

THE IMPACT OF STRATEGIC MANAGEMENT ON SELECTED FINANCIAL AND ECONOMIC RESULTS OF AGRICULTURAL ENTERPRISES OPERATING IN THE SLOVAK REPUBLIC

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Abstract

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Strategic management is usually described as a process that begins with a mission statement and tends to the choice and implementation of the most suitable strategy and strategic control. Despite the protracted adverse situation which has afflicted the Slovak agricultural sector, a properly selected strategy may be the impetus behind the more progressive financial and economic results achieved by some agricultural holdings in comparison with their competitors who have experienced difficulties in adjusting to a dynamically evolving external environment. The main outcome of the submitted article is the assertion that agricultural holdings which devoted greater attention to strategic management have performed better in terms of economic results, especially business success based on Earnings before Taxes (EBIT), EBIT per one employee and per one hectare of agricultural land.

Keywords: strategic management, management, implementation, agriculture, profitability

INTRODUCTION

The continually changing conditions of world economic development impose high demands on managers, and the essence of strategic management is also acquiring greater importance for agricultural holdings. This stems from the fact that the agricultural sector operates in unstable and rapidly changing conditions. Particularly in the European Union's Common Agricultural Policy (CAP), strategy is becoming an important factor for the survival, comprehensive development and prosperity of every organization, based on new approaches utilizing nontraditional methods and tools (Gregová, 2006). In these new circumstances, it is important to highlight that agriculture is an integral part of the national economy (Szabo and Jankelová, 2006) and belongs to the essential sectors of every state (Nagyová *et al.*, 2012). Despite this fact, in their research works, foreign and Slovak authors

have devoted limited attention to the subject of strategic management in the agricultural sector. One exception is the work of the authors

Szabo and Jankelová (2006). Alongside an analysis of strategic management tools and methods used in agriculture holdings, they also examine the implementation of strategic management and primary production planning. They demonstrate that the managements of some holdings have been able to implement the basic principles of strategic approaches. As a consequence, some of them are successfully supervising the management in conditions of a continuously changing external environment.

Meier, O'Toole Jr., Boyne, Walker (2006) claim that idea of strategy content influences organizational performance and it is a central element of generic management theory. Strategy content can be defined broadly as the way an organization seeks

to align itself with the environment. Strategy can be characterized as senior managers' response to the constraints and opportunities that they face. The better the fit that an organization achieves with external circumstances, the more likely it is to win financial and political support and thereby improve its performance.

Mišanková, M.- Kočíšová, K., (2014) state that strategic management consists of three separate processes which are interconnected together and influence each other. These processes are – strategic planning, strategic implementation and strategic control. Researches in companies showed that the most important and the most underestimated part is strategic implementation. Implementation of the strategy is a part of strategic management which success is conditioned by managers, employees, their organization, as well as by the transformation of company's culture. The main task of implementation of the strategy is to bring the strategy into the life as a part of everyday decision making process of the company. It is necessary to find appropriate indicators characterizing company activities and a system for measurement to eliminate deficiencies in the implementation of the strategy.

Žufan and Chládková (2008) in their research dealt with strategic management in the wine sector, more specifically they came up with a new concept of the "7S", an attempt to move the original McKinsey concept towards the new conditions in the dynamically developing business environment. As an essential competitiveness factor, among others they consider the shift of competitiveness towards strategic confidence simultaneously and sequences (2008).

Stemming out from the above mentioned research outcomes of various authors, the objective of this paper is to enlarge the existing model for the evaluation of strategic management based on the selected financial and economic indicators in the researched group of agricultural holdings operating in the Slovak Republic. The research assumption is that the enterprises devoting greater attention to strategic management are attaining more favorable results. This conviction is based on the fact that a well-selected strategy and, stemming from it, the consequent actions of agricultural holdings, are reflected in better economic results and in the upgraded effectiveness of the entire production process.

MATERIAL AND METHODS

The survey has been carried out in 81 agricultural holdings which have a diverse structure according to the following criteria: production zone, legal form

and acreage of cultivated land in use according to the Land Parcel Information System (LPIS).

