in-depth interview with the representatives of universities, businesses and public institutions in Bulgaria, Hungary, Poland, Slovenia, Spain and other Eastern European countries. The analysis of the information obtained from the interviews revealed a common belief, that universities and business speak different languages. According to the study, the gap between the worlds of education and business is explained with the conservativeness of the higher education institutions, and the dynamic business environment. The existing gap between the worlds of education and business are explained with different factors by the authors individually for the countries covered by the study; For example in Hungary it is caused by "different and partly contradictious points of view", "bureaucracy" in the higher education institutions, similar factors are

---

[52] Azerbaijan, Belarus, Moldova, Georgia, Armenia and Ukraine.

[53] Bardak, U., Sabadie, J. A., Fetsi, A., & Zaman, C. (2011). *Labour Markets and Employability Trends and Challenges in Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine.* Luxembourg: Publications Office of the European Comission. DOI:10.2816/14590.

[54] Rakovska, N., Pavlin, S., &Melink, M. (2014). *Assessment of cooperation between higher education institutions and employers in Europe.* European Commission.

"conservativeness" in Bulgaria, "passiveness" in attracting investors in the field of education in Poland and "dynamic business environment" in Spain. The scholars consider that universities need to adapt to "rapidly changing technologies and market needs" to overcome these problems. However, the situation is exacerbated by the fact that companies often focus on problems that require specific knowledge and getting results in the short term, while scientists focus on relatively long-term basic research, publishing in journals, and are less likely to carry out applied type work.

A similar study[55] was conducted in 2016 by Radovik and Djuraskovic. The authors analyzed the problem of mismatch between education and labour market needs on the example of Montenegro. One of the major weaknesses of education system recognized by employers was inadequate representation of practical training in university programmes or as stated by one of the focus group participants: "A student that graduated from the Faculty of Economics had never filled in a common transfer order during his/her studies. The same goes for someone who has a degree in Law - he/she has never written a complaint". Another issue that needs to be paid attention to is poor cooperation between education system institutions and employers. In terms of poor communication, the education system does not receive the right information on what exactly the labour market considers an attractive profile. As a result, higher education institutions find it difficult to make a proper transformation. Domination of quantity over quality has contributed to increased growth in the number of university graduates, consequently leading to increased number of unemployed university graduates. Insufficient specialization of study programmes and education programmes at the level of general secondary education ends up in low value knowledge. A syndrome known as easier to diploma – harder to job, prevails.

The education system in almost all transition economies is also characterized by quality and knowledge transfer inadequate to the needs of regions[56]. It is increasingly recognised that curricula and teaching methods inherited from the previous communist system do not focus on the development and challenges of the service-oriented market economy; therefore, they need to be fundamentally upgraded to be relevant to the new occupations and labour market demands of the modern service sector and high technology industries. The skills that are taught in vocational education institutions of these countries are outdated and tend to be too specialised in obsolete occupations that are no

[55] Radovic, M., &Djuraskovic, J. (2016). *Mismatch between Education System and Labour Market Needs – Enabling Environment for Sustainable Enterprises in Montenegro*. Podgorica: Montenegrin Employers Federation.
[56]Sondergaard, L. and Murthi, M. et al. (2012) Skills Not Just Diplomas: ManagingEducation for Results in Eastern Europe and Central Asia. Washington: The World Bank

longer in demand in the labour market. Education methods in these educational institutions often depend on rote learning rather than developing the skills of problem solving and critical thinking[57].

Quality problems in higher education system are often linked to the lack of financial resources that leaves institutions unable to deal with the rapid increases in enrolment and makes them to slow down the modernisation of education programmes and fields of study. A significant increase in the ratio of students to teachers was observed in state universities in almost all of the Eastern Partnership countries. The scholars[58] also highlight a widespread corruption in the form of gifts and bribes for getting preferential treatment in an unfair way. This indicates the existence of low quality in the university field where the attention is paid not to the educational process and student achievements but to personal gain. In similar countries (Ukraine, Georgia and Moldova) private higher education institutions also seem to operate at low levels of quality; poor infrastructure and low salaries prevent private institutions from attracting the best professionals and improve the situation.

A mismatch between education system and labour market needs poses a serious threat to economic growth and development. Such a mismatch, reflected in discrepancy between supply and demand for labour, instantly results in decreasing relevance of labour and inadequate use of the most important manufacturing factor. There is an inefficient utilization of its fundamental resource - human capital in the economy, where this problem is faced. Finally, such situation worsens a long-term trend of GDP and impedes overall economic growth. The scholars[59] note that mismatch between education system and labour market needs has a negative effect on the population's income. In some countries, especially in southern Europe, despite getting a university degree young people face significant obstacles in the labour market. As a result, many graduates get low salaries and the jobs that do not require higher education. However, it should be noted that these problems are quite rare in North Europe (especially in the Scandinavian countries) and these risks are minimized[60].

As a result of economic restructuring, a shortage and in some cases even excess supply of various skills is observed in transition economies. Economic transformation resulted in simultaneous processes of disappearance of some jobs and creation of new ones. Under these circumstances, low-

[57]Bartlett, W. (2013). *Skill Mismatch, Education Systems, and Labour Markets in EU Neighbourhood Policy Countries.* WP5/20 Search Working paper.

[58]Bardak, U., Sabadie, J. A., Fetsi, A., & Zaman, C. (2011). *Labour Markets and Employability Trends and Challenges in Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine.* Luxembourg: Publications Office of the European Comission. DOI:10.2816/14590.

[59]Radovic, M., &Djuraskovic, J. (2016). *Mismatch between Education System and Labour Market Needs – Enabling Environment for Sustainable Enterprises in Montenegro.* Podgorica: Montenegrin Employers Federation.

[60] Ansell, B., & Gingrich, J. (2017). Mismatch: University Education and Labor Market Institutions. PS: Political Science and Politics, 50(2), 423–425. DOI: https://doi.org/10.1017/S104909651600294

skilled workers lost their jobs as soon as technological changes led to the entry of highly qualified blue-collar workers in the labour market[61]. Newly emerged jobs required different types of skills instead of outdated ones. This restructuring and increased demand for new skills is occurring relatively faster than the appropriate adaptation to the education and training system. This all has resulted in a significant shortage of new skills. Scholars believe that in the early years of transformation, eliminating the sharp decline in economic growth and reduction of accompanying unemployment is possible by investing public finances in education and training the individuals whose working skills have deteriorated due to unemployment[62]. In addition, developing countries should also pay attention to the fact that after economies are fully restructured, the demand for new skills will further increase and the development of the country will significantly depend on how the state manages to address the persistent challenges in the global economy.

---

[61]Bilsen, V. and J. Konings (1998): Job creation, job destruction and growth of newly established, privatised, and state-owned enterprises in transition economies: Survey evidence from Bulgaria, Hungary, and Romania, Journal of Comparative Economics, September 26:429-445. DOI: https://doi.org/10.1006/jcec.1998.1542

[62]Bardak, U., Sabadie, J. A., Fetsi, A., & Zaman, C. (2011). *Labour Markets and Employability Trends and Challenges in Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine.* Luxembourg: Publications Office of the European Comission. DOI:10.2816/14590.

Part 2. Research design and methodology

Within the framework of the scientific research, a complex survey was planned and conducted in three directions: a survey of the graduates of Georgian HEIs, a survey of employers and a survey of higher education institutions.

Quantitative method was used in each survey and the survey area covered accredited HEIs in Georgia, local and foreign employers registered in Georgia (in private and public sectors) and graduates of higher education institutions (who have been awarded at least one of their academic degrees by a HEI registered in Georgia.).

2.1 Development of the research design

The **objective of the present research** is to study the current state of collaboration between higher education institutions and employers and to identify areas of mutually beneficial collaboration based on evaluating the results of collaboration between higher education institutions and employers.

Depending on the research objective, the **research task** and the **key research questions** were determined; in particular:

1. to study the existing forms of "University-Business" collaboration in Georgia and to identify the factors that stimulate their development taking into account the experience of developed countries;
2. to identify the results of cooperation in the field of knowledge transfer, research and development and implementation of joint projects and how these processes linked these two areas (employer and HEI);
3. to assess the relevance of the knowledge and skills provided to students by the higher education institutions with the job qualification requirements requested by an employer;
4. to identify the key challenges, policies, and drivers of collaboration in the short and long term.

An online questionnaire survey method was used for obtaining the data needed for the research. The questionnaires were divided into sections – each section focused on obtaining information in a specific direction.

At the first stage of the research, a survey of employers was conducted. An online questionnaire for this group was divided into the following 4 sections:

1. The first section of the questionnaire included general information of the employers; in particular, their distribution by regions, company size and experience, and industry. This section contained closed ended questions and did not require from company representatives to comment;

2. The second section of the questionnaire allowed employers to express their views on the extent to which the Georgian higher education system provides graduates with the relevant knowledge and skills that meet the requirements of the industry their organization belongs to;

3. The third section of the questionnaire mainly reflected the assessments of the employers about the quality of collaboration with HEIs, the extent of collaboration, the barriers, benefits and the ways for enhancing relations;

4. The fourth section focused on collecting quantitative data on the employers, which would be used for quantitative data analysis through various statistical methods. The degree and scale of collaboration between employers and higher education institutions would be assessed based on statistical processing of the data.

A survey of the other two target groups - graduates of higher education institutions and higher education institutions themselves - was conducted at the second stage of the research.

A questionnaire containing 30 questions was developed for the graduates and it was divided into three sections:

1. The first section of the questionnaire included general information of the graduate;

2. The questions in the second section mainly focused on assessing the transfer of the knowledge acquired by the graduates at the university to the workplace; the level of qualification obtained and satisfaction from the workplace;

3. The third section mainly focused on assessing the relationship between HEIs and employers and analyzing the benefits received by the graduates and the degree of their involvement in these processes.

According to the tasks and objectives of the survey of higher education institutions, the online questionnaire for this focus group contained 34 questions, which were divided into three sections:

1. The first section of the questionnaire included general information of the higher education institution, including questions about the average number of students and professors, research centers, and the relative value of tuition;

2. The questions in the second section mainly focused on the evaluation of teaching methods and student preparation by university representatives. In addition, this section was aimed at

assessing the difficulties and directions that occur during the integration of HEIs with the labour market. This section also allowed the representatives of HEIs to express their views on the state of collaboration between HEIs and potential employers;

3. The main goal of the third section was to collect quantitative data. In particular, to find out the extent and intensity of cooperation of HEIs with the representatives of the employer sector; what kind of joint activities are organized and how often students and graduates are able to participate in them; and what is the level of mobility of local students to international higher education institutions.

2.2 Data collection mechanisms

At the initial stage of the research, information on the study population was obtained from publicly available databases provided by the National Statistics Office of Georgia, the Ministry of Education and Science of Georgia, the Ministry of Economy and Sustainable Development of Georgia, the National Agency of Public Registry and other relevant agencies. Based on these statistical databases it became possible to obtain the following information:

1. Names of units / individuals / organizations covered by the research;
2. Individual codes (codes assigned when registered in the public register),
3. Areas of activity, contact information and other necessary data.

In addition to the data obtained, internal university information and databases were actively used, which made a valuable contribution to the final formation of the initial study population.

Initial populations were formed for each target group (employers, graduates, and HEIs). Sampled population was selected from the population of employers and HEIs using non-probability sampling[63] method, which is partly based on the researcher's choice and means that some of the members of the population are more likely to be selected according to their weight and quality within the population. The use of this method is advisable due to the fact that several higher education institutions and employers in Georgia are significant sources of graduates and job creation in the labour market. Sampled population of the HEI graduates was formed based on the population obtained at the initial stage. In the latter case, the Simple Random Probability Sampling method[64] was used which means that each member of the population has an equal chance of being selected.

Since the samples were obtained, individual work was started with each representative of each focus group for collecting data. As it was noted above online questionnaires in Google Forms were used to obtain information. These online questionnaires, along with relevant explanations and other related information, were sent to each member participating in the survey by email or other channels of communication.

Around 300 organizations of different types, sizes and legal forms were selected from the population of employers using the non-probability sampling method. Online questionnaires were sent to each of them, and up to 140 completed questionnaires were received. After processing and cleaning the

---

[63]Follow the link: https://www.questionpro.com/blog/non-probability-sampling/
[64]Follow the link: https://onlinecourses.science.psu.edu/stat100/node/18/

received data, 130 organizations remained, from which complete and relevant answers were received. Over 400 graduates were interviewed and 25 higher education institutions[65] including 3 private colleges, 5 teaching universities and 17 universities participated in the survey. Information from employers was mainly provided by top managers of these organizations or special representatives of the HR departments. In case of HEIs this function was mainly performed by representatives of quality assurance services or other related persons (who have information on the implementation of similar activities at the specific HEI), while in case of the graduates information was received directly from them.

---

[65]By the time the survey (as of May 1, 2020) was conducted, 64 authorized higher education institutions were operating in Georgia. Twenty-five higher education institutions participated in the study, representing 45% of the total number. HEIs were selected based on their educational status (university, university, college), legal form, and regional distribution .

2.3 Statistical data processing methodology

At each stage of the research the data obtained from the questionnaires was processed using the techniques specially designed to clean statistical and textual data. The data processed using similar methods allows us to build relevant and accurate graphs, diagrams and charts, to study cause-and-effect relationships between data, to perform valid analysis and to make competent conclusions that can be generalized to the entire population.

Firstly, systematic and random errors were detected and corrected in the primary qualitative information obtained from the respondents; the data were filtered and corrected. Convention and aggregation of the data allowed us to obtain additional statistics required for the study. The initial quantitative data was mainly processed using basic statistical methods, such as estimating standard deviations from the mean, identifying and eliminating "outlier" points by using Chebyshev's Inequality, testing hypothesis to determine normal distribution, etc. Vinsorization method was also used where needed which means replacing extremely small and large values with the logical or less extreme data. Additional in-depth data evaluation was also performed using a statistical data analysis software (Stata).

Finally, after processing the primary data, authentic databases were created for each focus group, which were used for statistical analysis of the data, for constructing graphs and diagrams, evaluating various criteria and factors; all research tasks and issues were analysed according to the research objectives. In addition, Cronbach's alpha was used to assess the internal consistency of the data obtained from the survey and to determine how closely the individual variables are related to each other as a group. As a result, Cronbach's alpha was 0.7104 for the employers, 0.7824 – for the higher education institutions, and 0.7215 for the graduates. These results allow us to say that the structure of the questionnaire used in the study and the answers obtained help us to relevantly reflect the existing environment and maintain a high level of credibility.

Part 3. Key research findings and their discussion

3.1. Analysis of international experience of cooperation between higher education institutions and employers

The present part of the research discusses the best examples of the countries both influenced by the Soviet past (Estonia, Finland, Poland) and market economies (free from the Soviet influence) (US, UK, Germany, South Korea). In addition, according to the 2015 study of the International Student Assessment Program (PISA) of Organisation for Economic Co-operation and Development (OECD) these countries were ranked among the top 25 countries in science, reading and mathematics[66]; therefore the existing practice of cooperation between HEIs and employers in these countries are even more interesting.

Estonia. Innovative ecosystems of Estonia have undergone a transformation in recent years. The rapid growth of the companies such as Skype and Taxify has paved the way for other companies to succeed. Collaboration between higher education institutions and the business sector has also shifted from a traditional approach to a modern system of collaboration. These are the two elements that create synergy and provide new opportunities in terms of promoting collaboration between business and researchers.

In the recent period Estonia has taken some measures for improving cooperation between business and research institutions; in particular, the government actively supports applied research to be conducted in cooperation with business; in addition, it supports the coordination between doctoral training and business. With the purpose to promote cooperation with business, the main funding criteria for Estonian research institutes have also changed. In particular, trainings for the development of entrepreneurial skills on all levels of education are promoted. Such trainings aim at fostering entrepreneurial spirit among students and acquiring knowledge in the entrepreneurial field by them, thus increasing their employment opportunities and preparing them for starting a business. Higher education institutions, as well as general education and vocational schools, employers' organizations, etc. participated in the programme. Various electronic support platforms have been developed. For instance, the programme ADAPTER was created, which is a free service. The programme was developed by the Estonian Research and Development Community and it offers easy access to the best of Estonian R&D for all companies and organizations. The program allows the interested parties to contact to over 3500 scientists and engineers from sound design to biotech and from product development to market research within the ADAPTER network. As the program

---

[66]OECD. (2015). From PISA 2015: https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf

developers suggest "if there is a specialist in your field of interest available in Estonia, we probably know where to find them. And if we don't, our extensive international contact network will help"[67]. During the reform process in Estonia, in order to better align the education system with the needs of the labour market a major emphasis has been placed on the evolving role of teaching and learning. At present, the process of cooperation between Estonian HEIs and employers is intensive; in particular, the level of cooperation in the development of curricula is high; employers are actively involved in the development of program curricula and learning outcomes and provide internships to HEI students.

During the reform process Estonia strengthened its R&D and innovation system through market oriented reform of the former Soviet system. Although, Estonia has a relatively strong public and university research system, a solid human capital base, good connections to global knowledge networks and proper internet infrastructure, in general, business innovation remains below the OECD median. In terms of R&D, the country is mainly concentrated in a limited number of high-technology sectors, such as ICT, biotechnology and financial and telecom services[68].

University of Tartu **(UT)** is Estonian state university, which was founded in 1632. It has four faculties: Faculty of Arts and Humanities; Faculty of Social Sciences; Faculty of Medicine and Faculty of Science and Technology. The University of Tartu is currently undergoing a process of transformation from traditional to entrepreneurial university. Therefore, a new strategic direction of the University of Tartu is the entrepreneurial direction, which is reflected in the strategic development plan of the University for 2015-2020.

Strategic Plan of the University of Tartu for 2015-2020 includes collaboration between business and the University, especially in terms of entrepreneurial development. The purpose of this process is "to strengthen the innovative and entrepreneurial spirit through which knowledge is reflected in the economy." Interaction between entrepreneurial and innovative components is supported by the following approaches:

➢ Entrepreneurial approach enables students to develop their general and area-related business competencies based on their needs and interests;

➢ Employees are provided opportunities of self-improvement in the fields of enterprising spirit and entrepreneurship;

[67] ADAPTER. (2019). From Estonian research and development (R&D) community: https://adapter.ee/en/about-adapter

[68] Masso, J., & Paes, K. (2015). Business Start-ups & Youth Self-Employment in Estonia: A Policy Literature Review. University of Tartu.

➢ Students are encouraged to follow the interests and needs of businesses and society in choosing topics of research papers and cooperative supervision of such papers is supported;

➢ Creation and growth of knowledge-based businesses and innovation is promoted.

To achieve these goals, the University carries out a number of activities, involving not only the University of Tartu and the state of Estonia, but the Baltic Sea region and wider international representation as well. In the University of Tartu, the Vice-Rector of the university is directly responsible for planning, coordinating and controlling the results of the collaboration between the University and business.

In the University of Tartu, collaboration between the University and business can be divided into the following main directions:

➢ providing innovative and entrepreneurial education;

➢ ideas incubator;

➢ ensuring exchange of technology;

➢ career support and practical teaching;

➢ cultural exchange programmes;[69]

The environment created within the framework of these activities ensures development of a close cooperation between the University and the business sector.

Finland. The major objective of Finland's higher education system is to ensure sustainable economic development, employment and competitiveness. These economic functions of higher education and their role in meeting the changing needs of the labour market have formed a key vision for Finland's future. For instance, the reduction of poverty, social inequality and other widely recognized public benefits are now the guiding principles of Finnish higher education institutions. These clearly defined features represent the strengths of the Finnish education system and make it outstanding around the world.

The University Act was adopted in Finland in 2009, which entered into effect in January 2010 and became a landmark in the evolution of Finnish universities. The Act created a legal framework for universities, which led to changing their traditional role and public institutions became hybrid organizations, either as independent corporations under public law or as foundations under private law. Therefore, universities got more freedom in financial management, more autonomy and

---

[69]Pavlin, S. (2016). Cultivating entrepreneurial mindset through the inclusion of relevant stakeholders. University of Tartu.Pg. 3-5

responsibility[70]. The University Act of 2009 created new environment for HEIs; the opportunity of improving the integration of university's education and research activities for the benefit of students and faculty has occurred. Accordingly, students are offered new experiential learning programmes, new business management and entrepreneurial skills are acquired; in addition, the Act provides opportunities for the acquisition of leadership and creative thinking capabilities, wider inclusion in joint research projects with business partners, increased employment rates through internship programmes, higher employability due to broader skill sets, support for start-up formation, employment in university start-ups, etc. Academic staff benefits from better access to business problems and widens the academic research agenda through promotion of multidisciplinary research, finding the funds for research, supporting the formation of start-ups, etc.[71].

According to the Finnish legislations, universities are obliged to involve external stakeholders in their governance structures to ensure compliance of education with research and development through cooperation with other sectors. Therefore, the new higher education curricula created with the participation of stakeholders, including potential employers, are focused on meeting the requirements of the employment market, which directly determines the sustainability of the Finnish higher education system.

TIIMI AKATEMIA (Team Academy) based in Jyväskylä University of Applied Sciences (JAMK) represents an excellent example of close collaboration between HEIs and business in Finnish higher education market. The educational process in the Academy is adapted to the experiential teaching model and is based on David Kolb's[72] (David Kolb, 1984) experiential learning theory, which combines education and business. According to this theory, learning is the process whereby knowledge is created through the transformation of experience. As a result, the Team Academy offers students to be fully involved in both the learning and practical activities. One of the aims of the Team Academy is to enable students to start their own business before they graduate and collect financial resources for travelling around the world. The Academy is constantly striving to be close to the practice in order to increase the employability of the students.

The Team Academy has a three-and-a-half-year bachelor degree programme in business. The programme is a flipped classroom model run across an entire academic degree combining the worlds

---

[70]Ranga, M., Perälampi, J., & Kansikas, J. (2016, 10). The new face of university–business cooperation in Finland. *Science and Public Policy*, pp. 601-612. pg. 604

[71]Same Source; Pg. 611

[72] Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. New Jersey: Prentice-Hall.Pp.38.

of business and education.. The central component of Team Academy is the Teamcompany which is the most important learning tool. Students create their company on the first day of class and spend the rest of their time in the university working to make the company a success[73].

United Kingdom. The university-business collaboration in the UK is based on intensive application of existing knowledge in business. Such collaboration is a means of using, updating and utilizing knowledge. HEIs that connect with businesses gain access to potential private funding for research and other initiatives as business realises commercial value of the research and supports students from definite HEIs to develop their entrepreneurial initiatives. Universities are open to and accessible to local businesses, particularly SMEs that may not realise the mutual benefits that are on offer, or are otherwise tentative about engaging with their local HEI.[74] In the United Kingdom, Universities, especially English ones, increasingly recognize the importance of employability skills. Recent evaluation of Higher Education Innovation Fund (HEIF) strategies found a large and growing emphasis on enhancing student employability and enterprise skills by universities, with 71% of HEIs seeking to expand their work experience and internship offers[75].

System of Apprenticeships is widely spread in the United Kingdom, which allows people e to develop technical and work based qualifications whilst working. Many will comprise a mix of qualifications which will be delivered by Higher Education Institutions, Further Education Colleges or private providers. In addition, the Government is interested to see more Apprenticeships as higher Apprenticeships have the potential to deliver high level skills tailored specifically to individual business requirements[76].

In addition to the above facts, the recent reforms implemented in Britain clearly show that the government, together with industry and academic institutions has purposefully created an innovative system of Catapult.[77] This system allows academia and industry to foster collaboration and deepen relationships through collaborative research. Catapult Centers is a network of the world's leading innovation centers designed to transform the UK's opportunities for innovation in specific areas and to promote the country's economic growth. Catapult is a network of world-leading innovation centres

[73]Davey, T. (2016). *Team learning through starting a business at Tiimiakatemia.* Jyväskylä: Jyväskylä University of Applied Sciences; page 3,6

[74]BIS Department of Business Inovation & Skills. (2012). *Following up the Willson Review of Business University Collaboration - Next steps for universities,business and Government.* London.Page 3

[75]PACEC. (2012). *Strengthening the Contribution of English Higher Education Institutions to the Innovation System: Knowledge Exchange and HEIF Funding.* Cambridge.

