

Artículo de investigación

Integrated budgeting at agricultural enterprises: functionality and management decision makingИнтегрированное бюджетирование на сельскохозяйственных предприятиях:
функциональность и принятие управленческих решений

Presupuestación integrada en empresas agrícolas: funcionalidad y toma de decisiones de gestión

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Written by:

Gamlet Y. Ostaev²⁶³**Oleg V. Kotlyachkov**²⁶⁴**Ekaterina V. Markovina**²⁶⁵**Nina A. Kravchenko**²⁶⁶**Marina V. Mironova**²⁶⁷**Elena V. Nekrasova**²⁶⁸**Elena A. Konina**²⁶⁹**Elena V. Alexandrova**²⁷⁰**Abstract**

In agriculture, issues of cost optimization and resource conservation play an important role both in setting correct and effective accounting and managing the agricultural business and in making strategic, timely and focused management decisions. Currently, more and more agricultural enterprises are striving to justify the long-term goal of developing their agricultural business. This fact largely forms the relevance of budgeting in the framework of the current state of the economy, which is in a stagnant state. The aim of the study was the development of budgeting methods for agricultural enterprises as a tool for accounting and analysis in the management of their activities. Nowadays, budgeting is one of the important elements of agricultural enterprise management concepts. Budgeting with an integrated approach as part of strategic budgeting in agriculture should take a leading position, as

Аннотация

В сельском хозяйстве вопросы оптимизации затрат, сохранности ресурсов, играют важную роль как в постановке правильного и эффективного бухгалтерского учета так и управления сельскохозяйственным бизнесом и принятии стратегических, своевременных и целенаправленных управленческих решений. В настоящее время все больше сельскохозяйственных предприятий стремятся к обоснованию долговременной цели развития своего сельскохозяйственного бизнеса. Данный факт во многом формирует актуальность осуществления бюджетирования в рамках современного состояния экономики, которая до сегодняшнего дня находится в стагнационном состоянии. Целью исследования являлось развитие методики бюджетирования для сельскохозяйственных

²⁶³ Candidate of Economic Sciences, Associate Professor of Accounting, Finance and Audit, Izhevsk State Agricultural Academy, 426069, Izhevsk, Studencheskaya Street, 11

²⁶⁴ Candidate of Economic Sciences, Associate Professor of Accounting, Finance and Audit, Izhevsk State Agricultural Academy, 426069, Izhevsk, Studencheskaya Street, 11

²⁶⁵ Candidate of Economic Sciences, Associate Professor of the Department of Economics of the Agro-Industrial Complex, Izhevsk State Agricultural Academy, 426069, Izhevsk, Studencheskaya Street, 11.

²⁶⁶ Candidate of Pedagogical Sciences, Associate Professor of the Department of Economic Cybernetics and Information Technologies, Izhevsk State Agricultural Academy, 426069, Izhevsk, Studencheskaya Street, 11.

²⁶⁷ Candidate of Pedagogical Sciences, Associate Professor of the Department of Economic Cybernetics and Information Technologies, Izhevsk State Agricultural Academy, 426069, Izhevsk, Studencheskaya Street, 11.

²⁶⁸ Candidate of Economic Sciences, Associate Professor of Management and Law, Izhevsk State Agricultural Academy, 426069, Izhevsk, Studencheskaya Street, 11.

²⁶⁹ Candidate of Economic Sciences, Associate Professor of the Department of Economics of the Agro-Industrial Complex, Izhevsk State Agricultural Academy, 426069, Izhevsk, Studencheskaya Street, 11.

²⁷⁰ Candidate of Economic Sciences, Associate Professor of the Organization of Production and Economic Analysis, Izhevsk State Agricultural Academy, 426069, Izhevsk, Studencheskaya Street, 11.

mathematical calculations are carried out, a market analysis is carried out taking into account all the features of accounting management and financial accounting and business management. In the research process, general scientific and special methods were applied: analysis, synthesis, abstraction, modeling, methods of systematization and generalization of the results. The objectives of the study were to assess the role of budgeting in agricultural enterprises; substantiation of the functionality of integrated budgeting; determination of the stages and types of economic decisions of integrated budgeting; development of a conceptual model for assessing the risk level of strategic budget alternatives. In accordance with the goals and objectives, the functionality of budgeting is substantiated, the stages and types of economic solutions for agricultural enterprises are determined. A conceptual model for assessing the risk level of strategic budget alternatives in agriculture has been developed. The proposed activities will help agricultural organizations to fully carry out activities, taking into account preliminary and competent budgeting, as well as budget alternatives.

