Competence analysis

Work Package 2/ Task 2.3.

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DEVELOPMENT OF A MASTER PROGRAMME IN THE MANAGEMENT OF INDUSTRIAL ENTREPRENEURSHIP FOR TRANSITION COUNTRIES

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Partners :

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Introduction

The purpose behind the MIETC project is to build the capacity of the human capital in the HEIs of Central Asian countries on industrial entrepreneurship aiming to provide students with the skills and competences more aligned to the needs of labour markets.

The main challenge inherited from Soviet education system is its inflexibility and its inability to adapt to the rapid changes of the market. Due to the lack of HEI´s capability to provide adequate education to cover the labour market needs, firms import a significant number of foreign workers for high qualified positions while there is a huge share of students going to Russian´s Universities to get a relevant education. Then, after graduation more than half of these students remain in Russia causing an important loss of human capital.

The private sector usually does not consider academia as a source of the best expertise and research capability. The lack of market-oriented education are among the reasons for the mismatch of education and labour market. Moreover, education materials and teaching methodology are required improvement to enable more effective student learning.

Although these countries are rich in natural resources and have a big share of manufacturing companies, engineers are less likely to start a business compared to other specialties due to lack of marketing or basic business knowledge.

One of the problems of modern economic education, which is most often pointed out by employers, is the unavailability of graduate students to quickly and effectively engage into professional activities. The problem is relevant not only to CA countries but in many countries over the world.

Problems and needs identified at Partner Country level:

(1) Kazakhstan (Partner 5 and Partner 9): EKTSU and KEUK

Kazakhstan is facing a huge problem of student migration, low quality of education is among the key problems of the young generation leaving the country. Russia is the first destination where usually students migrate due to the same language and more competitive education providers. Russian Universities are usually more internationalised and have better connections with the private sector which increase future employability of graduates. According to OECD report "there is a massive challenge to upgrade physical facilities and develop textbooks while at the same time training new educators and providing retraining for those now in the system".

(2) Tajikistan (Partner 10 and Partner 11): TUT and TSUC

According to The World Bank, higher education in Tajikistan lacks qualified teachers and research activities are limited. "The teaching workforce is rapidly aging and the system is unable to attract

and retain qualified young scholars to replace them as they gradually approach retirement. While university and college-educated individuals are more likely to find a stable job in the formal sector, earn higher incomes, and are less likely to be unemployed or poor in Tajikistan, many employers are unsatisfied with university graduates' skills level. Students themselves feel that they do not possess adequate qualifications and relevant skills required in the labour market."

(3) Turkmenistan (Partner 6, 7 and 8): AST, TSIEM and TSIF

The transition from the post-Soviet educational model to the student-focused model of higher education based on competences is still unfinished creating numerous contradictions between well-established content of education and real needs of the economy. The educational sector in spite of reforms started in June 2009 and switching from the dual' 4 years system onto 5 years in order to expand educational potential is still low and mostly old. As a result, modern educational techniques are practically nonexistent and lecture materials are low quality. For instance, very few international literature and scientific journals have been acquired by the University libraries.

After the intensive investment of Turkmenistan attempting to establish modern educational infrastructures, there is still a big gap in the amount of education, research and especially in the Industrial Entrepreneurship. The decreasing share of enterprises with a longstanding production cycle and the increasing number of small and medium-sized enterprises requires specialists, who are well trained and able to quickly acquire and/or modify their competences.

Competence analysis

To avoid that developing programs will be misaligned with student needs and market demand, in WP2, **task 4.1** *Analysis of needs and competences,* AYeconomics is performing a data-driven approach defining skills with greatest demand for the target group and trends that affect the industrial skills required for sustainable development. Results of the analysis will provide useful insights about the knowledge and skills the local market lacks. It will lead to better adaptation of curriculum to the needs of employers and the market in general. Program market research will provide insight into how a program should be designed based on current and future demand, in addition to how it should be positioned from a creative standpoint within the larger education market.