[76] Department of Business Inovation & Skills. (2012). *Following up the Willson Review of Business Tanivercity Collaboration - Next steps for universities,business and Government.* London, page 3

[77]Catapult. (2019). From https://catapult.org.uk/about-us/about-catapult/

designed to transform the UK's capability for innovation in specific areas and help drive future economic growth. Catapults are not-for profit, independent centres which connect businesses with the UK's research and academic communities. These centers bring together best of the UK's businesses, scientists and engineers to work side by side on late-stage innovative research projects and support transforming high potential ideas into new products and services to generate economic growth. Each Catapult centre specialises in a different area of technology and allows businesses and researchers to collaboratively solve key problems and develop new products and services on a commercial scale.

Liverpool John Moore University (LJMU) is implementing the World of Work programme, which was developed in cooperation with employers and aims at enhancing student employability. Each course of the programme includes three interrelated elements:

- *Work oriented learning* - every student is offered work related learning as part of their course, including opportunities to undertake a 1 year paid placement, shorter placements and one day long "World of Work Uncovered" visits to employer facilities;
- *Graduate skills* - development of personal skills is a part of getting degree; therefore, simulations of workplace situations are integrated in academic modules and employers and careers advisors play the role of teachers. Students can receive a graduate skills transcript upon graduation.
- *World of Work Skills Certificate* - after completing a process involving an online virtual interview, attending careers workshops, revealing the relevant skills and finally a filmed interview with an employer, alongside their degree students can be awarded a World of Work Skills Certificate.

The University of Kent has the Employability Points Scheme. According to this Scheme, students who are actively engaged in extra-curricular work-related activities, students who have part-time jobs, have learnt a new language, have been engaged in business and enterprise activities, or are active members of various clubs and societies, earn points according to the activities performed. After earning points, they can apply for employability enhancing rewards, participate in trainings and paid internships sponsored by the University's corporate partners from a broad spectrum of sectors. In 2015 the scheme was able to engage 1932 students and 86 companies, and awarded 95,300 points, with an average number of 50 per student. As a result, students were able to get work experience in a diverse range of sectors, including publishing, marketing, consulting, IT, tourism, arts and journalism. Their sponsors included Kent County Council and international giants such as Penguin Books, Tesco, and Coca Cola.

These UK universities pay special attention to student employment opportunities as well as providing the necessary skills through the lectures that meet the requirements of the market. These are clear examples of how systemic collaboration between universities and business should develop.

Germany. Dual education has a long tradition in Germany and it is generally considered as one of the successful models of collaboration. This model operates mainly in the vocational education and training sector, however, it finds its place increasingly in higher education as well. This model in higher education includes agreements about large financial investments, to be covered jointly by the federal and state governments[78]. (see scheme 1).

Scheme 1. Vocational training system in Germany[79].

Apprenticeship

Training contract between the company and the apprentice		State recognized profession
Public school		Company
- Funded by the state - 2/3 are elective courses		-pays the apprentice; - trains a company employee as a certified apprentice trainer.
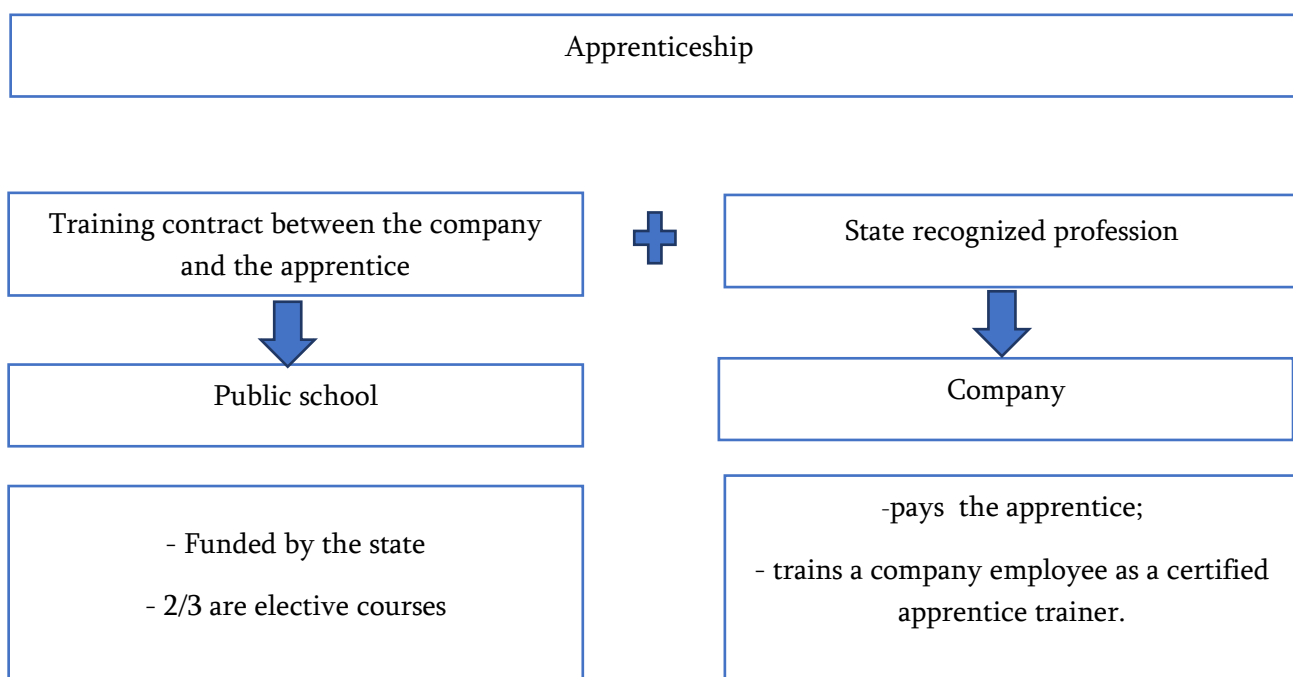
In Germany, students of a vocational training programme receive a monthly salary from the company they work for. Their average monthly salary is around 963 Euros. Depending on occupation and the region they work in, their salary may be higher or lower. The Federal Institute for Vocational Education and Training (BIBB) determines occupations and the respective salaries that trainees receive[80]. This system is also applied by apprenticeships. 80% of them get jobs in production based industries. All this shows the importance of a vocational training system for companies. Currently,

---

[78] Weert, E. d. (2011). *Perspectives on Higher Education and the labour market - Review of international policy developments.* Center for Higher Education Policy Studies.Page 11

[79] Source: Federal Statistical Office of Germany: Trade and Investment in 2017

[80]MakeitGermany. (2019). From https://www.make-it-in-germany.com/en/study-training/training/vocational/system/

there are more than 1.4 million apprenticeships in Germany. The German dual education system has high international reputation; as a result, Germany has the lowest youth unemployment rate in Europe.

The German higher education system also applies the dual system of vocational training. There are currently more than 110,000 students taking part in a dual study programme. This system is usually offered by universities of applied sciences. Most of the dual study programmes are in engineering or business because of the high level of integration with the more than 41,000 partner companies[81]. The educational relationship between the enterprise and the apprentice is established by the training contract which must be concluded in writing before the beginning of the training. The following issues are regulated by the training contract:

- type, structure and especially the goal of the training;
- duration of the training;
- training measures;
- duration of the regular daily time of training;
- duration of the probation period;
- payment method and amount of trainee allowance;
- duration of the leave;
- preconditions for termination[82].

In Germany, the training process in the company is coordinated and strictly regulated by the study-plan, which describes how the set goals can be achieved and the competencies the students will gain. In terms of competencies, the processes are focused on three areas: the development of vocational skills, personal skills and social skills.

Cooperation between Siemens and German universities can be considered as an outstanding model of collaboration in Germany. Such relations have a long history of providing benefits for both company and higher education institutions. At present, Siemens closely cooperates with a number of universities and research institutes around the world within the scope of the open innovation strategy, which fosters the company´s long term success and strengthens its innovative potential. Open Innovation, which means engaging third parties in the research and development (R&D) process, is crucial for Siemens' to maintain its competiveness. Siemens' University Relations (UR) Unit

---

[81]GTAI. (2019). From https://www.gtai.de/gtai-en/invest/business-location-germany/business-climate/dual-education-system-65348

[82] Hogeforster, J., &undDöding, L. (2012). *ThedualsystemofvocationaltraininginGermany.* Hamburg . page 2

manages and coordinates the company´s cooperation with universities. Establishing networking links with both academic staff and students play a crucial role for the Siemens employees.

All universities with which Siemens does not have strategic collaboration are called Partner Universities and their cooperation is general; in case of strategic collaboration, the agreement specifies the areas of cooperation and research directions (time and specific topics are also determined). Universities become Principal Partners of Siemens after they already have certain experiences in conducting research or performing other joint activities with the company. Currently Siemens has 16 global Principal Partner universities all over the world and over 50 Partner Universities. In the above processes the highest level of partnership is the Centre of Knowledge Interchange (CKI). Here collaboration covers not only individual departments or research groups, but the entire university that focuses on both joint research activities and talent acquisition. There are eight universities, with which Siemens has a long term strategic partnership. They are as follows:

- RWTH Aachen in Germany;
- Technical University of Berlin in Germany;
- Technical University of Munich in Germany;
- University of Erlangen-Nuremberg in Germany;
- Graz University of Technology in Austria;
- Tsinghua University in China;
- University of California at Berkley in the United States;
- Georgia Institute of Technology in the United States.

Talent acquisition and R&D are the main activities carried out by the Centres of Knowledge Interchange. Siemens and CKI universities conduct various large-scale, long-term research projects, which have a strategic impact on both institutions. Professional mobility is one of the newest models in this direction. This activity allows Siemens to develop university-industry relationships and facilitate expert exchange on a strategic level with selected CKI universities. Such activity is a new form of the CKI programmeme and is developing to be one of the promising directions for the future collaboration[83].

Poland. Over the past decade, reforms have been carried out in the Polish higher education system with the aim to align the Polish education system with the European higher education system. Currently, the development objectives of the Polish higher education institutions focus not only on

---

[83]Orazbayeva, B. (2017). *Siemens research cooperation with universities* . Munich: University-Business Cooperation in Europe,page 3,4,7.

increasing the number of students, but they also pay attention to research projects, the level of internationalization and cooperation with employers. Therefore, one of the main tasks of the recent reforms for Polish universities has been to equip graduates with the skills compatible with the demands of the modern labour market.

By 2014, there were 681 active business and innovation centres in Poland, including 42 science and technology parks and 24 technology incubators which were operated by the Foundation of Academic Entrepreneurship Incubators (AIP), 42 technology transfer centres, 47 innovation centres, 103 investment funds, 81 local and regional loan funds, 58 credit guarantee funds, 7 the so called business angel networks, 207 training and consulting centres, and 46 incubators. However, it should be mentioned as well that many publicly funded technology parks are half empty and serve non-innovative tenants, while new technology-based firms use privately funded co-working spaces[84]

In Poland, cooperation between HEIs and businesses (UBC) is carried out in different forms; the most common 8 main are as follows (see Scheme 2):

1. Collaboration in research and development;
2. Mobility of academics;
3. Mobility of students;
4. Commercialization of research and development results;
5. Curriculum development and delivery;
6. Lifelong learning;
7. Entrepreneurship;
8. Governance.

---

[84] Arjona, R., Vankalck, S., & Senczyszyn, D. (2017). *Peer Review of Poland's Higher Education and Science System.* Brussels: European Commission, page 58

Scheme 2. Forms of cooperation between HEIs and employers in Poland[85]
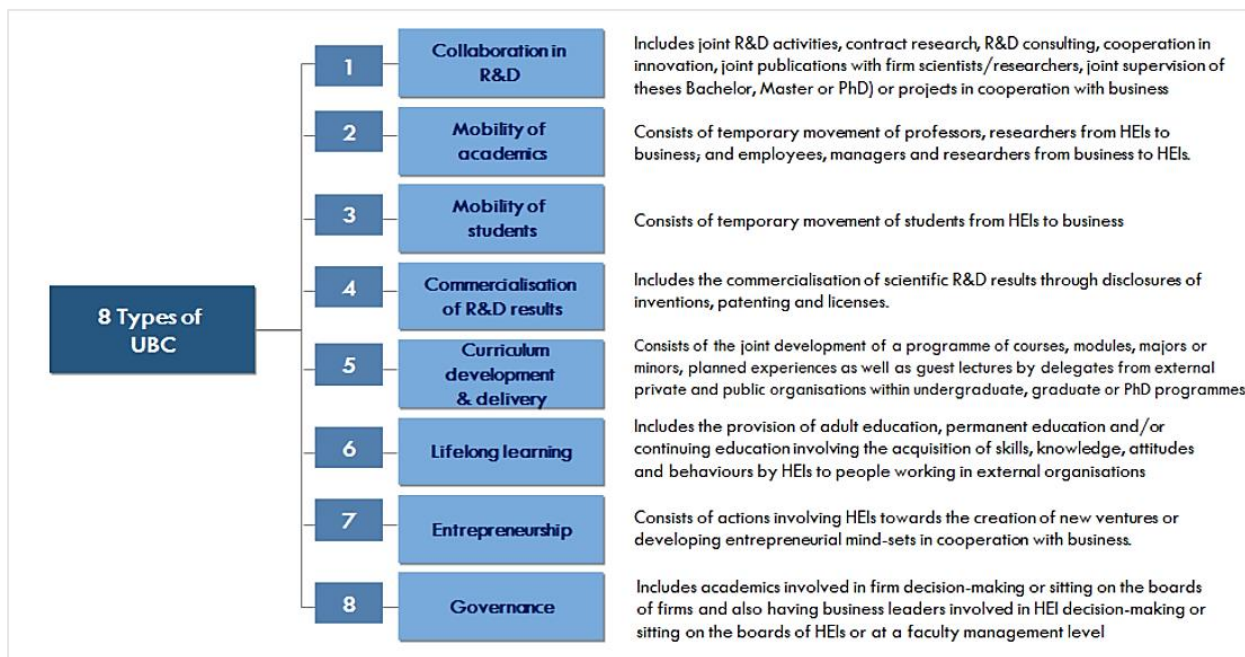
The above-mentioned forms of cooperation are grouped in four main areas and include different types of activities. (see Scheme N3).

Scheme 3. Areas of cooperation between HEIs and employers in Poland [86]

Area	Activity
Education	1. Joint development of curricula
	2. Joint delivery of curriculum (invited lecturers)
	3. Student mobility (student internship and employment)
	4. Dual training programmes (some theory, some practice)
	5. Lifelong Learning (executive education, industrial training and professional training)
Research	6. Joint research and development
	7. Business consulting
	8. Mobility of professionals (temporary exchange of employees)

---

[85]State of University and Business Cooparation in Poland, T. Davey, V. Galán-Muros, A. Meerman, T. Kusio, Science-to-Business Marketing Research Centre, apprimo UG and University Industry Innovation Network (UIIN), 2013, page 10

[86]Arjona, R., Vankalck, S., & Senczyszyn, D. (2017). *Peer Review of Poland's Higher Education and Science System.* Brussels: European Commission., page 9

Subsidizing	9. Commercialization of research and development (licensing and patenting)
	10. Academic entrepreneurship (spinoffs)
	11. Student entrepreneurship
Management	12. Governance (exchange of representatives of HEIs and businesses in the process of decision-making).
	13. Destribution of resources (infrastructure, staff, equipment)
	14. Industry support (sponsorship, funding, scholarships)

As Scheme 2 and Scheme 3 show, the system in Poland is based on more traditional approaches and cooperation between universities and business is mostly based on the acquisition of academic knowledge. As a result, links between business and science are less developed in Poland. Only 10% of innovative companies cooperate with higher education institutions. In terms of cooperation between public and private scientific sectors, Poland lags behind its regional neighbors such as the Czech Republic and Hungary[87].

In Poland, the mechanisms used in the University-Business cooperation format are aimed at strengthening the links between business and scientific centers and are analogous to the measures used for these purposes in European countries; however, the average level of their use in Europe is higher (see Diagram 1).

---

[87] Arjona, R., Vankalck, S., & Senczyszyn, D. (2017). *Peer Review of Poland's Higher Education and Science System.* Brussels: European Commission., p. 56

Diagram 1. Supporting operating mechanisms for university business cooperation[88]
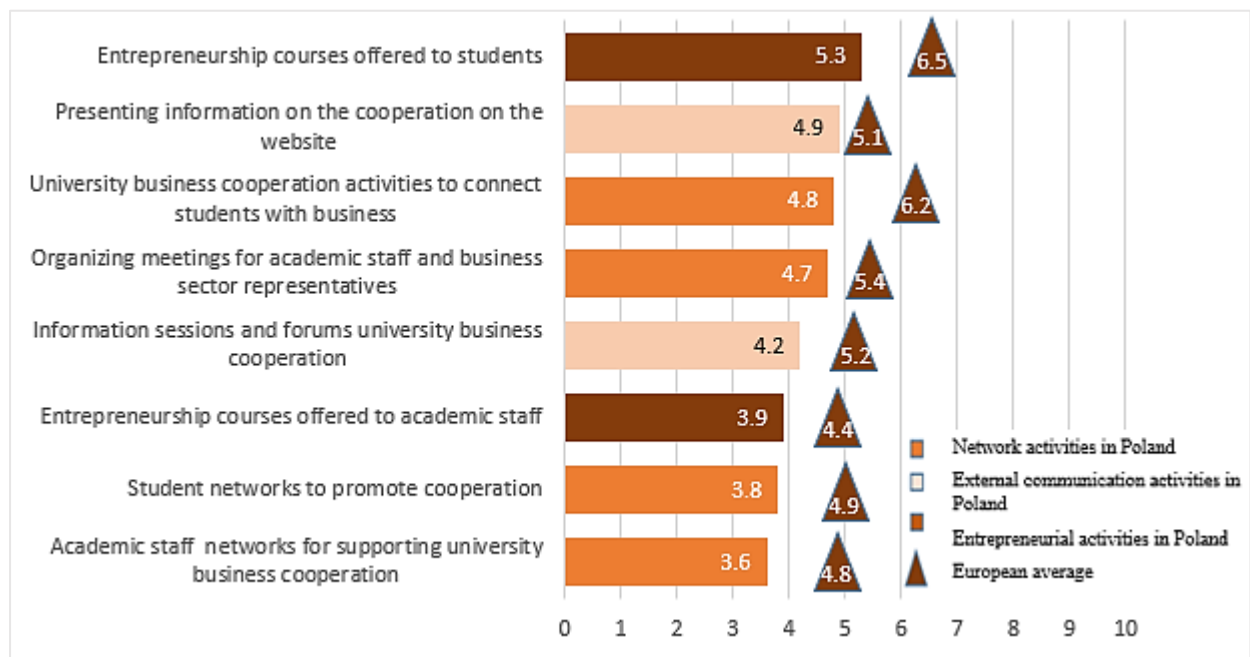
Gdańsk University of Technology (GUT), founded in 1904, is one of the oldest in Poland. It employs approximately 2,500 people; including 1,200 academic teachers and has over 26,000 students. The University has nine faculties in the following fields: Architecture; Chemistry, Electronics, Telecommunications and Informatics, Electrical and Control Engineering, Applied Physics and Mathematics, Civil and Environmental Engineering, Mechanical Engineering, Ocean Engineering and Ship Technology, Management & Economics. The mission of the University is based on the knowledge triangle, which has three main integral components: research, education and innovation. Implementation of the mission includes 5 basic goals that the University has achieved by 2020; in particular:

I. Raising funds considering the priorities of the region, the country and the EU in order to achieve and implement strategic tasks;

II. Promoting development of innovation;

III. Implementation of new methods of teaching and learning: lifelong learning, team designing, e-learning, research-oriented practice, modernisation of teaching and research laboratories;

IV. Supporting the talented youth;

V. Elimination of barriers and administrative burden, supporting best practices of working and innovation.

According to the strategy of GUT, the main objective of the University is "to become a modern technical university and a renowned opinion-forming centre, as well as the initiator and implementer

---

[88]Arjona, R., Vankalck, S., & Senczyszyn, D. (2017). *Peer Review of Poland's Higher Education and Science System.* Brussels: European Commission., page 34

of application undertakings and innovative tasks in cooperation with the business sector". The main reason for GUT to intensify cooperation with business is related to the demand for highly qualified engineers on regional and national levels. Companies are looking for innovative solutions through R&D conducted jointly with scientific institutions. In addition, this is a prerequisite for governmental investments and subsidies. In GUT, activities for the commercialization of science are carried out by two units: Centre for Knowledge and Technology Transfer (CKTT), and the Excento Special Purpose Vehicle (SPV).

Centre for Knowledge and Technology Transfer (CKTT) was established in 2011 and it helps researchers with the commercialisation of their research outcomes through the mechanisms such as licensing research results, sales, intellectual property-related processes, etc. The centre is also engaged in identifying the needs/unsolved problems of business and tries to find academic teams willing to cooperate in finding solutions for them. The centre plays the role of an intermediary among professors and researchers on one side and professors, researchers and entrepreneurs on the other, in supporting them through finding appropriate contacts, preparing documents, commercialising academic research, and finding financial resources. It also provides support to the spin-off companies which understand the importance of research and technology for producing and selling products on the market. In addition, such companies benefit from other forms of support, in particular: support in protection of intellectual property, formation of working teams consisting of scientists and managers, mentoring for commercialization, support in the patent application procedures, and in finding financial resources. Special Purpose Vehicle (SPV) focuses on supporting commercialization of the innovations developed at the University. SPV was established in 2014 and currently it holds shares of six spin-off companies. According to Polish national regulations, universities cannot directly take charge of spin-off companies but this can be achieved through the SPV. CKTT and the SPV have common politics and a common board; they cooperate closely, which allows them to make decisions on implementing particular projects (directly or indirectly) more easily.

The decisions made within the frames of the above discussed new strategy have led to the implementation of a few large investment projects at the GUT dedicated to cooperation between science and business. This resulted in the construction of the following innovative technological and science centres:

- *The Nanotechnology Center* – a total of € 18 million was invested in the Center. The Centre has 36 education and research laboratories equipped with modern equipment. The centre consists of two parts:

1. Research and education - belongs to the Faculty of Mathematics and Physics. The laboratories belonging to the Faculty of Mechanical Engineering having the equipment which is mainly used for testing the mechanical properties of materials also belong to that part.
2. Office and lectures - is equipped with modern information and communication technologies and belongs to the Centre for Mathematics Teaching and Distance Learning Centre;

- *The Centre of Maritime and Military Technology* – is an independent body; however, it is part of the university structure. It is involved in many large national military projects, especially for the navy, which are vitally important in terms of finances and innovation as well;

- *The Information and Communication Cluster* - this is the most advanced clusters in Poland in terms of development. It was awarded with the title of the Key Pomeranian Region Cluster in the competition organised by the Regional Board. The cluster includes around 140 entities from the fields of electronics, information and telecommunications technologies;

- The Centre of Excellence in Manufacturing Research Infrastructure Application (CD NIWA) – it provides its users with comprehensive services in the area of technological competence for innovative manufacturing platforms, applications, offering access to advanced IT infrastructure and a wide range of consulting services. Approximately €10 million was invested in the project;

- The Centre for Advanced Technologies POMERANIA – represents a group of laboratories specialising in the performance of research services in the field of information and telecommunications technologies, functional materials and nanotechnology, environmental protection and biotechnology, chemistry, nutrition and medicinal chemistry. POMERANIA consists of 10 laboratories (8 of them are located at GUT and 2 are at the University of Gdansk), which are equipped with modern research equipment. The cost of the project is approximately € 6 million. Therefore, this is the largest project financed from the regional funds. The Centre is intended for direct cooperation with industry. Initially, it was mainly aimed at cooperation with small companies from the region; however its area of operation has increased from the regional to the national level.

South Korea. The South Korean Work-Learning Dual System has been enforced since 2014. This system is based on using some of the elements of the apprenticeship system implemented in Germany and Switzerland. In particular, in this system companies hire youths seeking employment and provide them with systematic on-site education and training to raise practical skills required at workplaces. These training programmes are provided by local educational institutions. Qualifications of those who complete their education and training in such format are recognized through the certificates

provided by the companies. Therefore, the system is based on the practice of on-site teaching and ensures simultaneous employment and training of the students and other job seekers through various programmes and training courses.

Work-Learning Dual System is based on the practice of on-the-job training (OJT) and off-the-job training (Off-JT). In the first case, companies independently provide on-the-job training of the workforce, while in the second case the companies, together with independent training centers, develop joint employment-training programmes and implement them outside the workplace. Such programmes are designed for the companies that are unable to operate their own training programmes due to corporate conditions. Instead, companies make agreements with training centers and conduct off the job trainings[89].

