

REPORT ON THE COMPETENCE ASSESSMENT OF GDAŃSK UNIVERSITY OF TECHNOLOGY GRADUATES IN THE OPINIONS OF ENTREPRENEURS

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TABLE OF CONTENTS:

Introduction.....	4
Methodological assumptions for the test.....	6
Characteristics of the test sample	7
Assessment of competences of GUT graduates	11
Motives for the decision on the employment of GUT graduates	19
Summary	27
Literature.....	29
Composition of the Team for monitoring the professional careers of graduates of Gdańsk University of Technology for the term of office until 31 August 2020	30

LIST OF ABBREVIATIONS

GUT	- Gdańsk University of Technology
FA	- Faculty of Architecture
FCh	- Faculty of Chemistry
FECE	- Faculty of Electrical and Control Engineering
FETI	- Faculty of Electronics, Telecommunications and Informatics
FAPM	- Faculty of Applied Physics and Mathematics
FME	- Faculty of Mechanical Engineering
FOEST	- Faculty of Ocean Engineering and Ship Technology
FCEE	- Faculty of Civil and Environmental Engineering
FME	- Faculty of Management and Economics

INTRODUCTION

In recent years, the difficulties facing enterprises seeking suitable job candidates have increased significantly in Poland. According to ManpowerGroup survey (2016), as many as 45% of Polish employers declared problems in recruiting employees. This is the highest result in the last 6 years, and engineers were at the top of the professional groups with the greatest talent shortages. The intensity of this phenomenon is determined on the one hand by the limited supply of candidates on the labor market, and on the other by the level of their competences and experience. The existence of a competence gap is also confirmed by the results of research conducted by the Polish Agency for Enterprise Development (Kocór 2015), according to which three out of four employers indicated difficulties in finding the right people for work. This phenomenon is particularly intensified in the case of smaller companies (Kocór, Strzebońska, Dawid-Sawicka 2015). Elimination of the above gap in the area of competences (understood as knowledge, skills and attitudes) for which there is a demand on the labor market, is possible, among others thanks to an effectively functioning educational system (Leoni 2014). The knowledge and practical skills acquired during studies prepare graduates for starting professional activity and are one of the factors determining success in the workplace (Ionescu, Cuza 2012).

At the same time, graduates naturally have little professional experience. Among employers, the opinion related to this fact that despite the relatively high level of formal education of young people, this group often has a lower level of specialist competence (Wojdyło-Preisner, Zawadzki 2015) is quite common.

However, due to the high dynamics of modern economy, one cannot expect a graduate to be fully prepared to take up any role in the enterprise where they will be employed, immediately after graduation. It seems that the goal that higher education entities can set themselves is rather to prepare graduates to start working, providing them with both current knowledge and practical skills, which must be further developed to meet the changing requirements. Such activities should be accompanied by verification of how university graduates are perceived by employers employing them. Obtaining such information allows assessing the effectiveness of the university's efforts to ensure high quality education (by adding the perspective of an important stakeholder of its actions, which are employers), and can also indicate directions for further actions that are worth taking not only within the university itself, but also as part of its cooperation with the business environment.

In connection with the above, in addition to the research conducted in 2011-2017 on monitoring the professional careers of graduates of Gdańsk University of Technology, the results of which have been published in annual reports (Tomczak, Ziemiański, Szeluga-Romańska 2017), on the initiative of his Magnificence Vice-Rector for organization professor Janusz T. Cieśliński, PhD, DSc, Eng., full professor at GUT, a survey of entrepreneurs' opinions on the competences of GUT graduates was also conducted. The results of the survey can be a valuable source of information in the area of effective selection of education content in terms of competences for which there is a demand on the labor market. The research project itself can fulfill an integrating role as a factor strengthening the cooperation of the academic community with the socio-economic environment.

METHODOLOGICAL ASSUMPTIONS OF THE TEST

The results presented, analyzed and interpreted below are the result of surveys of Pomeranian entrepreneurs' opinions on the competences of graduates of Gdańsk University of Technology. The study was conducted by the Team for monitoring the professional careers of graduates of Gdańsk University of Technology, which includes GUT employees of: the Faculty of Management and Economics, the Career Office and the of International Relations Office.

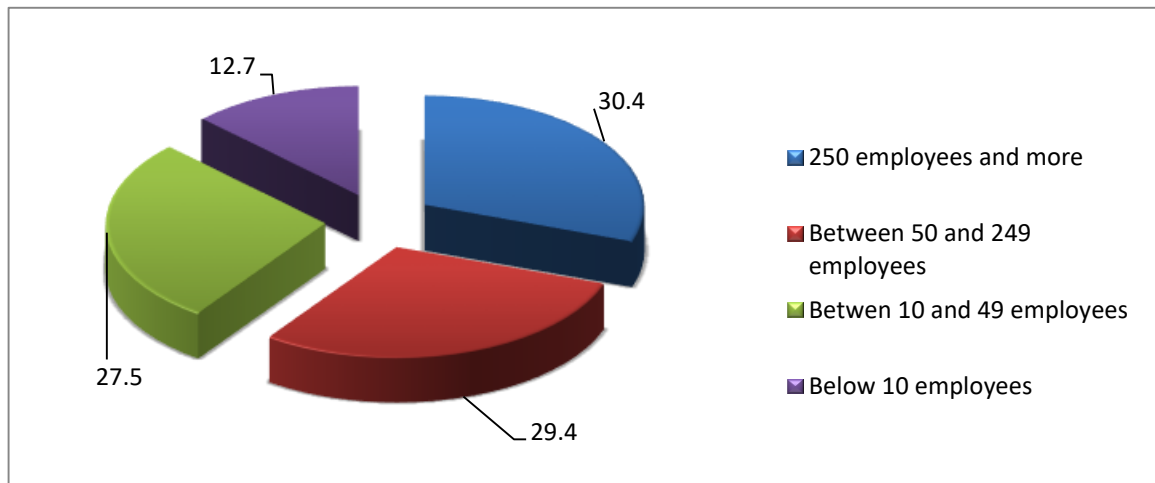
The study concept and research tool in the form of a questionnaire were developed by research and teaching staff of the Faculty of Management and Economics. The electronic version of the form was prepared by the employees of the GUT IT Services Center.

The survey was conducted from February to September 2017 using the Computer Assisted Web Interview (CAWI) method. The electronic questionnaire was distributed to respondents by email. The selection of the research sample was intentional, non-random. It included entrepreneurs from the GUT Career Office database, the database of the GUT Faculty of Management and Economics and members of organizations of entrepreneurs cooperating with Gdańsk University of Technology (Pomeranian Employers and Pomeranian Regional Chamber of Commerce). The research sample consisted of 102 people representing Pomeranian enterprises, diverse in terms of size, length of operation and industry in which they operate.

The authors of the report would like to cordially thank Ms. Monika Downar - Head of the GUT Career Office, PhD, DSc Anna Drapińska - Proxy of the Dean for contacts with the environment at the Faculty of Management and Economics, and Ms Agnieszka Anielska - Specialist for graduate relations and the business environment at the Faculty of Management and Economics for their assistance in conducting the study. Acknowledgments are also directed to partners from the employers: Mr. Zbigniew Canowiecki - the President of Employers of Pomerania and Mr. Sławomir Halbryt - President of the Board of the Pomeranian Regional Chamber of Commerce for helping to reach some of the respondents.

CHARACTERISTICS OF THE TEST SAMPLE

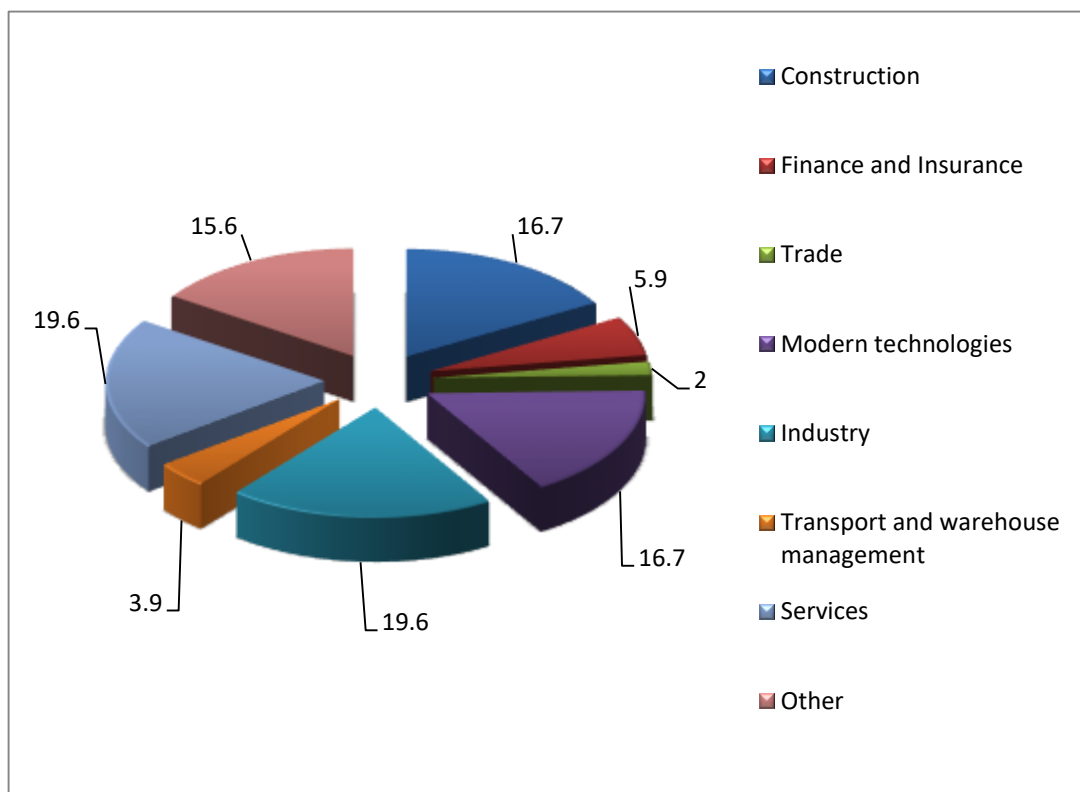
Test sample by company size (in%), N = 102



In the research sample, large enterprises (with 250 employees and more) and medium enterprises (with between 50 and 249 employees) were most frequently represented. The least numerous group were enterprises employing fewer than 10 employees.

