DIAGNOSING THE POTENTIAL OF ENTERPISES IN THE FIELD OF ACTIVITY G46.21 - WHOLESALE OF CEREALS, SEEDS, FODDER AND UNMANUFACTURED RAW TOBACCO

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Abstract

The economic development of the Republic of Moldova is largely determined by the trade relations that our country supports, both domestically and externally. The management of economic relations carried out by the enterprises of G46.21group, which activity involves the wholesale of cereals (grains), seeds, animal feed and raw tobacco on the free market, has some peculiarities and characteristics that distinguish it, therefore it is important to diagnose their potential.

This study is focused on the comprehensive assessment of the profile of G46.21group enterprises, according to the general and main indicators of their activity, with the aim to analyze the structure of the enterprises byform of ownership, organizational-legal form, by employees, value of fixed assets and sales income; by value structure offixed assets and value structure of sales revenue.

The problem of analysing the potential of companies of G46.21 group is currently very relevant, because it has an essential link with the economic development of the Republic of Moldova, which in the context of globalization, growing markets and competition, make it possible to determine the competitiveness of this sector.

Keywords: enterprises, G46.21group, variable analysis, Cobb-Douglas function

1. Introduction

The issue of sustainable development of the industry is associated with the formation and maximum use of its capacities - economic potential, the essence of which determines the possibility of its expansion, realized by adapting internal production factors to innovative changes in macromedia, efficient use of available resources and the best available technologies. Today, management is facing an acute problem both at the national level and at the enterprise level, namely, the use of opportunities offered by the economic conjuncture of various sectors of activity. According to the Classification of Economic Activities in Moldova (hereinafter CAEM Rev.2), companies engaged in the wholesale trade of cereals, seeds, fodder and raw tobacco are assigned G46.21code. There were about 485 companies in the Republic of Moldova during the analysed period, qualified by this code according to their main activity. Thus, the goal of the study is to determine the economic and market conjuncture, as well as the methods, techniques, tools for analysis and effective management of the potential of G46.21 group companies.

The diagnosis made in the article aims at evaluating the status of the analysed companies in the context of incomplete information in order to identify the boundaries of their functioning and the reasons for their appearance on the market of the Republic of Moldova. At the same

time, the main task of analysis is to determine the economic efficiency of use of labour, financial and material resources to optimize management decisions that would allow companies to operate and develop efficiently. Thus in the course of the study, it is proposed to highlight the following diagnostic stages of G46.21 group enterprises:

- factorial structuring of G46.21 group enterprises;
- value structuring of fixed assets and sales revenue of G46.21 group enterprises;
- determining the dependence between the number of employees and the sales revenue of G46.21 group enterprises;
- determining the dependence between sales revenue of G46.21 group enterprises, and value of fixed assets available;
- achieving the Cobb-Douglas regression model and estimating the multiple linear regression model.

The correlation of these stages will make it possible to developrecommendations for improving and increasing the efficiency of company management in this area, in order to mobilize the potential for export promotion and penetration into new markets by using the most modern organizational and economic ways.

At the same time, the quality of information and decision-making methodologies, and the information and organizational restructuring of activities influence the efficiency of management activity.

2. The degree of current investigation of the problem, the purpose of research

Research in this field was carried out at the National Institute of Economic Research, Academy of Economic Studies of Moldova and Trade Co-operative University of Moldova. Theoretical support of the research focused on the study of works in the field of management and econometrics, including Moldovan authors, an essential quota, and Romanian scientists Ursachi Vitalie and Săvoiu Gheorghe.

At the same time, many theoretical and methodological aspects of diagnosing the potential of group G46.21companies, due to the specificity of their economic activities, are stillinsufficiently analysed. In this regard, the author pursued the purpose of determining the potential of enterprises involved in the wholesale trade of cereals, seeds, fodder and raw tobacco in the Republic of Moldova by applying econometric calculations, based on the studied structural theories, current legislation and regulatory process of economic activity.

3. Applied methods and materials

The research algorithm includes the fulfilment of quantitative diagnosis of G46.21 group enterprises using a simple and linear regression model to determine the degree of dependence of the resultant and factorial variables of the sales revenue, correlated with the factors involved in the analysis (work and fixed assets).

