

National Research Tomsk State University (NR TSU) Faculty of Chemistry
 Subject area 04.03.01/04.04.01, Chemistry,
 major 04.05.01, Fundamental and Applied Chemistry
 Cluster of study programmes Chemistry, Fundamental and Applied Chemistry, Fundamental and Applied Chemistry of Substances and Materials, Translational Chemical and Biomedical Technologies

Employers' satisfaction survey

Objectives:

1. To identify factors contributing to cooperation between employers and TSU in terms of graduate employment.
2. To provide employers with an opportunity to assess the quality of training according to the proposed criteria.
3. To reveal employers' requirements for their employees.
4. To determine the degree of partners' readiness for further cooperation in training and employment of graduates and identify promising forms of cooperation from the employers' perspective.

13 heads of the enterprises and their departments working with young specialists, i.e. recent TSU graduates, were surveyed:

1. *Tomskgeomonitoring*, Head of Hydrochemistry Laboratory;
2. Research and Production Centre *Technoanalyst*, CEO;
3. *Innovative Pharmacology Research (IPHAR)*, Head of Analytical Laboratory;
4. *Artlife*, Head of Quality Control;
5. Research Institute of Cardiology, Tomsk National Research Medical Center of the Russian Academy of Sciences, junior research fellow;
6. Central laboratory of *Siberian Chemical Plant*, Head of Laboratory;
7. JSC *SIBIR*, Head of Laboratory;
8. *NIOST*, Head of Department;
9. Russian Federal Service for Surveillance on Consumer Rights Protection and Human Wellbeing (Rospotrebnadzor) in Tomsk Region, Head of Laboratory of Physico-Chemical Research Methods;
10. Research and Production Enterprise *Tomanalyt*, Deputy Director;
11. Forensic Center of the Department of the Ministry of Internal Affairs in Tomsk Region, Head of Department;
12. National Research Tomsk Polytechnic University, Head of Chemical Engineering Department;
13. Engineering Chemical Technological Centre (ECTC), CEO.

The representatives had to assess factors influencing the quality of graduate training.

1. Factors contributing to cooperation between employers and TSU in terms of graduate employment.

Advanced applied skills is the main factor of effective cooperation marked by 9 representatives (Fig. 1). 7 representatives went for *Advanced theoretical knowledge*. 7 respondents graduated from TSU, therefore they have had a long-lasting partnership with the university.

4 representatives highlighted *Long-term cooperation with TSU* as the main factor. 2 representatives selected such formal factor as *Strategic cooperation agreement*, whereas 1 chose *Good references for TSU graduates*.

The number of answers increases the number of the surveyed since they could tick several factors contributing to cooperation.