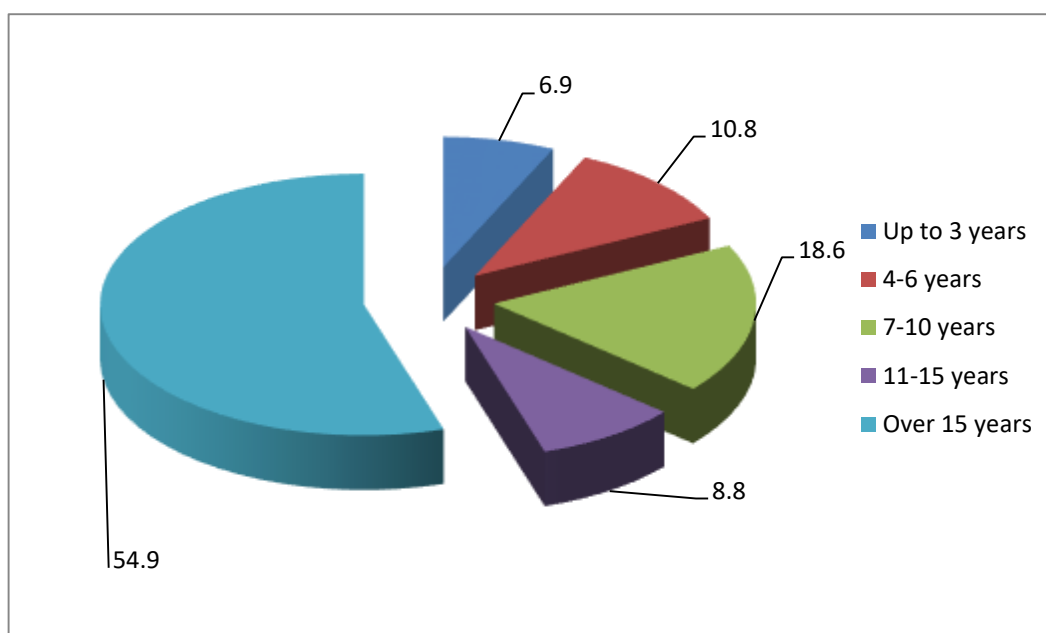
Due to the fact that the research sample was not representative, no conclusion can be drawn about the size of companies in which GUT graduates are most often employed. However, the size of the company can be successfully used as a grouping variable when analyzing the answers obtained from respondents to individual questions. The results of such analyzes will be presented in further parts of the report.

Test sample by industry of enterprise activity (in%), N = 102



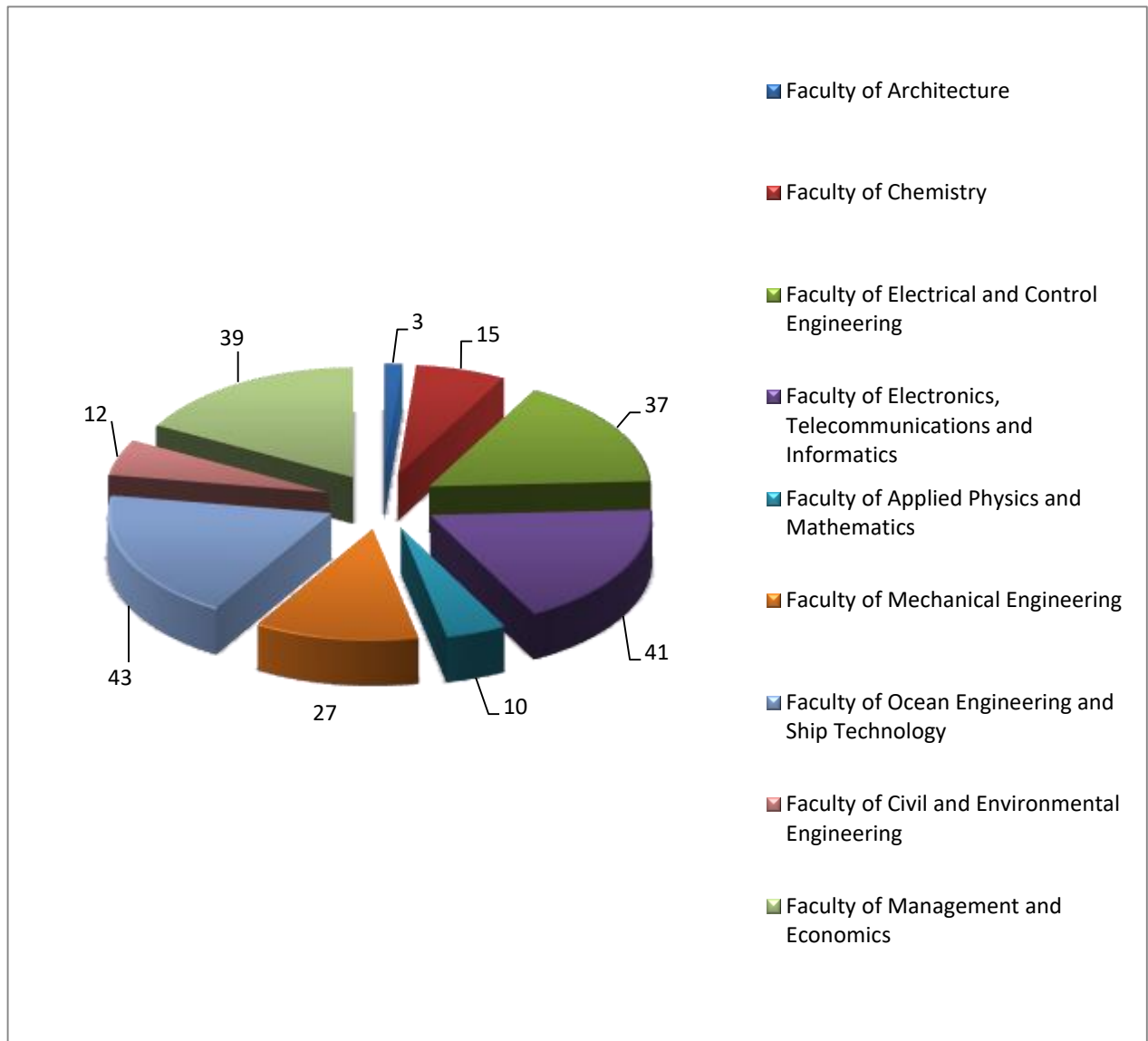
The surveyed enterprises represented various industries, of which the most numerous sectors were: industry and services (19.6% each) as well as modern technologies and construction (16.7% each).

Test sample by length of existence on the market (in%), N = 102



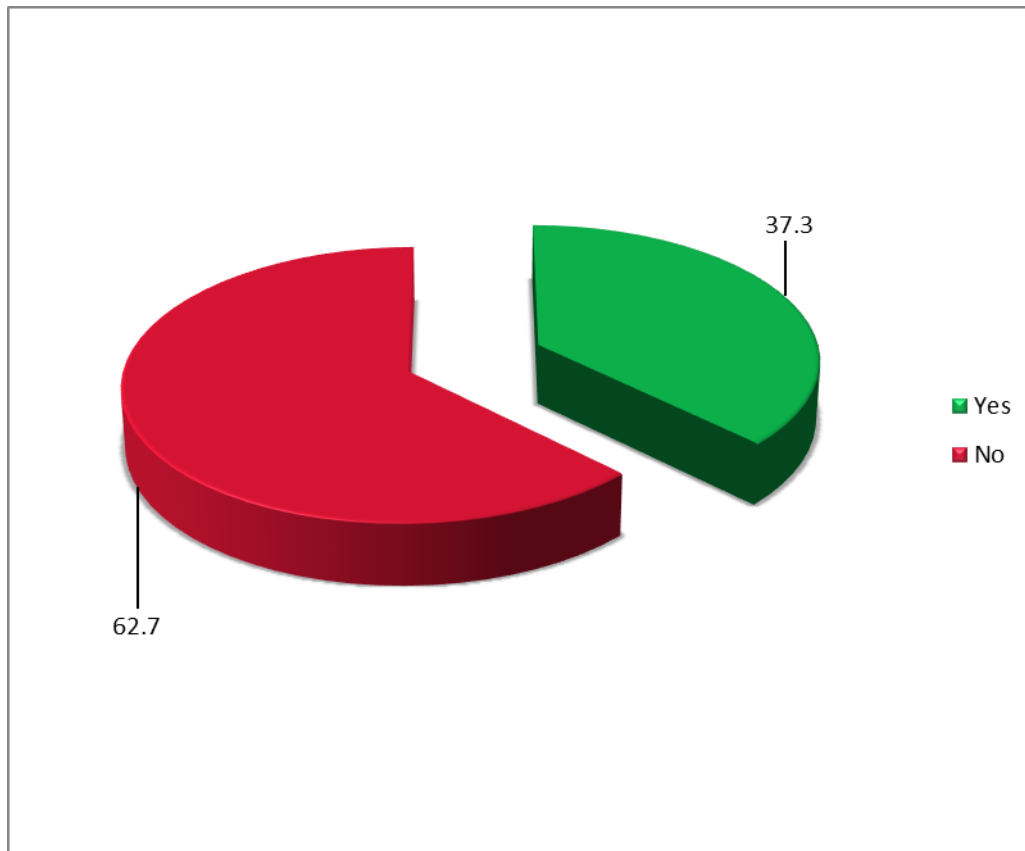
Over half (54.9%) of the surveyed enterprises were characterized by many years of experience on the market, longer than 15 years. Subsequently, there were enterprises operating between 7 and 10 years (18.6%), between 4 and 6 years (10.8%) and between 11 and 15 years (8.8%). The least numerous group were young enterprises, existing for no more than 3 years (6.9%).

Number of GUT graduates from particular faculties employed in the surveyed enterprises, N = 102



The respondents were asked to indicate the GUT faculties, from which the graduates employed by them come. Due to the fact that one enterprise may employ graduates from various faculties, the study participants could select multiple answers and the total of indications is more than 102. The above chart presents the number of indications of individual faculties. Due to the fact that the respondents were not a representative sample, it is not possible to draw conclusions from their declarations about how easy it is for graduates to find employment after graduating from individual GUT faculties. More representative results on this aspect can be found in the report on the professional careers of graduates (Tomczak, Ziemiański, Szeluga-Romańska 2017). On the other hand, it is certainly worth bearing in mind that the opinions on graduate competences presented later in the report will apply to a greater extent to graduates of those faculties, which were more often indicated in the answer to the above question.

