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UNSUSTAINABLE POWER DISTRIBUTION? WOMEN LEADERS IN POLISH ACADEMIA

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ABSTRACT. The results of the research on gender diversity in academia present a mixed image of women's participation in power structures. There is a large number of studies showing that women at universities encounter the 'glass ceiling' in their careers much more frequently than men. The thesis is that in Poland, the number of men and women working in academic institutions is similar, but there is a large disproportion in their numbers at the highest power positions (women being severely underrepresented). The goal of this paper is to analyse the power structures in Polish universities from the viewpoint of gender diversity. The research method is statistical analysis based on the official public data as well as official documents made available by universities. The result of the research is the illustration of the model of an unsustainable power distribution in top management structures of Polish higher education institutions (HEI).

Introduction

The results of the research on gender diversity in academia present a mixed image of women's participation in power structures. There is a large number of studies showing that women at universities encounter the 'glass ceiling' in their careers much more frequently than men, especially when they are aspiring to authority positions (Ballenger, 2010; Rosser, 2004; Legato & Glezerman, 2017). On the other hand, there is a growing body of research showing that participation of women in academic power structures is increasing in the EU countries and the USA (McKoy *et al.*, 2018). However, there is a strong overrepresentation of women on precariat managerial positions at universities (Ryan & Haslam, 2005).

The thesis is that in Poland, the number of men and women working in academic institutions is similar, but there is a large disproportion in their numbers at the highest power positions (women being severely underrepresented) (Sulik, 2010, pp. 186-187). The thesis is based on the literature review taking into account both international and Polish sources. On the grounds of this thesis, three more detailed research hypotheses have been formulated. A positive verification of the hypotheses will mean that there is unsustainable power distribution in Polish academia.

The aim of this paper is to analyse the power structures in Polish universities from the viewpoint of gender diversity. The research method is statistical analysis based on the official data from the Ministry of Science and Higher Education database (POL-on) as well as official documents made available by universities. The result of the research is the illustration of the model of unsustainable power distribution in top management structures of Polish higher education institutions (HEI). The results from Poland will be compared to the data on women participation in senior management positions from the World Bank and to data from other European countries.

1. Literature review

1.1. Feminist Perspective on Power Relations

The trend of radical feminism in social sciences stems from the criticism of the contemporary patriarchal culture and calls for a deep rebuilding of social structures leading to equality, and in some concepts, even to women's privileged position. The criticism of patriarchy is based on the unmasking of masculinist mechanisms of power and masculinist epistemologies related to the development of the scientific method (Oakley, 2000). Evelyn Keller (2004) argues that the currently dominating epistemology, which is the basis for the development of science, is guided by the obsession of control over human life, both in the sense of its creation and destruction, characteristic of masculinity. Radical feminism, therefore, postulates the creation of a new, feminist epistemology that will change the cognitive perspective. Such a revolution would concern social sciences and science in general, but also culture and social structure as a whole (Oakley, 1999). In 1991, Marta Calás and Linda Smircich (1991) analysed the classic text of Henry Mintzberg entitled 'The Nature of Managerial Work.' The authors unmask and criticize the masculinist model of leadership suggested by Henry Mintzberg in his flagship

work. First of all, he legitimizes male power, and subconsciously reveals obsessions of sexual domination (Calás, Smircich & Voicing, 1991). Since then, the feminist perspective on organizational power and leadership is developing. Summarizing and simplifying the feminist views on power in organizations and leadership, one can come to three basic conclusions. Firstly, social mechanisms of inequality and perpetuation of the male domination, which should be eliminated, are embedded in the organizational structures (Eagly & Carli, 2012; Sabharwal, 2013). Secondly, the neoliberal current in management strengthens the 'neo-colonial' model, discriminating against women in organizations. Thirdly, unequal power relations and the culture of masculinity develops through 'symbolic violence' rooted in language and communication processes (Blackmore, 2010; Butterwick, Carrillo & Villagante, 2015). The key feature of the development of equality cultures, postulated by many feminists, is to increase the participation of women in the structures of power (Davis, Maldonado & Shattering, 2015; Jalalzai, 2013; Isaac, Kaatz & Carnes, 2012; Sulkowski, 2010, 2012).

