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WP2: Enhancing Entrepreneurship Education and Skills Development

D 2.1 Report on status quo on entrepreneurship education, labour market requirements and knowledge/skills mismatches

Toraighyrov University, Kazakhstan

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Table of Contents

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1. Introduction

Toraighyrov University (TOU) is one of the largest universities in the north-eastern part of Kazakhstan. ToU was established in 1960 and started with only 400 students. Today it is a multidisciplinary entrepreneurial university of innovative type, the leading university in the region, the largest research center, widely known for its innovations and achievements. Toraighyrov University was established in 1960, there are 7 faculties, 1192 employees, 8522 students. The University conducts 138 study programs (117 programs are accredited). According to the annual national ranking, ToU is among 5 top multidisciplinary universities in Kazakhstan. In 2020, the university entered 1201+ of QS World University Rankings.

The present report provides an overview of the status quo of entrepreneurship education at Toraighyrov University in Kazakhstan and aims to identify related labour market requirements and possible knowledge/skills mismatches of university graduates. The report was developed as part of Work Package 2 on “Enhancing Entrepreneurship Education and Skills Development” (WP2) of the Erasmus+ Capacity Building in Higher Education Project “Triggering innovative approaches and entrepreneurial skills for students through creating conditions for graduate’s employability in Central Asia” (TRIGGER).

The report first provides an overview of the current offer in entrepreneurship education at the university. Second, relevant results of an HEI self-assessment are provided which was conducted based on the HEInnovate[1] tool in WP1.[2] For the requirements of WP2 the present report specifically looks at the self-assessment findings of the university for the HEInnovate dimensions “Entrepreneurial Teaching and Learning” and “Preparing and Supporting Entrepreneurs”.[3] Third, results of a survey among employers and graduates are provided to identify labour market qualification requirements and possible skills mismatches for graduates in the field of entrepreneurial skills. The survey was implemented by the university in spring 2021 as part of WP2. Fourth, a summarizing discussion of the identified gaps and skills mismatches is provided. In sum, the mentioned aspects allow for comprehensive audit of the state of entrepreneurship education at the university. Finally, conclusions for the further development of entrepreneurship education at the university are derived.

[1] For further details see: https://heinnovate.eu/en
[2] For further detail see Deliverable 1.1 on “The Methodology for the Analyses of HEI preparedness for future challenges” of Work Package 1.
[3] For further results of the self-assessment along all 8 HEInnovate dimensions see Deliverable 1.2 “The Report on HEI preparedness for future challenges in CA countries” of Work Package 1.

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Before digging deeper into the status of entrepreneurship education at the university, this section closes with a summary on the notion of entrepreneurship education as adopted in the TRIGGER project:

- **Entrepreneurship Education** (EE) seeks to provide students with knowledge, skills and motivation to create ideas in entrepreneurial action in different environments, both as self-employed entrepreneur and as employee in established organisations (EC 2015, Lackéus et al. 2020).
- **Entrepreneurship** is a key competence for all learners, supporting personal development, active citizenship, social inclusion and employability (see European Commission et al. 2016: 21).
- **Organizational change** of HEIs is needed, since „the capacity to implement the entrepreneurship and innovation agenda depends on the governance arrangements, organisational capacity and the institutional culture of HEIs as well as characteristics of the surrounding economy“ (OECD 2019: 12).

2. Overview of current offer in entrepreneurship education at the HEI

This section provides an overview of the status quo of entrepreneurship education at the university, looking at BA, MA, and PhD levels.

2.1. Existing entrepreneurship education offer at BA level

In connection with the transition to a non-profit joint-stock company in 2020, the university received academic and managerial freedom in its activities, which allows it to independently determine the vector of development of the university, develop our own educational programs. We have chosen an entrepreneurial type of university. The interaction of business, government and the scientific community has become the basis that allows us to achieve strategic goals and ensure sustainable development.

Jointly with Local Executive Bodies, Toraighyrov University actively implements the “Strong University – Strong Region” Program. Today, many of our researchers are actively involved in the work of the project offices of the regional governments, cities and districts, which allows Toraighyrov

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University to use the scientific and technical potential of the university to solve regional problems. The three-way interaction of government, science and business allows us to employ graduates successfully.

Toraighyrov University is the undisputed leader among educational institutions in Pavlodar region both in the number of students and in the quality of educational services. The university trains specialists of higher professional education in various fields in the state and Russian languages in 150 specialties of bachelor's, master's, and doctoral degrees.

Toraighyrov University annually holds a competition for the provision of small grants. The purpose of the grant is the generation of innovative and scientific ideas of the university staff, students and their commercialization.

Objectives of providing grants include the following:

- creation of financial conditions for the implementation of innovative processes, including R&D;
- intensification of R&D and their commercialization in the activities of the university;
- building an innovative entrepreneurial ECO-system at the university;
- to improve the qualifications of university staff and students;
- development of integration links in the “education-science-production” system.

The amount of the grant is up to 6,025,000 KZT (11,570 euros). The grant is available for:

- university staff;
- undergraduate, graduate and postgraduate students.

Also, the University regularly holds business meetings with successful entrepreneurs, coaches, business coaches, representatives of government agencies and representatives of funds (DAMU and Atameken) to support and develop entrepreneurship to support and develop entrepreneurship among students and employees of the University.

Thus, based on the entrepreneurial university profile, all educational programs have modules aimed at developing entrepreneurial skills in students. All undergraduate programs of the university have the compulsory module “Organization of Business” and “Economic Justification of Startup Projects”.

