Development of Human Capital in the Labor Market in the Modernization of the Economy of Kazakhstan

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Abstract

Kazakhstan today is a country with a low level of economic development, although it has sufficient resources and manpower. The purpose of the study is to determine the specifics of human capital development in the labor market under the conditions of modernization of the economy of Kazakhstan. The analysis of economic indicators has shown that the financial stability of the country is at a low level. The study of the labor market has established that its labor supply is sufficient but low-promising. The perfect econometric modeling using the additive method of forecasting has shown that in the next two periods it should be expected an increase in the labor force. With the help of linear forecasting, it was established that in the next two periods of education and labor market reforms are not carried out, the economic situation of the country will continue to deteriorate.

Keywords: Cost of education, Enrollment in higher education, Labor force, Additive econometric forecasting model, Factor analysis.

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Introduction

Today, it is each person who shapes the economy of the country and the world (Malyarets et al., 2024). Human capital plays a very important role in the modernization of the country's economy (Dovgal et al., 2024). It is necessary to consider the essence of the concept of "human capital". S.K. Baidybekova (2021), in her study, determined that human capital is an accumulation of knowledge, skills, and abilities that a person receives in the process of general and special education, training, and general experience. The author noted that today rather high attention in any company is paid to human resource management. Exactly effective human capital management is always accompanied by high efficiency of work at the enterprises. Also, the human factor is a base for the formation of scientific and technical progress and the effective development of the economy as a whole. N.G. Nichkalo (2012) determined human capital as an integrated indicator reflecting a country's internal capabilities in terms of knowledge productivity and its application in industrial and societal development. Specifically, the rapid development of integration and global action is accompanied by new research in all spheres of life and education as well. Today, in all civilized countries of the world, there is a development of education and the introduction of unconventional approaches with the help of innovative and telecommunication technologies. At the same time, there are important issues of interaction between educational systems, which develop on different contingents, their versatility, and comparability, as well as ensuring their mutual recognition of their resulting product – education.

Bottone (2008) treated human capital according to the traditional and institutional approach. From the traditional approach, the author defines this term as a set of skills, knowledge, and income-generating skills. It is also noted that the development of human capital is quite positive for the economic development of any country. From an institutional point of view, this paper defines human capital as a stock that allows for income generation. It refers to the interest received from making investments in physical capital. Accordingly, the greater the investment, the higher the earnings should be. Expanding the definition of human capital will help to encompass all personal and constitutional attributes in individuals. T. Iankovets (2018) explained that the knowledge and skills possessed by a person are inappropriate to consider as capital if their use does not create value. This principle extends to other hierarchical levels of the economic system. It means that capital exists only with the use of human labor in socio-economic conditions and the creation of its surplus value, respectively, receiving income as a bearer of human capital. The author defines the main stages of human capital development as obtaining education and basic knowledge, accumulation in the process of work, consolidation of knowledge and skills, gaining experience, and constant improvement.

Bhatti et al. (2022) considered the essence of human capital based on three indicators, namely leadership and motivation, qualification, satisfaction, and creativity. The authors single out knowledge management itself as the main factor of human capital improvement. According to the authors' theory, exactly based on knowledge management leadership, the qualification and creativity of employees are formed as a whole from the human capital of the country. X. Ding et al. (2021) consider human capital as the main factor of socio-economic development. The authors interpret this concept as a set of professional skills and abilities that form the profitability of the enterprise, region, or country. D.A. Seytkhozhina and A.B. Maydyrova (2022), in their studies, determined that human capital is formed, developed, and implemented, bringing its owner a return on investment. Investment in human capital begins in the family and educational institutions (birth, health care, upbringing) and continues by the individual independently and with the help of employers interested in the long-term success of their enterprise.

Thus, the conducted analysis of research has shown that human capital is the embodiment of knowledge, education, skills, abilities, and qualifications in individuals, forming income both

in a particular industry and in the country as a whole. Kazakhstan has a sufficient labor force, but the country's economy is deteriorating every year. Therefore, the question of human capital development in the labor market in the context of the modernization of the economy of Kazakhstan is relevant. The main task of the study is advisable to highlight the analysis of trends in the labor force of the country, unemployment, literacy, and state expenditures on education.

The purpose of the work is to forecast the development of human capital in the labor market of Kazakhstan and study future trends in the modernization of the economy of the country.

Materials and Methods

Using the method of definition of concepts, the essence of the category "human capital" was defined, and the essence of the labor market was established. An overview of the foundations of modernization of the economy of Kazakhstan was conducted. Using the method of analysis, the general state of Kazakhstan's economy was investigated and the peculiarities of the country's labor market functioning were determined, systematizing data regarding the gross domestic product (GDP) per capita, exports, inflation, imports, total reserves, the amount of foreign debt, the labor force, the current account balance, the unemployment rate, the percentage of persons enrolled in higher education, and the country's total expenditures on education. This method was used in the analysis of recent works of researchers from Kazakhstan, East Asia, Romania, China, Greece, and Ukraine on the development of human capital in the labor market in the modernization of the economy of Kazakhstan. During the study of the economic condition of Kazakhstan, an objective method was used to determine the main problems of GDP formation. Also, this method was applied in assessing the condition and development of the labor force, the unemployment rate, the percentage of persons referred to higher education institutions, and the total expenditure of Kazakhstan on education in the labor market of the country.

