

Main Aspects of Education Internationalization: Case of Ternopil Ivan Puluj National Technical University, Ukraine

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Abstract: In recognising the strategic position of the higher education sector in terms of the international competitiveness in the globalised economy, many countries have begun to internationalise their educational systems. This paper aims to present main features and aspects of Ternopil Ivan Puluj National Technical University (TNTU), Ukraine practices that have been used to strengthen its international activity. Prospects of the university international activity are stated. The research methodology is analyzing primary data presented by the International office of TNTU, literature review and collecting data from the web sites set up by the statistical organizations of Ukraine. University's international activities can be broadly categorized as academic exchange, research collaboration and university-community-industry engagement. The paper reviews those which are mostly used by TNTU. The results show that it is needed for TNTU to focus on research and university-community-industry collaboration in its international strategies to better position itself at the educational market. Internal competition, demographic decrease, change in age structure and consumer behaviour and preferences are those trends that create new challenges. This is an original piece of analytical work on the main forms of university internationalization, case of TNTU.

Keywords: Internationalization; globalization; higher education

1. Introduction

In the 21st century well-being involves more than access to material resources, such as income and wealth, jobs and earnings, housing. It is also related to the quality of

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life, including health, civic engagement, social connections, education, security, life satisfaction and the environment. Equitable access to all of these underpins the concept of inclusive growth (OECD, 2018). Education has a vital role to play in developing the knowledge, skills, attitudes and values that enable people to contribute to and benefit from an inclusive and sustainable future. Learning to form clear and purposeful goals, work with others with different perspectives, find untapped opportunities and identify multiple solutions to big problems will be essential in the coming years. Education needs to aim to do more than prepare young people for the world of work; it needs to equip students with the skills they need to become active, responsible and engaged citizens.

Higher education, research and innovation play a crucial role in supporting social cohesion, economic growth and global competitiveness. At the same time, an increasing demand for skills and competences require higher education to respond in new ways. This requires from higher education institutions themselves to become more diverse in their missions, mode of educational provision and cooperation, including growth of internationalisation, digital learning and new forms of delivery. One of the key trends in the modern education world is its internationalization, driven by active globalization processes.

In recognising the strategic position of the higher educational sector in terms of international competitiveness in globalised economy, many countries have begun to internationalise their educational systems. This paper aims to present main features and aspects of Ternopil Ivan Puluj National Technical University (TNTU), Ukraine practices that have been used to strengthen its international activity in 2017-2018.

TNTU international strategy aims on the sustainable development of institutional relationships and strategic activities that will highlight its international profile in the future. University international activities can be broadly categorized as academic exchange, research collaboration and university-community-industry engagement. Prospects of the internationalization process of TNTU are needed to be defined with the aim to ensure its successful integration into modern educational world.

Higher education as an important sphere of social development and human capital has long been identified as a key factor in battling unemployment and low pay and there is also robust evidence that it is an important determinant of economic growth. Countries perceive a successful education system as a key element of their social and economic development. The economic justification for the internationalization of

higher education is in favor of the national economy and individual universities as a result of the export of educational and research services, the attraction of foreign students, talented teachers and scholars, the possibility of receiving grant funding by both students and teachers, and universities (Stepanenko, 2015). Moreover, there is emerging evidence that it is associated with a wide range of non-economic benefits, including improvements in health, stronger civic and social engagement, and a greater sense of well-being (OECD, 2017).

As a result of the study of internationalization national programs in most countries in all regions of the world, conducted by a group of scientists at the Boston College of International Higher Education, five main types of such programs were identified, namely student mobility; scientific mobility and cooperation; international education; internal internationalization; comprehensive internationalization. This indicates the focus of national policies on the development of specific forms and directions of internationalization, based on opportunities, priorities, national peculiarities and goals. International sociological surveys (Egron-Polak, 2014) show that 53% of respondents (the total number of respondents is 1 336 higher education institutions from 131 countries) have an institutional policy/strategy of internationalization, 22% develop it, and 16% declare internationalization as part of a common institutional strategy. At the same time, 66% of those polled indicate that they have clear goals and criteria for assessing the implementation of the internationalization policy. The results of the survey show that the largest share of respondents with a strategy of internationalization falls to countries of Europe and Asia (56-61%), the least - to the Middle East countries (13%).

