

Survey Sampling at Kyiv National Economic University

Tetiana Manzhos¹

¹Vadym Hetman Kyiv National Economic University, e-mail: tmanzhos@gmail.com

Abstract

The paper presents short review about Kyiv National Economic University and its history. It is given information about statistical disciplines for students of the University. Short description of a new course “Survey Sampling and Hypothesis Testing in Economics” is given.

Keywords: survey sampling theory, statistical disciplines.

1 KNEU: general information and brief historical overview

In 2011, our University celebrated its 105th anniversary. This year we will celebrate the 145th anniversary of our founder, a prominent historian Mytrofan Dovnar-Zapolsky (1867 - 1934). It was on his initiative that the Kyiv Graduate Commercial Courses were founded in Kyiv in 1906 as a private higher education establishment tasked with the training of human resources for the sectors of economy in the south of the Russian Empire. It became the second higher education establishment in the field of economics in the Empire and the first one within the territory of Ukraine. At that time, the Courses had 229 students and 22 teachers.

In 1908, Kyiv Graduate Commercial Courses were reorganized into Kyiv Commercial Institute and provided with own building. Commercial Institute was granted equal rights on a par with state-owned higher education establishments. As a result of strengthening of the role of economy in the society, the demand for the education in economics was growing. Accordingly, the number of students in the Institute was going up as well: the Institute had about 1,000 students and 34 professors and teachers by 1908. By 1914, there were 4,200 students and more than 50 teachers. In 1914, the construction of the 4th floor of the Institute's building was completed. However, World War I started the same year and the hostilities lasted till 1921 in view of the struggle over the Ukrainian-populated lands of neighboring states, which produced mainly negative impact on the education sector. Kyiv Commercial Institute was evacuated in autumn 1915 to Saratov. In summer 1916 it was returned to Kyiv.

During the Freedom Movement in 1917 to 1921, the Institute was also involved into the revival of the Ukrainian state: one of its graduates (M.M. Kovalevsky) was a minister in the government of the Ukrainian People's Republic. After the final imposition of the Soviet regime in Ukraine, the Institute was conveyed into the ownership of the state and changed its name. Between 1920 and 1930 it was named Kyiv National Economy Institute.

On 1 October 1930, Kyiv National Economy Institute was transformed into two institutes: Kyiv Exchange and Distribution Institute and Kyiv Finance and Economics Institute. In 1931, Kyiv Exchange and Distribution Institute was liquidated. Kyiv Finance and Economics Institute was moved to Kharkiv in 1934

and stayed there till 1941 having changed its name to Kharkiv (Ukrainian) Finance and Economics Institute. During the Kharkiv period, there were about 700 students and 45 teachers in the Institute. Up to 400 students and teachers joined the Red Army, when the Great Patriotic War started. The rest of employees and students were evacuated to local finance and economics institutes in Irkutsk and Tashkent. At the end of the war (1944) the Institute was permitted to return to Kyiv and resumed working in its native city as Kyiv Finance and Economics Institute.

Structurally, the Institute consisted of two faculties after 1945: the Finance Faculty with the finance and credit departments and the Planning Faculty with departments of industrial economics and planning, and agricultural economics and planning. The duration of studies was 4 years. In 1946, the post-graduate school of the Institute was restored. The number of students kept growing. The main building of the Institute was completed in 1958. It permitted normalizing the instructional process and increased the number of students (from 343 in 1945 to 5,000 in 1960).

Since the Institute has started training specialists in late 1950s in 12 specialities going beyond the finance and economics profile, the Ministry of Higher and Specialized Secondary Education of the Ukrainian RSR made a decision in 1960 to rename Kyiv Finance and Economics Institute into Kyiv National Economy Institute, thus broadening the range of specialities, in which the Institute trained specialists. At that time, the Institute had 5 Faculties: Industrial Economics, Agricultural Economics, Finance and Economics, Accounting and Economics, and Economics and Statistics.

Upon restoration of Ukraine's independence, Kyiv National Economy Institute made a lot to upgrade the system and the contents of the economic education, to improve the training of specialists for various sectors of the national economy of our country, and to develop appropriate scientific and educational literature. In addition to well-established international relations with ex-Communist countries, close relations were set up with economics higher education institutions of Austria, the UK, Germany, the Netherlands, the USA, France and other leading countries of the world.

Achievements of the Institute in the development of Ukraine's economy were recognized at the state level. Resolution of the Cabinet of Ministers of Ukraine of 25 August 1992 transformed Kyiv National Economy Institute into Kyiv State Economics University. On 27 February 1997, the President of Ukraine granted Kyiv State Economics University the status of a national university in recognition of its thorough work focused on training highly qualified specialists for various branches of economy of our state and the development of the domestic economic science.