Recently, South Korean universities have been positioned among the world leading universities when it comes to the research output completed with industry partnerships. In the influential ranking of higher education institutions (SDG) of 2019, South Korean universities are leading among 300 universities from 63 countries according to innovations, their number of patents and their research income. In particular, Yonsei University is ranked 1st, Korea Advanced Institute of Science and Technology (KAIST) is ranked 4th, Sungkyunkwan University (SKKU) is ranked 6th, Kyung Hee University is ranked 8th, Pohang University of Science and Technology (POSTECH) is ranked 22nd, etc.[90] It should be noted that these universities not only cooperate with companies, but in some cases companies are their founders as well. For instance, POSTECH was founded by Korean steel company POSCO in 1986; SKKU, one of the oldest educational institutions is in a long-term alliance with Samsung. In addition to SKKU, leading South Korean universities actively collaborate with Samsung, the Korean multinational electronics conglomerate, carry out joint research and publish research outcomes[91].

It should be noted that the collaboration between the South Korean universities and Samsung is the best example of university-company cooperation, which results in an increase of between 2% and 5% in the number of joint research. Until the early 1960s South Korea was a poor, agriculture-based

[89]OECD-OPSI. (2019). From Korean Work-Learning: https://oecd-opsi.org/wp-content/uploads/2018/09/Work-Learning-Dual-System.pdf

[90]timeshighereducation.com. (2019). From South Korean universities lead way on industry collaboration: https://www.timeshighereducation.com/news/south-korean-universities-lead-way-on-industry-collaboration#survey-answer-დასб

[91]timeshighereducation.com. (2019). From South Korean universities lead way on industry collaboration: https://www.timeshighereducation.com/news/south-korean-universities-lead-way-on-industry-collaboration#survey-answer

economy; at present it is one of the most developed high-tech economies in the world. Fruitful cooperation between universities and industry can be considered as the main source of this progress.

United States of America. The cooperation between universities and business in the US involves a wide range of initiatives, both public and private sectors are engaged, the process is mediated by different organizations, professional associations or private foundations. For example, Skills for America's Future is a government-led effort to build "partnerships with industry, labour unions, community colleges and other training providers in all 50 states" (The White House, 2010). The Startup America Partnership is another initiative - an independent, private-sector coalition of major corporations, advisors, funders, service providers and mentors working to dramatically increase the achievements of American entrepreneurs.

The Business - Higher Education Forum (BHEF) is an organization which combines senior business and higher education executives that are working to advance innovative solutions to US education and workforce challenges. BHEF is composed of CEOs, college and university presidents, and other leaders. The Forum aims to address fundamental issues of global competitiveness. There are various examples of curricular adaptation with the requirements of business as a result of cooperation with businesses. For example, the curriculum of University of Waterloo and University of British Columbia is adapted as a joint education programme and includes students' work placements in the course structure. As a result, in US collaboration between business and universities is driven by availability and stability of financial resources, availability of excellent human resources, a favorable environment for education, research, innovation and entrepreneurship, requirements of regional development, institutional culture of collaboration, research, entrepreneurial education and commercialization of technology[92].

The Berkeley Research Center is a joint industry-university research center located at the University of California, in particular, at the Berkeley campus. The Center was founded in 1999; it includes 11 faculties and is funded jointly by industry and the federal government. Companies, such as Intel, ST Microelectronics, Infineon, Hitachi, Sun, Cisco, Agilent and Conextant are partners of the research center. The Center also has nine associate members from the government sector - Defense Advanced Research Projects Agency (DARPA), the National Science Foundation, Office of Naval Research, MARCO (a semiconductor industry research consortium), etc. One of the aspects of the cooperation is the open intellectual property (IP) and quickly published research results. This has removed one of

---

[92]Epure, M. (2017). University-business cooperation: adapting the curriculum and educational package to labor market requirements. *International Conference on Business Excellence.* Bucharest, page 342.

the major impediments to industry university cooperation in the past. The result of industry-university collaboration is the existence of university startups. The cases of Berkeley and Stanford Universities are good examples of this. Palo Alto Research Center (PARC) was founded in 1970 and it has close ties with several departments at Stanford. Many faculties worked with PARC and a broad exchange programme was offered as well. Some of the notable start-ups from Stanford include Silicon Graphics, Sun, MIPS and many others. Some of these companies were later bought by existing companies and many of them became large employers, occupying major market share in their sectors. The University of California at Berkeley played a major role in the development of computer aided design of integrated circuits. Start-up companies such as Cadence and Ingress, Chiron, Inktomi, NanoSystem and others were actively involved in this process.

In the early stages of university-industry collaboration, ownership of open intellectual property (IP) was largely a major problem, as specific research was only funded by industry. This led to difficult negotiations; complex research contracts were needed, which is a great stumbling block to university-industry cooperation. Today, in the US, each university and industry has its own policies for intellectual property, which further complicates the issue. The government addressed the problem by adopting the Bayh-Dole Act[93], which awarded the IP to the federally funded research organization[94].

The University City Science Center was established in the US in 1963. It is headquartered in West Philadelphia. It is the first and the oldest research park in the US and it is also presented as one of the pioneers of the business incubator model. This center is non-profit organisation which is located adjacent to the campuses of University of Pennsylvania and Drexel University as part of an urban renewal zone. The Center includes fifteen buildings and owns a campus located on $70,000m^2$, evolving from the urban transformation project into an innovation intermediary to fuel the region's innovation-based economy. Since it was established, 442 companies mainly in the life sciences, health technologies, and other emerging technologies have benefited from the Science Center's business incubation services. 214 of these companies are still active. 155 businesses that have 'graduated' from the Science Center reached income of $13 billion that accounts for 2.2% of the region's total economic output. These businesses employed 12,000 people in the highskilled and high-wage positions. Currently, there are approximately 60 business incubator companies operating at the Science Center from a range of fields, from healthcare to green tech. At present, the Science Center cooperates with Microsoft, SeventySix Capital and Wexford Science. For example, the

---

[93]Bayh-Dole Act: Regulations Impacting Ownership of Patent Rights, Pub. L. 96-517, December 12, 1980 (https://research.wisc.edu/bayhdole/).
[94]Spencer, W. (2006). University-Industry Cooperation; Examples from the US. San Francisco, page 7-8

Science Center and Microsoft have formed a Strategic Digital Alliance focused on digital literacy, small business and entrepreneurship, health and youth engagement joint programmes.

Activities carried out by the Science Center can be clustered in five directions the organization has identified for itself: business incubation, connections to the Capital, community building, education and workforce development, and infrastructure for development. Business incubation services offered by the Science Center aim at supporting new start-ups to survive the 'valley of death', the period of negative cash flow until first revenues are made. One of the main aims of the Science Center is to prepare workforce specialized in STEM fields (Science, Technology, Engineering and Math). To this end, the Center launched First Hand, a unique programmeme to encourage student engagement in the STEM disciplines. The programmeme allows participants to work together with scientists and researchers at Science Center companies, as well as to receive advice from professionals. First Hand is a unique programme launched by the Science Center to engage students in the STEM disciplines of Science, Technology, Engineering and Math, combined with Arts (STEAM), through hands-on projects and real-life lab experience [95].

It is noteworthy that the world is facing serious challenges due to the COVID-19 pandemic and the education sector is no exception. In order to maintain the continuity of education, universities have shifted to the distance learning system; as a result, different HEIs found themselves in different starting positions. After a year and a half of distance learning, leading and less successful ones were identified, although the challenge of continuous learning was met by all higher education institutions. This part of the paper provides an analysis of the challenges and opportunities of COVID-19, as well as an assessment of the new skills required by employers that have emerged as a result of changes in the business environment due to the pandemic.

A key challenge for higher education (HE) in response to the pandemic has been managing the abrupt move of teaching and learning from face-to-face to online delivery. Other issues that have arisen for HE include how to assess and evaluate students, support international students, manage travel restrictions, and ensure the psychosocial wellbeing of students, faculty and staff[96]. Collaboration between higher education institutions and industry was severely affected by companies' struggle for self-servival during the pandemic period. The issue of cooperation with higher education institutions has lost some urgency, which is an impediment for achieving synergy between these sectors.

---

[95]Tercanli, H., & Meerman, A. (2017). *University City Science Center - A unique business incubation model to enhance technology-based economic development.* Philadelphia;pages 3-9.
[96]Masri, A. E., & Sabzalieva, E. (2020, July 21). Dealing with disruption, rethinking recovery: Policy responses to the COVID-19 pandemic in higher education. *Policy Design and Practice*, pp. 312-333.

The COVID-19 pandemic has created the largest disruption of education systems in modern history, affecting nearly 1.6 billion learners in more than 190 countries and all continents. Closures of schools and other learning spaces have impacted 94 per cent of the world's student population, up to 99 per cent in low and lower-middle income countries[97].

Georgian legislation was a clear evidence of the fact that distance learning was not considered to be an important issue in Georgia. E-learning first appeared in the legislation in 2016 and distance learning was considered only as a method of synchronous communication. The fact that the shift fully to the distance learning was forced by a force majeure, obviously created some discomfort for universities and students. Initially, the problem of access to the internet was particularly noticeable, but at a later stage, the need for adapting teaching and learning methods to distance learning became apparent. The problem of access to the Internet became a major challenge, especially for students living in the regions. The pandemic processes also affected the collaboration between HEIs and employers; in particular, new opportunities for cooperation emerged as a result of introduction of the e-learning; the need for employment without leaving home increased, which saved employers' and employees' time, money, etc. However, the use of these opportunities has become possible in particular fields, including higher education. For example, in order to mitigate the devastating effects of the COVID-19 pandemic in the US, government and various stakeholders of the education sector actively cooperated to develop a policy of cooperation that would respond to the challenges of the pandemic. O* NET Database, which includes data on education, skills, abilities and the knowledge required for each job has become a successful tool[98]. It also provides a measure of distance between similar occupations "making use of similar skills and experience" and "requiring minimal additional preparation". For aligning the skills required with the labour market needs the Database is used both by HEIs and empoyers[99]. During the COVID-19 pandemic, there were some changes in student appraisal by prospective employers, as evidenced by online assessment tools. As for the graduates, the COVID-19 pandemic had a negative impact on their careers. They graduated at the beginning of the global recession. Due to the existing situation and low market conditions, when entering the labour market, employees have to agree to low salaries, which, in many cases, have a negative impact on their careers[100].

---

[97] Policy Brief: Education during COVID-19 and beyond, (2020), United Nations, AUGUST;

[98]ihილეთ წყარო: O*NET online;https://www.onetonline.org/

[99]OECD. (2020). Skill measures to mobilise the workforce during the COVID-19crisis. OECD.

[100]Burgess, S., & Sievertsen, H. H. (2020, April 1). *Schools, skills, and learning: The impact of COVID-19 on education.* Retrieved from VOX EU: https://voxeu.org/article/impact-covid-19-education

The COVID-19 crisis has prompted some innovations in the education sector of **the United Kingdom** as well. Following the example of the United Kingdom, it is important to highlight the role of the social network as a tool for two-way communication between the university and students. Technological changes may cause a shift from place-based interactions to person-to-person connectivity resulting in what Wellman (2001) terms "networked individualism"[101]. As it was revealed, in the UK employers demand new skills from higher education institutions in terms of the pandemic. The ability of teamwork is encouraged in the modern education system. Studies show that this skill helps students in self-realization and therefore, it should be supported through the use of advanced technologies. As a result, recently collaboration spaces like Microsoft Teams, GoogleDrive and Slack have integrated file sharing, co-editing, text chats and video/audio call options in their work spaces[102]. It can be considered as a positive fact that university careers services moved their entire programme of activities and events online, sparking new and innovative ways of working with employers, students and graduates. To support this effort, Universities in the UK established an Advisory Board bringing together representatives from higher education, business, and careers services[103].

Australia. Higher education system of Australia effectively addressed problems due to COVID-19. Australian universities rapidly began to support alternative forms of teaching. Some of them temporarily stopped teaching to design online learning (e.g. Macquarie University; Monash University; Victoria University), while others continued face-to-face learning with social distancing protocol and offering of online recordings (e.g. University of Queensland; University of Technology Sydney). Others made rapid progress towards online learning and were able to implement progressive offerings without delay (e.g. Australian National University; University of Tasmania)[104]. As a result, Australia has become one of the leading countries to mitigate the negative impact of COVID-19 on higher education, including cooperation between higher education institutions and employers. It is noteworthy that the pandemic encouraged the use of the methods such as "learning by doing"[105].

---

[101]Raaper, R. and Brown, C. (2020) 'The Covid-19 pandemic and the dissolution of the university campus : implications for student support practice.', *Journal of professional capital and community.*, 5 (3/4). pp. 343-349

[102]Qingqi, W.and Rasmussen, A. (2020), resilient hybrid learning strategies to explicitly teach team skills in undergraduate students., University of Nottingham

[103]Universities UK. (2021). *Supporting graduates in a Covid-19 economy.* London: Woburn House.

[104]Butler-Henderson, J. C., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., Magni, P. A., & Lam, S. (2020, April 1). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching, 3*(1).

[105]OECD. (2020). *Skill measures to mobilisethe workforce during the COVID-19crisis.* OECD.

Taking the above facts into consideration, it becomes clear that higher education was affected by COVID-19 pandemic all around the world. Despite a completely different starting position, most of the HEIs in different countries had to shift to the distance learning model. HEIs, especially in developing economies are facing the challenges such as updating the planning system, adaptation of implementation and evaluation systems. Demand for new skills by employers has become a key factor in the employment process of students and graduates; a new reality has emerged for the future cooperation between HEIs and employers, a significant emphasis has been placed on the use of digital technologies.

3.2.Cooperation between higher education institutions and employers in Georgia

In order to achieve the objectives of the research, a complex survey was conducted in the following three directions: the research of the graduates of Georgian HEIs, the research of employers, and the research of HEIs.

At the initial stage of the research, *a survey of employers* was conducted which **covered** 140 organizations. Most of the surveyed organizations (78%) operate in Tbilisi, followed by Shida Kartli - 5%, Kvemo Kartli - 5% and Imereti - 4%; other regions account for the remaining 8%. 62% of the surveyed employers operate in private sector, while the non-governmental and public sectors are represented by 19% each. The surveyed organizations operate in various areas, including finance and insurance (18%), education (15%) and tourism (12%), followed by professional, scientific and technical activities (10%), trade (8%), public administration, and healthcare and social assistance (6-6%). The survey covered both large employers (with more than 500 employees) as well as relatively small and medium-sized organizations with 50 or fewer employees (see. Figure 1).

Figure 1. Number of employees in the employer organizations participating in the survey
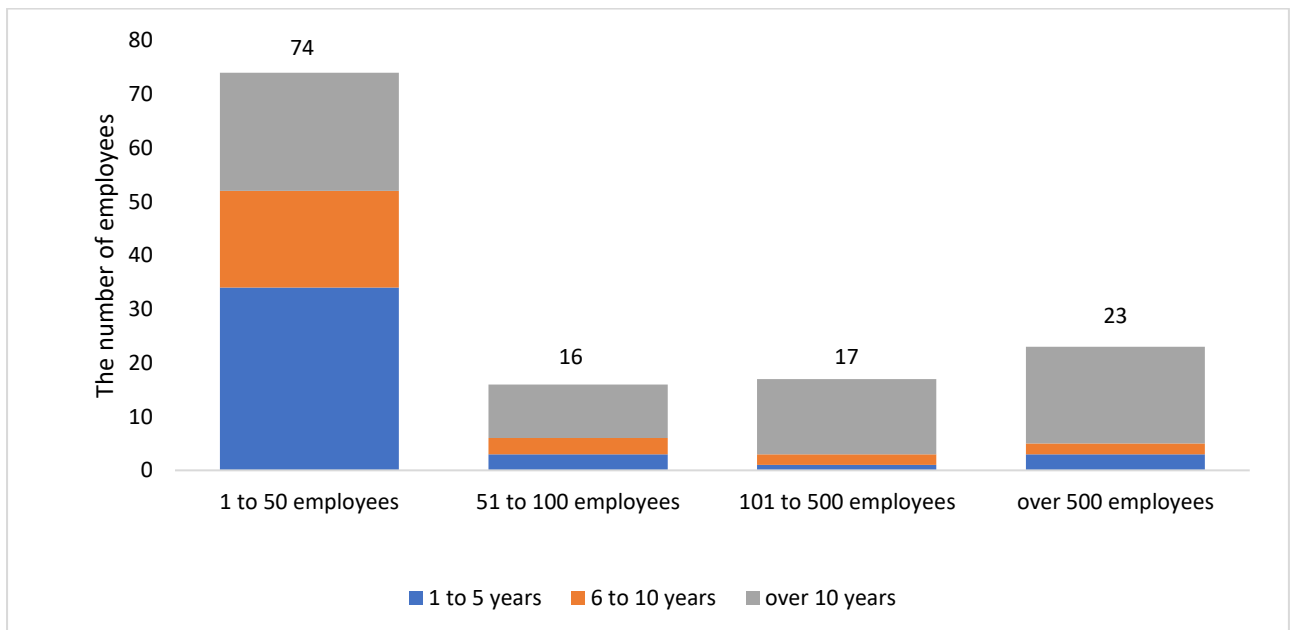

The majority of the surveyed employers are small companies with an average of 5 years experience of operating in the market. As for the relatively large companies surveyed, most of them have been in the market for 10 years or more.

The main criteria that employers use in the recruiting process of new employees were identified by the research. When selecting new staff, the vast majority (60%) of the respondents focus on the professional experience of the applicants. The academic degree of the potential staff is the second most important factor (19%), and the third one is the HEI where the applicant graduated from (see Figure 2).

Figure 2. Main criteria used by the employers for selecting employees
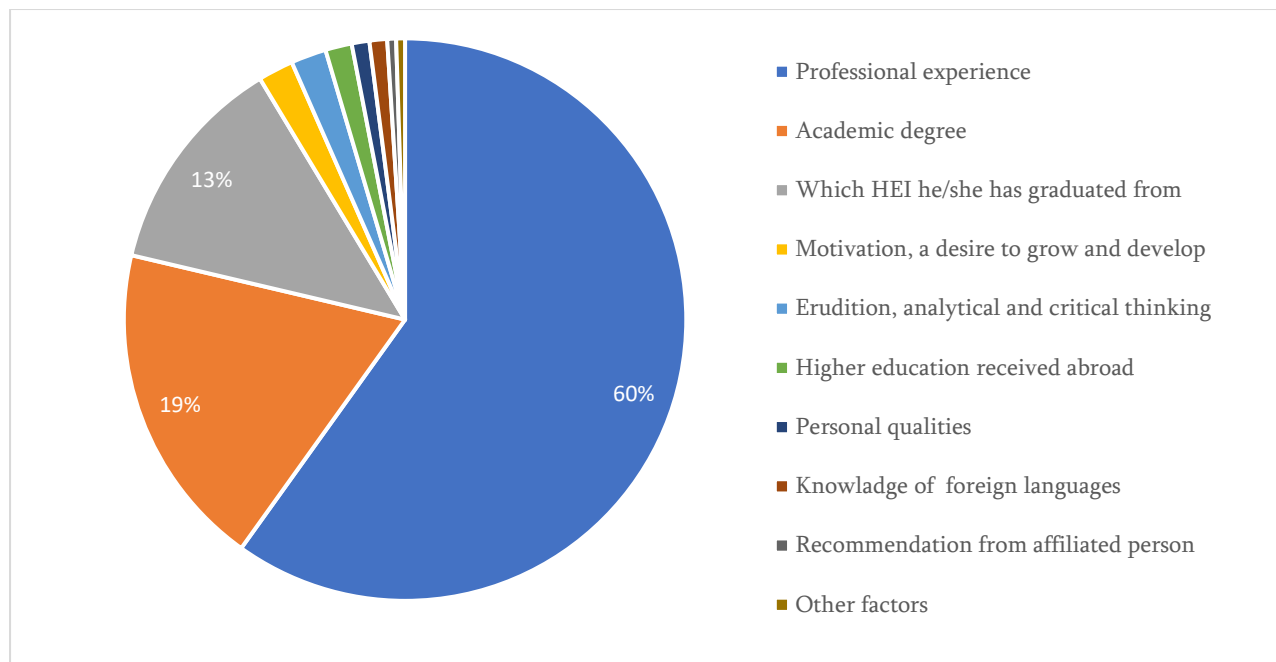
The analysis of the above issues according to sectors (public, private, and civil) allowed us to conclude that the professional experience of the candidates is the most important factor in the selection process of the applicants. However, it should be noted that when selecting employees in the public sector compared to other sectors, relatively large attention is paid to the academic degree of the future employee, while employers in the private sector pay higher attention to which HEI the applicant graduated from. It is worth noting that in the selection process, nongovernmental sector, unlike the other two sectors, focuses more on the factors such as the candidate's motivation and desire to develop, analytical thinking skills, etc.

Assessment of collaboration between HEIs and employers showed that 27% of the organizations participating in the survey do not cooperate with HEIs at all, while 28% of them have weak cooperation. Only 16% of organizations rate their collaboration as having high-level involvement, and 29% consider that their involvement is moderate. Organizations that report relatively active involvement in collaboration with HEIs are mostly large organizations with more than 100 employees. If we evaluate university-employer cooperation by sectors, most of the organizations which consider having high and/or medium quality relations with HEIs are public sector employers.

Therefore, 28% of public sector respondents say they have a high level of involvement while the corresponding figure for the private sector is 15% and for the non-governmental sector - 8%. In addition, the vast majority (71%) of the employers participating in the survey believe that the desire to collaborate with HEIs should be mutual; while fewer consider that such type of collaboration should be initiated by a third party (public, civil sector). There were a few respondents who noted that they do not see the need for such cooperation.

The collaboration of the employers participating in the survey with HEIs mainly includes student mobility or internships. The results (see Figure 3) show that this relatively simple form of cooperation is two or more times higher compared with the other forms of cooperation. Other, relatively frequently carried out forms of cooperation include collaboration in research and development, seminars and training delivered by academic staff for organizations and the development of joint training programmes. It should be noted as well that only eight of the surveyed organizations (about 6% of the respondents) participated in the preparation and development of academic programmes in HEIs.

Figure 3. Main directions of collaboration between HEIs and employers

The analysis of the issue according to sectors (public and private) shows that collaboration between HEIs and private sector representatives is mostly limited to internships and training of students. Cases of such collaboration between HEIs and members of the public and non-governmental sectors are also quite common. It is important to note that the non-governmental sector, compared to the other two sectors, is more intensively involved in processes such as cooperation in R&D activities and creation/testing of new services/products (see Figure 4).

Figure 4. Main directions of cooperation between employers and higher education institutions according to sectors
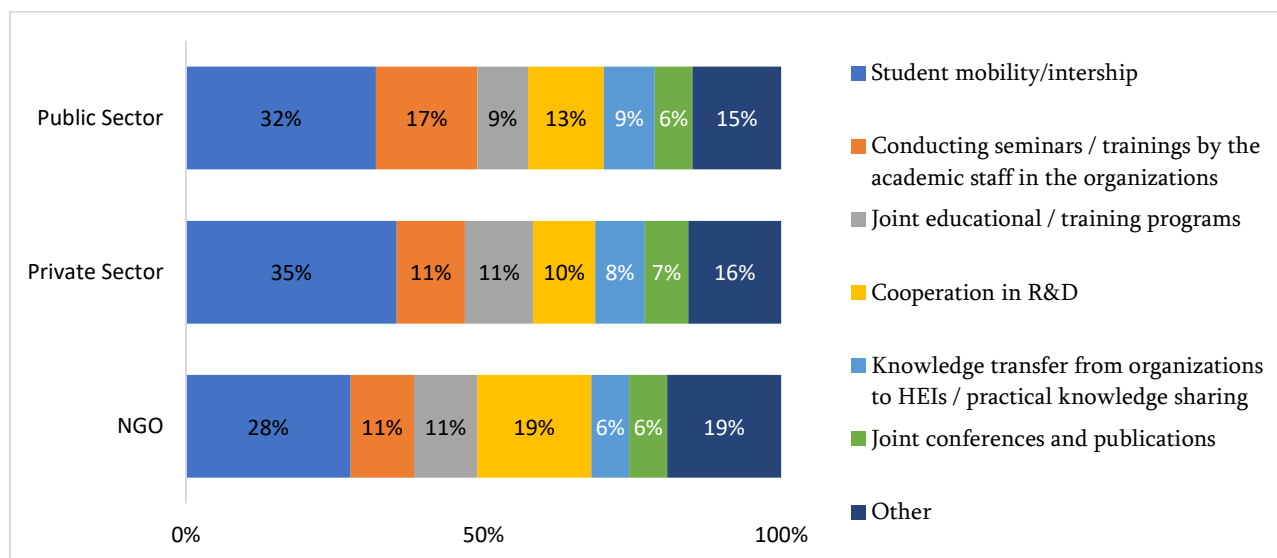
From the employers' point of view, the main factors and goals that should promote further deepening and strengthening of collaboration between the university and organizations are: attracting new qualified staff; the possibility of implementation of joint projects or goals; and the desire of the organization to share its practical experience with the HEIs and to provide its staff with continuous education (see Figure 5).

