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## DYNAMIC METHOD FOR MANAGEMENT OF INVESTMENT FINANCIAL RESOURCES IN AGRICULTURE

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### ABSTRACT

Farm management is related to the decisions that affect the profitability of this business. Limited resources are allocated, and after taking a certain risk, a return is expected. In order to manage risk effectively, it needs to be clearly identified and valued.

Determining the production structure of an agricultural holding in the current study is considered in the short term, in the case of choosing between two annual crops. Solving this problem in the future involves establishing the amount of investment funds, areas in which to invest, and the use of tangible fixed assets as efficiently as possible.

In carrying out the investment process, financial and investment decisions are made, developing this dynamic method for every possible alternative to investing capital.

The purpose of this study is to propose a method for making management decisions in agriculture, when choosing to invest financial resources in terms of choosing between two crops - wheat and sunflower.

**Key words:** dynamic method, budget, financial resource, management, agriculture.

### INTRODUCTION

The agricultural holding in its essence represents a complex unity of technological and organizational-economic relations and relations, which predetermine its internal mechanism of functioning as an independent economic unit. The main internal factors and functional areas of the agricultural holding are the goals of the economic activity; the structures of production, organization and management; the applied technology and organization of labor and personnel. (1)

Some of the most commonly used in practice methods and tools of management are: methods of systematic analysis and approach; economic-mathematical methods and models; economic-statistical methods (analysis of time series, analysis of trend artopopulation, correlation and

regression analysis, etc.); morphological analysis; goal tree; different types of groupings; expert methods; various empirical management methods and others.

The choice of management tools is a difficult and responsible process. It is the presence of a large number of methods and means by which the object of management (agriculture) can be influenced that significantly complicates this process. Some of the main problems of modern management are related to budgeting, such as the fact that budgets rarely reflect emerging network structures, do not sufficiently promote the exchange of knowledge, they are time-consuming, rarely strategically oriented and often contradictory. Budgets are based on assumptions and vertical management and control (2) Beyond Budgeting Round Table is an international training network for organizations with a common interest in transforming their governance models into models with sustainable, superior characteristics. BBRT embodies a set of principles that lead to more dynamic processes.

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This organization is at the heart of a new movement that is looking for ways to build adaptive and ethical companies that can maintain significant competitiveness. (2) The basic principles of this management model relate to relieving employees of the burden of suffocating bureaucracy and control systems by giving them a vote of confidence and giving them information and time to think, reflect, share, learn and improve.

Budgeting can be divided into two main types - capital budgeting and operational budgeting. The main difference between the two types is in their maturity. In capital budgeting, long-term cash flows are determined, ie. over 1 year, and in the operational up to 1 year. (2) The investment projects in the capital budgeting may refer to new investments for the expansion of the activity of the enterprise, renewal of the inventory and the facilities and projects, which do not bring immediate financial benefit, but are carried out in connection with providing conditions for normal course of activity.

For its part, operational budgeting considers the efficient allocation of resources. It has lower planning costs than capital, gives a more realistic forecast, provides regular monitoring of activities and is better perceived by managers. (2)

The current article has developed a model based on the principles of operational budgeting. The farmer can choose from the many possible means one or more that are most suitable for his production. If none of the available means is appropriate, then one or more of them can be specially adapted to the needs of the farm.

If a reporting period is pre-terminated, for example, this could provide information for making decisions to change or introduce a new activity before the end of the reporting year. There is a reason to do it in moments when problems arise and a decision has to be made to solve them.

The object of the study are all agricultural producers on the territory of Bulgaria who inspect wheat and sunflower.

## **GOALS AND TASKS OF THE RESEARCH**

The purpose of this study is to propose a method for making management decisions in agriculture, when choosing to invest financial resources in terms of choosing between two crops - wheat and sunflower.

The following tasks are set:

- To present a theoretical statement of budgeting;
- To present a dynamic model for management decision making;
- To provide information for making a management decision related to the investment of financial resources;
- To evaluate the management decision, deriving the advantages and disadvantages of the two options considered in the study.
- To offer a quality model for evaluation of the method.

## **METHODOLOGY, MONITORING AND ANALYSIS OF THE DYNAMIC METHOD FOR FINANCIAL RESOURCE MANAGEMENT IN AGRICULTURAL HOLDINGS**

The current study presents a dynamic model for decision-making, based on the assessment of favorable and unfavorable consequences. The method is used to represent the changes in the change in the results that result from changes in technological parameters and price variation. For example, such changes can be observed in average yields, productivity and others. The correlation between two factors can be studied simultaneously. The change in the result can be measured for one or more activities or for a level on the agricultural holding.

