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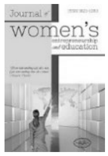
ORIGINAL SCIENTIFIC PAPER

Gender Inequality in Education and Science: The Case of Serbia



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A B S T R A C T

The research in the paper is directed towards the study of gender equality in science and education, with a focus on science and research activities in Serbia. The aim of the research conducted is to identify certain anomalies indicating the presence of a gender gap in education and science and to compare the trend in the domain of gender inequality with the one detected in Europe. Descriptive statistics is used in the research. The data is collected from various sources and the relevant literature that explores the gender gap in education and science, primarily focusing on the publications of the Statistical Office of the Republic of Serbia (SORS). The research proved the presence of gender inequality in science and research activities in Serbia. In fact, the gender segregation that is present in the education system is also reflected in the field of science. The research also confirmed the existence of

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vertical segregation, manifested through women's extremely modest participation in management positions of institutes and faculties.

KEYWORDS: *science, education, women, gender segregation, hierarchy, humanities, engineering and technological sciences*

Introduction

Despite certain efforts which have been made to mitigate the gender gap, the progress achieved in Serbia in recent years has been modest. Similarly, the results have been inconsistent and even stagnant in certain segments. Gender inequality is manifested through the unequal position of women and men in the labor market, striking differences in the level of income, access to the resources for support in employment/self-employment, entrepreneurial activities, ownership of real estate or real property, participation in the informal economy, etc. In all the abovementioned situations, women are in a disadvantageous position compared to men (Official Gazette Republic of Serbia no. 103/2021). Regardless of education, women in Serbia still do not have well-paid jobs and successful professional careers to the same extent as men (Kolin, 2010). They earn less than men and these gender inequalities in earnings are visible in almost all activities for the same occupations (Pavlović & Ognjenović, 2020). Similar to developed economies, women in Serbia spend twice as much time doing housework and participate less in paid jobs. Furthermore, their presence and activity compared to men is greater in the informal economy. Unlike men, women are more self-employed in unregistered enterprises.

According to the Gender Equality Index 2021, continuous progress in the gender equality segment is achieved in the domain of work and power, i.e., by certain indicators which can specify the approaches that women and men have in the labor market and their participation in the structure of political, economic and social power. Fluctuating trends are identified in the area of knowledge (academic achievement) and finance (access to financial resources/the economic situation in which women and men live). Stagnation can be noticed in the domain of time (gender gap in terms of the length of period that women and men spend on child care, care for older adults and people with disabilities; the gap also exists in the time spent doing household chores, and the time period when women and men spend in cultural, sports and other leisure activities), as well as in the domain of health, i.e., the indicator related to health status, health-related behavior, and access to health care (Babović & Petrović, 2021).

The focus of this paper is scientific research activities and the position of women in science. The role and importance of women in science can be best described by the words of the author Lukić-Krstanović (2020): "Women in science are important social actors, implying that they come forward with their attitudes, values, and worldview. Most of them boldly and critically contribute to society, fight for human rights, fight against totalitarian, autocratic regimes, dictatorships and nationalist ideologies, clearly pointing out dangerous and destabilizing processes. Most of them strongly advocate the principles of academic and scientific honesty, responsibility, speaking up against injustice" (Lukić-Krstanović, 2020, p. 445).

At the European Union level, the importance and significance of gender equality in education, science and research is gaining more and more attention. Since 2012, this issue has been one of the main objectives in the creation of the European Research Area. The EU is committed to gender equality in research and innovation because achieving equality between men and women is not only a fundamental right but also crucial for fostering diversity, driving innovation, and ensuring that the full potential of individuals is realized in the field of research and innovation.

However, there is still a lack of progress in improving gender balance in research management positions. By creating comprehensive gender equality plans with Member States and stakeholders and by using the improved gender equality provisions proposed in Horizon Europe, gender equality in research and innovation will be strengthened. Since 2022, the gender equality plan has been an obligatory part of the new framework program in public institutions, research organizations and higher education institutions (Ruggieri et al., 2021; European Commission, 2021).

Education represents a core system in any society, functioning as the agent for its continuity by perpetuating fundamental social values. Simultaneously, it acts as the catalyst for societal progress and ongoing development. The shifts introduced by postmodern and postcapitalist eras have placed higher education institutions in a challenging position. In developed countries, higher education remains a pivotal concern with significant political, ideological, and economic implications (Marjanović et al., 2023). Gender disparity in the educational system is a global issue since the presence of women in the education sector is rather low. There is a great deal of gender discrimination in higher education. Additionally, women are not sufficiently represented in positions of power and prestige (Basantia & Devi, 2022).

On the other hand, Beck-Peter and Wenzel (2020) highlight the potential of human capital for economic growth and emphasize that women are a well-hidden source of potential human capital. Encouraging girls to pursue higher education can boost the economy and decrease the limitations of non-gender-conscious education programs.