1.2. Women's Leadership in Academia

A vast body of literature concerns women's participation and the 'gender gap' in academia (McDowell, 1990; Johnson, 2017; Chisholm-Burns *et al.*, 2017; Hong, 2018). The general perspective is still based on the assumption that the 'gender gap' in academia exists, especially in science, technology and medicine (Morley, 2014; Süßenbacher *et al.*, 2017; Cama, Jorge and Peña, 2016). However, the participation of women in academia is slowly and constantly growing (Lone, Hussain, 2017; Uhly, Visser & Zippel, 2017; Tower, Plummer & Ridgewell, 2007) and there are no significant differences in men's and women's scientific productivity (Aiston & Jung, 2015). Especially large amount of literature concerns international and interdisciplinary differences in women participation in scientific activities and education in HEIs (Davis, Maldonado & Shattering, 2015; Kameshwara & Shukla, 2017; González-Álvarez & Cervera-Crespo, 2017; Turner *et al.*, 2018). The body of research on gender in power structures of universities is much more limited (Poggio, 2017). One of the reasons is probably the difficulty with identifying proper databases collecting information about the management of universities in different countries.

Research form the EU, Asia, and the Balkan states describes the general problem of the low participation of women in leadership positions at universities (Morley & Crossouard, 2015; Caliyurt, 2017; Carvalho & Diogo, 2018). Despite the increasing presence of women studying at universities, the number of those who have achieved the highest authority positions is relatively low. This is also the case for countries with diverse policies and legislation for gender equality (Morley, 2013; O'Connor *et al.*, 2015). Women are equally represented at the beginning of their career, but are underrepresented in top positions (Carvalho & Diogo, 2018; White &Bagilhole, 2011; White, Carvalho & Riordan, 2011).

1.3. Sustainable and Unsustainable Power Distribution

Sustainability basically means the balanced way of using the available resources, implementing institutional changes, informing technological development and trends for future investments (WCED, 1987). All these processes should take place in harmony to facilitate the current and future potential for meeting mankind's needs and aspirations. There are scholars that found sustainability on three interrelated pillars: environment, economy and society (United Nations General Assembly Draft, 2015; Kuhlman & Farrington, 2010). Others, still, believe that sustainability belongs more in cultural, technological and political domains (Gibson, 2001). Although the ideal can never be reached, the very process of approaching it leads to the creation of a sustainable system (Giovannoni & Fabietti, 2014). In Sustainable

Development Goals (SDG) there is a development target concerning directly the participation of women in power structures: 'Women – Achieve gender equality and empower all women and girls' (Transforming our world: the 2030 Agenda for Sustainable Development, 2015).

The subject of the 'gender gap' and sustainability is connected in the literature by the conclusion that increasing the participation of women in power structures in business and society will lead to a more sustainable development (Caliyurt, 2017; Sawicka & Lagoda, 2015). A growing number of women in the highest power positions at universities is important for the development of HEIs, but also for the development of society. There are studies showing that businesses with well educated women in the top managerial positions achieve better performance indicators (Smith, Smith & Verner, 2006). Education of women as well as gender initiatives contribute to the economic development (Women, Government & Policy Making in OECD Countries 2014), while diversity – and this term includes gender diversity – facilitates the development of research innovation (European Commission-Brussels, 2012). It has also been demonstrated that higher education institutions promoting equal opportunities are better at attracting and motivating research and teaching staff with best qualifications (McIntyre, 2002). In addition, women bring specific perspectives to organizations, thus facilitating the leadership that is both effective and representative (Ely, Ibarra & Kolb 2011). By being present in top positions, women are increasing their chances to influence the decisions of their organizations (Santiago, Carvalho & Vabø, 2012) and in this way, they provide new role models for the university community, i.e. both the students and the instructors (O'Connor et al., 2015; European Commission-Brussels, 2012).

To sum up, in the paper we would like to explore the model of unsustainable power distribution in Polish HEIs.

2. Methodological approach

2.1. Research hypotheses

To fulfil the aim of this study, i.e. describe the power structures in Polish universities from the point of view of gender diversity, the decision was made to conduct quantitative surveys in all higher education institutions in Poland. Three research hypotheses were formulated, as presented below.