Among the tools used to diagnose G46.21 group enterprises, the following categories can be distinguished: the first category of tools - quantitative indicators - is based on the use of various statistical data and coefficients for the analysis of sales revenue, labour, capital

productivity, etc. The second category of tools - comparative parameters - is mainly based on the assessment of primary information when the comparison parameters are selected.

Based on the diagnosis of indicators, it was found that data series on sales revenue and fixed assets contain zero and negative values,not supported by the Data Analysis toolbar in EXCEL; for these reasons, statistical modelling was performed in the EViews system.

In the process of work, general scientific research methods were used, such as: analysis and synthesis unity method, statistical analysis method, comparative analysis, tabular method, etc.

As a basis for carrying out an applicative study, theories focused on structural and functional approaches were used. This allowed approximate reflection of the diagnostic results of G46.21 group companies, having as information support, analytical materials of the National Bureau of Statistics and materials of the Food and Agriculture Organization of the United Nations.

4. Obtained results and discussions

The effectiveness of long-term functioning of any economic sector directly depends on the sustainability of its development, determined by the ability of the system to maintain its integrity and ability to reproduce its activities with the expectedfluctuations of the external and internal business conditions [6, p.14]. Before proceeding to specify the model of Cobb-Douglas function type for the enterpriseswith CAEM code G46.21, it will be useful to characterize the profile of this category of companies by various criteria, according to which some aspects of results can be differentiated.

Thus, according to the organisational-legal form, the vast majority of enterprises are limited liability companies [3], which in 2015 amounted to about 94,3% of the total number of companies in G46.21 group (Figure 1).
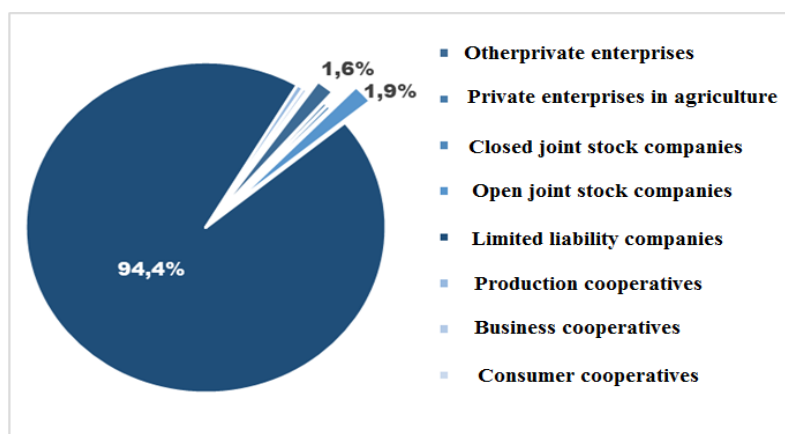

Figure 1.Structure of enterprises in G46.21 (CAEM) group by organisational-legal form, 2015

Source: developed by author, statistical database [1]

Exclusively, all the analysed companies are representatives of the private form of ownership. However, perhaps the major need for investment in the activities of the companies of G46.21 group - Wholesale of cereals (grain), seeds, fodder and raw tobacco - led to the predominance

of the collective form of ownership [2], which is valid for almost 4/5 (79,8%) of the total number of this group companies (Figure 2).
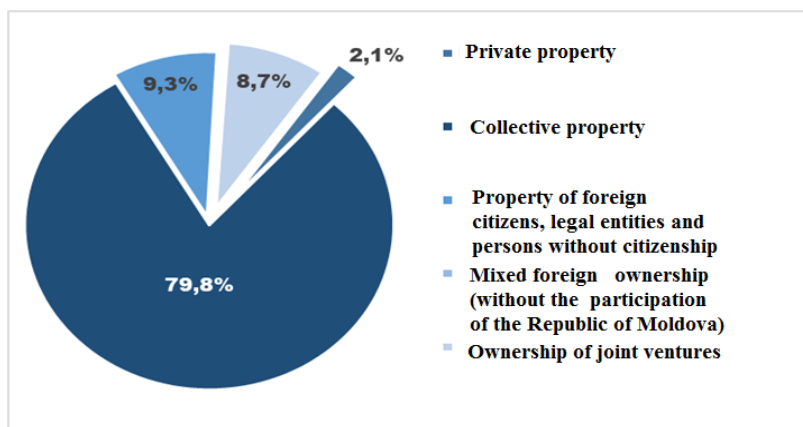

