“Breaking the glass ceiling in Kazakhstani science: Government grants and gender representation trends”

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BREAKING THE GLASS CEILING IN KAZAKHSTANI SCIENCE: GOVERNMENT GRANTS AND GENDER REPRESENTATION TRENDS

Abstract

Equal participation in scientific activity is an important indicator of the fair distribution of opportunities in a democratic society. This article examines the issue of women's representation as leaders in Kazakhstani science, with a particular focus on the gender aspect of participation in scientific projects. For this purpose, the study analyzed the distribution of grants for scientific projects funded by the government between 2018 and 2024 in Kazakhstan. The findings show a positive trend in women's participation in project leadership over the period analyzed, with the share of projects led by women increasing from 38.2% in 2018 to 48.4% in 2022, noting that most projects are funded for three years. At the same time, the analysis reveals pronounced disciplinary disparities. Women are most strongly represented in the social sciences and humanities, while their participation remains considerably lower in technical and natural science fields. The results also indicate a persistent gender gap in access to large-scale funding, as projects with higher budget allocations are predominantly led by male researchers. Overall, the results highlight both quantitative progress and structural limitations, underscoring the need for targeted policy measures aimed not only at increasing women's participation but also at reducing gender imbalances across scientific fields and funding levels in Kazakhstani science.

Keywords science, inequality, women's leadership, Kazakhstan, government grants

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INTRODUCTION

Global institutional frameworks increasingly position gender equality as a core dimension of sustainable development and human rights. This shift has placed women's advancement at the center of international research and policy agendas. In the United Nations Sustainable Development Goals (SDGs), gender equality and quality education are articulated as key priorities for global development (UN, 2025). Thirty years after the adoption of the Beijing Declaration and Platform for Action, gender equality remains a central commitment, including the promotion of women's equal opportunities in all spheres, science and research among them (UN, 2015; OECD, 2025; WTO, 2025).

In Kazakhstan, the global mainstreaming of gender equality and the ratification of major international agreements have been accompanied by national policy initiatives aimed at strengthening gender parity. Strategic documents such as the Strategy for Ensuring Gender Equality 2006–2016 and the Concept of Family and Gender Policy of the Republic of Kazakhstan until 2030 (CFGPRK) (Legislation of the Republic of Kazakhstan, 2016) have contributed to the institutional-

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ization of gender policy. The latter is supported by an implementation roadmap that allocates responsibilities across government agencies to advance gender parity in priority areas.

Gender inequality is often most visible in leadership pipelines, where structural barriers constrain women's progression to senior roles. Despite these commitments and broader global progress, disparities in leadership representation persist across many sectors (UNDP, 2024). This pattern is also pronounced in academia and science, where women may constitute a substantial share of personnel yet remain underrepresented in senior academic and managerial roles. Persistent structural inequalities shape women's career trajectories through unequal access to leadership positions, constrained opportunities for advancement, and differential distribution of resources and decision-making power. Kazakhstan exhibits similar dynamics: women's participation declines at higher academic and administrative levels despite strong representation at early career stages. Although legislative reforms and policy measures have expanded the formal framework for gender equality, women remain underrepresented among senior leaders in higher education institutions (HEIs), and research institutes continue to be predominantly led by men.

Inclusive participation in science is essential for advancing knowledge and ensuring that diverse perspectives inform research priorities and outcomes. However, disparities persist in access to research funding, leadership roles, and professional recognition, including women's underrepresentation in technical fields and uneven resource allocation. In Kazakhstan, these inequalities remain insufficiently examined at a systemic level. Therefore, this study investigates gender-related disparities in the national research funding and recognition system by analyzing women's participation in competitive grant programs, their representation in scientific evaluation committees, and nomination patterns for national scientific awards in 2018–2024, thereby providing evidence on structural factors shaping gendered outcomes in the scientific sphere.

1. LITERATURE REVIEW

Historically, women faced substantial barriers to participating in science on equal terms with men. Although women's representation in academia has improved over time, men continue to dominate senior and decision-making positions, including within the scientific sector. Persistent structural inequalities underlying this imbalance are commonly captured through concepts such as the "sticky floor", "glass ceiling", "glass cliff", and the "leaky pipeline", which describe systemic obstacles that constrain women's career progression in academia (Kuzhabekova & Almukhambetova, 2017; Rodionov et al., 2023). Kazakhstan reflects these broader global dynamics.