The study also employed a method of econometric forecasting by constructing an additive time series model. This method is based on determining the correlation field, seasonal component, and time series concerning the labor force data of Kazakhstan. Determination of the trend of this model took place through analytical alignment of the series using a linear trend. This method of econometric modeling made it possible to forecast the development of the labor force of Kazakhstan for the years 2022 and 2023. The method of mathematical modeling was also used, which allowed for building single-factor models of the dependence of indicators of economic development in Kazakhstan on the education of the labor force in the labor market of the country. This method had a negative impact on the development of the labor force in the economy of Kazakhstan. Using the method of linear forecasting, and using the results of the projected values of the development of the human capital of the country, it was possible to obtain the forecast economic indicators for 2022 and 2023.

The conceptual method was applied to substantiate the negative trends in the development of human capital in the labor market of Kazakhstan and their impact on the modernization of the economy. With the help of the integrative method, the directions of improvement of human capital development in the labor market of Kazakhstan were determined. The information base of the study is the works of experts from Kazakhstan and scientists from East Asia, Romania, Saudi Arabia, China, Greece, Amazon, Ukraine, and the European Union on human capital development, experts of the Beijing Institute of Economics, East Kazakhstan State University, and the World and Sumy State University on the state of the labor market and economy of Kazakhstan. The data of the World Bank were used as the basis for the analysis of human capital in the labor market and the modernization of the economy of Uzbekistan.

Results

Human capital is the basis for the formation of the economy, and its development is the main factor in modernizing the stability and sustainability of any country. The labor force of Kazakhstan needs improvement and state support. The development of human capital in the labor market of Kazakhstan will allow to carry out modernization of the country's economy, as it forms the main income of the country. Quality education and vocational training for the citizens of Kazakhstan will allow them to form a qualified workforce and bring the country to the international labor market. Such changes contribute to the improvement of the economic situation of the country. To determine the current state and development of Kazakhstan, it is advisable to consider the features of this country's economic indicators (Table 1).

Table 1. Dynamics of economic development indicators of Kazakhstan during 2012-2021

Characteristic	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Growth rate, %
GDP, billions of U.S. dollars	208	236.6	221.4	184.4	137.3	166.8	179.3	181.7	171.1	190.8	-8.26
GDP per capita, U.S. dollars	12386	13890	12807	10510	7714	9247	9812	9812	9121	10041	-18.93
Imports of goods and services, billions of U.S. dollars	61.6	63.4	56.7	45.2	39.1	40.7	46.5	51.6	44.5	N	-27.8
Export of goods and services, billions of U.S. dollars	91.7	91.4	87.1	52.6	43.7	54	67.5	66.2	51.7	N	-43.64
Inflation, consumer prices, %	5.1	5.8	6.7	6.7	14.5	7.4	6.0	5.2	6.7	N	32.39
Total reserves (including gold, billions of U.S. dollars)	283	246.9	292.5	278.5	296.0	307.5	309.8	289.6	356.4	343.8	21.48
Amount of external debt, (billion U.S. dollars)	1355.3	1497.1	1577	1531.8	1634.9	1589.5	1569.8	1589.6	1629.7	N	20.25
Current account balance, (billions of U.S. dollars)	22.5	19.5	61.1	-60.1	-81.3	-50.9	-1.2	-72	-65.7	-57.4	-355.32

Note: U.S. dollars – United States dollars.

Source: GDP (current US$) (2021); GDP per capita (current US$) (2021); Exports of goods and services (% of GDP) (2021); Imports of goods and services (% of GDP) (2021); Inflation, consumer prices (annual %) (2021); Total reserves (includes gold, current US$) (2021); External debt stocks, total (DOD, current US$) (2021); Current account balance (BoP, current US$) (2021).

The GDP rate in Table 1 has declined by 8.26% over the past 10 years in Kazakhstan, indicating a deterioration in the country's economic situation. There has also been a decrease in GDP per capita by almost 19%, indicating a decline in the socioeconomic development of the country. Meanwhile, Kazakhstan's import and export indicators have also declined by 27.8% and 43.64% during 2012-2020, respectively, reflecting the deterioration and contraction of the country's international economic activity. In addition, quite a negative change took place in the inflation rate, as it rose during the analyzed period from 5.1% to 6.7%, which in turn indicates an increase in the price level in Kazakhstan. Total reserves (including gold) had a positive trend during 2012-2021 and grew by 21.48% over the period, indicating the implementation of measures to improve the financial health of Kazakhstan. But, most likely, the growth of reserves was due to the receipt of international loans, as the amount of external debt increased by 20.25% during 2012-2020. At the same time, the current account surplus balance at the beginning of the analyzed period worsened to a deficit of $57.4bn. In general, the economy of Kazakhstan is in decline, so the country is trying to stabilize its financial situation through external borrowing while increasing debts to the world and increasing the current account deficit. In a further study, authors will consider the peculiarities of human capital formation in Kazakhstan (Table 2).

Table 2. Dynamics of the formation of the human capital of Kazakhstan during 2012-2021

Characteristic	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Growth rate, %
Workforce, total million	8.9	9	9	9.1	9.1	9	9.2	9.2	9.2	9.3	4.44
Total unemployment rate (% of the total labor force)	5.3	5.2	5.1	4.9	5	4.9	4.8	4.8	4.9	4.9	-7.37
Enrollment in higher education (% of total)	51.6	50.4	48.8	46.4	46.6	50.1	54	61.7	70.7		36.95
Public spending on education, $ billion	8.1	8.1	7.6	5.1	4.1	4.6	4.7	5.2			-36

Source: Labor force, total (2021); Unemployment, total (% of total labor force) (modeled ILO estimate) (2021); School enrollment, tertiary (% gross) (2021); Government expenditure on education, total (% of GDP) (2021); Literacy rate, youth total (% of people ages 15-24) (2021).