By drawing up a profit matrix, the level of risk taken by the farm manager can be determined by undertaking a change in the structure of production or another aspect of the operation of the enterprise.

To illustrate the model, we will consider the problem of replacing 1 decare of sunflower with 1 decare of wheat. The favorable and unfavorable consequences can be presented in tabular form.

**Table 1.** Model of formation of consequences in tabular form.

<b>Negative effects of change:</b>	<b>Positive effects of change:</b>
Decrease in sunflower production	Increase in wheat production
Increase the costs of wheat production	Reduce the costs of sunflower production
<b>Total negative effects:</b>	<b>Total positive effects:</b>

The information needed for the analyzes in the model is aggregated in several main directions in order to simplify the example. However, in order to achieve absolute reliability of the results of the current study, real data are taken for these areas, not examples. These data include all economic units in the country, not a sample. Sources of accurate information such as the National Statistical Institute and the Ministry of Agriculture, Food and Forestry were used. For the purpose of comparability of the data, the main units of measurement used in the survey are decare, BGN and ton.

The average yield of sunflower and wheat per decare for 2020. is 152 kg / dca and 394 kg / dca, respectively. (6) The average price per ton for sold sunflower and wheat production according to NSI data for 2020. is BGN 725.16 and BGN 342.31, respectively. (3). The total production costs are according to data for 2020. of the Center for Economic Analysis in Agriculture and include all costs per decare for production, such as fertilizers, preparations, etc. (7) For the calculation of the net difference from income and expenses by crops, the information may be structured in tabular form.

**Table 2.** Average price per ton for 2020 for wheat and sunflower according to NSI data

Crop	Price in BGN/ton First quarter 2020	Price in BGN/ton Second quarter 2020	Price in BGN/ton Third quarter 2020г.	Price in BGN/ton Forth quarter 2020г.	Average price in BGN/ton for 2020
Wheat	324.95	334.78	331.98	374.54	342.31
Sunflower	687.15	647.18	664.45	801.38	725.16

**Table 3.** Calculation of net income-expenditure difference in BGN from wheat and sunflower production for 2020

Statistical information	Sunflower	Wheat
Average yield per ton per decare for the country in 2020 *	0.152 ton	0.394 ton
Average price per ton for the country in 2020 in BGN **	725.16 BGN	342.31 BGN
Average income per decare from sales of products for the country in 2020 in BGN (average yield / dca x average price / ton)	110.22 BGN	134.87 BGN
Total cost for production of decare for the country for 2020 in BGN ***	90 BGN	80 BGN
<b>Net difference in BGN</b>	<b>20.22 BGN</b>	<b>54.87 BGN</b>

\* Data from MAFF(4)

\*\* NSI data (3)

\*\*\* Data from CAPA (5)

To analyze the results obtained from Table 3, we use the model from Table 2, in the hypothesis of replacing 1 decare of sunflower with 1 decare of wheat.

**Table 4.** Analysis of the consequences of substitution.

<b>Negative effects of change:</b>	<b>Positive effects of change:</b>
Decrease in sunflower production 0.152 ton/dca x 725.16 BGN/ton =110.22 BGN	Increase in wheat production 0.394 ton/dca x 342.31 BGN/ton =134.87 BGN
Increase the costs of wheat production c 80 BGN	Reduce the costs of sunflower production 90 BGN
<b>Total negative effects: 190.22 BGN</b> <b>Balance: 34.65 BGN</b>	<b>Total positive effects: 224.87 BGN</b>

**Table 4** presents the advantages and disadvantages of implementing the change. The unfavorable consequences include a decrease in the income from sunflower production by BGN 110.22 and an increase in the costs for wheat by BGN 80. At the same time, the revenues from wheat production increased by BGN 134.87 and the costs for sunflower decreased by BGN 90, which would be made if sunflower is produced. The balance of advantages and disadvantages is positive, which indicates that the change is appropriate.

The main advantages and applications of this method are that it can be used in solving more

complex problems, such as replacing a certain area with one crop with up to two or three crops. The main disadvantage of the method is that it can be used as a management tool only with small changes.

In order to expand the scope of the analysis, the final balance at different yields and at different prices of sales could be considered. For example, at NSI prices for the quarter. The yield will be considered 10% lower than the average (0.355 t / dca), 20% lower than the average (0.315 t / dca), 10% higher than the average (0.433 t / dca) and 20% lower. -high than average (0.473 t / dca), measured in tonnes, rounded to the third decimal place, after the comma.

**Table 5.** Revenue from wheat per decare, at an average price per ton for wheat by quarters for 2020, according to NSI data and different yields.

