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ASSESSMENT OF THE INFLUENCE OF CHANGES IN RURAL DEVELOPMENT ON LABOR RESOURCES

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The purpose of the study consists in researching the changes occurring in the rural environment and their influence on the skills of labor resources. Fundamental scientific methods of knowledge were used in the presented study. An abstract-logical method was used to reveal the theoretical foundations of labor resources. When researching the need to adapt labor resources to the changes produced in the rural environment, their analysis and evaluation, statistical-economic and economic-mathematical methods were used. In order to evaluate the role of labor resources in rural development, monographic and computational-constructive research methods were used. The changes that occur today in various sectors of the economy are also present in agriculture, as the main branch of activity in the rural environment. The transition to new forms of employment, digitization, modernization of the professional training system, the emergence of new professions, new approaches to labor relations cause changes in the development of the rural economy, as well as in the behavior of labor resources. The work is original in terms of treating contemporary changes in rural development as a factor disrupting the skills of rural labor resources.

Keywords: *labor resources, rural development, agriculture, rural environment.*

APRECIEREA INFLUENȚEI SCHIMBĂRILOR ÎN DEZVOLTAREA RURALĂ ASUPRA RESURSELOR DE MUNCĂ

Scopul studiului constă în cercetarea schimbărilor care au loc în mediul rural și influența acestora asupra competențelor resurselor de muncă. În studiul prezentat s-au folosit metode științifice fundamentale de cunoaștere. Pentru a dezvălui fundamentele teoretice ale resurselor de muncă s-a folosit o metodă abstract-logică. La cercetarea necesității de adaptare a resurselor de muncă la schimbările produse în mediul rural s-au folosit analiza și evaluarea acestora, metode statistico-economice și economico-matematice. Pentru evaluarea rolului resurselor de muncă în dezvoltarea rurală s-au folosit metode de cercetare monografică și de calcul-constructivă. Schimbările care se produc astăzi în diverse sectoare ale economiei sunt prezente și în agricultură, ca principală ramură de activitate în mediul rural. Trecerea la noi forme de ocupare a forței de muncă, digitalizarea, modernizarea sistemului de formare profesională, apariția unor noi profesii, noi abordări ale relațiilor de muncă determină schimbări în dezvoltarea economiei rurale, precum și în comportamentul resurselor de muncă. Lucrarea este originală prin aspectul tratării schimbărilor contemporane în dezvoltarea rurală ca factor perturbator a competențelor resurselor de muncă în mediul rural.

Cuvinte cheie: *resurse de muncă, dezvoltare rurală, agricultură, mediu rural.*

Introduction

Labour resources are among the primary factors in shaping and increasing a country's national income. From a quantitative perspective, labour resources determine the supply in the labour market, while their utilization influences the production of the national product and the satisfaction of society's material and spiritual needs.

The worsening demographic and economic problems are contributing to the quantitative and qualitative degradation of labour potential in rural areas. The numerical decline of labour resources in the agricultural sector, imbalances in their structure, low levels of qualification, and unfavourable socio-economic conditions negatively impact both agricultural production and the satisfaction of the population's needs [1, p. 106].

Improving the current situation requires enhancing mechanisms for managing rural labour resources. Research and innovation can play a significant role in driving positive change in rural areas by developing and implementing solutions to address various challenges and opportunities. Consequently, all changes in rural development result in corresponding changes in labour resource behaviour.

Materials and methods

Theoretical scientific methods such as analysis, synthesis, induction, deduction, classification, history, and logic were applied in the research. Additionally, methods of economic and financial analysis and diagnosis, statistical processing of empirical and official data, graphing, indicators, comparison, grouping, and others were utilized. The theoretical aspects of labour resources were analyzed based on the works of representatives of classical economic thought, including F. Quesnay, J. S. Mill, D. Ricardo, A. Smith, R. Ehrenberg, and others. To uncover their theoretical foundations, the abstract-logical method was applied.

