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SUSTAINABILITY OF THE WORKFORCE ON A FARM IN THE NORTH-EAST REGION OF ROMANIA

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Abstract

Sustainability in the labour field on a farm in the Nord-East Region of Romania is a valuable subject having a significant impact on the performance and long-term development of the agricultural enterprise. The efficiency of using the available resources is known as productivity or effectiveness. The efficiency measurement can be attained through several methods, however two of them are most frequently utilised for performance evaluation. The first method, the physical productivity computed by measuring the natural performance of production indicators and is expressed in natural or conventional units; the second method, the performance is measured in terms of value, allowing to evaluate efficiency in terms of financial-monetary terms and is utilised in the modern management of enterprises. In this paper, the main objectives include identifying the optimization directions of workforce performance for S.C. Treter S.R.L., evaluation level and labour productivity evaluations, available resources analysis for improving labour productivity and review of economic consequences of the changes traced in the workforce productivity field. In the period 2019-2023, S.C. Treter S.R.L. increased the number of employees from 12 to 17, this expansion was the result of the company's development policy, oriented towards the acquisition of additional land and expansion of operational capacities, and the evaluation of work efficiency shows an increase in annual return from 218,526 lei/employee in 2019 to 229,363 lei/employee in 2023. In terms of commercial labour efficiency, it peaked in 2022 at 233,199 lei/employee and the analysis of daily and hourly efficiency showed fluctuations, with the highest productivity level in 2022 and the lowest in 2021, thus highlighting the variable impact of agricultural production and number of employees on the company's performance. The study showed that S.C. Treter S.R.L. had a steady increase in the number of employees and improved efficiency in the use of human resources, indicating a well-founded expansion strategy, thus the positive developments in work efficiency underline the importance of continued investment in technological progress and employee skills development. These measures are essential for maintaining and improving productivity and adapting to fluctuating economic conditions, and increasing work efficiency has a direct impact on the volume of output and the time taken to produce it, thus highlighting the essential role of effective human resource management in organisational success.

Key words**:** *human resources, sustainability, performance, efficiency*

INTRODUCTION

Labour is a fundamental component from economical perspective, being considered an essential production indicator in the manufacturing and services sectors.

Within economic theories, labour is described as one of the three main resources, together with capital and land, that assist to generate income and value in an economy [14].

From a social perspective, workforce is not only an economic activity, but it represents a more vital component of society.

Through labour, individuals ensure the means of living, develop and value abilities and are an integral part of the community wellbeing, as well as labour is a significant component of social identity and status of an individual in society [9].

Therefore, labour is the intersection between economic and social dimension, having a major impact on the economic operating system, as well as social structure and cohesion, as a central component in the process of society progress and development, influencing both tangible and cultural and moral essential elements of the individual and collective life [6].

From economical perspective, labour implies expenses, representing a production cost

determined by the number and quality of individuals involved and hourly fee [11]. Labour is distinct from the other production indicators, land and capital, as it is triggered by individuals that have different reasons to efficiently fulfil the tasks [2].

Workforce in agriculture is influenced by difficult and inconsistent conditions, often times unfavourable, accompanied by diversity and seasonality, which require adaptability of the plants and animal's needs, being correlated to natural cycles and specific requirements of living organisms [14].

From social and economic, agriculture labour is defined often times by its familiar nature, not being compensated directly, less specialised and adapted to the technical requirements of productions, even more the quality of agricultural labour is difficult to be evaluated due to high dependencies on climatic conditions and the difficulties to control it [9].

In the context of workforce in the agricultural field, the labour offer is greatly influenced of the salary levels, although this relation is sometimes offset by indicators like time to rest, that can sometimes lead to replace resting time with work times and the effect of income, which can lead to a reduction of working hours in case of an increase in hourly fee [8].

Labour is an investment in production, being quantified in terms of labour productivity, representing an essential indicator of economic efficiency analysis [6].

The main methods used to compute labour productivity are: the method of physical units (utilised for cases where it is produced a single type of item or a specific task and it is based on the report between total production or volume of tasks and total time spent); the method of conventional units (is used to compute labour productivity for a group of products, that can be converted in conventional units, like nutritional or calories, using specific corelation coefficients) and the method of value units (which implies evaluations of production as valuative, expressed monetary.

