

Internationalization of Higher Education

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The paper considers internationalization of higher education associated with the increased number of foreign students in Russian higher education institutions. Education internationalization is proved to be important through the case study of Tomsk Polytechnic University, which is one of the global leaders in the sphere of resource-efficient technologies. The authors have analyzed the specialties mostly chosen by foreign TPU students studying in Russian language.

Key words: education, training, foreign students, specialties.

Today, higher education is a major factor to facilitate scientific and technological progress, increase labour capacity, strengthen innovation potential. There are regularities in the development of education system, and one of them is internationalization. The notion of internationalization within the education domain comprises two components: inner and outer internationalization. Internationalization of higher education improves its quality and makes it more available, boosts innovation, strengthen international cooperation. Migration policy of the RF up to 2025 should be in line with the Concept of the President [1], which describes all types of migration.

Education abroad is important to improve professional competence, provide universities and countries with information on the latest scientific achievements, contribute to international cooperation, and foster mutual understanding.

The number of foreign students in Russian universities increases every year, which is illustrated in the graph (Fig. 1). The data are taken from the statistical abstracts by the Ministry of Education and Science of the RF [2, 3, 4, 5].

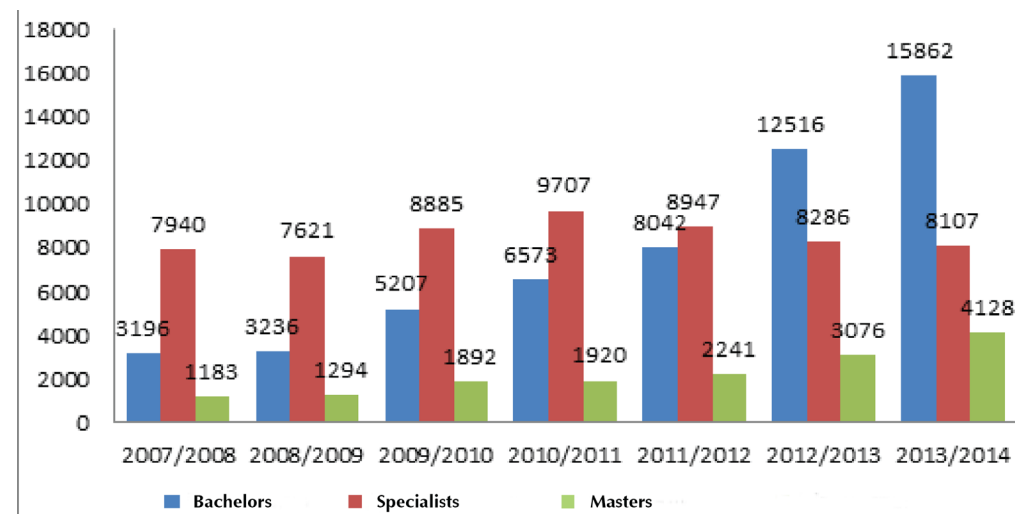
If we turn to the dynamics of growth in the number of foreign students at Russian higher education institutions (Fig. 1), it is clear that the number of Bachelor's degree

students is almost five times as much as that in 2007/2008 and the number of Master's degree students is more than three times as much as it used to be. This is attributed to the Bologna Declaration and successful development of the Bologna process in European Community including the RF (implementation of two-level system of higher education). The number of those taking Specialist's degree courses remains approximately the same.

Today, internationalization of higher education, with its quality and availability, significantly contributes to international cooperation. Any activity is performed due to motivation, which is based on three major components: interest, profit, and psychological comfort. The interest and profit of knowledge integration are undisputable. As for psychological comfort, it is obviously interrupted in alien linguistic environment. However, knowledge of Russian culture and education obtained in Russia are highly estimated all over the world.

Foreign students show sympathy to Russian universities: RUDN University (People's Friendship University of Russia) ranks first, St. Petersburg State University ranks second, Lomonosov Moscow State University – third and Peter the Great St. Petersburg Polytechnic university – fourth. National Research Tomsk Polytechnic

Fig. 1. Number of foreign students obtaining degrees at Russian higher education institutions



University, the oldest technical higher education institution in Siberia, occupies the fifth position [5].

It is worth noting that the location of university influences its competitive ability: the universities located in the European part of the RF gain more popularity. Tomsk Polytechnic University (TPU), one of the best technical universities in Russia, is located in the Asian part. Life in Tomsk and education at TPU are not so expensive as those in Moscow or St. Petersburg, therefore, education at TPU is a good choice for foreign students.

Let us turn to TPU statistical data: Fig. 2 shows the number of foreign students graduated over the period 2007–2015.