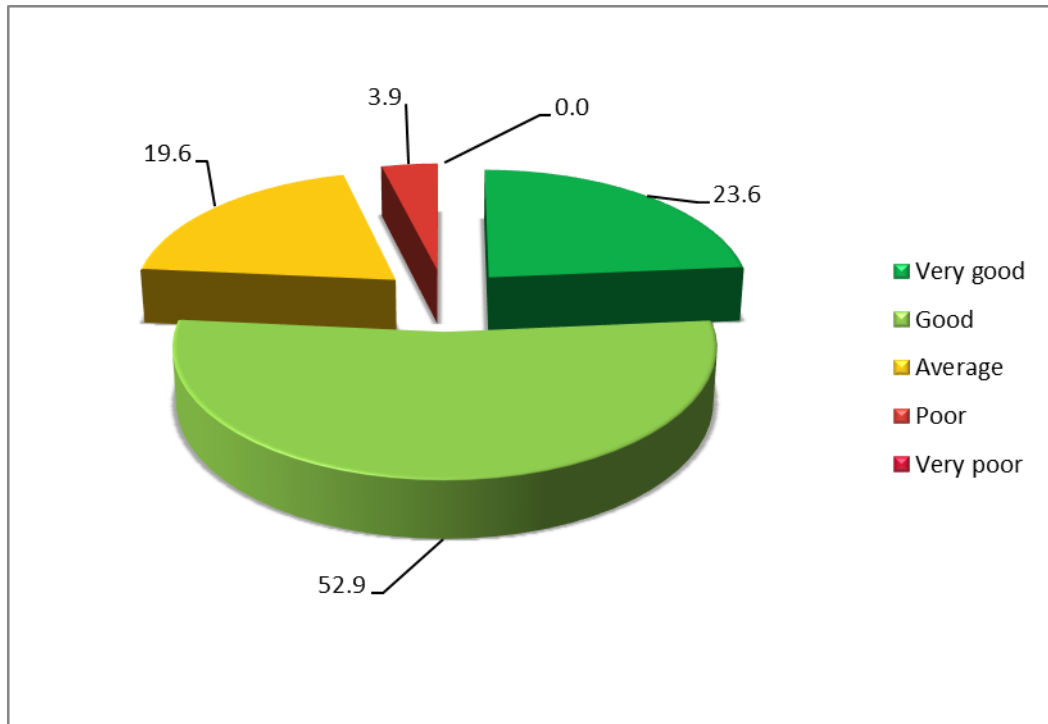
Percentage of respondents who are GUT graduates, N = 102



The respondents were also asked to answer the question whether they themselves are graduates of Gdańsk University of Technology. GUT graduates constituted over a third of the respondents (37.3%), and the remaining 62.7% were people who were not GUT graduates.

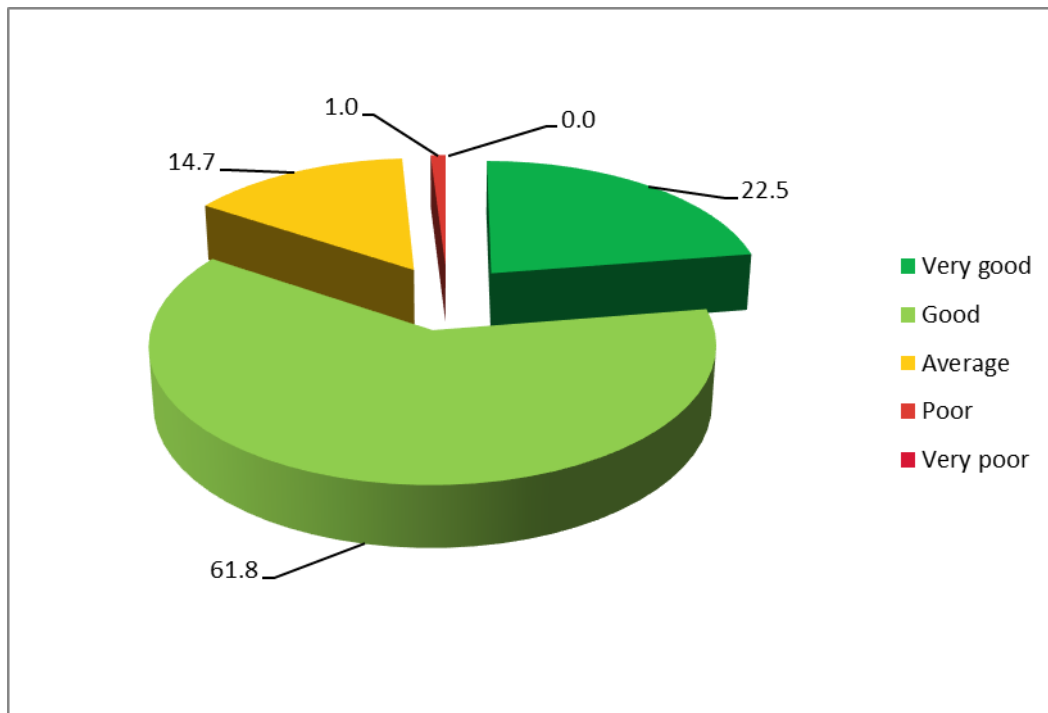
ASSESSMENT OF GUT GRADUATES' COMPETENCE

Assessment of GUT graduates' preparation for the requirements of the workplace (in%), N = 102



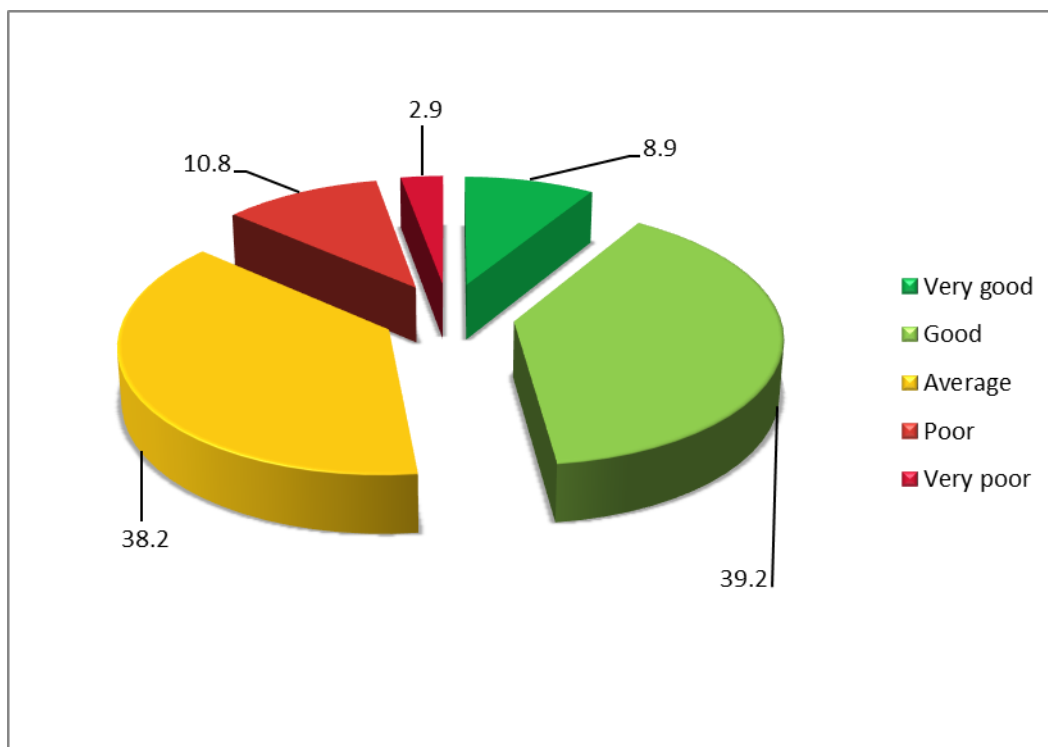
Over half (52.9%) of the surveyed entrepreneurs rated the preparation of GUT graduates for the job requirements as good, while almost every fourth person (23.6%) described their preparation as very good. In total, this gives a high percentage of respondents (over 76%) positively evaluating this parameter. Only 3.9% of respondents rated graduates' preparation poorly. It is worth noting that none of the respondents rated it as very bad.

Assessment of theoretical knowledge of GUT graduates (in%), N = 102



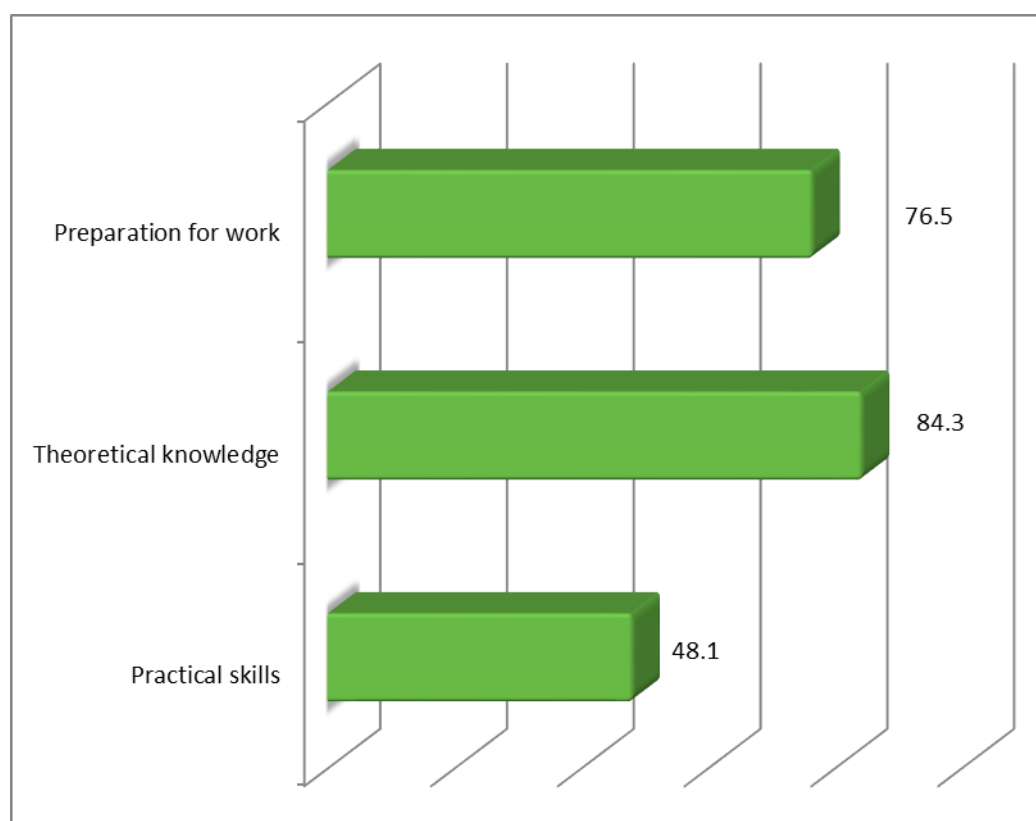
Even more favorable than the entrepreneurs' assessment of preparation for work, is the assessment of theoretical knowledge possessed by graduates. Over 84% of those surveyed rated it as good or very good. Only 1% of respondents rated it badly. Again, no one rated it as very bad.

