



## ***Gender and Labor Market Situation among Technical University Graduates in Poland***

### **ABSTRACT**

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**RESEARCH OBJECTIVE:** The aim of article is to analyse the professional situation of technical university graduates in Poland, focusing on the gender as the key impact factor.

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**THE RESEARCH PROBLEM AND METHODS:** The research problem was to examine the influence of gender on the employee's professional situation among technical university graduates in Poland. Empirical data was gained as a result of six annual quantitative research projects, conducted in the years 2012-2017 on a total sample of almost 8000 respondents.

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**THE PROCESS OF ARGUMENTATION:** Firstly, the method of empirical research and hypotheses were described. Secondly, the relation of gender and the situation in the Polish labor market was presented and then the situation of technical university graduates within the contemporary labor market were outlined. Finally, there was a presentation of research results and summary with recommendations.

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**RESEARCH RESULTS:** The results confirm the influence of gender on the employee's professional situation, which is worse for women, also in the case of technical university graduates. Women fared worse than men i.a. in terms of the percentage of working individuals, the length of the period of searching for employment upon graduation and they were paid less than men. Nevertheless, it should be emphasized that the situation of both the women and the men surveyed can be described as favourable.

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**CONCLUSIONS, INNOVATIONS, AND RECOMMENDATIONS:** It can be hoped that the differences will be reduced. The changes should focus primarily on two key areas: the amount of remuneration received and the nature of the workplace.

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→ **KEYWORDS:** GENDER, TECHNICAL UNIVERSITY GRADUATES, POLISH LABOR MARKET, EMPLOYMENT

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## STRESZCZENIE

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### *Płeć i sytuacja na rynku pracy wśród absolwentów uczelni technicznych w Polsce*

**CEL NAUKOWY:** Cel artykułu stanowi analiza sytuacji zawodowej absolwentów uczelni technicznej w Polsce, koncentrując się na płci jako kluczowym czynnikiem wpływu.

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**PROBLEM I METODY BADAWCZE:** Problemem badawczym było zbadanie wpływu płci na sytuację zawodową pracowników wśród absolwentów uczelni technicznej w Polsce. Dane empiryczne pozyskane zostały w rezultacie sześciu ilościowych projektów badawczych przeprowadzonych w latach 2012-2017 na łącznej próbie niespełna 8000 respondentów.

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**PROCES WYWODU:** Na początku opisano metodę badania empirycznego i hipotezy. Następnie przedstawiono relację pomiędzy płcią a sytuacją na polskim rynku pracy oraz scharakteryzowano sytuację absolwentów uczelni technicznej na współczesnym rynku pracy. Zaprezentowano również wyniki badań wraz z podsumowaniem i rekomendacjami.

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**WYNIKI ANALIZY NAUKOWEJ:** Wyniki badań potwierdziły wpływ płci na sytuację zawodową pracowników, która jest mniej korzystna dla kobiet, również w przypadku absolwentów uczelni technicznej. Wśród kobiet odsetek osób pracujących był niższy, okres poszukiwania pracy był dłuższy oraz były one wynagradzane gorzej niż mężczyźni. Pomimo to warto podkreślić, że sytuację zarówno ankietowanych kobiet, jak i mężczyzn można określić jako korzystną.

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**WNIOSKI, INNOWACJE, REKOMENDACJE:** Można mieć nadzieję, że wyżej wymienione różnice zostaną zredukowane. Zmiany dotyczyć powinny przede wszystkim dwóch kluczowych obszarów: wysokości wynagrodzenia oraz charakteru miejsca pracy.

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→ **SŁOWA KLUCZOWE: PŁEĆ, UCZELNIE TECHNICZNE, POLSKI RYNEK PRACY, ZATRUDNIENIE**

## Introduction

Gender, apart from education, age and place of residence, is one of the most important determinants of a worker's professional situation, thus constituting one of the key traits used in labor market analysis. This factor may have an impact on the ability to find and keep a job. It may also be reflected in the amount of remuneration received or affect the nature of the job, the type of profession or the probability of work in given industries, as well as the productivity of work, hourly workload and the stability of employment. The aim of this article is to analyse the professional situation of technical university graduates in Poland, focusing on the gender as the key impact factor.