Completing market analysis WP2 also considers a students and teachers competence analysis, i.e. to shine light onto not only what is in demand from a skills perspective, but also how it should be delivered, considering growing digitalization trends and how information is consumed by students. Students and teachers' main backgrounds (engineering or social sciences) are taken into account to adjust master content to their competences. Market analysis will ensure that the right program is created, which will in turn deliver education in a mode that is successful and the most convenient for students. The competence analysis will help to adapt training and learning material to the competence level of teachers and students.

Students Competence analysis

According to the analysis carried out with the partner universities in Central Asia, the following conclusions could be drawn:

The average age of students is less than 25 years old, that is, immediately after the completion of the bachelor's program. Consequently, most of the students have no work experience. The number of students in groups varies and reaches from 20 to 60 students per group. The ratio of students by gender in similar industrial programs is almost the same in Kazakhstan and Turkmenistan, while in Tajikistan male students outnumber female students and make up 70%. Students of the Master's program participate in the full-time program. According to the share of foreign students, they are present only at the university of Kazakhstan (EKTSU), accounting for only 2%.

Below is a table showing the amount of students accepted, graduated in 2018-2020 years, as well as the mode of study and its conditions and a gender split.

Table 1 Students competence analysis summary[1]

Countries	Accepted students at master level in previous year	Students expected for the master	Expected students background	Mode of study	Gender split
KZ - EKSTU	432	20	Engineering, Economics	Full-time (with the opportunity to work)	F-45,2% M-54,8%
TKM - TSIEM	60	20	Business, Economics, Management	Full-time (mainly)	F-48% M-52%
TKM - TSIF	Do not have master program	20-40	Currently no undergraduate degree	Full-time (will deal with non-working students)	F-57% M-43%
TJ - TUT	157	10-25	No info (mainly applied for Economics)	Full-time (not entitled to work)	F-30% M-70%

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[1] Detail information by university is provided in the Annex

Teachers Competence analysis

EKSTU

According to the data provided by the EKSTU, the majority of teachers in this university specialise in Management and Data. There are also several professors teaching Business and Engineering.

The total number of professors is 15.

AST

In AST, all professors with background in technical specialisation and none in business. There are 2 professors specialising in Engineering, 2 in ICT in economy and 1 in Social Economy.

The total number of professors is 5.

TSIEM

At this university, most of the professors specialise in various areas of Business Management and Economics. There are 4 professors teaching the Information system.

The total number of professors is 22.

TSIF

At TSIF University almost all professors have Finance as a field of expertise. This university has 2 professors specialising in Management, 1 in Financial mathematics and 22 financiers.

The total number of professors is 25.

KEUK

At this university the main fields of expertise of professors are Economics, Public Administration and Management.

The total number of professors is 21.

TUT

In this university, the majority of professors with a background in Statistics, IT, International Economics, Financial Market and other fields.

The total number of professors is 19.

TSUC

The professors of this university specialise in Banking and Management, Marketing and Entrepreneurship, Business planning and other related subjects.

The total number of professors is 21.

Below there is a table showing the level of English of the professors:

Table 2 Level of English Language of the Professors from Partner Universities

	EKSTU	AST	TSIEM	TSIF	KEUK	TUT	TSUC
A1	0	0	12	14	8	0	0
A2	1	0	8	8	0	8	7
B1	3	5	1	3	8	9	8
B2	8	0	1	0	5	2	6
C1	3	0	0	0	0	0	0
Total:	15	5	22	25	21	19	21

