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Gulnara Nyussupova, Gaukhar Aidarkhanova, Aubakirova Gaukhar, Zhumagulov Chingiz, Mukhtarov Ulan
Al-Farabi Kazakh National University, Almaty, Kazakhstan

Gender features of human capital development in the Republic of Kazakhstan

Abstract: The basis of this study was the analysis of the human capital reproductive processes in the Republic of Kazakhstan, considering the gender component. The object was the human capital of Kazakhstan's regions, and the subject was the gender aspect of human capital development. Mincer's supplemented human capital assessment model was the primary model for calculating human capital. Factors influencing the effective use of human capital in the regions, considering the gender component, were identified, and their indices were calculated. The analysis showed a persistent gender gap in life expectancy, education level, income, and labour market. Based on the results, leader and outsider regions in terms of the accumulated human capital level were identified. The analysis indicates the responsible attitude of the government of the Republic of Kazakhstan towards developing gender equality. Over the past ten years, Kazakhstan has advanced significantly in its efforts to empower women in the socio-political sphere. The Republic of Kazakhstan has assumed obligations under several international agreements, adopted many laws, and developed government measures critical for increasing women's participation in government activities.

Keywords: gender equality; human capital; human capital index considering gender factor; labour market; region

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Introduction

The economic growth of the Republic of Kazakhstan is inextricably linked with increasing its national wealth. According to the concept proposed by the World Bank, national wealth is understood as a combination of three components: natural capital, productive and non-productive assets, and intangible assets, including human capital. At the same time, human capital should include several indicators characterising the population's

well-being and quality of life. Significant funds are spent annually on the reproduction of human capital, including upbringing, education, promotion of health, and other factors that increase people's working capacity, lengthen their working period, and other conditions for favourable life activity. This, in turn, leads to the population's increased productivity and a higher standard of living.

Women in Kazakhstan make up slightly more than half of the country's total population. Still, their contribution to the national economy, growth and well-being is significantly below its potential. The purpose of this study is to assess the human capital of the Republic of Kazakhstan in the spatial and territorial contexts, taking into account the gender aspect, confirming the prevalence of gender imbalances associated with existing national traditions, which is especially evident in the southern regions of the country due to the various mental, national and religious characteristics of society that determine attitudes to women. The insufficient demand for women in employment, a decrease in their economic activity, and lower wages all negatively affect the quality of life of women and reduce the return on female human capital.

Ensuring gender equality is one of the factors in achieving sustainable development and adequate economic growth in countries and regions. Despite the attention of international organisations to gender inequality, occupational segregation and underutilisation of women's human capital in the economy, most countries are not able to overcome the barriers to gender equality. Kazakhstan's ten-year strategy demonstrates the government's active and responsible participation in achieving gender equality, which has brought significant success. Among its key achievements is adopting two critical laws: "On State Guarantees of Equal Rights and Opportunities for Men and Women" and "On the Prevention of Domestic Violence."

Considering the current situation, the human capital problem without analysing its gender component would be incomplete and one-sided. Gender determines educational and career opportunities, affects an individual's social status, and influences professional self-determination and self-realisation. Along with this, in Kazakhstan, there is not enough regional research on the gender structure of human capital and its impact on the development of the region. This determines the relevance and need for a geographical study of the regional differentiation of gender aspects of human capital in the Republic of Kazakhstan. To analyse the factors of gender characteristics in the development of human capital in the regions of Kazakhstan, a spatial database of geographic statistics for 2013–2021 was created using GIS technologies.

Material and Methods

Methodologically, this study used theoretical analysis of academic literature, comparative and statistical analyses, GIS, grouping and systematisation, and structural analysis. The data for 2013–2021 was gathered from statistical collections, the «Taldau» information and analytical system, the national SDG reporting platform of the Bureau of National Statistics of the Republic of Kazakhstan, monographs, scientific articles, OECD publications and reports, the European Commission database "Women and Men in Decision Making," and others.