A substantial body of theory and empirical research examines women's representation in academia and science and explains why gender imbalances persist. Understanding contemporary inequality requires attention to both the historical roots of exclusion and the conceptual frameworks that describe how discrimination operates within scientific institutions. Historical accounts document numerous cases in which women's achievements were marginalized, silenced, or attributed to male colleagues. This pattern is captured by the "Matilda effect", which refers to the systematic undervaluation or invisibilization of women's scientific contributions and is widely used to conceptualize gender bias in knowledge production and recognition (Lerman et al., 2022). In Europe, the Matilda effect has become an established area of inquiry, reflected in research projects, educational programs, and dedicated university units that investigate mechanisms of misattribution and devaluation. Collectively, this work identifies recurring forms of bias, analyses historical and contemporary cases, and informs interventions aimed at reducing gendered disparities in scientific recognition and career advancement.

Many countries are implementing projects aimed at overcoming gender stereotypes and encouraging women to actively participate in science, particularly in the technical field, which remains predominantly male-dominated. Well-known European universities offer master's degree programs called Matilda. These programs are avail-

able at universities in Germany, Italy, France, and Bulgaria. The curricula of these programs include courses on the history of women in science and gender studies. This education is necessary, first and foremost, to prevent a decline in the number of women in science and to increase young women's interest in the field. Organizing and holding a scientific conference with the participation of partner countries, and organizing and conducting training for Kazakhstani experts at a European university.

In contrast to European countries, no university in Kazakhstan currently offers an independent program of study related to gender issues (Temirbekova & Ergebekov, 2022). According to Kazakhstani scholars, gender studies are not sufficiently conducted in Kazakhstan, largely because universities lack a comprehensive program of study on gender issues at the bachelor's, master's, and doctoral levels. Some universities offer elective courses with a gender-sensitive component as part of their social sciences and humanities programs (Aksit & Salimzhanova, 2024; Shakirova, 2022). However, the lack of developed national standards for gender studies hinders and limits the teaching of gender-oriented courses (Agabekova et al., 2025).

Some theories examine and explain the prevalence of men in science: "Matthew effect" and "Homosociality theory". The interaction between the Matthew effect and the theory of homosociality creates a systemic mechanism for reproducing gender inequality in science. According to the theory of homosociality, men in leadership positions in science prefer to collaborate with members of their own gender and support their career growth. This, in turn, triggers the Matthew effect, whereby those who already have advantages (in this case, men) receive even more opportunities, recognition, and resources. Thus, a self-perpetuating system is formed in which men's scientific research and discoveries are perceived as more frequent or significant (Coleman, 2010; Dion et al., 2018; Medeuov et al., 2025).

Another reason limiting women's participation in science is gender stereotypes. Despite global efforts to ensure diversity in the scientific community and a relatively high proportion of women among researchers, persistent gender stereotypes remain in academia and science. Although statistics show that women in Kazakhstan exceed men in terms of education at all levels (university and postgraduate education), this does not translate into equal career opportunities (Kenzheali et al., 2024; Eizmendi-Iraola & Peña-Fernández, 2023). Social stereotypes still have a strong influence on women's choice of education in "traditionally female fields of activity" and, accordingly, "male" and "female" professions (CFGPRK) (Legislation of the Republic of Kazakhstan, 2016). This subsequently affects the distribution across scientific fields, with women being underrepresented in the physical and technical sciences.

Stereotypical attitudes influence academic success and visibility. Gender bias is observed in scientific articles. Studies show that women are cited less frequently in scientific publications than men (Lerman et al., 2022; Aufenvenne et al., 2024; Tchilinguirova et al., 2024; Zhou et al., 2024; Medeuov et al., 2025). According to some studies, men are more likely to receive funding for research (Ayala et al., 2019; O'Connor et al., 2020). Thus, gender can affect professional recognition in the scientific community. To eliminate all these prejudices, changes and regulatory mechanisms are needed on the part of policymakers, as well as initiatives on the part of the scientific community itself to recognize contributions regardless of gender, so that merit truly becomes the only criterion for scientific recognition.