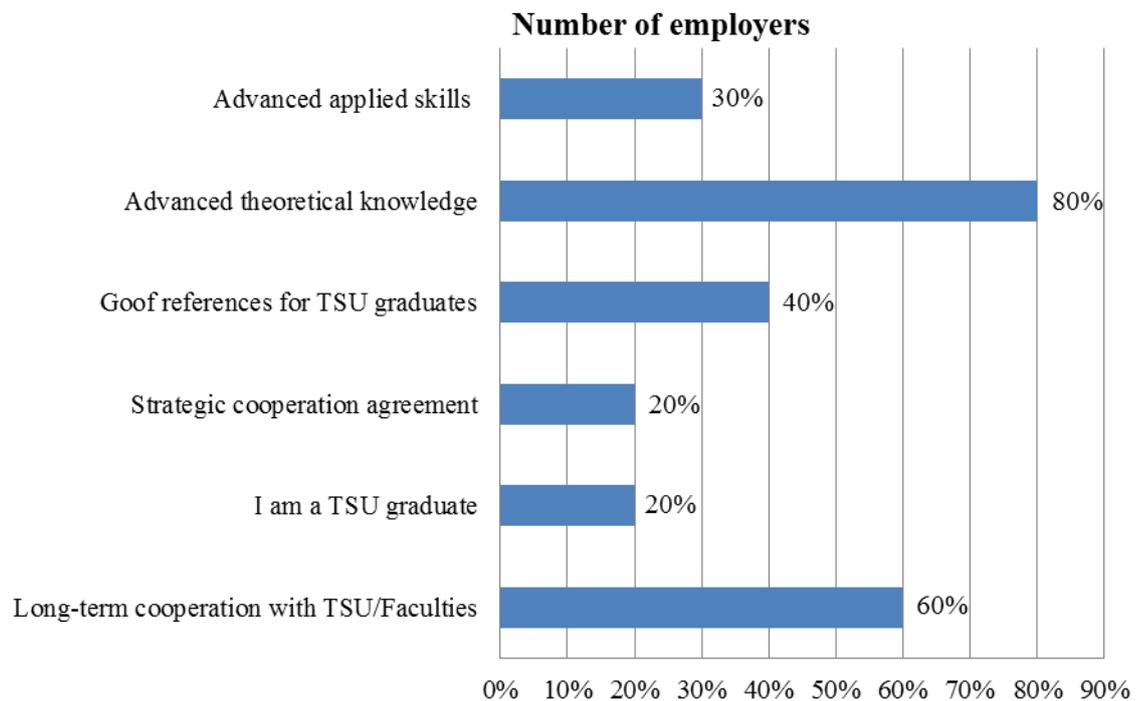


Figure 1 – Employers’ evaluation of the main factors contributing to cooperation with TSU in terms of graduate employment

2. Employers’ satisfaction with the quality of graduate training.

According to the given criteria, the survey shows that the employers are satisfied with the quality of training (76% on average) (Fig. 2). 1 respondent (8%) is mostly dissatisfied with *Topical and comprehensive knowledge*. The employers gave the highest marks to graduates’ *ability to solve professional tasks relying on fundamental and specialised knowledge* (54%), *conduct independent research*, and *use modern methods for processing and interpreting information* (46% each). Graduates’ *topical and comprehensive knowledge and competencies* (23%), *abilities to develop models for solving research and production tasks* (23%), and *ability to use modern equipment* were given a bit lower scores.

3. Employers’ evaluation of graduates’ cultural competencies and their personal traits.

The employers highly evaluated graduates’ cultural competencies (Fig. 3). 2 respondents could not assess graduates on their *ability for abstract thinking, analysis, and synthesis* (15%).

The other criteria were positively assessed. The employers highly appreciated graduates’ preparedness for self-development (77%) and ability to work in team (69%). A bit lower scores were given for graduates’ *emergency preparedness* (46%), *business communication skills* (46%), and *stress resistance* (54%).

1 respondent is mostly dissatisfied with graduates’ *ability for abstract thinking, analysis and synthesis* and 1 respondent is mostly dissatisfied with *leadership skills* (8% each). The other marks were higher.