An index approach was chosen when considering methods for assessing human capital within the article's framework, allowing for interregional comparisons and tracking dynamics. The construction of integral indices for territorial comparisons included

methods of standardisation and aggregation of the indicators used. To simplify the standardisation process, the gender difference of the selected indicators was calculated using their percentage expression, which was then converted into a decimal fraction. A standard aggregation method was used to summarise all the indices and calculate their arithmetic mean, assuming equal weight of all the components in recognition of their equal priority. In the article, the authors chose the aggregation method, which calculates the arithmetic mean of all indicators and considers the weighting coefficients for each indicator. The values of the weighting coefficients are based on the literature.

Results and Discussion

The formation and development of the human capital theory developed along with a similarly critical idea of gender equality, a historically conditioned and scientifically grounded process based on denying gender stereotypes in the transformation of social reproduction. In the seventeenth and eighteenth centuries, representatives of various scientific schools studying market relations focused primarily on men as active participants in production and social processes. Women were then subordinate, as they were not considered social units. This did not allow for assessing women's household-based labour and their role as mothers in the reproduction of human capital.

The involvement of women in social production in the eighteenth and nineteenth centuries did not lead to active research into the problem of social gender equality. The justification of discrimination against women by property relations (Marx, 1971) excluded gender aspects from the analysis and caused gender deformation in the social policy of "real socialism." Only later in the nineteenth century did researchers of the concept of "living productive forces" in approaches to assessing human capital in their studies assessing a nation's human capital consider the totality of the country's populations. This became the starting point for further research, considering gender differences. They were carried out by scientists such as Engel (1881), who proposed using the production price method to determine the monetary value of human beings, Petty (1899), who proposed estimating the amount of accumulated human capital by capitalising earnings as a life annuity, and Dublin and Lotka (1928).

Furthermore, Farr (as cited in Johnson, Kotz, 2011) improved Petty's methodology by introducing the factor of the death possibility into the model by mortality rates, and Han and Lee (2020) assessed the value of human capital by the composition of the labour force by age, gender, education and wage level. Worth noting are the studies of Nobel Prize laureate Goldin (Goldin et al., 2021), who identified the reasons for the gender pay gap in the decisions taken by women regarding their prospects in the labour market and the personal circumstances of their families. In a fifteen-year study, the researcher found evidence that the pay gap between men and women widened a year or two after a woman gave birth to her first child.

No comprehensive geographical studies have been devoted to the spatial and territorial analyses of human capital by regions in Kazakhstan's academic literature, especially considering gender imbalance. In Kazakhstan, academic economists, sociologists, and political scientists study various aspects of human capital, quality of life, and human development. Still, more geographical research on human capital needs to be done.

According to the conducted analysis, the assessment of human capital development in the Republic of Kazakhstan was carried out mainly by international organisations and

the state (World Bank, 2020; OECD, 2007). Furthermore, international organisations primarily considered gender equality issues in the context of Central Asia (ADB, 2012). Until now, Kazakhstan studies have aimed at studying individual components of human capital and determining their statistical parameters (Sydykov, 2014), and there has been very little comprehensive spatial assessment of human capital development considering the gender component. All this justified the interest in studying factors of human capital development, identifying the causes and effects of existing gender disparities, and modelling development scenarios.

In international organisations' development strategies, gender equality as a component of socio-economic development is perceived as an essential direction of public policy. The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), adopted in 1979 by the UN, defines the imperative of equality of outcome, not just equality of opportunity. It is not enough to develop anti-discrimination laws. Still, it is necessary to formulate a mechanism for their application in social life and the economy to guarantee true gender equality so that women enjoy it daily. The dual goal of achieving gender equality should be considered. On the one hand, it is the expansion of women's opportunities and choices; on the other, the national potential for a positive response to the interests and problems of women is realised.

In the UN Secretary-General's Report on the Sustainable Development Agenda prepared for the Global Summit 2015, 12 of the 17 goals were gender-sensitive (UN Secretary-General's Message, 2015). Of course, the situation of women in the world over the past quarter century has undergone significant positive changes in education, health care, employment, and sources of income.