In Serbia, the number of women in higher education and women employed in science and research institutions has been steadily growing. The data are encouraging, but based on them, it is not possible to draw any conclusions about the actual position of women in education and science.

The authors of the paper state that the achievement of gender equality in the field of education is a basic condition for the equal participation of women in science and scientific research work. Also, it starts from the assumption that science, as any other field, is gender-based, i.e., certain gender imbalances can be recognized in science and they are manifested in: 1) greater presence of women in certain scientific fields (the fields that are considered to be traditionally female ones - Humanities, Social Sciences, and Medical Sciences); 2) difficult and slow development of an academic career in certain scientific fields; 3) insufficient presence of women in management (vertical segregation). The paper aims to emphasize certain trends, their possible implications for further growth and development based on knowledge and to offer solutions for the improvement of gender equality in science.

In addition to promoting the principle of gender equality in the field of education and science, the importance of the paper is also reflected in the fact that it points to specific gender gaps present in science and research activities. The research results can help improve normative and institutional support in empowering the position of women in education and science.

The paper analyses and evaluates the position of women in the field of education and science in Serbia. The intention of the authors of the paper is to reveal the potential gender gaps that exist in these two areas. The following sections present the theoretical background of the research. Then, the methodology is presented with data analysis followed by discussion and conclusion.

Literature Review

There has been growing interest of the professional public in the topic of gender equality in education and science in Serbia in recent years; however, it is still insufficient compared to the research conducted in developed economies. Discussions and debates on this topic indicate the presence of certain types of gender segregation (Bogdanović, 2006; Šobot, 2014; Popović, 2012; Delibašić et al., 2018).

Positive development in achieving gender equality in education in Serbia has been constant. In this region, the positive trend was particularly noticeable after the Second World War by introducing the system of compulsory education and the trend has continued to this day. Even in periods of major crises, such as the one that occurred during the 90s in the last century, greater participation of women in education was noticeable. It is assumed that the positive trend was not the result of the policy that was introduced in the area of education in the mentioned period, but rather the consequence of the political and social situation in our economy (Popović, 2012).

Regarding the share of women and men in higher education, equality seems to have been achieved. According to the data from the Gender Equality Strategy for the period from 2021 to 2030, women have a greater participation among students (57%), among graduates (59%), as well as among those who have obtained a doctorate (57%). However, there is also a trend for women to primarily opt for studies in the fields of education, health, social protection, humanities and arts (Babović & Petrović, 2021). The presence of segregation in education is also reflected in the choice of future occupation; therefore, most women in Serbia are employed in service and commercial occupations - 57%, engineers, professional associates and technicians - 53% and administrative officers - 60% (Official Gazette Republic of Serbia no. 103/2021). Gender segregation is also present in ICT education, where only 28.6% of women are graduates, and only 21.6% of women are ICT experts in the labor market. There is also a gender pay gap in this segment. Actually, women in the ICT sector earn 9.1% less compared to men (Babović & Petrović, 2021). The manifested trends in education have a negative impact on the future lives of women, considering that they study at departments of lower prestige and are trained for professions that are less paid and less valued (Jacobs, 1996). Additionally, women mainly choose to study the fields that are less respected in the labor market, and due to their lower presence at higher levels in the hierarchy, they also have lower incomes compared to men (Fényes, 2010).

Globally, scientific work is increasingly becoming an insecure and poorly paid activity, and, therefore, the interest in this field of work is decreasing. Ignjatović and Buturović (2022) maintain that Serbia shows signs of this process, but due to its above-average level of material position and job stability, the profession of a scientist in Serbia is still desirable. According to certain criteria, the position of female scientists in Serbia is estimated to be just as good, if not even better, compared to EU countries and the USA.

Despite good intentions and various initiatives, it is still possible to recognize different forms of gender inequality in science (Vinokurova, 2015; Moss-Racusin et al., 2012; Macarie & Moldovan, 2015). Segregation is particularly visible in the fact that women are more present in certain fields, such as Social Sciences and Humanities (Ignjatović & Buturović, 2022). These imbalances are particularly noticeable when the focus is placed on natural and technical-technological sciences.

Certain gender imbalances in science and education are primarily the consequence of still-present traditional values and the generally accepted attitude that women do not belong in professions such as Science, Technology, Engineering and Mathematics – so-called STEM disciplines. Not only is the mentioned phenomenon present in underdeveloped economies, but it also exists in developed parts of Europe. Stoet and Geary (2018) prove that along with increasing gender equality, the gap in graduating in STEM disciplines also increases, i.e., the countries with a lower level of gender equality have relatively higher participation of women in these disciplines. The findings are rather surprising given the fact that gender-equal countries give women more opportunities for education and empowerment and promote their engagement in science. Strengthening the participation of women in STEM is considered to be one of the biggest challenges in women's education (Grljević et al., 2019).