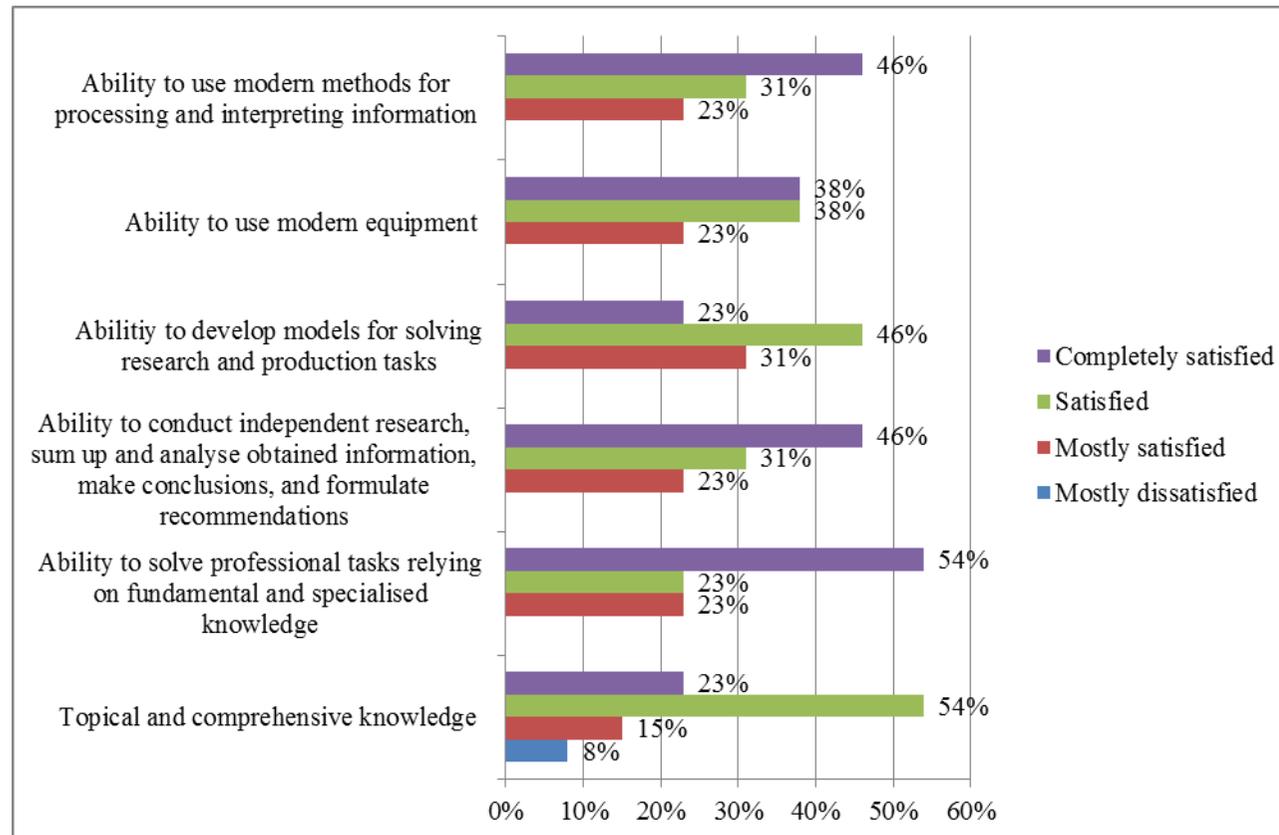


Figure 2 – Employers’ satisfaction with the quality of TSU graduate training

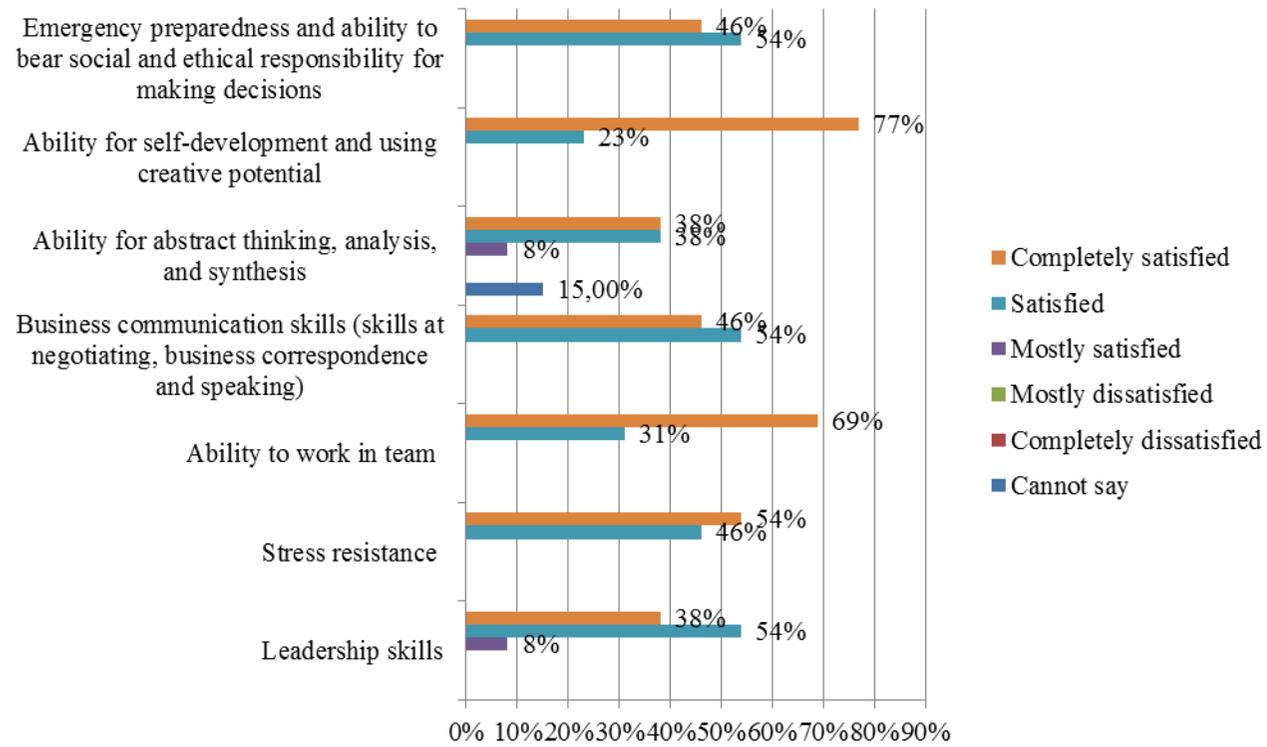


Рисунок 3 – Employers' evaluation of graduates' cultural competencies and their personal traits

4. Employers' satisfaction with TSU graduates' information competency.

The employers highly appreciated graduates' information competency (Fig.4). Only one respondent is mostly dissatisfied with two criteria. The other surveyed are completely satisfied and satisfied with graduates' *skills at working with computer and applying modern technical means and information technology to solving professional tasks*.