In studying the need for the adaptation of labour resources to changes in the rural environment, methods such as analysis and evaluation, statistical-economic analysis, and economic-mathematical modeling were employed. Monographic and computational-constructive research methods were used to evaluate the role of labour resources in rural development.

The research was based on data from the National Bureau of Statistics of the Republic of Moldova. However, methodological changes in population and labour force statistics from 2014 to 2019 limit the chronological comparability of the data.

Results and discussions

Labour resources are an integral and important part of socio-economic relations, particularly labour relations. They serve as one of the main factors of production, without which it is impossible to address various economic challenges or meet the ever-increasing needs of the population. Labour resources also represent a segment of the population possessing psychophysiological and intellectual qualities, formed through the interplay of economic and labour relations between society, the labour force, and the individual, and necessary for participation in economic and production activities.

The living environment, sector of activity, and level of professional training all significantly influence labour resources. Agriculture remains one of the most prevalent activities in rural areas of the Republic of Moldova, despite its steadily declining share in the country's gross domestic product (GDP) [2]. The agricultural sector, due to its importance, holds a specific value in the structure of the economy. It supplies the population with food products and raw materials for material production. Furthermore, through the consumption of production means, agriculture stimulates the development of industry, services, and other economic sectors [3, p. 87].

Agricultural production has distinct characteristics that leave a unique imprint on labour resources, such as the extensive application of labour power, the mismatch between the working period and the production period, dependence on natural and climatic factors, the seasonality of agricultural production, the versatility of employees' qualifications, the implementation of innovative agricultural production technologies requiring advanced knowledge, and the maintenance of living organisms at various stages of development [4, p. 368].

These features, specific to agricultural production, differentiate the formation of labour potential from that in other sectors of the national economy. The influence of agriculture's particularities on the development of labour resources is increasingly shaped by a range of conditions and factors, including demographic, migration, social, economic, natural, climatic, and cultural influences.

The main quantitative factor determining the formation of labour resources in agriculture is the demographic situation and migration. In terms of qualitative content, besides the demographic factor, their formation is influenced by the development of the education and training system, the healthcare system, and socio-psychological factors [5, p. 324].

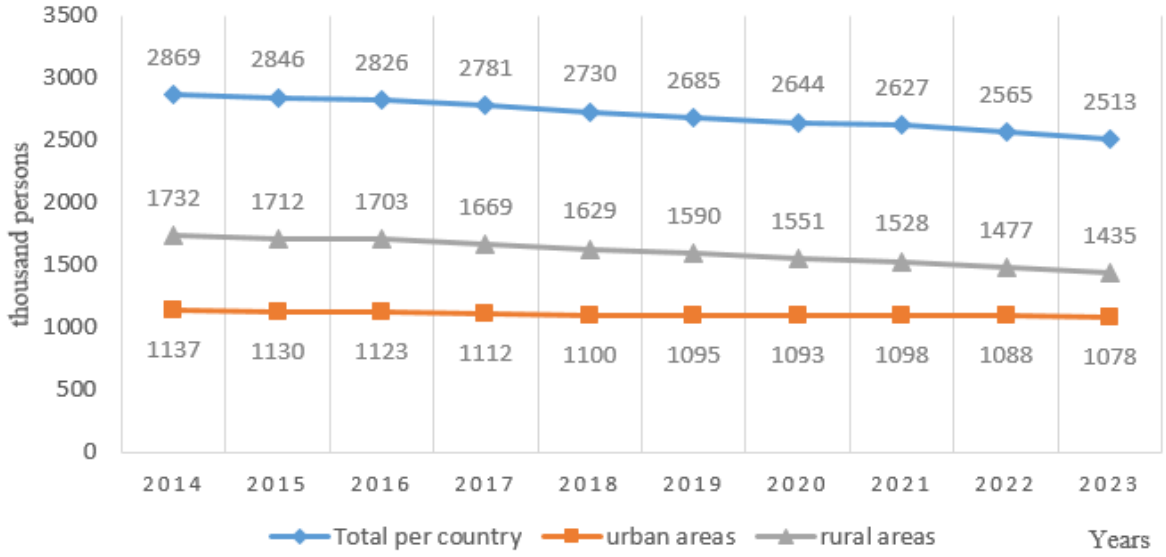
Figure 1. Factors determining the formation of labour resources in agriculture.