According to what is indicated by research in the area of women's situation at universities in developed countries, in particular the lower level of women employment in top leadership and managerial positions in HEIs (McDowell, 1990; Johnson, 2017; Chisholm-Burns, 2017; Hong, 2018), the following hypothesis (no. 1) was formulated:

H. 1. In Polish HEIs women are less frequently employed in top leadership and managerial positions. The higher the level of management in Polish HEIs, or the higher the power position in Polish HEIs, the lower the percentage of women in these organisational positions.

The research of the public sector in OECD countries shows that for years, the role of women on the job market and in the public sector has been growing. Within the last 20 years, the share of women on the job market in OECD countries increased from 57.7% on average in 1990 to 64.9% in 2010, while the public sector remains the main employer of women (Women, Government and Policy Making in OECD Countries 2014). At the same time, women occupy less than a third of decision-making posts in all branches of authorities in OECD countries. Data from the EU show that women occupy only 26% of top non-political administrative positions and 36% of second level administrative positions (European Commission-Brussels, 2012). Opportunity, power and numbers are three significant features that differentiate men from women in leadership posts and there is an asymmetry of women and men in public

management (D'Agostino & Levine, 2011). Therefore, the following hypothesis was formulated (no. 2):

H. 2. A stronger power imbalance exists in public HEIs in Poland, while in private ones, the situation in more favourable for women, i.e. the percentage of women leaders in top positions is higher.

In Poland, despite socio-cultural changes within the last 30 years and the shift in political, social and professional roles of women (Leśniak-Moczuk, 2015), there are stereotypes, very much alive, that deprecate women's competences in certain domains, place them primarily in family capacities and not in roles related to managing organisations and occupying top positions (Kolasińska, 2012). Stereotypes concerning the place of women in society and professions which are supposedly "natural" for them are still strongly maintained and perpetuated by subsequent generations (Pokojska, 2018, p. 10). Leadership positions, including top-level management posts are – according to Poles – still more frequently assigned to men (Pokojska, 2018). There is a horizontal segregation (Korzec, 2000), oriented on women's professional activity limited to several domains, e.g. education, services or healthcare. We believe that this state of affairs is also manifested in the situation of higher education, hence the hypothesis (no. 3):

H. 3. There are types of HEIs in Poland, e.g. military academies, technical or theological universities, where the gender gap is definitely the greatest – women reach top positions extremely rarely, or never. The reverse is also true; in certain types of HEI, such as pedagogical universities, the share of women among authorities is above the average.

2.2. Data gathering process

To verify research hypotheses, it was decided to obtain data from all higher education institutions in Poland. The study was conducted between June and September 2018, and the work proceeded in the following manner:

- Existing reports on higher education in Poland, published by the Central Statistical Office were used. For the verification of the Central Statistical Office's data concerning HEIs, official data from the Ministry of Science and Higher Education database (POL-on) was used as well.
- A detailed database was created, which included all higher education institutions in Poland – in total, 390 public and private HEIs, divided according to their profile: Comprehensive universities (19), Technical universities (23), Agricultural universities (7), Economic universities (58), Pedagogical universities (13), Medical universities (9), Maritime universities (2), Physical education academies (6), Artistic academies (22), Theological universities (15), Ministry of National Defence academies (5), Ministry of Internal Affairs and Administration academies (2) and remaining higher education institutions (209), which includes also state higher education vocational schools.
- For every HEI in the database, based on their official websites, all top-level managerial positions (rectors, vice-rectors) were identified, as well as managerial positions at the level of basic organisational units (usually faculties/departments).
- Thus, a database was constructed, encompassing various categories (types) of HEIs, particular institutions in these categories, divided into public and private ones, particular managerial positions at the central institutional level (rectors and vice-rectors), and discerning particular basic organisational units (usually departments) along with their heads and deputies (usually deans and deputy deans). In the case of deputies of central university authorities and organisational units' heads, a particular name of the position

was also assigned. Each discerned position at an institution includes the information about who occupied it in 2018, i.e. whether it was a woman or a man.

● As a result, the created database comprised all basic managerial positions in all HEIs as of September 2018. It should be emphasised that in all public HEIs, terms of office for authorities last from 2016 to 2020, while there is no such regularity for private universities, therefore it is important to indicate September 2018 as the period in which a particular person held a particular managerial post.