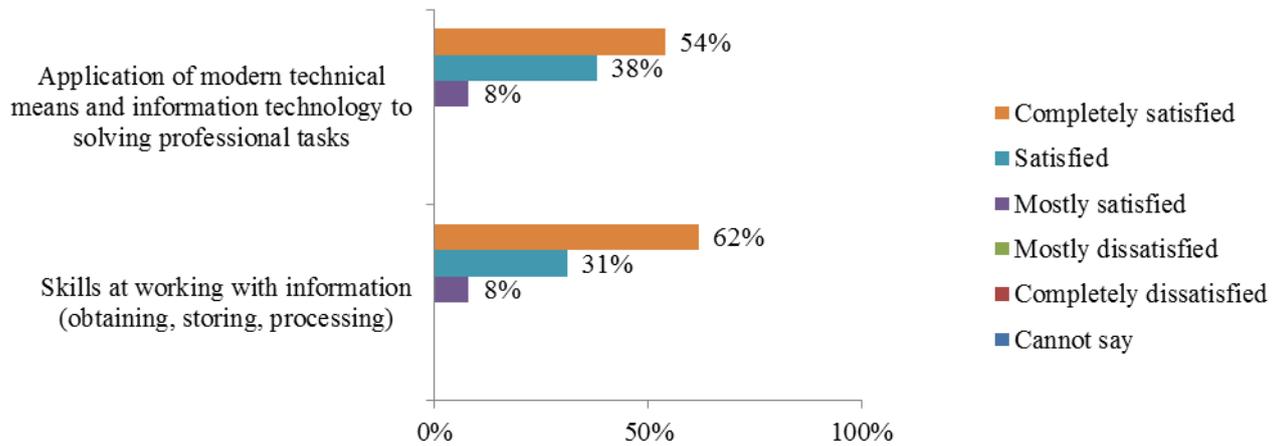


Figure 4 – Employers' satisfaction with TSU graduates' information competency

5. Employers' basic requirements.

The employers were offered to list the main requirements to their employees (Fig. 5). 12 out of 13 representatives recognised *ability to master modern technical means and technology* (92 %), as one of the main requirements. *Professional competencies* and *ability to independently solve tasks* received 11 responses each (85%). *Ability to work in team* and *Initiative* gained 10 responses each (77%).