One of the key factors influencing the career advancement of scientists is mentoring relationships and professional connections within the academic community. However, access to these resources and the ability to use them effectively vary significantly between men and women. Since men predominate in some fields (for example, in STEM), it is challenging for women to find mentors of their own gender; therefore, mentoring is more common among men, who tend to benefit from it more often (O'Connor et al., 2020; Van Helden et al., 2021). Kazakhstani researchers note that in order to change the situation, it is necessary to develop the institution of mentoring among women engaged in science (Kuzhabekova et al., 2018; Kireyeva & Olzhebayeva, 2023).

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Mentoring is closely linked to the phenomenon of academic networking, which is well-developed among men. Researchers raise the question of the relationship between the influence of academic networking on career growth and how this process occurs in terms of gender (Coleman, 2010; Greguletz et al., 2019; Blommaert & Van den Brink, 2020; Woehler et al., 2021; Medeuov et al., 2025). According to some studies, connections among women are crucial for women. In contrast, other studies suggest that such connections are unstable and may weaken over time, so it is necessary to develop gender-mixed connections as well (Van Helden et al., 2021). According to scientists' observations, women often struggle to form the necessary connections in academic circles or are unsure how to leverage them for career growth. In some countries, this may be due to cultural characteristics, where personal and family values are prioritized over professional growth. In general, women's networks tend to be more emotional, providing moral support to one another. Research demonstrates that despite comparable access to professional networks, men and women employ these connections through distinctly different strategies, resulting in divergent career outcomes (Woehler et al., 2021). Thus, overcoming the gender gap in academic careers requires a comprehensive approach to developing mentoring and professional networks among female scientists. This requires not only the creation of formal support programs, but also consideration of cultural characteristics and variations in how men and women build and use academic networks in the scientific sphere.

Despite the existing difficulties, it should be noted that the situation is improving and interest in gender studies is growing in Kazakhstan. Every year, Kazakhstani researchers show increasing interest in studying women's participation in academic and scientific activities (Khamzina et al., 2020; Rodionov et al., 2023; Kuzhabekova & Almukhambetova, 2021; Kireeva & Olzhebaeva, 2023; Agabekova et al., 2025). Further development of gender equality in scientific and academic spheres and the motivation of women to participate in decision-making processes require constant attention from government policy and researchers in general.

In addition, as mentioned earlier, the lack of specialized educational programs and national standards for gender studies in Kazakhstan may contribute to the perpetuation of systemic barriers that prevent women from achieving equal representation in senior scientific positions. Therefore, studying actual grant distribution patterns and identifying specific mechanisms of gender discrimination in the Kazakh scientific context is critical for developing evidence-based policies that could bridge this gap and create more equitable opportunities for women researchers.

The purpose of this study is to examine gender disparities in Kazakhstan's scientific leadership by analyzing the distribution patterns of government research grants from 2018 to 2024, identifying systematic barriers that prevent women from achieving equal representation as principal investigators across different scientific disciplines, and providing evidence-based recommendations for policy interventions to promote gender parity in the national research funding system.

2. METHODS

This study uses a mixed-methods design combining document analysis, quantitative analysis of grant competition outcomes, and content analysis of decision-making bodies. The empirical dataset was compiled from publicly available sources provided by the National Center of Science and Technology Evaluation, which contains official PDF documents on competitive grant and programme-targeted funding calls administered by the Ministry of Science and Higher Education of Kazakhstan (NCSTE, n.d.a). Due to the transition from paper-based submissions and institutional reorganisation, complete digital records are not available for 2011–2017; therefore, the quantitative analysis focuses on the period 2018–2024, when full competition documentation became accessible online (NCSTE, n.d.b).

For each funding call and scheme, we downloaded all available PDF decision files and extracted information on applicants and results. The unit of analysis is the submitted proposal (funded vs. unfunded). The final dataset includes proposals across competitions (n = 17,002) and funding lines

(n = 3,540) between 2018 and 2024. The primary outcome variable is proposal success (funded = 1, not funded = 0). To test differences in success rates, we applied chi-square tests and estimated logistic regression models predicting funding success as a function of applicant gender, year, and scientific field (where applicable). All extracted data were consolidated into Table 1.