Keywords: Budgeting, management, accounting, integral budgeting.

предприятий как инструмента учета и анализа в управлении их деятельностью. Бюджетирование сейчас выступает одним из важных элементов концепций по управлению сельскохозяйственным предприятием. Бюджетирование с интегральным подходом как часть стратегического бюджетирования в сельском хозяйстве должно занять ведущие позиции, так как осуществляются математические расчеты, проводится анализ рынка с учетом всех особенностей бухгалтерского управленческого и финансового учета и управления бизнесом. В процессе исследования применены общенаучные и специальные методы: анализ, синтез, абстрагирование, моделирование, приемы систематизации и обобщения полученных результатов. Задачами исследования являлись оценка роли бюджетирования в сельскохозяйственных предприятиях; обоснование функциональных возможностей интегрального бюджетирования; определение этапов и типов экономических решений интегрального бюджетирования; разработка концептуальной модели оценки уровня риска стратегических бюджетных альтернатив. В соответствии с целями и поставленными задачами обоснованы функциональные возможности бюджетирования, определены этапы и типы экономических решений для предприятий сельского хозяйства. Разработана концептуальная модель оценки уровня риска стратегических бюджетных альтернатив в сельском хозяйстве. Предлагаемые мероприятия помогут сельскохозяйственным организациям в полной мере осуществлять деятельность с учетом предварительного и грамотного бюджетирования, а так же бюджетных альтернатив.

Ключевые слова: бюджетирование, управление, бухгалтерский учет, интегральное бюджетирование.

Resumen

En la agricultura, los temas de optimización de costos y conservación de recursos juegan un papel importante tanto en establecer una contabilidad correcta y efectiva y en administrar el negocio agrícola como en tomar decisiones estratégicas, oportunas y enfocadas en el manejo. Actualmente, cada vez más empresas agrícolas se esfuerzan por justificar el objetivo a largo plazo de desarrollar su negocio agrícola. Este hecho forma en gran medida la relevancia del presupuesto en el marco del estado actual de la economía, que se encuentra en un estado estancado. El objetivo del estudio fue el desarrollo de métodos de presupuesto para empresas agrícolas como una herramienta de contabilidad y análisis en la gestión de sus actividades. Hoy en día, el presupuesto es uno de los elementos importantes de los conceptos de gestión de empresas agrícolas. La presupuestación con un enfoque integrado como parte de la elaboración de presupuestos estratégicos en la agricultura debe tomar una posición de liderazgo, ya que se realizan cálculos matemáticos,

se realiza un análisis de mercado teniendo en cuenta todas las características de la gestión contable y la contabilidad financiera y la gestión empresarial. En el proceso de investigación, se aplicaron métodos generales científicos y especiales: análisis, síntesis, abstracción, modelado, métodos de sistematización y generalización de los resultados. Los objetivos del estudio fueron evaluar el papel del presupuesto en las empresas agrícolas; fundamentación de la funcionalidad del presupuesto integrado; determinación de las etapas y tipos de decisiones económicas de presupuestación integrada; Desarrollo de un modelo conceptual para evaluar el nivel de riesgo de las alternativas de presupuesto estratégico. De acuerdo con las metas y objetivos, se fundamenta la funcionalidad del presupuesto, se determinan las etapas y los tipos de soluciones económicas para las empresas agrícolas. Se ha desarrollado un modelo conceptual para evaluar el nivel de riesgo de las alternativas presupuestarias estratégicas en la agricultura. Las actividades propuestas ayudarán a las organizaciones agrícolas a llevar a cabo actividades en su totalidad, teniendo en cuenta el presupuesto preliminar y competente, así como las alternativas presupuestarias.