Figure 1 Percentage of professors by English level
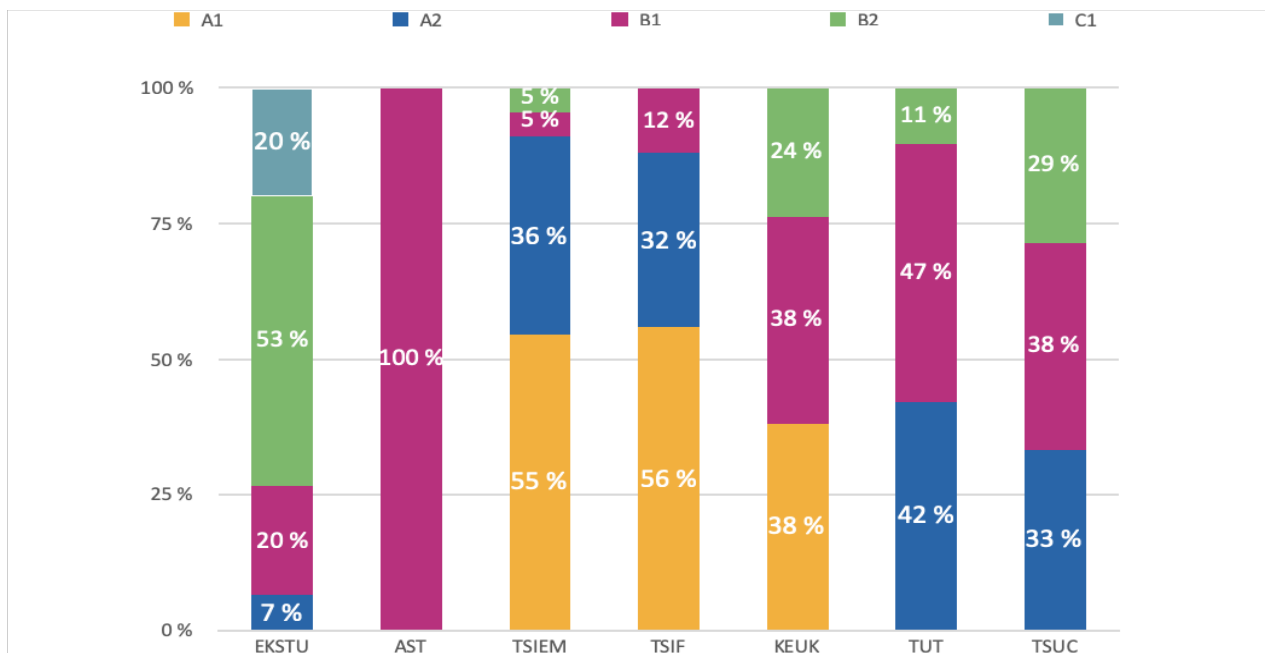
From the chart we can see that at **EKSTU** all of the professors have levels B1 and higher.

At **AST** all of the professors are B1 in English.

At **TSIEM** and **TSIF** Universities most of the professors have A1-A2 levels.

KEUK has professors with A1, B1 and B2 levels.

At **TUT** and **TSUC** Universities all of the professors have levels B1 and higher.

Annex

Detailed information about student competence analysis of EKSTU

In order to better develop Master curriculum and Content of the proposed Master programme (MIETC), we would like to ask you to provide below-mentioned information. If your institution has a similar Master Program you can provide data based on the previous academic year (for example last 5 years). If there is no similar program you can make some approximations and expectations of potential students who would like to apply for Master (MIETC).

1. Students by age group: to analyse which is the average age of students Most often 80-90% of undergraduate students after taking Bachelor degree apply for Master degree program. These students don't have any practical experience. Consequently, average age of people who are applying for Master degree programs is 22
2. In general, master's programs are received immediately after graduation, regardless of the specialty, such a majority - 80-90% without productive experience. In this regard, the average age of students entering the master's programs is 22 years
1. Majors (bachelor degree) accepted : to analyse which is background students has in order to adapt the content (our assumption that engineering students have to be strong in maths, for example)

The statistics of the last few years shows that engineering students are more and more interested in economic and management. This Master's degree will be of interest for both for engineering undergraduates (power engineering, metallurgy, mechanics, builders, etc.) and graduates of economic specialties.

1. Geographical dispersion (local vs foreign vs regional) Ust-Kamenogorsk locates in the East Kazakhstan region which borders with China, Mongolia and Russia. The priority task of the university is to export educational services. This academic year the share of foreign students is only 2%. Most of the students are local, however, new educational program in English increases the possibilities of attracting foreign students. Next academic year the university develops joint educational programs with foreign universities in the fields of geology and mining, metallurgy and materials science, nuclear industry to attract foreign students.
2. Gender split: % of female and male students: female students 45,2% and male students 54,8%
3. Expected number of students: if there is similar Master programme to use number from the previous academic year if not to do approximation Minimal number of students in group is 5; Maximum number – 30. Average number is 20 students in a group.
4. Full time vs part time: to analyse if we are dealing with students who works or full time students According to the regulations of the Republic of Kazakhstan, training in the Master degree program only full time. However, many undergraduates combine work

with training. The university, taking into consideration employment of students, offers them a more acceptable schedule of training, mainly in the evenings and on Saturdays. Taking into account the fact that a certain number of master students have governmental scholarships, it is not always relevant. Master students can be trained in full-time mode.

