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Trends in Labour Resources in Romania

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Abstract

Currently, the labour market is characterised by workplace flexibility, life skills training, employer support for skills development, company concern for the society in which it operates, and increasing labour productivity through technology. The current research makes a forecast for the average monthly nominal net earnings for Romania and for the availability of labour resources for Romania for the period 2023-2025. The work will help employers to find the right way to keep employees in the company. The research methods used are the average dynamic index and linear trend analysis, by choosing the forecasting method that presents the highest accuracy. The conclusions present proposals and recommendations for the Romanian labour market.

Keywords: labour resources, productivity, linear trend.

JEL Classification: F16, F66.

1. Introduction

According to Giese & Haldane (2020) *"the company's impact on society"* represents a key issue for attracting potential employees. The labour resources in Romania are changing in a blink of an eye due to the evolution of the digitalisation and the desire for work flexibility.

In the perspective of the 2030s, according to HR experts, two trends will have an effect on the way we work. On the one hand, acquiring the skills to become experts in digitisation and on the other hand, increasing productivity at work (Brown & Rocha, 2020).

Personalising salary benefits is a priority for employees looking for a job. The benefits must be tailored to the employees' wishes according to their lifestyles (Portuguez Castro & Gómez Zermeño, 2020).

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In light of the above, we see the need to analyse the figures of the available labour resources in Romania, by total and by development region, the analysis of the average monthly nominal net earnings by total Romania and by development region, as well as the analysis of the unemployment rate by total Romania and by development region, for the period 2018-2022. Furthermore, we forecast the three macroeconomic indicators for the period 2023-2025, highlighting the results and related discussions.

2. Problem Statement

Due to the technology advancements the workplace is changing rapidly (Nagurney, 2022). In this way, the employees are looking for personalising their work contracts and really want the support of their employers as a partner in the real life also.

Not easy to impress, the new employees are looking for a salary package that includes along with the salary others incentives (Pelau et al., 2023). So, the success of a company lies in the respectful relationship between the employer and employees. The company of the future will offer not just a simple job, but more than that, like support, understanding, flexibility, and stimulants (Tirau et al., 2022).

The employees will be more and more absolve by their work attributes, and the companies will seek to offer job related to the circular economy.

The technology will help workers to be highly productive and involved in their tasks (FutureStation, 2023 and de Mena et al., 2024).

A change in Romanian employees is observe, as they look for hybrid works, more than just one job, the switch between jobs rapidly, high payed salaries, and the desire to create their own career portfolio, which allow workers to be engaged in multitude projects (Rinne, 2021). Therefore, in the near future, companies will need to perfect their HR departments.

According to Maha et al. (2023), future employees will want a flexible schedule, the desire to work remote, to stay at home as much as possible, the possibility to create and innovate at the work place.

The HR strategy will need to be involved in the wellbeing of the employees, in their health, family, and teamwork activities (Kwortnik, 2003).

In the Romanian context, the workers are looking for a more friendly-business environment, the possibility to affirm themselves, the possibility to create and innovate at the workplace (Tapescu, 2015).

In this research paper, we will use statistical indicators helping us to see the labour market evolution through the years. Only in this way the future labour strategies can be put in place.

3. Research Methods

The research database was created using Tempo Online, the portal of the Romanian National Institute of Statistics. The indicators for analysis were selected and the five-year time period under investigation was defined as 2018-2022.

The total of the labour resources in Romania was analysed and forecast, and the average monthly nominal net earnings for Romania were analysed and forecast. More than that, the research paper examines the evolution, by economic development regions, for Romania, for three macroeconomic indicators: labour resources, average monthly nominal net earnings, and unemployment rate. For each indicator, the rate of change was calculated and analysed on a fixed basis.

Two statistical methods are used to see which of them best adjusts the data series. The first one is the dynamic index, and the second one is the linear trend. In statistics, the best method for forecasting is the one with v (the coefficient of variation) as lower as possible, usually less than 5%. The lower v it is the best the forecast method it is.