Over the past two decades, the Republic of Kazakhstan has assumed obligations under several international agreements, adopted many laws, and developed government measures that have become conditions for increasing women's participation in government activities. Based on compliance with international agreements, such as the UN Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), the Beijing Declaration and Platform for Action, and the Millennium Development Goals, the state developed its Gender Equality Strategy for 2006–2016, which until recently served as the main guideline for government activities in the gender sphere. As the Gender Strategy 2006–2016 was completed, the government has prepared the Concept on Family and Gender Policy until 2030.

Gender policy programs should be based on legislative and socio-economic factors. Still, established ethno-economic and geopolitical conditions, including national and cultural traditions, must also be considered. An assessment of socio-economic development indicators of regions indicates gender imbalances associated with existing national traditions, especially evident in the country's southern regions due to various mental, national, and religious characteristics that determine attitudes towards women.

In all regions of the Republic of Kazakhstan, the number of women exceeds that of men, and women's life expectancy is, on average, ten years longer (Figure 1).

In the regions and, on average, throughout the state, women's wages are 30–35% lower than men's. However, this indicator deserves special attention in the Atyrau and Mangystau regions, where the difference is 40–50%. This phenomenon is explained by the predominance of the oil and gas sectors in these regions, where female labour is less competitive.

There are also trends in higher levels of economic activity among men compared to women. In all regions, males predominate in the structure of the in the economically active population (EAP) structure, except for the cities of national significance, Almaty and Shymkent, where the female population is more economically active than the male (Figure 2).

Women's wages, which are 30–35% lower than men's, justify the emergence of a phenomenon known as "ineffective employment." This term means that investments in women as human capital are higher than the return on these investments due to the insufficient demand for women in employment, which reduces their economic activity and manifests in lower wages. Ineffective employment is understood as under-using the potential of human (female) capital in the labour market according to their education, competence, and accumulated work experience.

Gender inequality in employment has significant consequences both for the society as a whole and for individual women. Among them, it is necessary to highlight the following:

- women's lower standard of living manifested in lower pay for the same work as men,
- reducing investments in human capital as ineffective and not providing adequate returns,
- the decline in the social status of women known as the "glass ceiling," "Matilda effect," or "Matthew effect,"
- a decrease in women's reproductive function determined by a reduction in the number of children born due to a low level of women's income as a component of family income (Kravchenko, 2008).

Researchers have argued that because social relationships and institutions shape behaviour, the key issues in achieving the reproductive health required to reproduce human capital include poverty and livelihood strategies, gender, health behaviour, reproductive behaviour and access to services (Price, Hawkins, 2007).

Human capital is formed primarily in the education system in professional training areas and then used and returned through employment. Participation in social and reproductive labour allows us to distinguish three types of women's employment in social production: full employment, part-time employment, and non-employment, each corresponding to a different relationship between the professional and family spheres. Incomplete and partial employment of women in social production leads to the ineffective use of human capital and the ineffective employment of women.

It is necessary to identify factors that stimulate the development of quantitative and qualitative human capital characteristics, considering gender-related, for the subsequent formation of effective social and gender policies at the national and regional levels, which have certain specifics. The effective use of human capital in the regions, taking into account the gender component, is influenced by several factors, including:

- education level and remuneration level, considered for men and women,
- indicators of economic growth of the state or region (the higher the economic growth, the more smoothed out gender inequality),
- religious characteristics, i.e. the proportion of the population professing Islam,
- the urbanisation level of the state or region, as there is a significant discrepancy in gender equality between urban and rural areas,
- women's access to leadership positions (women are excluded from decision-making despite higher educational capital).

