



WP1 – Milestone 1.2

Guidelines for the distribution of questionnaires

In order to complete the three *National State-of-the-art reports*, which review the needs, gaps and aspects for improvement, every Central Asian (CA) partner will conduct a simple survey with the double purpose of complementing and reinforcing the contents of the CA institutional reports.

These surveys are based on questionnaires for students, lecturers and business actors, and every CA partner will survey:

- at least 15 students from Engineering specialities,
- a minimum of 10 lecturers in Engineering, and
- a minimum of 4 business actors.

When a population is too big to study every individual, it is common practice to study a fraction of the population, referred to as sample, and inferring the general characteristics of the whole population from it. Statistical theory provides a rigorous body of knowledge to sample populations obtaining representative samples that reflect the general features of them.

These methods include criteria regarding the size of samples and the way to extract the individuals that make up the sample. There are purely random methods, stratified sampling techniques, etc.

The application of these mathematically rigorous methods requires a sufficient previous study and knowledge of the population. The nature of the general study conducted in this work package makes unfeasible to apply this type of methodologies and we have to opt for non-probabilistic sampling.

Non-probabilistic sampling, also known as judgment sampling, depends on subjective judgment. The non-probabilistic method of sampling is a process where probabilities cannot be assigned to the individuals of the population objectively, and hence it becomes difficult to determine the reliability of the sample results in terms of probability. In non-probabilistic sampling, often, the surveyor selects a sample according to his convenience, or generality in nature. Anyway, this type of sampling is well suited for exploratory research intended to generate new ideas that will be systematically tested later. However, there is no way of knowing the accuracy of a non-probabilistic sample estimate.

With the above considerations, some general guidelines are listed below to help in the selection of individuals to be surveyed.

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Sampling guidance principles

Students – select a minimum of 15 students that represent the diversity of:

- degrees (engineering degrees with different levels of implementation of ICTs),
- degree year,
- academic results (it is desirable to have a sample where representative¹ students are more frequent),
- full time / part time students, if applicable, and
- other relevant factors you consider important in your institution to reflect the diversity of students.

Lecturers – select a minimum of 10 lecturers that represent the diversity of:

- lecturer position (full-professor, associated professor, teaching assistant, etc.),
- subject / area,
- teaching experience,
- internationalization (experience in exchange programs or international projects reflecting the representative¹ situation of lecturers in your institution),
- research level (based on indicators as h-index or citations, and representative¹ general research level of your institution staff),
- level of ICTs used in classroom, and
- other relevant factors you consider important in your institution to reflect the diversity of lecturers.

Business actors / employers - select a minimum of 4 Business actors / employers that represent the diversity of:

- the sample should collect employers suitable for the students targeted in the project,
- years in business (not applicable for public administrations),
- industrial or service sector,
- level of use of Information and Communications Technologies (the sample should include representative¹ employers with plans to increase the presence of ICTs)

¹ The term “representative” is used throughout the text to refer to individuals (students, lecturers or employers) that suit within the general profile of the majority of the population (95%), excluding extreme situations. As a general rule – where applicable - in the distribution of questionnaires, those individuals in the upper tail (beyond the 97.5 %) or in the lower tail (below 2.5 %) should be excluded. This roughly represents the exclusion of 5% of the population. As an example: the 2.5 % of best and worst students should be excluded.



- internationalization (based on exports and relations with companies out of the country), and
- other relevant factors you consider important in your country to reflect the diversity of employers.

Please, always follow the general rule that we have to sample individuals that show the diversity of the situation in the academic institution, or of the employers in your country, trying to pick individuals representative of the population. Thus, extreme individuals (students with very poor records, very bright students, top researchers, very singular and specialized enterprises, etc.) should not be included.

Partners conducting the surveys:

Due to the different nature of partners, not every partner is supposed to conduct every kind of survey. Academic partners should survey the three types of targets foreseen in the project (students, lecturers and business actors). These partners are,

Kazakhstan:

- P5** SHOKAN UALIKHANOV KOKSHETAU STATE UNIVERSITY, KokSU
- P6** INTERNATIONAL INFORMATION TECHNOLOGY UNIVERSITY, IITU
- P7** ABAY MYRZAKHMETOV KOKSHETAU UNIVERSITY, KUAM
- P8** KOSTANAY STATE PEDAGOGICAL INSTITUTE, KSPI

Minimum number of questionnaires: 60 students (15 per institution), 20 (5 each institution) and 16 business actors (4 each institution).

Turkmenistan:

- P10** TURKMEN STATE INSTITUTE OF CULTURE, TSIC-TDMI
- P11** TURKMEN STATE INSTITUTE OF FINANCES, TSIF-TDMaI

Minimum number of questionnaires: 30 students (15 per institution), 10 (5 each institution) and 8 business actors (4 each institution).

Uzbekistan:

- P12** SAMARKAND AGRICULTURAL INSTITUTE, SAI
- P13** TASHKENT UNIVERSITY OF INFORMATION TECHNOLOGIES, TUIT

Minimum number of questionnaires: 30 students (15 per institution), 10 (5 each institution) and 8 business actors (4 each institution).



Non-academic partners - *recommendation*:

Other non-academic partners, listed below (P9, P14 and P15), are expected to help the academic partners to survey business actors as potential employers of future graduated students. In order to increase the representativeness of data collected, it is recommended that these partners survey additional business actors:

- Kazakh non-academic partners, **P9** and **P14**, might contribute surveying 2 additional business actors each one, completing 4 additional surveys.
- The Uzbek non-academic partner (**P15**) might contribute surveying 4 additional business actors.

P9 KAZAKHSTAN ASSOCIATION FOR ENGINEERING EDUCATION KAZSEE,
KAEE KAZEE

P14 MINISTRY OF EDUCATION AND SCIENCE OF THE REPUBLIC OF
KAZAKHSTAN, MES RK

P15 MINISTRY FOR HIGHER AND SECONDARY SPECIALIZED EDUCATION OF
THE, MHSSERUZ