Etzkowitz and Kemelgor (2001) confirm in their research that women achieve the greatest success in technical fields where science has a relatively low status compared to other professions. The same authors underline the phenomenon that when science has a low cultural status, the number of women engaged in scientific research activities increases. On the other hand, when doing science implies improving the social status and when it is a source of different kinds of power (prestige, money), women tend to be excluded from this field. Larivière et al. (2013) highlight the inequalities that exist in the domains of academic career advancement, earnings, employment, funding, satisfaction and patenting, despite the fact that women are increasingly present in undergraduate and postgraduate studies. Moreover, there is a noticeable trend that women who get a doctorate degree in these fields soon stop being interested in these fields after having been employed. According to Rosser and Taylor (2004), two factors are primarily responsible for the trend: the need for career balancing and a lack of a professional network.

Certain research point to the fact that in Serbia, in addition to horizontal, there is also vertical segregation, i.e., gender imbalance in terms of the presence of women in management positions and in professional career development (Bogdanović, 2006; Stojanović et al., 2019; Manić et al., 2018; Baćević et al., 2010). Several factors affect the slower advancement of women in science. Patriarchal patterns are slowly changing, so female scientists in Serbia still, in addition to doing science, take on most of the family and household duties. They consult more with their partners and ask them for support (Popović, 2008). According to the research by Marcess (2022), the effect of burnout is extremely present in academic staff, regardless of gender. This one as well as other research point to the fact that women are still more exposed to stress and are under more pressure than men (Marcessa, 2022; Gupta et al., 2005). On the other hand, Tomić (2010) finds in his research that women in Serbia are aware of their lower vertical mobility, but that they tend to shift the blame to themselves and justify their position from the perspective of female habitus without much protesting.

Data and Methodology

In order to identify the trends that are present in scientific research activities in Serbia in the gender equality segment, a desk-research method was applied, whereby the publications of the Statistical Office of the Republic of Serbia (SORS) were primarily used as the data sources. The research was based on statistical processing and the analysis of the data published in the bulletins - Scientific Research Activity in the Republic of Serbia (SORS). The data were collected and processed for the period from 2012 to 2022.

Based on the collected data, the focus was on the ratio of women and men employed in scientific research activities who had the status of researchers (with at least higher education), structured according to a specific scientific field and the scientific title – Doctor of Philosophy (Ph.D.). The research did not include the employees engaged in scientific research activities from the category of associates, technical staff, and other support staff.

The Student's t-test (also called t-test, eq. 1) was utilized on the data. The t-test was used to compare the two groups' means (in this case, the two groups consisted of the groups of women and men). It was used in hypothesis testing, with the null hypothesis that the difference in the groups' means is zero (H_0: $\mu_1=\mu_2$) and the alternative hypothesis that the difference in the groups' means is different from zero (H_1: $\mu_1\neq\mu_2$). The t-test's most common application is to test whether the means of the two populations are different. When calculating the t-test, it was assumed that both analyzed groups had equal variances.

To calculate the t-test, we use the following equation (Soetewey, 2020):

$$t_{obs} = \frac{(\bar{x}_1-\bar{x}_2)-(\mu_1-\mu_2)}{\sigma_p\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}} \tag{1}$$

where $\bar{x}_1, \bar{x}_2$ is the mean of sample 1 and 2, respectively. n_1, n_2 is the number of observations in both populations, and σ_p is calculated according to the equation:

$$\sigma_p = \sqrt{\frac{(n_1-1)\sigma_1^2+(n_2-1)\sigma_2^2}{n_1+n_2-2}} \tag{2}$$

where σ_1^2, σ_2^2 presents the variances of both populations.

In order to identify the presence of women in management positions in scientific research institutions (institutes and higher education institutions), an additional database of scientific research institutes and higher education institutions accredited by the competent ministry (Ministry of Science, Technology and Innovation) was formed.

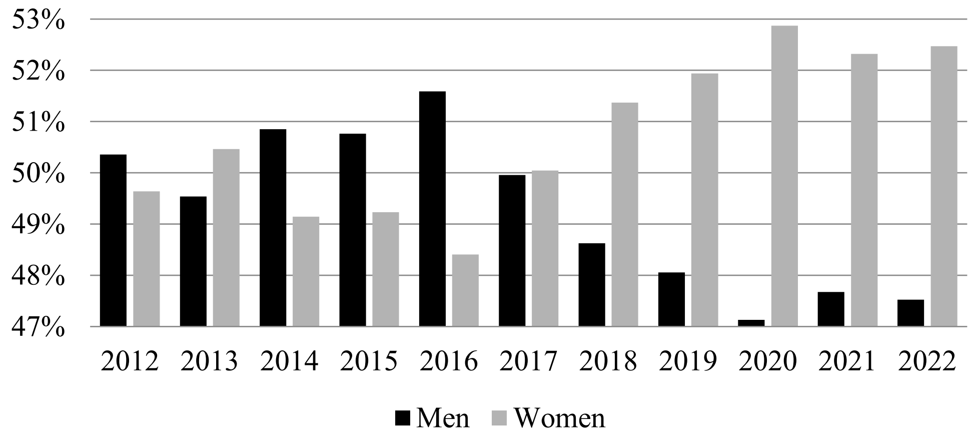
In the aforementioned institutions, the participation of women in management positions was established using a desk research method. Only top management positions, such as directors of institutes and deans of faculties, depending on the type of keeping records in the database of the competent ministry, were considered as management positions.