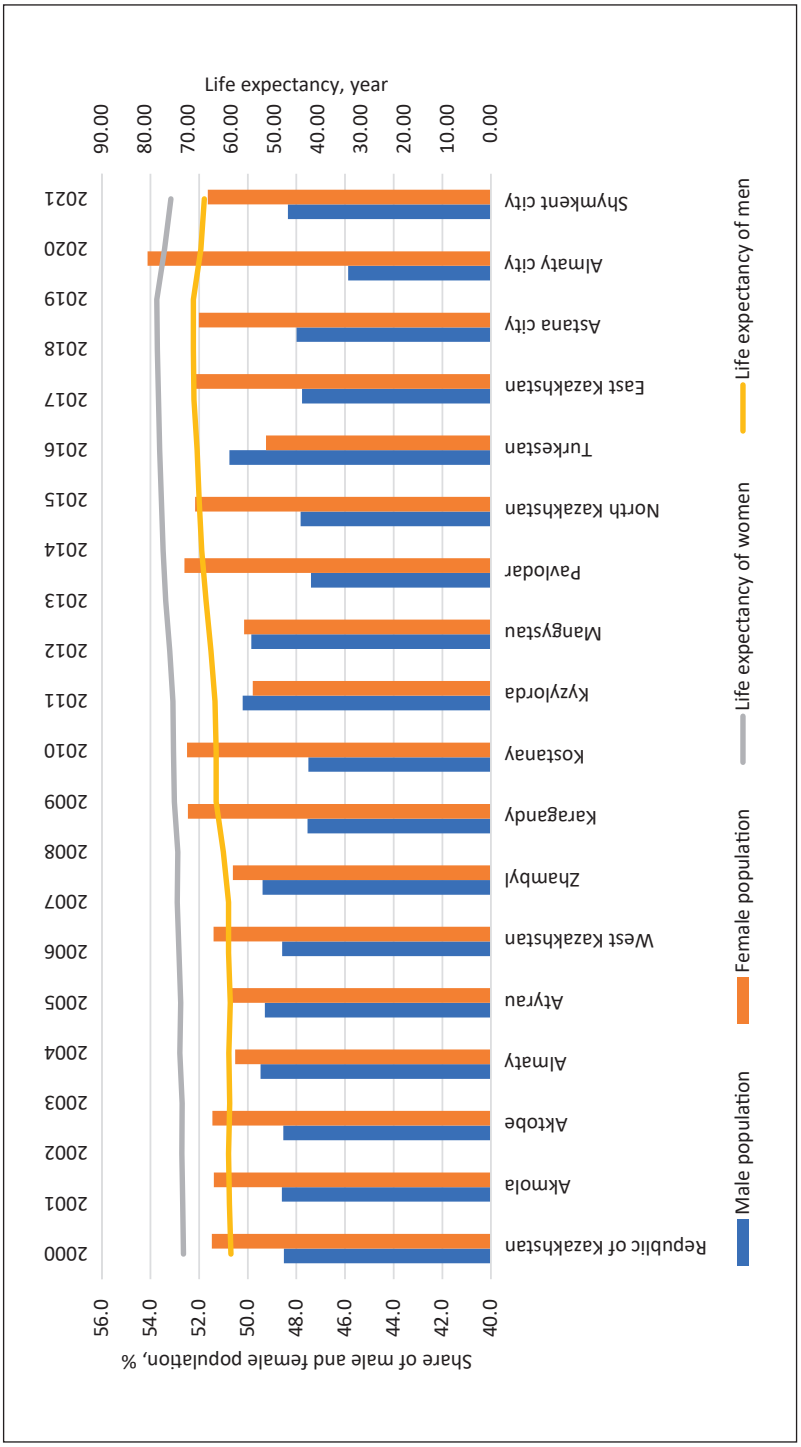


Figure 1. Sex structure and life expectancy by gender by regions of the Republic of Kazakhstan: 2021

Source: Compiled by the authors based on the «Taldau» information-analytical system

