

INTERNATIONAL COOPERATION AS A KEY TO THE TRAINING OF QUALIFIED SPECIALISTS IN THE CONDITIONS OF INDUSTRY 4.0

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The current stage of the development of information and communication technologies and their use in production business processes is taking place within the framework of Industry 4.0. This stage of development is considered as a digital transformation of production. At the same time, the spread of digitalization goes beyond production processes, occupying a decisive place both in the daily life and in education. The incentive for the transformation of curricula and approaches to the organization of the educational process is also social, environmental and economic problems associated with the rapid growth of the population, the negative impact on the environment, new opportunities open to society through the use of information and communication technologies. Educational institutions should go ahead, identifying the need for future specialists and preparing them in advance, considering new competencies.

An analysis of the World Bank data shows a trend of population growth. At the same time, during 1960-2021, there is an aging trend in the population. As shown in fig. 1, there is a general trend in the world of population aging: the proportion of the population over 65 has almost doubled (from 4,97% in 1960 to 9,54% in 2021). If we analyze the trend among the eurozone, then the proportion of the population over 65 is even higher – 21,46% in 2021 against 10,19% in 1960. It should be noted that in Ukraine there is also a growing trend in the proportion of the older population: 21,46% as of the end of 2021.

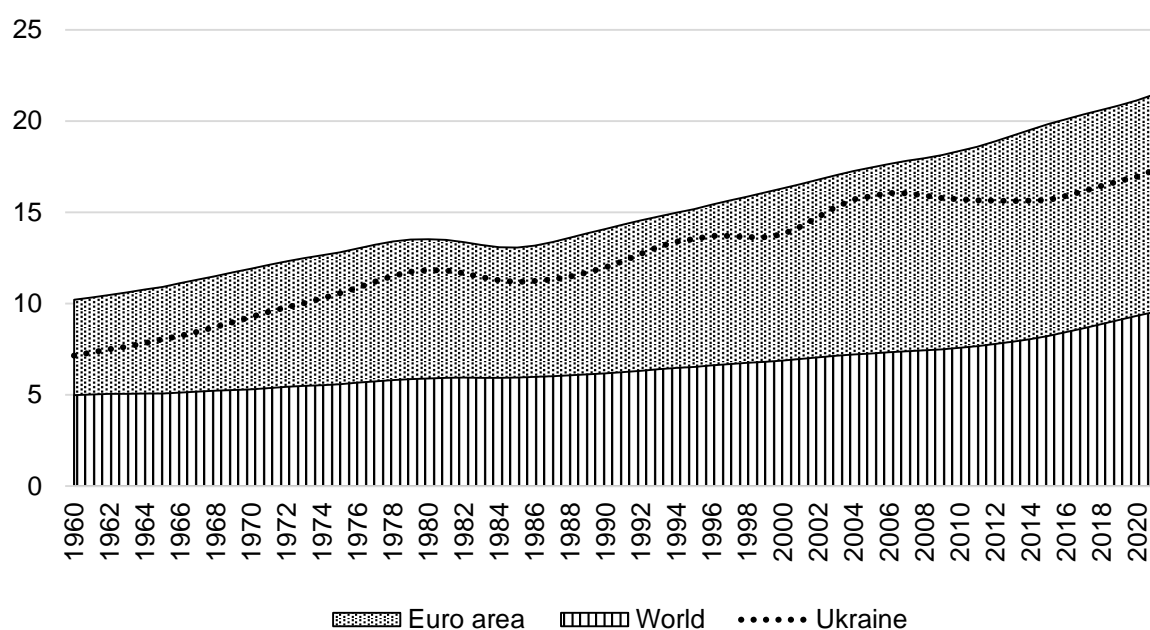


Figure 1. Population ages 65 and above (% of total population) built on data [1]

The adopted course of the European and global development of society is associated with its greening and digitalization. Thus, future labor cadres should have the relevant knowledge. In this case, educational institutions are faced with the task of going one step ahead, determining the future needs of the economy in specialists. It is also necessary to take into account the new qualification requirements facing them. The use of information and communication technologies of Industry 4.0, combined with modern management requirements for potential employees by employers, makes it possible to improve training programs. The simultaneous combination of international experience in the implementation of joint and educational projects can significantly improve the level of training of future specialists.

The National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" is actively working in this direction. In particular, during 2018-2021 a joint project "Cooperation between NTNU and KPI in the framework of the formation of Industry 4.0" was implemented. Norwegian partner was Norwegian University of

Science and Technology. Within the framework of the project, scientists exchanged experience in implementing Industry 4.0 technologies for organizing production processes and finding ways to increase their economic efficiency. Within the framework of the project, joint courses "Industry 4.0" (by prof. Niels Peter Østbø, prof., Voitko Serhii and prof. Anna Kukharuk), "Experts in Teamwork" (by prof., Voitko Serhii and prof. Grinko Iryna), "Production Management" (by prof. Natalia Skorobogatova), "Product Development" (by prof. Olena Korogodova), and "Project Work" (by prof. Anna Kukharuk and prof. Natalia Skorobogatova) have been developed. This allows creating the educational work plans considering the experience of scientists and methodological features of teaching disciplines by specialists from different countries [2].

Postgraduate students and students of the Igor Sikorsky Kyiv Polytechnic Institute had the opportunity to study the Norwegian experience in introducing modern technologies into production. Despite the COVID-19 pandemic and the war in Ukraine, work on the project continued uninterrupted. The holding of international summer schools and workshops made it possible to involve a wide range of both scientists from different countries and applicants for higher education in the process. The main results of the cooperation are the development of new educational programs, the strengthening and expansion of cooperation between partner institutions in the long term, the exchange of staff and students, intercultural exchange and cooperation. Thus, we believe that international cooperation between universities and the implementation of the provisions of Industry 4.0 will create a basis for the training of highly qualified specialists. A significant number of obstacles allow solving digital cooperation mechanisms, which opens up great opportunities for involving a wide range of stakeholders.

References

1. Population ages 65 and above (% of total population). World Bank. URL: <https://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS>
2. Østbø P. N., Berg J. P., Kukharuk A., Skorobogatova N. INDUSTRY 4.0 AND SOCIETY 5.0: THE VISIONS OF A SUSTAINABLE FUTURE. URL: <http://ied.kpi.ua/wp-content/uploads/2022/04/istc2022.pdf#page=84>