Analysis on the Effectiveness of Human Resources in Supporting the Economic Transition and Development of the Western Regions

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Abstract: The position of human resources in economic development has become increasingly prominent. It is the most active factor of production that promotes economic development. It runs through the entire process of constructing a modern economic system. Based on the analysis of the correlation between the efficiency of human resources and the development of economic transformation in the western regions, this paper considers the changes in human resource demand for the construction of the modern economic system in the western regions as an entry point, and concludes that the quantity, structure and quality of the existing human resources in the western regions are insufficient to support the needs of the current economic transformation, so as to put forward suggestions for improvement in response to existing problems.

1. Introduction

In a general sense, the number of employees at the end of the year is usually used to reflect the basic human resources status of a country or region, and gross domestic product (GDP) is used as a measure of economic growth [1]. This study uses the number of employees in the western regions at the end of the year to reflect the basic status of regional human resources, and uses the gross domestic product (GDP) in the western regions as a measure of economic growth to analyze the correlation between GDP and employees at the end of the year. In order to analyze the overall situation of human resources and economic growth in the 12 western provinces (autonomous regions and municipalities), this study selects the average GDP of the western regions in the past 8 years (2012~2019) and the average number of employees at the end of the year for correlation analysis.

According to calculations, it can be concluded that the correlation coefficient between the average GDP of the western provinces (autonomous regions and municipalities) and the average number of employees at the end of the year is r=0.957.

Correlation test is carried out on the average value of GDP and the average value of the number of employees at the end of the year in the western regions: take the confidence coefficient α=0.05.

Put forward the hypothesis: H_0: r=0; H_1: r≠0

Then, calculate the t statistics for the test: $t = \dfrac{r\sqrt{n-2}}{\sqrt{1-r^2}}$

Finally, according to the given significance level and degree of freedom (n-2), find the corresponding critical value in the t distribution table $t_{\alpha/2}$=2.447, thus, $|t| > t_{\alpha/2}$: Reject the null hypothesis, so r is statistically significant, the overall correlation coefficient is not 0, and there is a linear correlation between the overall variables. That is, there is a positive linear correlation between economic growth in the western region and the number of employees at the end of the year, and GDP increases with the increase in the number of employees. It can be judged from this that there is a positive linear correlation between the economic growth of the western region and the number of human resources.

2. Analysis on the Effect of Human Resources on Regional Economic Growth

The effectiveness of talents intuitively refers to the extent to which talents play a role. Generally

speaking, talent efficiency = total talent (person) / GDP per capita (yuan) [2]. As far as a country or region is concerned, the lower the value of talent efficiency, the higher the level of talent utilization in the region and the smaller the waste of talent, that is, the lower the value of talent efficiency, the better, and vice versa [3]. In the same way, human resource efficiency refers to the expected result or degree of influence achieved by human resource management activities. Human resource efficiency = total human resources (person)/per capita GDP (yuan) [4]. According to the availability of data and the feasibility of research, this paper uses the total number of employees at the end of the year to reflect the number of human resources.

It can be seen from Table 1 and Figure 2 that from 2012 to 2019, as the efficiency value of human resources in the western regions continued to decrease, that is, the utilization rate of human resources in the western region was increasing year by year, and the per capita GDP continued to grow.

Table 1 Basic Situation Of Human Resource Efficiency in the Western Regions

Year	Average GDP per capita in the western regions (yuan)	Average number of the employed in the western regions at the end of the year (person)	Human resource efficiency (person/yuan)	Per capita GDP change rate (%)	Human resource efficiency change rate (%)
2012	32426.20	16771958.33	517.23		
2013	35909.40	17117558.33	476.69	10.74	-7.84
2014	38798.50	17392966.67	448.29	8.05	-5.96
2015	40410.30	17604433.33	435.64	4.15	-2.82
2016	43172.20	17848200.00	413.42	6.83	-5.10
2017	45576.60	17947550.00	393.79	5.57	-4.75
2018	47212.50	18023280.43	381.75	3.59	-3.06
2019	49001.13	18103702.23	369.45	3.79	-3.22

Source: Calculated based on the statistical yearbooks of provinces (autonomous regions and municipalities) in the western regions.