Palabras clave: Presupuesto, gestión, contabilidad, presupuesto integral.

Introduction

Budgeting is widely used to improve the efficiency of management systems, which allows to form the most realistic programs for agricultural production and sales of agricultural products, most quickly respond to changes taking place in the market, and contributes to the creation of significant advantages in modern competition (Alborov et al., 2012).

Most agricultural enterprises achieve a certain level of success, while not spending a lot of work on carrying out formal planning. In addition, the implementation of planning does not provide a given level of success. However, carrying out formal planning can form a number of the most important and often the most important favorable factors for a given agricultural enterprise (Danilina and Ostaev, 2019; Ostaev, Klychova, Sokolova, 2018). The budgeting of agricultural activities in different organizations is done differently. This fact concerns the essence of the budget, the duration of the budgeting process, the sequence of budgeting, and the process of organizing budgeting.

Thus, the boundaries of the content of budgeting for different agricultural enterprises are completely different: in some cases, it is slightly wider than the budget of the sales department activity (Kokonov et al., 2019). At the opposite place is strategic budgeting, which is based on a broad consideration of the business strategy, which affects the development of integral budgeting, which covers the entire set of markets and products. Certain agricultural enterprises, especially those related to small business, may not have any plans or budgets to create, promote and provide products as a whole document that would include several types of plans (budgets). A business plan formed for the enterprise as a whole or for certain directions for its

development is the only planning (budgeting) document for these agricultural enterprises. In this plan, information is formed on the capacity of market segments, their market share; a characteristic of competitors and consumers is presented, barriers to entry into this market are characterized; forecast estimates of sales for the next few years are compiled and presented (Ostaev, Khosiev, Sokolov, 2018; Ostaev, Klychova, Sokolov, 2019).

The aim of the study is to develop a budgeting methodology for organizations of the agro-industrial complex as an instrument of accounting and analysis in the management of their activities.

The objectives of the study are: to evaluate the role of budgeting in organizations of the AIC system; justification of the functionality of integral budgeting; determination of the stages and types of economic decisions of integral budgeting; development of a conceptual risk assessment model of strategic budget alternatives. Budgeting problems are addressed by many authors such as R.A. Alborov S.M. Kontsevaya, G.S. Klychova (Alborov R.A., Kontsevaya S.M., Klychova, 2017), L.I. Khoruzhiy, Yu.N. Katkov, D.M. Poletaeva (Khoruzhiy, Katkov, Poletaeva, 2018), V. B. Ivashkevich (Ivashkevich, 2006), B.N. Khosiev (Khosiev, 2013), S.R. Kontsevaya (Kontsevaya, 2010), O.O. Zlobin, I.A. Selezneva, I.P. Selezneva (Zlobina, Selezneva, Selezneva, 2010) and others. However, the functionality of budgeting for the purposes of agricultural enterprises require development.

The material and method

The object of the research is budgeting using an integral approach (integral budgeting) as a tool for management, accounting and analysis of organizations in the AIC system. In the process of research, general scientific and special methods were applied: analysis, synthesis, abstraction, modeling, methods of systematization and generalization of the results obtained.

Integral budgeting as part of strategic budgeting is budgeting with elements of mathematical analysis. It is an important component of accounting and management of an agricultural enterprise.

Integral budgeting in accounting and management activities affects the expansion of agricultural production and product sales by conducting mathematical and analytical research (identifying the requests of target consumers). In this case, the important thing in the integral

budgeting is the target orientation and complexity that is, combining business, production and marketing activities of an agricultural enterprise in one space.

The modern experience of foreign enterprises shows that the use of certain constituent elements of budgeting does not create the desired effect (Gogolev and Ostaev, 2018). An integrated approach helps to effectively influence the market with the penetration of it with new agricultural products or original services. An agricultural enterprise must always function taking into account that its goals and product range constantly maintain a high level of demand for this market. To achieve the latter goal, an agricultural enterprise needs to periodically review its strategic, target and tactical installations (Ostaev, Klychova, Nekrasova, 2018).

Integral budgeting performs certain functions presented in Fig. 1.