2.3. Data analysis method

Before undertaking the analysis of the collected data, the database was organised. At this stage, 17 schools in total were excluded from the subsequent analysis: 2 economic HEIs, 1 pedagogical university, 1 artistic academy, 3 theological universities and 10 of the remaining HEIs. Such a decision was made if the HEI in question was being closed down, or when no information about its authorities was available. The final analysis included 373 HEIs in total.

In order to conduct a quantitative analysis of the acquired data, names of types of positions at the level of organisational units was standardised with the assumption that certain functions at a certain organisational level are equivalent. Therefore, initial names of heads of basic HEI organisational units: director, institute director, manager, were considered equal to dean as the head of basic organisational units in most Polish HEIs, while deputy directors, vice-director and assistant deans were all included in the category of deputy deans.

The quantitative analysis enabled obtaining numerical and percentage data for particular categories, which were subsequently put into tables. The chosen method of presenting data allowed to compare them and verify the formulated hypotheses.

3. Conducting research and results

The conducted study reveals that women occupy over 36% of all positions in the authorities of Polish higher education institutions, from rectors, to vice-rectors, to deans, to deputy deans (*Table 1*). The highest percentages of women's representation exist in the following types of institutions: remaining HEIs (44%), medical universities (close to 43%), pedagogical universities (42%) and economic universities (41%). Among the studied universities, women are the least represented in the authorities of Ministry of National Defence academies, maritime and theological universities (14%, 11% and 4% respectively).

After a closer look at the survey results, the situation in HEIs is even more complex. Top positions (rectors) in all Polish universities are occupied by women decidedly less often than by men: only less than 20% rectors and 30% of vice-rectors in Poland are women (*Table 2*). In the Polish academic hierarchy of prestige, the most prestigious are comprehensive universities operating in the four largest agglomerations. In the most important Polish HEIs, i.e. comprehensive universities, in this term of office there is no woman rector. Similarly, there are no women among rectors of agricultural, medical and maritime universities, or in the academies of physical education, Ministry of National Defence or Ministry of Internal Affairs and Administration. We will find the most women in top university positions in Poland in the group of remaining HEIs (over 27%), pedagogical universities (25%) as well as economic and artistic universities (close to the overall average, i.e. ca. 19%).

Meanwhile, among vice-rectors, the share of women is decidedly larger (*Table 2*) even in HEIs where there are no women rectors. The highest percentage of women in vice-rector positions was observed in the same schools where also the share of women rectors is the highest, i.e. among the so-called remaining HEIs, economic, pedagogical and artistic universities. Certain HEIs, such as comprehensive universities, physical education academies or medical

universities, despite the lack of women rectors, employ women much more readily as vice-rectors (27.5%, 29% and 24% respectively). In other schools with a low share of women rectors, vice-rector positions are not occupied by women (*Table 2*).

Table 1. Participation of women in top authority positions, according to HEI type

HEI type	Designation: T – total P – public N – private	Total	Incl. women	% of women among HEI authorities (rectors, vice-rectors, deans, deputy deans)
Total	T	4250	1538	36.19%
	P	3183	1110	34.87%
	N	1067	428	40.11%
Comprehensive universities	T	940	348	37.02%
	P	940	348	37.02%
	N	0	0	0
Technical universities	T	846	225	26.60%
	P	803	209	26.03%
	N	43	16	37.21%
Agricultural university	T	213	73	34.27%
	P	205	71	34.63%
	N	8	2	25.00%
Economic university	T	392	162	41.33%
	P	97	39	40.21%
	N	295	123	41.69%
Pedagogical universities	T	128	54	42.19%
	P	89	39	43.82%
	N	39	15	38.46%
Maritime universities	T	36	4	11.11%
	P	36	4	11.11%
	N	0	0	0
Medical universities	T	222	95	42.79%
	P	222	95	42.79%
	N	0	0	0
Physical education academies	T	92	28	30.43%
	P	92	28	30.43%
	N	0	0	0
Artistic academies	T	268	101	37.69%
	P	265	99	37.36%
	N	3	2	66.67%
Theological universities	T	48	2	4.17%
	P	28	1	3.57%
	N	20	1	5.00%
Ministry of National Defence academies	T	84	12	14.29%
	P	84	12	14.29%
	N	0	0	0
Ministry of Internal Affairs and Administration academies	T	14	5	35.71%
	P	14	5	35.71%
	N	0	0	0
Remaining higher education institutions	T	967	429	44.36%
	P	308	160	51.95%
	N	659	269	40.82%