Source: elaborated by the author.

Like many other countries, the Republic of Moldova is experiencing an ongoing population decline. According to the National Bureau of Statistics (NBS), the population with usual residence as of 1 January 2023 was 2,512.8 thousand people, a decrease of 52.3 thousand people or 2% compared to the beginning of 2022. In rural areas, 1,078 thousand people, or 57.1%, reside, while in urban areas, 1,434 thousand people, or 42.9%, live, representing a 0.6% increase compared to the previous year (Fig. 2).

Figure 2. Population dynamics of the Republic of Moldova with usual residence by backgrounds.



Source: elaborated by the author based on NBS data [6].

Reduced demand for labour, insufficient state funding, and other socio-economic problems have negatively impacted the formation of labour potential in rural areas. As in urban areas, most rural families prefer to have only one child. Consequently, the issue of labour shortages is becoming increasingly pressing. This leads to a rise in labour costs, increased production costs, and, subsequently, higher product prices. Ultimately, the volume of agricultural production decreases, resulting in a reduced quality of life.

Studying the demographic situation is an essential prerequisite for effective economic and social policy-making. Forecasting population numbers and structure enables the efficient allocation and utilization of labour resources [7, p. 107]. At the same time, addressing the demographic problem and mitigating its negative consequences is possible by implementing demographic policies. These policies should focus on strengthening the institution of the family, increasing birth rates, and reducing mortality.

Labour force potential is a vital component of a country's socio-economic development. Currently, the labour potential of the rural population is experiencing both quantitative and qualitative deterioration. Economic challenges, coupled with worsening demographic issues, limit economic growth in rural areas and contribute to a decline in the living standards of the rural population, further reducing labour potential and its reproductive capacity.

Since 2014, the population of the Republic of Moldova with usual residence has been continuously declining, reaching 2,565 thousand inhabitants in 2022. Of this total, 1,108 thousand people, or 42.4%, live in urban areas, while 1,477 thousand, or 57.6%, reside in rural areas (Table 1).

The depopulation of the country during the period 2014–2022 amounted to 304.5 thousand people or 10.6%. The trend of depopulation is more pronounced in rural areas, where, in 2022 compared to 2014, there was a reduction of 254.3 thousand people, or 14.3%. In urban areas, the depopulation during the same period amounted to 49.4 thousand people, or 4.3%.

Table 1. Population dynamics by living environment, employed population and labour force in the Republic of Moldova in 2014-2022.

	Number of population, thousands of persons			Total workforce, thousands of persons	Population employed		
	total	including			total, thousands of persons	including agriculture, forestry and fisheries	
		urban areas	rural areas			thousands of persons	as % of total
2014	2.869,3	1.137,1	1.732,2	1.020	982	318	32,4
2015	2.846,3	1.129,8	1.716,5	1.038	989	338	34,2
2016	2.825,6	1.122,8	1.702,8	1.035	994	363	36,6
2017	2.780,7	1.111,5	1.669,2	1.000	961	341	35,5
2018	2.729,6	1.100,7	1.628,9	1.018	988	389	39,3
2019	2.684,8	1.094,7	1.590,1	919	872	183	21,0
2020	2.643,7	1.092,8	1.550,9	867	834	176	21,0
2021	2.626,6	1.098,3	1.528,3	872	843	181	21,5

Source: elaborated by the author based on NBS data [6].