Results and Discussion

In the period from 2012 to 2022, the number of women employed in scientific research institutions in Serbia was constantly increasing. In the category of researchers, it is possible to identify a slight dominance of women in relation to men (Figure 1). By analyzing the age structure (Appendix in Table 1A), it can be concluded that women in science are most present in the age group of 25-54, but this dominance gets much lower in the category of researchers over 55, and, especially, at the age of 65.

The increase in the number of women in science is an indicator of the growing interest of women in Serbia in scientific research activities and academic career development. Nevertheless, we still have to answer the question of why women do not remain in scientific research activities and, consequently, lose their dominance in the later stages of their career development.

Figure 1: All researchers in Serbia in the period 2012-2022



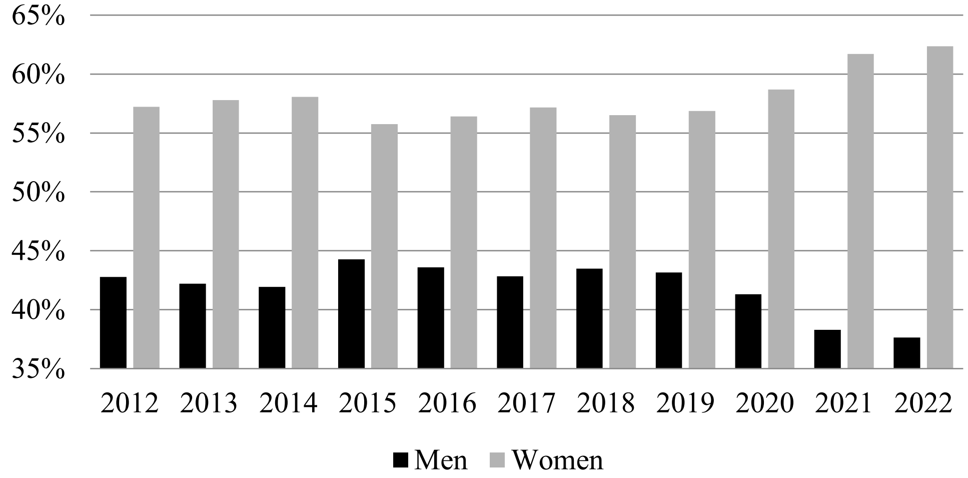
Source: Authors' presentation and calculation based on SORS data.

This is a worldwide phenomenon of the lack of presence of women in science and the fact that their participation in science declines as their careers progress. Areas et al. (2020) have noticed that this decreasing trend is more evident when it comes to women in STEM disciplines. The common explanations for the decline include motherhood, fewer publications, and reduced ability to obtain grants. This could be explained by the fact that women are more prone to get interested in part-time employment in order to balance work and private life, and they are also more likely to take time off work due to childcare (European Commission, 2008).

Acknowledging the fact that numerous studies conducted in developed economies have indicated a tendency for women, for various reasons, to opt for certain scientific fields, further analysis examines the underlying trend in Serbia. In the following part of the paper, the participation of women in the fields of Social Sciences, Humanities and Medical Sciences will be analyzed.

By analyzing and processing the data, it can be stated that the participation of women in Social Sciences is more significant than that of men. The trend is particularly apparent after 2015 with certain fluctuations, whereby in 2020, the percentage of women accounted for 53%. Figure 2 displays the participation of researchers by gender in the field of Humanities. Based on the data presented, it can be concluded that this is a scientific field that is certainly a field of interest for women researchers. The participation of women in the field of Humanities exceeds 60%.

Figure 2: Researchers in Humanities in Serbia in the period 2012-2022



Source: Authors' presentation and calculation based on SORS data.

Table 1 presents the results of the t-test for the percentage of women and men researchers in Social Sciences and Humanities. The results of the test suggest that the null hypothesis can be rejected in all three cases. Therefore, the alternative hypothesis that the difference in the groups' means (women and men) is different from zero cannot be rejected in all three cases. Moreover, it is possible to say that at the confidence level of 5% ($p<0.05$), there is indeed a statistically significant difference in the two groups' means (women and men). More precisely, the mean values between women and men differ significantly in Social Sciences and Humanities.