Yield ton / dka	First quarter 2020 – 324.95 BGN/Ton	Second quarter 2020- 334.78 BGN/ton	Third quarter 2020- 331,98 BGN/ton	Fourth quarter 2020 – 374, 54 BGN/ton
0.315	102,36 BGN	105,46 BGN	104,57 BGN	117,98 BGN
0.355	115,36 BGN	118,85 BGN	117,85 BGN	132,96 BGN
0,433	140,70 BGN	144,96 BGN	143,75 BGN	162,18 BGN
0,473	153,70 BGN	158,35 BGN	157,03 BGN	177,16 BGN

**Table 5** shows the revenues from wheat per decare, which are obtained as a product of the average quarterly quarter of wheat in 2020. and an approximate yield per ton per decare. In order to calculate the benefits of replacing sunflower

with wheat, the saved costs per decare of sunflower must be added to the revenue per decare of wheat. The results are visualized in Table 6.

**Table 6.** Advantages of replacing sunflower with wheat in BGN per decare.

Yield ton / dka	First quarter 2020 – 324.95 BGN/Ton	Second quarter 2020- 334.78 BGN/ton	Third quarter 2020- 331,98 BGN/ton	Fourth quarter 2020 – 374, 54 BGN/ton
0.315	192,36 BGN	195,46 BGN	194,57 BGN	207,98 BGN
0.355	205,36 BGN	208,85 BGN	207,85 BGN	222,96 BGN
0,433	230,70 BGN	234,96 BGN	233,75 BGN	252,18 BGN
0,473	243,70 BGN	248,35 BGN	247,03 BGN	267,16 BGN

In order to complete the evaluation of the obtained results, the shortcomings in replacing 1 decare of sunflower with 1 decare of wheat in BGN, amounting to BGN 190.22, obtained in

**Table 4**, must be removed. The result is illustrated in Table 7.

**Table 7.** Balance advantages-disadvantages when replacing 1 decare of sunflower with 1 decare of wheat in BGN

Yield ton / dka	First quarter 2020 – 324.95 BGN/Ton	Second quarter 2020- 334.78 BGN/ton	Third quarter 2020- 331,98 BGN/ton	Fourth quarter 2020 – 374, 54 BGN/ton
0.315	2,14 BGN	5,24 BGN	4,35 BGN	17,76 BGN
0.355	15,14 BGN	18,63 BGN	17,63 BGN	32,74 BGN
0,433	40,48 BGN	44,74 BGN	43,53 BGN	61,96 BGN
0,473	53,48 BGN	58,13 BGN	56,81 BGN	76,94 BGN

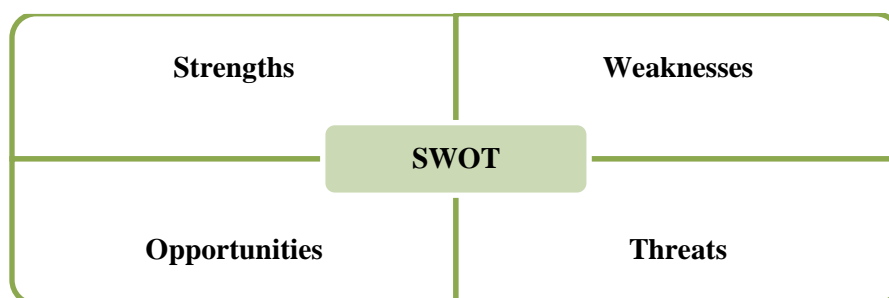
From the obtained results it can be concluded that even with a decrease in wheat yield of 20% and sales at the lowest prices for 2020 (first quarter), the balance remains positive, which means that the replacement is financially justified undertaking. If we allow sales at a yield above 20% higher than the national average, at prices in the fourth quarter, we will get a balance of BGN 76.94, which in practice means 69.8% more profit compared to the average profit from sunflower per decare for 2020, namely BGN 110.22.

#### MODEL FOR EVALUATION OF THE DYNAMIC METHOD FOR FINANCIAL RESOURCE MANAGEMENT IN AGRICULTURAL HOLDINGS

A qualitative model that can reliably evaluate the proposed method in the current study is the

SWOT analysis. Prospects for the development of grain production, possible threats (risks) are indicated and ideas for their overcoming are presented.