Source: *own work*

Table 2. Participation of women among rectors and vice-rectors, according to HEI type

HEI type	Designation: T – total P – public N – private	Rectors	% of women	Vice-rectors	% of women
Total	T	373	19.84%	589	30.05%
	P	134	10.45%	393	26.72%
	N	239	25.10%	196	36.73%
Comprehensive university	T	19	0.00%	80	27.50%
	P	19	0.00%	80	27.50%
	N	0	0	0	0
Technical universities	T	23	4.35%	77	19.48%
	P	18	0.00%	71	15.49%
	N	5	20.00%	6	66.67%
Agricultural university	T	7	0.00%	25	12.00%
	P	6	0.00%	22	13.64%
	N	1	0.00%	3	0.00%
Economic university	T	56	19.64%	73	36.99%
	P	5	0.00%	17	35.29%
	N	51	21.57%	56	37.50%
Pedagogical universities	T	12	25.00%	19	31.58%
	P	5	40.00%	14	35.71%
	N	7	14.29%	5	20.00%
Maritime universities	T	2	0.00%	6	16.67%
	P	2	0.00%	6	16.67%
	N	0	0	0	0
Medical universities	T	9	0.00%	38	23.68%
	P	9	0.00%	38	23.68%
	N	0	0	0	0
Physical education academies	T	6	0.00%	17	29.41%
	P	6	0.00%	17	29.41%
	N	0	0	0	0
Artistic academies	T	21	19.05%	45	33.33%
	P	19	15.79%	44	31.82%
	N	2	50.00%	1	100.00%
Theological universities	T	12	8.33%	11	0.00%
	P	3	0.00%	5	0.00%
	N	9	11.11%	6	0.00%
Ministry of National Defence academies	T	5	0.00%	18	16.67%
	P	5	0.00%	18	16.67%
	N	0	0	0	0
Ministry of Internal Affairs and Administration academies	T	2	0.00%	5	20.00%
	P	2	0.00%	5	20.00%
	N	0	0	0	0
Remaining higher education institutions	T	199	27.14%	175	40.00%
	P	35	25.71%	56	44.64%
	N	164	27.44%	119	37.82%

Source: *own work*

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The presence of women in managerial positions in Polish universities decreases with the level of hierarchy (moving up in the organisational structure). The representation of women in dean and deputy dean positions is decidedly stronger than in the case of central authorities (rectors, vice-rectors). And thus, over 33% of the total number of deans are women (*Table 3*). Schools that exceeded the 40% threshold of women's representation in dean positions are: economic universities, pedagogical universities, medical universities, ministry of internal affairs and administration academies and remaining HEIs. Only two types of HEIs do not have women deans, namely ministry of national defence academies and maritime universities.

Meanwhile, women in deputy dean positions constitute over 42% of all deputy deans, and this is the largest share of women among all studied power positions at universities (*Table 3*). The large majority of HEIs among the distinguished types exceeds the 42% threshold. In this instance, it worthy of note that for the first time, comprehensive universities ranked lower than the rest of HEIs. Almost half of deputy dean positions is occupied by women in medical universities. 50% or a little over half of women deans work at economic universities, pedagogical universities and ministry of internal affairs and administration academies. Importantly, remaining HEIs can boast the highest percentage of women deputy deans, in contrast to theological universities, where the percentage of women deputy deans amount to zero.

In summary, results presented in *Tables 1-3* prove that Hypothesis 1 is true, as women occupy top leadership and managerial positions in Polish HEIs less frequently than men. The higher the level of management in Polish HEIs, or the higher the power position, the lower the percentage of women in these organisational positions. The lower percentage of women in managerial positions concerns in particular top positions at the central level of the institution and among deans, while when it comes to deputy positions (vice-rector, deputy dean), women's share increases significantly.