Among the incentives for the development of internationalization of higher education for the countries there can be defined such as followings:

- academic (expanding access to higher education, improving the quality of higher education, international recognition and improvement of positions in international rankings, creation and implementation of knowledge);
- economic (short-term economic effect of direct expenses of foreign students, training of skilled workforce with skills in the field of international cooperation, conditions for long-term economic development);
- political (development of public democracy, international cooperation);

- socio-cultural (association of leading scientists for solving global problems and achieving sustainable development, raising the level of international communication, increasing tolerance in society) (Helms & Rumbley, 2015).

The process of internationalization is important for Ukrainian higher educational sector because it provides opportunities and mechanisms for improving its quality. Science, which is a priori international, can not develop without anchoring and understanding of the international context.

The Law of Ukraine “On Higher Education” contains a separate section (XIII, Articles 74, 75, 76), which declares and regulates international cooperation. According to the project of the Strategy of the higher education reform in Ukraine till 2020, one of its key directions is “the real entry of the national system of higher education into the world educational and scientific space through its internationalization” (Project, 2014).

According to statistics of the Organization for Economic Cooperation and Development, since 1975 international student mobility has rapidly increased from 0.6 mln to 4.5 mln people in 2012, so the total number of people wishing to get education abroad has increased by 7.5 times in the past four decades (OECD, 2018).

Today academic mobility of students in the world has systematic nature, organized at the level of state policy; in Ukraine, unfortunately, it is individual and spontaneous phenomenon. Most Ukrainian students’ trips abroad are financed by parents, foreign charities and organizations. Programs of foreign academic mobility financed by the state or higher educational establishment are less than 10.0% of the official total. According to data of the analytical center “CEDOS” for the period from 2009 to 2015 (Stadnyy & Slobodyan, 2018), the number of Ukrainian students who went abroad to receive education has increased from 29.0 thousand to 59.6 thousand people respectively (in 2.0 times). According to the results of 2014-2015, the largest number of Ukrainian students now study at the universities of Poland, Russia, Germany, Canada, the Czech Republic, Italy, USA and Spain.

Enhancing the academic mobility of students and teachers from different universities is now possible within the framework of the new integrated program of the European Union “Erasmus +” (2014-2020), which combines into a single program the program “Continuous Education” (consisting in turn of the Leonardo da Vinci, Comenius, Grundtvig, Erasmus and JeanMonetAction subprograms), Youth In Action, and five other international programs, including Erasmus Mundus and Tempus. This program focuses on ensuring cooperation in education with countries outside the EU. In the

process of implementing this program, Ukraine already has significant achievements. Thus, in the period from 2015 to 2017, according to the results of the competitions of the Erasmus + program (International Credit Mobility), 1008 projects were submitted from Ukraine, of which 643 were recommended for funding, which provided for the implementation of 7181 mobility (total cost is more than 24 million euros). In 2017, within the framework of this competition among the countries of the Eastern Partnership countries, Ukrainian universities ranked first and gained more opportunities on the basis of the Inter-institutional agreements with the University of Europe for the implementation of 268 projects for the funding of 2,65 thousand scholars (Erasmus, 2017).

2. Research Methodology

The research methodology used in the paper is analysis of primary data presented by the International office of TNTU, literature review and collection of data from the web sites set up by the statistical organizations of Ukraine.

3. Results and Discussion

With the aim to define prospects of Ukrainian universities' international strategies, TNTU in particular, we have analyzed the data provided by the State Committee of Statistics of Ukraine. Number of higher educational institutions of III-IV level of accreditation in 2010/11 was 330 comparing to 289 in 2017/18. Number of students also decreased from 2066667 to 1329964 which is 35% decline. Number of students who were admitted to higher educational institutions of III-IV level of accreditation equals to 381362 in 2010/11 and 264448 in 2017/18 [9]. These numbers indicate on the problem of significance on the the educational system reform needed to be used in Ukraine to be able to increase the number of students enrolled to the universities.

One of the reasons in the number of students decline is the fact that Ukrainians at study in foreign universities has a steady upward trend. As of 2014/2015 academic year, the number of Ukrainian students who received education abroad was 59 648 people. Among the most desirable countries to study, Ukrainian citizens choose Poland, Germany, Canada, Italy, the Czech Republic, the USA, Spain, Austria, France and Hungary. The dynamics of student mobility growth from 2009 to 2015 amounted to 129%. Comparing the last two years, the growth is almost 29% or 13 266 people. Moreover, 2/3 of this increase was made by Ukrainians studying at

Polish universities [6]. So, on one hand, we notice the attention of Ukrainian universities to internationalization, and on the other hand such strategy affects the number of students' who want to receive higher education in Ukraine. That is why there must be done significant efforts by both, the state in general and universities in particular, to strengthen international positions of the universities and at the same time to attract students to study at home higher educational establishments. So one of the prospects of the internationalization in HE in Ukraine in general, and TNTU in particular, is defined the international collaboration in research and university-community-industry areas.