To examine whether the gender composition of decision-making bodies is associated with funding outcomes, we conducted a content analysis of the gender structure of National Scientific Councils (NSCs) that discuss and approve grant applications. NSC membership lists were collected from NCSTE and official public records for the corresponding years. For each council and year, we calculated the proportion of women among members and examined their relationship with female applicants' success rates across fields. During the period under review, the NSCs focused on the following areas: rational use of natural resources, including water resources, geology, processing, new materials and technologies, safe products and structures; energy and mechanical engineering; information, telecommunications and space technologies, scientific research in the natural sciences; life and health sciences; Scientific foundations of "Mangilik El" (21st century education, fundamental and applied research in the humanities); Sustainable development of the agro-industrial complex and food safety; National security and defence (some of the areas changed their names to reflect actual trends).

In addition, to analyze gender patterns in national scientific recognition, we constructed a database of award recipients from 2018 onwards using triangulated publicly available sources: official institutional announcements, formal communications on university and research institute websites, and government news releases. Where possible, entries were validated across multiple sources to ensure accuracy and completeness.

3. RESULTS

The analysis of gender representation in Kazakhstan's HEIs and research sectors reveals a striking paradox: while women constitute the majority of academic staff and researchers, they remain significantly underrepresented in leadership positions. In 2022, 25 university rectors were women, compared with 94 men in the same role (KIPD, 2024). Women's academic achievements in Kazakhstan tell a different story from their representation in leadership roles. If we consider the numerical ratio of women and men with candidate and doctor of science degrees, doctors of philosophy and PhDs, there are more women among candidates of science (men – 8,427, women – 9,079), PhDs (men – 785, women – 902), and more men among doctors of science (3,121 men, 1,928 women) (BNSRK, 2021). Thus, if women are not inferior to men in terms of numbers in obtaining higher and postgraduate education, and the main composition of HEIs is women, it is necessary to identify the barriers that prevent women from being more represented in management positions.

A similar pattern emerges in the scientific sector. As shown in Figure 1, national statistics indicate that in 2022, women accounted for 53.8% of researchers in Kazakhstan, while men represented 46.2% (BNSRK, 2022). However, leadership positions in most research institutes are held by men. An analysis of applications and participation in research funding competitions further indicates that women are underrepresented as principal investigators and project leaders. A key limitation is that official statistics do not provide more recent data, which constrains longitudinal analysis.

Table 1 highlights a notable paradox. Although female researchers demonstrate high application rates for scientific research grants, their success rates remain lower than those of their male counterparts. A promising exception is observed among early-career female scientists under 40, who show both strong participation and competitive success in youth-targeted grant programs. This pattern suggests that targeted interventions such as quota mechanisms and dedicated grant writing training could help improve women's overall success in securing state research funding.

Funding disparities across different grant categories reveal important patterns in resource allocation. The lowest funding was for projects with 12-month funding (approximately 5-8 million tenge per year). Next, "the Zhas Galym"

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Source: BNSRK (2022).