## Method of research and hypotheses

The research results presented, analysed and interpreted below are part of the outcomes of six annual surveys of the professional careers of GUT graduates conducted in the years 2012-2017.<sup>1</sup> The selection of the research sample was purposive and consisted of individuals who had attained the status of a graduate in the two years prior to their participation in the study, i.e. the graduates from the years 2010-2015.<sup>2</sup> They were graduates from all the nine faculties of GUT and of the first and second degree studies. Due to the diversity of research sample sizes in particular years, as well as the diversity of the number of respondents representing individual faculties and majors, the sample is characterized by limited representativeness. It is worth, however, to note the large number of graduates surveyed, which totalled 7917 individuals (47.8% women and 52.2% men) in the years 2012-2017.

Taking into consideration the issues that are the subject of this study and the rather homogeneous structure of the researched group, consisting of young people who have higher education obtained at a technical university and most frequently little professional experience, as well as live and work mainly in the northern part of Poland, in the pomorskie voivodeship, the analysis of empirical data was focused on the key variable, being the gender of the respondents. Before starting the cycle of reported studies, there was a set of preliminary hypotheses created.

Main hypothesis:

(H) – The gender is a factor influencing professional situation of technical university graduates.

Detailed hypotheses:

(H1) – The percentage of working individuals among technical university graduates is lower for women.

(H2) – The time of employment searching upon graduation among technical university graduates is longer for women.

(H3) – The percentage of technical university graduates' job incompatibility with completed studies profile is higher for women.

(H4) – The level of salaries among technical university graduates is lower for women.

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<sup>1</sup> The surveys were conducted with the use of the CAWI method within six research projects financed with the statutory funds of the GUT and implemented by the GUT's Graduate Monitoring Team.

<sup>2</sup> The two year after graduation period was chosen in order to fulfill the requirements of Polish higher education legal acts.



## Gender and the situation in the Polish labor market

The causes of differentiation of women's professional situation due to gender can be traced back to historical circumstances. It was not until the twentieth century that the right of women to work became commonplace and obvious. Despite the fact that the Polish labor market has been dynamically changing over the last twenty years, i.e. as regards the structure and level of employment, today the situation of women today is still less favourable than that of men. The economic activity rate in the fourth quarter of 2015 amounted to respectively: 48.6% for women and 65% for men. However, the unemployment rate among women was slightly higher (by 0.3%) than among men and amounted to 7.1% in the same period (*Kobiety i mężczyźni na rynku pracy*, 2016, pp. 2, 11).

Quite significant for the professional situation of employees – and women in particular – is their family situation (with having children as the most important factor). According to the results of research, mere presence of minor children constitutes an important factor. However, in the discussed context their total number, i.e. the size of the family, is not very significant and does not affect the employment of women in Poland (Baranowska-Ratajand & Matysiak, 2016, pp. 343-367). On the other hand, the professional work of mothers is strongly related to the age of the youngest child dependent on their family. In the case of one-year-old children, the percentage of working mothers amounts to approximately 45%, while in the case of pre-school children it increases up to about 75%. At the same time, in comparison to men gainfully employed women have more difficulty combining professional and family responsibilities. Difficulties related to access to childcare (mainly due to the cost of such care) make it difficult to return to the labor market after maternity leave (Czarnik, Kasperek, & Magierowski, 2015, p. 28).