It is interesting to note that none of the 10 respondents who selected *initiative* ticked *creativity*. 8 out of 13 representatives mentioned *workplace discipline* as a crucial criterion.

None of the surveyed marked *creativity* and *foreign language proficiency* as an important trait.

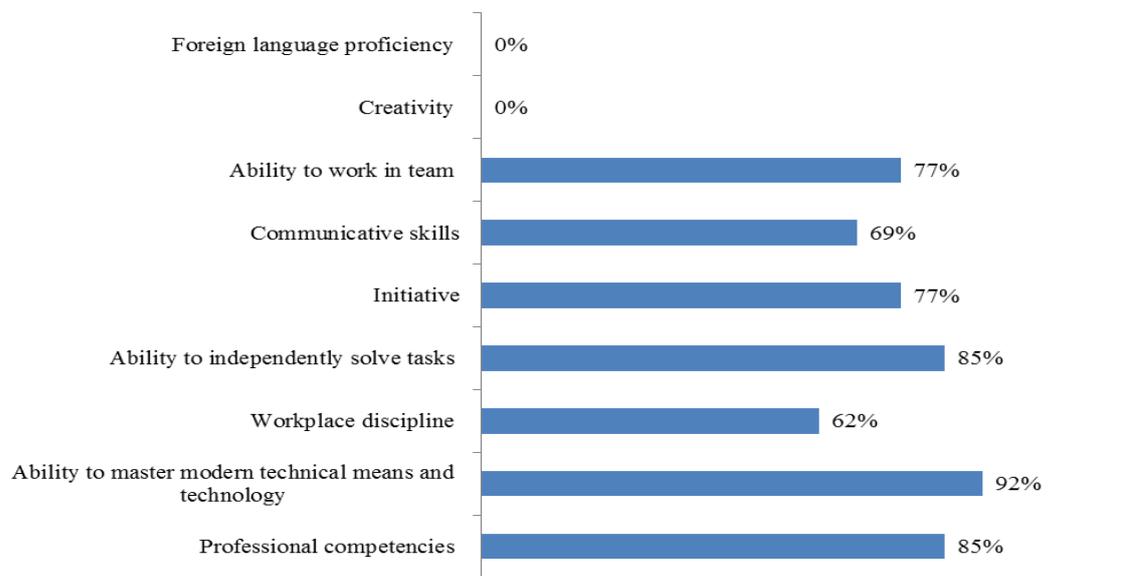


Figure 5 – Employers' main requirements for employees

6. Number of TSU employed graduates and employment for prospective graduates.

The respondents provided information on how many TSU graduates have been employed for last 5 years and how many were employed last year. 1-10 young specialists in subject area Chemistry have been employed for 5 years. Overall, 41 graduates.

All the enterprises have hired 1-2 graduates for a year. One of the enterprises employed 8 graduates of the Faculty because of the expansion of the range of activities.

11 employers (85%) are interested and going to continue employing TSU graduates. 2 people found the question difficult to answer. They believe that the employment rate mostly depends on the state of the enterprise, vacancies, and quality of training at the Faculty.

7. Most preferable forms of cooperation.

Employers' interests must be taken into account while searching for forms of university and business cooperation. Thus, the employers consider *internship* and *opportunity to do theses at employer's request* as the most effective forms of cooperation. The parameters received 11 (85%) and 7 responses (54%) respectively (Fig. 6).

The employers prefer long-term forms of cooperation which allow company management to know prospective graduates better and see them in action. On the other hand, such forms help students get familiarised with the activity of an enterprise and make a reasonable choice.