Figure 5. The key factors that impact cooperation between employers and higher education institutions
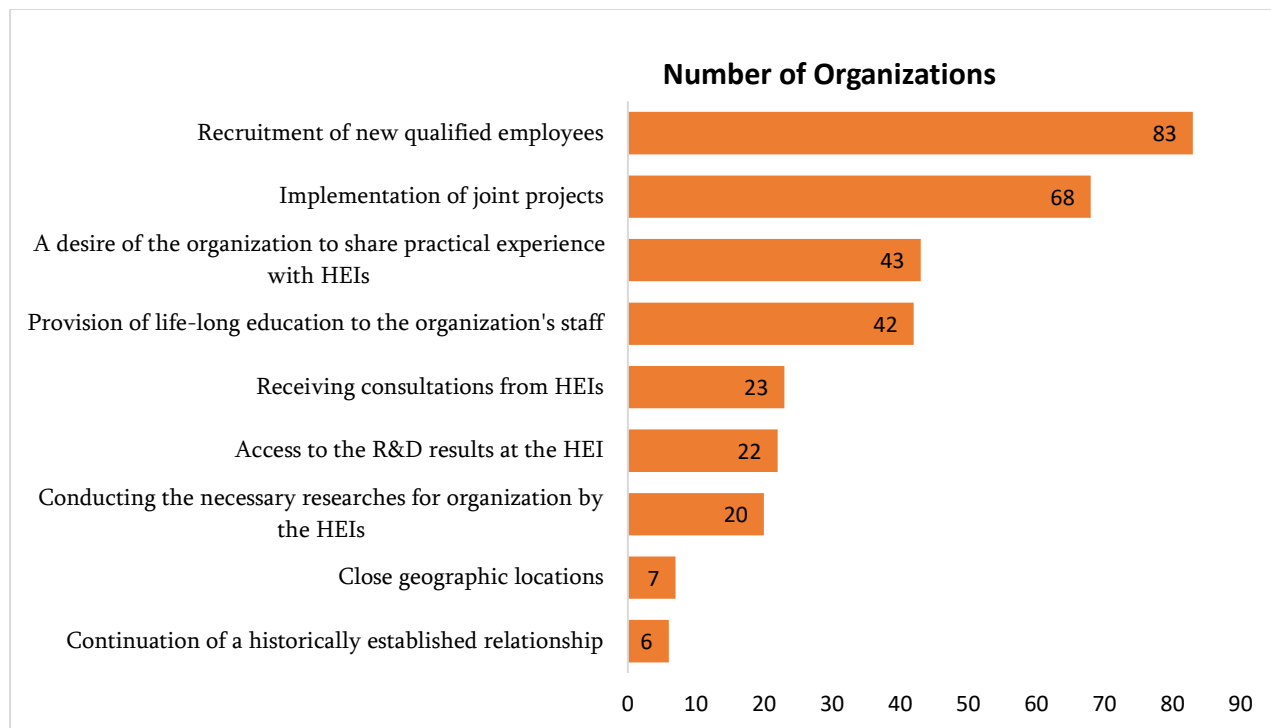
Only 22 of the surveyed employers indicate the need for expanding cooperation in the fields of research and consulting, while a very small number (6 organizations) focus on maintaining the established relationship. Based on such approaches, we can assume that models of strong, multi-year, mutually beneficial partnerships between the university and employment sectors have not been established in Georgia as yet, and more effort is needed in this direction.

An assessment of the barriers to cooperation between HEIs and employers showed that only a small part of the surveyed organizations (2 of them) believe that in the current period there are almost no obstacles in cooperation with HEIs. Most of them consider that the main problems in the process of cooperation with HEIs are mostly caused by differences in motivations, values, and visions. Other important problems include the lack of time and resources and the high level of bureaucracy in HEIs. A small part of the respondents (5%) also noted that, in some cases, the barrier to cooperation was the refusal from HEIs (see Figure 6).

Figure 6. Barriers to the collaboration between higher education institutions and employers
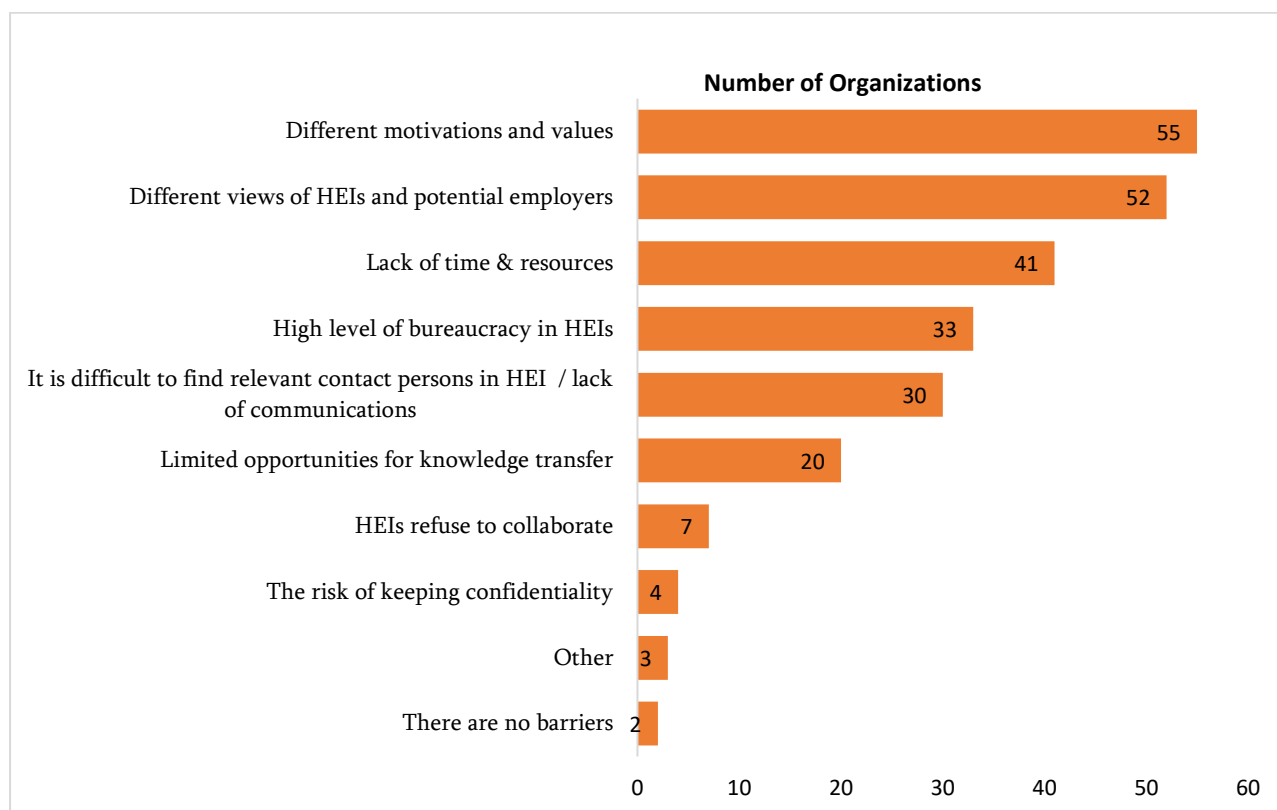
In the framework of the study, critical views regarding their hesitation to collaborate with HEIs were also expressed by several employers. In particular, they consider that, on the one hand, the quality of education in HEIs is not satisfactory and, therefore, companies are not motivated to seek staff in universities; and on the other hand, cooperation with HEIs is mostly formal and they show little initiative to focus on promoting and recommending successful students.

The employers with experience of high level of cooperation and collaboration with HEIs (16% of all the employers participating in the survey) evaluated the benefits they received from collaboration with HEIs on a four-point scale. Most of them point out that significant benefits have been achieved through collaboration with HEIs as the skills of the graduates have become relevant to the demands of the labour market. In addition, significant or very significant benefits were gained from the point of improving innovative capabilities of organizations; practical skills and professionalism of the organization's staff also improved. According to the organizations, there is mainly a slight improvement in receiving scientific advice and recommendations from HEIs. The situation is similar in terms of the general financial and economic situation of the organization, as most employers did not receive any special benefits from collaboration with HEIs in this regard. Moreover, 33% of the surveyed organizations believe that the Georgian government is not involved in collaboration programmes, 32% have no information on state policies in this area, and 18% believe that the

government more or less promotes this type of collaboration. Only 5% of respondents believe that the government is actively involved in promoting these processes.

The study showed that vertical and horizontal mismatch is a critical issue for employers in Georgia. Organizations note that a mismatch between the knowledge and qualifications of an employee and job requirements is one of the key challenges for them. Horizontal mismatch of some degree is observed in about 70% of organizations. With regard to vertical mismatch most of the surveyed employers note that an average of 30-50% of their employees have the relevant education required by their particular job; 20-40% have lower qualifications than required to perform a particular job; and an average of 10-30% of employees have higher level of education than required to perform the assigned job.

The results of the employers' survey allowed us to see their opinion about the qualification and skills of the HEI graduates. 35% of the respondents openly stated that currently, the higher education system of Georgia does not provide graduates with the necessary knowledge and skills. A significant share of employers also pointed out that university education provides a student with more or less appropriate basis of theoretical knowledge; however, practical knowledge and skills are a problem. The assessment of the availability of qualified workforce in the labour market made by employers was even harsher. 80% of the respondents stated that the workforce who fails to have appropriate skills is a serious challenge for organizations. The analysis of the answers to the open-ended questions by the employees provides a basis to conclude that, according to the employers, in many cases the graduates in Georgia have a theoretical knowledge base, but they lack the practical skills. Most of the employers note that the graduates employed by them learn the technical issues they should have mastered at HEIs directly in the working process. However, employers also point out that in different HEIs the quality of education is various and in many cases, the practical skills students gain are fundamentally different.

With regard to promoting graduate employment, it is important to note that the organizations that are involved in student internship programmes generally hire an average of 10 to 30 interns or employees a year directly from HEIs. Moreover, there are some, although a small number of employers that fund tuition fees for their student employees. However, a serious problem occurs with regard to the implementation of startup ideas, during the previous 5 years, most employers did not fund any business idea or startup within HEIs (see Figure N7).

Figure 7. Funding projects and/or start-up ideas for the last five years
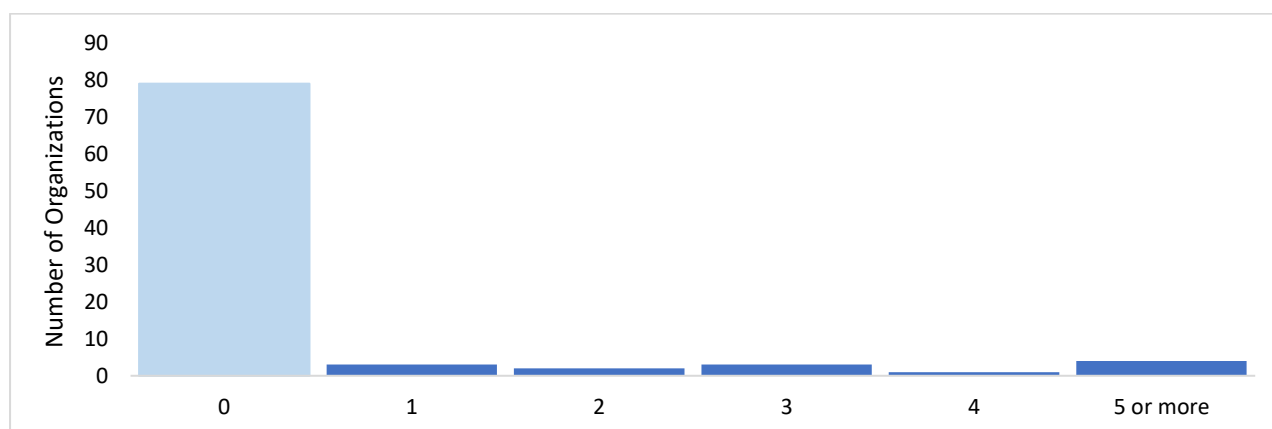
An analysis of the current situation shows that in many cases employers fail to engage in healthy, active and in-depth cooperation with HEIs, show little effort to encourage student initiatives and support them to gain practical knowledge. As a result, 76% of the surveyed employers consider that cooperation with HEIs is not actually related to significant financial and/or material costs for them and only 4% believe that cooperation with HEIs is related to high financial costs.

Statistical methods were used to analyze the data based on the quantitative information obtained during the research and correlations between the variables in the research were calculated (see Table N2 - correlation matrix).

Table 2. Correlation matrix

Correlation matrix	Number of years of collaboration	Number of partner HEIs	Interaction with the representatives of HEIs	Staff participation in academic activities
Number of partner HEIs	**0.52**			
Interaction with the representatives of HEIs	**0.40**	**0.55**		
Asking for collaboration			**0.48**	
Asking for staff training		**0.68**	**0.47**	
Staff participation in courses provided by HEIs	**-0.12**	**-0.13**		**0.45**
Student employees				**0.49**

The analysis of the results obtained from the correlation matrix shows that the longer the cooperation between the employers and the HEI is, the more often their representatives communicate and the more employers try to get in touch with new educational institutions. In addition, a weak negative relationship was found in terms of participation by the representatives of the employer in training courses organized by partner HEIs; in particular, the more the duration of the collaboration with HEIs increases, the fewer employees (from employer organizations) participate in the courses organized by them. These circumstances indicate that the quality of services offered by HEIs does not meet the requirements of employers. However, the more employees of the organization are involved in academic activities and/or have the status of a student, the more employees participate in trainings and seminars organized by HEIs.

The survey of the graduates covered 400 graduates. In terms of the academic degree obtained, 51% of the respondents have a bachelor's degree, 43% have a master's degree, 5% have a doctorate degree and 1% of respondents did not indicate their degree. 47% of the respondents have received education only in state HEIs, 44% only in private HEIs and 9% in both types of HEIs. At the time the survey was carried out, 82% of respondents were employed and 18% were unemployed. Approximately 20% of the unemployed had never been employed and 80% had been employed at least once in the past. In terms of age distribution, a problem of high unemployment among relatively young graduates is observed. About 30% of the graduates aged 20-24 does not have a permanent and stable job; while this figure is much lower for graduates aged 30 and over. 80-85% of the employed respondents are hired employees and this type of employment is leading in all the age categories. The share of the self-employed in total respondents and of business owners in the self-employed is small. The graduate survey focused more on the assessments made by relatively new graduates (4-5 years after graduation on average).

More than half (53%) of the surveyed graduates who were employed at the time of the survey or had been employed before note that they work (and / or have worked before) in the field relevant to their education. However, only 70% of the respondents of this category work exactly in accordance with the qualifications granted by the HEI (see Figure 8).

Figure 8. Relevance between the job and the qualification obtained
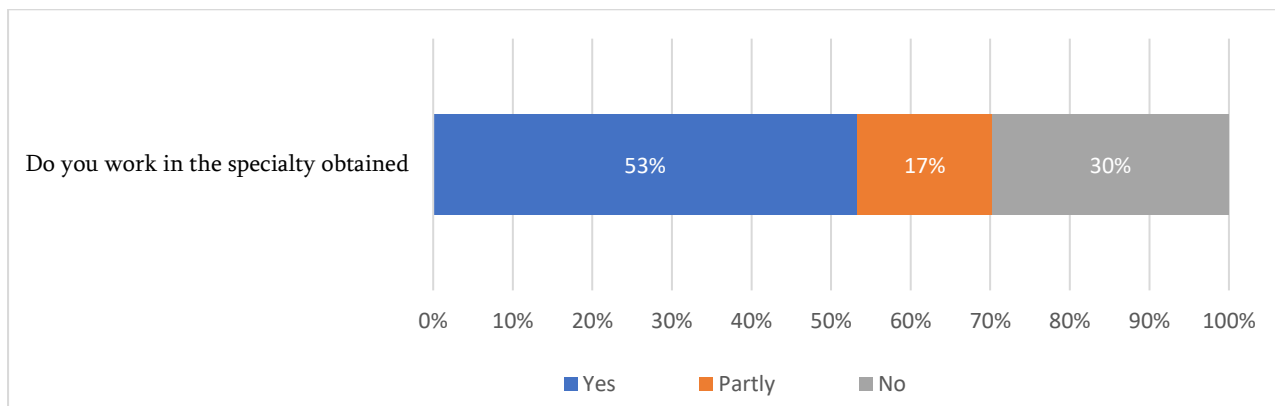
As Figure 8 shows, the field of employment and qualification of 17% of the respondents are partially related to each other, while the remaining 30% of the respondents do not work in accordance with their specialty or in a field where they would be able to apply the knowledge gained in HEIs. **This fact indicates a horizontal mismatch between the labour supplied to the Georgian labour market and the labour requirements.** The study of research data showed that employment according to the specialty remains a significant challenge in today's Georgia. In addition, the average length of time a graduate needs to find a job according to one's specialty after graduation is an important factor as well. 86% of the respondents employed in their specialty stated that it took them less than 1 year to find a suitable job in the labour market, while 14% needed over 1 year to find a job relevant to the qualification obtained in the HEI (see Figure N9).

Figure 9. The period of time from graduating the HEI to finding a relevant job in the specialty
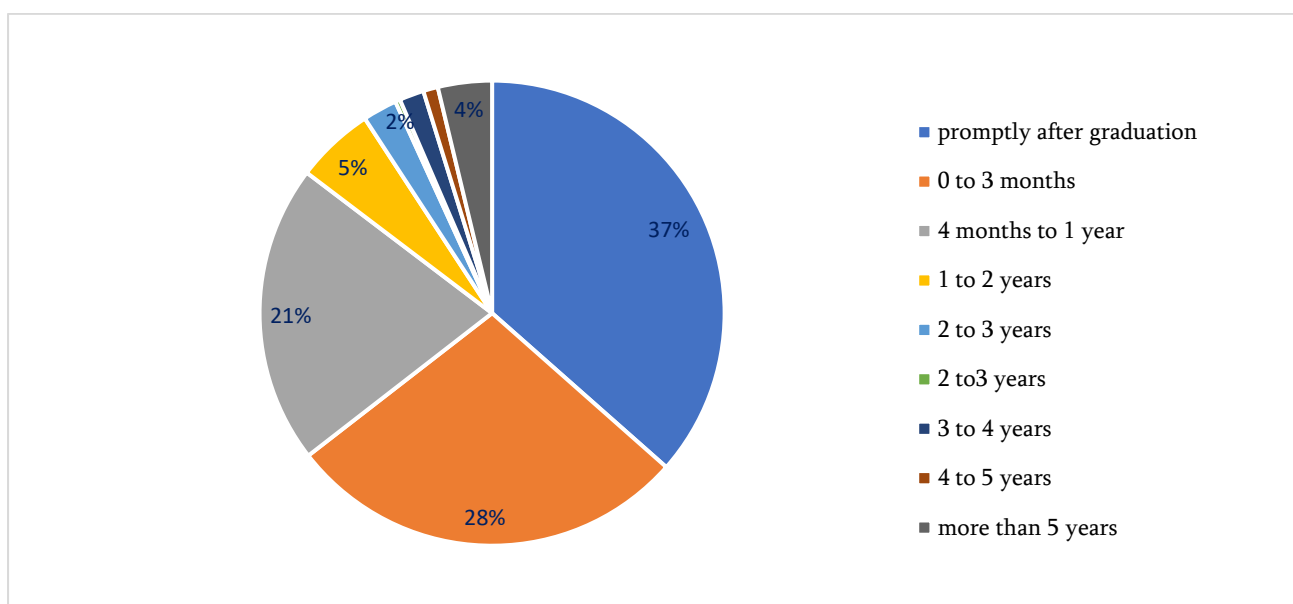
The fact, that in addition to a high level of unemployment among graduates, it takes them quite long to find a job after graduating from HEIs is one of the indicators of poor cooperation between HEIs and employers. The responses of the graduates show that 36% of those employed according to their specialty find a job upon completion of the HEI, 28% need about three months to find a job and 36% need more than four months, in many cases even a year or more. This rate differs for various age groups depending on the period they graduated. Data analysis shows that young graduates are able to find a job relevant to their profession in a shorter period than older graduates were (or are) able to. Accordingly, 93% of the graduates aged 20-24 were able to find a job relevant to their profession in less than 1 year, while the corresponding figures are 89% for the respondents aged 25-29; 77% for respondents aged 30-34 and 68% for those aged 35 and older.

Relevance between jobs and specialties obtained in higher education institutions was also studied in the broader context of qualifications available in HEIs. The results of the study revealed that an average of 50% or more of the graduates in the fields of economics, business, law, humanities and social sciences do not work according to their specialties. However, unlike graduates of other qualifications, graduates of economics, business and law who are currently working in their specialties note that it took them less than 1 year to find a suitable job in the labor market. Due to specificity and the demand in the labor market, graduates of construction, engineering and natural sciences are most often employed with their specialties. Graduates of humanities need relatively more time to find a relevant job. In addition, on average a relatively long period of job search is met among graduates of humanities (see Figure 10).

Figure 10. Distribution of graduates according to being employed with their specialty, in terms of the qualifications awarded.
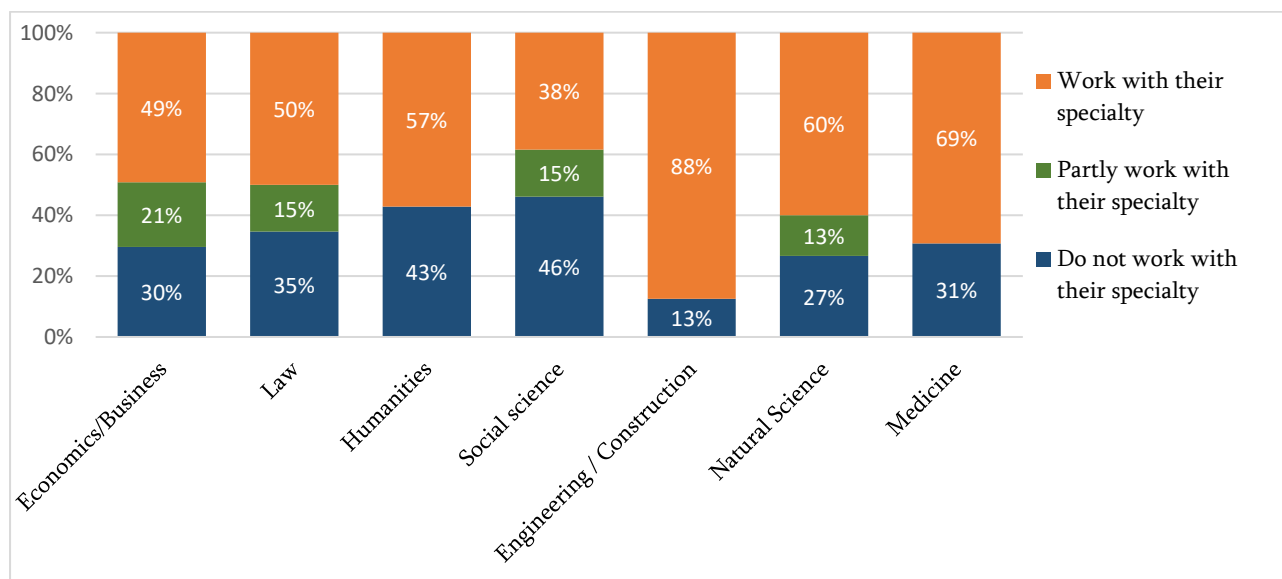
The outcomes of cooperation between HEIs and employers directly reflect on the competitiveness of the graduates and on effective employment according to their specialty. Therefore, it is important to see how they evaluate the practice of this kind of collaboration in Georgia. 31% of the respondents consider that there was cooperation between their education institutions and organizations and this cooperation provided the desired outcomes; more than one-third of the respondents (34%) mentioned that there was no cooperation and collaboration between their education institutions and employer organizations during their studies. 18% of the graduates have no information and have never heard of such cooperation. 17% of the respondents indicated that there was a collaboration between HEIs and the business sector, although it did not provide the desired outcomes and was only a formality (see Figure 11).