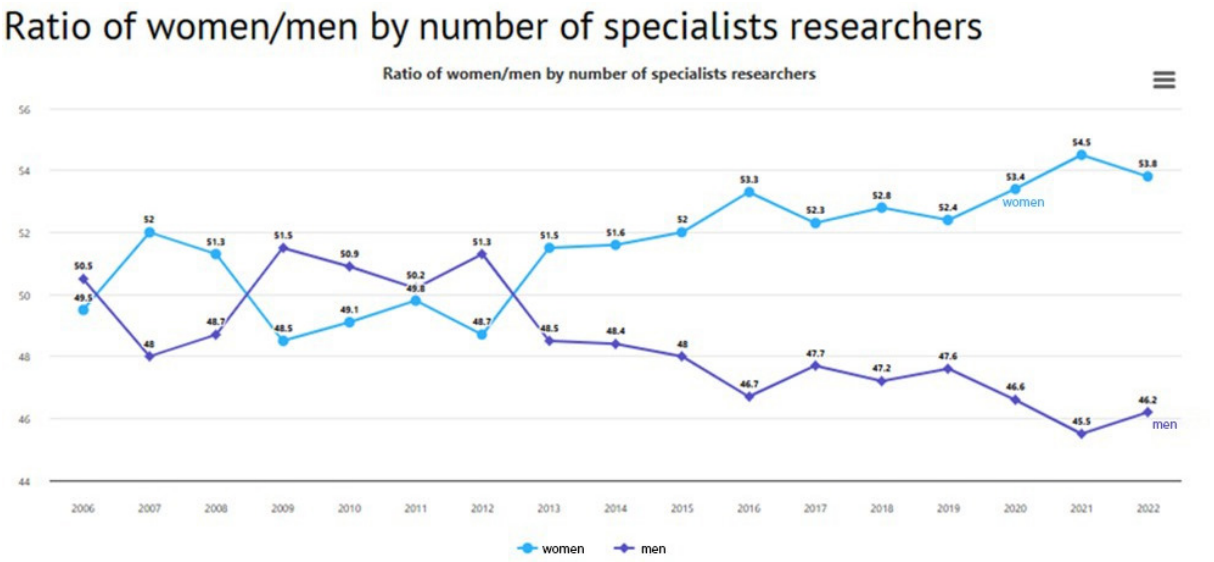

Figure 1. Number of researchers in Kazakhstan from 2006 to 2022

("Young Scientist" in Kazakh) projects had a small budget (approximately 19-24 million tenge for 3 years). Another form of competition for young scientists had a slightly larger budget (approximately 54 million tenge for 3 years). The grant funding competition has a slightly larger budget (75-90 million tenge for 3 years). The program-targeted funding competition has a large budget (from 90 million tenge to 4 billion tenge, with an average budget of 260-450 million tenge). This funding hierarchy correlates strongly with gender, as female-led projects

Table 1. Number of applications submitted and approved

Name of competition	Total applications	Male	Female	Undefined	Total approved	Approved, male	Approved, female	Approved, undefined
Grant funding (2018–2020)	4,660	2,497	2,148	15	1070	645	420	5
Program-based funding (2018–2020)	456	309	147	0	84	65	19	0
Young scientists (2020–2022)	1,374	609	761	4	164	81	83	0
Grant funding 27 months (2020)	1347	696	642	9	325	184	139	2
Grant funding for 12 months (2020)	372	137	235	0	123	43	80	0
Grant funding (2021–2023)	2,101	1,081	1,005	15	386	222	160	4
Grant funding for 12 months (2021)	964	419	542	3	172	96	76	
Program-based funding (2021–2023)	163	101	61	1	26	18	8	
Program-based funding (2021–2023)	35	23	10	2	25	17	8	
Young scientists (2021–2023)	620	286	325	9	151	75	76	
Grant funding (2022–2024)	2,786	1,296	1,474	16	476	256	213	7
Program-based funding (2022–2023)	70	31	38	1	6	4	2	
Program-based funding (2022–2024)	186	114	70	2	55	42	13	
Young scientists (2022–2024)	843	391	446	6	134	77	57	
Young scientists (2022–2024)	477	186	288	3	167	64	101	2
Young scientists (2022–2024)	329	139	190		106	50	56	
Young scientists (2022–2024)	219	87	132		70	26	44	

cluster in modest funding categories while male researchers predominantly secure substantial financial resources.

As shown in Table 2, according to data published openly on the website NCSTE, the members of the NSCs are predominantly men, with most holding male chairperson positions (NCSTE, n.d.b). A positive development is that, in recent years, the number of women on these councils has increased, especially in the social sciences and humanities. This may also be contributing to an increase in the number of grants awarded to female-led projects. However, in the technical sciences, men still predominate on project selection committees.

We have divided all areas covered by the commission into three categories for the period from 2019 to 2023. These include the technical sciences, social sciences, humanities, and other fields. The category "technical sciences" combines the following areas: rational use of natural resources, including water resources, geology, processing, new materials and technologies, safe products and structures; energy and mechanical engineering; information, telecommunications and space technologies, scientific research in the natural sciences; sustainable development of the agro-industrial complex and agricultural product safety. The category "other" includes life and health sciences, as well as national security and defence. The group "social sciences and humanities" encompasses 21st-century education and fundamental and applied research in the humanities. As shown in Table 2, men predominate in the composition of the competition commissions that review and select applications to determine the winners of funding grants. They also mainly head the commissions. Unfortunately, we were unable to find data on the gender breakdown of chairpersons for 2021–2023. The data below shows that there are more women on the committees in the social sciences and humanities.

