Araştırma Makalesi / Research Article

Glass Ceiling and Work Engagement: Higher Education in Kazakhstan[*]

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Abstract

This study examines the relationship between women's beliefs about the glass ceiling and their work engagement in higher education institutions in Kazakhstan. The proposed theoretical model was tested using PLS-SEM. Data were collected from 274 women working in higher education institutions in Kazakhstan. Women's beliefs about the glass ceiling were examined across four dimensions (denial, resilience, resignation, and acceptance), while work engagement was measured using the Utrecht Work Engagement Scale. The findings indicate that denial and resilience positively affect work engagement, whereas resignation and acceptance negatively affect it. The results show that women's beliefs about the glass ceiling play an important role in shaping their level of work engagement. The study provides a comprehensive understanding of women's beliefs about the glass ceiling and work engagement in Kazakhstan's higher education sector.

Keywords

Glass ceiling, work engagement, higher education, Kazakhstan, PLS-SEM.

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Kazakistan Yükseköğretiminde Cam Tavan ve İşe Tutkunluk*

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Öz

Bu çalışma, Kazakistan'daki yükseköğretim kurumlarında kadınların cam tavan algıları ile işe tutkunlukları arasındaki ilişkiyi incelemektedir. Önerilen teorik model PLS-SEM yöntemi kullanılarak test edilmiş, veriler Kazakistan yükseköğretim kurumlarında çalışan 274 kadından toplanmıştır. Kadınların cam tavana ilişkin algıları inkâr, dayanıklılık, vazgeçme ve kabullenme olmak üzere dört boyutta ele alınırken, işe bağlılık Utrecht İşe Tutkunluk Ölçeği ile ölçülmüştür. Bulgular, inkâr ve dayanıklılık boyutlarının işe tutkunluğu olumlu yönde etkilediğini, vazgeçme ve kabullenme boyutlarının ise olumsuz yönde etkilediğini göstermektedir. Genel olarak sonuçlar, kadınların cam tavan algılarının işe tutkunluk düzeylerinin şekillenmesinde önemli bir rol oynadığını ortaya koymaktadır. Çalışma, Kazakistan yükseköğretim sektöründe cam tavan algıları ile işe tutkunluk arasındaki ilişkiye ilişkin kapsamlı bir anlayış sunmaktadır.

Anahtar Kelimeler

Cam tavan, işe tutkunluk, yükseköğretim, Kazakistan, PLS-SEM.

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Introduction

Current research on gender inequality has not only identified the obstacles that women face but also comprehensively investigated how these obstacles operate within established hierarchies (Davidson and Cooper; Cotter et al.; Wirth; Dreher; Smith, Caputi, et al.; Smith, Crittenden, et al.). These studies demonstrate that, although historical female roles, such as wives and mothers, have transformed over time, they remain prevalent (Messaoud and Dajani 493-494). These traditional female roles significantly affect women's career paths and social interactions (Tabassum and Nayak 1-2). The maintenance of these roles both supports and limits the development of women in business life. The economic, social, and technological advances initiated by the Industrial Revolution strengthened women's presence in the business world (Karyotaki et al. 247) and necessitated their participation in managerial positions. Currently, new business models and work patterns are emerging that challenge the gender-based division of labor (İnce Yenilmez 49). Particularly in the education sector, female leaders are striving to improve gender equality and ensure equal opportunities for women (Luke 69; Silander et al. 74; Kuzhabekova et al. 6; Alshdiefat et al. 13).

