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РОЛЯТА НА ЧОВЕШКИЯ КАПИТАЛ ЗА ПОВИШАВАНЕ НА ПРОИЗВОДСТВЕНО-ИКОНОМИЧЕСКАТА ЕФЕКТИВНОСТ НА ЗЕМЕДЕЛСКИТЕ СТОПАНСТВА
ROLE OF HUMAN CAPITAL TO INCREASE PRODUCTION AND THE ECONOMIC EFFICIENCY OF AGRICULTURAL FARMS

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Abstract

The development of modern management science increasingly regarded man as the most valuable asset and the carrier of competitive advantage for any business organization.

The purpose of this article is to analyze the status and development of the human capital and assess its role in increasing production and economic efficiency in different size, status and ownership of farms.

The study covers the period between 2007-2012 and is based on data from the National Statistical Institute, Bulletins of the Agricultural Statistics department of MAF, specifically designed for the purpose of analyzing questionnaires, direct contact, company records and more. To specify the data and information the method of interview is applied.

Key words: human capital, farms, Bulgaria

INTRODUCTION

The development of agricultural farms in Bulgaria is extensively defined by the available production resources, by their quality and the effectiveness of their use. One of the main resources that differ significantly from the others is the human resource. They possess particular knowledge, skills and qualities that are unique in nature and are crucial for the productivity growth and welfare. This gives rise to the perception of human resources as *human capital*. Along with the development of the modern management science, the human capital is increasingly considered to be the most valuable asset and the factor of competitive advantage for any business organization.

In recent years, the socio-economic changes in Bulgaria have significantly influenced the status and development of agricultural farms. As a consequence, agricultural production diminished drastically. Following the country's accession to the European Union /EU/ in 2007, to overcome the negative production and economic performance appears very slow and difficult. One of the main reasons for this is the low professional and qualification level of those employed in agriculture and the inefficient management of the human capital.

The lack of good management of the human capital, together with the low level of professional knowledge, skills and competencies, negatively affect the economic performance of the farms. Therefore, it is necessary to analyze the condition of the human capital, to reveal the opportunities for their efficient use and management.

The purpose of this article is to analyze the condition and development of the human capital by evaluation of their role in increasing the production and economic efficiency in different in size, status and ownership, agricultural farms.

MATERIALS AND METHODS

In the research of the status and development of the human capital in different in size, status and ownership farms, were used four criteria with their respective indicators /Table 1/.

Based on the specifics of the farms, for the analysis in this study, the the following criteria were included: "Number, structure and experience of employees", "Educational and vocational profile", "Efficiency of utilization of employees" and „Payment and work incentives". Each criterion contains matching indexes which reveal in depth the impact of the human capital. Indicators are used to reveal the age and sex structure, length of service, educational and vocational profile, productivity, level of basic and additional payment, according to the Labour Code and the internal regulations of the agricultural farms.

Fot the purpose to study the condition and development of the human capital and its role in increasing production and economic efficiency, 116 agricultural farms were researched. The majority of them are located in the South Central region /SCR/ where in 2007 /at the onset of the study/ agricultural farms were 133 569 out of 481 920 in total for the country /27.72%/ (Agricultural reports, 2007).

The reveal of the scope of the studied farms by their type is characterized by the minimum and maximum values of a group of indexes. These include the total cultivated area, the produce from it, as well as the number of the staff employed in farm management and execution /Table 2/.

During the study of the impact of the human capital on production and economic efficiency, the farms are divided into two groups. The first group features farms with profit. The second group includes the farms which did not make profit and declared economic loss for the period. Production and economic efficiency is measured by the level of profit made by the farms.

Table 1. Criteria and indicators for the analysis of the condition and development of the human capital and its impact on production and economic efficiency of farms

Criteria	Number, structure and experience of employees	Educational and vocational profile	Efficiency in the utilization of employees	Work payment and incentives
Indicators	*1. Total employed in the farm* a/Of which, management *2. Age structure of the management* a/ from 15 to 35 years; b/ from 36 to 55 years; c/ over 56 years. *3. Gender* a/ Men; b/ Ladies. *4. Work experience* a/ to 15 years; b/ from 16 to 35 years; c/ over 36 years	*1. Education* a/ secondary comprehensive level; b/ specialized secondary education; c/ Bachelor; d/ Master degree. *2. Experience in the specialty* a/ to 15 years; b/ from 16 to 35 years; c/ over 36 years. *3. Specializations* a/ in the country; б/ abroad. *4. Training and use of foreign languages* a/ English; b/ French; c/ German; d/ Russian; e/ other languages	*1. Gross Output from one da / BGN* *2. Gross Output per employee / BGN* *3. Gross Output one diem / BGN* *4. Gross Output one diem of the management / BGN*	*1. Basic pay and social security of employees in the BGN / Month.* *2. Social additional payments BGN/ month.* *3. Additional incentives BGN / month*