Qualitative data have been collected by way of a questionnaire elaborated with the intention of evaluating strategic management under the conditions of the agricultural sector. The survey was undertaken in mid-2012. The quantitative data have been obtained from the Information Letters of the Ministry of Agriculture and Rural Development (MOARD) for the period 2006–2012. The fundamental parts of these letters are, among others, the balance sheets, profit/loss statements and the statement of selected specific financial and economic indicators. The given data have been provided by the Food and Agricultural Economics Research Institute. The following indicators have been used for the evaluation of strategic management:¹

- Business success of total capital – PTC using EBIT,
- debt-to-capital ratio,
- the period for payments of receivables,
- the obligation's liquidity,
- total liquidity,
- EBIT per hectare of cultivated land according to the LPIS,
- EBIT per one employee.

As the complex indicator of effectiveness, we used the rate of super efficiency which is given by Andersen and Peterson's Data Envelope Analysis (DEA) model for super efficiency.² The rate of super effectiveness has been set up under assumption of constant returns to scale (CRS), as well as from the variable returns to scale (VRS).

The following indicators have been selected as inputs in this model: arithmetic average of property's value; the cost of material and energy; and the cost of wages over the years 2006–2012. The selected output variable was the arithmetic average of production in the period 2006–2012. For the other abovementioned indicators, the numerator and denominator of the individual indicators have been substituted by the arithmetical average of respective lines from the balance sheet, profit/loss statement and the statement of selected specific economic and financial measurements for the period 2006–2012.

Taking into consideration the nature of the tested data, the statistical method applied was the Jonckheere-Terpstra test. This is a non-parametric test, through which it is possible to determine, whether in the medians of tested groups the arranged pattern exists according to individual factor levels.³ Hypothesis H_0 regarding the non-impact of a factor's influence, in the case of the Jonckheere-Terpstra test, can be expressed in the formula below:

1 The detailed algorithm of the calculation of the above-mentioned indicators are followed by Gurčík and Miklovičová (2009), Gurčík (2004), Kotulič, Király and Rajčániová (2007) and Bielik (2008).

2 From the methodological viewpoint, the given model is explained by Jablonský and Dlouhý (2004).

3 Given non-parametric test is explained, e.g. Field (2009), Metha and Patel (1996) and Sheskin (2004).

$$H_0: \theta_1 = \theta_2 = \dots = \theta_k \quad (1)$$

In this test we assume that an alternative hypothesis is proposed and the one-side hypothesis H_1 can have the following form:

$$H_1: \theta_1 \leq \theta_2 \leq \dots \leq \theta_k \quad (2)$$

respectively,

$$H_1: \theta_1 \geq \theta_2 \geq \dots \geq \theta_k \quad (3)$$

In which at least one from the disparity is sharp. In the formula (1), (2) and (3), θ_i represents the median of values of the i -population ($i = 1, 2, \dots, k$). With respect to the fact that the test data are unequally distributed into the individual groups, we are using a decision about whether the zero hypothesis Jonckheere-Terpstra test is accepted or is rejected, the estimation of exact p -value followed by simulation based on the Monte Carlo Method⁴.

RESULTS

Characteristics of Respondents

The respondent group consisted of enterprises involved in the programme of the Monitoring Data Sheets of the Ministry of Agriculture of the Slovak Republic ("Informačné listy MP SR") in 2006–2012.

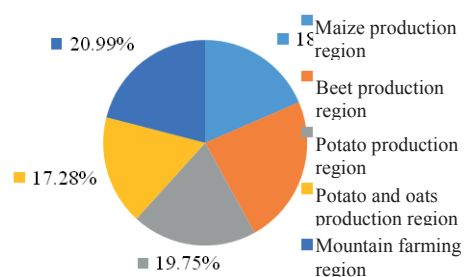
The subjects of our research were the agricultural operators in crop and livestock primary production.