Figure 11. Graduate assessment of the existence of cooperation between HEIs and employers during their study period
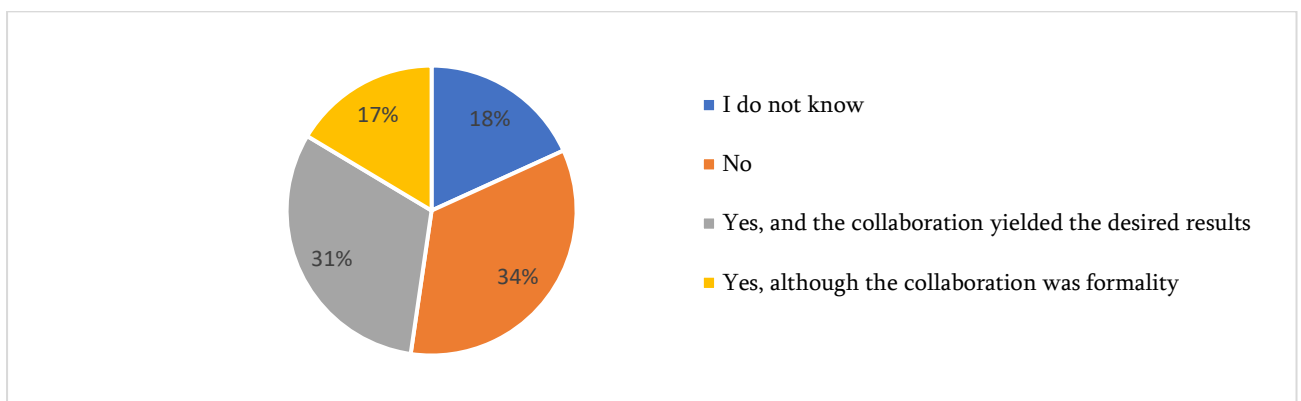
41% of the respondents who participated in joint programmemes and activities implemented as a result of cooperation between HEIs and employers during their studies indicate that joint programmemes and activities were of great help to them and made it easier to find a job. For 49% of the respondents in the same category, the cooperation did not directly made it easy to find a job, although it helped them to improve their skills and only 10% say that such activities were of no benefit to them. It should be noted that such collaboration between foreign higher education institutions and private or public companies is developed in the areas such as the establishment and functioning of joint research centers, the development of continuing training programmes, dual education programmes, etc. While in Georgia collaboration between HEIs and employers mainly include the simplest forms of cooperation, such as internship programmes in employer organizations, delivery of public lectures by the representatives of employer organizations in HEIs and employee training programmes.

The analysis of matching between the obtained qualifications and occupations shows that vertical mismatch is a serious problem for Georgian labour market. In particular, 35-40% of bachelors' and masters' degree holders employed according to their profession (fully or partially) believe that the level of their qualification is higher than needed for performing their functions in the workplace. This rate is over 60% in respondents with a doctorate degree. Moreover, none of the respondents employed according to their qualification consider that their qualification is lower than required for performing the duties imposed on them. As for employees whose jobs do not fit their specialty, 62% of the surveyed bachelors and 55% of the master's degree holders state that their qualifications are in line with the job requirements. One more problem in this regard is the inconsistency between the salary and the job performed. More specifically, 37% of the respondents employed in the private and non-governmental sectors believe that their qualifications are in line with the job and that the income earned is also adequate. However, 25% of the respondents employed in these sectors believe that their qualifications are much higher than required by the job to be done, and the salary is relatively small. The majority of the respondents employed in public sector believe that their qualifications and specialties are relevant to the work to be performed, although they are paid less with respect to the work done. 58% of the respondents employed in public sector consider that they are paid less with respect to the work done, while 47% of private sector employees think they get paid less with respect to the work done.

As it is widely known, the primary goal of the university education is to provide a set of skills and qualifications that allow graduates to be competitive in the labour market. The researchers studying education systems in Eastern European and developing countries point out that the skills currently provided to students by an average HEI in these countries are very old or they focus on specialties that are of little or no demand in the modern labour market. In many cases, teaching methods in such educational institutions focus on routine teaching and not on the development of problem solving and critical thinking skills[106]. Obviousely, Georgian higher education sector also suffers from this type of problem, which is substantiated by research results.

According to the results of the survey conducted as part of the research most of the graduates consider that during their studies at HEIs they could not gain the practical skills and experience that they need

---

[106]Bartlett, W., Uvalic, M., Durazzi, N., Monastiriotis, V., & Sene, T. (2016). From University to Employment: Higher Education Provision and Labour Market Needs in the Western Balkans.

to apply the acquired theoretical knowledge in the workplace. Development of office programme and foreign language skills were named as other important problems (see Figure 12).

Figure 12. Competencies that the graduates could not obtain during their studies at the HEI (by age)
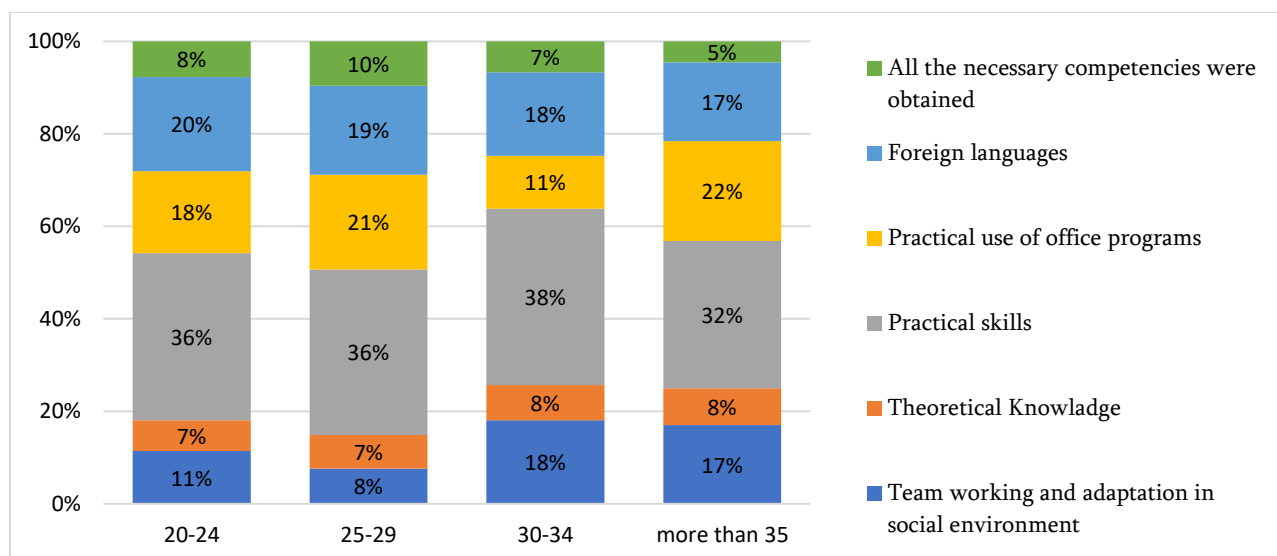
As Figure N12 shows, compared to the graduates aged 20-24 and 25-29, for the graduates aged 30 and over it is a more serious problem that they were not able to acquire the skills of teamwork and social adaptation while studying in HEIs. Respondents aged 35 and over also point out that the lack of the skills needed for practical application of office programmes is a relatively acute problem for them. However, graduates aged 30 and over consider the issue of learning a foreign language in HEI to be less problematic, which to some degree hinders their proper employment. It is important to note that on average 9% of the graduates under 30 think that the HEI provided them with all the necessary qualifications needed for employment; while the corresponding indicator for the graduates aged 30 and over is 6% on average.

Furthermore, 41% of the employed graduates surveyed consider that while performing daily activities in the current or previous jobs they only partially use the theoretical knowledge and practical skills acquired during their studies at the HEI; and 19% of the respondents think that they use only a very small part of the practical and theoretical education received in the HEI or do not use it at all. 25% of the respondents mostly use the education received in the HEI and only 15% of the respondents fully use the education received in the HEI in their professional activities.

Against this background, it is clear that for occupying the desired position in the labour market and performing appropriate duties it is important for most graduates to properly develop practical skills. However, unfortunately most of them consider that they are less able to do all this while studying in

HEIs. In addition, the existing problems obviously show that in most cases practical and theoretical training in higher education institutions cannot provide graduates with skills relevant to the requirements of the modern labour market.

The students' assessment of how much the cooperation between employers and HEIs helps them in the employment process should be regarded as one of the criteria of effectiveness of such cooperation. The survey revealed that graduates mostly search for and find jobs with their efforts or with the help of employment web pages (31% of employed respondents). The use of personal contacts is one of the most common ways for them to find a job. The second largest group of graduates (23%) gets a job with the help of contact persons and acquaintances/relatives. Only 11% of the graduates indicate that employment agencies and services in their HEIs have helped them find a job, while only 14% consider that finding a job was related to internship programmes which are partly carried out as a result of cooperation between HEIs and employers. Against this background it is clear that the Alumni Employment Services within HEIs are not functioning properly so far and accordingly, only small part of the graduates are able to find a job with their support. The fact that the use of personal contacts is one of the most common ways to find a job poses some threat of the spread of nepotism and ineffective employment. The data analysis shows that the graduates who were employed with the support of the specialized employment centers of higher education institutions are more likely to get jobs where they make better use of the skills obtained at the HEI compared to the ones who used employment websites or private contacts to get a job. This allows us to conclude that widening the scale and developing the capacity of functioning of career planning and development centers within HEIs will have a positive impact on the employment of graduates in the right directions and increase job satisfaction (see Figure N13).

Figure 13. The main tools for promoting graduate employment

Legend:
- Employment websites / job vacancies
- Public employment agency
- Employment service of a HEI
- Private employment agencies
- Internship programs
- Private contacts
- Involvement in family business
- Starting one's own business

Values shown in chart: 31%, 6%, 11%, 4%, 14%, 23%, 5%, 6%
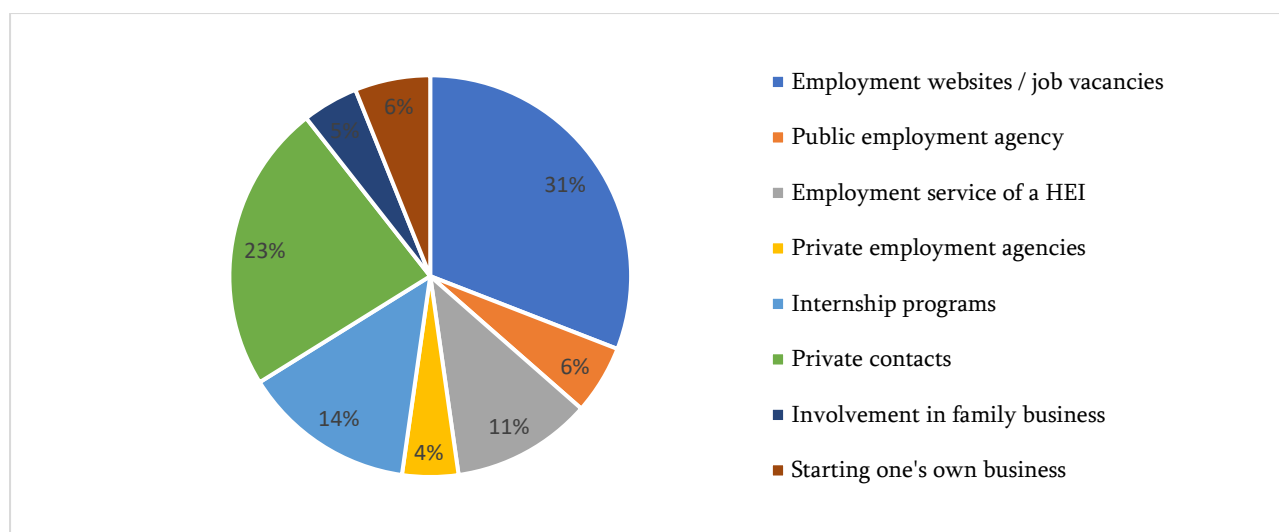
It is also interesting to see how effectively different HEIs manage to equip graduates with the appropriate knowledge and skills. As the results of the research show, the graduates of state HEIs use less of the knowledge and skills acquired at HEIs in the workplace compared to the graduates of private HEIs; and the graduates who got their education abroad use more of the theoretical and practical knowledge gained in HEIs compared to the local graduates (see Figure 14).

Figure 14. The use of knowledge acquired by graduates in a HEI, by types of HEIs
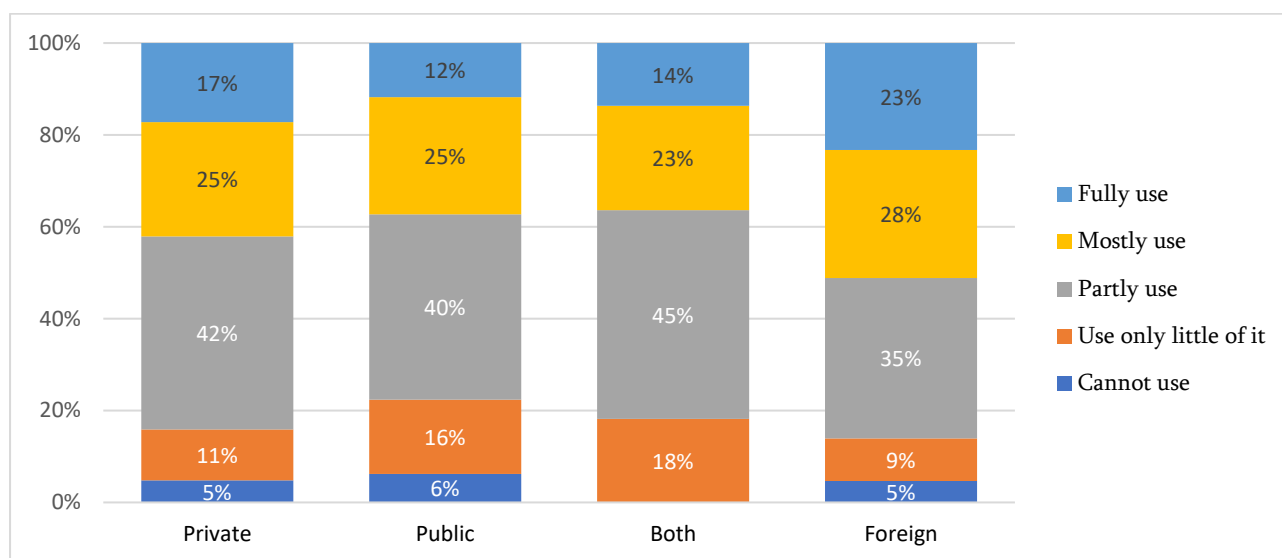
86% of respondents also believe that they need to take additional preparation and training courses in order to have higher qualification and achieve more career advancement. This situation is, in fact, similar in terms of key sectors. Therefore, it is clear that the majority of graduates see the need for additional training and preparation programmes for professional development. This fact once again highlights the shortcomings of the education received in HEIs and requires the implementation of training and preparation programmes and their proper functioning (see Figure 15).

Figure 15. How much additional training is needed for graduates to improve their skills, by sectors
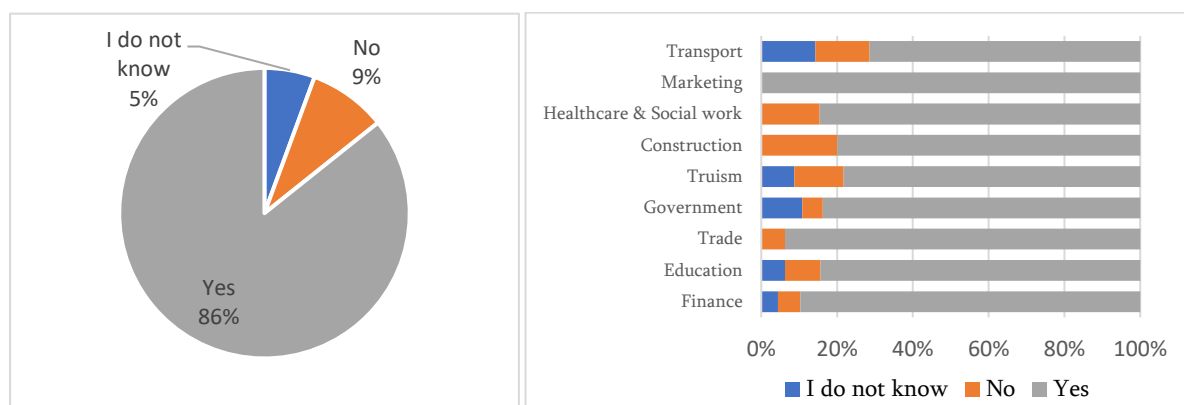
Most of the surveyed graduates believe that cooperation between HEIs and employers is highly important for each party involved. Most of them consider that if there is active cooperation and participation between higher education institutions and employers, it will primarily help new graduates to become highly qualified, adapt to the demands of the modern labour market and relatively easily find a suitable job. 20% of respondents think that collaboration will allow students to strengthen their theoretical knowledge with practical skills, while 15% think that it will contribute to career success of all future graduates. Only a small share of respondents (7%) feels skeptical and believes that such cooperation will be of no benefit to them. In addition, it is clear that the forms of collaboration between higher education institutions and employers aimed at training students and improving their qualification and knowledge help the further employment of students with their specialties.

To sum up the results of the survey of graduates, it can be said that this analysis clearly identifies the key challenges the sector is facing. Outdated teaching methods and teaching and practical materials in HEIs are some of the major problems mentioned above. Graduates believe that it is necessary to update the teaching methods and make great efforts to translate and publish leading textbooks. The quality of foreign language learning is another challenge and it needs significant improvement. Respondents consider that if in some cases some specific theoretical materials are taught and processed from high quality foreign textbooks it will greatly contribute to their professional development. In addition, the existence of career development department in the HEI and its proper functioning is a crucial issue as well. In their opinion such centers should connect students with potential employers. The results of the research confirm that although the graduates who got employed with the help of such centers represent a fairly small group, most of them got a job with their specialty, unlike the employees who got their job in other ways. And finally, the greatest focus was placed on the unconditional intensification of practical learning alongside the theoretical one. Students need to have active communication with potential employers through trainings, presentations or other activities. One of the essential needs identified was that educational programmes should be adequate to the requirements of the labour market.

The next stage of the research included the study of **higher education institutions** covering 25 HEIs, which accounted for about 45% of the HEIs authorized in accordance with the requirements of Georgian legislation by 2020. 15 universities participating in the survey are privately owned and 10 are public institutions. Among the HEIs covered by the survey 17 are universities, 5 are teaching universities and 3 are colleges. As regards to regional distribution, most of the surveyed HEIs are located in Tbilisi and six of them are from different regions (see Figure 16).

Figure 16. Higher education institutions participating in the survey
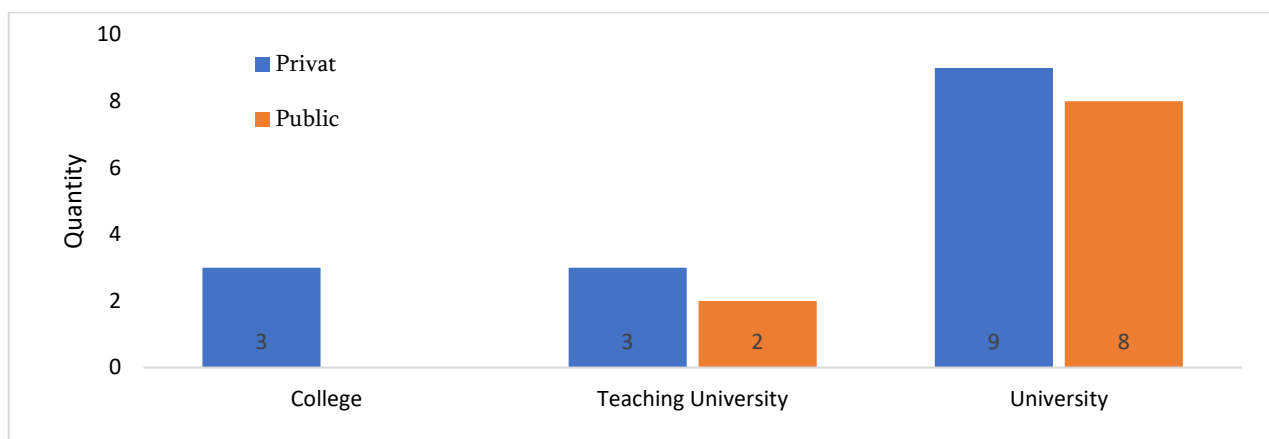
Scientific literature often refers to the fact that the higher education system in post-Soviet countries (or in countries with transition economies with similar history) is characterized by inadequate quality of higher education and graduates fail to gain the knowledge adequate to the needs of these regions. Therefore, the curricula and teaching methods in HEIs are still not sufficiently sophisticated and fail to adequately respond to the challenges of a market economy[107]. Obviously, one of the main goals of higher education institutions is to provide their students with up-to-date, relevant and necessary knowledge and practical skills and ensure adequate employment for them. One of the main goals of enhancing collaboration with organizations is also to improve the practical skills of graduates and increase effective employment opportunities for them. Horizontal and vertical mismatch is a particularly acute problem in the Georgian labour market. In the scientific literature it is often emphasized that the mismatch between graduates' education and skills and the requirements of the labour market has a negative impact on the efficiency of this market and leads to an increase in unemployment above the natural level. Matching between education and skills and the labour market requirements reduces frictional and structural unemployment and ensures matching between vacancies and properly qualified and skilled workers[108].

Taking the above into consideration, with the purpose to make a general assessment of the current situation in the Georgian labour market, we asked the representatives of higher education institutions to express their views on the extent to which their HEIs and Georgian higher education system in general provide graduates with knowledge and skills that meet qualification requirements of the employment market. The majority of higher education institutions participating in the study consider

---

[107]Sondergaard, L. and Murthi, M. et al. (2012) Skills Not Just Diplomas: Managing Education for Results in Eastern Europe and Central Asia. Washington: The World Bank

[108]Petrongolo, B., &Pissarides, C. A. (2001). Looking into the Black Box: A Survey of the Matching Function. Journal of Economic Literature, 390-431.

that the level of theoretical and practical education of their graduates matches the requirements of the labour market. More specifically, all the colleges and teaching universities noted that they provide their graduates with all the necessary knowledge and skills that are needed to find a suitable job in the employment market. About 30% of private and public universities stated that they fully provide graduates with all the necessary education, while 50% of them consider that they mostly provide their graduates with the necessary knowledge and skills (see Figure N17).

Figure 17. The extent to which HEIs provide graduates with the necessary knowledge and skills
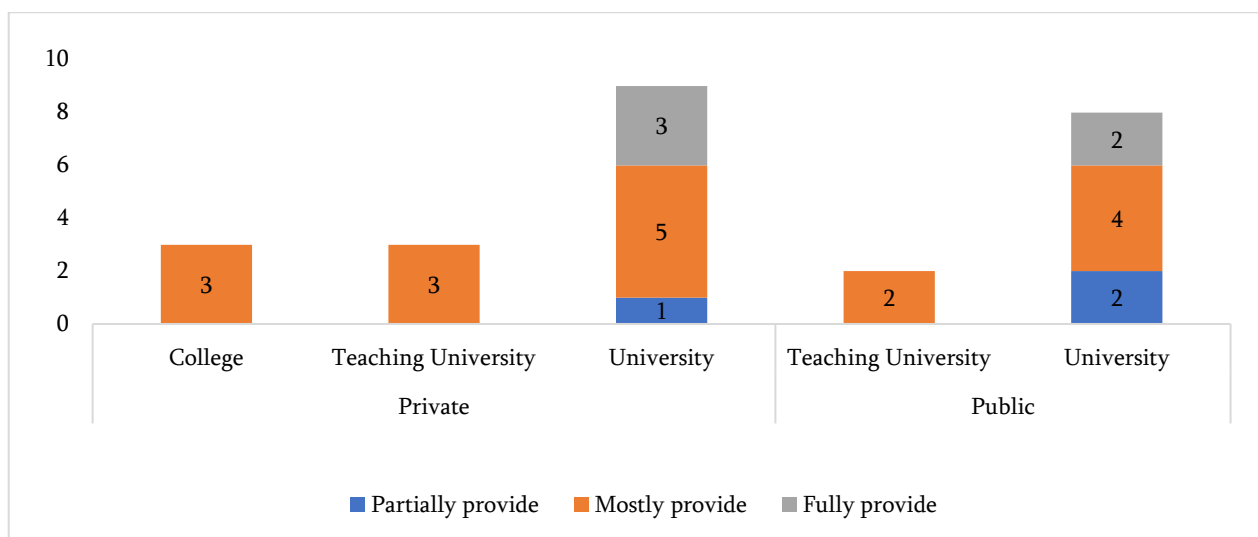
It should be noted that only 12% of the surveyed HEIs believe that they only partially provide the graduates with the knowledge and skills necessary to find a suitable job in the employment market. However, when representatives of HEIs made an assessment of the general situation in the country in this regard, it turned out that 72% of HEIs across the country only partially provide graduates with the knowledge and skills necessary to find a suitable job in the labour market. Representatives of HEIs point to this issue as one of the reasons for the mismatch, emphasizing that even employers often do not fully understand what qualifications, skills and knowledge they need currently or in the future.