Examining the awards for scientific achievements in Kazakhstan across various fields, it is evident that men are significantly more likely to receive recognition from the scientific community for their contributions and scientific achievements (Table 3). However, there has been a positive trend in recent years, with an increasing number of female scientists being recognized and winning awards in various fields. When nominating for awards, there is always one winner, either a single researcher or a team consisting of several researchers. However, in some awards (for example, the I. Altynsarin Award), a team of five women won.

Table 2. Members of the National Scientific Council by gender, including the chair and deputy chair (2019–2023)

Direction		Female	Male	Chair	Deputy Chair
2019					
Technical sciences	108	17	91	4 Males	4 Males
Others	58	10	48	1 Female/1 Male	2 Males
Socio-humanitarian sciences	24	13	11	1 Female	1 Male
2020					
Technical sciences	348	68	280	4 Males	4 Males
Others	131	33	98	1 Female/1 Male	2 Males
Socio-humanitarian sciences	88	53	35	Female	Male
2021					
Technical sciences	132	25	107	Unknown	Unknown
Others	48	10	38	Unknown	Unknown
Socio-humanitarian sciences	40	26	14	Unknown	Unknown
2022					
Technical sciences	157	31	126	Unknown	Unknown
Others	48	10	38	Unknown	Unknown
Socio-humanitarian sciences	40	28	12	Unknown	Unknown
2023					
Technical sciences	157	31	126	Unknown	Unknown
Others	48	10	38	Unknown	Unknown
Socio-humanitarian sciences	40	28	12	Unknown	Unknown

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Table 3. Kazakhstan's awards in the scientific field from 2018 to 2024

Year	Name of the award	Total	Male	Female
2018	Named after K. Satpaev	1	1	–
	Named after Ch. Valikhanov	1	1	–
	Named after Y. Altynsarina	1	1	–
	Named after Kul-tegin	1	1	–
	Named after D. Kunaev	1	–	1
	Named after M. Auezov	1	–	1
2019	Named after K. Satpaev	3	2	1
	Named after Ch. Valikhanov	1	–	1
	Named after Y. Altynsarina	5	–	5
	Named after Kul-tegin	1	1	–
	Named after D. Kunaev	4	4	–
	Named after M. Auezov	1	1	–
2020	Named after K. Satpaev	4	3	1
	Named after Ch. Valikhanov	4	3	1
	Named after Y. Altynsarina	1	1	–
	Named after Kul-tegin	1	1	–
	Named after D. Kunaev	5	5	–
	Named after M. Auezov	1	–	–
2021	Named after K. Satpaev	3	3	–
	Named after Ch. Valikhanov	1	1	–
	Named after Y. Altynsarina	5	–	5
	Named after Kul-tegin	1	1	–
	Named after D. Kunaev	–	–	–
	Named after M. Auezov	1	–	1
2022	Named after K. Satpaev	3	3	–
	Named after Ch. Valikhanov	1	1	–
	Named after Y. Altynsarina	1	1	–
	Named after Kul-tegin	1	1	–
	Named after D. Kunaev	2	2	–
	Named after M. Auezov	1	–	1
2023	Named after K. Satpaev	5	3	2
	Named after Ch. Valikhanov	4	3	1
	Named after Y. Altynsarina	1	–	1
	Named after Kul-tegin	1	–	1
	Named after D. Kunaev	1	1	–
	Named after M. Auezov	1	1	–
2024	Named after K. Satpaev	5	3	2
	Named after Ch. Valikhanov	2	2	–
	Named after Y. Altynsarina	1	–	1
	Named after Kul-tegin	1	–	1
	Named after D. Kunaev	1	1	–
	Named after M. Auezov	1	–	1

4. DISCUSSION

Situating Kazakhstan within international policy practice helps identify feasible mechanisms to improve women's representation in scientific careers. Developed countries employ various approaches to regulating gender balance in science, allowing for the analysis of the effectiveness of different strategies (Kireyeva & Olzhebayeva, 2023). According to the UNDP analytical report, Kazakhstan has achieved significant success compared to other countries in the Central Asian region, particularly in education (UNDP, 2024). At the same time, the Government of Kazakhstan regularly implements policies to promote gender equality and integrates these priorities into education and science initiatives. Each year, the state allocates funds for competitive research grants on priority topics to support domestic scientists.