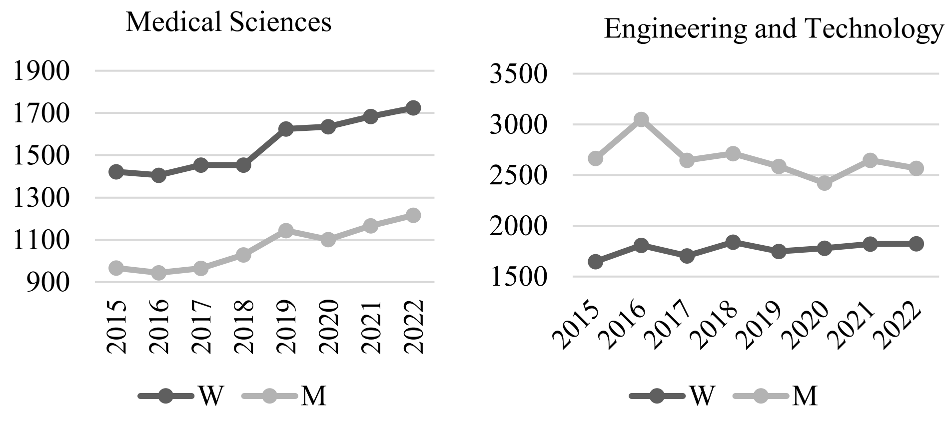
Table 1: T-test with H_0 = the difference in group means is zero

	Researchers	Researchers in Social Sciences	Researchers in Humanities
t-test	0.041	0.003	0.000
H_0	Reject	Reject	Reject

Source: Authors' calculation.

Further analysis confirmed a higher presence of female researchers in the field of Medical and Health Sciences and the significant dominance of men in the field of Engineering and Technology (Figure 3).

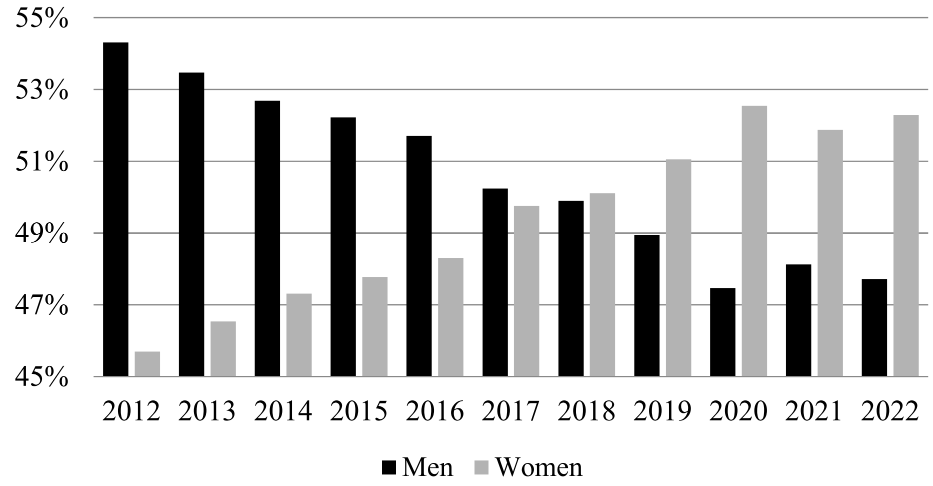
Figure 3: Trends in the number of researchers by gender - Medical and Health Sciences and in the field of Engineering and Technology



Source: Authors' presentation and calculation based on SORS data.

Aiming to examine the vertical mobility of women in certain scientific fields, an analysis of the presence of female researchers with doctoral graduates was conducted. Observed at the level of scientific research activity, there is an increase in the number of female researchers with this title; even a slight dominance of women can be noticed in this segment of the analysis. The aforementioned tendency occurs along with the growth of the number of female researchers and the trend has been particularly noticeable since 2018 (Figure 4).

Figure 4: Researchers with PhD in Serbia in the period 2012-2022

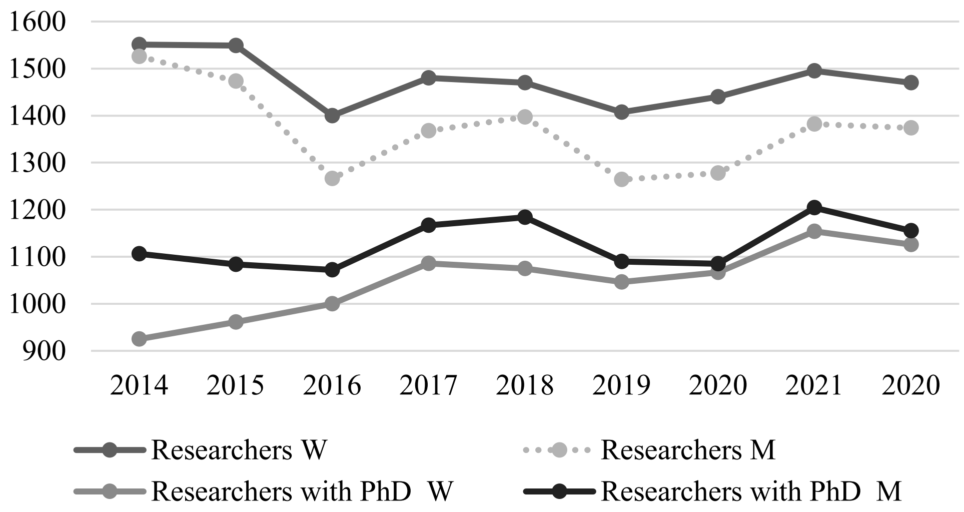


Source: Authors' presentation and calculation based on SORS data.