The "glass ceiling" is generally used to emphasize the invisible barriers that women encounter in business settings and their careers (Wirth 1; Cotter et al. 656; Manzi and Heilman 4; Kazykhankyzy et al. 2). This concept was first introduced in the 1970s in the USA (Wirth 25). The prevailing belief that female employees could not succeed in the business world and were not suited for senior positions significantly impacted women in the workplace (Hanek and Garcia 1–14). Hymowitz and Schellhardt described the glass ceiling as the obstacles women face in their article published in the Wall Street Journal (Weyer 483; Smith, Crittenden, et al. 69; Mattis 155; Uysal and Ak 257; Kazykhankyzy et al. 3). Various studies characterized the glass ceiling as a subtle yet enduring obstacle caused by discriminatory, conscious, or unconscious practices and attitudes that hindered the employment of qualified women in senior management roles (Babic and Hansez 2). These barriers highlighted the challenges women faced in advancing to higher positions, often due to discrimination based on gender, race, ethnicity, or other factors (Manzi and Heilman 4). The glass ceiling syndrome can also be described as an invisible and unbreakable barrier (Sever 577) that impedes

the career advancement of specific groups, such as women or minorities, regardless of their qualifications. The fundamental dynamic underlying the glass ceiling concept is the hindrance to women's upward mobility (Yamagata et al. 571). The glass ceiling, whether in business, politics, or educational settings, reflects social and economic gender inequality (Wirth 1). Gender roles discriminate against women compared to men (Manzi 2). The glass ceiling is recognized as a symbol of gender inequality. Simply put, the glass ceiling represents vertical discrimination against women (Kazykhankyzy et al. 3; Babic and Hansez 2; Baxter and Wright 275). The glass ceiling suggests that gender (or other) inequality is more pronounced at the top of the hierarchy, with these disadvantages worsening as individuals advance in their careers (Cotter et al. 1). This is due to the widespread cultural bias that denotes men as more capable than women in leadership, or prejudices that disadvantage women (Begeny et al. 2). Despite ongoing discussions, gender inequality persists as an ethical and social issue (Mbuli and Sibindi 118).

The Glass Ceiling in Higher Education

What are the obstacles to women's participation in high-level decision-making within higher education? This question remains relevant. Higher education institutions (HEIs) play a crucial role in public discussions about gender and racial inequality (Xiao et al. 1–7). Many factors, such as workforce diversity, discrimination, and employment inequalities, are discussed in academia (Jackson and O'Callaghan 460). The rise of female employees in higher education has led to considerable challenges regarding gender equality and diversity (Hou 75; Kazykhankyzy et al. 3), and has brought critical issues in this area to the forefront. Career opportunities in academia are gendered, with women being under-represented in higher academic positions and over-represented in lower ones (Silander et al. 72). For a long time, the challenges and barriers women face in higher education have been overlooked (Hou 75; Llorens et al.). Furthermore, female researchers experience discrimination in higher education, hindering thorough research on this topic. The effects of gender discrimination accumulate and impact women more disproportionately as they gain seniority. In other words, the adverse effects of the glass ceiling persist throughout a woman's career and may worsen as she progresses (Jackson and O'Callaghan 468). Compared to men, women face inequalities in access, professional distribution,

and academic promotions in higher education (Francis and Stulz). The perception of the glass ceiling continues to exist in higher education, perpetuating gender inequality in both academic careers and managerial roles (Silander et al. 85). The glass ceiling in higher education (Bülbül 102) is generally highlighted by factors such as male-dominated leadership models, pressures to publish, inflexible working hours, and gender bias in academic evaluation criteria (Mott 12; Llorens et al. 2047–74; Valencia 1315–33; Griffiths 70–94).

The glass ceiling in HEIs has been addressed in various studies (Bülbül; Abbas et al.; Jackson et al.; Mukhina). Jahangirov (10-131), through a relational survey conducted with all employees at Bilkent University in Türkiye, explored the correlation between the glass ceiling and power distance and found that female employees' perceptions of power distance and the glass ceiling were more pronounced than those of their male counterparts. In a case study of Malaysian higher education, Luke (52–75) examined women's experiences and perceptions of cultural and structural barriers. The study highlighted that the glass ceiling could be understood within local contexts due to socio-political, cultural, and historical factors. According to Williams (75-84), entrenched prejudices, racism, lack of accountability, and a robust diversity infrastructure aimed at transforming institutional culture were the dynamics that perpetuated the glass ceiling in academia. Peterson (33-44) investigated specific challenges faced by 22 senior academic administrators through qualitative semi-structured interviews in Sweden's higher education sector. Can et al. (52-64) explored the relationship between glass ceiling syndrome and academic power distance, reporting a strong positive correlation between perceived glass ceiling and power distance. Abbas et al. (1-8) examined factors influencing the glass ceiling affecting women's career advancement in HEIs, concluding that perceived discrimination and a male-dominated culture were significant contributors. Aslan et al. (151-159) aimed to understand academicians' perceptions of artificial barriers that hinder women's access to senior management positions, asserting that social expectations and assumptions would continue to affect female careers adversely. Xiao et al. (1-7) conducted a retrospective study examining the progress of gender and ethnic diversity in senior academic roles and management in England and Wales. The findings underscored that the overall trend of increasing female representation resulted in a scenario where the number of academic leaders