This can compress main production and secondary or undetermined and is calculated by assessing the final production and gross margin to total time of labour consumed) [17]. Indicators of labour productivity reflect efficiency of production labour, being influenced by both quantity and quality of work and utilised capital [16].

An increase of labour productivity can have an impact on the valoric structure of the product at macroeconomic level and can alter the report between living labour and labour at macroeconomic level, leading to a reduction of unitary cost [12].

The analysis of workforce productivity relies on a set of indicators that express the quantity of products obtained in report to the labour expense, as well as the labour expense necessary to obtain units of product.

Considering the computing methodology of production and labour expenses, we can identify the following indicators to measure labour productivity [4].

a) measuring the volume of production:

- methods in natural units: they apply in companies with a homogeneous production or with a small number of products, where is computed labour productivity in physical and quantitative terms [5].
- conventional methods: utilised in similar situations, but converted production in conventional units, like kilograms or tones [12].
- methods of working hour shifts: utilised in companies with homogeneous production, establishing standard times for each operation and the labour productivity is measured according to the completion of this standardizations [1].
- valoric method: is applied in companies with a diverse production or heterogenic, where computing labour productivity is in terms of value [14].

The analysis and relevance of valoric indicators of labour productivity are essential to express total volume of activity in dynamics over time and space. At macroeconomic level, the labour productivity calculation through valoric method utilises indicators like net

production, global production, goods production and added value [7].

b) measurement through labour consumption:

- total number of employees: this indicator measures annual productivity of workers, quarterly or monthly, based on number of employees [10].
- total individual-working days: utilised to compute average daily productivity, representing average daily productivity achieved by a worker [3].
- total individual-working hours: this indicator measures the average hourly productivity, being used to evaluate the average productivity achieved by a worker in a working hour [13].

The purpose of this research is to investigate the sustainability of the workforce in a farm, located in the North-East Region of Romania, with a dedicated perspective on the enterprise S.C. Treter S.R.L. The study is focused on the evaluation of utilizing the indicators of production with the intend of obtaining optimal efficiency by using the available resources.

The approach to productivity can be achieved through various modalities, each one having specific methods to measure results. This includes physical productivity, which evaluates efficiency in natura of the production indicators and it is expressed in physical units, as well as the productivity express valoric, which is allowing efficiency assessment in terms of financial-monetary terms and is utilised extensively in modern enterprises management.

The main objectives of this study reflect:

1. determining the ways to increase economic efficiency of the labour performance for S.C. Treter S.R.L.: this stage implies to evaluate the existing research on identifying the methods and practices that can improve workforce efficiency within the analysed enterprise.
2. determining the labour efficiency level and dynamics within S.C. Treter S.R.L.: the purpose is to analyse the level of current farm labour productivity and how it evolves over time.
3. analysis of resources for increasing labour efficiency: this stage implies identification and evaluation of factors that can positively influence the increase of labour efficiency, like qualified human resources or management processes.
4. analysis of economic effect of changes in labour productivity: the objective is to evaluate the economic impact of changes in labour productivity on the financial and profitability performances of the enterprise S.C. Treter S.R.L.

MATERIALS AND METHODS

The study is focused on the sustainability analyses of workforce in S.C. Treter S.R.L. The company is a private capital enterprise with a mix of Romanian-French stakeholders, specialized in the cultivation of cereals, leguminous plants and oilseed crops. The farm has in usage 1,300 hectares of personal propriety of arable, out of which 150 hectares are personal propriety and the rest is leased land. The main type of cultures in the company's portfolio are cereals (wheat, barley, triticale, corn), oilseed crops (sunflower and rapeseed) and aromatics (coriander).

To increase efficiency and maximise the crops outputs, the farm has implemented a simplified working system, which means diversity in the steps for preparation of the soils, sown and based on the needs of the crops.

In terms of labour force, the company has currently 17 employees, with a majority number of qualified workers in the agricultural sector. The growth of the company and of the land field create the need to expand the workforce, with approximately 80% of qualified workers for dedicated job roles.

The study intends to evaluate sustainability in the workforce in the specific context of a farm from the North-East Region of Romania, taking into consideration aspects like qualified workers, need of workforce and operational efficiency.