A similar tendency is present at the EU level. As a consequence of the implementation of the current policies at the EU level, there is a trend that the number of female doctoral graduates has been increasing faster compared to the number of male doctoral graduates. Since 2010, the share of female doctoral graduates has been constantly increasing and gender equality has almost been reached. According to the data from 2018, women accounted for 48.1% of the doctoral graduates at the European (EU-17) level. Observed at the level of member states and associated countries, the share of women among all doctoral graduates ranged between 40%-60%, the exceptions being Albania - 62.3%, Georgia - 60.8%, and Luxembourg - 35.6% (European Commission, 2021).

In order to identify certain gender inequalities present in the scientific research activities in Serbia, an analysis of the presence of female doctoral graduates in certain scientific fields - Social Sciences, Humanities, Medical Sciences, and Engineering and Technology - was conducted.

Figure 5: Number of researchers and researchers with PhD (by gender) in the field of Social Sciences



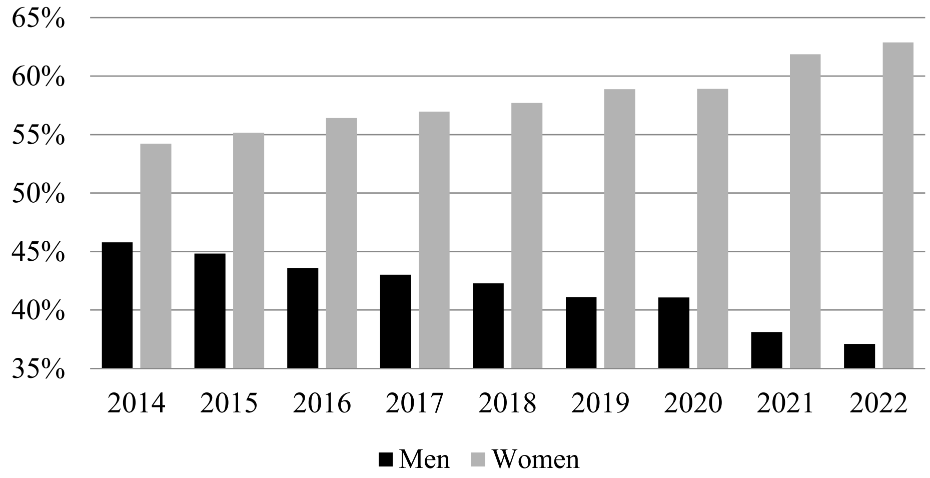
Source: Authors' presentation and calculation based on SORS data.

Figure 5 displays the movement of the number of researchers and researchers with a Ph.D. (by gender) in the scientific field of Social Sciences. It is a scientific field in which, in the analyzed period, the dominant participation is held by female researchers. However, based on the results presented, it can be clearly seen that dominance is lost if the focus is on the analysis of the presence of female doctoral graduates. In other words, in the segment of Social Sciences, there is a noticeable increase in the number of female researchers, whereas the percentage of female researchers with a Ph.D. is lower than that of male ones (Figure 5).

The trend is similar when it comes to gender equality in the field of Social Sciences at the EU level; namely, a general trend is that the number of female researchers is continuously increasing, but it cannot be stated to be the common trend for all EU countries. Actually, the data illustrate that there are also certain countries where the number of researchers in this field is declining (European Commission, 2021). Furthermore, to obtain a more complete analysis, the socio-economic characteristics of Serbia and other countries with a growing trend of participation of female researchers in the field of Social Sciences need to be analyzed.

The trend of hindered vertical movement of women in academic careers, which was identified in the field of Social Sciences, is not present in the Humanities segment, where a prevailing percentage of female researchers and female doctoral graduates was detected.

Figure 6: Researchers with PhD in Humanities in Serbia in the period 2014-2022



Source: Authors' presentation and calculation based on SORS data.

Table 2 presents the results of the t-test for the percentage of women and men by academic title, whereas Table 3 illustrates the results of the t-test for the percentage of women and men who have Ph.D. in Social Sciences, Humanities, and in the field of Engineering and Technology. Table 2 shows that the results of this test suggest that the null hypothesis can be rejected in one case, while in the case of researchers who have a Ph.D. and undergraduate university education, the null hypothesis that the difference in group means is zero cannot be rejected. Therefore, the mean values between men and women who have a Ph.D. and the ones with a BSc are equal. However, the null hypothesis can be rejected with a group of researchers with MSc. Therefore, it is possible to say that at the confidence level of 5% ($p<0.05$), there is indeed a statistically significant difference in the mean of the two groups (women and men) when it comes to the researchers with MSc.