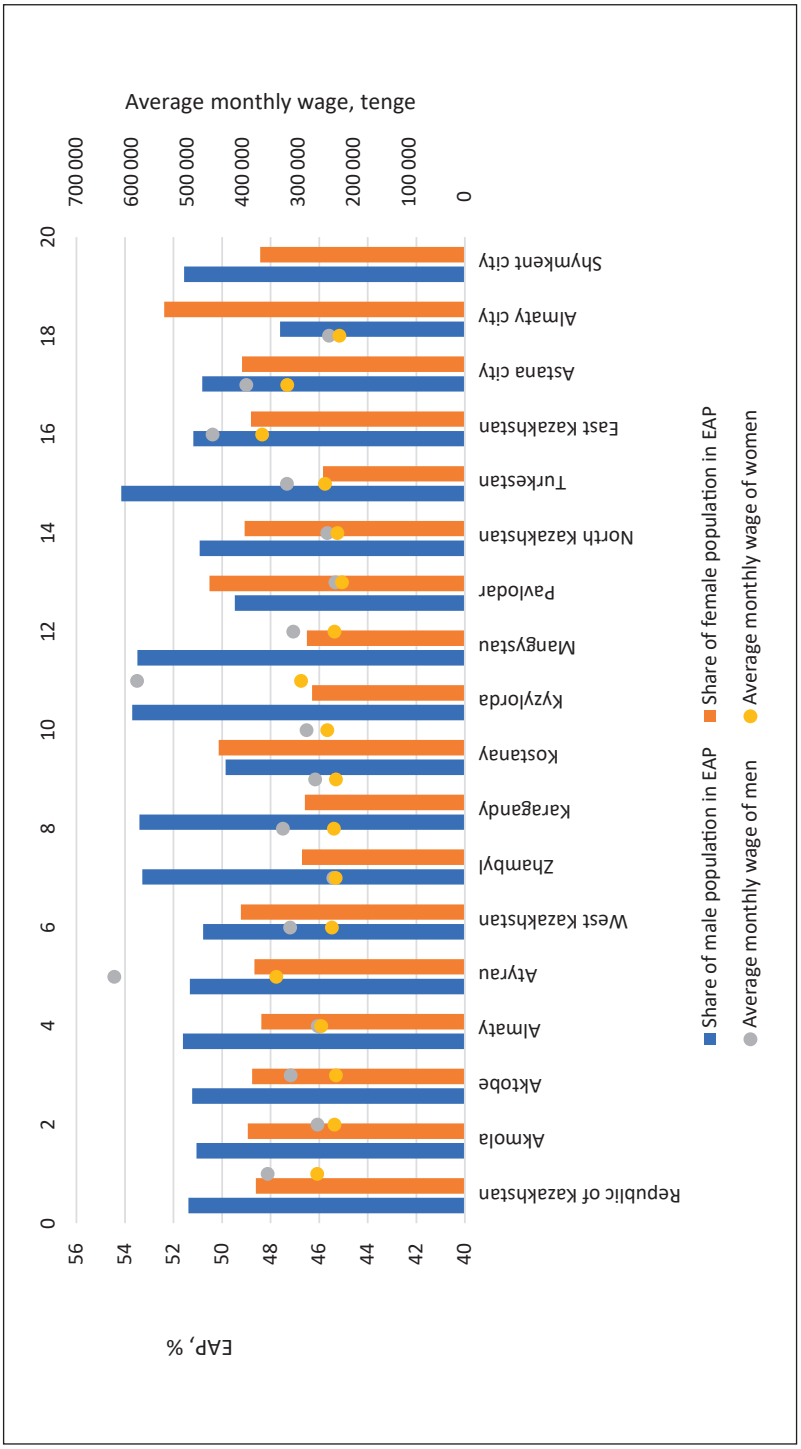


Figure 2. Leading labour market indicators by gender by regions of the Republic of Kazakhstan: 2021

Source: Compiled by authors based on the «Taldau» information-analytical system

The most common method for assessing the economic profitability of investments in human capital is Mincer's wage equation (Mincer, Polachek, 1974). Denisenko and Sagradov (2000) supplemented Mincer's method with the indicator of self-assessed health problems. Furthermore, Seitkhozhina (2008) proposes to introduce an indicator of cultural capital, including knowledge of foreign languages, entrepreneurial abilities, level of management, and the ability of an individual to work in several places and have several sources of income. Zadarozhnya also noted the need to consider gender characteristics in the formation and development of human capital (Zadorozhnaya, Naidenko, 2016); this substantiated the possibility of clarifying this model with a gender factor, taking into account the indicators mentioned above related to the discrepancies in education and wage levels, the economic growth of the territory, religion, urbanisation level, women's access to leadership positions, and the level of feminisation of economic sectors. A group of scientists led by Zadarozhnaya proposed the following method for calculating human capital, considering the gender factor:

$$HCI = 0{,}095\ D_1 + 0{,}075\ D_2 + 0{,}02\ D_3 + 0{,}12\ D_4 + 0{,}24\ D_5 + 0{,}05\ D_6 + 0{,}4\ GEI$$

where:
D_1 – the difference in educational levels between men and women,
D_2 – the difference in wage levels between men and women,
D_3 – territory's economic growth index,
D_4 – religion (Islamisation level),
D_5 – urbanisation level,
D_6 – percentage of women in leadership positions,
GEI – Gender Development Index.