outnumbered that of executive leaders, indicating a move toward greater diversity as staff members are promoted over time. Lahiri et al. (48-63) sought to determine how the perceived glass ceiling impacting female faculty members' professional advancement in Indian higher education affected their careers. D'sa et al. (232-242) investigated the influence of the glass ceiling on the careers of Omani women in HEIs in the Ibra region of North Sharquiah. The study identified organizational, psychological, and cultural factors as the primary contributors to the glass ceiling that significantly impacted women's careers. Titili et al. (1-7) investigated gender equality in Albanian universities, emphasizing the importance of implementing gender-oriented strategies for progress, despite ongoing challenges and horizontal discrimination. In a study employing Q methodology, Sel and Bozan (227-246) investigated Turkish academicians' experiences with gender equality. Hernández (1–14) investigated the gender salary gap in Spanish public universities, reporting a significant income disparity between female and male faculty members at the University of Murcia, attributed to the glass ceiling that restricted access to full professorships.

Theoretical Background and Hypotheses

Glass Ceiling: Career Pathways Survey

Beliefs about the glass ceiling are significant factors influencing the development of women's career attitudes and behaviors (Khalid and Aftab 5). Smith, Crittenden, et al. (68-77) developed the Career Pathways Survey (CPS) to measure women's beliefs related to the glass ceiling quantitatively. The CPS outlines women's perceptions of the glass ceiling based on four factors: denial, resilience, acceptance, and resignation (Smith, Crittenden, et al. 68-77; Smith, Caputi, et al. 460). Denial is linked to the belief that men and women face similar workplace challenges and have comparable opportunities for achieving career goals; thus, it dismisses gender discrimination and affirms that women can succeed regardless of the glass ceiling (Smith, Crittenden, et al. 71). Resilience is tied to the belief that men and women encounter different circumstances in their pursuit of higher positions, suggesting that experience, education, and hard work can help women overcome obstacles (Smith, Crittenden, et al. 71). Acceptance reflects women's general acknowledgment of societal gender roles and a preference for family-oriented tasks over career ambitions

(Smith, Crittenden, et al. 72). Resignation is associated with the belief that women will face severe negative and discriminatory attitudes if they attempt to advance their careers; therefore, they should not strive to break the glass ceiling (Smith, Crittenden, et al. 72; Balasubramanian and Lathabhavan, "Women's Glass" 1126; Khalid and Aftab 5).

The CPS (Smith, Crittenden, et al. 72) is frequently used in the literature to assess beliefs associated with the glass ceiling. CPS has been utilized in studies examining the impact of female leadership styles on glass ceiling beliefs in healthcare (Mohammadkhani and Gholamzadeh), the relationship between these beliefs and job quitting intentions (Roman; Lathabhavan, "Glass Ceiling"; Lathabhavan, "Psychological Aspects"), the link between glass ceiling beliefs and mental health and burnout (Bayati and Alavi), the analysis of glass ceiling beliefs through the lens of demographic variables (Sarıoğlu; Buyrukoğlu et al.), the connection between female personality traits, glass ceiling beliefs, and subjective career success grounded in optimism and pessimism theories (Khalid and Sekiguchi), the relationship of glass ceiling beliefs with the Emotional Commitment Scale (Khosla), and studies on glass ceiling beliefs among female college students (Biju et al.) and female employees in the banking sector (Masood et al.). Additionally, research has explored the effects of glass ceiling beliefs of female academics on job performance (Akbar et al.), gender differences among students aspiring to work in the sports industry (Perry and Livingston), perceived career advancement (Khalid and Aftab), glass ceiling perceptions related to female upward mobility (Javadizadeh et al.), and the career decision-making self-efficacy of women advocates (Pandurangan and Arumugam), among others.