Regarding the composition structure, the largest group of respondents were 51 agricultural cooperatives (62.96%). The second most numerous category were limited companies (more than 30% of respondents), and the remaining respondents were four joint-stock companies and one self-employed farmer.

From the production type aspect, the composition of the respondent group is illustrated in Fig. 1. As the graph shows, individual production areas were almost evenly represented in the analysed respondent group. The surveyed enterprises came from 48 districts of the Slovak Republic, though most of them were located in the District of Bardejov (four enterprises).

Of equal importance for further processing of data is the classification of respondent enterprises according to the number of employees. In total, the surveyed group consisted of four micro-enterprises (4.94%), 55 small enterprises (67.90%), and 30 medium enterprises (37.04%).

The composition structure of the respondent group according to acreage of agricultural land shows that most enterprises fall into the size category of 500 ha to 1,000 ha of acreage. The fewest



1: Composition structure of the surveyed group of agricultural enterprises from the aspect of production areas

Source: Author's own work and research, and Monitoring Data Sheets of the Ministry of Agriculture of the Slovak Republic, 2006–2012

enterprises were those with the acreage of more than 2,000 ha of agricultural land.

The Definition of Strategic Management Levels in the Agricultural Holdings

The level of strategic management development in the individual agricultural holdings is assessed on the basis of five dimensions, which are represented by twelve questions in the questionnaire for evaluation of strategic management. These are grouped into the five dimensions in the following way:⁵

- Dimension 1 – vision and strategy:
 - Vision – questions are whether strategy is formulated and for how long a period.
 - Strategy – the questions concern whether strategy is formulated and in which form.
- Dimension 2 – analysis of the internal environment:
 - Own analysis about the holding's economic situation.
 - Manager's ability to recognize the holding's strengths and to benefit from them.
 - Manager's ability to recognize the holding's weaknesses and capacity to react effectively to them.
- Dimension 3 – analysis of the external environment:
 - The holding manager's capacity to analyze the external environment and its impact on the holding's productivity.
 - The holding manager's capacity to identify in the external environment its main competitors.
 - To prepare a prognosis of the external environment and to benefit from this.
- Dimension 4 – the strategy's suitability and the degree of employees' knowledge about it.

⁴ Detailed explanation of this method was provided by Metha and Patel (1996).

⁵ A similar, however less sophisticated enterprises evaluation model has been presented by Nováková (2011).

● Dimension 5 – the other issues of strategic management:

- The level of planning.
- The level of strategic control.

With regard to the above-mentioned dimensions, each agricultural holding could obtain a maximum of four points, and up to twenty-four points could be assigned to the holding for the overall level of its strategic management. However, the aggregate is not apportioned through addition of the points for the respective dimensions of strategic management, but through a specific form of arithmetic transformation. This is based on the fact that each holding in our group of enterprises was assigned a certain arithmetic shape-pentagon, the dimensions of which depended on the sum of points assigned for the individual dimensions of strategic management. The share of the area of the pentagon which corresponds with a respective holding and the share of the area of the largest possible pentagon (this corresponds with a holding which obtained maximum points for each dimension), will ultimately indicate the level of strategic management in the individual holding.

Before each holding was assigned the area of its corresponding pentagon, it was necessary to add the value of one unit to each point for dimensions of strategic management. Otherwise no area of pentagon would have been assigned to the holding with a zero level of dimensions. Similarly, a situation could arise where the enterprise with several (not all) non-zero dimensions would be allocated zero total points for its level of strategic development.