Figure 2. Structure of enterprises in G46.21 (CAEM) group by ownership form, 2015
Source: developed by author, statistical database [1]

The number of employees is one of the criteria for classifying companies by their size. Thus, the group of analysed companies falls entirely in the category of micro and small companies, and less in the category of medium sized enterprises. Thereby, about 88,2% of the reference enterprises can be qualified as micro-enterprises, while about 10,9% of the analysed enterprises are represented by small enterprises. Medium-sized enterprises, with a personnel of more than 100 employees, have a share of only 0,8% of the total number of companies in the group (Figure 3).
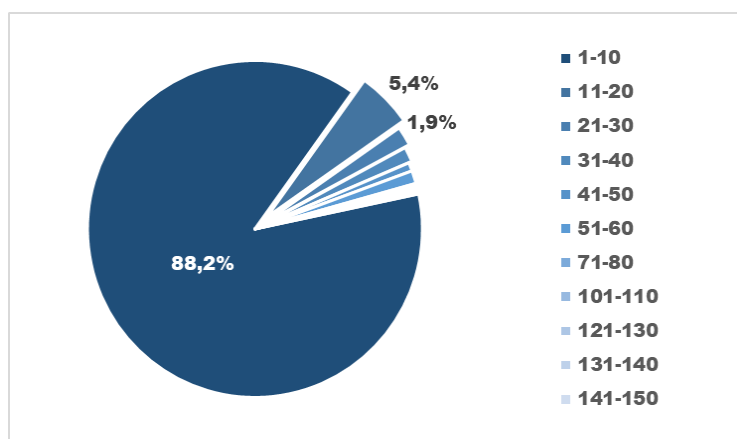

Figure 3. Structure of enterprises in G46.21 (CAEM) group by staff, 2015
Source: developed by author, statistical database [1]

According to the data on the availability of companies in G41.26 group, from the point of view of fixed capital, their distribution is as polarized, as in other criteria described above. Thus, about 96,3% of the analysed companies have a fixed capital of up to 10 million lei (467 out of 485 companies), and the remaining 18 companies have fixed assets (hereby FA) in the amount of 10 to 190 million lei. The distribution of enterprises by the value of fixed assets is shown in Figure 4.
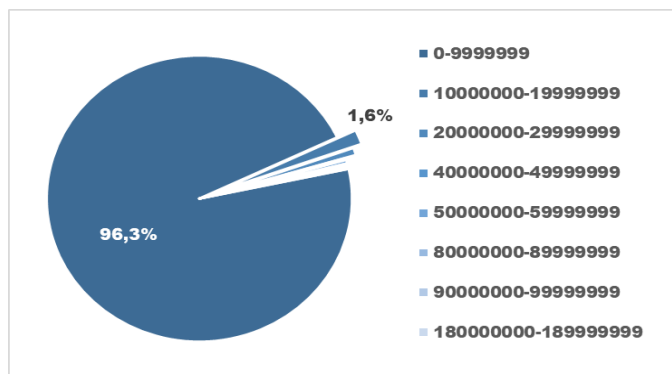
Figure 4. Structure of enterprises in G46.21 (CAEM) group by value of fixed assets, 2015

Source: developed by author, statistical database [1]

In another round, if we distribute the group companies by the total value of fixed assets owned, then their structure becomes more uniform (Figure 5). Hence, there are many enterprises (467) with low availabilities of FA, which total less than 30% (27,1%) of the total value of fixed assets. On the other hand, the remaining 18 companies own about 72,9% of the total value of fixed assets, so that this point could be useful for the modelling procedures.
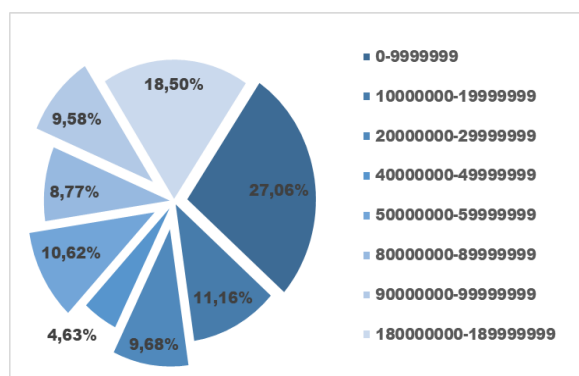