The most popular academic degree among foreign students is Bachelor's degree. For instance, in 2007 about 49% of foreign student obtained Bachelor's degree, 38% – Specialist's degree, and about 13% – Master's degree. In 2008, 62% got Bachelor's degree, 32% – Specialist's degree, and only 6% – Master's degree. In 2009 48% and 43% obtained Bachelor's and Specialist's degrees, respectively. In 2010, almost one half of all graduates (49%) were awarded Bachelor's degree, 30% – Specialist's degree (engineer), and

21% – Master's degree.

degrees over the period from 2007 till 2015

Since 2011, Master's degree programmes have gained popularity. In 2011, about 66 % of foreign students got Bachelor's degree and 28.5% – Master's degree; in 2012, about 72% and 24.7% (one forth), respectively; in 2013, 68.5% and 28%, respectively; in 2014, 65.4% and 31%. Last year, 2015, 73% of foreign students obtained Bachelor's degree and 22% – Master's degree.

Statistical data analysis indicated that annually more than 50% of TPU graduates obtained Bachelor's degree. Since 2011, about 30% on average got Master's degree. The rest share (about 10%–20%) graduated from Specialist's degree programmes.

Fig. 3 shows countries which Bachelor's degree students come from.

It is worth noting that the majority of foreign students awarded Bachelor's degree are from China and Vietnam. The other students doing Bachelor's degree courses come from Asia, Africa, South America, and European countries.

TPU popularity among the students from China and Vietnam is due to the fact that, firstly, TPU participates in the programme



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Fig. 2. Number of graduates awarded Bachelor's, Specialist's, and Master's degrees over the period from 2007 till 2015

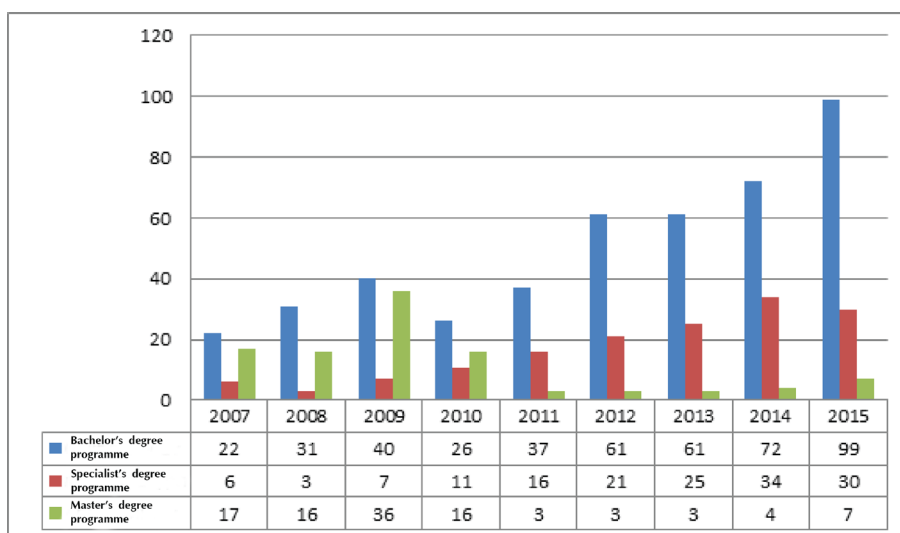
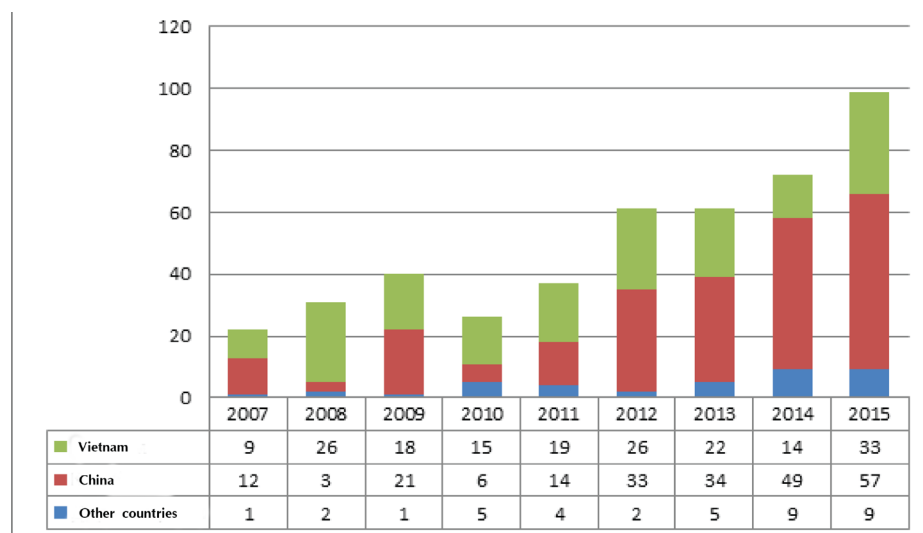


Fig. 3. Number of graduates from Vietnam, China, and other countries awarded Bachelor's degree



“Duty to Help” to provide education for Vietnamese students [6], and secondly, there is an agreement between TPU and some universities of China (Jilin University, Shenyang University) on cooperation in educating Chinese students [6]. Moreover, since 2012 TPU in cooperation with the Harbin Institute of Technology provides double-degree programmes, conducts

research, develops and implements mutual projects.