Occupational gender segregation (Nitescu, 2016, p. 112), having primarily negative connotations, is also noticeable in the labor market. In this case, stereotypes in the area of ideas related to the so-called "male" or "female" professions, as well as the discriminatory behaviour of employers resulting from their own preferences or the preferences of their employees or customers, can be pointed out as the main factors of influence (Czarnik & Kasperek, 2015, p. 31). The occupational segregation may be horizontal or vertical in nature. Its horizontal dimension consists in insufficient representation or overrepresentation of one gender within a given sector or profession. On the other hand, vertical segregation does not refer to a particular sector or occupation and is reflected in the unequal representation of both genders in managerial positions (Nitescu, 2016, pp. 112-113). The phenomenon of employee discrimination on grounds of gender is primarily a result of the expectations and rules of behaviour, duties and privileges of men and women in a given culture. The traditional division of roles is also reflected in the society's hierarchy of values related to performed work and its prestige (Tracz-Dral, 2013, p. 22). Nevertheless, occupational segregation is also a natural phenomenon being a result of obvious gender differences. They are related to discrepancies with regard to the preferences and predispositions to perform certain types of work activities, first of all requiring

physical strength. They also entail legal barriers to the work of women in occupations that require significant physical effort or are related to health risks. Occupational segregation is also influenced by the aforementioned maternity issue, and as a result, decisions made by women regarding childcare leaves. It may also encourage women to choose professions characterized by slower devaluation of competences (Czarnik, Kasperek, & Magierowski, 2015, p. 31). With regard to all occupational categories, women less often than men occupy managerial positions – especially at the second and the highest level (Czarnik, Kasperek, & Magierowski, 2015, p. 34). Gender also implies a difference in the amount of remuneration received for the performed work. According to the research of the Polish Agency for Enterprise Development (Czarnik, Kasperek, & Magierowski, 2015, pp. 34-36), the amount of remuneration declared by women is about 20% lower than in the case of men. Greater involvement of women in childcare, and thus reduced working hours, breaks in employment or choosing jobs that are easier to reconcile with family life are factors that drive down income levels.

It is worth emphasizing that gender as a factor influencing the job situation is an important not only in relation to the Polish labor market, but rather universal in nature and common in Europe and around the world (Olivetti, 2011; Sianou-Kyrgiou, 2012, pp. 112-128; Nitescu, 2016; Bičáková, 2017).

## Technical university graduates and the contemporary labor market

The considerations in the text below focus primarily on the issue of gender in the context of the situation in the labor market, but of course the other socio-demographic characteristics of university graduates, such as higher education and young age, and moreover, the characteristics of the labor market to which the graduates have access, are also significant.

First of all, it is necessary to take into account higher education, which translates into high formal qualifications. It constitutes a key factor influencing the position in the labor market, due to the fact that it prepares its participants for starting future professional activity by providing them with necessary skills (Ionescu & Cuza, 2012, pp. 130-144). It is particularly important for working women – according to data for the fourth quarter of 2015, they were the largest group (42.3% of all the employed) with higher education, while in the case of men it was only over twenty per cent (*Kobiety i mężczyźni na rynku pracy*, 2016, p. 5). In addition, since women are on average more educated than men, as a result they enter the labor market later (Czarnik, Kasperek, & Magierowski, 2015, p. 27). The economic activity rate for men reaches a maximum in the 30-34 age range, while for women it peaks in the 40-49 age range (*Kobiety i mężczyźni na rynku pracy*, 2016, p. 3). Higher education is associated with material benefits, reflected i.a. in the level of obtained income, which obviously affects the economic position. It also includes intangible benefits (Pukelis & Pileičikienė, 2012, pp. 140-167), related to the sense of professional and self-fulfillment, as well as the prestige of one's profession.

Another important factor influencing the situation of the analysed group is a young age, which is usually related to little professional experience. Consequently, employers are quite likely to believe that despite the relatively high level of formal education of young people they are often characterized by a deficit of professional and specialized competences (Brada, Marelli, & Signorelli, 2014, pp. 556-557; Wojdyło-Preisner & Zawadzki, 2015, p. 56). It is quite significant in the context of their professional situation, making it rather difficult (Lundahl, 2011; Bykowski et al., 2012, pp. 182-193; Garrouste & Rodrigues, 2012; Pacuska, 2014, pp. 4-11; Jelonek, 2015), which in turn makes the problem of integrating young people in the labor market a very important issue (Ryan, 2001; Wolbers, 2007, pp. 189-210). As a rule, the unemployment rate among youth is much higher than its average level (Brada, Marelli, & Signorelli, 2014, p. 556). Moreover, young women are even more at risk of unemployment than men (Wojdyło-Preisner & Zawadzki, 2015, p. 64).