As a result of studying this discipline, students will be able to generate ideas for the implementation of Start up projects and carry out their economic justification. The goal of the discipline is to form the necessary set of knowledge, skills and competencies to carry out the economic feasibility study of Start up projects. Discipline objectives include the study of the following:

- Startup projects as a tool for modern business entrepreneurship;
- Methodology for constructing an algorithm for developing a startup project;
- The principles of designing business models; study of the methodology for assessing investment costs in fixed assets;

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- Methodology for assessing investment costs in working capital;
- Methodology for assessing investment costs in the formation of HR resources;
- Methodology for performing the economic feasibility study of costs and expenses of the period;
- Methodology for designing a pricing system;
- Methodology of financial planning;
- Methodology for performing investment analysis of a startup project;
- Methods of protecting a start-up project.

All educational programs at Toraigyrov University must comply with the requirements of the Ministry of Education and Science of the Republic of Kazakhstan, which sets the list of compulsory disciplines, such as: Modern History of Kazakhstan, Philosophy, Foreign Language, Kazakh (Russian) Language, Information and Communication Technologies (in English), as well as the Module of Socio-Political disciplines (Sociology, Political Science, Culture Studies, Psychology) and Physical Education. Compulsory general knowledge disciplines take up 51 credits. The rest of the content of the educational program is determined by the universities independently within the academic freedom policy. Specialized disciplines take up 60 credits as a university component (elective disciplines) out of 240 credits in total. Thus, universities have the freedom to shape the content of educational programs and determine the specialization of their further development.

2.2. Existing entrepreneurship education offer at MA level

Currently, the university pays great attention to the development of practical skills. We are talking about close cooperation with the real and financial sector to improve the process of training students and increase their competitiveness.

To improve the quality of entrepreneurial education, the following practitioners are involved in the academic process:

- I. Nazarchuk, head of the State Institution “Department of Economics and Budget Planning of Pavlodar Region”;
- S. Shayakhmetov, deputy governor of Pavlodar region;
- A. Molshina, leading marketer, SMM manager of Pavlodar city;
- M. Kantarbayev, head of the department “Center for Receiving and Processing Information from Individuals” of the State Revenue Department in Pavlodar;
- A. Amerkulova, leading specialist of Otbasy Bank;
- S. Akhmetova. - auditor.

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The university has long-term cooperative relations with colleagues from several universities abroad. For example, Prof. Almaz Tolymbek, Delta International University (USA), Dr. Stuken T.Yu, Dean of the Faculty of Economics, Omsk State University (Russia), Dr. A. Sharkova, Head of the Department of Economics of the Financial University under the Government of the Russian Federation.

As part of the academic mobility of foreign lecturers, Almaz Tolymbek, from October 14 to November 8, 2019, conducted educational trainings and seminars for teaching staff and students in the following courses: Soft skills and Leadership, Strategic Management, Financial Markets and Portfolio Investment. The seminars were aimed at obtaining investment literacy and were based on the growth of their financial capabilities of citizens of the Republic of Kazakhstan in the context of global financial markets. In general, the program is designed for the development of modern investment literacy among teaching staff and students, as well as for the gradual achievement of personal financial independence.

In addition, within the Senior Expert Service program (Germany), expert Wolfgang Boehme was invited to conduct professional development training “Reducing Banking Risks”. The course was attended by undergraduate, graduate and doctoral students and faculty members. Thus, in order to form entrepreneurial competencies, leadership skills among students, all events are carried out on an ongoing basis with the involvement of practitioners from the real sector of the economy, invited professors, as well as successful entrepreneurs and founders of Startup projects.

All educational programs of postgraduate education at Toraigyrov University must comply with the requirements of the Ministry of Education and Science of the Republic of Kazakhstan, which regulates the list of compulsory disciplines, such as: History and Philosophy of Science, Foreign Language (Professional), Higher Education Pedagogy, Management Psychology and Pedagogical Internship in a 2 year research graduate program. Compulsory disciplines take 20 credits out of 120. In a one year practice oriented graduate program, the list of compulsory disciplines includes the following ones: Foreign Language (Professional), Management, Management Psychology. Compulsory disciplines in this program take 6 credits out of 60. The rest of the content of the educational program is determined by universities independently, and this is academic freedom. Thus, universities have the freedom to shape the content of educational programs and determine the specialization of their further development. In this connection, it is possible to offer a course on the development of entrepreneurship and entry into the international market as an elective course for all educational programs at graduate level.

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2.3. Existing entrepreneurship education offer at PhD level

In all educational programs of the doctoral level, the courses are taught only in the 1st semester (in accordance with the State Standard). The next 2.5 years (five semesters) all doctoral students do research work, engage in research activities and events, write articles, consult their supervisors.

The disciplines of the compulsory component are also determined by the requirements of the State Educational Standard of the Ministry of Education and Science of the Republic of Kazakhstan, such as: Academic Writing and Methods of Research from 45 credits of theoretical study in the first semester.

In connection with this, admission to doctoral studies is possible if there are prerequisites in this area. It is expected that all doctoral students have studied entrepreneurship courses at the previous levels (bachelor's and master's programs), since they are a compulsory component. Therefore, doctoral students do not study additional modules on entrepreneurship, but they are supposed to master them previously, during bachelor and master degree programs.

2.4. Other activities in entrepreneurship education

Currently, the university pays great attention to the development of communication skills, including public speaking skills, as well as attracting top managers and entrepreneurs.

As part of the implementation of this direction, speaker Sayasat Nurbek, a well-known public figure of Kazakhstan, was invited to conduct lectures. He spoke about world trends, professions and skills of the future. He showed, using the example of the Atlas of New Professions and Competencies, that there are available tools for professional diagnostics and career guidance for common citizens of Kazakhstan.

Also on April 15, the founder of the famous smart.point, ex-CEO of “BI Innovation” Amirkhan Omarov was invited. He is the head of the club of intellectual youth “Almaty Trends”, as well as a co-author of a number of startups in the field of information technology. Amirkhan Omarov shared tips on time management, self-development, discipline, marketing and business. He also provided consultations to gave everyone the opportunity to get advice and advice for aspiring entrepreneurs.