Work Engagement

Work engagement reflects an employee's satisfaction and positive mental state in the workplace (Leiter and Bakker 1; Schaufeli and Bakker 294; Schaufeli et al. 702; Balasubramanian and Lathabhavan, "Women's Glass" 1126; Min and Yoon 500). Several studies have focused on work engagement because it is a significant factor in employee well-being and behavior (Schaufeli and Bakker; Schaufeli et al.; Balasubramanian and Lathabhavan, "Women's Glass"; Lathabhavan, "Psychological Aspects"; Min and Yoon; Pereira and Wang). Work engagement is described as a motivational concept consisting of three correlated dimensions: vigor, dedication, and absorption (Schaufeli

et al.; Leiter and Bakker; Balasubramanian and Lathabhavan, "Women's Glass"; Min and Yoon). It is acknowledged that optimistic employees take ownership of their jobs more (Bakker and Demerouti 310), whereas pessimistic thoughts lead to negative work outcomes (Schaufeli et al.; Leiter and Bakker; Balasubramanian and Lathabhavan, "Linking Women's"; Balasubramanian and Lathabhavan, "Women's Glass" 1126; Min and Yoon 505; Smith, Caputi, et al. 459).

Balasubramanian and Lathabhavan ("Women's Glass" 1131) demonstrated that beliefs about the glass ceiling significantly influence work engagement. Thus, women's perceptions of the glass ceiling affect their engagement in an organization (Min and Yoon 500; Sunaryo et al. 2). The correlation between these two variables indicates that perceptions of the glass ceiling are linked to work engagement (Balasubramanian and Lathabhavan, "Women's Glass" 1126; Smith, Caputi, et al. 465; Sharma and Kaur 133). Previous studies have explored the relationship and causality between the glass ceiling and work engagement. These studies indicate that women's perceptions of unfair treatment and discrimination in the workplace negatively impact work engagement (Sia et al.; Min and Yoon; Balasubramanian and Lathabhavan, "Linking Women's"; Lathabhavan, "Glass Ceiling"; Lathabhavan, "Psychological Aspects"; Son Hing, et al.; Sunaryo et al.; Stamarski and Son Hing). In the structural model, the anticipated effects of glass ceiling beliefs on work engagement are outlined in four hypotheses (Balasubramanian and Lathabhavan, "Linking Women's" 77).

H1. Denial is positively related to work engagement.

H2. Resilience is positively related to work engagement.

H3. Resignation is negatively related to work engagement.

H4. Acceptance is negatively related to work engagement.

Methodology

The Study Sample and Data Collection

This study examined the impact of women's beliefs about the glass ceiling on their work engagement in Kazakh HEIs. Thus, the research population consisted of female employees from Kazakh universities. An online survey was conducted with voluntary participants during April and May 2024. A

total of 300 female university employees participated in the online survey, and after excluding incomplete forms, the analysis included survey data from 274 participants.

Measurement Instrument

The survey used in the study comprised three sections. The first section contained sociodemographic questions. The second section featured the CPS created by Smith, Crittenden, et al. to assess glass ceiling beliefs. The CPS includes four sub-dimensions: denial (10 items), resilience (11 items), resignation (10 items), and acceptance (7 items) (Kazykhankyzy et al. 6). The third section comprised five items from the Utrecht Work Engagement Scale, developed by Schaufeli et al. to gauge work engagement. A five-point Likert-type scale was used with anchors ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The CPS was previously adapted to the Kazakh language by a research group that included the authors (Kazykhankyzy et al. 1–20), confirming the scale's validity and reliability. The items measuring work engagement were translated into Kazakh and Russian, given Kazakhstan's multilingual higher education system, and then tested in a pilot study ($n = 15$) to assess comprehensibility and cultural adaptation.