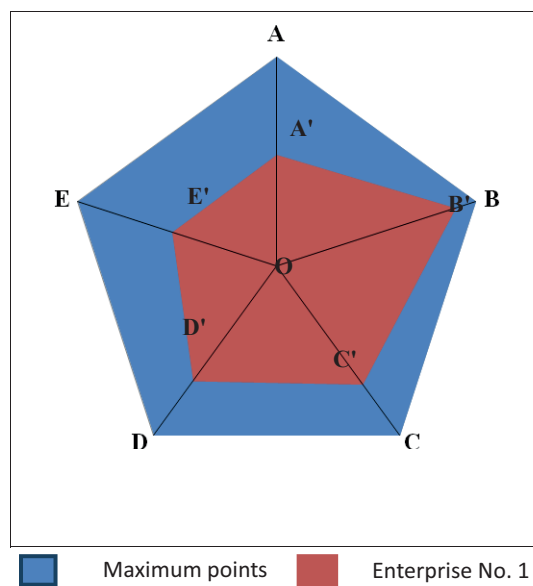
The arithmetic transformation of points gained from individual dimensions of strategic management of the total number of points expressing level of strategic management in the given enterprise is presented in the example of holding Number 1 from the following group.

In Fig. 2, the area of the blue pentagon (subsequently flagged as S_M) is the highest possible level of strategic management which it is possible to achieve in the given evaluation. This is a situation where the holding is assigned maximum points for all dimensions of strategic development. After addition, the value of one unit would be valid $|OA| = |OB| = |OC| = |OD| = |OE| = 5 \text{ units}$. The length of these abscissas according to ranking expressed the maximum points for dimensions of strategic management 1, 2, 3, 4 and 5 (after totaling the value of one unit).

The share of the eventually largest possible pentagon can be calculated in the following way:

$$S_M = (|OA||OB| + |OB||OC| + |OC||OD| + |OD||OE| + |OE||OA|) \frac{\sin \alpha}{2}. \quad (4)$$

Angle α corresponds to the angle $\angle AOB$ and it is equal to 72 degrees. The area corresponding to holding No. 1 (subsequently it will be flagged as S_{p_1}) is given by the following abscissas:



2: Determination of the Level of Strategic Management in the Agricultural Holdings

Source: Own elaboration, own research

$|OA'|$ – the number of points for dimension of strategic management No. 1 after adding the value of one unit,

$|OB'|$ – the number of points for dimension of strategic management No. 2 after adding the value of one unit,

$|OC'|$ – the number of points for dimension of strategic management No. 3 after adding the value of one unit,

$|OD'|$ – the number of points for dimension of strategic management No. 4 after adding the value of one unit,

$|OE'|$ – the number of points for dimension of strategic management No. 5 after adding the value of one unit.

For the size of the area S_{p_1} , the following formula is valid:

$$S_{p_1} = (|OA'||OB'| + |OB'||OC'| + |OC'||OD'| + |OD'||OE'| + |OE'||OA'|) \frac{\sin \alpha}{2}. \quad (5)$$

Stemming from this, for the share of the area corresponding to holding No. 1 and for the area of the eventually largest possible pentagon, the following formula is valid:

$$\frac{S_{p_1}}{S_M} = \frac{|OA'||OB'| + |OB'||OC'| + |OC'||OD'| + |OD'||OE'| + |OE'||OA'|}{|OA||OB| + |OB||OC| + |OC||OD| + |OD||OE| + |OE||OA|}. \quad (6)$$

Already from formula (3), the general formula could easily be deduced for calculation of the area's share of the pentagon corresponding to any holding, and the area of the largest possible pentagon (thus to the area S_M). The area corresponding to the i -holding

I: Classification of the Selected Agricultural Holdings into Groups according to the Level of Strategic Management

Code	Point	Verbal evaluation
1	$\langle 16, 24 \rangle$	Excellent Level of Strategic Management
2	$\langle 8, 16 \rangle$	Average Level of Strategic Management
3	$\langle 0, 8 \rangle$	Lagging Level of Strategic Management

Source: own elaboration, own research

will be flagged as S_{p_i} and share of the areas S_{p_i}/S_M . For the total number of points which would correspond with the level of strategic management (LSM_{p_i}) of the respective agricultural holding, the following formula is defined:

$$LSM_{p_i} = \begin{cases} \left[25 \frac{S_{p_i}}{S_M} \right] - 1; 25 \frac{S_{p_i}}{S_M} - \left[25 \frac{S_{p_i}}{S_M} \right] < 0.5 \\ \left[25 \frac{S_{p_i}}{S_M} \right]; 25 \frac{S_{p_i}}{S_M} - \left[25 \frac{S_{p_i}}{S_M} \right] \geq 0.5 \end{cases}$$

Formula (7)⁶ generates round numbers starting from zero and ending with twenty-four. The holdings, on the basis of total points for the level of strategic management, are classified into three groups as shown in Tab. I.