Figure 5. Value structure of fixed assets of enterprises in G46.21 (CAEM) group, 2015

Source: developed by author, statistical database [1]

The last variable to be considered and which will be the resultant variable in the Cobb-Douglas function will be sales revenue (SR). The strongly asymmetric situation on the right (mainly low-income enterprises) is also valid for this variable (Figure 6).
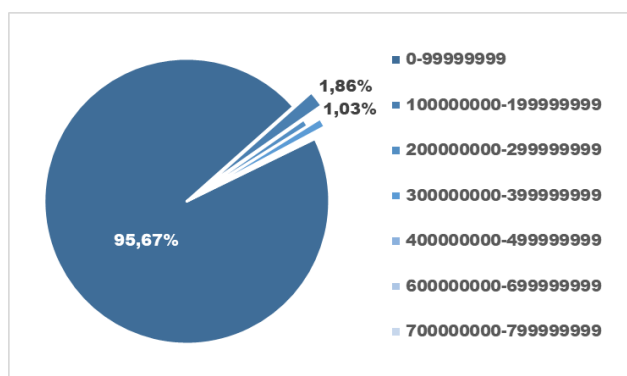

Figure 6. Sales structure of G46.21 (CAEM) group, 2015

Source: developed by author, statistical database [1]

As in the fixed assets case, the distribution of the total value of sales revenue, received by companies related to a sales revenue variation range, is more balanced than the structure of companies by the value of sales. Thus, 464 companies (95,7%) with sales revenues of up to 100 million lei totalled a value of about 3,236.61 million lei in 2015, which is more than 1/3 of total sales revenue (about 35,2%), while the remaining 2/3 were distributed among 21 companies (4,33% of their total number) registering sales revenue exceeding 100 million lei.
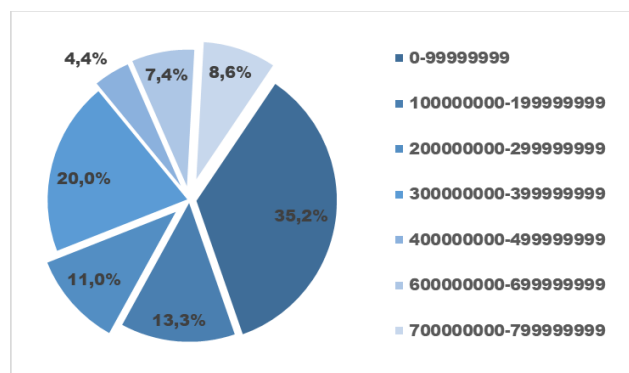

Figure 7. Sales revenue structure of G46.21 (CAEM) group, 2015

Source: developed by author, statistical database [1]

The presentation of sales revenue correlated with factors involved in the analysis, such as work (employees - L) and fixed assets (FA), when taken separately, give certain degrees of dependence between the resultant variable and factor variables. Thus, the double entry table, where the values of pairs relative to the number of employees and sales revenue are systematized, has the amounts of the sales revenues concentrated around a conventionaldiagonal: upper left, bottom right. So, this situation can be interpreted as follows: as the number of employees increases, revenue from returnsincreases, too (Table1).

Table 1.Distribution of sales revenue (SR) among G46.21 (CAEM) companies in relation to the number of employees (L)

Row Labels	0-99999999	100000000-199999999	200000000-299999999	300000000-399999999	400000000-499999999	600000000-699999999	700000000-799999999	Total
1-10	1690686251	367791113		343750649				2402228013
11-20	800926520	287352585	215207885					1303486990
21-30	136666686	151654488	271666539	379237956				939225669
31-40	383731695							383731695
41-50	54739653	310454371		395924380				761118404
51-60	98817062		525439220	721321345				1345577627
71-80	71037173							71037173
101-110					404401703			404401703
121-130							788305646	788305646
131-140						681265500		681265500
141-150		107791914						107791914
Total	3236605040	1225044471	1012313644	1840234330	404401703	681265500	788305646	9188170334

Source: developed by author, statistical database [1]