It is essential to comprehend how the state fosters the advancement of scientific research. In 2023, the Concept for the Development of Higher Education and Science in the Republic of Kazakhstan for 2023–2029 (CDHESRC) (Legislation of the Republic of Kazakhstan, 2023) was developed, which refers to the expansion of inclusion issues. The results of the study showed that female researchers are no less active than their male counterparts and participate in competitions for grant funding. Over the period under review, there has been a positive trend in the growth in the number of winning projects led by women. Specifically, the proportion of projects headed by female researchers rose from 38.2% in 2018 to 48,4% in 2022. However, the results of the study show that women are less likely to be nominated for awards for scientific achievements.

However, empirical data indicate a persistent bias in favor of male researchers in the distribution of competitive funding, with this trend being most pronounced in the technical sciences and among projects with higher funding volumes. One of the reasons why men are more likely to win state-funded projects is the confirmation of the homosociality theory. The founders of the theory argue that men are much more likely to support colleagues of the same sex (Coleman, 2010; Van den Brink & Benschop, 2014). This pattern can be explained by two interrelated factors: firstly, the historically established gender imbalance in technical sciences, which are dominated by men; secondly, as can be seen from the data in Table 2, the disproportionate representation of men in the composition of competition commissions that review and select grant projects.

The findings underscore the imperative to investigate the underlying factors contributing to disparities in grant allocation, alongside the systemic barriers impeding women's scientific career trajectories. Such examination is essential for fostering greater female participation and achieving substantive gender parity in academia.

A comprehensive analysis of international best practices would facilitate the identification and contextualization of effective interventions for diverse national settings. Drawing from European models, potential strategies include establishing dedicated funding streams for gender-focused research and implementing quota systems (EU, 2024; Kireyeva & Olzhebayeva, 2023). Additionally, targeted initiatives to enhance female representation in technical disciplines merit particular attention, as these sectors demonstrate the most pronounced gender gaps. To this end, eliminating national stereotypes regarding profession-specific suitability, which remain prevalent in Kazakhstani society, is essential. Furthermore, institutional mechanisms must be established to ensure the visibility and recognition of women's scientific contributions and achievements.

While this study examines only a limited range of barriers to women's career advancement in science, with the complete spectrum of systemic constraints requiring further comprehensive research, it nonetheless highlights key areas for intervention. The proposed measures could address multiple dimensions of inequality simultaneously, attracting young women to scientific careers, strengthening their research output, and improving publication metrics. By implementing such multifaceted approaches, despite the need for a deeper understanding of all existing barriers, Kazakhstan can begin working toward a meaningful transformation of its scientific landscape, positioning women not merely as participants but as leaders in knowledge production. Future research should continue to uncover and analyze the full complexity of obstacles faced by women scientists, thereby informing more targeted and effective policy interventions.

CONCLUSION

The purpose of this study was to examine gender disparities in scientific leadership in Kazakhstan by analyzing the distribution of government research grants, the gender composition of evaluation bodies, and patterns of scientific recognition between 2018 and 2024.

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The study found that, despite a positive increase in the number of female project leaders who have secured state funding in Kazakhstan, substantial challenges remain. One key issue is the strong concentration of women among grant winners in the social sciences and humanities, alongside their underrepresentation in technical fields. Another concern is that men more frequently secure higher-value grants, which may discourage women from participating in competitive funding schemes. This unequal distribution may be partly linked to the predominance of men, particularly as chairpersons, within selection and evaluation committees.

Overall, these findings indicate that formal equality in participation does not necessarily translate into substantive equality in scientific leadership and resource allocation. The persistence of gender imbalances suggests systemic barriers embedded in funding mechanisms, disciplinary structures, and decision-making processes. Addressing these challenges requires targeted policy measures, including increasing women's representation on expert and selection committees, strengthening transparency and accountability in grant allocation, and expanding institutional support such as mentoring and leadership development for women scientists. Strengthening gender-sensitive governance in science is essential not only for equity but also for improving the quality, diversity, and sustainability of Kazakhstan's research system.

AUTHOR CONTRIBUTIONS

Conceptualization: Zhazira Iskindirova, Zhaxylyk Sabitov.
Data curation: Makpal Bekturganova, Zhaxylyk Sabitov.
Formal analysis: Zhazira Iskindirova, Makpal Bekturganova.
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