On February 18, a meeting was held with the founder of an international startup in the field of logistics, Yerzhan Nauryzbayev. Yerzhan Nauryzbayev is a technology entrepreneur - techpreneur, IT expert and mentor. All events are aimed at developing entrepreneurial skills and competencies and are held on an ongoing basis.

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2.5. National/institutional regulations to implement changes at the course level and to initiate new extra-curricular activities

Within the last few years, after intensive reforms in the area of higher educations, universities in Kazakhstan receive more academic freedom. Toraigyrov University has a continuous mechanism for monitoring and assessing the quality of educational programs. The following structural parts of the university are involved in this process: chairs, dean's offices, and the department for managing academic activities. This process includes a survey of students, graduates, teachers, employers; analysis of students' progress; information support of the educational process, resource and information support of the EP; analysis of the student assessment system; assessment of the level of competence of teaching staff; the degree of compliance of the educational programs with the established requirements.

The revision of the educational programs is carried out once a year, taking into account changes in the labor market, the needs of employers, the latest scientific achievements in specific disciplines and the social demand of society. Every year, changes are made to each educational program, taking into account the opinions of students and employers.

3. Results of the HEInnovate self-assessment for the dimension “Entrepreneurial Teaching and Learning” and “Preparing and Supporting Entrepreneurs”

As part of WP1 a HEI self-assessment was conducted based on the HEInnovate tool. For the requirements of WP2 this section specifically looks at the self-assessment results of the university for the HEInnovate dimensions “Entrepreneurial Teaching and Learning” and “Preparing and Supporting Entrepreneurs”.[4]

3.1. Dimension “Entrepreneurial Teaching and Learning”

Toraighyrov University has profiled itself as the entrepreneurial university. We provide students with the knowledge, skills and motivation to encourage entrepreneurial success in a variety of settings

[4] For further results of the self-assessment along all 8 HEInnovate dimensions see Deliverable 1.2 “The Report on HEI preparedness for future challenges in CA countries” of Work Package 1.

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Entrepreneurship is a major part of the university's strategy. The University focuses on the development of skills or attributes that enable the realization of opportunity of the students as future potential businessmen and employers. The University conducts competitions for business projects and startups, and implements subject-based entrepreneurial curriculum in all the spheres of education.

Interest in entrepreneurship education is growing over the world. There is a great variety of different views in the field of research concerning the content and structure of entrepreneurship courses, but no comprehensive study has yet been done in which these competing views are clearly articulated as rivals and tested against each other. There is also a lack of program evaluations. Therefore, the assessment of staff regarding evaluation of Entrepreneurial Teaching and Learning processes is highly marked. Despite the fact that this process gets high scores from the respondents, actually entrepreneurial education is taught not in whole university.

Currently, Toraigyrov University has 58 licenses for educational activities in higher and postgraduate education.

Level of education	Number of licenses in areas of training	Number of educational programs (EP)
PhD	6	13
Master's degree	23	58 (scientific-ped.)
Undergraduate	29	79
Total	***58***	***150***
* in 2020, 9 new EPs were opened: bachelor's degree - 3; magistracy - 3; doctoral studies - 3. ** in 2021, work continues to include new EPs in the register and update current EPs.		

The Register of the Ministry of Education and Science of the Republic of Kazakhstan includes all 150 educational programs, the content of which is: - implementation of project-based learning through research and implementation of projects in accordance with the Major program; - additional formation of competencies in the field of entrepreneurship and start-up design through the Minor program "Entrepreneurship", English Language Course (ongoing course), Deutschkurse (ongoing course), "Chinese" (basic course), "IT: Graphics and Design ", "IT: Augmented and Virtual Reality", "IT: Web Development", "IT: SMM & SEO", "IT: Video Production", "IT: Digital Sound Engineer".

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5 measures to be taken by the HEI:

1. Provide students with the knowledge, skills and motivation to encourage entrepreneurial success in a variety of settings Entrepreneurship is a major part of the university's strategy. ToU has profiled itself as the entrepreneurial university.
2. Focus on the development of skills or attributes that enable the realization of opportunity of the students as future potential businessmen and employers.
3. Conduct competitions for business projects and startups.
4. Conduct more joint events for students and entrepreneurs to learn from their experience and improve their skills.
5. Implement subject-based entrepreneurial curriculum in all the spheres of education.

3.2. Dimension "Preparing and Supporting Entrepreneurs"

Toraighyrov University organizes forums and meetings for sharing and discussing challenges of entrepreneurs. The University provides students with help from a personal mentor, access to large-scale networking event and collaborates with big companies that can offer exclusive discounts on hotel, travel, business and lifestyle products and services.

Within the framework of educational programs, the following trends in higher and postgraduate education are being implemented: 1) dual training with enterprises of the Pavlodar region: - Faculty of Engineering - POCR LLP, PF KSP Steel LLP, Temirzholsu-Pavlodar LLP, Omis Inc. LLP, PF RSE "Kazakhstan Institute of Standardization and Metrology", work is underway to organize dual training at KEZ JSC » and «Bi Group» LLP; - Faculty of Agricultural Sciences - JSC "Sut", LLP "Gorzelenstroy", LLP "Pobeda", LLP "Sharbakty-Kus", LLP "Kyzylzhar-Kus"; - Faculty of Energy and Computer Science - PF LLP "KSP Steel", LLP "Promanalit", LLP "Elnur-Service", LLP "Best-garant", IP "RBA Development", work is underway to organize dual training in JSC "KEZ" ; - Faculty of Economics and Law - "Halyk Bank of Kazakhstan" JSC, "Eurasian Bank" JSC. - Dual training is being implemented under the "FEZ-ToU" project: Manufacture of liquid soap and antiseptic, Natural cosmetics "Rimma cosmetics", Air monitoring ministations «Airkaz», Production of electric motorcycles, Production of compact supply and supply and exhaust ventilation, Medical diagnostic bracelets, Production of building SIP panels, Robotic fire platform, Social workshop "Greental", Transformation of wheelchairs from mechanical to electric, radio-controlled, Manufacture of metal structures and creative furniture, Highly passable technique "Swamp", Production of electric trimarans and catamarans SIZ-KZ personal protective equipment, Production of bactericidal recirculators, Repellent for personal protection (spray,

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gel against midges), Educational guide service of modern professions and skills, Ecological studies of bitter-salty lakes of the Pavlodar region, Production of forged products Laboratory "Bio-Green" for growing microgreens in a hydroponic plant.