The factors driving population decline are natural increase and migration. In urban areas, the natural population increase remains positive but is decreasing year by year, while in rural areas, a natural population decrease has already been noted. The districts of Cimișlia, Cantemir, Călărași, Telenești, Hîncești, Briceni, and Nisporeni are the most affected by these processes. To a lesser extent, the municipality of Bălți and UTA Gagauzia have also experienced depopulation.

The depopulation of the country has led to a numerical reduction in the workforce. In 2014, the labour force totaled 1,020 thousand people, but by 2022, it had decreased to 890 thousand people, a reduction of 12.75 percentage points. However, in 2022, the labour force in the Republic of Moldova increased by 2.1% compared to 2021. Analyzing by gender, the share of men in the workforce (51.7%) was higher than that of women (48.3%). At the same time, the share of economically active people in rural areas (54%) was higher than in urban areas (46%).

In 2022, the employed population was 862 thousand people, an increase of 19 thousand or 2.2% compared to 2021. Among the employed population, the share of men (51.5%) was higher than that of women (48.5%). The average age of the employed population was 43 years. By living environment, the share of employed people in rural areas (54.4%) was higher than in urban areas (45.6%).

Analyzing the distribution of employed persons by economic activities, it was observed that the number of people employed in agriculture increased from 32.4% in 2014 to 39.3% in 2017. However, from 2018 onward, there has been a continuous decline, reaching 20.8% in 2022. This shift contributed to an increase in the share of people employed in industry, from 14.4% in 2021 to 14.8% in 2022, and in the service sector, where 56.7% of all employed persons were engaged in 2022, compared to 56.4% in 2021. However, the sectoral labour flows reveal that the release of labour from agriculture has not been fully absorbed by other economic sectors.

In terms of territorial distribution, 28.5% of the employed population were residents of Chișinău municipality. The Northern region accounted for 31.7% of total employment, followed by the Central region with 25.7% and the Southern region with 14.1%. Based on the distribution of employment by ownership forms, in 2022, the public sector employed 28.8% of the workforce, while the private sector or other forms of ownership accounted for 71.2%.

Another factor affecting the formation of rural labour resources is migration, whose role in labour force dynamics has increased. Social and economic issues such as unemployment, low living standards, and limited access to social infrastructure encourage rural residents to migrate to cities where labour demand is higher. Consequently, rural-to-urban migration remains predominantly one-way.

According to data from the Public Services Agency, in 2022, approximately 21.5 thousand people moved within the country, a decrease of 38.6% compared to 2021 (Table 2). The majority of internal migrants (91%) were of working age, predominantly aged 20–49. Examining migration flows by gender, 56.2% of migrants were female, and 43.8% were male. During 2021, the population in urban localities increased by 8.2 thousand people at the expense of rural localities due to internal migration. In 2022, this figure fell to 5.3 thousand people, a reduction of 35.4% or 2.9 thousand people compared to 2021.

The largest number of migrants moved to major cities, with 53.4% of total arrivals settling in Chișinău municipality, followed by Bălți municipality with 3.7%. This trend not only intensifies the urbanization process but also contributes to asymmetric regional development.

Table 2. Internal migration due to change of residence in 2021-2022, persons.

Age group	Number of arrivals						Number of departures					
	Total		including:				Total		including:			
			in urban areas		in rural areas				in urban areas		in rural areas	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Total	34967	21545	23978	14743	10989	6711	34967	21454	15744	9455	19223	11999
including												
0-14 years	63	66	44	36	19	30	63	66	20	18	43	48
15-34 years	15370	10668	10639	7517	4731	3151	15370	10668	5309	3829	10061	6839
35-59 years	15375	9026	10567	6117	4808	2909	15375	9026	7791	4566	7584	4460
60 years and over	4159	1694	2728	1073	1431	621	4159	1694	2624	1042	1535	652

Source: prepared by the author based on PSA data [8].

The acquisition of vocational skills in rural areas is influenced by the specificity of the agricultural sector. The use of land as a means of production requires workers to possess both specific and universal skills. In agriculture, there is no narrow specialization of the workforce. The operation of specific systems of agricultural, plant, and animal machinery, as well as the management of agricultural land as a means of production, necessitates a workforce with diverse skills.