The survey revealed that in private HEIs, more often than in public schools, women are in managerial positions as rectors or deans (*Table 4*), which positively verifies Hypothesis 2. The difference between public and private HEIs occurs at the level of rector (10% to 25%); the percentage of women vice-rectors is significantly higher as well in private schools (the difference of 10 percentage points). Even more significant differences between public and private institutions exist at the level of deans and deputy deans, where the participation of women is decidedly higher for both types of HEIs, but in private schools, women constitute almost 43% of all deans in Poland, while deputy dean positions are occupied by women more often than men, as they constitute 54% of all deputy deans in these HEIs.

Table 3. Participation of women among deans and deputy deans, according to HEI type

HEI type	Designation: T – total P – public N – private	Deans	% of women	Deputy deans	% of women
Total	T	1197	33.42%	2091	42.42%
	P	801	28.84%	1855	40.97%
	N	396	42.68%	236	53.81%
Comprehensive university	T	231	24.68%	610	44.10%
	P	231	24.68%	610	44.10%
	N	0	0	0	0
Technical universities	T	185	20.00%	561	30.66%
	P	169	17.75%	545	30.83%
	N	16	43.75%	16	25.00%
Agricultural universities	T	49	24.49%	132	43.94%
	P	47	25.53%	130	43.08%
	N	2	0.00%	2	100.00%

Economic universities	T	131	44.27%	132	50.00%
	P	24	33.33%	51	49.02%
	N	107	46.73%	81	50.62%
Pedagogical universities	T	42	40.48%	55	50.91%
	P	22	31.82%	48	52.08%
	N	20	50.00%	7	42.86%
Maritime universities	T	7	0.00%	21	14.29%
	P	7	0.00%	21	14.29%
	N	0	0	0	0
Medical universities	T	40	50.00%	135	48.89%
	P	40	50.00%	135	48.89%
	N	0	0	0	0
Physical education academies	T	17	23.53%	52	36.54%
	P	17	23.53%	52	36.54%
	N	0	0	0	0
Artistic academies	T	90	33.33%	112	46.43%
	P	90	33.33%	112	46.43%
	N	0	0	0	0
Theological universities	T	13	7.69%	12	0.00%
	P	8	12.50%	12	0.00%
	N	5	0.00%	0	0
Ministry of National Defence academies	T	16	0.00%	45	20.00%
	P	16	0.00%	45	20.00%
	N	0	0	0	0
Ministry of Internal Affairs and Administration academies	T	3	66.67%	4	50.00%
	P	3	66.67%	4	50.00%
	N	0	0	0	0
Remaining higher education institutions	T	373	43.43%	220	65.00%
	P	127	47.24%	90	73.33%
	N	246	41.46%	130	59.23%

Source: *own work*

Table 4. Participation of women in top authority positions for public and private HEIs

Designation: T – total P – public N – private	Total	Incl. women	% of women	
T	4250	1538	36.19%	
P	3183	1110	34.87%	
N	1067	428	40.11%	
	Rectors total	% of women	Vice-rectors total	% of women
T	373	19.84%	589	30.05%
P	134	10.45%	393	26.72%
N	239	25.10%	196	36.73%
	Deans total	% of women	Deputy deans total	% of women
T	1197	33.42%	2091	42.42%
P	801	28.84%	1855	40.97%
N	396	42.68%	236	53.81%

Source: *own work*

Studies reveals that there are large differences between certain categories of HEIs in terms of women' participation in their authorities (*Tables 5 and 6*). And so, the lowest percentage of women in power occurs in theological universities, maritime and ministry of national defence academies (*Table 5*). These are strongly masculinised schools, preparing primarily men for social and professional roles. In the case of ministry of defence and maritime academies, women sometimes are rectors and deans, but in any of these positions, their share does not exceed 20% (*Table 3 and 4*). In the case of technical universities, it should be noted that for a relatively high percentage of women holding leadership positions in these schools in total (almost 27%) most work as deputy deans (close to 31%) and vice-rectors (19%). In private technical universities, indicators of women's participation among school authorities are decidedly higher, but such schools in Poland are few and far in between. In general, however, the share of women in technical universities is at a much lower than the total percentage of women among the authorities of all HEIs in Poland.