Furthermore, another key factor is the specificity of the labor market available to the employee, which is manifested by the need for specific worker competencies. The development of new technologies has an impact on the level and structure of employment, reflected in the growing demand for specialist skills and qualifications (Pukelis & Pileičikienė, 2012, pp. 140-167), which obviously translates into the employability of university graduates (Tomlinson, 2012; Pavlin & Svetlik, 2014). In the pomorskie voivodeship, where most of the Gdańsk University of Technology (GUT) graduates are employed, there is a group of professions that are deficient, i.e. those in which the supply of labor is not able to meet the demand for employees. Formal qualifications for the performance of many of them can be obtained in the course of studies at GUT. These are mainly computer science professions and occupations in the construction industry (Janiszewska & Wiśniewska, 2015, pp. 9-12).

## Research results

### The dynamics of access to the labor market

By analysing the percentage of individuals working at the time of the survey, the disproportion described above is highlighted. In all six phases of the research, the percentage of working men was higher than that of women. However, the difference was not large and ranged from 2.5 to 7.5 percentage points in particular years. It is worth pointing out that the percentage of individuals who did not succeed in starting work after graduation is low for both genders. In the years 2012-2017 it ranged from 1.3 to 11.9% (Table 1).

Table 1  
The time of starting work by gender, 2012-2017 (%)

Period of searching for empl.	2012		2013		2014		2015		2016		2017	
	f	m	F	m	f	m	f	m	f	m	f	m
Immediately after graduat.	46.5	64.7	42.4	61.6	48	62.1	46.9	60.2	46.9	66.2	58	69.5
1-3 months	22.6	16.7	19.1	19.2	18.2	17.1	17.1	17.3	20.7	16.9	16.5	14.9
4-6 months	12.6	12	14.1	9.1	11.5	10.4	11	10.1	10	6.5	6.6	7.5
7 months – 1 year	8.2	3.3	10.7	3.6	7.2	3.7	8.9	4	5.8	3.7	4.3	3.5
More than – 1 year	6.3	2	4	2.5	7.2	4.2	4.2	2.7	5	2.3	4.6	2.1
No employment	3.8	1.3	9.7	4	7.9	2.5	11.9	5.7	11.6	4.4	10	2.5

Source: own work based on research results.

An important factor in the context of assessing the situation of young workers in the labor market is the ease of overcoming the barrier between studying at the university and participating in the labor market, reflected in length of the period of searching for employment. In this case, gender disparities among respondents are higher. The surveyed men were more likely to enter the labor market faster. Most of them (more than 60%) declared that they found a job immediately after graduation. In the case of women this percentage was several percent lower. Women are also predominant in the group of individuals who had most difficulty finding a job, i.e. they searched for it for more than 7 months after graduation (Table 1).

### Compatibility with the chosen major

The respondents were also asked to assess in a subjective way whether their current professional work could be described as compatible with the major they chose at the university. This is important in the context of evaluating the selection of the content of curricula offered during the course of study with a view to the demand for specific employee competencies within the labor market, as well as in the perspective of the previously discussed phenomenon of professional segregation. In the case of all editions of the survey, the vast majority of respondents responded affirmatively to this question, although men were more likely to agree. The differences in responses depending on gender ranged from several to less than 20 percentage points (Table 2).

Table 2

*The compatibility of the work with the chosen major by gender, 2012-2017 (%)*

The compatibil. of the work with the major	2012		2013		2014		2015		2016		2017	
	f	m	f	m	f	m	f	m	f	m	f	m
No	29	13.3	22.3	14.7	28.8	21.4	19.6	8.2	15.1	5.6	20.4	11.7
Yes	71	86.7	77.7	85.3	71.2	78.6	80.4	91.8	84.9	94.4	79.6	88.3

Source: own work based on research results.