Changes can also be observed in the dynamics of relative indicators characterizing the rural labour market.

In 2022, the labour force participation rate increased by 0.7 percentage points compared to 2021 (Table 3). However, this increase was more pronounced in urban areas, where it reached 2.0%, while in rural areas, the labour force participation rate remained practically unchanged.

Regarding the employment rate, which measures the proportion of employed people aged 15 and over in relation to the total population in the same age group, this also saw an increase in 2022 compared to 2021. Although the growth rate was slow in both urban and rural areas, urban areas exhibited a higher increase (47.3%) compared to rural areas (36.1%). Additionally, the employment rate of men (44.7%) was higher than that of women (36.8%).

Table 3. Analysis of relative labour market indicators in the Republic of Moldova by average over the period 2014-2022.

	Labour force participation rate, %			Occupancy rate, %			BIM unemployment rate, %		
	total	including		total	including		total	including	
		urban areas	rural areas		urban areas	rural areas		urban areas	rural areas
2014	43,3	46,0	41,4	41,7	43,6	40,3	3,7	5,2	2,6
2015	44,5	46,8	42,9	42,4	43,8	41,4	4,7	6,5	3,4
2016	44,8	46,6	43,5	43,0	43,8	42,4	4,0	6,0	2,5
2017	44,1	46,0	42,8	42,4	43,3	41,7	3,9	5,8	2,5
2018	45,9	45,1	46,4	44,5	43,0	45,5	2,9	4,7	1,8
2019	42,3	49,4	37,6	40,1	47,0	35,5	5,1	4,9	5,3
2020	40,3	46,5	36,3	38,8	44,4	35,1	3,8	4,5	3,3
2021	41,1	47,1	37,2	39,8	45,6	36,0	3,2	3,2	3,2
2022	41,8	49,1	37,1	40,5	47,3	36,1	3,1	3,6	2,7

Source: elaborated by the author based on NBS data [9].

During 2022, the labour force participation rate increased by 0.7 percentage points compared to 2021 (Table 3). However, in urban areas, this increase was more pronounced, reaching 2.0%, while in rural areas, the labour force participation rate remained practically unchanged.

The employment rate, which measures the proportion of employed people aged 15 and over in relation to the total population in the same age group, also increased in 2022 compared to 2021. Although this indicator is growing at a slow pace in both urban and rural areas, the growth rate in urban areas (47.3%) is higher than in rural areas (36.1%). Additionally, the employment rate of men (44.7%) was higher than that of women (36.8%).

By age category, in 2022, the employment rate for young people aged 15-29 was 28.3%; for those aged 15-34, it was 37.0%; and for the 15-64 age group, it reached 48.4%. For the working-age population, as defined by national legislation, the employment rate stood at 51.7%. Among people with disabilities, the employment rate was 15.2%. By gender, this indicator was slightly higher for men (15.5%) compared to women (14.8%). Regionally, the employment rate averaged 15.6% in urban areas and 15.1% in rural areas.

The unemployment rate in the Republic of Moldova in 2022 was 3.1%, remaining practically stable compared to 2021 (3.2%). By residence, the unemployment rate was higher in urban areas (3.6%) than in rural areas (2.7%).

Beyond demographic, migration, and social problems, deeper structural economic processes negatively influence rural labour force development. Due to insufficient economic growth, lack of and inefficient use of financial resources, the rehabilitation and development of the agricultural sector are progressing very slowly. As a result, agricultural enterprises are unable to provide enough well-paid jobs, leading to rising unemployment. The lack of demand for labour results in declining real wages and living standards for workers. At the same time, low wages fail to attract highly skilled professionals to rural areas, which adversely affects productivity and work quality.