Most of the respondent HEIs consider that, on average, 40-60% of their graduates work in the specialty and qualification that they were awarded in HEIs. This figure is relatively high in case of private and public universities and lower for colleges and teaching universities. According to the representatives of several private universities and colleges, only 20% of their graduates are able to find employment in accordance with their profession.

Different types of HEIs provide different assessments of the major obstacles faced by their graduates while searching for a job. In particular, colleges and universities generally believe that their graduates

do not have sufficient practical skills and this hinders their employment; they also point to the lack of vacancies in the labour market. Representatives of teaching universities consider that the lack of vacancies is the main problem in the country. Adaptation to the labour market was also named as a significant problem by colleges (see Figure N18).

Figure 18. The main difficulties encountered in employing HEI graduates
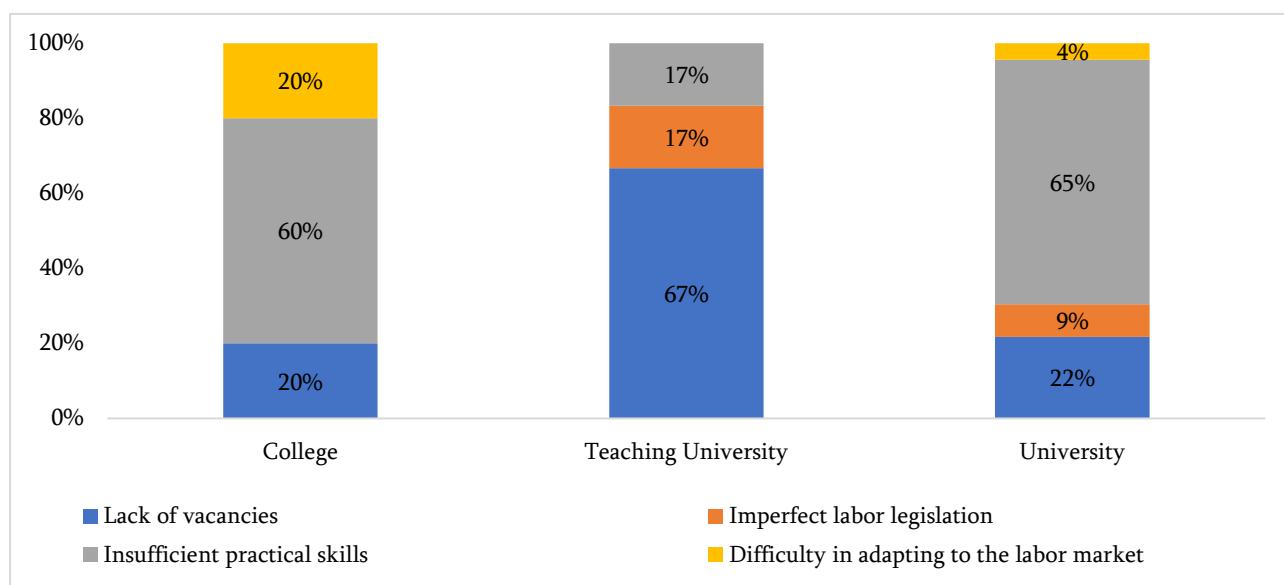
Most of the HEIs participating in the survey noted that their cooperation with employers is mostly moderate. 40% of the participants consider that they have a high level of cooperation with companies and government organizations. It is interesting to note that cooperation in research and development and cooperation in lifelong learning was observed in several higher education institutions (see Figure 19). However, unfortunately some of the modern forms of collaboration, such as sponsorship of scientific activities by organizations in HEIs and joint development, testing and creation of new products and services, are not found in any higher education institution.

Figure 19. Forms of cooperation between HEIs and organizations
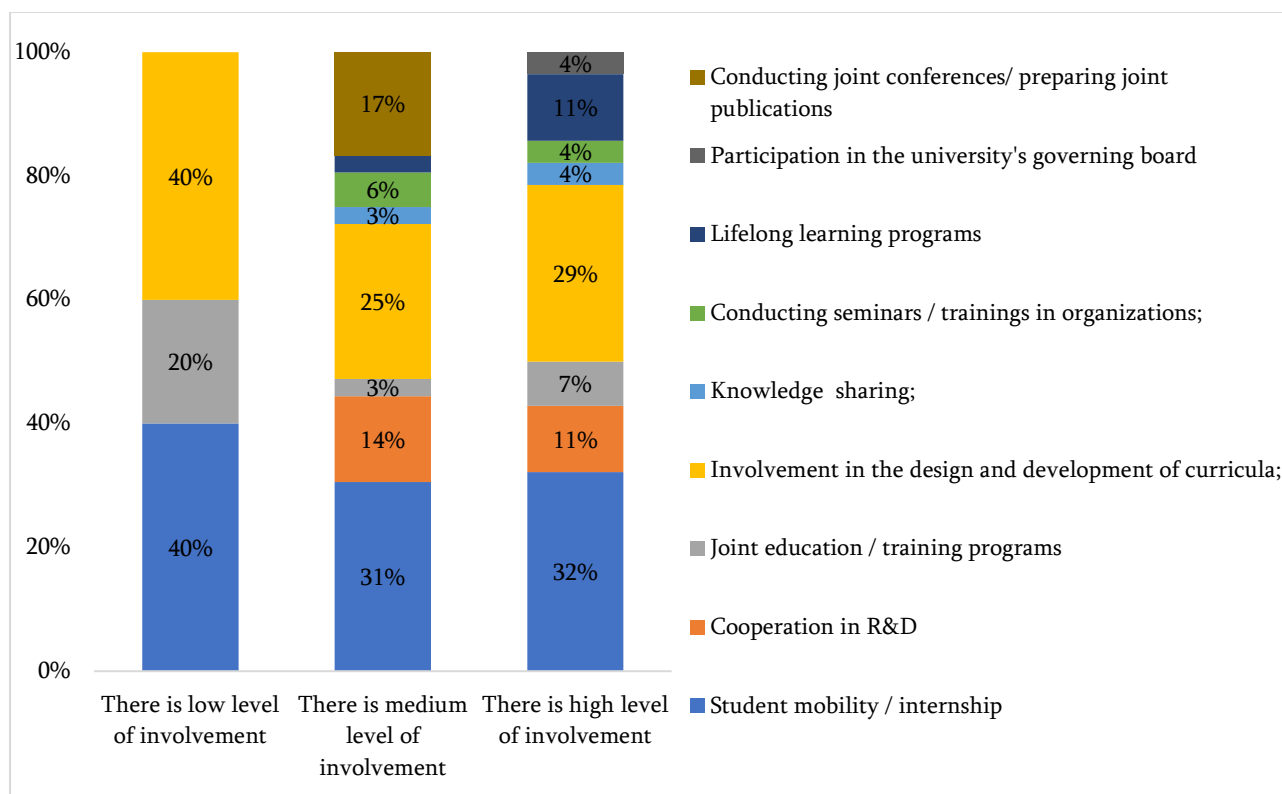
However, it should be noted that effective cooperation between higher education institutions and organizations can result in many positive benefits for both parties. Today, many HEIs in developed countries are busy with modernization of education models to reduce mismatch between theory and practice and to respond to current labour market challenges. Improved communication between the parties would facilitate activities in R&D; encourage joint activities, projects and the effective functioning of research centers. Collaboration between HEIs and employers has to be facilitated through provision of adequate legislative framework, which, in turn, can lead to appropriate and effective initiatives and innovations [109].

It is very important for the students to have an opportunity to participate in collaborative projects and activities implemented as a result of collaboration between HEIs and employers. The representatives of HEIs assessed the average number of student participation in joint programmes and activities. The representatives, who consider that they have intermediate or high-level mutually beneficial cooperation with employers in terms of separate programmes, stated that:

In terms of student internships, on average 20-40% of college students have the opportunity to participate in internship programmes in various organizations. ***Joint applied and research projects***

---

[109]Rakovska, N., Pavlin, S., &Melink, M. (2014). Assessment of cooperation between higher education institutions and employers in Europe. European Commission.

are not implemented by half of the colleges at all; and where it is implemented, a maximum of 10% of students are involved. Most of the teaching universities are implementing such projects; however, in most cases, even in these institutions the involvement of students does not exceed 10%. ***Applied or research projects*** are carried out in most universities, although mainly the rate of student involvement ranges between 10 and 20%. There were only 2 universities that reported that more than half of the students are involved in this type of joint programmes. ***Qualification improvement activities and preparation and training programmes for students*** - in case of colleges only 20-50% of students participate in such activities. Most of the teaching universities did not provide any answer to this question. With regard to student participation in such activities, universities were divided in two large groups – in one group, up to 10% of the students participated in joint qualification improvement and training programmes; while, in the second group the majority of students did so. Two of the surveyed universities do not provide any *joint qualification improvement and preparation and training programmes*. In case of colleges, an average of 20% of students participates in ***joint scientific conferences***. Student involvement rate in teaching universities and universities varies widely. In general, 20% of students might be regarded to be involved in similar joint programmes in these institutions. However, in several HEIs participation rate is quite high and exceeds 50%.

Analysis of HEIs according to their types also shows that **student mobility and internship programmes** are most frequent forms of collaboration. The second, more common form is the involvement of organizations **in the design and development of educational programmes** (see Figure N20). It is notable that compared to public HEIs the private ones held joint conferences and/or prepare joint publications with the involvement of both parties more frequently; however, public HEIs, unlike private ones, are relatively active in sharing accumulated theoretical and practical knowledge with the organizations. Some of the public universities also noted that they have experience in conducting thematic seminars / trainings in different organizations. According to HEIs, in addition to other benefits, active cooperation has a positive impact on their status and competitiveness. A large part of the surveyed universities and teaching universities pointed out that the prestige and attractiveness of the institution significantly or very significantly increased as a result of cooperation with employers and cooperation was found to be beneficial in this regard.

Figure 20. Forms of collaboration between HEIs and organizations by the types of HEIs
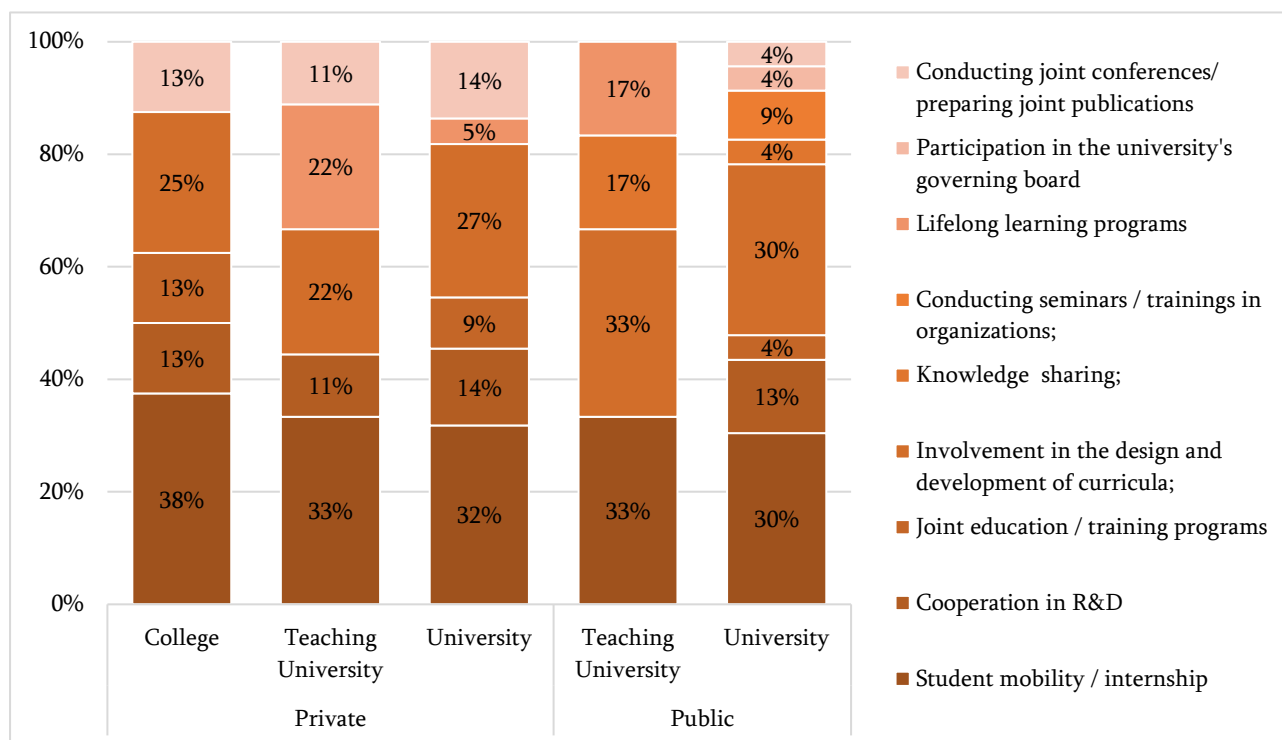
Higher education institutions also assessed the benefits of collaboration with the organizations; in particular, how much progress has been achieved within the frameworks of various implemented projects. Based on this information, it was observed that for the universities, which stated that their cooperation with employers was of medium or high intensity, cooperation measures resulted in some positive effects. As a result, the skills of the graduates have improved significantly and they have become much more relevant to the demands of the labour market. A similar situation was observed in teaching universities – collaboration was followed by a significant improvement in the skills of the graduates. However, in some cases with regard to teaching universities relevance of graduates' skills could not be improved despite high level of cooperation. As for the colleges, it should be said that the joint programmes have had a significant or more or less significant positive impact on improving the employment skills of the graduates of these institutions. Most of the higher education institutions engaged in comparatively intensive collaboration with the organizations state that this cooperation brings little or no significant benefit to research and development, and there are almost no improvements in this regard. In case of teaching universities, more respondents noted that they have significantly benefited from collaborating with regard to research and development. However, even in this category, a considerable number of HEIs have not achieved satisfactory results (see Figure N21).

Figure 21. The level of benefits achieved by HEIs as a result of collaboration with employers
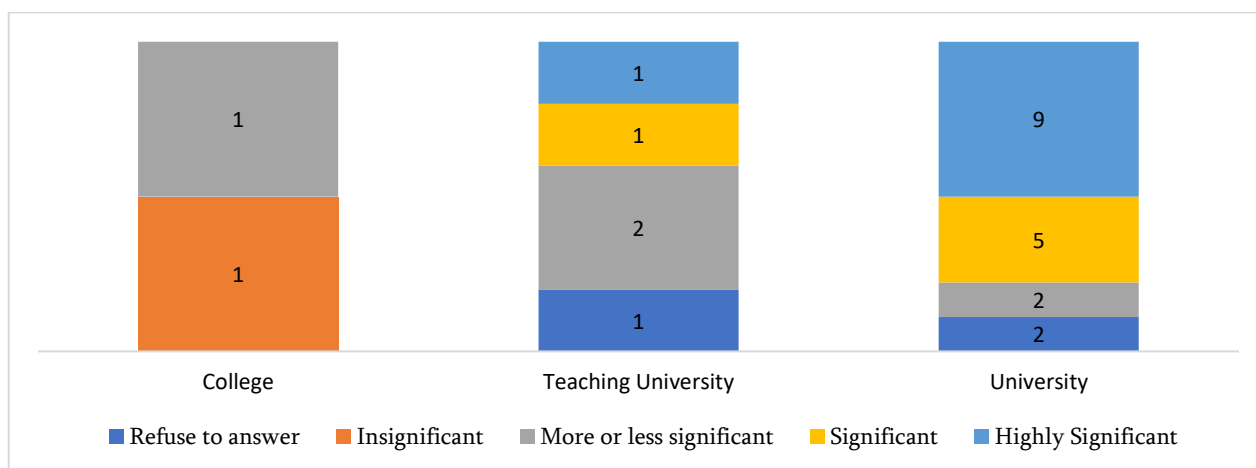
As for the impact of collaboration on improving teaching and scientific programmes of higher education institutions, it has been found that cooperation brings significant or very significant benefits for most of the universities and teaching universities that are relatively actively involved in the collaboration processes. As a result, teaching and scientific programmes are becoming more relevant and adapted to modern challenges. In this regard, cooperation has not yet produced tangible positive effects for colleges. As for the increase in the prestige and attractiveness of HEIs, the research showed that active cooperation has a positive impact on their status and competitiveness.

The research process confirmed that HEIs face various problems and challenges in cooperating with organizations - 13% of the respondents indicate that time and resources are limited, while 10% focus on differences in views in problem solving processes. It was also mentioned (by 8% of the respondents) that organizations and HEIs have different motivations and it is difficult to implement common goals and projects in such a situation. A significant part of HEIs (9%) noted that they face high level of bureaucracy while communicating with employers and often get refusal to the offer of cooperation (see Figure 22).

Figure 22. The main barriers and/or constraints that HEIs face in cooperation with organizations
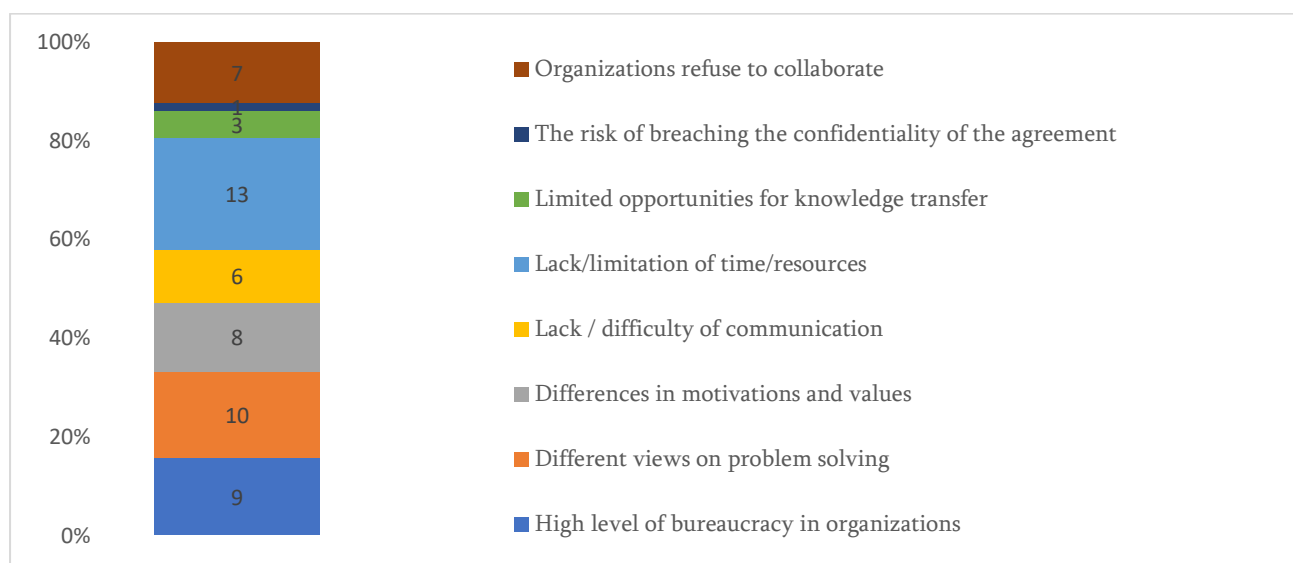
For regional teaching universities the lack of time and resources which hinders their collaboration with employers is the most acute problem in this regard. Differences in visions between HEIs and employers is also a serious problem for the public universities both in the Capital city and in the regions. However, private colleges pointed to the refusal of organizations to collaborate with them.

It is also interesting to find out what the representatives of HEIs think about the motivation factor that can deepen cooperation between these institutions and the employers. According to the majority of the HEIs with relatively many years (30 years) of experience of operating in the market participating in the survey, the main goal of the cooperation is to promote the employment of graduates with the help of partner organizations. Younger institutions (less than 15 years of operation in the market) focused on receiving practical advice from organizations, which would help them to develop further. While implementation of research and relevant projects by the university was considered as one of the most important motivating factors for cooperation by relatively older universities and teaching universities (60 years and over). Most of the HEIs agreed that the benefits of cooperation are important for both parties; therefore, it is logical that both parties should be the initiators of such cooperation. Representatives of the surveyed HEIs also noted that the involvement of the state is quite low in the areas of implementation and development of cooperation. Most of the HEIs think that state institutions either are not involved in these processes, or their contribution to the development and deepening of cooperation between HEIs and employers is not significant.

Based on the above, it is clear that most of the higher education institutions participating in the study have a desire and interest to cooperate with potential employers and expect positive complex results as a result of this cooperation. HEIs focus on future cooperation with potential employers in the following areas: increasing the involvement of potential employers in designing and development of educational programmes; establishing an active, consistent and ongoing links between employers and higher education institutions in the form of partnership and not just for implementing activities with one-time effect.

3.3. The model of cooperation between employers and higher education institutions in Georgia

The presented research allows us to say that the model of cooperation between employers and higher education institutions in Georgia is at an early stage of development. The existing model is based on several aspects of poorly developed cooperation (internships, a number of joint activities, etc.) which cannot provide the positive effect that perfect cooperation can ensure.

All the stakeholders believe that collaboration between employers and higher education institutions is essential. However, there is no agreed approach to the issues such as what the model of collaboration should be, who should participate in it and how should the functions be distributed.

Based on foreign experience, the works of Georgian and foreign researchers, and the survey (of employers, graduates, HEIs) carried out by us, cooperation between business, higher education and government (Business-HEI-Government) can be considered as a model of cooperation relevant to the current reality of Georgia.

We believe that it is appropriate to consider business as the main source of employment and the main area of cooperation in the **'Business-HEI-Government'** model. This does not exclude the relationship between HEIs and other potential areas (public, non-governmental sector) of cooperation; however, in terms of market economy, it would be appropriate to consider that business plays a major role in labour demand.

In this model the role of government includes some stimulating functions for the development of cooperation between HEIs and businesses (especially in the initial stage of formation and development of cooperation); however, the model does not exclude direct relations and collaboration between business and higher education institutions without any intervention by the state.

In our opinion, the **Business-HEI-Government** model should be based not on coercion, but on the principles of mutually beneficial cooperation. In addition, each participant should be well aware of what needs to be done to establish, deepen, expand and develop cooperation.

The **Business-HEI-Government** model in Georgia should include the following areas of cooperation: joint development of academic study programmes (curriculum); student internships and job placement; development of dual training programmes; development approaches of continuing education; format development and its implementation in practice; promoting the commercialization of research; conducting joint research (especially applied research); development and implementation of student startup support mechanisms.

Based on the areas of cooperation the **Business-HEI-Government** model should cover a wide area of activities, which should be reflected in specific activities implemented by each party. Based on

international experience, barriers to cooperation identified in the study, and overall research findings, the main activities of the parties involved in the collaboration are outlined below.

Business activities in Business-HEI-Government model

➢ Participation in the development of academic study programmes and curriculum;

➢ Admission of HEI students for internships and short-term visits;

➢ Participation in research activities in HEIs;

➢ Participation in governing boards of HEIs;

➢ Financial, technical and consulting support for student startups.

➢ Participation in employment forums;

➢ Participation in monitoring and evaluation of academic programmes in HEIs;

➢ Planning and implementation of applied research jointly with higher education institutions;

➢ Recruitment of students and university staff through a special (jointly developed) mobility programme;

➢ Allocating (and/or finding) resources for funding commercially profitable innovations in HEIs;

➢ Participation in joint conferences, forums, information meetings;

➢ Promoting the delivery of lectures and masterclasses for HEI students by the company representatives with practical experience.