In Ternopil region there are six higher educational institutions III-IV level of accreditation: 4 – state/public, 1 – private, 1 – collective [9].

Ternopil Ivan Puluj National Technical University was founded in 1960 and is one of the main universities in the region. The university is recognized by the international educational organizations. It is an active member of the European University Association (EUA) since 1999 and the “n+1” Network of French Engineering Schools since 2006. Moreover, it is a participant of Magna Charta Universitatum, the Baltic Sea Programme (BUP) and the International Association of Scientific and Technological University Libraries (IATUL). TNTU is the representative of the certified educational programs of the world IT companies Cisco (1999), Microsoft, Schneider-Electric, ST Microelectronics, ASCON. There are such international education centers at TNTU: VUE, QNX Software Systems, SUN Microsystems, IBM, STMicronix, D-Link, C++.

TNTU consists of four faculties, 33 departments and three technical colleges. Training of Bachelors of Science is being conducted in 28 fields (including Computer Science, Computer Engineering, Mechanical Engineering and Machine Building, Welding, Civil Engineering and Management), Masters of Science – in 26 fields (including Management of Innovative Activity, Software Engineering, Information Management Systems and Technologies, Industrial and Civil Construction, Metal-Cutting Machine Tools and Systems, Technologies of Machine Building, Food and Processing Production Equipment, and also Ukrainian-Polish Program of Double Diploma Degree on Computer Science, Mechanical Engineering, Civil Engineering and Management), PhD programs - in 18 fields (including Ukrainian-French PhD Program on Mechanical Engineering).

In 2007-2008 there were established joint faculties with Shobit University (New Delhi, India), with the Technological University of Tajikistan (Dushanbe, Republic

of Tajikistan). The local center for distance education was opened in Dushanbe (2011), Michigan, USA (2012), 9 local centers work in Ukraine. It is planned to set up centers based on associations of Ukrainians in Spain, Portugal and Canada.

The unique feature of the university is that it is the only technical university in Ternopil region and it provides training of all educational levels, doctors and candidates of sciences, prepares professionals in not only engineering and computer fields, but also administrative and economic ones.

In 2016 the University has got the 1st place among higher educational establishments in Ternopil and 6th place in Western region in according with the consolidating rating. It has got 34th place in TOP-200 rating among 200 best higher educational establishments in Ukraine; 40th place in Scopus rating and 32nd place in Webometrix rating among higher educational establishments in Ukraine.

TNTU cooperates with 83 foreign higher educational institutions from 20 countries (Azerbaijan, Bosnia and Hercegovyna, Bulgaria, Canada, China, Estonia, Finland, France, Georgia, Germany, Lithuania, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Turkey, UK, USA), which have concluded agreements on cooperation in the educational and scientific areas.

There are 7 international educational programs of double diplomas running at TNTU with such universities as: Lublin University of Technology, Opole University of Technology, Jan Amos Komenski State School of Higher Vocational Education, University of Applied Sciences in Nysa (Poland); Kaunas University of Technology (Lithuania); Schmalkalden University of Applied Sciences (Germany); University of Valencia (Spain).

TNTU also would like to expand geographical area of cooperation with other higher educational institutions as it is convinced that the exchange of teachers will add even more international features to its students' competences. Lecturers from abroad will bring new information and new teaching methods to both of the institutions. Students will extend their knowledge through learning about other methods than the ones already taught at Partner universities. Lecturers from Partner universities go abroad with the purpose of raising the quality of teaching. Going abroad inspires lecturers to improve their teaching materials which is a huge benefit for students. Lecturers keep themselves continuously updated on new areas which also provide students with knowledge about the most recent methods.

A number of 23 students were enrolled at double diplomas programs at both “bachelor” and “master” levels. Among these, we mention the Master degree program at the Lublin University of Technology and Opole University of Technology (Poland) - 16 students; the Ukrainian - German Bachelor degree program at the Schmalkalden University of Applied Sciences (Germany) - 7 students.

In the 2017-2018 academic year, lecturers and post-graduate students of the University undertook the internships abroad, including the academic mobility for the Erasmus + Program: for up to 3 months - 4 internships, and up to 1 month - 11 internships (at the Slovak Technical University (Slovakia), the University of Valencia (Spain), University of Southampton (Great Britain), Wroclaw University of Economics (Poland), University of Applied Sciences in Nysa (Poland) and Kaunas University of Technology (Lithuania), and 6 scientists conducted scientific studies in Lublin University of Technology and Opole University of Technology (Poland). One university student completed an internship for Canada's Mitacs Globalink Research Internship Program.