Assessment of practical skills of GUT graduates (in%), N = 102



Graduates' practical knowledge rating is lower than in the case of the previous two questions. Almost every second respondent (48.1%) described it as good or very good. 38.2% rated it as average, while 13.7% rated it as poor or very poor. This result is consistent with the assertion that among employers there may be a general opinion that, despite the relatively high level of formal education of young people, at the same time the group is often characterized by a lower level of professional and specialist competence (Wojdyło-Preisner, Zawadzki 2015). The result obtained shows that this is also true to some extent for GUT graduates.

Comparison of assessment of preparation for work, theoretical knowledge and practical skills of GUT graduates – 'very good' and 'good' answers (in%), N = 102

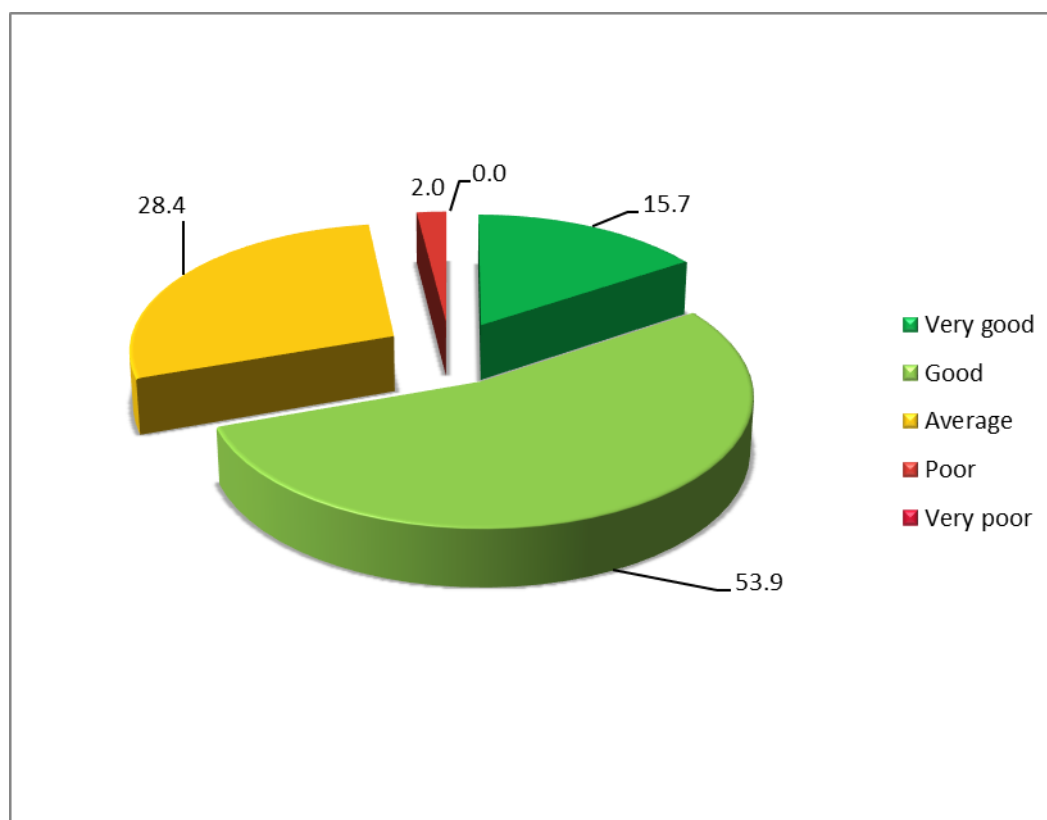


Referring to the assessment of the parameters listed above, there are significant differences in the assessment of the level of theoretical knowledge and practical skills of graduates. In the case of the former, as many as 84.3% of all assessments were 'very good' and 'good'. In turn, in the case of practical skills, there were 48.1% of such answers. In addition, it is worth paying attention to the fact that the assessment of the general preparation of graduates for work was also definitely positive - as many as 76.5% of the answers were assessments indicating very good and good preparation of graduates. One may be tempted to try to interpret the results obtained. They may mean that although the level of practical skills is assessed lower than theoretical knowledge, they are sufficient for GUT graduates to successfully take up their jobs. One of the possible explanations may indicate that entrepreneurs in the era of progressive development of tools and technologies need employees with an ever higher level of specialization. In relation with this, they assess the general preparation of graduates positively, despite the fact that graduates can only acquire some practical skills by fulfilling their duties in the workplace (initially even in a more basic scope). As mentioned in the introduction to the report, universities cannot be expected to equip their graduates with all qualifications needed for any job. Rather, the university's goal should be to strive to develop

attitudes, transfer knowledge and develop skills to start a successful career. Further updating and transformation in the course of work into highly specialized competences should be carried out in accordance with the idea of life-long learning. At the same time, a noticeably lower assessment of practical skills possessed by graduates in comparison with theoretical knowledge may lead to consideration by the university of placing greater emphasis on activities leading to more practical education of students, for example through updated content of subjects or further intensification of cooperation with the environment.

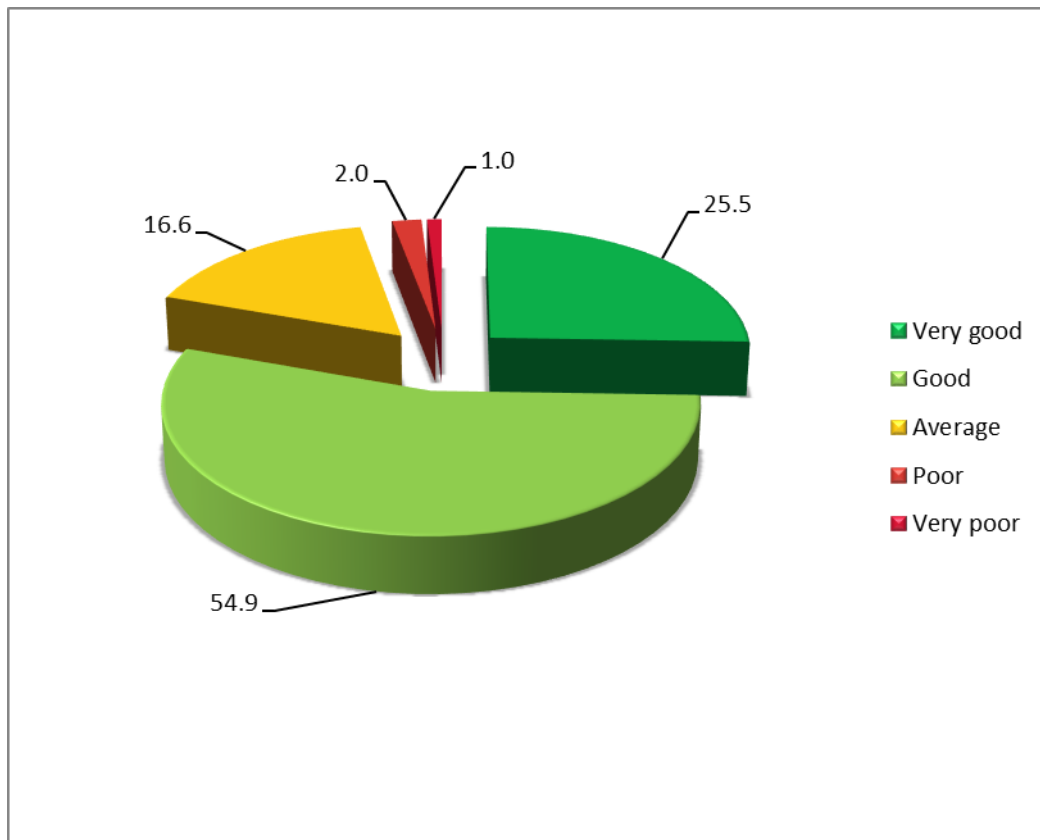
The respondents were also asked to assess several selected competences, key in terms of professional work (Filipowicz 2016). Among them were: specialist and technical competences (directional for a given industry), social (interpersonal) competences and managerial competences (related to employee management).