The equations for adjustment and forecasting are given below, i.e., equation 1 represents the root mean square deviation and equation 2 the coefficient of variation.

$$\sigma = \sqrt{\frac{\sum_{i=1}^{n}(y_i - \tilde{y}_i)^2}{n}} \tag{1}$$

$$v = \frac{\sigma}{\bar{y}} \cdot 100 \tag{2}$$

4. Findings

The initial objective was to examine the total labour resources available in Romania, both in aggregate and by development region, over the period from 2018 to 2022.

Labour resources are defined as the category of population with the physical and intellectual capacity to perform useful work in one of the economic activities. This includes the working age population, as well as those who are under or over the working age but still working.

The working age is 16-61 years old for women and 16-65 years for man. The following labour resources are included in the calculations: the working age population who are able to work is determined by subtracting the number of people who are permanently incapacitated to work and the number of pensioners of working age who do not work from the total working age population; and the number of people who are actively employed, both under and over the age of working age.

Thus, the total labour resources available to Romania in 2022 amount to 11986.4 thousand persons, a decrease of 2.06% compared to the base year 2018. By region, the Bucharest-Ilfov region recorded the largest increase of 10.19% and the Western region the largest decrease of 9.78% in terms of labour resources in the analysed period 2018-2022 (Table 1).

Table 1. Labour resources by total and by development regions in Romania

Labour resources in Romania	Year 2018 Thousands of persons	Year 2019 Thousands of persons	Year 2020 Thousands of persons	Year 2021 Thousands of persons	Year 2022 Thousands of persons	Change % 2022/2018
TOTAL	12238.9	12198.3	12216.8	12201.4	11986.4	-2.06
Region NORD-VEST	1626.8	1621	1625.7	1630.5	1586.3	-2.49
Region CENTRU	1453.9	1447.3	1448.7	1454.7	1389.7	-4.42
Region NORD-EST	1965.5	1954.7	1956.9	1958.7	1985.1	+1.00
Region SUD-EST	1489.2	1473.1	1468.1	1461.5	1433.9	-3.71
Region SUD-MUNTENIA	1813	1789.5	1793.8	1770.7	1721.9	-5.02
Region BUCURESTI - ILFOV	1535.2	1575.6	1589.3	1600.1	1691.7	+10.19
Region SUD-VEST OLTENIA	1204.5	1193.4	1194.2	1185.2	1139.5	-5.40
Region VEST	1150.8	1143.7	1140.1	1140	1038.3	-9.78

Source: calculated by the authors based on Tempo Online (2024).

The average monthly nominal net earnings by total and by development regions in Romania show significant discrepancies between the earnings of the Bucharest-Ilfov region compared to the other regions in Romania. In 2022, the average monthly nominal net earnings increased by 43.58% compared to 2018. The North-West region recorded an increase of 50.27% in 2022 compared to 2018 for the average monthly nominal net earnings (Table 2). The foreign investment in the Western region of Romania created a infusion of financial capital proper for the Romanian specialists to be more prosper. Their earning has been doubling over the past five years, representing a very important issue for the prosperity of the region.

Table 2. The average monthly nominal net earnings by total and by development regions in Romania

Average monthly nominal net earnings	Year 2018 RON	Year 2019 RON	Year 2020 RON	Year 2021 RON	Year 2022 RON	Change % 2022/2018
TOTAL	2642	2986	3217	3416	3801	+43.87
Region NORD-VEST	2419	2781	2997	3203	3635	+50.27
Region CENTRU	2453	2757	2953	3153	3489	+42.23
Region NORD-EST	2317	2674	2876	3014	3349	+44.54
Region SUD-EST	2257	2551	2770	2883	3173	+40.58
Region SUD-MUNTENIA	2370	2697	2885	3024	3355	+41.56
Region BUCURESTI - ILFOV	3559	3947	4263	4576	5110	+43.58
Region SUD-VEST OLTENIA	2324	2630	2828	2954	3247	+39.72
Region VEST	2545	2879	3079	3313	3650	+43.42

Source: calculated by the authors based on Tempo Online (2024).