From Table 2, it can be seen that trends in the market of Kazakhstan are quite positive because during 2012-2021 the total labor force increased by 4.44% and at the same time the unemployment rate of the total labor force decreased from 5.3% to 4.9%. That is, as of January 1, 2022, 95.1% of citizens fall into the category of the labor force and work in Kazakhstan. At the same time, enrollment in higher education institutions among young people in Kazakhstan has grown from 51.6% in 2012 to 70.7% in 2020, which indicates an increase in the skills of the labor force of Kazakhstan in the future. But spending on education decreased by 36% during 2012-2019. Thus, although Kazakhstan has the resources of the labor force, the qualifications of workers are currently quite low, and the government of Kazakhstan is narrowing measures to educate its citizens. Such trends of human capital in the market need development, which will help to modernize the economy of Kazakhstan. To establish the peculiarities of the development of human capital in the labor market of Kazakhstan, it is reasonable to carry out its forecasting for future periods and determine the features of its impact on the modernization of the country's economy. The forecasting was carried out with the help of an additive model of econometric modeling. The initial data for the study of forecasting the development of human capital are determined by the indicators of the labor force of Kazakhstan during 2006-2021 (Table 3).

Table 3. Input data for the construction of an econometric additive model of forecasting human capital development in Kazakhstan

Year	Labor force, million people	t
2006	8079537	1
2007	8274942	2
2008	8533075	3
2009	8573098	4
2010	8721578	5
2011	8816456	6
2012	8899357	7
2013	8972219	8
2014	9045894	9
2015	9115881	10
2016	9064290	11
2017	9004270	12
2018	9169408	13
2019	9227219	14
2020	9196321	15
2021	9294725	16

Source: Labor force, total (2021).

From Table 3, it can be observed that the labor force in Kazakhstan from 2005 to 2021 was growing. To determine the seasonal component, a correlation field of human capital development in Kazakhstan was constructed (Figure 1).

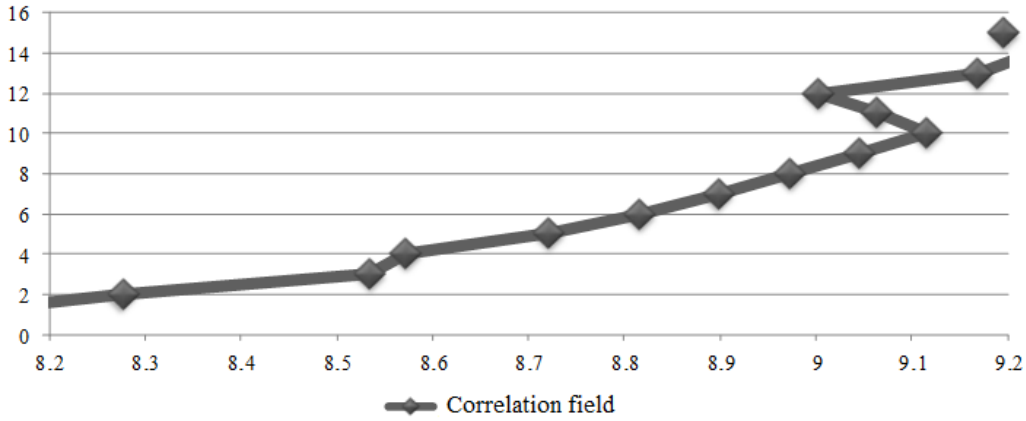

Figure 1. Correlation field of human capital development in Kazakhstan

From the analysis of Figure 1, it can be concluded that, since the values form a dust-shaped figure, there may be a seasonal component in the development of human capital in Kazakhstan. To verify this, authors calculated several consecutive autocorrelation coefficients. Figure 2 shows a correlogram reflecting the sequence of correlation coefficients at the first, second, etc. levels. The significance limits of the correlation coefficients are also plotted on this graph.

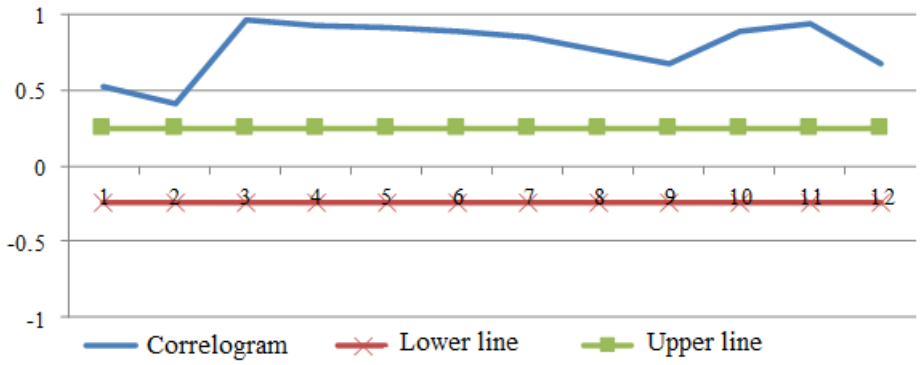

Figure 2. Correlation of human capital development in Kazakhstan

From the analysis of correlograms, it can be concluded that this time series contains seasonal fluctuations with periodicity in four quarters, and the highest values of correlation coefficients are observed for lags 0.4 and 0.95. Then an additive model of time series was built. The sum of the levels of the series for each quarter was found sequentially with a shift to one point in time, and conditional indicators of the labor force of Kazakhstan were determined. The sums obtained were divided by 4, and moving averages were found. The equated values obtained in this way no longer contain seasonal components. Authors adjusted these values to the actual moments, for which authors found the average of two consecutive moving averages – centered moving averages (Table 4).