Assessment of specialist and technical competences of GUT graduates (in%), N = 102



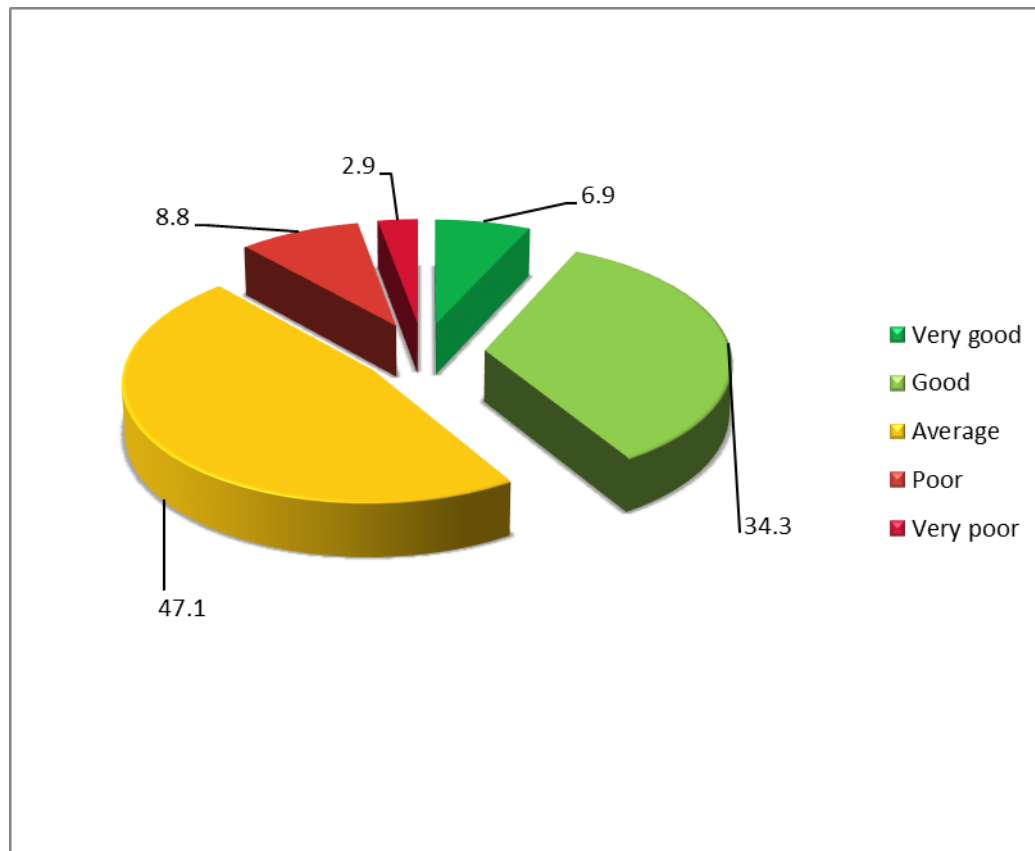
Specialist competences were most often described as good (53.9%), which together with the answers of people evaluating them very well (15.7%) gave a percentage of 69.6% of opinions positively describing the abovementioned parameter. Only 2% of respondents rated the abovementioned competences negatively.

Assessment of social (interpersonal) competences of GUT graduates (in%), N = 102



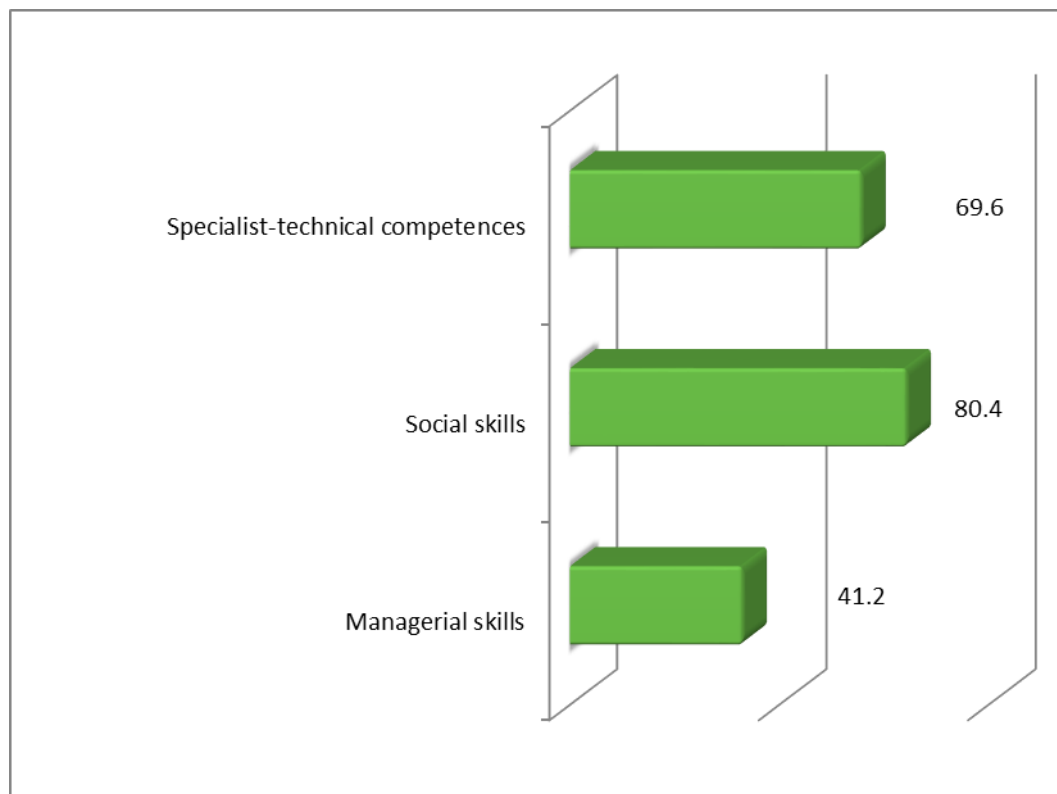
Interestingly, the level of social competence of GUT graduates was rated even higher than in the case of specialist competences. In total, as many as 80.4% of entrepreneurs rated them positively (good or very good). Only 3% of those surveyed were of the opposite opinion. This result seems to correspond with the larger deficit of technical competences described in the introduction and perceived by employers compared to so-called soft skills. It is also likely that the person employing a technical university graduate primarily expects such competences from them, and their possible lack or lower level strongly affects the ability to perform a specific job and is more clearly noticed by the employer.

Assessment of managerial competences (management related) of GUT graduates (in%), N = 102



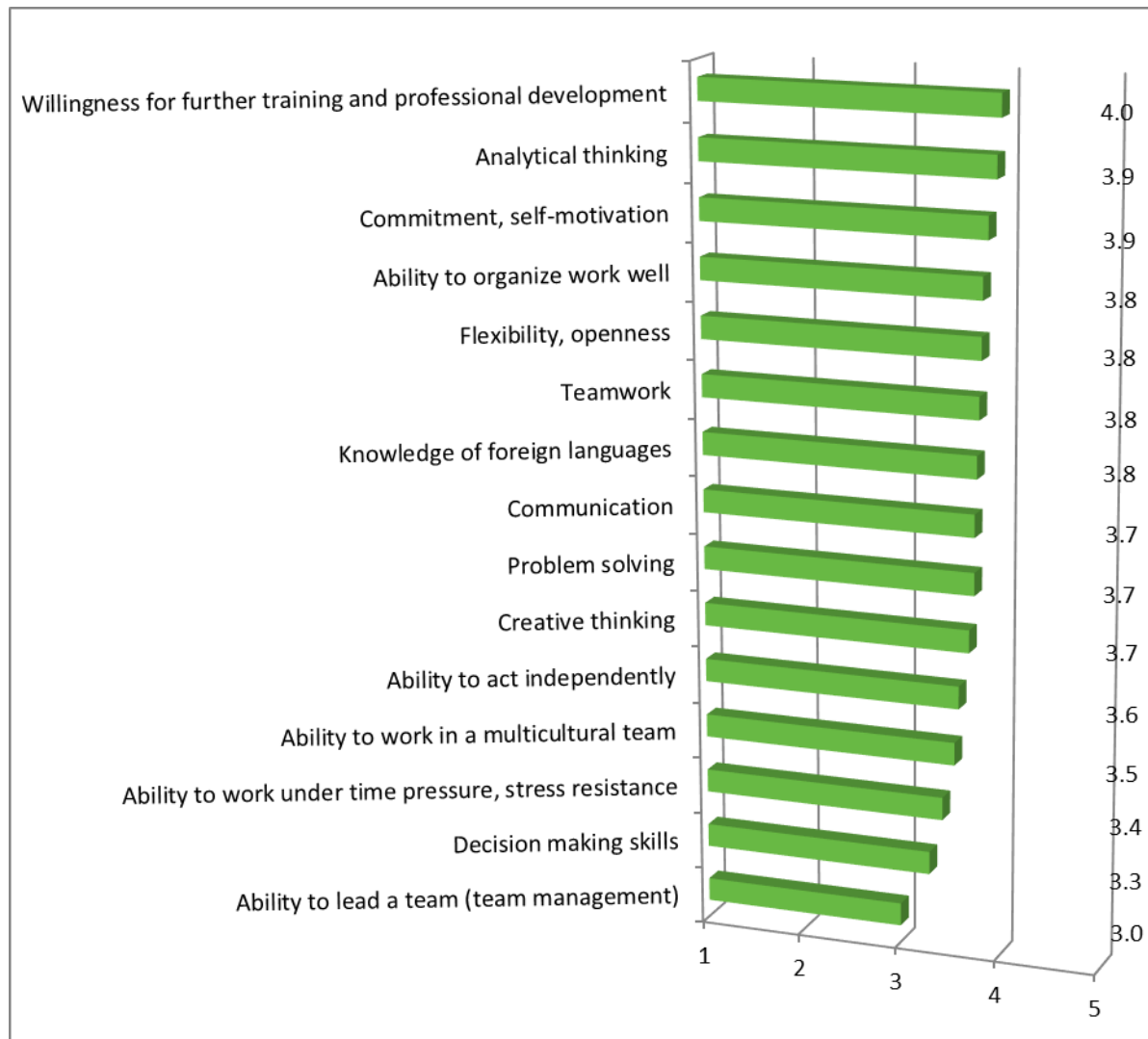
Among the key competences listed, the managerial competences of GUT graduates were rated the lowest. 41.2% of entrepreneurs rated them as very good or good, and 47.1% described their level as average. 11.7% of respondents rated this type of graduates' competence negatively. It is worth noting that the lowest assessment of the level of these competences should not be surprising, because in the course of education (both at the university level and at earlier stages) graduates have the least opportunity to develop managerial competences. Specialist and technical competences are developed during studies on implemented courses, while social competences, for example, as part of work on group projects. The development of managerial competences requires, in turn, the inclusion in the study program of classes related to them and / or practical experience related to managing people. It may be worth considering how the university can intensify its current activities so that graduates are more prepared to take leadership roles.