Data Analysis

The dataset was initially examined using a multivariate normality test, which indicated that the data distribution was not normal ($p < 0.05$). Consequently, Partial Least Squares Structural Equation Modeling (PLS-SEM), a method better suited to situations where the data are not normally distributed, was used. PLS-SEM is a powerful statistical technique that provides reliable estimates, particularly in cases involving small sample sizes, multicollinearity, and non-normal data distributions (Hair et al., *Partial* 11). It also facilitates modeling complex correlations between variables and testing of theoretical frameworks through an exploratory approach.

The power analysis conducted to assess the adequacy of the sample size indicated that the minimum sample size for 80% power was $p_{min} = 0.20$ and $n_{min} > 250$, based on the smallest path coefficient in the model at a significance level of 1% (Hair et al., *Partial* 17). PLS-SEM estimates were calculated using SmartPLS 4.0 software.

Findings and Analysis

Analyzing the Demographic Data

Descriptive characteristics of the sample are presented in Table 1. Twenty-two percent of the participants were between 20 and 29 years old, 40% were aged 30 to 39, 31% were between 40 and 49 years old, and 7% were 50 years old or older. Eight percent of the participants were high school graduates, 42% held bachelor's degrees, 34% possessed master's degrees, and 15% earned PhDs. Among the participants, 7% were executive managers, 13% held middle management positions, 26% were lower managers, and 55% were not in managerial roles.

Table 1

Characteristics of the sample

Variable	Frequency	Percentage
Gender		
Female	274	1.00
Age		
20 – 29	60	0.22
30 – 39	110	0.40
40 – 49	84	0.31
50 or older	20	0.07
Education Level		
High school	23	0.08
Undergraduate	116	0.42
Master's	94	0.34
PhD	41	0.15
Managerial position		
Executive	18	0.07
Mid-level	35	0.13
Low level	71	0.26
N/A	150	0.55

Measurement Model

Hair et al. (*Partial* 76) recommend analyzing measurement models for both reliability and validity. The reliability of the measurement model is assessed through indicator loadings and internal consistency, while validity is evaluated by determining convergent and discriminant validity. Upon examining the loadings of all indicators presented in Table 2 to evaluate indicator reliability, which is the initial step in validating the measurement model, it is evident that they meet the recommended threshold of ≥ 0.65, and all loadings are statistically significant ($p < 0.001$) (Hair et al., "When to Use" 9). Following the analysis of statistical consistency among the indicators, the second step involves evaluating internal consistency reliability using Cronbach's alpha (CA) and composite reliability (*CR*). It was found that both coefficients exceeded the threshold value of ≥ 0.70 (Hair et al., "When to Use" 8). The results in Table 2 show that CA values for all dimensions ranged from 0.862 to 0.933, while *CR* values ranged from 0.863 to 0.936, indicating good internal consistency.

In the third step of evaluating the measurement model, convergent validity, a method that assesses construct validity, was tested to determine whether the average variance extracted (AVE) was ≥ 0.50 (Hair et al., "When to Use" 9). The AVE values presented in Table 2 indicate that the AVE for all dimensions is above 0.50. Thus, each construct explains at least 50 percent or more of the variance in the indicators (Hair et al., *Partial* 78).

Table 2

Factor loadings, t-value, reliability (CA, CR), and convergent (AVE) validity

Factor / Item	Std. loading	t – value	CA	CR	AVE
Denial			0.929	0.930	0.609
D1	0.734	11.568			
D2	0.795	16.447			
D3	0.763	15.168			
D4	0.809	21.202			
D5	0.759	16.686			
D6	0.788	21.140			
D7	0.777	17.109			
D8	0.767	15.580			
D9	0.768	14.870			
D10	0.840	22.102			