According to the results of self-evaluation of Toraighyrov University in this section, the average score of answers was 3.8 points.

- Offer entrepreneurial team building support and conflict management 3.6
- Host their own incubators or facilitate easy access to external incubators 3.8
- Ensure that their incubators offer a full range of soft support (networking, mentoring, etc.) as well as physical infrastructure 3.7
- Embed the incubation facilities with the research and education infrastructure of the HEI to enhance synergies 3.75

5 measures to be taken by the HEI:

1. Organize forums and meetings for sharing and discussing challenges of entrepreneurs.
2. Provide students with help from a personal mentor, access to large-scale networking events.
3. Strongly collaborate with big companies that can offer exclusive discounts on hotel, travel, business and lifestyle products and services.
4. Create Special Club “Young Entrepreneur Council” with specific functions, including monitoring of more experienced mentors.
5. Offer startup financing, networking opportunities and a support network for social entrepreneurs.

4. In-depth survey (employers, alumni)

As part of WP2 the university conducted a survey among employers and graduates to identify labour market qualification requirements and possible skills mismatches for graduates in the field of entrepreneurial skills.

In this chapter, results from the online survey of employers and alumni are presented. The rationale of the survey was to identify the skills gaps in terms of skills needed and the actual skills state of university graduates as perceived by companies and alumni.

The survey was conducted in May and June 2021. Each TRIGGER partner in Kazakhstan, Uzbekistan and Tajikistan distributed the same questionnaire independently in order to gain comparable

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data. The questionnaire was developed based on the Entrepreneurship Competence Framework[5] and other studies on entrepreneurship.[6]

In total, the questionnaire comprised 130 items on three EntreComp dimensions „Ideas“, „Resources“ and Actions“ and in four dimensions on „Digital Skills“, „Financial Skills“, „Marketing Skills“ and „Skills in Innovation Management“, plus 8 questions on demographic variables, such as position of the survey participant in the company, company size, and sector of company/professional activity. All items were presented with a five-point Likert scale anchored with 1 = not at all important to 5 = very important.

4.1. Dimension “Ideas”

Table 1: Dimension "IDEAS"

	Employer						Alumni					
	Importance					I ± GL	Importance					I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Identifying, creating and seizing opportunities.	23	4,5	0,6	3,0	0,8	-1,5	22	4,3	0,6	3,0	0,5	-1,3
Uncovering the needs of customers and other stakeholders.	23	4,4	0,7	3,0	0,8	-1,4	22	4,3	0,8	3,1	0,5	-1,2
Analysing the contexts where value can be created.	23	4,4	0,7	3,1	0,7	-1,3	22	4,1	0,8	3,0	0,6	-1,1
Developing ideas and opportunities to create value.	23	4,2	0,7	3,1	0,8	-1,1	22	4,3	0,6	3,2	0,4	-1,1
Developing better solutions to existing and new challenges.	23	4,4	0,7	3,1	0,8	-1,3	22	4,3	0,7	3,2	0,6	-1,1
Exploring and experiment with innovative approaches.	23	4,4	0,7	3,0	0,8	-1,3	22	4,2	0,8	3,2	0,6	-1,0
Developing a vision to turn ideas into action.	23	4,3	0,9	3,0	0,6	-1,2	22	4,1	0,7	3,0	0,4	-1,1

[5] Bacigalupo M., Kampylis P., Punie Y. and Van Den Brande L. (2016) EntreComp: The Entrepreneurship Competence Framework. Luxembourg (Luxembourg): Publications Office of the European Union; Online: https://publications.jrc.ec.europa.eu/repository/handle/JRC101581 (accessed 2021-02-02).

[6] The dimension on „Digital Skills“ was developed from Carretero, S. / Vuorikari, R. / Punie, Y. (2017). DigComp 2.1: The Digital Competence Framework for Citizens with eight proficiency levels and examples of use, doi:10.2760/38842; the further dimensions were built on Loué, C. & Baronet, J. (2012) Toward a new entrepreneurial skills and competencies framework: a qualitative and quantitative study. In: International Journal of Entrepreneurship and Small Business, Vol. 17, No. 4, pp. 455-477.

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Judging what value is in social, cultural and economic terms.	23	4,4	0,7	3,1	0,7	-1,3	22	4,1	0,7	3,0	0,5	-1,1
Recognising the potential an idea has for creating value.	23	4,4	0,6	3,1	0,7	-1,3	22	4,2	0,7	3,1	0,5	-1,1
Identifying suitable ways of making the most out new ideas.	23	4,3	0,7	3,1	0,8	-1,2	22	4,2	0,6	3,0	0,5	-1,1
Assessing the consequences of ideas that bring value on the target community, the market, society and the environment.	23	4,4	0,7	3,1	0,8	-1,3	22	4,3	0,6	3,0	0,5	-1,3
Reflecting on how sustainable long-term social, cultural and economic goals are.	23	4,5	0,6	3,1	0,8	-1,3	22	4,2	0,6	3,0	0,2	-1,3
Acting responsible.	23	4,6	0,6	3,2	0,7	-1,3	22	4,3	0,8	3,0	0,4	-1,3

This direction contained very important points for an employer who hires employees who are former university graduates. Each employer considered such an item as the identification, creation and use of opportunities to be very significant. But when evaluating this quality among graduates, few gave high scores, hinting that this quality is not very developed among graduates. Employers especially highlighted the importance of having such skills as “Identifying, creating and seizing opportunities”, Reflecting on how sustainable long-term social, cultural and economic goals the share of which was 4.5, and Acting responsible, which is the highest score - 4.6.