The Gender Development Index was calculated using the same factors as the Human Development Index (HDI), but the results were adjusted for gender inequality. The indicators were calculated and differentiated by region in the Republic of Kazakhstan from 2013 to 2021 (Table 1).

There is a slight difference in the education level of men and women in the country and regions. In 2018, it was lower than the national figure (5%) in all regions except for the Aktobe region, which had 7%. According to the Bureau of National Statistics, in the capital and cities of national significance, the difference in the education level of men and women was 0%. In terms of the economic growth index, it was higher in Mangystau and Atyrau regions. Compared to the national average, the indicators of both regions were 2.5–3 times higher. Furthermore, by religion, the majority of Kazakhstan's population is Muslim. Therefore, in general, the country shows a high level of Islamisation, which determines the unique nature of women's education and subsequent employment. At the same time, in the northern regions, the share of the population following Islam is lower than 50%. Next is the urbanisation level, since among the urban population, the share of women with higher education is much higher than among the rural population. The share of the urban population nationwide is 58%.

The Likert scale (Kosolapov, Tolstova, 2015) was used as an expert assessment tool to rank the presented factors by their importance. Based on a study of the influence of the gender structure of human capital on socio-economic regional development, coefficients of the significance of gender equality factors were obtained (Naidenko et al.,

Table 1. Indices characterising the HCI of the regions of the Republic of Kazakhstan: 2021

Regions	Difference in educational levels between men and women	Difference in wage levels between men and women	Territory Economic Growth Index	The share of ethnic groups professing Islam	Urbanisation level the territory	Proportion of women in leadership positions	Gender Development Index
Republic of Kazakhstan	0.05	0.32	1.28	0.76	0.58	0.41	0.84
Akmola region	0.02	0.17	1.31	0.54	0.47	0.46	0.81
Aktobe region	0.07	0.24	1.29	0.84	0.70	0.34	0.84
Almaty region	0.03	0.09	1.34	0.84	0.22	0.39	0.77
Atyrau region	0.02	0.86	1.00	0.93	0.52	0.36	0.91
West Kazakhstan region	0.00	0.41	1.25	0.78	0.51	0.36	0.86
Zhambyl region	0.04	0.12	1.34	0.87	0.39	0.41	0.78
Karaganda region	0.03	0.32	1.28	0.55	0.79	0.36	0.84
Kostanay region	0.03	0.16	1.31	0.43	0.54	0.43	0.81
Kyzylorda region	0.03	0.22	1.32	0.97	0.44	0.37	0.80
Mangystau region	0.03	1.00	1.21	0.92	0.40	0.37	0.86
Pavlodar region	0.03	0.25	1.27	0.55	0.70	0.40	0.84
North Kazakhstan region	0.02	0.10	1.32	0.38	0.45	0.39	0.79
Turkestan region	0.03	0.12	1.36	0.98	0.19	0.40	0.74
East Kazakhstan region	0.05	0.21	1.30	0.62	0.61	0.45	0.82
Astana city	0.00	0.31	1.19	0.82	1.0	0.43	0.92
Almaty city	0.00	0.24	1.18	0.69	1.00	0.43	0.92
Shymkent city	0.00	0.14	1.32	0.89	1.00	0.47	0.84