Table 2: T-test with H_0 = the difference in group means is zero

	PhD	MSc	BSc
t-test	0.244	0.000	0.698
H_0	cannot be rejected	reject	cannot be rejected

Source: Authors' calculation.

Table 3 illustrates that the null hypothesis can be rejected for the group of researchers with a Ph.D. in Social Sciences, Humanities, as well as in the field of Engineering and Technology. Namely, the alternative hypothesis that the difference in the group (women and men) means is different from zero cannot be rejected in all three mentioned cases. To sum up, it is possible to say that at a confidence level of 5% ($p<0.05$), there is indeed a statistically significant difference in the mean of the two groups (women and men) regarding researchers with a Ph.D. in Social Sciences, Humanities as well as in the field of Engineering and Technology.

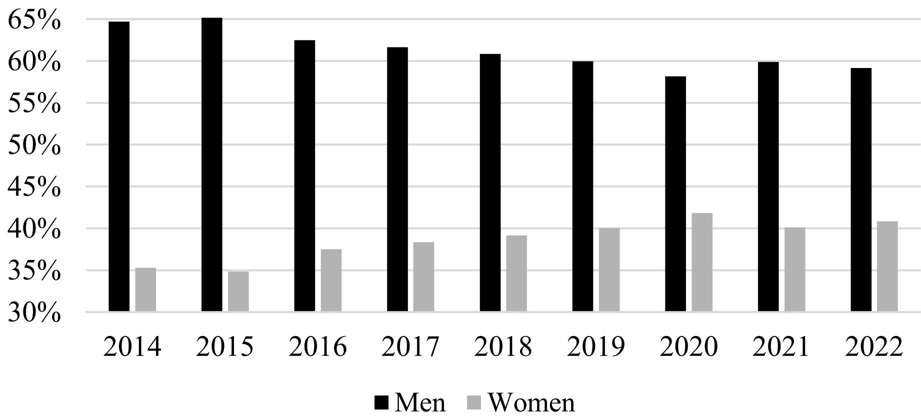
Table 3: T-test with H0 = the difference in group means is zero

	Ph.D. in Social Sciences	Ph.D. in Human Sciences	Ph.D. in Engineering and Technology
t-test	0.000	0.000	0.000
H_0	reject	reject	Reject

Source: Authors' calculation.

By processing the data, we have come to the conclusion that there is also a greater presence of women researchers and women who have a Ph.D. in Medical Sciences. On the other hand, in the field of Engineering and Technology, the dominant participation is by men, which is not an unexpected result.

Figure 7: Researchers with PhD in Engineering and Technology in Serbia in the period 2014-2022



Source: Authors' presentation and calculation based on SORS data.

The latest statistical reports on trends in Europe indicate that the number of women with Ph.D. varies by field, so the most popular broad field of study for women doctoral graduates is Medical Sciences (26.1%), while the most popular broad field of study for male doctoral graduates is Natural Sciences, Mathematics, and Statistics (27.4%) (European Commission, 2021).

Table 4 presents the results of the t-test for the percentage of female and male researchers by age in Serbia in the period 2019-2022. The results of the t-test suggest that the null hypothesis can be rejected in five cases, while it cannot be rejected in only one case (when the researchers are less than 25 years old). Therefore, this means that the mean values among men and women who are less than 25 years old are equal, while for all other age groups, the null hypothesis can be rejected; that is, the mean values between men and women are different.

Table 4: T-test with H_0 = the difference in group means is zero

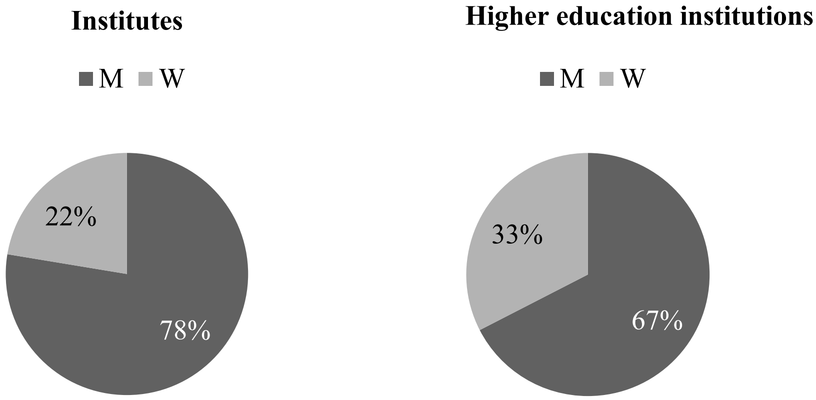
	< 25	25-34	35-44	45-54	55-64	65 >
t-test	0.220	0.000	0.000	0.001	0.000	0.000
H_0	cannot be rejected	reject	reject	reject	reject	reject

Source: Authors' calculation.

In order to identify the presence of women in management positions in scientific research institutions (institutes and higher education institutions), an additional database of the institutes and higher education institutions accredited by the competent ministry (Ministry of Science, Technology and Innovation) was used. The data were downloaded from the websites of the faculties and institutes.