5. % of students having working experience before the master program: to analyse if the majority of students are coming after graduation of bachelor or there is some of them who has experience. As mentioned above most of students (>80%) are graduates of bachelor degrees and have no working experience or those who gain such experience while training.

6. Acceptance rate: how many students accepted out of applied for similar program In 2018 year 432 were accepted to 2 year Master degree programs

7. Graduation rate: how many students were able to graduate out of enrolled at the beginning of the year. 386 graduate students graduate in 2020

Detailed information about student competence analysis of TSIEM

The following information about master programs which opened in two years ago. We hope the proposed Master programme (MIETC) will reinforce our academic mobility and better integrate to international educational system.

Students by age group: to analyse which is the average age of students. As mentioned above during two academic year average age is – 25.

Majors (bachelor degree) accepted : to analyse which is background students has in order to adapt the content (our assumption that engineering students have to be strong in maths, for example).

Bachelor degrees:

Bachelor in business (after completion students should proficient in economics, taxation, logistics, accounting)

Bachelor in management (after completion students should better know – micro/macroeconomics, managerial economics, risk management)

Bachelor in commerce (after completion students should proficient in economics, logistics, banking, marketing)

Bachelor in economics (after completion students should better know – micro/macroeconomics, taxation, statistics)

Geographical dispersion (local vs foreign vs regional): local vs regional

Gender split: % of female and male students – 48/52

Expected number of students: if there is similar Master programme to use number from the previous academic year if not to do approximation: 20 students

Full time vs part time: to analyse if we are dealing with students who works or full time students – mainly full time

% of students having working experience before the master program: to analyse if the majority of students are coming after graduation of bachelor or there is some of them who has experience – 30%

Acceptance rate: how many students accepted out of applied for similar program - 60

Graduation rate: how many students were able to graduate out of enrolled at the beginning of the year - 59.

Detailed information about student competence analysis of TSIF

In order to better develop Master curriculum and Content of the proposed Master programme

(MIETC), we would like to ask you to provide bellow-mention information. If your institution has similar Master Program you can provide data based on the previous academic year (for example last 5 years). If there is no any similar program you can make some approximation and expectations of potential students who would like to apply forte Master (MIETC).

Students by age group: to analyse which is the average age of students

Majors (bachelor degree) accepted : to analyse which is background students has in order to adapt the content (our assumption that engineering students have to be strong in maths, for example)

Geographical dispersion (local vs foreign vs regional)

Gender split: % of female and male students

Expected number of students: if there is similar Master programme to use number from the previous academic year if not to do approximation

Full time vs part time: to analyse if we are dealing with students who works or full time students

% of students having working experience before the master program: to analyse if the majority of students are coming after graduation of bachelor or there is some of them who has experience

Acceptance rate: how many students accepted out of applied for similar program

Graduation rate: how many students were able to graduate out of enrolled at the beginning of the year.

Students by age group: average age 21 years

Majors (bachelor degree) accepted: There is currently no undergraduate degree at TSIF

Geographical dispersion - 25% local, 75% regional

Gender split: 57% of female and 43% male students

Expected number of students: from 20 to 40 students

Full time vs part time: We will deal with non-working students

% of students having working experience before the master program: Since there is no undergraduate studies at TSIF. We do not have students with experience prior to the master's program.

Acceptance rate: We do not have a master's program

Graduation rate: We do not have a master's program

Detailed information about student competence analysis of TUT

In order to better develop Master curriculum and content of the proposed Master programme (MIETC), we would like to ask you to provide bellow-mention information. If your institution has similar Master Program you can provide data based on the previous academic year (for example last 5 years). If there is no any similar program you can make some approximation and expectations of potential students who would like to apply forte Master (MIETC).