The only difficulty in this case is a large number of companies with sales revenues of less than 100 million lei and a large variation in the number of employees. In addition, four companies with up to 30 employees,but whose registered sales income exceeds 200 million lei, can also be noticed. Using the correlogram below, one can have a fairly convincing idea of the relationship between the number of employees (factor variable) and sales revenue (resultant variable) (Figure 8). An approximation of this dependence by means of a simple

linear regression model indicates *a relationship of moderate intensity (R=0,77) between the number of employees and sales revenue, and changing the number of employees by one person would bring a similar sales revenue change of about 3,6 million lei.*
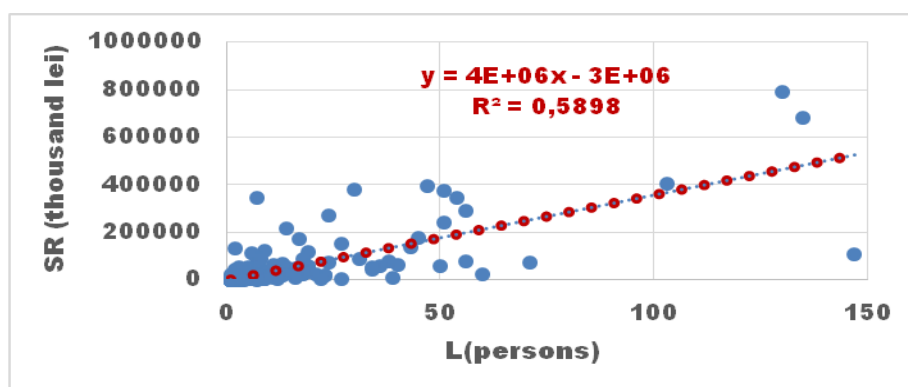

Figure 8. Correlogram on the relationship between sales revenue of companies belonging to G46.21 (CAEM) group and the average number of employees (2015)
Source: developed by author, statistical database [1]

The same situation can be observed in case of a correlated analysis of sales revenue (SR) and value of fixed assets (FA). The inclination of the total values of sales revenue to an imaginary diagonal of the contingency table (upper left – bottom right) in the conditions of the increasing order of SR and FA variables indicates the presence of a possible dependency relationship between the analysed variables (Table 2). Thus, the increase in the availability of fixed assets of considered companies determines, to some extent, an increase in sales revenue.

The time diagram suggests the same ideas, according to which the increase in the value of fixed assets leads to some increase in sales revenue. The regression line and associated indicators confirm this fact and the intensity of the relationship between the correlated variables (SR and FA) is quite high (R=0,79).

Table 2. Distribution of sales revenue (SR) within G46.21 (CAEM) code companies by cost of fixed assets

Row Labels	0-99999999	100000000-199999999	200000000-299999999	300000000-399999999	400000000-499999999	600000000-699999999	700000000-799999999	Total
0-9999999	2884471934	914590100	724804654	739675029				5263541717
10000000-19999999	169503347	134125127		379237956				682866430
20000000-29999999	96563999	176329244	287508990					560402233
40000000-49999999					404401703			404401703
50000000-59999999	86065760			346737769				432803529
80000000-89999999						681265500		681265500
90000000-99999999				374583576				374583576
180000000-189999999							788305646	788305646
Total	3236605040	1225044471	1012313644	1840234330	404401703	681265500	788305646	9188170334

Source: developed by author, statistical database [1]

Under these circumstances, the regression model, namely based on an estimate of the coefficient before the *x* variable (Figure 9), shows that an increase in the value of fixed assets

by one monetary unit would lead to an increase in sales revenue by approximately 4,86 monetary units.
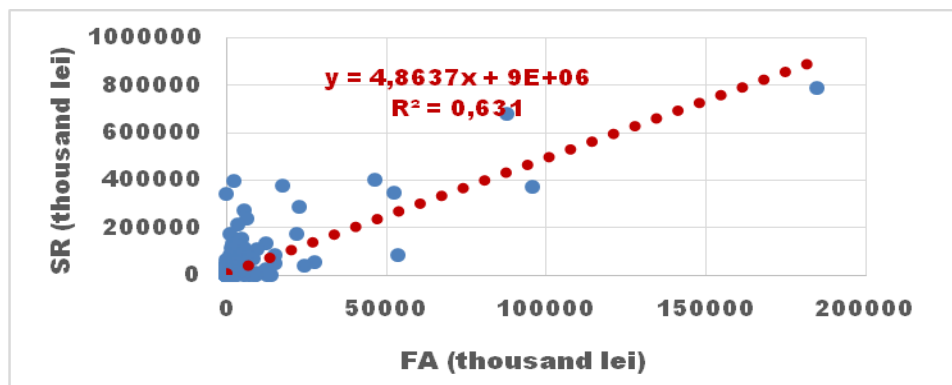