46% selected *reviewing graduates' theses*. 31% went for *involvement of employees in educational processes*. *Employer-sponsored education* and *Workshops* received 15% each.

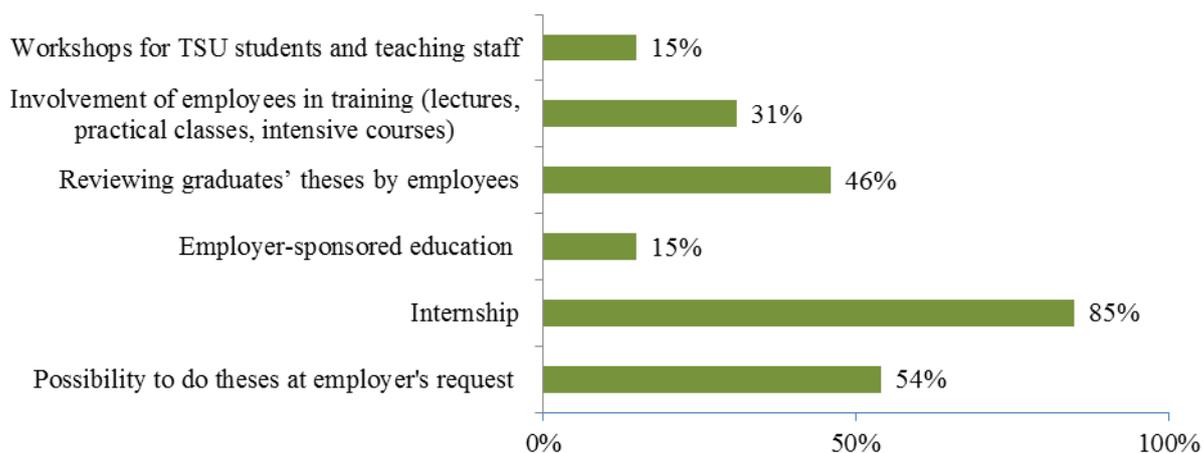


Figure 6 – Most preferable forms of cooperation

8. Conclusion.

The survey provided the data reflecting employers' opinion on weaknesses and strengths of training within the cluster of the study programmes in chemistry.

During the research the employers highly appreciated graduates' acquired fundamental and specialised knowledge (54% is completely satisfied) aimed at solving professional tasks, ability to do independent research (46% is completely satisfied). The surveyed highlighted graduates' preparedness for self-development (77%), ability to work in team (69%), skills at working with information (62%), skills at applying modern technical skills and information technology to solving professional tasks (54%).

Ability to master modern technical means and technology (92%), *professional competencies*, and *ability to independently solve tasks* (85% each) are the main requirement for prospective employees.

Partners are ready for further cooperation by developing the environment for internship. They suggest students doing theses on-site and being reviewed by specialists. The employers' interest in graduates of the study programmes and further cooperation with the university is proved by their feedback:

- ..Keep basic training in chemistry, other skills develop on-site while mastering analysis techniques.
- .. Increase the number of hours of training for young specialists when working with analytical equipment. ”.
- ..We are interested in responsible and ready for development applicants. Some applicants are insufficiently oriented to professional work. Develop their understanding why they need a job and how to succeed.
- ..Strengthen theory-based training of young specialists. Teach them to work with information resources both Russian and overseas, process statistical data using software for statistical data processing. Be more demanding and strict to students/master's students.
- ..Stages of development and certification of techniques for carrying out measurements, assessment of characteristics of measuring techniques, intralaboratory control over the quality of measurement.
- ..Increase professional training.
- ..Develop applied skills, strengthen chemical and technological disciplines.
- ..Strengthen the development of skills at working with modern physico-chemical equipment.
- ..Joint research and study projects.

Overall, the survey may serve as a basis for identifying further forms of cooperation between the Faculty and partners to enhance TSU graduate competitiveness and employment in their major.