Table 2. Characteristics of the research in the agricultural farms

Types farms / Indicators	SP		Ltd.		LLC		Farmer Unions and cooperatives	
	min	max	min	max	min	max	min	max
Cultivated area /da	4	6000	10	19912	10	50098	29	16800
Production / kg	12500	2842560	13000	7196028	11850	24047040	23200	13739810
Total employed in farm / pc.	3	75	3	156	4	164	4	54
Of which, management / pc.	1	23	2	39	2	36	1	11
Of which, executive staff / pc.	0	39	0	96	0	111	0	36
Of these permanent employees/pc.	0	23	0	33	0	40	0	16
Of these temporary / pc.	0	37	0	84	2	92	0	27

Data from their own research

This study covers the period from 2007 to 2012. The data and information were collected through direct contacts, completing of specifically developed for the purpose of analysis reports, spreadsheets, company documents and more. The final data from the research is based on average rates from the five years of study. The statistical package SPSS 13.0 was implied for the processing and data analysis.

RESULTS AND DISCUSSION

Analysis of the condition and development of the human capital and its impact on production and economic efficiency of the agricultural farms under the "Number, structure and experience of employees" criterion.

The Human capital is defined as a combination of knowledge and skills that lead to increased productivity and efficiency. The quality of human capital in the farm, as well as their effective use, largely determine their economic proggress. (Tepavicharova, 2010; Bencheva, Tepavicharova, 2011).

For the proper operation of any business organization, the effectiveness of its management plays an important role, which directly affects the final economic results. They carry information about the total result of skillful management activities along with the effective use of human capital. Therefore, the profit is to be seen as the major indicating value expressing the degree of achieved production and economic efficiency of the farms. Out of the surveyed 116 farms, 86.21% generated profit for the period of research, and 13.79% reported economic loss.

Table 3. The impact of human capital on the production and economic efficiency under the " Number, structure and experience of employees " criterion

Groups of farms / Indicators	Profitable farms		Losers farms		Deviation of losers to profitabl
	number , $\bar{x}$	%	number, $\bar{x}$	%	%
1. Total employed in the farm	27,75	100	14,69	100	52,94
2. Of which, management	5,88	21,19	3,25	22,13	55,27
3. Age of 15 to 35	1,27	21,60	0,19	5,77	14,96
4. Age of 36 to 55	2,6	44,22	1,56	48,08	60,00
5. Aged above 56	2,01	34,18	1,5	46,15	74,63
6. Men	3,78	64,29	2,12	65,38	56,08
7. Ladies	2,1	35,71	1,13	34,62	53,81
8. Work experience to 15 years	1,44	24,49	0,63	19,23	43,75
9. Work experience from 16 to 35	2,61	44,39	1,37	42,31	52,49
10. Work experience above 36	1,83	31,12	1,25	38,46	68,31

Data from their own research

The analysis of the farms which generated profit for the period shows that the management staff members is 21.19% of the total number of employees, as for the farms which declared loss their share is 22.13% /Table 3/. This indicator does not show any significant differences between the two groups of farms. However, this indicates that the differences in the economic situation of the farms are due more to the variations in the quality characteristics of the respective managers and their skills rather than their number.

Regarding the age structure of the managerial staff in the surveyed farms, the survey data show that a major and particularly acute problem is the aging of the managers. In the farms at a profit, the share of young managers aged 15 to 35 years was 21.60% , while the managers aged 56 and over were 34.18%. The information of the farms at a loss in the period under study show even more negative trend. Nearly half of managers there are aged over 56, while the share of the managers aged 35, is only 5.77%. The lack of balance in terms of age groups, particularly in production with a defined seasonal character and periods of intense labor, has a direct negative impact on production and economic efficiency of the farms. The shortage of young people in the management staff who to understand and apply innovation, results in inefficient production and poor economic performance.

As for the gender structure of management in the studied farms, a certain predominance of men over women is observed. This affects both, the farms at a profit made during the period, and those at a loss. Therefore, production and economic efficiency of the farms can not be related to the gender of the managers there.

The length of service is an indication of the level of experience in the performance of work duties and responsibilities. From this we can evaluate the level of knowledge and skills acquired by managers in their practice. Regarding this indicator, in the farms that declared profit, a similar ratio to the ratio by age groups can be observed.

In the farms which made loss for the period, the share of the managers with work experience over 36 years /38.46%/ is relatively close to the share of those with experience of 16 to 35 /42.31%/. On the other hand, the proportion of managerial staff with 15 years or under of service is much lower - 19.23%.