Such items as Uncovering the needs of customers and other stakeholders, Analyzing the contexts where value can be created, Developing better solutions to existing and new challenges, Exploring and experiment with innovative approaches, Judging what value is in social, cultural and economic terms, Recognising the potential an idea has for creating value, Assessing the consequences of ideas that bring value on the target community, the market, society and the environment was 4.4 points.

Developing a vision to turn ideas into action and Identifying suitable ways of making the most out new ideas received 4.3 points each, and employers rated Developing ideas and opportunities to create value the least, which is 4.2 points.

In turn, graduates paid great attention to such criteria as Identifying, creating and seizing opportunities, Uncovering the needs of customers and other stakeholders, Developing ideas and opportunities to create value, Developing better solutions to existing and new challenges, Assessing

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the consequences of ideas that bring value on the target community, the market, society and the environment and Acting responsible, which is 4.3 points.

Exploring and experiment with innovative approaches, Recognizing the potential an idea has for creating value and Identifying suitable ways of making the most out new ideas, which is 4.2 points.

However, the most interesting thing is that both types of respondents noted low proficiency in the following skills, such as Identifying, creating and seizing opportunities; uncovering the needs of customers and other stakeholders and analyzing the contexts where value can be created. The survey showed a not very rosy picture, but also not completely negative. Everything is fixable; it shows us how to work further. Nevertheless, it is necessary to mention, that Differences between Importance and Graduate level are all highlighted in red colour (4.1 points).

The difference in the importance of skills and abilities for employers and the real low proficiency of these skills among graduates makes us think about making changes to syllabuses. These changes may help to form and develop these skills to the required level

4.2. Dimension "Resources"

Table 2: Dimension "Resources"

	Employer						Alumni					
	Importance					I ± GL	Importance					I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Reflecting on your needs, aspirations and wants in the short, medium and long term.	23	4,3	0,7	3,0	0,8	-1,3	22	4,3	0,7	3,0	0,4	-1,3
Identifying and assess one's own individual and group strengths and weaknesses.	23	4,3	0,8	3,0	0,8	-1,3	22	4,5	0,6	3,0	0,4	-1,5
Believing in one's own ability to influence the course of events, despite uncertainty, setbacks and temporary failures.	23	4,4	0,8	3,0	0,7	-1,4	22	4,2	0,6	3,0	0,4	-1,2
Being determined to turn ideas into action and satisfy one's own need to achieve.	23	4,3	0,7	3,1	0,8	-1,2	22	4,5	0,6	3,0	0,4	-1,5
Being prepared to be patient and keep trying to achieve long-term individual or group aims.	23	4,6	0,7	3,0	0,8	-1,6	22	4,1	0,6	3,0	0,6	-1,1

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Being resilient under pressure, adversity, and temporary failure.	23	4,5	0,7	3,0	0,8	-1,5	22	4,4	0,6	2,9	0,5	-1,5
Getting and managing the material, non-material and digital resources needed to turn ideas into action.	23	4,3	0,8	3,0	0,6	-1,3	22	4,1	0,6	3,0	0,4	-1,1
Making the most of limited resources.	23	4,5	0,7	3,1	0,7	-1,4	22	4,2	0,6	3,0	0,4	-1,2
Getting and managing the competences needed at any stage, including technical, legal, tax and digital competences through suitable partnerships, networking, outsourcing	23	4,3	0,8	3,0	0,7	-1,3	22	4,2	0,6	3,0	0,2	-1,2
Estimating the cost of turning an idea into a value-creating activity.	23	4,6	0,6	3,0	0,8	-1,6	22	4,3	0,5	3,0	0,6	-1,3
Planning, putting in place and evaluating financial decisions over time.	23	4,4	0,7	3,0	0,8	-1,4	22	4,2	0,5	3,0	0,3	-1,2
Managing financing to make sure my value-creating activity can last over the long term.	23	4,5	0,7	3,0	0,8	-1,5	22	4,5	0,5	3,0	0,4	-1,5
Inspiring and enthusing relevant stakeholders.	23	4,6	0,6	3,0	0,8	-1,6	22	4,3	0,5	3,0	0,5	-1,3
Getting the support needed to achieve valuable outcomes.	23	4,6	0,6	3,0	0,8	-1,6	22	4,3	0,6	3,0	0,5	-1,3
Demonstrating effective communication, persuasion and negotiation.	23	4,4	0,7	3,0	0,8	-1,4	22	4,3	0,6	3,1	0,6	-1,2
Demonstrating effective leadership.	23	4,5	0,7	2,9	0,8	-1,6	22	4,3	0,6	3,1	0,6	-1,2

Employers highly note the importance of owning such competencies as “Being prepared to be patient and keep trying to achieve long-term individual or group aims”, “Estimating the cost of turning an idea into a value-creating activity”, “Inspiring and enthusing relevant stakeholder”, “Getting the support needed to achieve valuable outcomes”- 4.6 points.

Employers also rated such indicators as 4.5 points: Being resilient under pressure, adversity, and temporary failure, Making the most of limited resources, Managing financing to make sure my value-creating activity can last over the long term and Demonstrating effective leadership.