Unemployment is a key indicator that reflects the situation in the labour market. For Romania, a significant improvement in the economic situation is observed in the five years of the economic analysis, 2028-2022, with the unemployment rate decreasing by 9.09% (Table 3). The situation is most favourable for the Bucharest-Ilfov region, where the decrease in unemployment is 25% in 2022 compared to 2018. This proves that there are jobs available and potential employees willing to occupy them. Together with the increase in the average monthly nominal net earnings, a strong inverse relationship is observed between the two macroeconomic indicators. The higher the earnings and the lower the unemployment rate, the more attractive and desirable the job is for the available labour resources. The favourable climate for increasing earnings will also lead to a favourable climate for reducing the unemployment rate in Romania.

Table 3. Unemployment rate by total and development regions in Romania

Unemployment rate in Romania	Year 2018	Year 2019	Year 2020	Year 2021	Year 2022	Change % 2022/2018
	Percentage	Percentage	Percentage	Percentage	Percentage	
TOTAL	3.3	2.9	3.4	3	3	-9.09
Region NORD-VEST	2.3	2	2.6	2.3	2.1	-8.70
Region CENTRU	2.9	2.6	3.3	2.7	3.1	+6.90
Region NORD-EST	4.8	4.3	4.7	4.3	4.2	-12.50
Region SUD-EST	4.6	4.2	4.8	4.2	4	-13.04
Region SUD-MUNTENIA	4	3.4	3.9	3.7	3.8	-5.00
Region BUCURESTI - ILFOV	1.2	1.1	1.2	1	0.9	-25.00
Region SUD-VEST OLTENIA	5.9	5.2	5.5	5.4	5.6	-5.08
Region VEST	1.8	1.7	2.2	1.9	1.7	-5.56

Source: calculated by the authors based on Tempo Online (2024).

In the following, we will adjust and then forecast the macroeconomic indicator: total labour resources in Romania.

Table 4. Adjustment using the average dynamic index of the total labour resources in Romania

	Real data	Adjust data	
Years	**Total Labour resources Thousands of persons**	$\tilde{y}_i = y_1 \cdot \bar{I}^{t_i}$	$(y_i - \tilde{y}_i)^2$
2018	12238.9	12238.9	0
2019	12198.3	12175.3	530
2020	12216.8	12112.0	10985
2021	12201.4	12049.0	23216
2022	11986.4	11986.4	0
			34730
The average dynamic index Formula and calculation	$\bar{I} = \sqrt[n-1]{\frac{y_n}{y_1}}$	*Sigma*	*83.34*
	0.9948	***v***	***0.68%***

Source: calculated by the authors.

Table 5. Adjustment using the linear trend method of the total labour resources in Romania

Years	Real data Total Labour resources Thousands of persons	ti	ti^2	yi*ti	Adjust data $\tilde{y}_i$	$(y_i - \tilde{y}_i)^2$
2018	12238.9	-2	4	-24477.8	12269	890
2019	12198.3	-1	1	-12198.3	12219	410
2020	12216.8	0	0	0	12168	2346
2021	12201.4	1	1	12201.4	12118	6927
2022	11986.4	2	4	23972.8	12068	6655
			10	-501.9		17229
The linear trend Formula and calculation	$\tilde{y}_i = a + b \cdot t_i$				*Sigma*	*58.70*
					v	***0.48%***
	$a = \overline{y}$ (***The mean***)					
a	**12168.4**					
	$b = \frac{\sum y_i t_i}{\sum t_i^2}$					
b	**-50.19**					

Source: calculated by the authors.

Comparing the coefficient of variation (v) of the two statistical-mathematical adjustment methods, we can see that v of the linear trend method (0.48%, Table 5) is smaller than v of the average dynamic index method (0.68%, Table 4), which means that the smaller v is, the more suitable this method is for forecasting. Thus, the forecast for the total labour resources in Romania will be made with the linear trend. We will see what will happen in the next few years in terms of labour resources in Romania.