It should be highlighted that various alternatives to the above-mentioned methodology, by which we defined the level of development of strategic management in the given holding, have been tested. The results which are referred to in the next part of this article have been arrived at using all these alternatives.

The Impact of Strategic Development on the Results of Agricultural Holdings

The above definition of the indicator of the level of strategic management development made it possible to classify the selected holdings into the three groups, according to the total number of points assigned. An outstanding level of strategic management was evidenced in only seven (8.64 percent) out of the total of eighty-one holdings. An average level has been achieved in the majority of holdings (70.37 percent) and the remainder – sixteen holdings (19.75 percent) revealed a low – under-performing level of strategic management.

Subsequently, the impact of the above-defined level of strategic management on selected indicators of economic performance and economic effectiveness was assessed in the selected group of agricultural holdings. For this process we used the non-parametric Jonckheere-Terpstra test, and the level of strategic management defined in Tab. I was considered as the factor influencing the given indicators. The results of the non-parametric trends'

testing of the selected indicators are presented in Tab. II.

Tab. II demonstrates that the zero hypothesis of the Jonckheere-Terpstra test can be rejected in favor of the alternate hypothesis of the following indicators:

- Business success of the total capital PTC using EBIT.
- The period for receiving the receivables.
- EBIT per one hectare of agricultural land according to the LPIS.
- EBIT per one employee.

In the case of the above-mentioned indicators, we are rejecting the zero hypothesis at the one percent level of significance, with the exception of the indicator for the period for receiving receivables (in the case of receivables, we reject the zero hypothesis of the Jonckheer-Terpstra test at the five percent significance level).

If the level of strategic development is considered to be the factor which is influencing the achieved results of these indicators, then in the case of each analyzed indicator, the medians are creating non-increasing gradualness. The higher values of these indicators are directed towards the holdings which are giving higher consideration to strategic management.

The result related to the business success of total capital with EBIT is considered to be significant. From the above consideration it can be deduced that the enterprises with an excellent level of strategic management can more effectively reproduce capital invested in the business in comparison with those which have less developed strategic management. Hence the same amount of capital expressed in financial units brings to the enterprises with higher levels of strategic management higher EBIT in comparison with enterprises with a less developed level of strategic management.

Furthermore, we do consider important the finding that higher values of EBIT per hectare of cultivated land according to the LPIS, and higher values of EBIT per one employee, are observed in the group of enterprises with excellent levels of strategic management (value std. J-T Statistic is negative in the case of both indicators, hence the medians are creating no-increasing gradualness). A certain correlation exists in the classification of

⁶ Function $y = [x]$, which is contained in formula (7) is called the integer part of number x . This topic is dealt with by Blaško (2007).

II: *Non-Parametric Testing on the Presence of Trends in the Case of the Selected Indicators of Financial Position and Effectiveness among the Groups of Agricultural Holdings according to their Level of Development of Strategic Management. Results of the Jonckheere–Terpstra Test*

Indicator		BSE ¹	OSE ²
PTC using EBIT	⊖	**	**
Debt-to-capital ration	⊖		
The period for receiving the receivables	⊖	*	*
The period for obligation's payment	⊖		
Total liquidity	⊕		
EBIT per hectare of cultivated land	⊖	**	**
EBIT per one employee	⊖	**	**
Super effectiveness under the assumption of CRS	⊕		
Super effectiveness under the assumption of VRS	⊕		

¹ upper limit of the 99 percent significance interval of the both sided exact *P*-value set up by the Monte Carlo simulation

² upper limit of the 99 percent significance interval of the one sided exact *P*-value set up by the Monte Carlo simulation

⊖ medians are creating non-declining gradualness

⊕ medians are creating increasing gradualness

* value < 0,05

** value < 0,01

Source: Information Letters of the MOARD for the years 2006–2010, own research, own elaboration

enterprises into the individual groups according to their level of strategic management and the EBIT per one hectare, and in the classification of enterprises into individual groups according to their level of strategic management and the EBIT per one employee. The enterprises with a higher level of strategic management are achieving higher EBIT per hectare and at the same time higher EBIT per employee.