Such items as Believing in one‘s own ability to influence the course of events, despite uncertainty, setbacks and temporary failures, Planning, putting in place and evaluating financial decisions over time

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and Demonstrating effective communication, persuasion and negotiation Employers evaluate on 4.4 points.

Meanwhile, the graduates highly appreciated the importance of owning such competencies as “Identifying and assess one’s own individual and group strengths and weaknesses”, “Managing financing to make sure my value-creating activity can last over the long term”. Both sides rated the graduates' actual possession of these skills lowly (4.3 points).

It is very important to develop all of the above in yourself, both for students and young professionals, and for senior managers who are confidently walking up the career ladder. The ability to take responsibility at the right time and direct all actions in the right direction to achieve goals is the main advantage at any stage of your career. All this is very important for an employee in various fields. This is what employers emphasize in this survey. However, their expectations and the real picture do not coincide a little. For example, employers rate extremely low such quality among university graduates as Acquiring and managing the competencies necessary at any stage, including technical, legal, tax and digital competencies, through suitable partnerships, networking, outsourcing. At the same time, graduates believe that they fully possess all the listed qualities to an average extent. Nevertheless, they agree that such quality as Planning, making and evaluating financial decisions over time requires improvement. The difference in the importance of skills and abilities for employers and the real low proficiency of these skills among graduates makes us think about making changes to syllabuses. These changes may help to form and develop these skills to the required level.

4.3. Dimension “Actions”

Table 3: Dimension “Actions”

	Employer						Alumni					
	Importance					I ± GL	Importance					I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Initiating processes that create value.	23	4,3	0,7	3,0	0,6	-1,3	22	4,1	0,7	2,9	0,6	-1,2
Taking up challenges.	23	4,2	0,6	3,0	0,8	-1,2	22	4,1	0,6	2,9	0,6	-1,2
Acting and working independently to achieve goals, stick to intentions and carry out planned tasks.	23	4,3	0,8	2,9	0,6	-1,4	22	4,1	0,6	3,0	0,6	-1,1
Setting long-, medium- and short-term goals.	23	4,3	0,6	3,0	0,7	-1,3	22	4,3	0,6	3,0	0,5	-1,3
Defining priorities and action plans.	23	4,4	0,6	2,9	0,7	-1,5	22	4,3	0,6	3,0	0,5	-1,3

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Adapting to unforeseen changes.	23	4,4	0,7	3,0	0,8	-1,4	22	4,4	0,6	3,0	0,4	-1,4
Making decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes.	23	4,3	0,7	2,9	0,7	-1,4	22	4,4	0,6	3,0	0,6	-1,4
Testing ideas and prototypes from the early stages to reduce risks of failing.	23	4,3	0,8	3,1	0,7	-1,2	22	4,0	0,6	3,0	0,5	-1,0
Handling fast-moving situations promptly and flexibly.	23	4,4	0,6	2,9	0,7	-1,5	22	4,2	0,6	3,0	0,5	-1,2
Working together and cooperate with others to develop ideas and turn them into action.	23	4,4	0,7	3,0	0,7	-1,4	22	4,3	0,5	3,0	0,4	-1,3
Networking with others to organise skills and expertise needed for goal attainment.	23	4,5	0,7	3,0	0,6	-1,5	22	4,2	0,5	3,1	0,6	-1,1
Solving conflicts and facing up to competition positively when necessary.	23	4,5	0,7	3,0	0,7	-1,5	22	4,5	0,5	3,0	0,6	-1,5
Using any initiative for value creation as a learning opportunity.	23	4,6	0,6	2,8	0,6	-1,8	22	4,3	0,6	3,1	0,7	-1,2
Learning with others, including peers and mentors.	23	4,3	0,6	3,0	0,6	-1,3	22	4,3	0,6	3,1	0,7	-1,2
Reflecting and learning from both success and failure (your own and other people's).	23	4,3	0,6	3,0	0,6	-1,3	22	4,3	0,6	3,1	0,8	-1,2

All the qualities were noted by employers as very important in the survey. But they gave average scores when evaluating these qualities among university graduates. Employers generally believe that graduates are not yet ready to work independently and it is difficult for them to make decisions without advice. They also give an average assessment of the graduates ' ability to work in a team and cooperate with others to achieve goals. At the same time, graduates evaluate these qualities above average. They also consider these points very important, but at the same time express confidence that they have such skills when graduating from a university and when applying for employment. The difference in the importance of skills and abilities for employers and the real low proficiency of these skills among graduates makes us think about making changes to syllabuses. These changes may help to form and develop these skills to the required level.

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4.4. Dimension "Digital Skills"

Table 4: Dimension "Digital Skills"

	Employer						Alumni					
	Importance					I ± GL	Importance					I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Using data and information from digital environments to assess the potential of ideas.	23	4,4	0,7	3,1	0,6	-1,3	22	4,1	0,8	2,9	0,4	-1,2
Deploying digital media, apps or web-based tools for marketing.	23	4,3	0,8	3,2	0,7	-1,1	22	4,2	0,8	2,9	0,3	-1,3
Using knowledge on automation and artificial intelligence for improving products, processes and services.	23	4,3	0,9	3,1	0,7	-1,2	22	4,2	1,1	2,9	0,6	-1,3
Understanding and using information from the web and other digital sources to identify customer needs.	23	4,4	0,7	3,1	0,7	-1,3	22	4,2	0,7	3,0	0,4	-1,2
Using software apps and digital tools for managing collaboration with teams and partners.	23	4,6	0,6	3,0	0,7	-1,6	22	4,1	0,8	3,0	0,5	-1,1