In order to measure the labour efficiency, we utilised a diverse set of indicators, as following:

- method of natural physical units, of labour (number of hours per shift) and valoric, based on production volume and the costs of the achieved labour.
- labour efficiency express in valoric units which allow a comparison between time and

space, offering a holistic perspective of efficiency. This method took into account the changes in sorting structure of production and prices.

- valoric indicators of labour efficiency, like net production, global production and value added have provided a more in-depth evaluation of the labour efficiency and has contributed to the global results of the farm.

RESULTS AND DISCUSSIONS

In the current analysis of the labour force of the company S.C. Treter S.R.L., we will focus on evaluating the available human resources and their degree of efficiency in usage, we will examine the aspects concerning the structure of personnel and the modalities of managing and utilization of the personnel to fulfil the company's objectives. Therefore, the evolution of the number of company employees with the purpose to obtain an overview of the trends and changes in the labour force dimension over time is presented in Fig. 1.

Fig. 1. Evolution of number of employees during the period 2019-2023
Source: own calculations based on the company's accounting data.

We observe that the company has a relatively small number of employees, that registered an increase year over year, since 2019 when the company had 12 employees to 2023 having a total of 17 employees. This increase in number of employees was determined by the extend in land field, as well as the company strategy which has as objective growth and development through acquisition or lend of additional lands.

The personnel structure within the company is in average as follows: 1 accountant, 1 agriculture engineer, 8 agriculture mechanics, 2 not qualified workers and 3 guardians. Analysing the structure, we can observe that the majority of employees are from the agriculture production sector, represented by agriculture mechanics and engineer (Fig. 2).

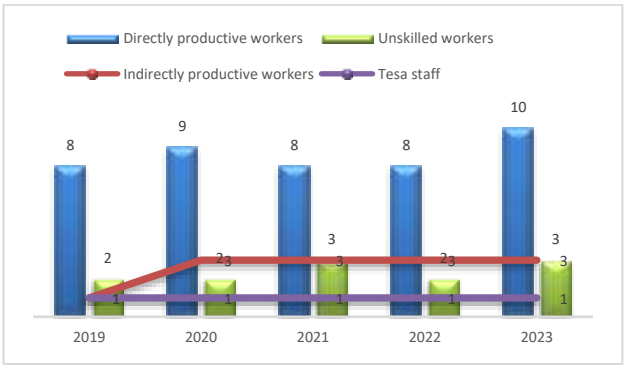

Fig. 2. Structure of personnel between 2019-2023
Source: own calculations based on the company's accounting data.

Regarding the other classes of employees, they are grouped as indirect productive workers, this includes guardians that ensure protection and security of the land and offices, as well as the non-qualified workers that handle a series of tasks for preparation of machines, loading and unloading of raw material, and the last group is represented by the accountant who is part of the Technical, Economic, Socio-Administrative category.

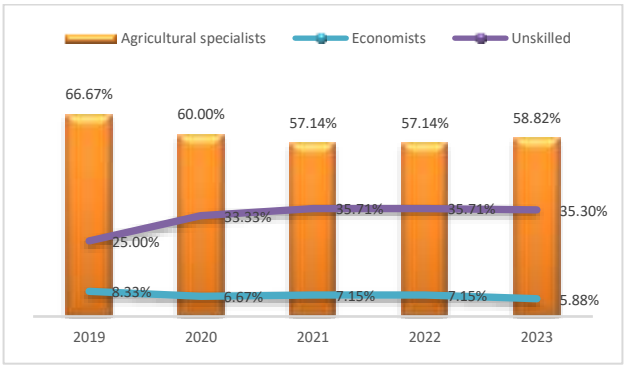

Fig. 3. Structure of personnel by job roles between 2019-2023
Source: own calculations based on the company's accounting data.

In Fig. 3 is illustrated the structure of the company personnel by job role, so we can observe that on the entire period of time we analysed the set of data, the agriculture employees represent over half of the entire number of personnel, followed by the non-qualified workers and the accountant of the company that has an Economic degree.