In 2007, there were 22 foreign students awarded Bachelor's degree including 12 students (54.5%) from China and 9 students (about 41%) from Vietnam. In 2008, about 84% of foreign students awarded Bachelor's degree were from Vietnam (26 out of 31 graduates). In 2009,

more than half of students (21 student – 52.5%) awarded Bachelor's degree were from China and 45% (18 students) from Vietnam. In 2010, 2011, 2012, and 2013, the numbers of students from China and Vietnam were 6 (23%) students vs 15 (58%) students, 14 (37.8%) vs 19 (51.3%), 33 (54%) vs 26 (42.6%), and 34 (about 56%) vs 22 (36%) students, respectively. In 2014, there were 72 students awarded Bachelor's degree including 49 (68%) from China, 14 (about 19%) from Vietnam, and 7 (9.7%) from Mongolia. In 2015, the number of foreign students awarded Bachelor's degree was 99 including 57.5% of Chinese and 33.3% of Vietnamese students.

As for the foreign students graduated from TPU Master's degree programmes, the shares of different countries are approximately the same as those for Bachelor's degree programmes.

It is important to note that over the period 2007–2009, there were few foreign graduates awarded Master's degree. In 2007 and 2008, students from Vietnam, apart from Bachelor's degree, were awarded Specialist's degree: in 2007 – 11 out of 20 (55%) Vietnamese graduates and in 2008 – 14 (35%) out of 40. In 2009, 66% of students from Vietnam (35 out of 53) obtained Specialist's degree. In 2010, 9 students from Vietnam were awarded Master's degree (82% as the total number of such graduates was 11) and 16 students obtained Specialist's degree (40% of the total number of Vietnamese students graduated from TPU in 2011). In 2011, the majority of graduates awarded Master's degree were from Vietnam – 11 out of 16 (68.75%), as well as in 2012, when there were 10 Vietnamese students among 23 Master's degree programme graduates (about 43%). In 2013, 14 Vietnamese and only 4 Chinese students (56% and 16%, respectively) obtained Master's degree. In 2014, these numbers were 17 and 12 (35%), respectively. In 2015, among 30 graduates awarded Master's degree 16 (56.6%) were from China and 10 (one third) – from Vietnam.

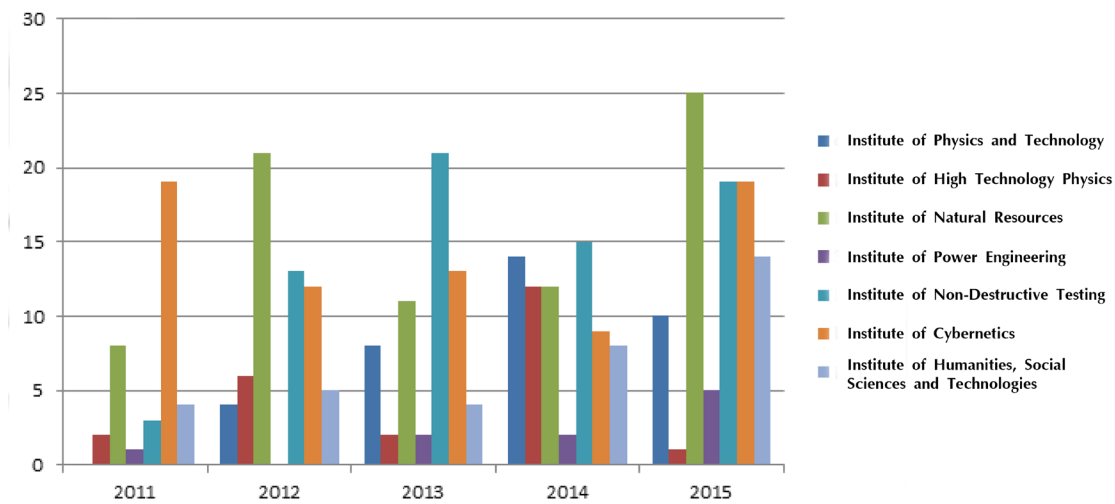
These data indicate that the majority of students awarded Specialist's degree (over the period 2007–2010) and Master's degree (2011–2014) were Vietnamese. The students from China preferred doing Bachelor's degree programmes.