Comparison of assessment of specialist-technical, social and managerial competences of GUT graduates – ‘very good’ and ‘good’ answers (in%), N = 102



To sum-up, the graph shows the results described above in aggregate form: the percentage shares of the summed ‘very good’ and ‘good’ ratings are presented for each of the three types of key competences analyzed.

Assessment of selected competences of GUT graduates, N = 102 (scale 1-5, arithmetic average)

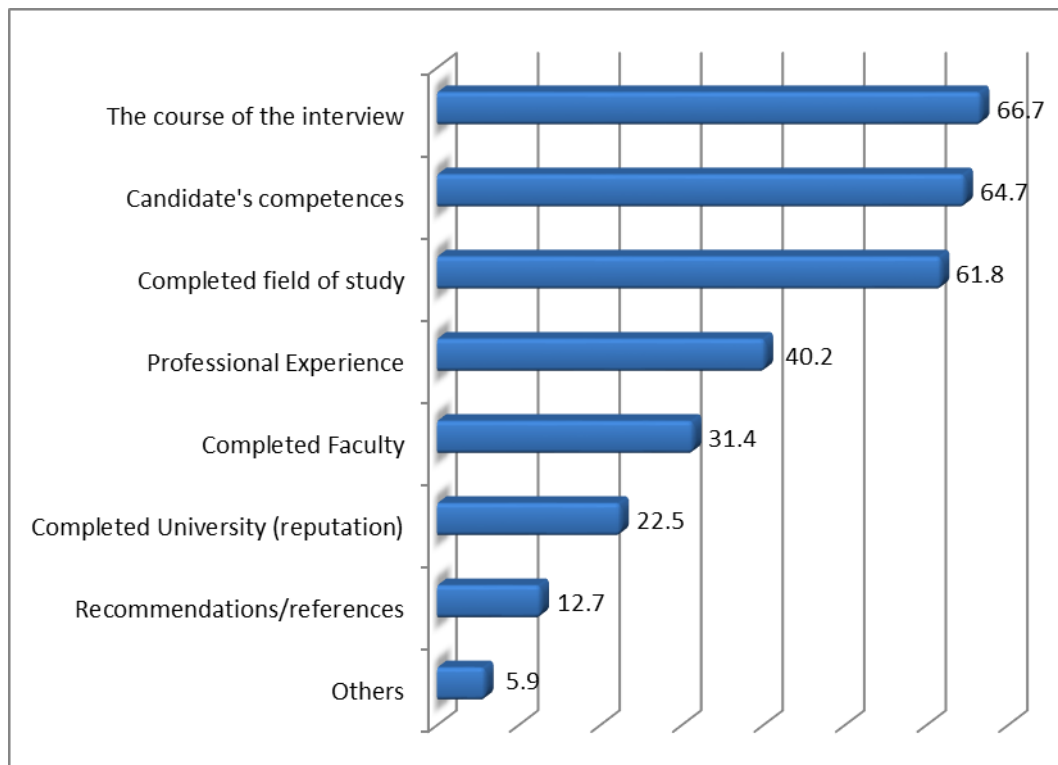


Entrepreneurs were also asked to provide a detailed assessment of selected competences useful in professional work (based on a scale of 1 to 5 - the higher the number, the better the assessment of the level of competence). Using arithmetic mean in the analysis, it was found that almost all of the above-mentioned competencies were rated higher than average. Willingness for further training and professional development was rated the highest, together with the ability to think analytically, and self-commitment and motivation. On the other hand, the lowest scores were obtained in the area of team management skills, decision making skills and the ability to work under time pressure. The ability to lead a team was also the only competence that was rated at an average level (average rating was 3.0).

GROUNDS FOR THE DECISION ON THE EMPLOYMENT OF GUT GRADUATES

The next part of the survey questionnaire was titled 'Grounds for the decision to employ GUT graduates'. The surveyed representatives of enterprises were asked in it both about the key factors determining the employment of a candidate, as well as recruitment methods, the candidate's need to have experience and about cooperation with Gdańsk University of Technology. Obtained answers can be useful both when planning activities aimed at increasing graduates' chances of receiving a job position they apply for, and to indicate areas of cooperation between the university and employers that are worth maintaining and developing.

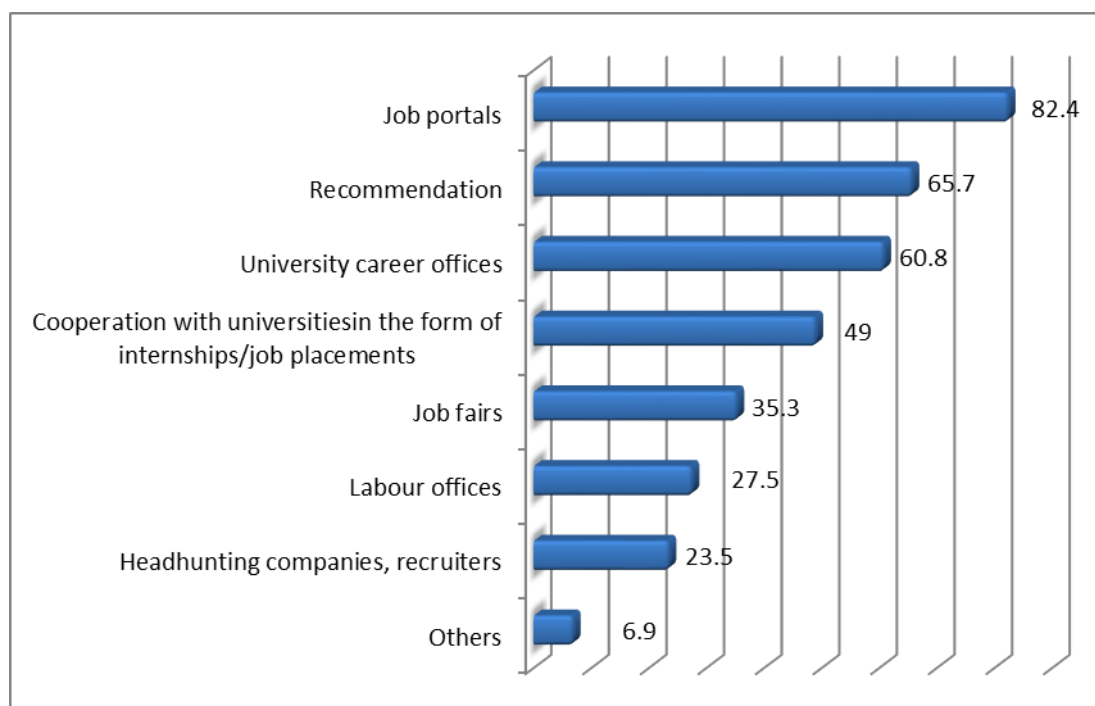
Key factors determining the decision to hire a candidate (in%), N = 102 (does not add up to 100%)



The question regarding the key factors determining the candidate's employment was a multiple-choice question. Study participants could indicate any number of responses. The chart above shows how high percentage of respondents marked each of the factors mentioned. Among the factors determining the employment of a candidate, in the opinion of the surveyed entrepreneurs, three are of key importance (they were indicated by over 60% of respondents). These are: the course of the interview, the candidate's competences and the completed field of study. Other factors, such as professional experience, completed faculty, university and its reputation or references presented by the candidates were less often indicated as key factors. The results obtained lead to interesting conclusions. On the one hand, it is worth noting that the course of the recruitment interview was considered the most important factor. This means that graduates should prepare for it. One may also consider introducing systematic actions at the university aimed at ensuring that GUT graduates develop the ability to prepare properly for the interview and learn how to present themselves during it. The competences of the candidate and the completed field of study are also of great importance for representatives of enterprises, which is probably closely related to the requirements of the given

job. The relatively small number of responses to 'Completed university (reputation)' seems to be interesting. The obtained result suggests that in the opinion of employers it is of relatively small importance (22.5% of respondents indicated the significance of this factor). In the annual research on the career of GUT graduates, obtaining a diploma from a reputable university is a very important source of their satisfaction. Graduates, determining their satisfaction with graduation, rated it at a higher level than satisfaction with completing a given faculty or field of study (Tomczak, Ziemiański, Szeluga-Romańska 2017). In the light of the results presented above, it is worth paying attention to this discrepancy in the perception of graduates and employers employing them, for whom the reputation of university is not so important.

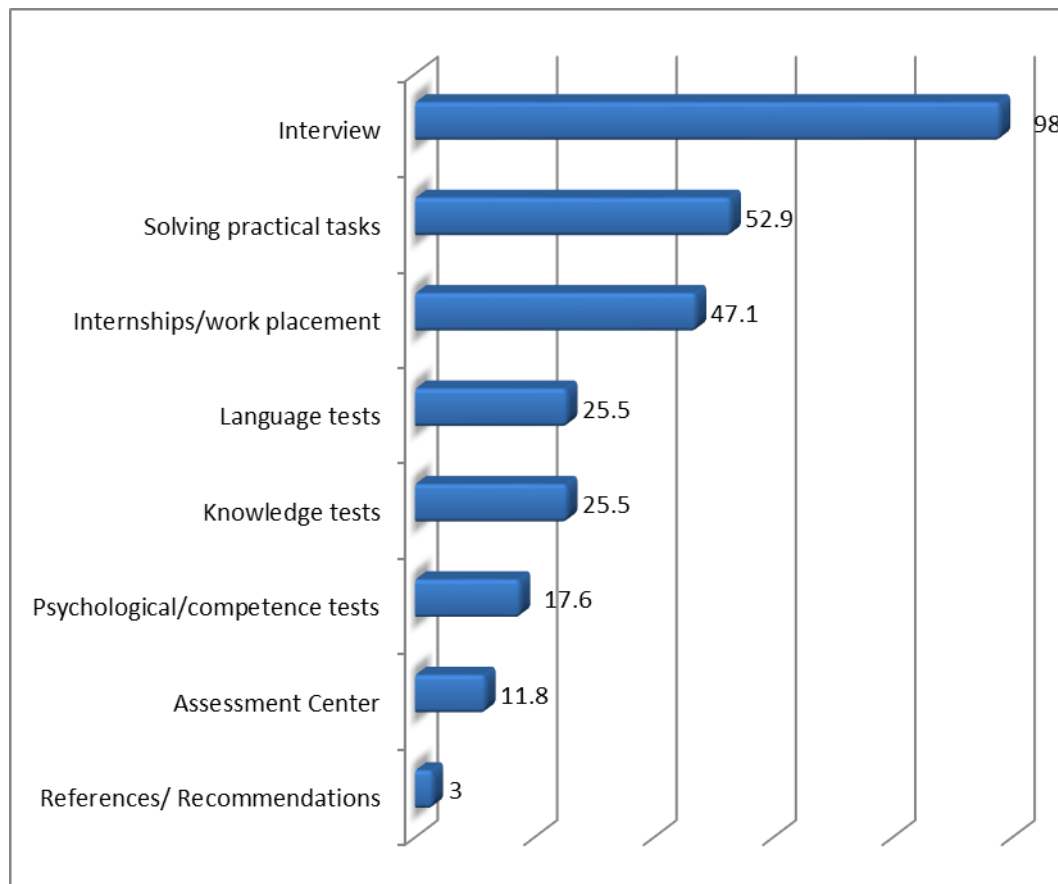
**Ways of recruiting employees as part of external recruitment from the labor market (in%),
N = 102 (does not add up to 100%)**



Entrepreneurs seeking employees on the labor market mainly used internet job portals for this purpose (82.4%). 65.7% used the recommendation of other people and it was the second most frequently indicated way of recruiting employees. Career offices at universities, which were indicated by over 60% of respondents, also played a significant role. The respondents also pointed to participation in job fairs and cooperation with job placement entities representing both the public sector (labour offices) and and private recruitment and headhunting companies.