3. An Analysis of the Effect of Human Resources on Economic Transition in the Three Industries in the Western Regions

3.1 An Analysis of the Human Resources of the Three Industries in the Western Regions and the Corresponding Gdp Status

First, from 2012 to 2019, the ratio of the number of employees in the primary industry to the total employment basically showed a downward trend (see Table 3), and the proportion of the output value of the primary industry in the total GDP also showed a year-by-year downtrend, from 12.46% in 2012 to 11.51% in 2019 (see Table 2). This is caused by the decrease in employment caused by the transfer of rural labor, but more importantly, it is caused by the low quality of rural labor in the western region and insufficient investment in agricultural science and technology.

Table 2 Gdp and Gdp Total of Three Industries

Year	Average GDP of the western regions (100 million yuan)	Average GDP of three industries (100 million yuan)			The proportion of the three industries in GDP (%)		
		Primary industry	Secondary industry	Tertiary Industry	Proportion of primary industry	Proportion of secondary industry	Proportion of tertiary industry
2012	9493.68	1183.03	4672.77	3637.88	12.46	49.22	38.32
2013	10472.02	1271.45	5030.48	4170.09	12.14	48.04	39.82
2014	11402.23	1359.08	5375.78	4667.38	11.92	47.15	40.93
2015	11943.66	1434.76	5412.34	5096.56	12.01	45.32	42.67
2016	12864.53	1530.04	5630.46	5704.03	11.89	43.77	44.34
2017	13823.10	1621.78	5787.34	6413.99	11.73	41.87	46.40
2018	14761.23	1701.87	5873.21	7186.15	11.53	39.79	48.68
2019	15843.68	1824.39	5998.81	8020.48	11.51	37.86	50.62

Source: Calculated based on the statistical yearbooks of provinces (autonomous regions and

municipalities) in the western regions.

Second, the output value of the secondary industry accounted for the largest share of GDP in the three industrial structures, reaching about 45% (see Table 2). The proportion of employees in the secondary industry in the total number of people showed an upward trend (see Table 3), which shows that the number of employees in the secondary industry continued to expand, and the situation in the western regions that mainly relies on the secondary industry to drive regional economic growth was not obvious changed.

Table 3 Number of The Employed of Three Industries and Number of the Employed At the End of the Year

Year	The average value of the total number of the employed in the western regions at the end of the year	Number of the employed of three industries (10,000 people)			The proportion of the three industries in the total employment (%)		
		Primary industry	Secondary industry	Tertiary Industry	Primary industry	Secondary industry	Tertiary Industry
2012	1677.20	836.73	323.85	516.62	49.89	19.31	30.80
2013	1711.76	828.70	338.07	544.99	48.41	19.75	31.84
2014 1739.30	817.51	347.27	574.52	47.00	19.97	33.03	
2015	1760.44	808.22	346.47	605.75	45.91	19.68	34.41
2016	1784.82	803.26	349.63	631.94	45.00	19.59	35.41
2017	1794.76	788.51	353.02	653.22	43.93	19.67	36.40
2018	1802.33	763.24	359.78	679.31	42.35	19.96	37.69
2019	1810.37	748.33	367.34	694.70	41.34	20.29	38.37

Source: Calculated based on the statistical yearbooks of provinces (autonomous regions and municipalities) in the western regions.

Third, the GDP share of the tertiary industry and the share of the employed both showed an overall upward trend. At present, due to the low population quality, per capita GDP level and urbanization level in the western regions, the development of the tertiary industry in the western regions is relatively lagging. The lagging development of the tertiary industry affects the construction of a modern economic system and high-quality economic development in the western regions, and also has a serious impact on the transformation of economic development mode [5].