Resilience			0.933	0.936	0.600
RE1	0.753	6.773			
RE2	0.775	10.301			
RE3	0.760	9.367			
RE4	0.772	10.477			
RE5	0.780	8.853			
RE6	0.771	7.568			
RE7	0.790	11.337			
RE8	0.781	9.773			
RE9	0.770	7.292			
RE10	0.783	9.111			
RE11	0.783	7.245			
Resignation			0.917	0.921	0.572
RN1	0.751	9.719			
RN2	0.752	7.057			
RN3	0.741	6.640			
RN4	0.783	10.516			
RN5	0.786	11.910			
RN6	0.803	9.496			
RN7	0.745	8.188			
RN8	0.769	9.507			
RN9	0.693	6.815			
RN10	0.735	8.846			
Acceptance			0.890	0.893	0.603
AC1	0.776	9.169			
AC2	0.736	8.434			
AC3	0.783	9.388			
AC4	0.825	11.224			
AC5	0.801	9.673			
AC6	0.753	7.919			
AC7	0.761	9.941			
Work Engagement			0.862	0.863	0.645
WE1	0.814	21.448			
WE2	0.824	24.804			
WE3	0.795	21.898			
WE4	0.773	18.208			
WE5	0.808	21.026			

Finally, in the fourth step, discriminant validity, which measures how distinct a dimension is from other dimensions in the model, was analyzed (Hair et al., *Partial* 79) using the heterotrait–monotrait (HTMT) correlation ratio as suggested by Henseler et al. ("A New Criterion") (Hair et al., *Partial* 79). The HTMT ratios in Table 3 show that none of the ratios among the dimensions exceeded the threshold value of 0.85 (Hair et al., *Partial* 79); therefore, it was concluded that discriminant validity was achieved.

Table 3
HTMT Ratio

	Acceptance	Denial	Resignation	Resilience	Work
Acceptance					
Denial	0.464				
Resignation	0.066	0.505			
Resilience	0.079	0.378	0.127		
Work	0.504	0.780	0.499	0.464	

After confirming the statistical significance of the measurement model's reliability and validity, the next step was to analyze the structural model results.

Structural Model and Hypotheses

The structural model was analyzed using the methodology proposed by Hair et al. (*Partial* 116). During this process, key collinearity criteria (potential collinearity), the significance and relevance of the path coefficients, the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2) were examined. To evaluate the path coefficients between endogenous and exogenous variables, the bootstrap method was applied with 5,000 resamples.

The first stage in analyzing the model involves determining the Variance Inflation Factor (VIF) to examine multicollinearity among the variables. The highest VIF was found to be 2.041, which is below the threshold of $VIF < 3$. It was concluded that there was no collinearity in the model (Hair et al., *Partial*).

In the next stage, the magnitude and significance of the path coefficients were analyzed, and the results are presented in Table 4. The findings indicate that all path coefficients align with the research hypotheses and are statistically significant ($p < 0.001$). Furthermore, the R^2 value for the endogenous variable Work Engagement was 0.62. This result indicates that the glass ceiling belief accounts for 62% of the variance in the four external work engagement factors, suggesting that the structural model has strong explanatory power (Hair et al., *Partial* 119).

To assess the influence of the model's exogenous variables on work engagement, f^2 values were calculated and are presented in Table 4. The results indicate that the effect sizes are moderate (Hair et al., "When to Use" 11). Additionally, the Q^2 value, calculated using the blindfolding method to evaluate the model's predictive accuracy, was 0.602. This value demonstrates that the model possesses a high level of predictive relevance (Hair et al., "When to Use" 11).

To assess the overall fit of the structural model, analyses of the Standardized Root Mean Square Residual (SRMR) and the Bentler-Bonett Normed Fit Index (NFI) were performed. The SRMR value was 0.046, which is below the acceptable threshold of 0.08 (Henseler et al., "Using PLS" 9). The NFI was calculated at 0.870, approaching the 0.90 threshold (Henseler et al., "Using PLS" 10; Dash and Paul 3). These results indicate that the overall fit of the structural model is satisfactory.