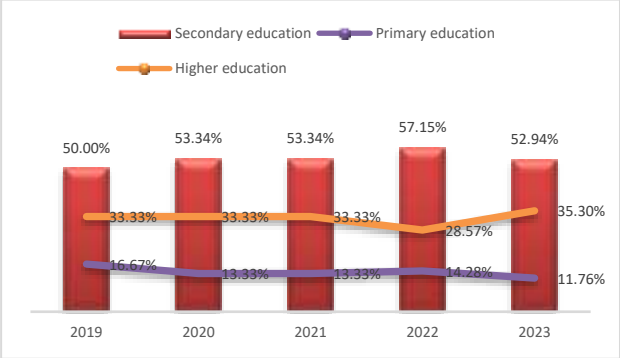

Fig. 4. Structure of personnel by level of qualifications
Source: own calculations based on the company's accounting data.

From Fig. 4, we can observe that the company includes personnel from the three levels of education, over 50% have secondary education, while over 28% have higher education from the total number of employees, the company has as well employees with primary education. During the analyses period, the structure of the personnel by level of experience is classified in five categories: 0-10 years, 11-20 years, 21-30 years, 31-40 years and over 40 years of experience (Fig. 5).
Examining the structure of personnel by level of experience, we observe that the majority are the young employees, the ones in the first range 0-10 years of experience (over 40% from the total of personnel between 2019-2023), followed by the range 11-20 years of experience with 25% in the year 2019, this registered a slight decrease in 2020. The smallest proportion of the personnel by experience levels can be observed in the range 31-40 years and over 40 years. This indicates that the company intends on utilizing a new personnel strategy, focused on youth that bring a fresh vision and reenergize the workforce.

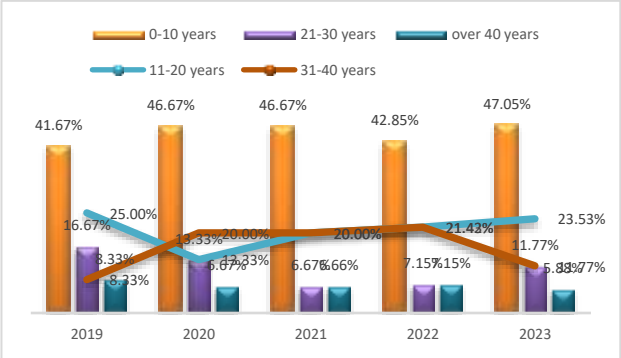

Fig. 5. Structure of personnel by experience
Source: own calculations based on the company's accounting data.

The tools for increasing labour efficiency with the company are diverse and focus on quantitative and qualitative components of the labour force. In this matter, evaluation emphasises the dimension, structure, mobility and stability of the workforce, as well as the degree of qualification and level of salaries (Table 1).

Table 1. Analysis of annual labour efficiency

Name/Symbol	Formula	Years				
		2019	2020	2021	2022	2023
Efficiency of labour annually (value) (Wav) - lei	VT/Ns	218,526	244,786.3	91,086.93	271,123.8	229,363.1
Efficiency of labour annually (commercial) (Wac) - lei	CA/Ns	187,368.8	230,389.1	98,402.8	233,198.8	224,773.1

Source: own calculations based on the company's accounting data.

Analysing the evolution of labour productivity over the years, a significant influence of the obtained production, the turnover and the total revenues registered by the company, related to the number of employees, is observed, thus the annual labour efficiency experienced an increase from 218,526 lei/employee in 2019 to 229,363 lei/employee in 2023, flagging an increase in efficiency of resource utilization within the company in the period of time 2019-2023.
Regarding the labour productivity expressed commercial which indicates the report between the business turnover and number of employees, the highest was registered in 2022, reaching the peek value of 233,199 lei/employee, this increase in labour efficiency

is due to expansion of sold products and increase in personnel.

In regard to the value of labour efficiency, it indicates the revenue by employee, as follows: 2019 registered 218,526 lei/employees, in 2020 it was 244,786 lei/employees, in 2021 the sum 98,402 lei/employee, in 2022 total of 271,123 lei/employee and in 2023 it reached 229,363 lei/employee.

This evolution of labour efficiency shows the fluctuations and trends in the financial performance of the company, emphasising the importance of labour efficiency in the context of company management.

Table 2.Analysis of daily labour efficiency

Name/Symbol	Formula	Years				
		2019	2020	2021	2022	2023
No. of days/worker/year/company (Z)	-	3.048	3.855	3.825	3.528	4.335
Efficiency of daily labour (valoric) (Wzv)	VT/Z	860.34	952.48	357.20	1075.89	899.46
Efficiency of daily labour (commercial) (Wzc)	CA/Z	737.67	896.46	385.89	925.39	881.46

Source: own calculations based on the company's accounting data.