3.2 Analysis of the Human Resources Effectiveness of the Three Industries

According to the division of the three industries in the western regions from 2012 to 2017, a comprehensive analysis of the human resource efficiency of the three industries (see Table 4) shows that:

First, the values of human resource efficiency in the three industries had gradually declined, and the rate of change also showed a downward trend as a whole. This fully shows that the efficiency of human resources in the three industries in the western regions is continuously improving, and the efficiency of the use of human resources is increasing year by year. This should be the result of the in-depth development and effective management of human resources in the western regions.

Second, the results of the human resource efficiency values of the three industries in the western region from small to large were: the secondary industry, the tertiary industry and the primary industry. This shows that the second industry in the western regions has the highest efficiency in the use of human resources, while the first industry has the lowest efficiency in the use of human resources. Due to the positive correlation between human resources and economic growth [6], this also further confirms why the output value of the secondary industry in the western regions is the highest, while the output value of the primary industry is the lowest.

Third, the second industry in the western regions had the highest efficiency in the use of human resources and the output value of the secondary industry was the highest, which shows that the western region mainly relies on the secondary industry to drive economic growth.

In summary, it can be inferred that the secondary industry in the western regions is the pillar

industry of the entire regional economic development [7], and its human resource efficiency is also higher than that of the primary and tertiary industries. Although the number of employees in the tertiary industry is higher than that of the secondary industry, its human resources Resource efficiency is lower than that of the secondary industry. The current construction of a modern economic system in the western regions mainly shows the obvious characteristics of shifting from industrial dominance to service industry dominance, and the internal structure of each industry tends to be advanced [8], that is, the tertiary industry is continuously developing and gradually growing, but the third industry in the western regions as the supporting role of industrial human resources is not fully played. Therefore, it is necessary to make breakthroughs in human resources development and efficiency.

Table 4 Comprehensive Analysis Of Human Resource Efficiency in the Three Industries

Year	Primary industry		Secondary industry		Tertiary Industry	
	Human resource efficiency (person/yuan)	Year-on-year change rate (%)	Human resource efficiency (person/yuan)	Year-on-year change rate (%)	Human resource efficiency (person/yuan)	Year-on-year change rate (%)
2012	2332.13		240.79		459.11	
2013	2135.73	-0.084	229.73	-0.046	420.39	-0.084
2014	1960.10	-0.082	221.51	-0.036	399.06	-0.051
2015	1823.53	-0.070	220.36	-0.005	386.13	-0.032
2016	1705.51	-0.065	216.00	-0.020	361.79	-0.063
2017	1584.31	-0.071	209.99	-0.028	335.05	-0.074
2018	1487.64	-0.061	204.37	-0.027	318.17	-0.050
2019	1398.77	-0.060	201.89	-0.012	302.89	-0.048

Source: Calculated based on the statistical yearbooks of provinces (autonomous regions and municipalities) in the western regions.

4. Existing Human Resources Are Difficult to Support the Construction of a Modern Economic System in the West Regions

Through the analysis of the per capita GDP and the total number of employed population in the western regions from 2012 to 2019, and the human resource efficiency of the three industries in the western regions, it is believed that the total amount and structure of human resources in the western regions are not sufficient to support the transformation of the western economic development mode, and it is difficult to support the construction of the modernized economic system of the western regions.

4.1 The Total Amount of Human Resources is Difficult to Support Regional Economic Growth

Table 5 shows that from 2012 to 2019, the average annual growth rate of the gross domestic product in the western region was 7.59%, and the average annual growth rate of the total employed population at the end of the year was 1.10%. It can be seen that the western regions' economy is in a state of rapid growth, but the growth of human resources is relatively slow, and its growth rate is much lower than the growth rate of GDP.

Table 5 2012-2019 Gdp and Total Employed Population in the Western Regions At the End of the Year

Year	The average value of the total number of the employed in the western regions at the end of the year	Average GDP of the western regions (100 million yuan)
2012	1677.20	9493.68
2013	1711.76	10472.02
2014	1739.30	11402.23
2015	1760.44	11943.66
2016	1784.82	12864.53
2017	1794.76	13823.10
2018	1802.33	14761.23

2019	1810.37	15843.68
Average annual growth rate	1.10%	7.59%

Note: The average of the total employed population in the western region at the end of the year refers to the sum of the total employed population of the 12 provinces (autonomous regions, and municipalities) in the western regions at the end of the year divided by 12. The average value of the western region's GDP is the same as above.