Table 4. Alignment of initial data of human capital development in Kazakhstan by moving average method

Quarter No.	Labor force, million people	Together for 4 quarters	Moving middle	Centered moving average	Assessment of the seasonal component	The square of the deviation from the average
1	8.08					0.63
2	8.275	33.461	8.365			0.36
3	8.533	34.103	8.526	8.445	0.088	0.12
4	8.573	34.644	8.661	8.593	-0.02	0.09
5	8.722	35.01	8.753	8.707	0.015	0.02
6	8.816	35.41	8.852	8.803	0.014	0
7	8.899	35.734	8.933	8.893	0.006	0
8	8.972	36.033	9.008	8.971	0.001	0.01
9	9.046	36.198	9.05	9.029	0.017	0.03
10	9.116	36.23	9.058	9.054	0.062	0.06
11	9.064	36.354	9.088	9.073	-0.009	0.04
12	9.004	36.465	9.116	9.102	-0.098	0.02
13	9.169	36.597	9.149	9.133	0.037	0.09
14	9.227	36.888	9.222	9.186	0.042	0.12
15	9.196					0.1
16	9.295					0.18
Average	8.874				Sum	1.87

Source: compiled by the authors.

Next, the estimates of the seasonal labor force component of Kazakhstan were found as the difference between the actual levels of the series and the centered moving averages, and a table of input data with estimates of the seasonal component by years and periods was generated. Authors found average estimates of the seasonal component of human capital. In the models with a seasonal component, seasonal influences are mutually canceled over the period. For the additive model, the sum of seasonal component values for all quarters should be equal to zero (Table 5).

Table 5. Average for each year estimates of the seasonal component of human capital development in Kazakhstan according to the additive model

Metrics	Year	Year No.			
		I	II	III	IV
-	1	-	-	0.087656875	-0.0202645
-	2	0.014741	0.01394363	0.006415	0.001309375
-	3	0.016939625	0.06230363	-0.008733	-0.0981095
-	4	0.036607375	0.04160762	-	-
Sum of 4 years	-	0.068288	0.11785488	0.085338875	-0.117064625

The average estimate of the seasonal component for the quarter	-	0.022762667	0.03928496	0.028446292	-0.039021542
Adjusted seasonal component	-	0.009894573	0.02641686	0.015578198	-0.051889635

Source: compiled by the authors.

A correction factor of 0.01287 is obtained for the additive model of human capital development forecasting. The sum of seasonal component values is equal to zero. Further, the influence of the seasonal component is excluded by subtracting it from each level of the input time series. These values contain only the trend and the random component (Table 6).

Table 6. Additive model of predicting human capital development in Kazakhstan

t	y_t	S_i	y_t-S_i	T	T+S	$E=y_t-(T+S)$	E^2	y-ycp^2
1	8.08	0.01	8.07	8.35	8.36	-0.28	0.08	0.6316
2	8.275	0.03	8.25	8.42	8.44	-0.17	0.03	0.3592
3	8.533	0.02	8.52	8.49	8.5	0.03	0	0.1164
4	8.573	-0.05	8.62	8.56	8.51	0.07	0	0.0907
5	8.722	0.01	8.71	8.63	8.64	0.08	0.01	0.0233
6	8.816	0.03	8.79	8.7	8.72	0.09	0.01	0.0033
7	8.899	0.02	8.88	8.77	8.78	0.12	0.01	0.0006
8	8.972	-0.05	9.02	8.84	8.79	0.19	0.03	0.0096
9	9.046	0.01	9.04	8.91	8.92	0.13	0.02	0.0295
10	9.116	0.03	9.09	8.98	9.01	0.11	0.01	0.0584
11	9.064	0.02	9.05	9.05	9.07	0	0	0.0361
12	9.004	-0.05	9.06	9.12	9.07	-0.06	0	0.0169
13	9.169	0.01	9.16	9.19	9.2	-0.03	0	0.0871
14	9.227	0.03	9.2	9.26	9.29	-0.06	0	0.1246
15	9.196	0.02	9.18	9.33	9.35	-0.15	0.02	0.1037
16	9.295	-0.05	9.35	9.4	9.35	-0.06	0	0.1768
Sum	8.874	-	-	-	-	-	0.24	1.9

Source: compiled by the authors.

The component (trend) of this model was determined. For this purpose, an analytical alignment of the series was performed using a linear trend. The intermediate calculations are shown in Table 7.