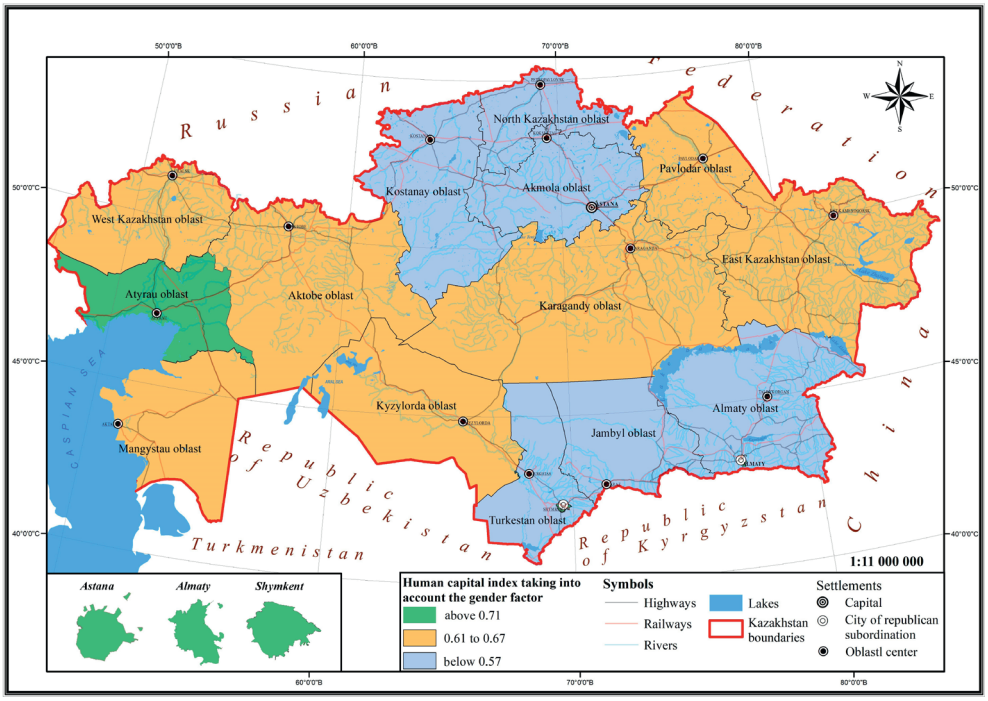
Source: Compiled by the authors

Table 2. Human Capital Index considering the gender factor in the regions of the Republic of Kazakhstan: 2013–2021

Regions	Human Capital Index considering the gender factor								
	2013	2014	2015	2016	2017	2018	2019	2020	2021
Republic of Kazakhstan	0.61	0.61	0.61	0.62	0.62	0.63	0.63	0.63	0.64
Akmola region	0.53	0.53	0.54	0.55	0.54	0.54	0.55	0.55	0.56
Aktobe region	0.64	0.64	0.65	0.64	0.65	0.65	0.65	0.65	0.67
Almaty region	0.50	0.49	0.50	0.52	0.51	0.52	0.52	0.52	0.52
Atyrau region	0.69	0.69	0.70	0.70	0.69	0.69	0.70	0.69	0.71
West Kazakhstan region	0.61	0.61	0.61	0.62	0.62	0.62	0.63	0.63	0.64
Zhambyl region	0.54	0.55	0.56	0.55	0.55	0.55	0.56	0.56	0.57
Karaganda region	0.64	0.64	0.65	0.65	0.64	0.65	0.65	0.66	0.66
Kostanay region	0.54	0.54	0.55	0.55	0.55	0.56	0.56	0.56	0.57
Kyzylorda region	0.60	0.60	0.60	0.61	0.60	0.60	0.60	0.60	0.61
Mangystau region	0.68	0.67	0.67	0.68	0.68	0.68	0.68	0.67	0.67
Pavlodar region	0.61	0.62	0.61	0.62	0.62	0.63	0.63	0.64	0.64
North Kazakhstan region	0.49	0.50	0.50	0.50	0.50	0.51	0.51	0.52	0.53
Turkestan region	0.55	0.55	0.56	0.57	0.58	0.58	0.59	0.58	0.52
East Kazakhstan region	0.58	0.58	0.59	0.59	0.59	0.60	0.60	0.61	0.62
Astana city	0.75	0.75	0.76	0.77	0.76	0.77	0.77	0.77	0.78
Almaty city	0.73	0.73	0.74	0.74	0.74	0.75	0.75	0.75	0.76
Shymkent city						0.73	0.73	0.73	0.74

Source: Compiled by the authors

Figure 3. Human Capital Index considering the gender factor in the regions of the Republic of Kazakhstan: 2021



Source: Compiled by the authors based on the «Taldau» information-analytical system

2016). The weights of the factors were distributed based on the importance of gender equality, religious traditions, and urbanisation and education levels. In 2013–2021, the country saw an increase in the Human Capital Index, considering gender, from 61% to 64% (Table 2; Figure 3).