Economic specialties and plan for TUT master's degree programme (academic year 2020-2021)

№	Speciality	Plan
	Finance and Credit – 250104	25
	World Economy – 250103	25
	Economics and enterprise management – 250107	15
	International Management-26020202	10
	Investment management -26020208	10
	Project Management - 25010707	10
	International Marketing -260203	10
	Banking Computer Systems- 40010203	10
	Business information provision-25011024	10
	Technology and information system in economy- 40010202	10
Total		135

1. Students by age group: to analyse which is the average age of students

Course	Total	Under 25 years old	26-30 years old	Over 31 years old
1	121	100	20	1
2	63	52	11	-
Total:	184	152	31	1

Including in economic specialties

Course	Total	Under 25 years old	26-30 years old	Over 31 years old
1	74	72	1	1
2	38	32	6	-
Total:	112	104	7	1

Accepted specialties (bachelor's degree): to analyze the basic knowledge of students in order to adapt the content (for example, our suggestion that students-engineers should be strong in mathematics)

It is necessary to have knowledge on disciplines: Economic theory, microeconomics, history of economic thought, the general theory of statistics, mathematics in economics, foundations of Informatics.

1. Geographical dispersion (local vs foreign vs regional)

Course	Total	Dushanbe	areas of republican subordination	Khatlon region	Sogd region	GBAO	Foreigners
1	121	65	22	23	8	3	-
2	63	39	5	8	6	5	-
Total:	184	104	27	31	14	8	-

1. 3.Including in economic specialties

Course	Total	Dushanbe	areas of republican subordination	Khatlon region	Sogd region	GBAO	Foreigners
1	74	40	16	11	4	3	-
2	38	24	4	4	1	5	-
Total:	112	64	20	15	5	8	-

1. Gender split: % of female and male students

Course	Total	Including	
		W	M
1	121 (100%)	29 (24%)	92 (76%)
2	63 (100%)	26 (41%)	37 (59%)
TOTAL	184 (100%)	55 (30%)	129 (70%)

Including in economic specialties

Course	Total	Including	
		W	M
1	74 (100%)	19 (25,7%)	55 (74,3%)
2	38 (100%)	18 (47,4%)	20 (52,6%)
TOTAL	112 (100%)	37 (33%)	75 (67%)

1. Expected number of students: if there is similar Master programme to use number from the previous academic year if not to do approximation

2018-2019 academic year		2019-2020 academic year		2020-2021 academic year	
plan	admission	plan	admission	plan	admission (prognosis)
209	66	202	134	430	208

Including in economic specialties

2018-2019 academic year		2019-2020 academic year		2020-2021 academic year	
plan	admission	plan	admission	plan	admission (prognosis)
105	37	145	84	135	115

1. Full time vs part time: to analyse if we are dealing with students who works or full time students

In accordance with the Regulation on the master's study of the Technological University of Tajikistan, the master students are full-time students and are not entitled to work.

1. % of students having working experience before the master program: to analyse if the majority of students are coming after graduation of bachelor or there is some of them who has experience

Course	Number of undergraduates	After graduation	Have work experience
1	121	100	21
2	63	52	11
Total:	184	152	32

Including in economic specialties

Course	Number of undergraduates	After graduation	Have work experience
1	74	72	2
2	38	32	6
Total:	112	104	8

1. Acceptance rate: how many students accepted out of applied for similar program

In the academic year 2019-2020 the Admission Committee of the University has received 152 applications for master's study, of which, after entrance examinations have been accepted 134 master students. Particularly, 82 applications were submitted to the economic specialties, of which 74 application were accepted and successfully enrolled in the 1st year of master's study.

1. Graduation rate: how many students were able to graduate out of enrolled at the beginning of the year.

2017-2018 academic year		2018-2019 academic year		2019-2020 academic year	
admission (1 Course)	graduation (2 Course)	admission (1 Course)	graduation (2 Course)	admission (1 Course)	graduation (2 Course)
128	88	157	114	66	63

Including in economic specialties

2017-2018 academic year		2018-2019 academic year		2019-2020 academic year	
admission (1 Course)	graduation (2 Course)	admission (1 Course)	graduation (2 Course)	admission (1 Course)	graduation (2 Course)
97	77 (79%)	95	88 (92,6%)	39	38 (97%)