Table 7. Analytical alignment of the series of an additive model of predicting the development of human capital in Kazakhstan

No.	x_i	y_i	x_i-X	$(x_i-X)^2$	y_i-Y	$(y_i-Y)^2$	$(x_i-X)(y_i-Y)$	$Y_i=b_0+b_1x_i$	Y_i-y_i	$(Y_i-y_i)^2$	Y_i-Y	$(Y_i-Y)^2$
1	1	8.07	-7.5	56.25	-0.8	0.65	6.03	8.35	0.28	0.08	-0.53	0.28
2	2	8.25	-6.5	42.25	-0.63	0.39	4.07	8.42	0.17	0.03	-0.46	0.21

3	3	8.52	-5.5	30.25	-0.36	0.13	1.96	8.49	-0.03	0	-0.39	0.15
4	4	8.62	-4.5	20.25	-0.25	0.06	1.12	8.56	-0.07	0	-0.32	0.1
5	5	8.71	-3.5	12.25	-0.16	0.03	0.57	8.63	-0.08	0.01	-0.25	0.06
6	6	8.79	-2.5	6.25	-0.08	0.01	0.21	8.7	-0.09	0.01	-0.18	0.03
7	7	8.88	-1.5	2.25	0.01	0	-0.01	8.77	-0.12	0.01	-0.11	0.01
8	8	9.02	-0.5	0.25	0.15	0.02	-0.07	8.84	-0.19	0.03	-0.04	0
9	9	9.04	0.5	0.25	0.16	0.03	0.08	8.91	-0.13	0.02	0.04	0
10	10	9.09	1.5	2.25	0.22	0.05	0.32	8.98	-0.11	0.01	0.11	0.01
11	11	9.05	2.5	6.25	0.17	0.03	0.44	9.05	0	0	0.18	0.03
12	12	9.06	3.5	12.25	0.18	0.03	0.64	9.12	0.06	0	0.25	0.06
13	13	9.16	4.5	20.25	0.29	0.08	1.28	9.19	0.03	0	0.32	0.1
14	14	9.2	5.5	30.25	0.33	0.11	1.8	9.26	0.06	0	0.39	0.15
15	15	9.18	6.5	42.25	0.31	0.09	1.99	9.33	0.15	0.02	0.46	0.21
16	16	9.35	7.5	56.25	0.47	0.22	3.54	9.4	0.06	0	0.53	0.28
S	136	142	0	340	SST=	1.93	23.9670736		SSE=	0.24	SSR=	1.69
	X	Y		var(x)		var(y)	cov(x,y)					
S/n	8.5	8.87	0	21.25		0.12	1.5					

Source: compiled by the authors.

Substituting the value into the obtained linear regression equation, the levels for each moment are found. The values of the levels of the series obtained by the additive model are found. For this purpose, seasonal component values for corresponding years were added to the levels. To assess the quality of the built model, the correlation value was calculated. In this case, the value is 87.36%; that is, the additive model explains 87.36% of the total variation in the levels of the time series of the labor force of Kazakhstan for 4 observations. Next, the additive model is used to calculate the forecast of the labor force in Kazakhstan for two periods ahead (Figure 3).

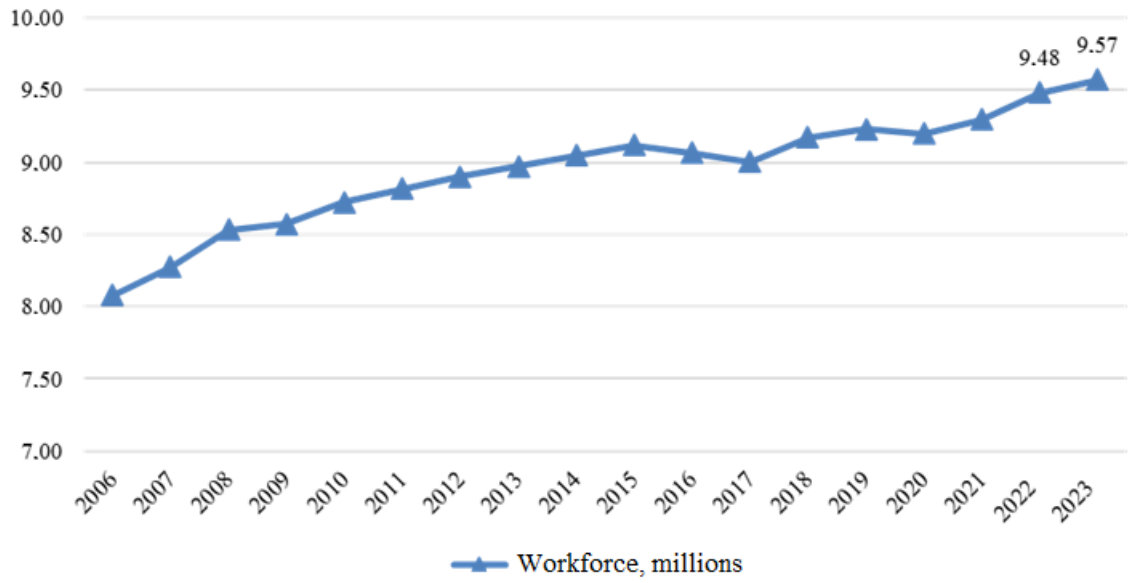

Figure 3. Results of prediction by an additive econometric model of human capital development in Kazakhstan

Figure 3 shows that the results of the prediction of the additive econometric model of human capital development in Kazakhstan show a tendency to increase the number of the labor force in the country to 9.48 million people in 2022 and 9.57 million people in 2023. Accordingly, it can be concluded that the development of human capital in the labor market will be positive, and the workforce will increase. To determine the specifics of the impact of the projected values of human capital development on the economy of Kazakhstan, authors initially built unit regression relationships of the main financial indicators of the country from the factor of change in the labor force, and then by substituting values in the regression equation, authors established projections for future periods (Table 8).