The statistical findings related to the research hypotheses were then analyzed, and four hypotheses were statistically confirmed. It was found that there were significant and positive relationship between denial and work engagement ($\beta = 0.345$, $p < 0.001$), and resilience and work engagement ($\beta = 0.287$, $p < 0.001$) Similarly, there were statistically significant negative relationship between resignation and work engagement ($\beta = -0.260$, p < 0.001) and acceptance and work engagement ($\beta = -0.314$, p < 0.001).

Table 4
Hypothesis test findings

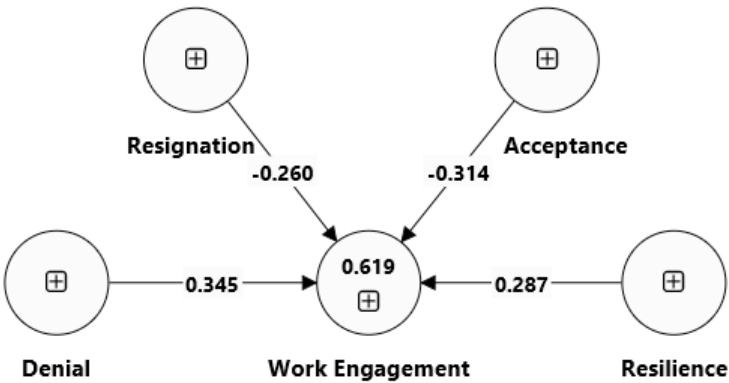| Relationship	Path coefficient	t statistics	VIF	f^2	Decision
Denial → Work Engagement	0.345	4.563	2.041	0.153	Supported
Resilience → Work Engagement	0.287	6.522	1.236	0.126	Supported
Resignation → Work Engagement	– 0.260	5.116	1.404	0.175	Supported
Acceptance → Work Engagement	– 0.314	6.709	1.407	0.184	Supported

Figure 1. *Structural Model*

Discussion and Conclusion

The study's findings support the existence of a causal relationship between these two variables, highlighting the determining role of glass ceiling beliefs on work (Smith, Caputi, et al. 462). The analysis results demonstrated that glass ceiling beliefs significantly influence work engagement, aligning with previous reports (Smith, Caputi, et al. 465; Balasubramanian and Lathabhavan, "Women's Glass" 1131; Lathabhavan, "Glass Ceiling" 310; Lathabhavan, "Psychological Aspects" 179). Specifically, it was confirmed

that glass ceiling beliefs, as assessed by the CPS, predicted women's work engagement in universities. This scenario indicates that, to ensure gender equality in higher education, current institutional policies need to be reviewed and comprehensive strategies developed to address glass ceiling barriers.

The study findings showed that denial significantly predicts work engagement in the presence of glass ceiling beliefs (β = 0.345, t = 4.563, f^2 = 0.153). Female academicians are more committed to their jobs, and their organizational motivation increases when they deny the existence of the glass ceiling. However, it is important to remember that this type of denial is not sustainable in the long term and may lead to overlooking structural gender inequalities. Resilience also has a positive and significant relationship with work engagement (β = 0.287, t = 6.522, f^2 = 0.126). This finding indicates that female academics possess psychological resilience, which enhances their commitment to their jobs despite the barriers posed by the glass ceiling. However, implementing egalitarian policies at the institutional level, rather than relying on individual resistance, will foster more sustainable work engagement in the long run.

On the other hand, acceptance and resignation variables were found to negatively affect work engagement (acceptance: β = -0.314, t = 6.709, f^2 = 0.184; resignation: β = -0.260, t = 5.116, f^2 = 0.175). The fact that female academics accept the existence of the glass ceiling or feel discouraged about their ability to advance in their careers significantly reduces their work engagement. This reveals that addressing the glass ceiling is essential at both the individual and institutional levels and highlights the importance of creating supportive mechanisms to encourage the career development of female employees.

Gender inequality in Kazakhstan's higher education system remains a subject of concern, with women's representation in academia and leadership positions reflecting broader global patterns. Occupational segregation continues to limit women's access to senior management roles and contributes to persistent wage disparities. These structural barriers reinforce the glass ceiling, which in turn negatively affects women's career aspirations and long-term engagement in the academic workforce. Numerous studies

emphasize the need to develop more inclusive national-level policies to ensure gender equality in all spheres of education and research.