Activities of higher education institutions in Business-HEI-Government model

➢ Organizing joint conferences, forums, information meetings;

➢ Encouraging professors and researchers to share the latest achievements in scientific research with companies;

➢ Development of a student activity assessment system that will encourage student involvement in the activities implemented within the framework of cooperation (training, internship, visiting companies, attending lectures delivered by invited practitioners, participation in joint research projects, etc.);

➢ Identifying the areas of academic education and specific academic programmes in cooperation with employers where it is possible to introduce the components of dual education (especially for higher education institutions of applied sciences). In addition, to determine the level of education, semester or other preconditions for a student to be involved in a dual education system;

➢ Periodically organize employment forums;

- Designing programmes for the development and enhancement of entrepreneurial skills among students;

- Permanently organizing student startup competitions in cooperation with companies; and finding sources for financial support for distinctive business ideas provided by students;

- Development and implementation of student and faculty mobility programmes in companies in cooperation with business;

- Integrating student internship and short-term visits into academic study programmes in cooperation with employers;

- Developing a strategy for implementing continuing education with employers. In addition, developing a plan for distributing the benefits of continuing education to graduates;

- Prioritizing collaboration with employers. Accordingly, imposing responsibility for the implementation of the activities envisaged within the framework of the cooperation with employers to upper management of the HEI (Vice President, Vice-Rector).

Activities of government sector in Business-HEI-Government model

- Introduction of a HEI ranking system (or encouraging the introduction of such system), where the employment rate of HEI graduates (including by specialization) and the main aspects of cooperation with employers (joint research, joint training programmes, attracting funding from business sector, joint educational programmes, etc.) are the main criteria;

- Clearly declaring in the regulatory documents used for the evaluation (rankings, accreditation, authorization, funding system, etc.) of higher education institutions that collaboration between HEIs and employers is one of the evaluation criteria; therefore, development of adequate mechanisms for monitoring collaboration processes;

- Implementation of the financial incentive programmes to enhance collaboration between HEIs and employers (joint research, joint academic programmes, etc.);

- Developing a special platform to support business, science and academia to connect easily with each other according to their needs;

- Organizing information meetings and events (with the purpose to share each other's values, visions and get closer to each other) for the employers' and HEIs' associations to enhance collaboration between the parties;

- Creating an equal access mechanism for higher education institutions of different organizational and legal forms to student funding system, participation in internship programmes;

- Development and implementation of special cooperation programmes (taking into account the peculiarities of the region) between employers and HEIs at the regional level in Georgia;
- Establishing methods for increasing autonomy of higher education institutions (for HEIs of all organizational and legal forms) focused on the development of innovative forms of collaboration between HEIs and businesses;
- Establishing (or supporting) special centers (specialized organizations) whose main purpose will be to connect business, academic and scientific areas;
- The directions and activities developed within the framework of the **Business-HEI-Government** model should be adjusted and changed periodically that will allow the workforce to remain competitive in the labour market. This will help HEIs to provide the required services to the education market. This will help HEIs to provide the services they need in the education market, and at the same time provide business companies with the necessary staff and research-based innovations.

Conclusions and Recommendations

Based on the literature reviewed in the paper, the study of the experience of various countries and international research, we can conclude that cooperation between HEIs and employers is of great importance for any country around the world, and obviously, Georgia is no exception in this regard. The best practices around the world show that some of the most common forms of cooperation between HEIs and employers are: development of curriculum design; development of individual-oriented courses; introduction of exchange and mobility programmes; conducting joint research; long-term education and lifelong learning; focus on the development of entrepreneurship and entrepreneurial skills.

The processes of cooperation between higher education institutions and employer organizations are still in the early stages of development in Georgia. Forms of cooperation have been gradually refined and deepened over the last decade. However, the business sector, the public sector, and the education system, which adopted the principles of the market economy still cannot receive the benefits that can be brought about by mutually beneficial cooperation. Therefore, a typical Georgian student cannot fully get the benefits that graduates of the world's leading HEIs receive as a result of cooperation between HEIs and employers. In particular, they do not have an opportunity to participate in dual education programmes or this kind of training is virtually formal and therefore fails to achieve its intended purpose; they are less or not involved in research projects initiated by companies; in most cases, they do not acquire appropriate practical skills during their studies at HEIs; there is little or no involvement in long-term programmes to deepen theoretical knowledge; etc. It should be noted that about one third of the employers in Georgia do not collaborate with HEIs at all, and the involvement of almost the same number of employers is minimal. In particular, for most HEIs, the main forms of cooperation with employers are limited to short-term student internship programmes and formal involvement of employers in designing and developing of educational programmes. Therefore, some of the modern forms of cooperation, such as sponsorship of scientific activities by organizations in HEIs and joint development, testing and creation of new products and services, are not found in any higher education institution.

The high level of youth unemployment in Georgia is partly the consequence of inadequate cooperation between HEIs and employers. As the facts show, a significant part of the graduates of Georgian HEIs cannot find a job, or get one only after a long search. In addition, a significant number of the graduates consider that they do not work in their professions (horizontal mismatch). Even if

they work in the specialties gained in HEIs, their qualification exceeds (vertical mismatch) the qualification required to perform the work. The main problem accompanying the lack of cooperation between HEIs and employers is that Georgian HEIs fail to develop the practical skills that are necessary to increase the competitiveness of their graduates in the labour market. The research confirms that the higher education system provides a more or less adequate base for students in terms of theoretical knowledge, however the labour market is experiencing a shortage of the practical skills the graduates need to have. Most of the HEIs surveyed also noted that the existing education system only partially provides graduates with all the necessary theoretical knowledge and practical skills that is required from them to take a relevant position in the labour market. The difference in motivations and visions, lack of time and resources, high level of bureaucracy both in HEIs and employer organizations are considered as an impediment to collaboration both by HEIs and employers in Georgia. Based on the results of the research, the main directions (measures), whose implementation would encourage the development of collaboration between HEIs and employers in Georgia have been identified, in particular:

- In order to enhance cooperation between HEIs and employers in Georgia, it is important to establish a platform of cooperation that will encourage the parties to be aware of each other's future plans. This will help them to consider and jointly develop certain forms and activities of mutually beneficial cooperation. Employers' associations, university associations, non-governmental organizations, and state institutions should play an important role in the development of such platforms.

- To enhance the cooperation between higher education institutions and employers in Georgia, while developing academic programmes, HEIs should really take into consideration the needs of the labour market and not simply formally meet the requirements of the legislation. . Despite numerous regulatory attempts, the existence of legislative requirements for HEIs to link educational programs to the labor market is insufficient for them to actually study current and promising labor market requirements and develop academic programs based on them. A competitive environment where cooperation becomes a key factor in competitiveness needs to be established and HEIs will naturally start looking for the ways of collaboration. In addition, when designing higher educational programmes, the focus should be made on harmonious combination of the determinants of modern knowledge, such as science, technology, engineering and skills (creativity, critical thinking, communication, and collaboration).

- It is essential for HEIs and employers to start active collaboration for the commercialization of science, as this is one of the real ways that can turn formal relations between HEIs and employers into mutually beneficial, long-term collaboration. HEIs should offer and persuade

employers to jointly determine research directions of mutual interest and conduct research by combining their resources. Unfortunately, as the results of the research show, there are no activities carried out in this area, while as foreign experience shows, this kind of cooperation is one of the cornerstones of successful collaboration between HEIs and employees.

- Less attention is paid to the continuing education system in Georgia; while, in developed countries this is an important area of collaboration between HEIs and employers. Therefore, it is obvious that HEIs and employers need to jointly develop plans for collaboration within continuing education in Georgia as well. The international experience, which shows that cooperation within the system of continuing education creates new opportunities for identification and deepening of other areas of collaboration needs to be taken into account.

- Graduate employment and internship programmes should remain an important area of collaboration in Georgia. In addition, employers need to arrange frequent meetings with students and graduates. Such meetings should be used to present details of the working process and the main functions to be accomplished, so that job seekers can understand to what extent their abilities, skills, and knowledge meet the requirements for this or that job. Moreover, it is important that the need for collaboration as a supportive tool for both parties to make them more successful and effective is properly understood.

- The existing approaches to teaching in higher education need to be revised; in particular, we believe that it is better to focus on the introduction of a so-called dual teaching model, which allows higher educational programmes to achieve the balance between theoretical and practical components and provides the graduates with the skills needed to achieve high competitiveness in the labour market. Obviously, this is the shortest way to employment in accordance with their qualifications.

It should be noted that the formation of an effective system of cooperation between HEIs and employers requires some caution. In particular, the above approaches should not be understood as an attempt to reduce the role of higher education in the development of society; on the contrary, we believe that the higher education system and, consequently, higher education institutions should actively take care of the development of the Third Mission and contribute to the socio-economic development of the country. It should be noted that in these processes, the curriculum should not be "overloaded" and a number of factors need to be taken into consideration; in particular, the readiness of the academic staff involved in the implementation of the programmes and the need to strengthen training, including in terms of professional training and leadership; attracting and encouraging 'smart' investments in the field of education; expanding career growth opportunities for students both during the study period and after graduation; the introduction of a modern cooperation system in

"HEIs-employers" format and meeting the demands of the labour market by providing qualified staff. In addition, it should also be taken into consideration that the pandemic has caused many changes in both education and business sectors, as well as in many other areas of public life. Naturally, the changes will affect collaboration between HEIs and employers, its forms and directions. However, what exactly needs to be changed as a result of Covid-19's impact is the subject of a separate study. One thing that is certain even today is that no matter what changes take place, cooperation between HEIs and employers has been, is, and will remain one of the most important and topical research problems.

To summarize, it could be said that the forms of traditional cooperation between universities and employers in Georgia should be revised, updated, and based on a harmonious combination of "Innovation - Research - Teaching - Employment" processes. By sharing different systems and experiences, Georgia can create its own system with unique features that will help higher education institutions and employers in Georgia develop and grow collaboration with each other.

References

1. Aroshvili, A. (2017) *Antisocial Policy in Georgia: Education and the Labour Market (part II)*. Human Rights Education and Monitoring Center.

2. Young Scientists' Union Intellect (2016). *The study of the labour market.* Batumi. http://www.intellect.org.ge/text_files/ge_file_788_1.pdf

3. Lezhava, D., Amashukeli, M. (2015). *A study of the relevance between the outcomes of academic programs and the demands of the labour market in the social sciences.* Tbilisi: Center for Social Sciences.

4. Lezhava, D., Amashukeli, M. (2016). Assessment of Bologna Process in Georgia: Main Achievements and Challenges. Tbilisi: Center for Social Sciences.

5. Bregvadze, T. (2013). *Strategic development of higher education and science in Georgia.* Tbilisi: The International Institute for Education Policy, Planning and Management.

6. Amashukeli, M., Lezhava, D., Gugushvili, N. (2017). *Education Return, Labour Market and Job Satisfaction in Georgia.* Tbilisi: Center for Social Sciences.

7. Abreu, Grinevich, Hughes, & Kitson, (2009). Knowledge Exchange between academicsandthebusiness, PublicandThirdsector. *Research report.* UK-Innovation Research Center; University of Cambridge & Imperial Collage London. www.ukirc.ac.uk

8. ADAPTER. (2019). Estonian research and development (R&D) community: https://adapter.ee/en/about-adapter

9. Almeida, M. (2005, January). The evolution of the incubator movement in Brazil. *International Journal of Technology and Globalisation,* 1(2). doi:10.1504/IJTG.2005.007054

10. American Council on Education. (2003). International Higher Education Partnerships: A Global Review of Standards and Practices. NW Washington, DC: CIGE Insights.

11. Masri, A. E., &Sabzalieva, E. (2020, July 21). Dealing with disruption, rethinking recovery: Policy responses to the COVID-19 pandemic in higher education. *Policy Design and Practice*, pp. 312-333.

12. BIS Department of Business Inovation& Skills. (2012). *Following up the Willson Review of Business University Collaboration - Next steps for universities, business and Government.* London.

13. Butler-Henderson, J. C., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., Magni, P. A., & Lam, S. (2020, April 1). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. *Journal of Applied Learning & Teaching, 3*(1).

14. European Centre for the Development of Vocational Training. (2011). *Annual report 2010.* Luxembourg: Publications Office of the European Union.

15. Ansell, B., & Gingrich, J. (2017). Mismatch: University Education and Labor Market Institutions. PS: Political Science and Politics, 50(2), 423–425. DOI: https://doi.org/10.1017/S104909651600294

16. Bardak, U., Sabadie, J. A., Fetsi, A., & Zaman, C. (2011). *Labour Markets and Employability Trends and Challenges in Armenia, Azerbaijan, Belarus, Georgia, Republic of Moldova and Ukraine*. Luxembourg: Publications Office of the European Comission. DOI:10.2816/14590.

17. Bartlett, W., Uvalic, M., Durazzi, N., Monastiriotis, V., & Sene, T. (2016). *From University to Employment: Higher Education Provision and Labour Market Needs in the Western Balkans.*European Commission

18. Bartlett, W. (2013). *Skill Mismatch, Education Systems, and Labour Markets in EU Neighbourhood Policy Countries.* WP5/20 Search Working paper.

19. Bayh-DoleAct: RegulationsImpactingOwnershipofPatentRights, Pub. L. 96-517, December 12, 1980 (https://research.wisc.edu/bayhdole/).

20. Bilsen, V. and J. Konings (1998): Job creation, job destruction and growth of newly established, privatised, and state-owned enterprises in transition economies: Survey evidence from Bulgaria, Hungary, and Romania; Journal of Comparative Economics, Sept 26:429-445. DOI: https://doi.org/10.1006/jcec.1998.1542

21. Catapult. (2019). From https://catapult.org.uk/about-us/about-catapult

22. Cosh, A., Hughes, A., &Lester, R. K. (2006). UK plc: Just How Innovative Are We? Massachusetts Institute of Technology Working Paper Series.

23. Dolfsma, W., &Leydesdorff, L. (2009). Lock-in&Break-outfromTechnologicalTrajectories: Modelingandpolicyimplications. *TechnologicalForecastingandSocialChange*, 932-941.

24. Edmondson, G., Valigra, L., Kenward, M., Hudson, R. L., & Eld, H. B. (2012*). Making Industry - University Partnership Work/ Lessons from successful collaboration*. Science|BusinessInovation Center.

25. Etzkowitz, H. (2002). MIT and the Rise of Entrepreneurial Science. London: Routledge.

26. Etzkowitz, H., &Leydesdorff, L. (1995). The Triple Helix-University-Industry-Government Relations: A Laboratory for Knowledge-Based Economic Development. EASST Review 14, 14-19.

27. Goddard, J. (2009). Re-inventing the Civic University. London: National Endowment for Science, Technology and the Arts (NESTA).

28. GTAI. (2019). From https://www.gtai.de/gtai-en/invest/business-location-germany/business-climate/dual-education-system-65348

29. Healy, A., Perkmann, M., Goddard, J., & Kempton, L. (2012). Measuring the Impact of University Business Cooperation. European Commission.

30. HM Treasury (2003). Lambert review of business-university collaboration: final report. URL: http://dera.ioe.ac.uk/id/eprint/16532

31. Koria, M., Salimäki, M., & Karjalainen, T.-M. (2011). *Keynote: Designing multidisciplinary learning for the real world. IDBM papers,* 33. 20-28.

32. Jacob, M. (2006). Utilization of social science knowledge in science policy: Systems of Innovation, Triple Helix and VINNOVA. Social Science Information, 45(3), 431-462.

33. JosephCrawfordKerrynButler-HendersonJürgenRudolphMattGlowatzRobBurtonBasharMalkawiPaola A. Magni&SophiaLamCoronavirus; COVID-19; cross-countrycomparison; digitaleducation; highereducation; onlineeducation; pandemic., JournalofAppliedLearning&Teaching Vol.3 No.1 (2020)

34. Kitson, M., Howells, J., Braham, R., & Westlake, S. (2009). The Connected University: Driving Recovery and Growth in the UK Economy. NESTA.

35. Kolb, D. A. (1984). Experiential learning: Experience as the source of learning and development. New Jersey: Prentice-Hall.Pp.38.

36. Majewski E. (2013). *Higher education reform: matching education to labour market needs*. European View (2013) 12: 179-188; DOI: 10.1007/s12290-013-0271-5

37. MakeitGermany. (2019). https://www.make-it-in-germany.com/en/study-training/training/vocational/system/

38. Masso, J., & Paes, K. (2015). Business Start-ups & Youth Self-Employment in Estonia: A Policy Literature Review. University of Tartu.

39. Molas-Gallart, J., Salter, A., Patel, P., Scott, A., & Duran, X. (2002). *Measuring Third Stream Activities. SPRU*, University of Sussex.

40. OECD. (2015). From PISA 2015: https://www.oecd.org/pisa/pisa-2015-results-in-focus.pdf

41. OECD-OPSI. (2019). From Korean Work-Learning: https://oecd-opsi.org/wp-content/uploads/2018/09/Work-Learning-Dual-System.pdf

42. PACEC. (2012). *Strengthening the Contribution of English Higher Education Institutions to the Innovation System: Knowledge Exchange and HEIF Funding.* Cambridge.

43. Pavlin, S. (2016). Cultivating entrepreneurial mindset through the inclusion of relevant stakeholders. University of Tartu.Pg. 3-5.

44. Policy Brief: Education during COVID-19 and beyond, (2020). United Nations.

45. Arjona, R., Vankalck, S., & Senczyszyn, D. (2017). *Peer Review of Poland's Higher Education and Science System.* Brussels: European Commission.

46. Weert, E. d. (2011). *Perspectives on Higher Education and the labour market - Review of international policy developments.* Center for Higher Education Policy Studies.

47. Petrongolo, B., & Pissarides, C. A. (2001). Looking into the Black Box: A Survey of the Matching Function. *Journal of Economic Literature*, 390-431.

48. Qingqi, W. and Rasmussen, A. (2020), resilient hybrid learning strategies to explicitly teach team skills in undergraduate students., University of Nottingham

49. Radovic, M., &Djuraskovic, J. (2016). *Mismatch between Education System and Labour Market Needs – Enabling Environment for Sustainable Enterprises in Montenegro*. Podgorica: Montenegrin Employers Federation.

50. Rakovska, N., Pavlin, S., &Melink, M. (2014). *Assessment of cooperation between higher education institutions and employers in Europe*. European Commission;

51. Raaper, R. and Brown, C. (2020) 'The Covid-19 pandemic and the dissolution of the university campus : implications for student support practice.', Journal of professional capital and community., 5 (3/4). pp. 343-349

52. Saad, M., Zawdie, G., &Malairaja, C. (2008). The triple helix strategy for universities in developing countries: the experiences in Malaysia and Algeria. Science and Public Policy, 35(6), 431-443.

53. Orazbayeva, B. (2017). Siemens research cooperation with universities. Munich: University-Business Cooperation in Europe.

54. Burgess, S., &Sievertsen, H. H. (2020, April 1). Schools, skills, and learning: The impact of COVID-19 on education. Retrieved from VOX EU: https://voxeu.org/article/impact-covid-19-education

55. OECD. (2020). Skill measures to mobilise the workforce during the COVID-19crisis. OECD.

56. Sondergaard, L. and Murthi, M. et al. (2012) Skills Not Just Diplomas: ManagingEducation for Results in Eastern Europe and Central Asia. Washington: The World Bank

57. Davey, T., Galán-Muros, V., Meerman, A., & Kusio, T. (2013). *State of University and Business Cooparation in Poland.* Science-to-Business Marketing Research Centre, apprimo UG and University Industry Innovation Network (UIIN).

58. Universities UK. (2021). *Supporting graduates in a Covid-19 economy.* London: Woburn House.

59. Davey, T. (2016). *Team learning through starting a business at Tiimiakatemia.* Jyväskylä: Jyväskylä University of Applied Sciences.

60. Teichler U. (2013). *Universities between the Expectations to Generate Professionally Competences and Academic Freedom Experiences from Europe.*doi: 10.1016/j.sbspro.2013.03.097. Social and Behavioral Sciences 77. pg. 421 – 428

61. Hogeforster, J., &undDöding, L. (2012). ThedualsystemofvocationaltraininginGermany. Hamburg .

62. Ranga, M., Perälampi, J., & Kansikas, J. (2016, 10). The new face of university–business cooperation in Finland. *Science and Public Policy*, pp. 601-612.

63. timeshighereducation.com. (2019). South Korean universities lead way on industry collaboration: https://www.timeshighereducation.com/news/south-korean-universities-lead-way-on-industry-collaboration#survey-answer

64. Tercanli, H., & Meerman, A. (2017). *University City Science Center - A unique business incubation model to enhance technology-based economic development.* Philadelphia;

65. Epure, M. (2017). University-business cooperation: adapting the curriculum and educational package to labor market requirements. International Conference on Business Excellence. Bucharest;

66. Spencer, W. (2006). University-Industry Cooperation; Examples from the US. San Francisco;

67. Viale, R., &Pozzali, A. (2010*). Complex Adaptive Systems and the Evolutionary Triple Helix.* Critical Sociology, 36(4), 575-594;

Internet Sources

1. https://www.destatis.de/DE/Home/_inhalt.html

2. https://triplehelix.stanford.edu/3helix_concept - Triple Helix Research Group at Stanford University

3. EBI website: http://www.energybiosciencesinstitute.org

4. http://accreditation.org/accords/bologna-declaration-1999

5. http://geostat.ge/ - National Statistics Office of Georgia

6. http://www.aic.lv/ace/ace_disk/2005_07/Reports/ExternalDimension-finalforconference.pdf

7. https://www.onetonline.org/ - O*NET online

8. https://www.questionpro.com/blog/non-probability-sampling/

9. https://onlinecourses.science.psu.edu/stat100/node/18/

10. http://www.economy.ge/ - Ministry of Economy and Sustainable Development of Georgia

11. https://www.geostat.ge/ka - National Statistics Office of Georgia

12. https://mes.gov.ge/ - Ministry of Education and Science of Georgia

13. https://www.napr.gov.ge/ - National Agency of Public Registry

Survey of Employers
Dear respondent!

The project (#FR–18–6156)[110] The Study of Cooperation between Higher Education Institutions and Employers in Georgia is carried out within the framework of grant funding provided by the Shota Rustaveli National Science Foundation for fundamental research.

❖ The present survey is a part of the grant project aiming to identify the extent to which the knowledge and skills of HEI graduates meet the job requirements, what forms of cooperation are used by employers with regard to HEIs, what are the current challenges and prospects for further collaboration;

❖ The results of the present survey will only be used for the academic purposes specified in the grant project.

	Section I – Organizational profile	
1	Name of the organization	
2	Address / Contact Information	
3	Sector	1. Private sector; 2. Public sector; 3. Non-governmental sector;
4	Field	1. Services; 2. Manufacturing; 3. Construction; 4. Agriculture; 5. Trade; 6. Other ----------------------
5	Average number of employees	1. 5 to 20 employees; 2. 21 to 40 employees; 3. 41 to 60 employees;

---

110 Grant #FR–18–6156 - Grant recipient: Grigol Robakidze University Ltd, Vasil Kikutadze, Murtaz Kvirkvaia, Natia Daghelishvili, Tamar Tavkhelidze, Givi Gujaraidze.