Figure 9. Correlogram on the relationship between sales revenue of G46.21 (CAEM) group companies and the cost of available fixed assets (2015)

Source: developed by author, statistical database [1]

The corresponding results allow us to use three variables in one model. Thus, initially, based on sales revenue (SR) data, value of fixed assets (FA) and number of employees (L), we undertake to specify the Cobb-Douglas function, defined by the following relation:

$$SR = A[FA]^\alpha L^\beta , \qquad (1)$$

where:

 SR–sales revenue;

 A − dimension (proportionality between factors) coefficient;

 FA–fixed assets;

 α –elasticity of production by capital; shows the growth of work product in relation to variation;

 β –elasticity of production in relation to labour.

Model specification operations within Eviews environment indicate an acceptable model of dependence of sales revenue on fixed assets and on the number of employees (Table 3). Thus, in general, the model is characterized by correlation indicators located above the average level (R=0,67, green shaded area) and by a rather large and significant Fisher statistics (yellow shaded area). (The simulation was undertaken in Eviews because the data series on sales revenue (SR) and fixed assets (FA) contain zero and negative values not supported by the Data Analysis toolbar in EXCEL).

Specific situations regarding the quality of model parameters estimates, expressed by t-statistics of the regression coefficients (blue shadedarea), exceed theoretical values with increased values also. In addition, there is Durbin-Watson statistics, which tends to normal limits (DW=2), revealing a slight autocorrelation of model errors (gray shaded area) and, therefore, an adequate quality of the model specification procedure. In these circumstances, the Cobb-Douglas model specified for 485 companiesof G46.21 (CAEM) group takes the form:

$$SR = A[FA]^\alpha L^\beta = 4.721 * FA^{1.28} * L^{1.66} \qquad (2).$$

Formula (2) was deducted in the absence of influence of production factors on sales revenue; there are chances that it's value is about 4,72 lei. One percent change in capital (FA) ratio would result in a change of sales revenue by approximately 1,28%, and one percent change in labour ratio (L) would result in a change of sales revenue by approximately 1,66%. Under these conditions, according to the valuation modelthe labour factor has a greater impact on the results of economic activity than the capital factor.

Table 3. Assessment results of the of the Cobb-Douglas regression model regarding the dependence of sales revenue on fixed assets and on the number of employees

Dependent Variable: LOG(VV)
Method: Least Squares
Sample: 1 485
Included observations: 485

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(MF)	0.246652	0.050489	4.885279	0.0000
LOG(T)	0.504615	0.298679	1.689489	0.0000
C	4.721311	0.367795	12.83680	0.0000

R-squared	0.442446	Mean dependent var	9.415995
Adjusted R-squared	0.440133	S.D. dependent var	7.558241
S.E. of regression	5.655400	Akaike info criterion	6.309265
Sum squared resid	15416.07	Schwarz criterion	6.335146
Log likelihood	-1526.997	Hannan-Quinn criter.	6.319434
F-statistic	191.2452	Durbin-Watson stat	1.518522
Prob(F-statistic)	0.000000		

Source: author's estimations

5. Conclusions

After diagnosing the efficiency and potential of companies in activity group G46.21 - Wholesale trade of cereals, seeds, fodder and raw tobacco, it can be stated that based on companies structural survey carried out in 2015 in the Republic of Moldova there were approximately 485 companies whose main activity was qualified by this code; about 88,2% of the reference companies can be described as micro-enterprises, while about 10,9% of the analysed companies are small enterprises; according to their organizational-legal form, the vast majority of companies are operating as limited liability companies,which have represented in 2015 about 94,3% of the total number of companies of G46.21 group. Exclusively, all companies analysed are privately owned and fairly evenly distributed; about 96,3% of the analysed companies have fixed assets of up to 10 million lei (467 out of 485 companies), and the remaining 18 companies have fixed assets estimatedbetween 10 and 190 million lei.