Table 5. HEIs with the lowest share of women among authorities

HEI type	Designation: T – total P – public N – private	Total	Incl. women	% of women among HEI authorities (rectors, vice-rectors, deans, deputy deans)
Total	T	4250	1538	36.19%
	p	3183	1110	34.87%
	N	1067	428	40.11%
Theological universities	T	48	2	4.17%
	P	28	1	3.57%
	N	20	1	5.00%
Maritime universities	T	36	4	11.11%
	P	36	4	11.11%
	N	0	0	0
Ministry of National Defence academies	T	84	12	14.29%
	P	84	12	14.29%
	N	0	0	0
Technical universities	T	846	225	26.60%
	P	803	209	26.03%
	N	43	16	37.21%

Source: *own work*

The situation is reversed, i.e. a significantly higher than average percentage of women in top positions occurs in the so-called remaining HEIs, medical, pedagogical and economic universities (*Table 6*). However, in each HEI type, the situation is slightly different. Pedagogical universities (especially public ones) have one of the highest percentages of women rectors, and they are appointed deans even more frequently, while at the level of deputy deans the gender gap is closing. However, these are HEIs where women dominate as students, as well as research and teaching staff, which explains the situation.

In the case of economic universities, the situation in slightly different: women are much more represented at the dean level (especially in private schools and among deputy deans, where the gender gap is virtually non-existent) than at the level of rectors (*Table 2 and 3*). In medical universities the situation is even more pronounced than in economic schools, as at the dean level, the distribution of positions between women and men is equal, while women's share of top (rector) positions is significantly smaller (24%).

Remaining HEIs are mostly private ones, which, as indicated above, have a more favourable women to men ratio of top positions.

In summary, there are fundamental differences in the staffing of managerial positions in certain types of schools, while women are the least represented in the most masculinised theological, military and maritime universities, and the most represented in feminised institutions, such as medical, pedagogical and economic universities, which proves Hypothesis 3.

Table 6. HEIs with the highest share of women among authorities

HEI type	Designation: T – total P – public N – private	Total number of women in top authority positions	Incl. no. of women	% of women among school authorities
Total	T	4250	1538	36.19%
	P	3183	1110	34.87%
	N	1067	428	40.11%
Remaining HEIs	P	967	429	44.36%
	P	308	160	51.95%
	P	659	269	40.82%
Medical universities	T	222	95	42.79%
	P	222	95	42.79%
	N	0	0	0
Pedagogical universities	T	128	54	42.19%
	P	89	39	43.82%
	N	39	15	38.46%
Economic universities	T	392	162	41.33%
	P	97	39	40.21%
	N	295	123	41.69%

Source: *own work*

4. Discussion

Despite increasing social and political efforts aiming at gender equality, women still experience inequality in professional development. Our research shows that women in Polish HEIs more rarely than men occupy top leadership and managerial positions – deputy posts are more accessible to them, which proves the existence of the glass ceiling (Ballenger, 2010; Rosser, 2004; Legato & Glezerman, 2017), and the sticky floor (Johnson, Long & Fought, 2014; Carli & Eagly, 2016; Khwaja, Eddy & Ward, 2017). These phenomena are especially pronounced in rector positions, and in certain types of HEIs even predominant, particularly in public schools (only 10% of women rectors). As a symbolic example, let us take in the fact that in the 655-year long history of the oldest and one of the best universities in Poland, a woman has never been appointed the rector, and in the largest Polish university it happened only once. However, this is not unusual, as very few of the best universities in the world are led by women. In fact, the analysis of the Times Higher Education World University Rankings 2018 reveals that just 34 of the top 200 institutions, which amounts to 17%, are currently led by women. This is a small decrease from 2017, when 36 of the top universities had female leaders (The World University Ranking 2018).