Source: Calculated based on the statistical yearbooks of provinces (autonomous regions and municipalities) in the western regions.

4.2 The Layout of Human Resource Structure Cannot Satisfy the Transformation and Upgrading of Western Industrial Structure

From the perspective of the number of employees in the three industries in the western region from 2012 to 2019, the number of employees in the secondary and tertiary industries has generally shown an upward trend (see Figure 1), and the proportion of the two in the total employment has also continued to rise, of which the total number and proportion of employment in the tertiary industry were higher than those in the secondary industry (see Table 3). However, from the perspective of the human resource efficiency of the three industries (see Figure 2), the value of the human resource efficiency of the secondary industry in the western region was the lowest, that is, the human resource efficiency of the secondary industry in the western region was the highest, followed by the tertiary industry. It can be inferred that the use efficiency of human resources in the industry was higher than that in the tertiary industry, and the human resources in the secondary industry were more effective. This shows that although the human resource structure in the western regions is continuously optimized, it cannot fully meet the needs of the industrial structure transformation and upgrading in the western regions.
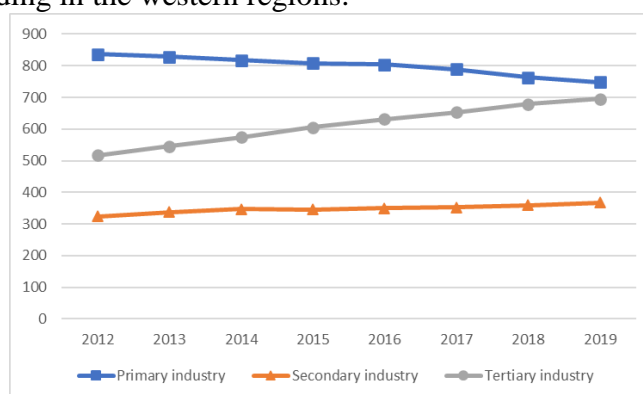

Fig.1 The Average Number of the Employed in the Three Industries At the End of the Year
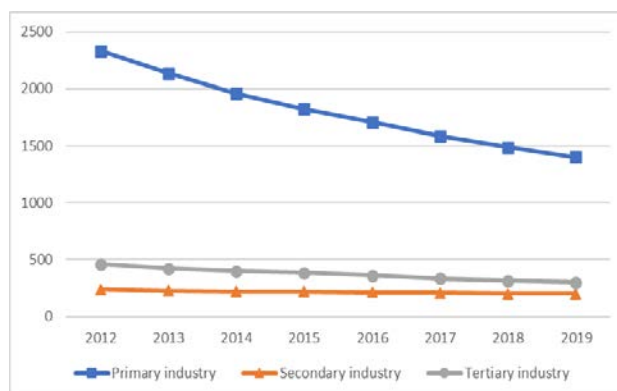

Fig.2 Human Resource Efficiency of the Three Industries from 2012 to 2019

5. Countermeasures and Suggestions for Human Resources to Support the Construction of the Modern Economic System in the Western Regions

Human resources are the core driving force for accelerating the transformation of economic development and scientific and technological progress, especially high-quality, high-skilled human resources for science and technology, which are the main supporting force to improve regional independent innovation capabilities and achieve high-quality economic development [9]. In view of the lack of human resources support in the construction of the modern economic system in the western regions, it is necessary to improve the top-level design to ensure that people make the best use of their talents. It is also vital to grasp the needs of economic development and introduce human resources as needed, promote the optimization and transformation of industrial structure, cultivate and attract high-quality human resources, and improve the development environment in the western region. Meanwhile, it is important to do a good job in the overall planning of human resources, continue to inject more new momentum into the economic development of the western regions, and promote the high-quality economic development of the western regions.

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