Nevertheless, Kazakhstan has achieved notable progress in specific domains. The country ranks among the top three globally in terms of the proportion of female researchers, with women representing 54% of the research workforce, significantly higher than the global average of 40%. According to the National Science Report (Ministry of Science and Higher Education of The Republic of Kazakhstan 145), women constitute more than half of all holders of master's degrees, candidates for the sciences, and Doctor of Philosophy (PhD) degrees in the country. In the 2023 – 2024 academic year, 5966 individuals were enrolled in doctoral programs, 62.2% of whom were women. These data point to a strong female presence in scientific research and advanced education, which may serve as a platform for further gender-balanced development in academic governance.

Kazakhstan has also undertaken substantial legal and institutional measures to promote gender equality. The government's Strategy for Gender Equality 2006–2016 sought to expand women's participation in political, social, and economic spheres. A key milestone was the adoption of the Law "On State Guarantees of Equal Rights and Equal Opportunities for Men and Women" in December 2009, which laid a legal foundation for equitable access to public service and leadership positions (Decree of the President of the Republic of Kazakhstan).

In addition to progress in legislative and educational frameworks, Kazakhstan also leads the region in the proportion of female university rectors. According to Harden-Wolfson and Shakirova, women occupied 26.1% of rector positions in HEIs. In comparison, in neighboring Kyrgyzstan, women hold approximately 17.2% of senior roles in the education sector and 5.3% in both Tajikistan and Uzbekistan (Harden-Wolfson and Shakirova, "Current and Emerging" 68; Harden-Wolfson and Shakirova, "Data on Female Rectors").

Such achievements reflect a consistent and targeted governmental effort to dismantle institutional gender barriers. Continued implementation of inclusive policies and systemic reforms is essential for ensuring equal

opportunities and strengthening women's contributions to the advancement of Kazakhstan's academic and scientific landscape.

Considering the gender perspective and spatial differences in assessing human capital in Kazakhstan is crucial for understanding the dynamics between glass ceiling beliefs and work engagement. The effect of glass ceiling beliefs on work engagement cannot be solely attributed to individual motivations; institutional structures, social norms, and cultural factors are key determinants of this relationship. While the glass ceiling remains a barrier to the career development of female academics, personal efforts alone are insufficient to overcome it. Universities must develop policies that promote gender equality and implement practices to reduce barriers faced by female scholars in their career paths.

In conclusion, this study aimed to raise awareness of gender equality in the Kazakh higher education system by examining the impact of glass ceiling beliefs on work engagement. The findings reveal that the invisible barriers female academics face in the workplace directly affect their work engagement. Considering how the glass ceiling interacts with individual psychology and organizational structure, the significance of educational programs and policy reforms that support women's career development is emphasized once again. Thus, the study not only provides theoretical contributions but also serves as an essential reference for guiding higher education policies in Kazakhstan.

Limitations and Future Research

This research has examined the impact of glass ceiling beliefs on work engagement through a conceptual model. However, the model relied on individuals' subjective evaluations. In the future, the model could be enhanced by linking women's career achievements in higher education to objective indicators.

The study data were collected through a voluntary survey, which may have introduced systematic errors, such as social acceptance and response biases. Future studies could explore the effects of glass ceiling beliefs within institutional and cultural contexts in greater detail, using qualitative methods such as in-depth interviews and focus groups.

The cross-sectional design on which the study methodology was based may have limited the ability to fully understand causal relationships. Therefore, longitudinal studies are necessary to examine changes in glass ceiling beliefs over time and their long-term effects on work engagement. Additionally, more comprehensive insights into gender inequality in higher education can be gained through comparative analyses across institutional and cultural contexts.

Therefore, while this study revealed significant findings, future research should employ broader methodological approaches to foster a deeper understanding of the glass ceiling phenomenon.

Contribution Rate Statement

The authors' contribution rates in this study are equal.

Conflict of Interest Statement

There is no conflict of interest with any institution or person within the scope of this study. There is no conflict of interest between the authors.

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