		4. Over 60 employees;
6	Number of years on the market	5. 1 to 5 years;
		6. 6 to 10 years
		7. Over 10 years;

Section II. Questions to identify theoretical context

1. **Do you think the higher education system of Georgia provides its graduates with the knowledge and skills that meet the requirements of the sector you represent?** (If so, please briefly describe how it is reflected)

----

2. **What are the criteria you as an employer use when selecting a new employee?** (choose maximum two answers)

   a. I am mainly interested in an applicant's academic degree (Bachelor, Master, Doctor);
   b. I am mainly interested in an applicant's professional experience;
   c. I am mainly interested in where (which HEI within the country) an applicant got his/her higher education;
   d. I am mainly interested in whether an applicant has received higher education abroad;

3. **Which party do you think should be the main initiator of cooperation between HEIs and potential employers?**

   a. Business sector;
   b. State institutions;
   c. The higher education institution;
   d. Non-governmental sector;

4. **Do you offer students/graduates the opportunity to take professional internships in your organization?**

    a. Yes;

    b. No;

    c. I am going to do so in case there is a mutual interest;

    d. I am not going to do so as it will be of no benefit to me;

5. **Do you have an experience of employing graduates who do not / did not have relevant professional work experience?**

    a. Yes;

    b. No

6. **Do you think that an underqualified workforce is a major and acute problem for any organization today?**

    a. Yes, as their training is associated with additional costs;

    b. No, as low qualification is a problem only for a job seeker;

Section III. Collecting qualitative data

1. **What do you think are the main problems in the employment market today?** (choose only one possible answer)

    a. Lack of staff;

    b. Lack of jobs;

    c. Unqualified staff;

    d. Imperfect labour legislation;

    e. Other (please specify):_____

2. **In what way do you mainly recruit new employees?** (choose only one possible answer)

    a. Announce a job vacancy;

b. Collect recommendations from individuals;

c. Through closed selection;

d. Cooperate with the career centers of higher education institutions;

e. Cooperate with public/private employment agencies;

f. Other (please specify):_____

3. Do you collaborate with Georgian higher education institutions (HEIs)?

a. Yes;

b. No;

c. We are going to do so in case there is mutual interest;

d. We are not going to do so;

e. We had a similar type of collaboration but it didn't work;

4. How would you assess the level of involvement of your organization in cooperation with HEIs? (choose only one possible answer)

a. High level of involvement;

b. Medium level of involvement;

c. Low level of involvement;

d. No involvement;

5. What are the main directions of cooperation between your organization and HEIs? (please, choose only three possible answers)

a. Student mobility / internship;

b. Cooperation in R&D;

c. Development of joint educational programmes, curricula;

d. Knowledge transfer from the business sector to HEIs, sharing practical knowledge;

e. Conducting seminars / trainings by the Faculty members in employer organizations;

f. Cooperation in the field of continuing education;

g. Sponsorship of scientific activities;

h. Participation in the university's governing board;

i. Conducting joint conferences/ preparing joint publications;

j. Joint development and testing of new products/services;

k. Other (please specify):_____

6. What are the key factors / motivations / goals that should encourage an organization to cooperate with HEIs? (please, choose maximum three possible answers)

    a. Joint implementation of joint projects/objectives;

    b. Continuation of a relationship that has been historically established;

    c. Close geographical location;

    d. Access to the results of R&D implemented in a HEI;

    e. Recruitment of new qualified employees;

    f. A desire of the organization to share practical experience with students;

    g. An organization's desire to share practical experience with students;

    h. Other (please specify):_____

7. What type of benefits do you think were received through collaboration with HEIS?

    a. Skills of graduates have become relevant to the demands of the labour market;

    b. Innovative capabilities of an organization have improved;

    c. The organization receives scientific advice and recommendations;

    d. Practical skills and professionalism of an organization have improved;

    e. Regional development and social status of an organization have relatively improved;

    f. The general condition (financial-economic) of the organization has relatively improved Other (please specify):_____

8. What financial / material costs is cooperation with HEIs associated with? (please, choose only one possible answer)

    a. High costs;

    b. Average costs

    c. Low/insignificant costs;

9. What do you think are the main barriers and/or constraints that companies face in collaboration with HEIs?

    a. High level of bureaucracy in HEIs;

b. Different motivations, values and visions of problem solving between HEIs and potential employers;

c. Differences in motivations and values;

d. It is difficult to find relevant people inside HEIs to connect with directly / lack of communication;

e. Lack / limitation of time;

f. Limited opportunities for knowledge transfer;

g. The risk of breaching the confidentiality of the cooperation agreement between HEIs and potential employers;

h. Other (please specify):_____

10. In what way do you think the cooperation between HEIs and potential employers should continue in the future?

a. Mechanisms for commercialization of achievements and results need to be improved;

b. An agreement on strategic cooperation should be achieved;

c. Cooperation in R&D should be improved;

d. Cooperation should be limited to basic academic research;

e. Cooperation should focus on short-term projects for the development of skills and knowledge;

f. HEIs and potential employers should stay apart from each other;

g. Other (please specify):_____

11. Which of the following types of HEIs do you (would you) prefer to establish cooperation with? (please, choose only one possible answer)

a. With local public HEIs;

b. With local private HEIs;

c. With foreign HEIs;

d. It does not matter;

e. None of them;

f. I do not know;

12. What is the profile of the HEIs you are (would be) collaborating with?

a. With HEIs of the same profile, in which the organization operates;

b. With HEIs of similar but not the same profile;

c. With HEIs of different profile (please explain the purpose of the collaboration).

d. I do not cooperate;

e. We do not have collaboration.

13. What is the size of HEI you would like to collaborate with? (please, choose only one possible answer)

a. HEIs with a large contingent of students;

b. Medium-sized HEIs working is several directions;

c. Small HEIs;

d. It does not matter a lot;

e. We would not have any collaboration;

14. Do you think the state is promoting cooperation between HEIs and potential employers? (please, choose only one possible answer)

a. Yes, the state is actively promoting;

b. The state is more or less promoting;

c. Promotion by the state is insignificant;

d. The state is not involved in these processes;

15. On average, how many percent of the new employees have the education that is relevant to the job requirements? --------------------------

16. Using a 100% scale, please evaluate how many percent of the new employees have higher, relevant or lower qualification and education than required for a particular job:

a. Higher than --- %

b. Relevant --- %

c. Lower than --- %

Section IV - Collecting quantitative data

#	Indicator	Number
1	For how many years have you been collaborating with HEIs?	
2	How many universities do you collaborate with simultaneously?	
3	How many times do you interact with the representatives of a specific partner HEI during a year?	
4	Name the average number of contracts / agreements signed with the HEIs during the last 3 years?	
5	How many times did the company ask the representatives of HEIs for assistance / mutual cooperation during the last 3 years?	
6	How many course programmes/ccurriculum were developed with your involvement during the last 3 years?	
7	On average, how many different types of academic mobility programmes (inviting academic staff in your organization, training / business visit of business representatives in HEIs) do you implement per year?	
8	On average, how many times per year do you apply HEIs to train / teach your employees?	
9	What percentage of your employees is involved in academic activities on average?	
10	What percentage of your employees is involved in continuing education, training, qualification raising courses in HEIs on average?	
11	On average what percentage of your employees are students?	

12	On average, how many interns / employees are recruited directly from universities during one academic year?	
13	For how many students does your company pay tuition?	
14	How many start-up ideas within HEIs does the company fund over a year?	
15	On average, how much (expressed in GEL) does it cost the company to cooperate with HEIs during the year?	

Thank you for participating in the study!

Survey of Graduates of Higher Education Institutions

Dear respondent!

The project (#FR–18–6156)[111] The Study of Cooperation between Higher Education Institutions and Employers in Georgia is carried out within the framework of grant funding provided by the Shota Rustaveli National Science Foundation for fundamental research.

❖ The present survey is part of the grant project;

❖ The results of the present survey will only be used for the academic purposes specified in the grant project.

Section I: General information of the respondent

1. **Age** _____

2. **Gender:**
    a. Male;
    b. Female;
    c. Refusal to answer;

3. **Which of the following academic degrees do you have?**
    a. Bachelor's degree;
    b. Master's degree;
    c. Doctor's degree;

4. **At which of the following higher education institutions did you get your education?**
    a. State (local);
    b. Private (local);
    c. State (foreign);
    d. Private (foreign);

---

111 Grant #FR–18–6156 - Grant recipient: Grigol Robakidze University Ltd, Vasil Kikutadze, Murtaz Kvirkvaia, Natia Daghelishvili, Tamar Tavkhelidze, Givi Gujaraidze.

5. **What was your field of study (according to your study programme) at the university?**

   a. Education;

   b. Humanities and Arts;

   c. Social sciences;

   d. Economics;

   e. Business administration;

   f. Law;

   g. Natural Sciences;

   h. Engineering, processing and construction industries;

   i. Agriculture;

   j. Medicine;

   k. Tourism;

   l. Others: _____

6. **Are you currently employed or have you been employed since you graduated?**

   a. I am currently employed;

   b. I am currently unemployed; I am not looking forward to starting a new job, but I have been employed in the past;

   c. I am currently unemployed; I am looking forward/planning to starting a new job, but I have been employed in the past;

   d. No, I have never been employed, but I am going to work in the future;

   e. No, I have never been employed and I am not going to work in the future;

7. **What is your employment status? (This question is answered only by the employed respondent)**

   a. Hired;

   b. Self-employed;

   c. Intern / practitioner / volunteer (both paid and unpaid);

   d. A business-owner;

8. **Which of the following fields do you work in? (This question is answered only by the employed respondent)**

a. Agriculture;

b. Manufacturing;

c. Construction;

d. Trade;

e. Tourism / Hotels / Restaurants;

f. Transport;

g. Communication;

h. Financial services;

i. Real estate operations;

j. State governance;

k. Education;

l. Health care and social assistance;

m. Other: _____

9. **Which sector do you work in?**

   a. Public;

   b. Private;

   c. Non-governmental;

10. **What is the average number of employees in the organization you are employed in or you own?**

    a. 1 to 50 employees;

    b. 51 to 100 employees;

    c. 101 to 500 employees;

    d. Over 500 employees;

11. **Which region is the organization you work for or you own located in?**

    a. Tbilisi;

    b. Autonomous Republic of Adjara;

    c. Guria;

    d. Imereti;

    e. Kakheti;

    f. Mtskheta-Mtianeti;

    g. Racha-Lechkhumi and Kvemo Svaneti;

    h. In Samegrelo-Zemo Svaneti;

i.   Samtskhe-Javakheti;

j.   Kvemo Kartli;

k.   Shida Kartli;

l.   Abroad.

12. What is your type of employment according to your position?

a.   Legislator, a high ranking government official;

b.   A business-owner;

c.   A top-level manager;

d.   A specialist / mid-level employee;

e.   A low-level employee

f.   A craftsman and worker of related professions;

g.   Other: _____

13. What is the average monthly salary for the position you hold? (Expressed in GEL):

a.   0;

b.   1 to 500;

c.   501 to 1,000;

d.   1,001 to 1,500;

e.   1,501 to 2000;

f.   2,001 to 5,000;

g.   Over 5,000.

14. For how many years have you been employed in your current job? _____

Section II: Knowledge transfer from university to the workplace / Assessment of the level of qualification / level of job satisfaction.

15. Do you work in the specialty obtained in HEI?

a.   Yes, I work with my specialty;

b.   Yes, I work in the field relevant to my specialty, but not directly to my qualification;

c.   Partly, in addition to working with my specialty I often have to deal with the activities that require different specialization;

d. No, but I use the specialty received at the HEI in my daily activities to some extent;

e. No, but the specialty received at the HEI sometimes helps me to perform the job;

f. No and I do not use the received qualification in my current job;

g. Not temporarily, though I plan to do so in the future;

16. In case you currently work in your field of specialty, approximately how long did it take you to find the current job?

a. I started working in the relevant upon graduation;

b. 0 to 3 months;

c. 4 months to 1 year;

d. 1 to 2 years;

e. 2 to 3 years;

f. 3 to 4 years;

g. 4 to 5 years;

h. 5 years and over.

17. Do you think your qualification meet the requirements of your current job?

a. My qualification is higher than it is required by my job;

b. My level of qualification is relevant to the requirements of the position held;

c. My level of qualification does not meet the requirements of the position held.

18. Do you think your remuneration is relevant to the work performed by you?

a. Remuneration is relevant to the work performed;

b. Remuneration is a little lower compared to the work performed;

c. Remuneration is much lower compared to the work performed;

d. Remuneration is a little higher compared to the work performed;

e. Remuneration is much higher compared to the work performed;

19. From the list below please choose the competencies that are necessary for you to be employed with your profession but you could not obtain at university:

a. Theoretical knowledge;

b. Practical skills;

c. Foreign language;

d. Practical use of office programmes;

e. Teamwork and adaptation to the social environment;

    f. I obtained all the necessary competencies at university;

    g. Other _____

20. To what extent do you apply the theoretical and practical knowledge gained at the university in your workplace?

    a. Fully;

    b. Mostly;

    c. Partly;

    d. Only a little;

    e. Can not apply.

21. Do you think you need some training to improve your qualifications and skills for achieving significant career advancement?

    a. Yes;

    b. No;

    c. I don't know.

22. Name the main factors / mechanisms that helped you to find a job during or after your studies at the HEI (please choose maximum 3 answers)

    a. Employment websites / job vacancies / internet;

    b. Public employment agency;

    c. Employment service of a HEI / consultations;

    d. Private employment agencies;

    e. Internship programmes;

    f. Private contacts;

    g. Involvement in family business;

    h. Starting one's own business;

    i. Other:_____

Section III: Assessing the relationship between HEIs and employers / analyzing views and involvement of graduates in this regard.

23. Did the HEI you studied at collaborate with potential employers?

    a. Yes and the collaboration yielded the desired results;

b. Yes, although the collaboration was formal and did not provide any results;

c. No;

d. I do not know.

24. In your opinion, the cooperation between the HEI and the potential employer mainly helps the student / graduate to: (please, choose maximum 2 answers)

a. Find a job more easily;

b. Adapt to the workplace;

c. Achieve career advancement;

d. Increase job satisfaction;

e. Improve the balance between job family life;

f. Strengthen theoretical knowledge with practical skills;

g. Other: _____

25. During your studies at HEI, did you have an opportunity to participate in practical training and / or professional knowledge and skills development courses / trainings / research or other similar activities jointly conducted by different organizations and HEIs?

a. Yes, I had an opportunity and I did participate;

b. Yes, I had an opportunity, but I did not participate;

c. No, I did not have an opportunity, but similar programmes were implemented;

d. No, I did not have an opportunity and have never heard of such programmes.

26. Have you ever participated in skills development courses / trainings / research or other similar projects? How much did all this help you to improve your skills and find a suitable job?

a. It helped me a lot and made it easier for me to find a job;

b. It did not make easier for me to find a job but I have improved my qualification;

c. It did not help me to find a job, neither did it improve my skills;

d. I have not participated in any of them.

27. Have you participated in qualification enhancement courses (trainings, preparation programmes, certification courses, etc.) organized by any HEI since you graduated?

a. Yes, quite often;

b. Yes, but rarely;

c. No, but I'm going to;

d. No and neither am I going to.

28. In your opinion, in what direction should cooperation between the employer and HEIs be carried out? (please, choose maximum 3 answers)

    a. I do not see the need for cooperation;

    b. Student mobility / internship;

    c. Cooperation in R&D;

    d. Development of joint education / training programmes;

    e. Involvement in the designing and development of curriculum;

    f. Knowledge transfer from HEIs to organizations / sharing of practical knowledge;

    g. Conducting seminars / trainings by academic staff in organizations;

    h. Cooperation in the field of continuous education;

    i. Sponsorship of scientific activities;

    j. Participation in governing boards of HEIs;

    k. Conducting joint conferences, preparing publications;

    l. Creation/testing of new services/products jointly;

    m. I do not know;

    n. Other:_____

29. In your opinion, what are the main problems / obstacles for cooperation between HEIs and employers today? (please choose maximum 3 answers)

    a. High level of bureaucracy in HEIs;

    b. Different views of HEIs and potential employers on problem solving;

    c. Differences in motivations and values;

    d. It is difficult and challenging to establish communication between them;

    e. Lack/limitation of time/resources;

    f. Limited possibility for knowledge transfer;

    g. The risk of breaching the confidentiality of the collaboration agreement between HEIs and potential employers;

    h. HEIs do not wish to cooperate;

    i. Organizations do not wish to cooperate;

    j. I do not know / I do not have information;

    k. There are no obstacles;

    l. Other:_____

30. In your opinion, what are the key components that HEIs need to improve so that their graduates have adequate and competitive theoretical knowledge and practical skills to be able to easily find a relevant job in the labour market? (please provide a short, theoretical answer) --
----

--**-------**

Thank you for participating in the study!

Survey of Higher Education Institutions

Dear respondent!

The project (#FR–18–6156)[112] The Study of Cooperation between Higher Education Institutions and Employers in Georgia is carried out within the framework of grant funding provided by the Shota Rustaveli National Science Foundation for fundamental research.

❖ The present survey is part of the grant project;

❖ The results of the present survey will only be used for the academic purposes specified in the grant project.

Section I: General information

1. **Type of higher education institution:**
   a. College;
   b. Teaching University;
   c. University.

2. **Which of the following categories does your HEIs belong to:**
   a. State (public);
   b. Private;
   c. Branch of a foreign institution;

3. **Which region is your HEI located in?**
   a. Tbilisi;
   b. Autonomous Republic of Adjara;
   c. Guria;
   d. Imereti;
   e. Kakheti;
   f. Mtskheta-Mtianeti;

---

112 Grant #FR–18–6156 - Grant recipient: Grigol Robakidze University Ltd, Vasil Kikutadze, Murtaz Kvirkvaia, Natia Daghelishvili, Tamar Tavkhelidze, Givi Gujaraidze.

g. Racha-Lechkhumi and Kvemo Svaneti;

h. In Samegrelo-Zemo Svaneti;

i. Samtskhe-Javakheti;

j. Kvemo Kartli;

k. Shida Kartli;

l. Abroad.

4. **How many years has your HEI been functioning in Georgia?**

    a. 1 to 15 years;

    b. 16 to 30 years;

    c. 31 to 60 years;

    d. 60 years and over;

5. **Average number of students in HEI:**

    a. 1 to 1000 students;

    b. 1001 to 2000 students;

    c. 2001 to 3000 students;

    d. 3001 to 4000 students;

    e. 4001 to 5000 students;

    f. 5000 students and over;

6. **Average number of professors in HEI:**

    a) 1 to 50;

    b) 51 to 100;

    c) 101 to 150;

    d) 151 to 200;

    e) 201 to 250;

    f) 251 to 300;

    g) 301 to 400;

    h) 401 to 500;

    i) 500 and over.

7. **Number of scientific and research centers in HEI: ---------------**

8. **How would you assess the average cost of tuition at your HEI (for all levels):**

    a. It equals to the average value on Georgian market;

    b. It is lower than the average value on Georgian market;

    c. It is higher than the average value in the Georgian market;

Section II: Qualitative data

9. **Do you think the Georgian higher education system provides graduates with the necessary knowledge and skills that meet the qualification requirements of the current employment market?**

    a) It does provide;

    b) It partly provides;

    c) It does not provide;

    d) I do not know;

    e) I do not have an answer.

10. **To what extent do you think employers are aware about what kind of qualifications, skills and knowledge they need today and in the future?**

    a. They are not aware at all;

    b. They are partly aware;

    c. They are aware to some extent;

    d. They are clearly aware of the current and future requirements;

    e. I do not know / I do not have an answer.

11. **To what extent do you think your HEI provides graduates with all the necessary knowledge and skills needed to get the right job in the labour market?**

    a. It does provide;

    b. It partly provides;

    c. It almost does not provide;

    d. It does not provide;

    e. I do not know /I do not have an answer.

12. **Depending on your experience, what are the main problems that employers face when hiring graduates?**

a. Graduates do not have sufficient theoretical knowledge;

b. They do not have the proper level of practical skills;

c. They find it difficult to adapt to the labour market / work in a stressful environment;

d. Employers find it difficult to employ graduates due to the lack of vacancies;

e. Imperfect labour legislation; the legal framework prevents them from effectively using the skills of graduates;

f. Other: _____

13. How would you assess the level of involvement of your HEI in cooperation with employers?

a. There is high level of involvement;

b. There is medium level of involvement;

c. There is low level of involvement;

d. We do not have such cooperation;

e. I do not have an answer.

14. What are the main directions of cooperation between your HEI and employers? (please, choose maximum 3 answers)

a. The HEI does not have any cooperation with organizations;

b. Student mobility / internship;

c. Cooperation in R&D;

d. Development of joint education / training programmes;

e. Involvement in the designing and development of curriculum;

f. Knowledge transfer from HEIs to organizations / sharing of practical knowledge;

g. Conducting seminars / trainings by academic staff in organizations;

h. Cooperation in the field of continuous education;

i. Sponsorship of scientific activities;

j. Participation in governing boards of HEIs;

k. Conducting joint conferences, preparing publications;

l. Creation/testing of new services/products jointly;

m. Other:_____

15. Which party do you think should be the initiator of establishing collaboration between higher education institutions (HEIs) and potential employers in most cases?

     a. Employer;

     b. Higher Education Institution;

     c. Both (Employer and HEI)

     d. Third party (public, civil sector, etc.);

     e. None of the above parties;

     f. I do not know;

     g. I do not have an answer.

16. What key factors / motivations / goals do you think should encourage an HEI to collaborate with organizations? (please, choose maximum three possible answers)

     a. Joint implementation of joint projects/objectives;

     b. Continuation of a relationship that has been historically established;

     c. Close geographical location;

     d. Promoting graduate employment by organizations;

     e. Access to the results of research and development implemented in a HEI;

     f. Obtaining support and financial resources from organizations;

     g. A desire of the HEI to share scientific experience with the organization;

     h. Receiving practical consultations from organizations;

     i. Conducting research for the organizations by HEIs;

     j. Providing continuing education to the organization's staff;

     k. Other :_____

17. What do you think are the main barriers and/or constraints that HEIs face in cooperation with organizations? (please, choose maximum 3 answers)

     a. High level of bureaucracy in organizations;

     b. Different motivations, values and visions of problem solving between HEIs and potential employers;

     c. Differences in motivations and values;

     d. It is difficult to find relevant people in organizations to connect with directly / lack of communication;

     e. Lack / limitation of time / resources;

f. Limited opportunities for knowledge transfer;

g. The risk of breaching the confidentiality of the collaboration agreement between HEIs and potential employers;

h. Organizations refuse to collaborate;

i. Other:_____

18. In your opinion, does the state encourage cooperation between potential employers and HEIs?

a. Yes, the state actively encourages cooperation;

b. The state more or less encourages cooperation;

c. The state effort to encourages cooperation is little;

d. The state is not involved in these processes.

e. I do not know;

f. I have no information.

19. On average, how many percent of your HEI graduates are employed according to the qualification obtained? (with their specialty)

a. 0 to 20 %;

b. 21 to 40%;

c. 41 to 60%;

d. 61 to 80%;

e. 81 to 100%

f. I do not have information.

20. Which of the following types of organizations do you (would you) prefer to establish collaboration with?

a. With local public organizations;

b. With local private organizations;

c. With local non-governmental organizations;

d. With foreign organizations;

e. It does not matter;

f. I do not know;

g. I would not establish any collaboration.

	1 - insignificant	2 – more or less significant	3 - significant	4 – extremely significant
Graduate skills have become relevant to the demands of the labour market;				
R&D areas in HEIs have improved;				
Educational and research programmes of HEIs have become increasingly relevant and modern;				
The prestige and attractiveness of the HEI have increased;				

21. **What kind of benefits do you think were received as a result of collaboration between your HEI and the employer?** *(Rank the factors by importance: 1. – insignificant, 2 – more or less significant; 3 – significant; 4 – extremely significant).*
----

22. **Is there a career planning and alumni orientation center at your HEI and how effectively does it work?**
   a. Yes, there is and it works effectively;
   b. Yes, there is but its effectiveness is low;
   c. Yes, there is but its effectiveness cannot be seen;
   d. No, there is not.

23. **How useful is the collaboration with employers for improving academic programmes?**
   a. It has no positive results;
   b. It is partly useful;
   c. It is useful;
   d. It significantly contributes to the improvement of academic programmes ;
   e. It is formal but is required for accreditation;
   f. I do not know / I do not have an answer.

24. **What financial / material costs is collaboration with business organizations associated with?**
   a. We do not have such collaboration / zero costs;
   b. Low costs;
   c. Average costs;
   d. High costs.

25. **In what way do you think the collaboration between HEIs and potential employers should continue in the future?**

Section III: Quantitative data

26. **For how many years have you been collaborating with employers?**

27. **How many organizations do you collaborate with simultaneously?**

28. **Name the average number of contracts / agreements signed with the organizations during the last 5 years?**

29. **What percentage of the students enrolled in undergraduate programmes is awarded academic degree?**

30. **What is the average percentage of bachelor graduates who continue their studies on master's programmes?**

31. **What is the average percentage of professors and teacher working in non-educational organizations along with teaching?**

32. **What is the average percentage of students participating in the activities carried out by the HEI in collaboration with organizations?**

	No activities are carried out	1to10%	11 to 20%	21 to 50%	51 to 75%	Over 75%
Internship						
Applied / research projects						
Training / preparation courses						
Scientific conferences						
Scholarships						
Sports / entertainment / adventure events						

33. **On average, how many foreign students study in your HEI over a year (including all existing programmes)?**

34. **On average, how many students go to study abroad over a year (including all levels)?**

Thank you for participating in the study!