Glancing at sustainability in the workforce, from the daily efficiency perspective within the company, it is shown the influence of number of days per worker over a year time and on the company, as well as of the indicators resulting (Table 2). The analysis of the daily efficiency expressed commercially indicates the lowest point in year 2021, when it reached 357.2 lei/no of days/worker/year/company, while the highest level of productivity was registered in 2022, with a value of 925.39 lei/no of days worker/year/company. This difference between 2021 and 2022 is based on the level of agriculture productions and number of company employees.

In regard to the daily labour efficiency expressed valoric, this is constant over the five years timeframe we researched, 860 lei/no of days/worker/year/company, except year 2020, when there was a value of 385.89 lei/no of days/worker/year/company. These observations emphasize the importance of efficient management of human resources and of adaptability to labour strategies under fluctuating market and economic conditions.

Table 3. Analysis of labour efficiency hourly

Name/symbol	Formula	Years				
		2019	2020	2021	2022	2023
No. of hours/worker/company. (O)	-	24,384	30,840	30,600	28,224	34,680
Labour efficiency hourly (valoric) (Wov)	VT/O	107.54	119.05	44.65	134.48	112.43
Labour efficiency hourly (commercial) (Woc)	CA/O	92.20	112.05	48.23	115.67	110.18

Source: own calculations based on the company's accounting data.

Regarding the sustainability of labour force from the hourly efficiency perspective in connection to the production, this is maintained at a constant level over the five years we analysed. This steady level of labour efficiency is directly connected to the stable environment of agriculture production and of the company's employees' influences. We can observe that, according to the data from Table 3, the highest level of efficiency from the commercial perspective was registered in the year 2022, while the lowest level was registered in 2021. In the other timeframe analysed, 2019 and 2020, the efficiency indicators kept a constant level, similar with the 2022-2023. This stabilization of hourly labour efficiency is reflecting the constant maintenance of agriculture labour efficiency, except for the year 2021. So, we can determine that there are a multitude of opportunities to increase labour efficiency within the economic units influenced by the technical and technological progress, the organisational and management method of the production and labour, as well as the management indicators.

The level and dynamics of labour efficiency are influenced by a large number of factors: natural, biological, technical-organisational, social-politics and psychosocial. Considering the economic transition, updating and re-technologization are essential, stimulated by the private propriety relations and the economic law on the market, facilitating integration with the developed European countries.

The main growth opportunities of labour efficiency include technical progress, improvement of qualified labour force, integration of modern management methods and optimization of financial employee stimulants. In order to establish the correct growth of labour efficiency is necessary to consider all elements that influence the level and dynamic, as are the productions particularities on each branch of the company.

The introduction of the technical progress represents the most important route to labour efficiency growth, leading to saving materials and work resources on each company.

The growth in labour efficiency generates direct effects on the volume of production and the number of employees, leading to an increase in the output per unit of time and a reduction in the time required for production. Direct effects include increasing production and saving labour resources.

CONCLUSIONS

The sustainability analysis of the labour force on a farm in the North-East Region of Romania emphasises the main evolution and attributes of human resources and labour efficiency between 2019-2023.

The personnel structure reflects the importance of specialized employees (agriculture), representing over half of the total number of company employees, followed by non-qualified workers and the accountant.

The labour efficiency analysis indicates a constant increase in the evaluated timeframe, annual labour efficiency increased from 218,526 lei/employee in 2019 to 229,363 lei/employee in 2023; at the same time, labour efficiency expressed valoric has fluctuated, but had an upward trend, varying between 98,402 lei/employee in 2021 and 271,123 lei/employee in 2022.

Regarding the daily labour efficiency, this was influenced by agriculture production obtained and the number of company employees, and the labour efficiency expressed commercial has fluctuated between 357.2 lei/no of days/worker/year/company in 2021 and 935.39 lei/no of days/worker/year/company in 2022, while the labour efficiency expressed valoric maintained a steady level over 860 lei/no of days/worker/year/company in 2021 and 935.39 lei/no of days/worker/year/company, except the year 2021, when it registered a decrease to 385.89 lei/no of days/worker/year/company.

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