In the next question, the respondents were asked to indicate methods for diagnosing the competences of job candidates. The results are presented below.

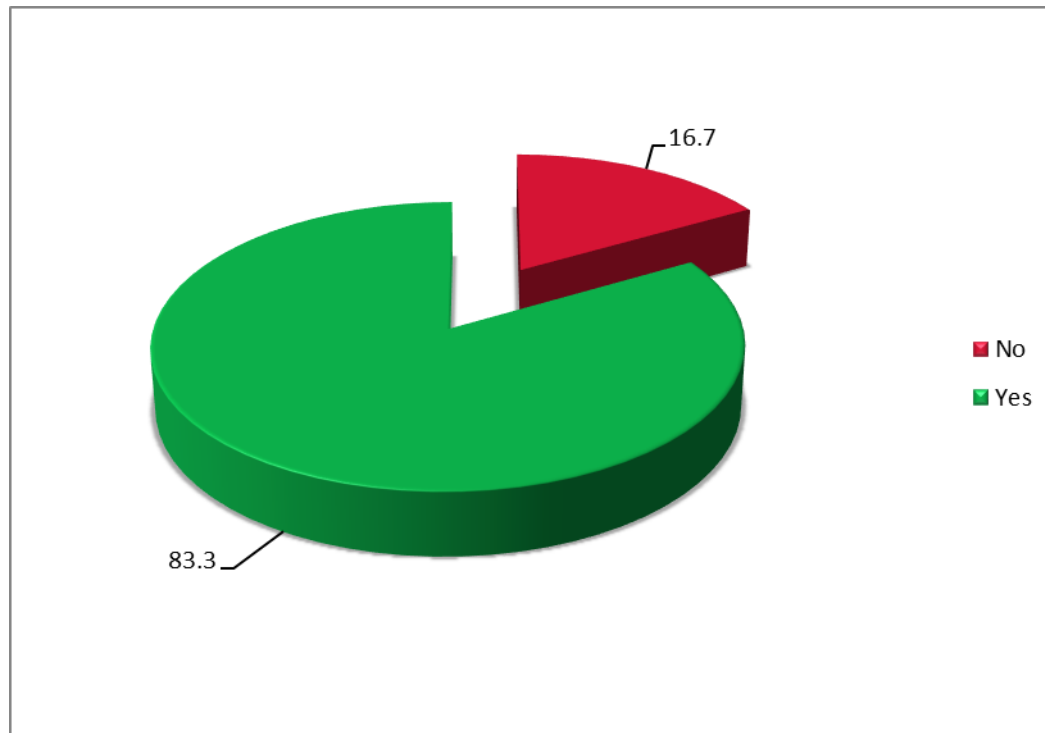
Methods for diagnosing the competences of job candidates (in%), N = 102 (does not add up to 100%)



As part of the employee selection procedure, the candidates' competences were most often diagnosed by means of an interview - this method was indicated by almost all respondents (98%). Over half of the respondents (52.9%) declared the extension of the interview scenario by asking candidates to solve practical tasks verifying their competences. Less than half of the respondents (47.1%) also proposed various forms of internships and work placement for students, trying to reach the most valuable candidates while they were still studying at the university. This activity was also presented as a form of competence diagnosis, because it is common practice to offer a job at a later stage to those persons who demonstrate competences valuable for the organization during the internship. Further, various forms of tests diagnosing competences in the field of foreign language skills, psychological and competence tests as well as the assessment center procedure were also pointed out. Few people also pointed to references and recommendations.

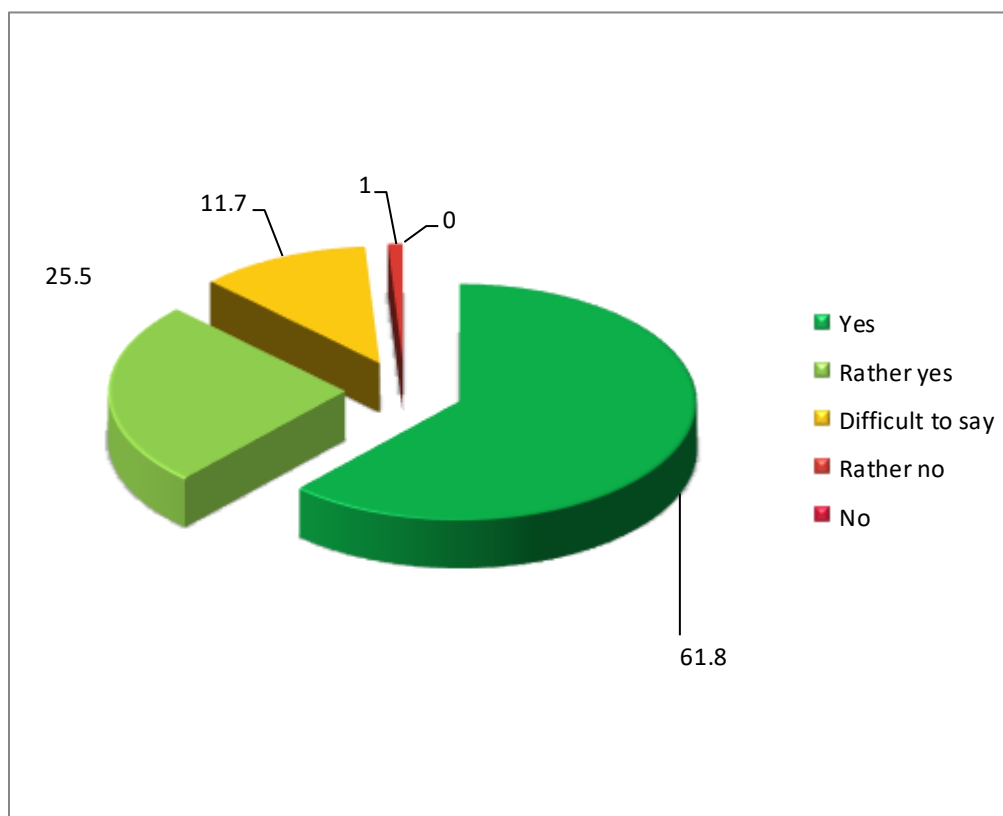
Respondents were also asked whether they had previously employed and would consider employment in the future of a GUT graduate with no professional experience. The obtained answers are presented in the charts below.

Employing GUT graduates without extensive professional experience, immediately after graduating from university (in%), N = 102



In the past, as many as 83.3% of entrepreneurs have employed a university graduate who had no professional experience directly after completing their studies.

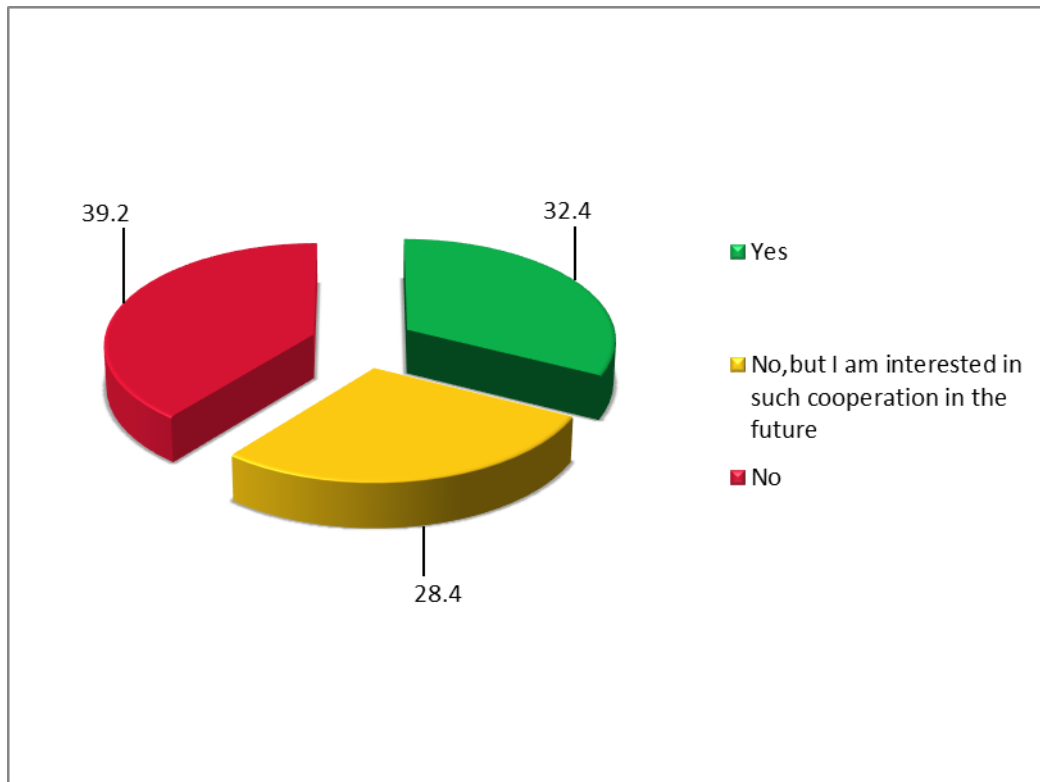
Opinions on the future employment of GUT graduates who do not have extensive professional experience, immediately after graduating (in%), N = 102



Moreover, as many as 87.3% of respondents said that they would be determined or rather determined to employ an inexperienced graduate in the future. Only one person was of the opposite opinion.