117 students completed a graduate internship and traineeship abroad in 2017. Every year a significant number of students are trained at Ustronyanka, Byala, Poland - 28 students, at the enterprise INSTAL, Poland - 9 students, at Lithuanian companies in Taurage - 41 students, under the program “Apollo”, Germany - 4 students, within the program “Agroimpuls”, Switzerland - 10 students; under language training programs at the Faculty of Economics, Management and Tourism at Wroclaw University of Economics in Jelenia Góra Poland -14 students, under Erasmus+ - 11 students.

Ukrainian-French joint program of double diplomas (doctor of philosophy in the field of destruction mechanics) within the framework of scientific collaboration with the Institute of Modern Mechanics, the University of Bléz Pascal (France) operates at the university, 2 dissertations were defended.

In the 2017-2018 academic year, the following international projects were/are implemented at the University: TEMPUS - “Inter-university Start-up centers for students' innovations development & promotion” (organization-beneficiary - University Montpellier 2, France); TEMPUS - “Modernization of Postgraduate Studies on Security and Resilience for Human and Industry Related Domains” (Tallinn University of Technology, Estonia); EuropeAid/Investing in people – “Equal opportunities in getting profession for young mother-students in higher

educational establishment” (Sumy State University, Ukraine); Erasmus+ - “Ecologically responsible business: research and implementation of European experience” (TNTU); Erasmus+ - “Development of a network infrastructure for youth innovation entrepreneurship support on fablab platforms” (Buckinghamshire New University, United Kingdom); British Council in Ukraine – “Brand-image of the university: positioning strategy of TNTU at the international market of educational services” (TNTU).

As shown above TNTU has potential to expand its research and “university-community-industry” collaboration. Moreover in 2011 it was established a University Science Park “Innovation & Investment Cluster Ternopil” to promote innovative projects in the fields of information technologies, ecology and energy conservation. Student Scientific Society and Society of Young Scientists are also the core parts of the innovation activity of the university. These organizations carry out organizational activity among the young researchers and annually organize international students' and young scientists' conferences. Start-up center was established at the university in 2012. It works to implement innovative students' ideas and to enhance innovation policy and students' entrepreneurship activity as the result of Tempus project SUCSID.

There are also 14 scientific schools at TNTU. They are led by professors who conduct researches in different scientific areas and publish their results in worldknown scientific journals. That's why one of the directions of research commercialization is collaboration with enterprises. There are several R&D projects which are conducted at the university and ordered by prominent Ukrainian public and private organizations/enterprises. One of them is conducted according to the order of the State Space Agency of Ukraine.

We also believe that students should acquire the necessary skills not only to study, but also to apply their knowledge in business and society at large. To do so collaboration “university-community-industry” will make it possible to form competencies needed for future graduates to successfully find jobs and be employed in those areas where they would perform the best. This will also inspire powerful and collaborative education programmes, jointly created by partners from the higher education, business and research fields.

Collaboration between university and industries is crucial for skills development (education and training), the generation, acquisition, and adoption of knowledge (innovation and technology transfer), and the promotion of entrepreneurship (start-

ups and spin-offs). The benefits of university-industry relations are wide-reaching: they can help to coordinate research and development agendas, stimulate additional private research and development investment (additionality effect), and exploit synergies and complementarities of scientific and technological capabilities.

The paper points out the potential TNTU has in R&D field. A typical approach to stimulate “university-community-industry” collaboration is to design R&D research grants, matching grants, and tax-incentives with a requisite of a consortium of firms and universities for project eligibility which is seen as a key prospect in TNTU international strategy.

4. Conclusions

Summarizing all of the above, we note that internationalization of higher education has positive aspects but at the same time this process is accompanied by some risks, which include “brain drain”, erosion of national traits, low quality of training of foreign students, significant commercialization of education, trade in educational programs and the mass character of higher education. In comparison, it turns out that the benefits of internationalization of higher education are greater than the disadvantages, the negative impact of which can be reduced by changing the focus of internationalization strategies.

The paper makes it possible to conclude that TNTU is gradually adapting to the world of educational and scientific space and knowledge economy. Internal competition, demographic decrease, change in age structure and consumer behavior and preferences are those trends that create new challenges. Taking into account the university potential in R&D field, it is defined that one of TNTU main priorities in its international strategy in the nearest future is development of research and “university-community-industry” collaboration.

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