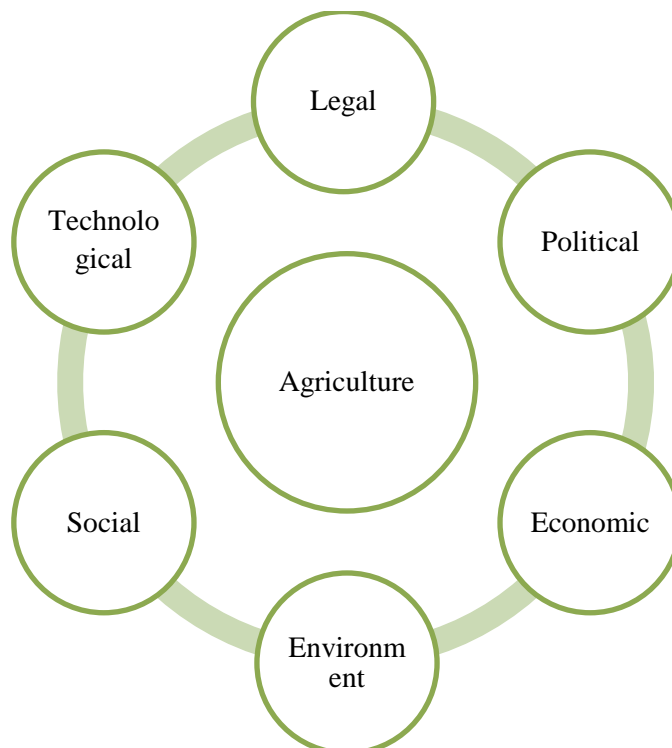
SWOT analysis is an easily applicable and useful framework for analyzing the strengths and weaknesses, opportunities and threats faced by the studied business unit, including in grain production. The technique of this type of analysis can be used in planning activities and assessing its condition at different intervals. This plan can help highlight key strengths in grain production and be used to achieve key opportunities and avoid threats. Revealing the weaknesses of grain production can help you choose strategies to overcome them.



**Figure 1.** Scheme of the factors in the SWOT analysis

PESTEL analysis is often used in parallel with the SWOT analysis, which is a variant of one of the common methods for analysis of organizations - PEST analysis. PESTEL analysis is used in strategic management to group macro-factors, thus making it easier to identify potential risks and opportunities. (7) This type of analysis has

been used to identify the benefits, opportunities and risks for wheat farmers. The factors considered in this analysis are part of the external environment, dividing them into political, economic, social, technological, environmental and legal (**Figure 2**).



**Figure 2.** Scheme of the factors in the PESTEL analysis

The dynamic model proposed in the study can be developed above its basic level, and in its improvement the influence of the following factors, elements of the external environment, which in the real economy would be determinants with a key role, is also taken into account.

**Economic** - Economic factors include economic growth, exchange rates, inflation, interest rates, disposable income of consumers and unemployment rates. These factors may have a direct or indirect long-term impact on consumer purchasing power and may change the supply / demand patterns in the economy. Therefore, it also affects the way farms evaluate their products and services.

**Political**- These factors relate to how and to what extent the government intervenes in the agricultural economy. This may include government policy, political stability or instability, corruption, foreign trade policy, tax policy, labor law, environmental legislation, trade restrictions, subsidies, and more.

**Environment** - These factors are particularly important due to the growing shortage of raw materials, pollution targets and carbon footprint targets set by governments. They mainly look at factors such as weather, climate, climate change, which directly affect agriculture.

**Social** - These factors give an indication of the local workforce and its willingness to work under certain conditions. This includes population trends such as population growth rate, age distribution, income distribution, career attitudes, emphasis on safety, health awareness, lifestyle attitudes and cultural barriers.

**Technological** - These factors refer to innovations in technology that may have a positive or adverse effect on industry and the market. This refers to technological incentives, the level of innovation, automation, research and development, technological change and the amount of technological awareness that the market has. These factors can influence the decisions of managers whether to enter a product in a market in the country or abroad.

**Legal** - Farms need to know what is and what is not legal in order to trade successfully and ethically. If an organization trades globally, this becomes particularly difficult, as each country has its own set of rules and regulations.

### **MAIN CONCLUSIONS**

- Budgeting is an important management process, without which any farm would fall into spending chaos, poor performance and inefficiency.
- The dynamic method for the management of investment financial resources in the agricultural holding gives accurate results from the economic effect when replacing 1 decare of sunflower with 1 decare of wheat.
- The method can also be used for an extended range of input data, such as different yields and different sales prices, giving even more concrete results.
- The method can be used to solve more complex problems, such as replacing an area with one crop with up to two or three crops.
- The method is subject to improvement and even more detailed results, adding the opportunity to study environmental factors.

*DIMITROVA M.*

In conclusion, it can be said that the presented method is a reliable tool for operational budgeting, with which farm managers can make informed management decisions with which to successfully invest and allocate financial resources in their farms.

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