Table 8. Predicting the modernization of the economy of Kazakhstan through the development of human capital in the labor market

У	a	b	У2022	У2023
GDP, billions of U.S. dollars	1267.81	-119.02	139.46	128.75
GDP per capita, U.S. dollars	102177.84	-19	6524.59	5616.49
Imports of goods and services, billions of U.S. dollars	408.43	-39.5	34.01	30.46
Export of goods and services, billions of U.S. dollars	899.93	-91.73	30.38	22.12
Inflation, consumer prices, %	13.03	-0.65	6.86	6.8
Total reserves (including gold, $ billion)	-989.87	141.61	352.62	365.36
Amount of external debt, (billion U.S. dollars)	-3365.72	541.85	1771	1819.76
Current account balance, (billions of U.S. dollars)	2273.23	-253.23	-127.34	-150.13

Source: compiled by the authors.

Table 8 shows that according to the results of mathematical modeling, the negative trends in the economy of Kazakhstan are obtained. If coefficient "a" of the regression equation is independent, then coefficient "b" reflects economic dependencies. Thus, with a decrease in the labor force per person, the country's GDP declines by $119.02. GDP per capita also declines by $19 per capita, GDP per capita also declines by $19 per capita, and GDP per capita also declines by $19 per capita. Imports decrease by $39.5; exports decrease by $91.5. Exports decreased by $91.73 per capita, and GDP per capita also decreased by $19.5 per capita. In addition, the current account balance is decreasing by $253.23 per capita, and inflation is decreasing by 0.65%. The current account balance is down by $253.23. And with an increase in Kazakhstan's labor force by 1 person, total reserves increase by $141.61. The number of external debts increases by $541.85. The negative impact of an increase in the labor force in Kazakhstan. The negative effect of an increase in Kazakhstan's labor force on the economy can be explained by the low qualifications of workers. It is possible to say that workers with low education bring a low level of profit to the state and are accompanied by significant expenses requiring the attraction of external loans.

To improve the modernization of the economy of Kazakhstan, human capital needs to be developed. The following ways to improve human capital in Kazakhstan are proposed (Figure 4). Direct methods to improve the development of human capital in Kazakhstan relate specifically to the labor market. It is important to develop a new system of education. The population of the country should obtain the necessary knowledge and skills, which can be used in the production process. It is necessary to update most of the obsolete equipment of vocational educational institutions, which will allow them to acquire the knowledge and skills required in the context of innovative development of the economy. Education should be based on international standards. It is important to develop curricula for higher education institutions that meet the real needs that exist in the labor market.

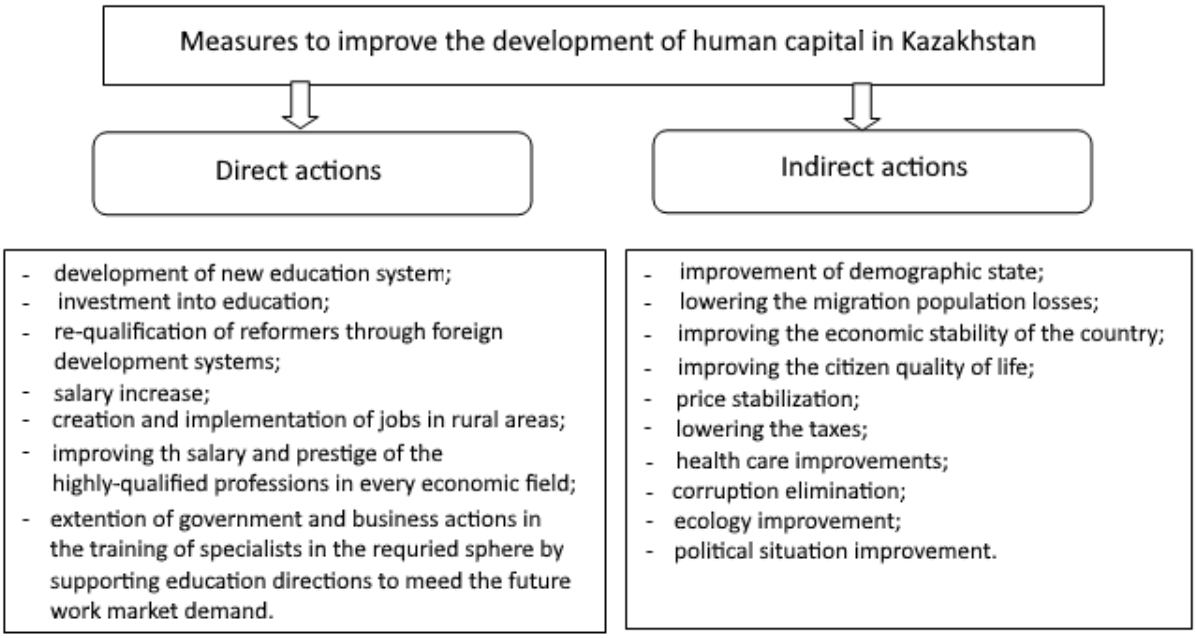

Figure 4. Measures to improve the development of human capital in Kazakhstan

It is also advisable to increase the profitability and prestige of highly skilled labor in all types of economic activity. It is important to expand the participation of government and business in the training of specialists of the right profile by supporting areas of training to meet the future needs of the labor market. Businesses are encouraged to open departments to work

and train employees, through which it is important to improve the skills of workers. It is also important to raise the level of wages because low wages force citizens to leave the country in search of decent work.