Figure 8 presents the percentage of women and men in management positions in the institutes as well as in the state higher education institutions in Serbia in 2023.

Figure 8: Participation of women and men in management positions in Serbian institutes and higher education institutions, respectively in 2023



Source: Authors' presentation and calculation based on self-collected data.

Figure 8 indicates the fact that there is still an insufficient number of women in management positions. Based on the processed data, it can be concluded that in 2023 there were far more men compared to women in management positions in higher education institutions. Similarly, the negative trend is clearly present in the scientific research institutes. The explanation for these trends can be traced back to various factors and causes, primarily in the fact that women take on a lot of tasks, trying to be successful in their professional and family life simultaneously. Moreover, in addition to certain stereotypes in gender roles and social and cultural prejudices, the causes of inequality in science can also be found in the attitude of women. Women in Serbia are aware of their lower vertical mobility, but they tend to shift the blame to themselves and justify their position from the perspective of female habitus without protesting much (Tomić, 2010).

A similar situation exists at the EU level. According to the European Commission report from 2021, women accounted for more than 40% of academic staff, but their participation in management positions was extremely low. According to the data for 2019, women participated with less than 25% in management positions in higher education institutions (European Commission, 2021).

Conclusion

Despite certain positive tendencies that have been achieved in the field of establishing gender equality in science, based on the research conducted in the paper, the gender gap still exists. The research results demonstrate the existence of horizontal and vertical segregation in Serbian science. Female scientists in Serbia are still predominantly present with their work and are most visible in the fields of Humanities and Medical Sciences. On the other hand, they lose this superiority in areas such as Engineering and Technology, bearing in mind that there is a slight positive upward trend in this field that may indicate certain changes in the future. The noticed trend, manifested through the "feminization" of certain scientific fields and the attribution of other fields exclusively to the male population, is not present only in Serbia, but it has been the tendency for a long time globally as well. The opinion of the author of the paper is that the identified gender gap in the scientific research activities of Serbia is a consequence of segregation that is present in the education system. A more significant presence of women in areas of education that traditionally do not belong to them would reduce the gender gap in science. The biggest challenges can be found in sciences such as Mathematics, Physics, Engineering, and Computer Science.

Despite the fact that in Serbia there is an increasing trend in the number of female doctoral graduates in almost all fields of science, the research results indicate the presence of an extremely low concentration of women in hierarchically high positions. Moreover, the participation of women in management positions is negligible. It seems that women cannot climb up the rungs of the hierarchy in the same way and with the same qualities as men do (Čičkarić, 2019), which results in low participation of women in decision-making, even in the areas that are numerically considered to be "feminized".

Acknowledging the obtained results, the authors of the paper are of the opinion that in order to reduce the identified gender gap, it is necessary to intensify the activities in the field of raising citizens' awareness in terms of the importance of gender equality, mitigate traditional and patriarchal attitudes that are present in the education system and the choice of profession, and apply the defined legal and by-laws that regulate this area. Promoting gender equality in education and science primarily implies the existence of an adequate legal framework as well as an appropriate institutional mechanism that enables the implementation of the regulations. Most of the reforms implemented in Serbia, including the field of gender equality, in the previous period were guided by the most important foreign policy strategy, i.e., the accession of our country to the EU (Ignjatović & Bošković, 2013), and, in this sense, the mechanisms for achieving gender equality are constantly being harmonized with the EU legislation.

The key recommendation of the authors of the paper is that it is necessary to take a strong initiative in Serbia to develop policies and programs which can eliminate obstacles in the process of strengthening the role of women in science. By creating equal opportunities for all researchers, the conditions for high-quality and better science can be created. The mentioned problem should not be observed exclusively at the level of the state, but also at the level of academic institutions, which should be more involved and active in the process of establishing gender equality.

It is not easy to achieve gender equality which is influenced by numerous factors, that is, it is intertwined with various legal, political, economic and social influences. The influence of the aforementioned factors and the other ones that determine the access and participation of women in certain scientific fields, as well as their career progress, represent extremely complex problems that have not been discussed in detail in this paper. In other words, the research does not fully reveal all the factors and causes of weaker affirmation of women in certain scientific fields, which is considered a basic limitation of this research, but also a challenge for some future studies and analyses that the authors of the paper intend to conduct.

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Appendix

Table 1A: Researchers (in %) as full-time employees - by age in Serbia in the period 2019-2022

	< 25		25-34		35-44		45-54		55-64		65 >	
	M	**W**	**M**	**W**	**M**	**W**	**M**	**W**	**M**	**W**	**M**	**W**
2019	49	51	46	54	44	56	47	53	55	45	68	32
2020	50	50	42	58	45	55	48	52	53	47	65	35
2021	51	49	43	57	44	56	49	51	54	46	61	39
2022	41	59	43	57	46	54	47	53	53	47	61	39

Note: M stands for men, and W stands for women.
Source: Authors' calculation based on SORS data.

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