The degradation of social infrastructure in rural areas and its slow recovery also negatively impact labour force development. Weak social infrastructure diminishes workers' motivation to acquire new knowledge, develop skills, and invest in human capital. In such circumstances, workers are often forced to focus on addressing economic challenges and improving living conditions rather than their own professional training. Furthermore, the rural housing market is poorly developed. New housing construction is concentrated in urban areas, with little to no new housing in rural areas. Rural housing funding should come from public budgets, organizations, and employees, but inadequate investment further diminishes rural attractiveness. Additionally, poor connectivity, insufficient infrastructure, limited employment opportunities, and restricted access to services reduce the appeal of living and working in rural areas.

In addition to demographic issues, migration, and living conditions, other factors contribute to changes in rural development, which in turn alter the structure of labour resources [10].

Digitisation, applied in various sectors, is also influencing rural labour resources. Rural residents can now perform jobs that do not require physical presence or commuting. However, such jobs demand higher professional skills, which are often lacking in rural areas, serving as an impetus for personal development.

The emergence of new professions and the disappearance of existing ones, alongside improvements in professional training systems, are shifting the focus from the quantitative to the qualitative aspects of labour resources. As the education level of rural residents slowly but steadily increases, the economic mobility of rural labour resources will improve, accelerating their transition to non-agricultural activities and professions. Enhancing the quality of the labour force is critical across all sectors, especially agriculture.

As noted earlier, most agricultural workers are characterized by their versatility, which is reflected in their ability to perform diverse tasks using various tools and technologies. This versatility is becoming increasingly relevant as agriculture depends more on modern digital technologies, necessitating a workforce with multi-professional skills. Consequently, the emergence of new professions is becoming a reality, requiring not only narrow classical training in specific specialties but also knowledge of digital technologies, the ability to interact with artificial intelligence, and the application of these skills in daily work.

Conclusions

Changes in rural development can significantly influence labour resources. This influence can be positive or negative, depending on the nature of the changes and how they are managed. Changes occurring in the rural economy directly affect the labour force, inducing changes in its quantitative and qualitative characteristics, such as:

- **Modernisation of the agricultural sector**: The introduction of advanced technologies, mechanisation, and automation can lead to increased productivity, which may reduce the demand for manual farm labour. However, it can also create jobs in high-tech industries and related areas such as research and development.
- **Diversification of economic sectors**: Promoting sectors other than agriculture, such as tourism, manufacturing, education, and services, can generate new employment opportunities for rural residents. This diversification reduces reliance on agriculture and enhances climate and economic resilience.
- **Investment in education and training**: Rural development must include investment in education and training to ensure that human resources in rural areas have the skills to adapt to economic changes. This enables them to seize new employment opportunities.
- **Migration to urban areas**: In some cases, rural development can lead to migration to cities in search of better-paid jobs and improved services. While this reduces the rural labour force, it can enhance the quality of life for those who remain in rural areas.

- **Women's participation in the labour force**: Rural development can significantly influence the labour resources of women. Improving access to childcare, education, and training can boost women's participation in the workforce and promote gender equality.
- **Social protection systems**: In the context of change, developing social protection systems is crucial to help affected workers manage transitions. These systems may include unemployment benefits, retraining programmes, and other forms of support.
- **Community involvement**: Effective rural development requires the involvement of the local community. Understanding the needs and aspirations of rural residents can guide the design of development strategies that leverage existing labour resources and create new opportunities.

At the same time, there are changes in the mindset of the rural population in general and the workforce in particular, as agricultural work no longer forms the foundation of rural life. The widespread digitisation of the rural economy and the active use of artificial intelligence-based technologies are leading to revised demands from employers. Restructuring the system of training executives for rural businesses implies the emergence of new professions and a reduction in demand for other professions, such as accountants and tractor drivers, which are currently widespread.

Additionally, there will be changes in the structure of employment, including a reduction in informal employment. Therefore, changes in rural development can have a profound impact on labour resources. Assessing this impact requires a multi-faceted approach to ensure sustainable and equitable development in rural areas.

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