It is evident that the length of service plays a key role in the management of the human capital only when it is linked to the quality application of the acquired knowledge and skills into practice. In this regard , the quantitative accumulation of years of professional activity should be combined with the development and improvement of professional knowledge and expertise. Only then the length of service of the management can guarantee the increase of production and economic efficiency in the farms.

Analysis of the condition and development of the human capital and its impact on production and economic efficiency of the farms under the "Educational and vocational profile" criterion

In order to determine the status of the human capital and its impact on the production and economic efficiency of the farms under the "Educational and vocational profile" criterion, were analyzed the acquired education, the professional experience and the opportunities for further professional training.

The information from the studied farms for the period 2007 - 2012 is presented in Table 4.

Table 4. The impact of human capital on the production and economic efficiency under the "Educational and vocational profile" criterion

Groups of farms / Indicators	Profitable farms		Losers farms		Deviation of losers to profitabl
	number , $\bar{x}$	%	number, $\bar{x}$	%	%
1. Master degree	2,28	38,78	0,56	17,31	24,56
2. Bachelor	0,97	16,50	0,06	1,92	6,19
3. Specialized secondary education	1,44	24,49	1,26	38,46	87,50
4. Secondary comprehensive level	1,19	20,23	1,37	42,31	31,09
5. Experience in the specialty to 15	2,16	36,73	1,25	38,46	57,87
6. Experience in the specialty from 16 to 35	2,43	41,33	1,06	32,69	43,62
7. Work experience above 36	1,29	21,94	0,94	28,85	72,87
8. Specializations	0,95	16,16	0,00	0,00	0,00
a/ in the country	0,6	63,16	0,00	0,00	0,00
b/ abroad	0,35	36,84	0,00	0,00	0,00
9. Training and use of foreign languages	3,36	57,14	0,50	15,38	14,88
a/ English	1,39	41,37	0,19	37,5	13,67
b/ French	0,28	8,33	0,00	0,00	0,00
c/ German	0,32	9,52	0,12	25,0	37,50
d/ Russian	0,47	13,99	0,13	25,0	27,66
e/ other languages	0,90	26,79	0,06	12,5	6,67
Data from their own research					

In the farms which achieved positive economic results, the managers with higher education are less than half - 55.28%. Of these, 38.78% have a Master's degree, and 16.50% - Bachelor's . Those with a secondary education are 44.72%, of whom only 24.49% have specialized secondary education. Uneven receipt of revenue, unfavorable working conditions, the high dependence of the production on natural and climatic conditions, make the farm unattractive for managers possessing a higher level of education.

The results of the farms which declared a loss in the period are also curious. In them the managers with higher education are only 19.23%. Equally, those with secondary education are 80.77%. Of these, the majority have secondary education without vocational specialty /42.31%/. This indicates that the educational level of the management at the farms which made loss is significantly lower than that of the ones which achieved good economic security. **Therefore, the high educational and vocational training is particularly important for the increase of production and economic efficiency of the farms.**

The analysis of the criterion "Educational and vocational profile" deals with the indicator "Work experience". The longer experience suggests a greater quantity and quality of the acquired knowledge and greater opportunities for their implementation. In terms of this indicator, the highest proportion in the studied farms at a profit, have the managers with experience in the field between 16 and 35 years /41.33%/. The similar shares of the other two groups - those with

qualification experience of up to 15 years - 36.73%, and with professional experience of over 56 years - 21.94% indicate that there is a potential for continuity in the application of knowledge and skills into practice.

In the farms which are at a loss, the highest share hold the managers with experience of up to 15 years /38.46%/. The other two groups demonstrte similar proportion distributions. The negative results in these farms show that the unsatisfactory professional experience of managers directly affects the production and economic efficiency of the farms.

The analysis of the "Specialization" indicator further clarifies the reasons for the differences in the economic situation of the surveyed farms. In these at a profit, 16.16% of the managerial staff specialized at home and /or abroad. The majority /63.16%/ specialized at home, but it is not a small share of those who specialized abroad - 36.84%. In the meantime, at the farms at a loss for the period, no managers acquired specialization. This leads to the conclusion that improving one's skills and expanding one's knowledge and experience with specializations in the country and / or abroad, have a significant positive effect on production and economic efficiency of the farms.

The development of agriculture in Bulgaria requires continuous improvement and self-improvement of the managing staff and the implementation of best practices and innovative solutions globally. This largely depends on the ability to communicate freely and to use foreign languages. In this case, the indicator "Learning and use of foreign languages" is particularly important in the analysis of the impact of the human capital on the production and economic efficiency of the farms.