In terms of regions, the state capital of Astana, the capital cities of national significance and the Atyrau and Mangystau regions have the highest accumulated human capital. The population of these regions has a high quality of life. Significant budget revenues, a high level of gross regional product per capita, production volume, average wages, social development, internal migration flow and other factors determined the leading positions in the ranking of regions of the Republic of Kazakhstan regarding the population's quality of life. Astana and Almaty are financial and economic urban centres, while Atyrau and Mangystau are raw materials export-oriented regions (Nyussupova et al., 2023).

Conclusions

The results of the study suggest that the relationship between the concepts of gender equality and human capital is not accidental. It is based on the social and economic evolution associated with changing roles in social production, which also led to changing roles of women and, consequently, recognising their equal rights and opportunities. Reproduction of human capital is impossible without adequate consideration of gender

indicators of social and economic development. This justifies the convergence of indicators of gender equality and human capital (education, qualifications, work experience, etc.), which are both natural and acquired through life. A high level of vertical and horizontal segregation in favour of men, combined with a higher level of education among employed women, indicates not only the ineffective use of human capital in the region and the country as a whole but also the widespread prevalence of gender stereotypes.

As a result of the study, a spatial database of human capital indicators by region of the Republic of Kazakhstan that considers gender factors was created for 2013 to 2021. The whole country and regions slightly differed in the above terms. However, according to the calculations, the leaders with the highest accumulated human capital, considering the gender factor, were the cities of Astana and Almaty. At the same time, the outsiders were the Turkestan and Almaty regions.

Gender and human capital are social constructs manifesting themselves during people's socialisation and inclusion. This necessitates the formation of effective social and gender policies to reproduce high-quality human capital corresponding to the economic structure.

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Gulnara Nyussupova, professor, Department of Geography, Land Management and Cadastre, Al-Farabi Kazakh National University, Almaty, Kazakhstan. Her research interests include social and demographic processes, regional economic development, globalisation's impact on regional transformation, GIS technology, and economic geography. She authored over 300 papers in these fields, including five monographs.

ORCID: https://orcid.org/0000-0001-5294-2671

Address:

Al-Farabi Kazakh National University
71 Al-Farabi Avenue
050040 Almaty, Kazakhstan

e-mail: gulnaran@mail.ru

Gaukhar Aidarkhanova is a lecturer at Al-Farabi Kazakh National University. Her research interests include socio-demographic processes, human capital, and quality of life.

ORCID: https://orcid.org/0000-0001-7280-7071

Address:

Al-Farabi Kazakh National University
71 Al-Farabi Avenue
050040 Almaty, Kazakhstan

e-mail: gauhar_222@mail.ru

Gaukhar Aubakirova is a senior lecturer at the Al-Farabi Kazakh National University. Her research interests include socio-demographic processes, urbanisation, sustainable development, and quality of life.

ORCID: https://orcid.org/0000-0002-5806-5638

Address:

Al-Farabi Kazakh National University

71 Al-Farabi Avenue
050040 Almaty, Kazakhstan

e-mail: gauhara_91@mail.ru

Zhumagulov Chingiz is a Ph.D. student at Al-Farabi Kazakh National University. His research interests include GIS, social and economic development, urbanisation, and sustainable development.

ORCID: https://orcid.org/0009-0007-3147-4945

Address:

Al-Farabi Kazakh National University
71 Al-Farabi Avenue
050040 Almaty, Kazakhstan

e-mail: c.zhumagulov@gmail.com

Mukhtarov Ulan is a master's student at Al-Farabi Kazakh National University. His research interests include GIS, social and economic development, and sustainable development.

ORCID: https://orcid.org/0009-0006-4147-217X

Address:

Al-Farabi Kazakh National University
71 Al-Farabi Avenue
050040 Almaty, Kazakhstan

e-mail: u_bekt@mail.ru