Digital literacy is a set of knowledge and skills that are necessary for the safe and effective use of digital technologies and Internet resources. Employers highly appreciated the importance of having all the competencies in this area. However, the real mastery of all the skills of graduates was rated low. The data on the difference between importance and actual skill proficiency show an alarming situation among graduates. Digital literacy is very important, but as the results show, real proficiency is at a low level. Modern organizations and companies are faced with the problem of restructuring the workflow, which means the emergence of distributed organizational structures, the decentralization of the decision-making process, a wider exchange of information, flexible working hours and cooperation within the team working on the project. Companies implementing such changes in organizational structures and business practices need new skills from employees. Employers have made it clear in their assessment of this area how highly they appreciate the importance of digital literacy. At the same time, they highly appreciate the digital competencies of graduates, which is very pleasant and understandable (from 4.3 to 4.6 points). Nowadays, it is impossible to have weak skills in digital literacy. The graduates also highly appreciated the importance of this direction. However, at the same time, they are not sure that they have a good command of these skills when they graduate from the university (from 4.1 to 4.2). This is an amazing fact, because now there is an era of digitalization, and to be relevant, you need to possess these competencies.

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4.5. Dimension "Financial Skills"

Table 5: Dimension "Financial Skills"

	Employer						Alumni					
	Importance					I ± GL	Importance					I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Knowing how to read and analyse a balance sheet.	23	4,2	0,7	2,8	0,5	-1,4	22	4,4	0,6	2,9	0,6	-1,5
Drawing conclusions and deriving potential courses of action from balance sheets.	23	4,2	0,7	3,0	0,7	-1,2	22	4,3	0,7	3,0	0,6	-1,3
Managing cash flow.	23	4,3	0,6	2,8	0,6	-1,5	22	4,3	0,6	2,8	0,7	-1,5
Identifying and meeting the organization's financial needs in the short and long term	23	4,4	0,7	3,0	0,6	-1,4	22	4,4	0,5	2,9	0,5	-1,5
Calculating costs, cost prices, and margins.	23	4,4	0,6	2,9	0,7	-1,5	22	4,4	0,6	3,0	0,6	-1,4

Financial literacy makes it possible to understand how the financial side of life is arranged, due to which certain events occur, how what is happening in the state will affect a person's life, what consequences this or that step will lead to with their own money, with the employer's money. To minimize the risk of getting into a difficult financial situation, employers want graduates to have the basic basics of economics and financial literacy. But in reality, they believe that graduates are not very good at these skills. In particular, employers believe that graduates are not very strong in knowing how to read and analyse the balance sheet and Calculate costs, cost and margin (4.2 point). Graduates in the same survey showed approximately the same opinions on these points. They also believe that university graduates are not strong in financial literacy after graduation.

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4.6. Dimension "Marketing"

Table 6: Dimension "Marketing"	Employer						Alumni					
	Importance					I ± GL	Importance					I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Deploying sales arguments with a view to persuading clients to buy.	23	4,5	0,6	3,2	0,7	-1,3	22	4,5	0,7	3,1	0,5	-1,4
Negotiating while using specific techniques	23	4,6	0,6	3,1	0,9	-1,5	22	4,6	0,5	3,1	0,4	-1,5
Developing commercial strategies and means whereby to attract new clients	23	4,6	0,6	3,2	0,7	-1,4	22	4,5	0,7	3,1	0,4	-1,4
Using specific techniques to encourage client loyalty.	23	4,6	0,6	3,3	0,8	-1,3	22	4,1	1,0	3,0	0,5	-1,1
Creating a positive image of the firm, promoting an ethical image of the firm.	23	4,7	0,6	3,1	0,9	-1,6	22	4,5	0,6	3,0	0,5	-1,5
Building relationships of trust with clients and partners.	23	4,8	0,4	3,3	0,8	-1,5	22	4,5	0,7	3,0	0,7	-1,5

Marketing knowledge is very much appreciated in the modern labour market. To remain in demand in your profession, you need to constantly improve your skills and expand your competencies in this area. Of course, this is very important for employers. They believe that the acquired knowledge should still be able to use. It is much more important whether he has a successful experience in solving problems similar to those existing in the company, and practical experience in a similar business area. And another point that can become a decisive factor when applying for a job is the tendency to constantly self — study in the profession. Now, when the development of technologies is happening at an incredible speed, obtaining new skills and abilities is becoming the norm for a good specialist. In general, in this survey, employers highly evaluate the skills of graduates in this field. Graduates, in turn, do not lag behind the answers of employers in this field (average 4.5-4.6 points). They believe that graduates have a good level of knowledge in this field. Thus, employers highly appreciated the skills of Building relationships of trust with clients and partners (4.8 point), as well as Creating a positive image of the firm, promoting an ethical image of the firm (4.7 point). However, the skill Using specific techniques to encourage client loyalty was rated relatively low by graduates at 4.1 points against 4.6 from employers.

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4.7. Dimension "Innovation management"

Table 7 Dimension "Innovation management"	Employer						Alumni					
	Importance					I ± GL	Importance					I ± GL
	N	Mean	SD	Mean	SD		N	Mean	SD	Mean	SD	
Items												
Developing innovation strategies.	23	4,3	0,7	2,9	0,8	-1,4	22	4,2	0,6	3,0	0,5	-1,2
Analysing the market potentials of ideas and concepts for new products, processes and services.	23	4,3	0,6	2,9	0,6	-1,4	22	4,2	0,5	3,0	0,5	-1,2
Planning, implementing and controlling innovation processes with project management methods.	23	4,2	0,7	3,0	0,6	-1,2	22	4,0	0,7	3,0	0,4	-1,0
Selecting and applying methods for exchange of ideas and knowledge in the innovation process.	23	4,5	0,6	2,9	0,7	-1,6	22	4,2	0,7	2,9	0,6	-1,3
Managing collaboration between customers, suppliers and development partners in the innovation process.	23	4,3	0,7	3,0	0,6	-1,3	22	4,0	0,4	3,0	0,4	-1,0

Innovation management is one of the areas of strategic management associated with the introduction of new products, production processes and economic relations. At the same time, innovation management is a vital activity for enterprises. Innovation management can consist both in direct coordination of work on innovative products, and in the development of systems for managing innovative processes and economic relations, which is carried out at the highest level of the company's management. At this time, employers consider this direction very important, according to their answers. Unfortunately, employers do not rate the skills of graduates in this field very highly. They consider low indicators in such areas as the development of innovative strategies and the choice and application of methods for exchanging ideas and knowledge in the innovation process. Graduates also show the importance of skills in this field, but also emphasize not very strong training. In this direction, the opinions of employers and graduates are in solidarity (from 4.0 to 4.2).