The research on the farms which generated profit shows that more than half of their managers /57.14%/ are able to use a foreign language. Of these, 41.37% are fluent in English. German is spoken by 9.52% of the managerial staff and French by 8.33%. The Russian language is utilized by 13.99%, and 26.79% of the managers said they use other languages in their daily lives as well as at work. In the farms which declared loss, the share of the managers using a foreign language is significantly lower - 15.38%, which is reflected in the final production and economic results. The use of foreign language gives way to an easy access to the international scientific achievements in the field of agriculture. This helps to continually update the knowledge of the managers. The application of the most modern techniques and technology in production leads to increased production and economic efficiency of the farms.

Analysis of the status and development of the human capital and its impact on production and economic efficiency of the farms under the "Efficiency of utilization of employees" criterion.

The effective utilization of employees combines the level and quality of knowledge and skills and their application in the physical capital in the production process. (Bencheva, 2011, 2012). A study of labor productivity allows us to understand how and to what extent the level of training of the management staff affects the final economic result.

Table 5 gives details on the average values of the research of labor productivity in the studied farms for the period 2007–2012. The information shows that the production in BGN from one acre in the farms which made loss is three times lower /32 12%/ than that of the profitable farms. The ratio of the output per one man-day of the management in BGN in the farms which declared loss, to the same indicator of the farms which generated profit was only 15.52%.

The given data lead to the conclusion that the low productivity is a result of poor management of the human capital and has a negative impact on production and economic efficiency of the farms.

Table 5. The impact of the human capital on the production and economic efficiency under the criterion "Efficiency of utilization of employees“

Groups of farms / Indicators	Profitable farms		Losers farms		Deviation of losers to profitabl
	number , $\bar{x}$	μ	number, $\bar{x}$	μ	%
Gross Output from one da/ BGN	**1314,72**	**245,62**	**422,25**	**75,11**	**32,12**
Gross Output per employee / BGN	**33895,26**	**5347,59**	**5971,96**	**1598,29**	**17,62**
Gross Output one diem / BGN	**134,51**	**21,22**	**22,69**	**6,34**	**16,86**
Gross Output one diem of the management / BGN	**654,57**	**108,00**	**101,57**	**21,65**	**15,52**

Data from their own research

Analysis of the status and development of the human capital and its impact on production and economic efficiency of the farms under "Payment and work incentives" criterion

Wages and material incentives are a measure of renumeration of labor and energy on the part of the human capital in the production of certain products. The executors are motivated to more effectively carry out their tasks in the future, when the remuneration is adequate to the work done. The financial incentives largely attract more and better qualified human resources in the farms.

Table 6. Impact of the human capital on the production and economic efficiency under the "Payment and work incentives" criterion

Groups of farms / Indicators	Profitable farms		Losers farms		Deviation of losers to profitabl
	number , $\bar{x}$	μ	number, $\bar{x}$	μ	%
Basic pay and social security of employees in the BGN/month.	740,60	12,58	643,13	22,99	86,84
Social additional payments BGN/month	11,20	2,18	14,38	4,53	128,39
Additional incentives BGN /month	111,80	7,43	32,50	10,82	29,07

Data from their own research

The study of the criterion "Payment and work incentives" indicates that additional incentives of the managing staff at the farms with a loss is three times lower /29.07%/ than that at the farms at a profit /Table 6/. This is due to the fact that the additional incentives are associated with the production results achieved - the better the production results, the higher the additional incentives should be.

The results of the research on the farms showed that even at these which declared profit, the remuneration of the managerial personnel is comparatively low. It is not tied to the final production and economic performance, which turns inefficient. Additional incentives are payed as social payments to wages that are minimal and in most cases succeed in compensating only for the inflation for the period. Part of the surveyed farms apply other work incentives. At the execution of the production plan, additional funds, apart from the basic pay, are granted. This extra incentive is largely the result of autocratic decisions by the owner or owners of the farm, making it unstable in reality.

CONCLUSIONS

The following conclusions have been drawn after the analysis of the impact of the human capital on the production and economic efficiency of the farms in Bulgaria:

- A basic problem in the agricultural farms, which requires immediate reaction, is the aging of the management staff. A priority should be given to younger managers, which will increase the capacity of the farms to implement innovative techniques and technologies, which is a prerequisite for increased production and economic efficiency in them.
- A proper recruitment, taking into consideration the age groups and the experience gained during the years of service, as well as the optimal balance between managerial and executive staff, have a significant impact on the production and economic efficiency of the farms.
- Upgrading the qualifications and expanding the staff's knowledge and experience with additional courses are major factors for effective management and achieving positive production and economic results.
- Highly educated and well-trained workforce is able to produce more and better products. From this standpoint, investment in human capital increases individual labour productivity.
- The higher productivity should be reflected in the rising of payment, and thereby motivate and retain staff in the farms.
- Awareness of the fact that high performance and lasting success can only be the result of a proper strategy for the management of human capital, which is the main driver for the development of each farm.

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