In compliance with TPU Development Programme 2009–2018, the university faculties were reorganized into 7 institutes: Institute of Physics and Technology, Institute of High Technology Physics, Institute of Natural Resources, Institute of Power Engineering, Institute of Non-Destructive Testing, Institute of Cybernetics, Institute of Humanities, Social Sciences and Technologies. Foreign students did basic education programmes provided at the Institutes.

Let us consider the specialties chosen by foreign students over the past five years (Fig. 4, 5). Most students chose the Institute of Natural Resources, the Institute of Non-Destructive Testing, and the Institute of Cybernetics for their studies, with the number of foreign students at each of the institutes being approximately the same. Over the period 2011–2015, there were 330 foreign students awarded Bachelor's degree, with 77 students graduated from the Institute of Natural Resources, 71 – from the Institute of Non-Destructive Testing, and 72 – from the Institute of Cybernetics. As for the other Institutes within this period, the Institute of Humanities, Social Sciences and Technologies ranked forth (41 students), the Institute of Physics and Technology – fifth, and the Institute of High Technology Physics – sixth. The least popular institute among foreign students is the Institute of Power Engineering.

As for Master's degree courses, the situation is similar to that of Bachelor's degree and the most popular Master's degree programmes are those of the Institute of Natural Resources, the Institute of Non-Destructive Testing, and the Institute of Cybernetics. Over the past five years, about 70% of foreign students (87 out of 126) chose the three above mentioned institutes for their studies. About 20% (25 students) did Master's degree courses

Fig. 4. Number of students doing Bachelor's degree courses



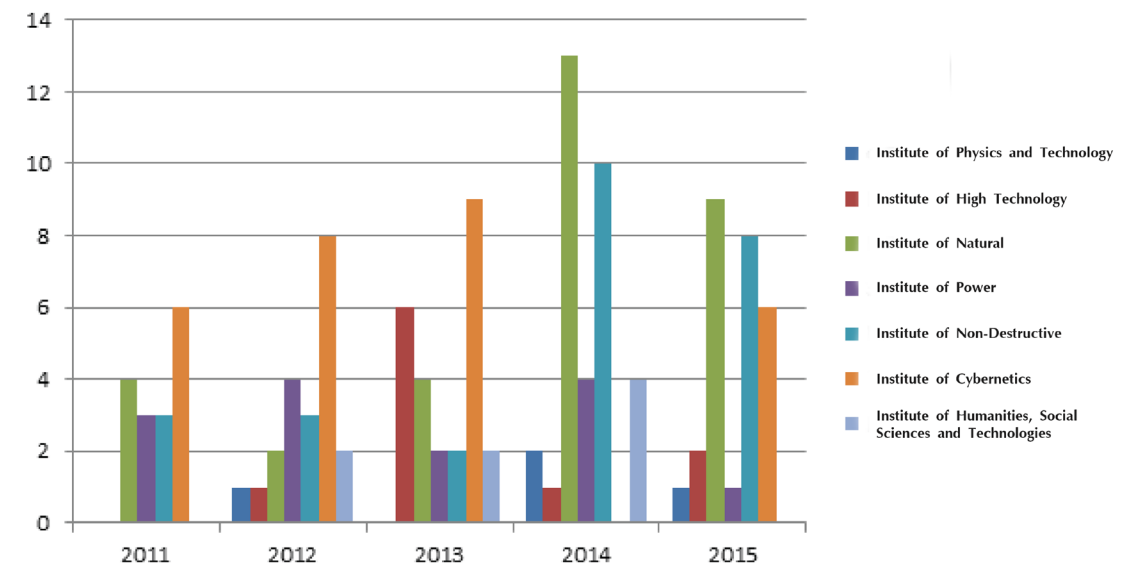
at the Institute of Power Engineering and the Institute of Humanities, Social Sciences and Technologies. The least popular Master's degree programmes were those of the Institute of Physics and Technology and the Institute of High Technology Physics (only 14 students).

The research results indicate that the choice of professional domain depends on two factors: professions in demand in student's native country and student's personal preferences.

In conclusion, it is important to note that internationalization of education not only contributes to bringing up talents

all over the world, but also boosts global integration of science and education. Under internationalization of education we mean widely-spread programmes of studying abroad, development of international education programmes, participation of students and academic staff in global educational process. Therefore, internationalization of education will improve the quality of education only if it involves modern technologies and conforms to high standards which ensure quality, variety, and availability of global higher education.

Fig. 5. Number of students doing Master's degree courses



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