## The amount of remuneration

The gender of the respondents is also reflected in the level of their remuneration – in this case the observed differences are most significant. Men declared a significantly more favourable situation in this respect, as they predominated in the group with highest remuneration (between 3501 and 5000 PLN net and over 5000 PLN net per month). Women, on the other hand, predominated in the two lowest remuneration ranges, respectively: up to 1500 PLN net and between 1501 and 2500 PLN net per month (Table 3).

Table 3

*The amount of net remuneration by gender, 2012-2017 (%)*

The amount of remun.	2012		2013		2014		2015		2016		2017	
	f	m	f	m	f	M	f	m	f	m	f	m
Up to 1500 PLN	13.6	3.3	19.7	6.9	21.4	6.3	13.1	3.7	7	2	5	2.8
1501 to 2500 PLN	37.4	26.2	38.6	20.9	33.2	15.3	35.8	17.4	33.4	15.1	33.8	14.5
2501 to 3500 PLN	24.5	22.8	18.9	24.9	20.6	21.9	19.8	25.2	23.9	23.8	33.1	27.9
3501 to 5000 PLN	5.2	16.8	6.4	17.6	7.1	21	6.5	17.3	10.2	23.3	13	22.2
Over 5000 PLN	5.8	14.1	3.9	13.2	3.4	19	2.9	17.3	5.1	18.7	6.6	21.8
No answer/ unempl.	13.5	16.8	12.5	16.5	14.3	16.5	21.9	19.1	20.4	17.1	8.5	10.8

Source: own work based on research results.

Such significant differences between the declared amounts of remuneration can be explained in two ways. On the one hand, they may be a consequence of the demographic structure of the studied group of graduates. Men dominated the computer science majors, related to new technologies and providing most beneficial employment prospects and ultimately also the highest level of achieved earnings. On the other hand, the observed gender differences in the level of achieved income are also in line with the general trends presented in the above-mentioned research findings.



## Summary

The results of empirical research presented above clearly confirm the influence of gender on the employee's professional situation, also in the case of technical university graduates. In result all of hypotheses presented above were confirmed. This effect is reflected to some extent in the worse situation of women in the labor market. Among the respondents, women fared worse than men in terms of both the percentage of working individuals and the length of the period of searching for employment upon graduation. According to their declarations, their job was also more likely to be incompatible with their learned profession and they were paid less than men.

Nevertheless, it should be emphasized that the situation of both the women and the men surveyed can be described as favourable. Successful completion of a technical university can have a positive impact on the current labor market, where specialized "hard" technical skills are sought after. The surveyed graduates of the technical university did not have too many problems with accessing the labor market, which was reflected both in the high level of their employment and the short time of searching for a job upon graduation. The jobs of the vast majority of respondents, both women and men, were also compatible with their university majors, which can confirm the adequacy and relevance of the acquired qualifications in terms of labor market needs.

Although gender is still an important factor in today's workplace, among the graduates of a technical universities the differences are less pronounced. In the face of lack of legal barriers, attitudes and preferences related to established social roles seem to be the actual main barrier. Traditionally, men are more likely to be attributed active roles, often related to managerial or specialized positions. On the other hand, women were more likely to be assigned roles related to dealing with home and childcare, and as a result they received more peripheral and auxiliary tasks at work. At present, the status of women and men in Polish society is equal and it should also be reflected in the situation of these two groups in the labor market. This, however, requires verification of the social attitudes towards the problem, and above all the changes of a nature related to people's world views. Due to obvious differences described above, related i.a. to maternity or the ability to make physical effort, the situation of women and men cannot be expected to be identical. It can be hoped, however, that the differences in the professional situation of both groups, and above all within those who graduated from technical universities – traditionally dominated by males – will be reduced. The changes should focus primarily on two key areas: the amount of remuneration received and the nature of the workplace.



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