Table 6. Linear trend forecast of total labour resources in Romania

Years	ti	$\tilde{y}_i = a + b \cdot t_i$
		Thousands of persons
2023	3	***12018***
2024	4	***11968***
2025	5	***11917***

Source: authors' own calculations.

We observe a slight decrease of -0.6% in total labour resources in Romania in 2025 compared to 2022. This slightly decreasing trend is influenced by the migration of young people to Western European countries in search of better-paid jobs. To counteract this decline, it is worth analysing the level of earnings in 2025.

The next step is to adjust and then forecast the macroeconomic indicator: total average monthly nominal net earnings in Romania.

Table 7. Adjustment using the average dynamic index of the total average monthly nominal net earnings in Romania

	Real data	**Adjust data**	
Years	**Total average monthly nominal net earnings (RON)**	$\tilde{y}_i = y_1 \cdot \overline{I}^{t_i}$	$(y_i - \tilde{y}_i)^2$
2018	2642	2642	0
2019	2986	2894	8556
2020	3217	3169	2309
2021	3416	3471	2983
2022	3801	3801	0
			13847
The average dynamic index Formula and calculation	$\overline{I} = \sqrt[n-1]{\frac{y_n}{y_1}}$	*Sigma*	52.63
	1.0952	***v***	***1.64%***

Source: authors' own calculations.

Table 8. Adjustment using the linear trend method of the total average monthly nominal net earnings in Romania

Years	**Real data Total average monthly nominal net earnings (RON)**	**ti**	**ti²**	**yi*ti**	**Adjust data** $\tilde{y}_i$	$(y_i - \tilde{y}_i)^2$
2018	2642	-2	4	-5284	2662.8	433
2019	2986	-1	1	-2986	2937.6	2343
2020	3217	0	0	0	3212.4	21
2021	3416	1	1	3416	3487.2	5069
2022	3801	2	4	7602	3762	1521
			10	2748		9387
The linear trend Formula and calculation	$\tilde{y}_i = a + b \cdot t_i$				*Sigma*	43.33
					v	***1.35%***
	$a = \overline{y}$ (***The mean***)					
a	**3212.4**					
	$b = \frac{\sum y_i t_i}{\sum t_i^2}$					
b	**274.8**					

Source: calculated by the authors.

Comparing the coefficient of variation (v) of the two statistical-mathematical adjustment methods, we can see that v of the linear trend method (1.35%, Table 8) is smaller than v of the average dynamic index method (1.64%, Table 7), which means that the smaller v is, the more suitable this method is for forecasting. Therefore, the forecast for the total average monthly nominal net earnings in Romania will be made with the linear trend. We shall see what will happen in the next few years in terms of total average monthly nominal net earnings in Romania.

Table 9. Linear trend forecast of total average monthly nominal net earnings in Romania

Years	t_i	$\tilde{y}_i = a + b \cdot t_i$
		RON
2023	3	***4037***
2024	4	***4312***
2025	5	***4586***

Source: authors' own calculations.

It is hopeful to note that the total average monthly nominal net earnings in Romania are on the rise year on year. This optimistic trend is expected to last, with an estimated 4586 RON monthly nominal net earnings in Romania by 2025.

5. Conclusions

After analyse and forecast the total number of labour resources in Romania and the total average monthly nominal net earnings in Romania, we can present the following remarks.

First, the Romanian employees are becoming more prosper year after year, as a result of the rise of their earning each month. The companies are wealthier and can afford better wages for their employees.

Second, the linear trend observed in the forecast is advantageous for the Romanian labour sector, and the implications for employers in creative services are essential as they need to offer an open-minded solution in attracting and maintain their workers.

Third, the analysis and the forecast of the labour resources and employees' earnings offer solutions for better market understanding.

Last but not least, in order to attract the Romanian specialists, a group of services is needed like: better salaries, work flexibility, freedom of expression, and innovation enhancement.

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