The unsustainable power distribution in Polish HEIs is also characteristic to many CEE countries or even looks like a more universal pattern. The most important institutions in the EU

academic landscape in 2010 were led and managed predominantly by men. In the EU-27, on average 15.5% institutions in the higher education sector are headed by women, and 10% of universities has a woman rector (like in Poland) (European Commission-Brussels, 2012). Academic organizations are more masculinist and are characterised by an unsustainable power distribution compared to other educational organizations. The example of Albania proves that in 2017 there was only one woman rector, which results in 8.33% participation. Cases of Germany and the UK are less pronounced, but also showing the lack of sustainability. Only 12% of rectors (vice-chancellors/presidents) in Germany in 2013 were women and in the UK – only 17%. The unsustainable power structure is probably influenced also by the generation effect, as gender imbalance in academic work activity increases with age (European Commission-Brussels, 2012). Leadership positions in academia are reached at a decidedly later age, which makes women less likely to assume these posts. Therefore, the distinguished percentage of women rectors in Polish private universities (25%) should be noted. It can be also explained by the so-called "leaky pipeline" phenomenon (Bennett, 2011; Gasser & Shaffer, 2014), which, however, requires more profound qualitative studies with the use of interpretative and critical paradigms (Anderson, 2017; Kindsiko, 2018; Sułkowski, 2010).

At the same time, comparing Polish results: 36% of women in top leadership positions in HEIs, to data from worldwide research, the situation does not look unfavourable. Research shows a 38.2% female share of employment in senior and middle management positions in the economy in 2017, as well as 28% of seats held by women in national parliaments (29.1% average for OECD member states), and 22.2% of women in ministerial-level positions (28.6% average for OECD member states) (Gender Indicators Report).

The most unbalanced gender power structure in Polish HEIs is correlated with the highest prestige. There is no women rector in a comprehensive university. Also very high prestige positions of the rectors in public universities, as well as traditionally masculinised HEIs, i.e. maritime, military or theological universities. Perhaps the explanation of this situation is connected to the fact that male-dominated HEIs (in terms of both numbers and hierarchy), where men prevent women from the full participation and integration in formal and informal networks, are main examples of homosocial institutions (Fogelberg *et al.*, 1999; Etzkowitz, Kemelgor & Uzzi, 2000; Husu, 2001; Gupta *et al.*, 2005; Sald, 2009).

Small and less renowned private schools and colleges in Poland have a higher representation of women than universities, universities of applied sciences and medical universities. One of the explanations is the strong correlation between prestige of an academic institution and low representation of women (Johnson, 2017). Secondly, the distribution of power in private institutions is more meritocratic than in the most prestigious public comprehensive universities (Patel *et al.*, 2018). Both explanations require deeper qualitative studies.

Conclusion

According to our research, the thesis that in Poland there is a large disproportion of women vs. men in the highest positions of power in academic institutions, is confirmed (Sulik, 2010). All three research hypotheses have been positively verified. In the highest positions in Polish HEIs, there is an unsustainable power distribution with an underrepresentation of women. Furthermore, in the most prestigious academic positions of rectors of all comprehensive universities, there are no women represented.

The general model of women's participation among HEI authorities in Poland is similar to that of the EU higher education institutions. It can be characterised in the following manner: men dominate in top positions – they are predominant as rectors and deans. But if women are in positions of power, they are usually deputies: vice-rectors and deputy deans. The model

becomes even stronger if we look at public schools; however, if we study private HEIs, the share of women in top leadership positions increases significantly and in the case of some types of HEIs, the gender gap at the level of deans is closing. It can be, therefore, noted that in the studied period, public HEIs in Poland calcify a long-standing system in which man have been holding the dominant role. Meanwhile, private universities, all of which were established in the period of economic and political transformations after 1989, are not burdened with tradition, and they are rather closer to contemporary Polish businesses where relatively more often women play the leading role.

Our research has certain limitations. The collected data refer to the current (2016-2020) terms of office of public HEI authorities, so they do not display trends of the studied phenomenon. Furthermore, in private universities, authorities' terms of office are planned in a completely different manner and may not be compatible with those in public HEIs.

Perspectives of the research connect a higher participation of women in academic power structures with scientific productivity and quality culture in HEIs (Dzimińska, Fijałkowska & Sułkowski, 2018). More practical questions concern methods that could be used to make the power structures in academia more sustainable. There are possibilities to use empowerment, education and awareness building tools (Turner & Maschi, 2015; Quinn, Davies & Lubelska, 2017). Another important area is building an international survey showing the change in women's participation in power structures, following the pattern of other comparative intercultural studies (Mączyński & Sułkowski, 2017).

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