In 2005, Kyiv National Economics University was named after V.P. Hetman, a prominent Ukrainian economist and the founder of the domestic currency of Ukraine, the builder of its banking sector. He obtained education in Economics in our Institute. The 100th anniversary of the University was celebrated in November 2006 at the national level.

Now Vadym Hetman Kyiv National Economics University consists of nine Faculties: Economics and Management, International Economy and Management, Law, Human Resources Management and Marketing, Accounting and Economics, Agro industrial Sector Economics, Finance and Economics, Credit and Economics, and Information Systems and Technologies. The University also includes the Post-graduate Education Centre, the Master Training Centre, the Pre-university Training Department, the Instruction Centre, the Instruction Methodology Unit, the post-graduate and doctoral schools, Kryvyi Rih and Crimean Institutes of Economics, target-oriented lyceums and colleges, library and computer centers, a museum, a publishing office, etc. There are more than 38,000 students.

2 Mathematical statistics as a discipline for future economists

Mathematics, as educational discipline, took the important place in all of the economic specialities. Wide application of mathematical methods is a feature of modern economy. The Department of Higher Mathematics conducts the fundamental mathematical training of students of all faculties, except the Faculty of Law. In the first year of studies, students study such courses, as “Mathematics for economists” and “Theory of probability and mathematical statistics”. The purpose of course “Theory of probability and mathematical statistics” is to acquaint students with basic concepts, methods, theorems and formulas of probability theory and mathematical statistics and help them to get primary skills in solving different problems. This course is for students of the first year of training and its studying continues during second semester.

Course “Theory of probability and mathematical statistics” consists of main concepts of probability theory and such topics of mathematical statistics as descriptive statistics (graphs and measures), confidence intervals (partially), hypothesis testing (partially), simple linear regression. Fundamental theoretical knowledge and skills of using probabilistic and statistical apparatus for different economic researches, analysis and predicting are the basis for successful learning of main economic disciplines such as macroeconomics, microeconomics, financial analysis, mathematical modeling etc. That’s why Department of Higher Mathematics is preparing new special statistical courses for our students. Another reason for such creation is that the main course of mathematical statistics contains not all topics which can be needed by our students for their future scientific researches and working. Some topics such as testing of statistical hypotheses are being studied not enough and survey sampling is not involved in main course of statistics at all. But now our university is successfully integrating into the European system of education based on the Bologna declaration, which defined the approaches to creating a single European educational environment. Therefore teachers of Department of Higher Mathematics obtained an opportunity to create new useful for students and up to date courses.

Main problem of improving studying process of mathematical statistics disciplines in our university is shortage of statistical literature in Ukrainian for students of economic specialities without strong mathematical background.

3 Course of Survey Sampling at the Economic University

Recently special course named “Survey Sampling and Hypothesis Testing in Economics” was created by teachers of our department. Despite some bureaucratic problems we obtained official permission to teach this course. Students of the first year of training have to choose some part of special courses for learning during the second year. Now created course is one of them. Next academic year this course will be carried out for the first time.

This course has been developed for all specialities except Law speciality and it contains of 5 ECTS Credits. It will be divided in two parts – “Survey Sampling” (with 28 hours of lectures and 24 hours of practical lessons) and “Testing of Statistical Hypothesis” (with 26 hours of lectures and 24 hours of practical lessons). This course is oriented on future economists who have no strong mathematical background. Students of economic specialities need more examples and less complicated theoretical material. They are interested how it works in practice. It was taken into account when new course was developing.

A short program of the first part of the course is:

- Goals and applications of survey sampling in economic researches, main concepts and definition
- Simple random sampling with and without replacement
- Estimators of total, mean, proportion in the population

- Confidence intervals and sample size
- Systematic sampling
- Stratified sampling
- Ratio and regression estimators
- Single-stage and multistage cluster sampling
- Errors in surveys, their sources and methods of reduction

Second part of the course consists of testing of parametric and nonparametric hypotheses.

On practical lessons of “Sample surveys and hypothesis testing in economics” students will solve different exercises with using software such as MS Excel, Statistica, Wolfram Mathematica. Two individual tasks based on exercises of S. L. Lohr were involved in the plan of practical work too. For creation a program and lectures of the course mainly books listed in the references were used.

References

Lohr, S. (1999). *Sampling: Design and Analysis*. Duxbury Press, Pacific Grove.

Kvanli, A., Pavur, R., & Keeling, K. (2003) *Introduction to Business Statistics: A Computer Integrated, Data Analysis Approach*. South-Western Publishing.

Vasylyk, O. & Yakovenko, T. (2010). *Lectures on Survey Sampling Theory and Methods*. Kyiv National University (in Ukrainian)

Chernyak, O. (2001). *Survey Sampling Technique*. Kyiv (in Ukrainian)