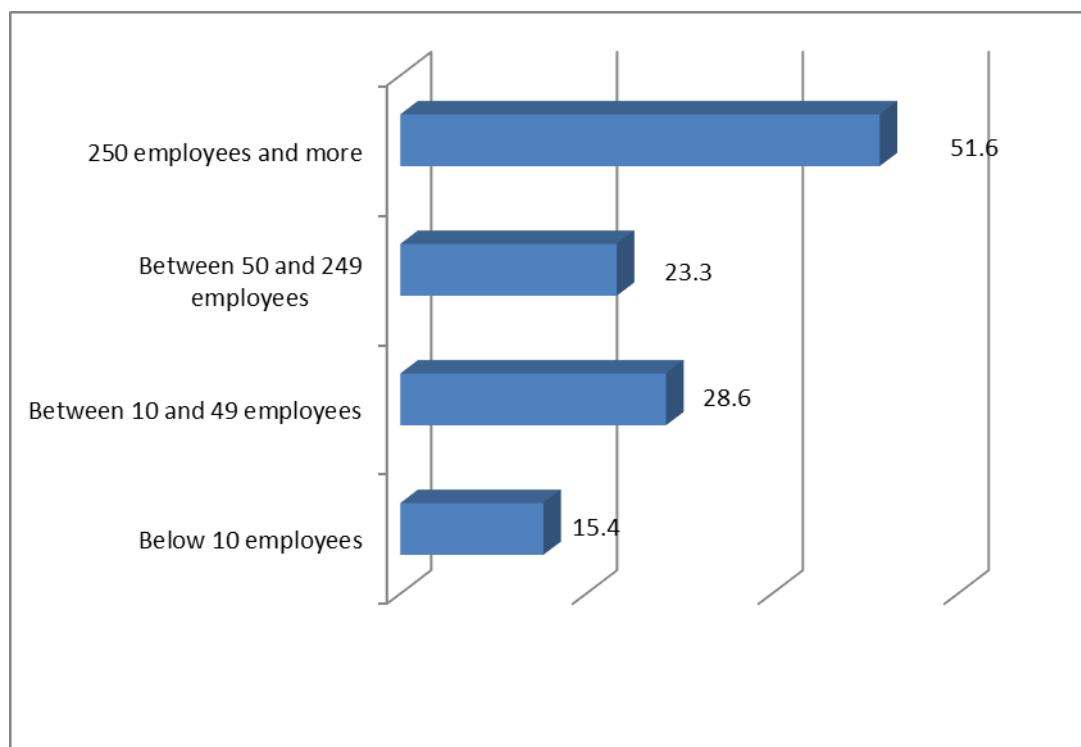
Respondents were also asked whether they are currently cooperating with Gdańsk University of Technology, what the nature of this cooperation is and whether they would like to start it in the case of enterprises not yet involved in this type of activity.

Cooperation with GUT in terms of student internships or work placement (in%), N = 102

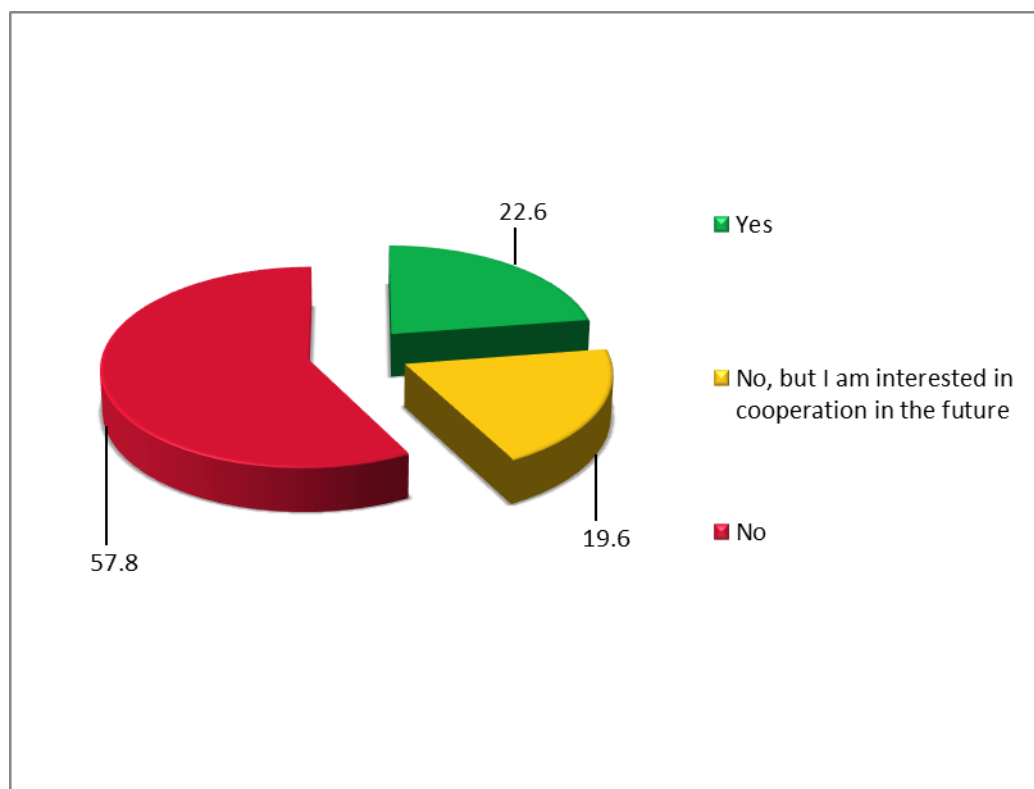


Almost every third (32.4%) of the surveyed entrepreneurs cooperated with GUT in terms of apprenticeship programs or internships, while 28.4% declared willingness to establish such cooperation in the future. In total, therefore, over 60% of respondents are people currently cooperating with GUT or declaring their willingness to cooperate. Further analysis of the answers obtained showed that the percentage of enterprises cooperating with the university is related to their size. Most often this type of cooperation was declared by the largest enterprises (as much as 51.6%), while the least often by the smallest enterprises, in which it was only 15.4%. In addition, people who were its graduates more often declared cooperation with GUT (42.1%) compared to entrepreneurs who were not university graduates (26.6%). This result may indicate the importance of the university maintaining contacts with graduates as one of the factors that may facilitate establishing effective cooperation with the environment.

**Cooperation with GUT in the field of student placement programs or internships
by company size – ‘yes’ answers (in%), N = 102**



Cooperation with GUT in a different form (in%), N = 102



Over 22% of entrepreneurs also declared cooperation in a form other than student internships. The respondents were asked to describe the type of this cooperation. It mainly concerned the implementation of joint projects, participation in job fairs, organization of information meetings, lectures, seminars and workshops for students during which the company is presented. Less than 20% expressed willingness to establish future cooperation with the university other than internships and work placement.

SUMMARY

The results obtained as part of the research and described in this report can be quite optimistic. First of all, it is worth emphasizing that the majority of respondents positively assessed the level of preparation of GUT graduates for the occupied position. The theoretical preparation of graduates and social competences were rated very highly. This is particularly important when we consider the fact that, according to the surveyed entrepreneurs, one of the key factors determining the decision to employ a specific candidate are their competences. The respondents, assessing the level of individual types of competences, indicated that theoretical competences of graduates are higher than the practical ones, which should not be surprising, given often the small professional experience of those who are just graduating. At the same time, it is worth emphasizing the importance of declarations obtained from the vast majority of respondents regarding the willingness to employ GUT graduates without extensive professional experience. This result may also confirm the fact that graduates have appropriate competences. Certainly, its interpretation should take into account that there is currently a shortage of employees on the labor market, which means that employers have less opportunity to make a strict selection. Nevertheless, a significant proportion of respondents also in the past employed GUT graduates without experience, and assessed their competences positively. It is consistent with the fact that some of the competences that characterize GUT graduates, which were rated by the respondents the highest, such as: willingness for further training and professional development as well as self-involvement and motivation can allow them to quickly acquire the necessary experience and practical skills.

The results of the research presented in the report aiming to examine the opinions of entrepreneurs in the scope of assessing the competences of university graduates, are a valuable source of knowledge that can be used to assess the current state and indicate further possible actions. The beneficiaries of the research are not only the university and entrepreneurs, but also students and even potential candidates for studies. This type of research contributes to continuing the dialogue and strengthening cooperation between the university and entrepreneurs, integrating the university environment with the socio-economic environment, and can also be an element of promotion among potential candidates for studies.

Finally, it is worth pointing out several possible actions that are worth starting, continuing or intensifying. First of all, it will be justified to continue the current research. It will be expedient to extend the research sample of employers, which will increase the level of research relevance and allow to conclude more reliably about graduates of all GUT faculties. In addition, at least some of the results obtained in the study should also be disseminated among university students. Knowing what their potential employers take into consideration may on the one hand allow for better preparation for the recruitment process and increase of employability in the desired position, and on the other, cause verification of certain common opinions (for example about the need to have significant professional experience immediately after graduation). For the university as a whole and for individual faculties, significant conclusions may in turn relate to the possibility of cooperation with the business environment, which is constituted by enterprises employing GUT graduates. It is worth noting that the surveyed entrepreneurs mostly declared cooperation or willingness to start it. Even taking into account the fact that the sample is unrepresentative, these declarations indicate that at least among some employers there is a desire to strengthen cooperation with Gdańsk University of Technology. What's more, among the respondents it was more often visible in people who themselves graduated from GUT. This result seems to clearly indicate the need to keep in touch with people who have obtained a university diploma and invite them to cooperate, which will allow to build social capital that can be used both in good times when graduates have no problem finding a job, and in times of slowdown when it gets harder.

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