DISCUSSION

From the results of the selected indicators tested by the Jonckheere–Terpstra test it emerges that those agricultural holdings implementing the basic principles of strategic management are achieving higher values in the following indicators: business success of total capital – EBIT, gross production result per one hectare and per one employee. From the above, we can state that these enterprises have been able to achieve higher EBIT from production re-calculated on one Euro of the total capital invested into the agribusiness. Similarly, they also attained higher EBIT recalculated on one hectare of cultivated land and per employee. The enterprises with a better developed level of strategic management have been able to benefit more from their human, material and financial resources, in comparison with those which paid less attention to the implementation of strategic management.

The achieved results are consistent with research undertaken by Gregova (2006), who states that

strategy is becoming an important factor for the survival, intensive development and prosperity of every organization. Our results confirmed the assumption that agricultural holdings which dedicate greater attention to strategic management and its implementation in business practices perform better in terms of economic results. The above outcomes also correspond with a statement by Szabo and Jankulová (2006) that those holdings which cope more precisely with the basic principles of strategic management are more successful in company management and adaptation to the dynamic changes in the external environment.

In the analogical research conducted by Huber (2006), it was affirmed that only about 50 percent of small and medium-size companies are actively implementing strategic planning and other tools of strategic management, while in our research the result was significantly less impressive; the same statement was relevant only in the case of 8 companies, (6, 4 percent). However, it should be noted that this significant distinction could be influenced by two factors. First of all, that our research was carried out in agricultural holdings, and secondly, that Slovak agricultural holdings have undergone two economic shocks – transformation of the economy and European Union accession.

In addition, the similar research implemented in Germany by Kutscheid (2014) is worthy of note. This study found that 36 percent of companies

in the service sector are regularly engaged in the strategic development process and do consider it to be very important or even critical. As indicated above, the results identified in this study partially agree with the recent findings of other authors. In addition, it should be noted that the present study

has undertaken its analysis and places much stronger emphasis on the agricultural holdings operating within the Slovak Republic, while the other studies are dealing with industrial companies or with firms providing services.

CONCLUSION

On the basis of the achieved results it could be stated that strategic management is a meaningful factor for business success. Strategic management is also important in relation to agricultural and food production; particularly in connection to adaptation to climate changes and in ensuring the food security resources required for a steadily growing human population. Equally important is the requirement for sustainable management of natural resources. Furthermore, for agricultural holdings operating under prevailing socio-economic conditions in the Slovak Republic, there is a requirement for these businesses to enhance production, particularly in terms of quality and food safety, gradually stabilize market conditions through domestic supply and strengthen their economic and financial status. These requirements stem from the objective to establish an agricultural sector which will be competitive with food commodities, and boost their market position. Therefore, it is important to dedicate increased attention to the implementation of strategic management within the framework of the agro-food sector at all levels, commencing from the level of central/regional government (ministries and regional self-governments), continuing through the institutional level up to the level of individual holdings

This paper presents a model for the evaluation of strategic management based on the premise that strategic management, as a concept, is not a one-sided process. Therefore, this model evaluates various aspects of strategic management which are cumulated in the form of dimensions. The final number of points allocated to the individual enterprises in this evaluation provided an opportunity to test whether strategic management as the "measurement" of qualitative nature has an impact on the enterprise's quantitative results, which are measured by the different economic indicators. The main idea on which the proposed model is based is not new. However, it is developed and applied in a new format. In conclusion, it should be pointed out that the evaluation carried out in this way can be applied to other social and scientific topics.

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