The government of Kazakhstan should help improve the demographic situation and improve the demographic structure of the country's population. Take measures to reduce migration losses of the population of productive age, including the population of high professional and qualification level. Also, the country should give citizens confidence in the future by resolving economic instability and improving the quality of life of the citizens of Kazakhstan. At the same time, rural areas have a high level of unemployment, so it is important to implement the creation of new jobs in these areas. It is recommended to reform the taxation system and reduce the level of taxes imposed on businesses at the expense of their employees. It is important to constantly improve health care to make quality health care completely free. The country must also take measures to improve working conditions, that is, to develop a system for checking proper working conditions. It is necessary to create opportunities for professional growth and the realization of creative potential. At the same time, it is important to maintain political stability in the country because it facilitates the inflow of investments from outside and the development of entrepreneurship within the region. It is important to carry out actions against corruption, especially in education. After all, in Kazakhstan, the practice of acquiring diplomas prevails; accordingly, positions are occupied by unqualified workers. Even positions of reformers are occupied by low-qualified persons, so their level of education should be tested following international standards. At the same time, the country should maintain a proper level of ecology, which will help to maintain health care and provide proper working conditions.

The main direction of the development of Kazakhstan's human capital in the labor market should be to improve education. After all, although the country has a sufficient labor force, the country's economy is unstable. Such tendencies are caused by the low level of quality of education and the low qualifications of workers. That is why human capital forms a low level of profit in Kazakhstan. The proposed measures to improve education will help to modernize the economy of Kazakhstan. It is important to attract not only international investment in education but also to use international experience in the provision of education and focus on international innovation. Indirect measures concern not only the labor market but are necessary for the development of Kazakhstan's human capital. These methods of improving politics and medicine, increasing demographic indicators, and improving the environment will contribute to the development of the country's human capital.

Discussion

The issue of the development of human capital in the labor market in the modernization of the economy of Kazakhstan has not been studied before. Thus, Z. Chulanova (2017) conducted a study of human capital as a factor of competitiveness and socio-economic development. Along with other countries, Kazakhstan was also analyzed in this study. The author referred to the human development index, which included life expectancy, education, and adult population level, as the main indicators of human capital. GDP per capita, which reflects the material well-being of the citizens of the country, was also determined as another indicator. In this study, it was noted that Kazakhstan has a high potential for human capital and the country's economy is in transition from the first level to the second level of development. Also, the author has proved the correlation between the formation of human capital and the competitiveness of Kazakhstan by using connection. Among all defined factors of the human capital in an aspect of the development of the competitiveness of this country, the strongest level of education and professional training has been established. It was also found that there is a lag in terms of innovation development, creation, and production of high-quality products and new

technologies between Kazakhstan and developed countries (Ciuhu and Vasile, 2019; Liadskyi and Diadyk, 2023). The authors determined the main reason for such trends is that, according to the Ministry of Industry and Trade of the Republic of Kazakhstan, only 2% of Kazakh companies are engaged in the development of new products or production processes. Accordingly, to increase the level of competitiveness of the country, it is recommended to develop new approaches to education and vocational training and retraining, in particular raising the qualifications of workers concerning the needs of the innovation economy. At the same time, it is important to improve the quality characteristics of specialists and the quality of the labor force.

V. Strokova et al. (2016) investigated the features of Kazakhstan's labor market and identified the main problems and achievements of human capital formation. The study drew attention to the fact that the income from the formation of human capital entailed a decrease in unemployment and increased socioeconomic development in Kazakhstan. The reduction in unemployment was caused by an increase in wages; the sectors with the highest increase in wages were mostly low-productive (health and social services, education, and public administration). Highly productive sectors (mining, real estate, finance, and insurance) have seen their productivity fall in recent years, and wages have fallen along with it. The authors determined that although Kazakhstan has experienced productivity-driven structural changes, human capital remains focused on low-productivity activities. The impact of growth on jobs is very weak because there is a concentration of investment in capital-intensive industries. There are significant differences in labor market outcomes and wages across regions and across populations, potentially exacerbated by limited geography (Olievska et al., 2020; Teslenko, 2021; Chyzhevska et al., 2022; Kuznetsova et al., 2022; Kazak, 2020). While there are relatively small differences in labor force participation rates across regions and populations, there are significant gaps in access to different types of employment. These large differences in wages across sectors in the regions, as well as by education level, age, and gender, point to certain limitations on labor mobility. Eliminating some of these constraints or reducing individual mobility costs can help improve access to better jobs and improve the development of human capital in the labor market.