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5. Identified gaps and skills mismatches

Summarizing the results of chapter four, we would like to mention that there are really some skills which levels employers and graduates rate significantly lower than the importance of the corresponding skills. E.g., such a skill as Demonstrating effective leadership. The employers consider this skill as a very important one. Unfortunately, according to their replies, they suppose that graduates are rather weak in this sphere. The average score of this item is just 2.9. The employers consider the graduates do not demonstrate effective leadership. It is interesting that graduate think the same.

Employers emphasize that graduates cannot make decisions when the result of that decision is uncertain, when the information available is partial or ambiguous, or when there is a risk of unintended outcomes and use any initiative for value creation as a learning opportunity. However, graduates have a slightly different opinion. They value these qualities more highly than employers do. If it is measured in points, the difference in the answers is small, only 0.3 points.

As for Digital Skills, here we would like to note that employers rate digital skills quite highly, which can not be said about graduates. Graduates rate these qualities lower than employers do, but both categories of respondents emphasize the importance of owning these skills.

Dimension “Financial Skills”. In this category, both sides emphasize the importance of these skills. However, at the same time, both employers and graduates show low scores in a real situation. That is, both categories of respondents claim that university graduates have weak indicators in this area.

Innovation Management. Here, employers believe that graduates have weak skills in this area, especially in Developing innovation strategies and Analyzing the market potentials of ideas and concepts for new products, processes and services. Graduates have the same opinion. At the same time, both parties believe that the above skills are very important when applying for employment.

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Table 1: Skills gaps as rated by employers and alumni

Main dimensions of competencies	rated as skills gap by employer **and** alumni	rated skills gap by employers	rated skills gap by alumni
1. Ideas	• Exploring and experiment with innovative approaches.	• Judging what value is in social, cultural and economic terms. •	• Developing ideas and opportunities to create value. •
2. Resources	• Demonstrating effective leadership.		• Being resilient under pressure, adversity, and temporary failure.
3. Actions	• Acting and working independently to achieve goals, stick to intentions and carry out planned tasks.	• Using any initiative for value creation as a learning opportunity.	.
4. Digital skills	• Deploying digital media, apps or web-based tools for marketing.	• Using software apps and digital tools for managing collaboration with teams and partners.	• Using data and information from digital environments to assess the potential of ideas.
5. Financial skills	• Managing cash flow.	• Knowing how to read and analyse a balance sheet.	• Identifying and meeting the organization's financial needs in the short and long term
6. Marketing		• Creating a positive image of the firm, promoting an ethical image of the firm.	• Deploying sales arguments with a view to persuading clients to buy.
7. Innovation Management	• Selecting and applying methods for exchange of ideas and knowledge in the innovation process.	• Developing innovation strategies.	

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6. Conclusions: Steps to further develop entrepreneurship education at the university

The results of an audit conducted at the university among employers and graduates showed the real situation in many areas, such as Ideas, Resources, Action, Digital skills, Financial skils, Marketing, Innovation management.

Analyzing the current situation, the university management identified a number of areas, and also developed measures to improve the weaknesses that employers pointed out. It is planned to revise the content of educational programs and syllabuses in order to strengthen the skills of students for which low scores were obtained.

As part of the bachelor's degree in all areas / specialties at the University, sufficient work is carried out to form entrepreneurial competencies, in the format of the choice of Minor courses. Also, as mentioned earlier in the bachelor's degree, the disciplines "Fundamentals of Entrepreneurship" and "Economic Justification of Startup Projects" are compulsory disciplines for the formation of entrepreneurial skills. These courses are sufficient at the undergraduate level to further develop entrepreneurship skills.

These courses are sufficient at the undergraduate level to further develop entrepreneurship skills.

Currently, the University offers the elective courses “Logistics of Modern Business Processes", "Investment Economic Models of Projects" for all areas / specialties at Master’s level.

Since these disciplines are elective ones, not all students choose them and include them in their curricula. As a result, not all graduate students have sufficient entrepreneurship competences.

To reach more students in the development of entrepreneurial skills, it is necessary to motivate them by providing more information and offering additional bonuses.

These courses must also be introduced at the doctoral level in all areas / specialties. The goal of teaching these courses is to form the necessary set of knowledge, skills and competencies necessary for building and developing entrepreneurship skills both at the individual and corporate levels.

In general, this will make it possible to apply the skills formed by these courses in writing doctoral dissertations within the framework of approved research topics, as well as work on research articles and projects.

Based on the results of the audit in the context of all the dimensions, according to which the questionnaire was conducted, the importance of all competencies was assessed as very important by both employers and graduates. However, in fact, the data obtained, this level is on average 3.2 points.

The lowest scores obtained during the survey are financial skills and marketing skills. That is, additional attention should be paid to these criteria when developing and forming curricula.

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The highest scores were given to digital literacy, which is a positive point.

To implement the presented measures for the introduction of additional curricula that form entrepreneurial skills, as well as financial skills and marketing, the support of the heads of departments / heads of educational programs, as well as the vice-rector for academic work and structural divisions of the University is required.

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