From the applied model, one can conclude: the presentation of sales revenuecorrelated with the factors involved in the analysis (labour and fixed assets), when considered apart, express certain degrees of dependence between the resultant variable and the factorial variables. This situation can be interpreted as follows: as the number of employees increases, the revenue from returns increases, too. An approximation of this dependence using a simple linear

regression model indicates a relationship of moderate intensity (R=0,77) between the number of employees and sales revenue, while changing the number of employees by one person would lead to a similar change of sales revenue of about 3.6 million lei. The same situation is observed in case of a correlated analysis betweensales revenue and the cost of fixed assets. From the contingency table (upper left - bottom right) given the conditions of increasing order of sales revenues and value of fixed assets variables, one can assume the existence of a possible relationship between them. The regression model, namely based on an estimator of the coefficient in front ofx variable, finds that increasing the value of fixed assets by one monetary unit would lead to an increase of sales revenue by approximately 4,86 monetary units; therefore, the change of the capital factor (FA) by 1% will lead to the change of the sales revenue by about 1,28%, and the change of thelabour ratio (L) by 1% will cause a change ofthe sales by about 1,66%. Under these conditions, based on the considered model, the labour factor has a greater influence on the results of economic activity in comparison with the capital factor.

Based on the above, we find that the state through its authorized bodies should be involved, by means of various organizational and economic ways,in modernising the management of international economic relations. The main conceptual features of this integration at the macro-economic level are: interstate regulation of economic processes; gradual creation of regional economic associations with a common production structure; diversification of opportunities for internationalizing labour and capital markets;homogenization of domestic economic conditions in the member states of the created associations. We considerthat the interaction of companies and national authorities regarding the development of external economic relations management is particularly important [5, p. 277].

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Rezumat

   Dezvoltarea economică a Republicii Moldova este, în mare parte, determinată de relaţiile comerciale pe care le promovează ţara noastră, atât pe plan intern, cât şi pe cel extern. Managementul relaţiilor economice realizat de întreprinderile grupei G46.21 al cărei activitate prevede comerţul cu ridicata a cerealelor, seminţelor, furajelor şi tutunului neprelucrat practicat pe piaţa liberă are unele particularităţi şi caracteristici care îl deosebesc, de aceea este important realizarea diagnosticului potenţialului acestora.

   Prezentul studiu este axat pe evaluarea cuprinzătoare a profilului întreprinderilor din grupa G46.21, după indicatori generali şi principali ai activităţii acestora, care vizează analiza structurii întreprinderilor după forma de proprietate, forma organizatorico-juridică, după personal, valoarea mijloacelor fixe şi după venitul din

vânzări; structura valorică a mijloacelor fixe şi structura valorică a veniturilor din vânzări.

Problema analizei potenţialului întreprinderilor grupei G46.21 este în prezent foarte relevantă, deoarece are o legătură esenţială cu dezvoltarea economică a Republicii Moldova, care în contextul globalizării, creşterii pieţelor şi a concurenţei, permite determinarea competitivităţii sectorului dat.

Аннотация

Экономическое развитие Республики Молдова во многом определяется торговыми отношениями, которые поддерживает наша страна как внутри страны, так и за ее пределами. Управление экономическими отношениями, осуществляемое предприятиями группы G46.21, чья деятельность предусматривает оптовую торговлю крупами, семенами, кормами и необработанным табаком на свободном рынке, имеет некоторые особенности и которые его отличают, поэтому важно осуществить диагностику их потенциала.

Данное исследование посвящено комплексной оценке профиля предприятий группы G46.21, в соответствии с общими и основными показателями их деятельности, с целью анализа структуры предприятий по форме собственности, организационно-правовой форме, персоналу, стоимости основных фондов и доходов от продаж; структуре стоимости основных средств и структуре стоимости выручки.

Проблема анализа потенциала предприятий группы G46.21 в настоящее время очень актуальна, поскольку имеет существенную связь с экономическим развитием Республики Молдова, которая в условиях глобализации, роста рынков и конкуренции позволяет выявить конкурентоспособность данного сектора.