A. Ayulov et al. (2019) considered human capital as the basis of rural development. The authors established that human capital becomes the basis for sustainable and integrated development of production and any social processes. It was determined that the two main factors that form human capital are innate ability, talent, and knowledge and skills. Researchers believed that to improve the development of the agricultural sector of Kazakhstan, it is necessary to focus the development of human capital on agriculture. The main reasons for the decline of the agricultural sector are established non-competitive wages compared to other industries, underdeveloped infrastructure in rural areas, as well as unclear career prospects, high physical labor, and harsh working conditions. The authors recommend combining the efforts of the state, local government, science, and business and directing actions to the development of the agricultural sector to improve socio-economic development. It is also found that the potential for human capital development in Kazakhstan is quite high, and its concentration in agriculture will not only improve the further development of the agricultural sector of the country but also modernize the economy (Ding et al., 2021). At the same time, it is recommended to carry out systematic measures that include educational, cultural, moral, social, and economic areas of modernization. It is explained that about 80% of the country's economy is built based on the functioning of the agricultural sector. Focusing human capital on the development of agriculture can be a major factor in improving the socio-economic development of Kazakhstan and a factor in the country's entry into competitive markets around the world.

S.T. Kapiki and S. Nurgaliyeva (2015) considered human capital as a significant asset for the sustainable development of Kazakhstan. The authors identified the main problem of human

capital development as the corruption of educational links. A high number of citizens of Kazakhstan can be said to buy certificates of education in a particular industry, as a result of which the relevant professionals do not have the necessary qualifications. The authors also noted that although there is the introduction of new reforms in the development of education, the professionalism of the reformers themselves is low, so these changes are not effective. In Kazakhstan, there is a low development of technical professions, and a degree of a young specialist is not worth anything and is usually used as a cheap labor force (Melnyk et al., 2020). To improve social and economic development, researchers recommend several measures to improve human capital. It is important to focus investment on the development of human capital and to maximize the return on it. According to the authors, the Kazakh government should establish laws that should primarily protect workers and the workplace. The most important is to establish equivalent pay between men and women, regardless of their race, color, religion, and age. Researchers also note that it is equally important to establish minimum wages, a maximum workweek, protections for pregnant women, support for the employee's family, and provide sick leave. At the same time, the government is recommended to use international educational programs (Wang and Liu, 2016; Niklewicz-Pijaczyńska and Wachowska, 2012). It is recommended that all enterprises in Kazakhstan create separate human resources departments, where directors and subordinates should be responsible for employees and their content, to assess the effectiveness of their work and to develop methods of professional development and training, developing employees, and implementing various measures to motivate employees.

A. Panzabekova et al. (2019) compared human capital in the regions of Kazakhstan. The authors explained that investments in human capital have a long payback period. After all, for example, the health care of children will affect the formation of the gross product of Kazakhstan only when they grow up and carry out professional realization. In this case, the researchers pay attention to the index of human capital, developed by the World Bank, the index of development, and the index of development goals. The authors determine that such indicators are imperfect and reflect the data accordingly to the macro level; therefore, it is recommended to determine the human capital factors. This study divides such factors into two groups. The first group concerns human health factors (life expectancy at birth, total morbidity of the population), and the second group of human capital factors reflects the state of the environment (emissions of harmful substances per capita). According to this, the regions of Kazakhstan were divided into four groups, depending on whether the national average is higher or lower. It is the groups of factors that formed the conclusions that the regions of Kazakhstan with a satisfactory level of development signal problems in a certain area of life, while ignoring the consequences will be quite devastating, and the factors with a good level of development are less exposed to risks and most favorable for improving human capital region. However, the authors consider it necessary to compare the indicators with the world standards for achieving the development of the human capital in the regions of Kazakhstan (Government presents national..., 2021).

By reviewing the works of scientists on the development of human capital in Kazakhstan, it can be concluded that previously the peculiarities of the impact of human capital development in the labor market on the modernization of the country's economy and the analysis of the labor force, unemployment, and the country's spending on education were not considered; no modeling of the interaction between human capital and the economy of Kazakhstan (An overview of..., 2022) was carried out.

Conclusion

After conducting a study of the development of human capital in the labor market under the conditions of modernization of Kazakhstan's economy, it was possible to establish that although the labor market is rich in the labor force, the country's economy has negative trends. The labor

force in the last ten years was growing, unemployment was decreasing, and the number of citizens with higher education was increasing, i.e., there were positive changes in the development of human capital. At the same time, expenditures on education decreased, which was accompanied by a low level of qualification of workers. Econometric modeling helped to find out that in the next two years the labor force of Kazakhstan increased, but further deterioration of the economic condition of the country is predicted. Such a forecast can be explained by the fact that it is based on the current state of education and qualifications of the labor force in the labor market of Kazakhstan. Therefore, it is recommended to completely reorganize the system of education and qualification of the country's workers.

First and foremost, it is important to set the direction of education toward international standards, innovation, and technology. It is important to assess knowledge with the help of international experts and requirements. It is important in the course of improvement of human capital development in the labor market of Kazakhstan to eradicate corruption because it is the main factor behind the low level of qualification of specialists in the workforce. At the same time, business should be focused not only on attracting skilled workers but also on the development and implementation of high-quality training. It is recommended to allocate whole departments at the enterprises of Kazakhstan, which would deal with employees and provide not only labor assessment and staffing but also conduct training and develop examination checks of the effectiveness of such activities. It is advisable to consolidate all these measures by increasing the level of wages in Kazakhstan and business. It is recommended to constantly develop and improve the system of incentives and bonuses for employees. After all, an interesting workforce is automatically transformed into a profitable human capital of the country. Certain activities will be one of the main methods of modernizing the economy of Kazakhstan. Further research in the aspect of human capital development in the labor market and modernization of Kazakhstan's economy should be based on the development of a new system of education according to the international level of knowledge.

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