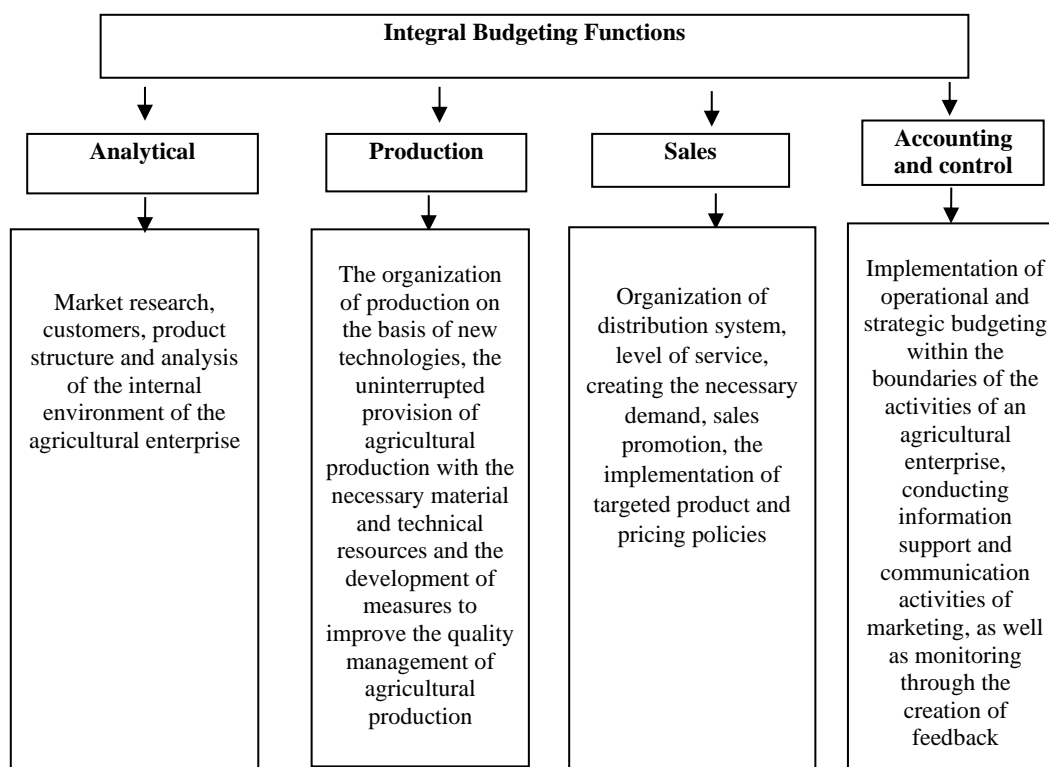


Fig. 1. The functionality of integral budgeting (made by authors)

Analyzing these functions, it is necessary to determine the conceptual relationship between the accounting and management functions, their main regularity - the formation of rhythm and efficiency of agricultural production and aggregate goals (Gogaev et al. 2019). Evaluating this relationship, it is possible to form the process of managing and drawing up integral budgeting as a sequence of actions that consist in passing the following elements:

- Mathematical (comprehensive) analysis of market opportunities of an agricultural enterprise;
- Selection of target markets;
- Development of an aggregate set of strategies;
- Implementation of strategic activities.

The following stages of the management and budgeting process in an agricultural enterprise can also be proposed:

- Determination of the purpose of the agricultural enterprise on the basis of the study of the internal and external environment (analysis of the strengths and weaknesses of the enterprise);
- Formulation of the objectives of the strategy of the agricultural enterprise (analysis and implementation of the choice of agricultural products);
- Carrying out mathematical analysis and comprehensive market research (identification of possible markets);
- Planning of new products and forecasting the capacity of the market for functioning (ranking of certain markets, conducting a thorough analysis of certain markets);
- Implementation of strategic decision making (plan development and execution of the plan);

- Carrying out control over the complex of decisions of an agricultural enterprise (monitoring the execution of the plan and carrying out control).

The most dynamic changes in the markets taking place today lead to an increase in competition, which affects the fact that agricultural enterprises operating in this market can no longer rely on the use of intuitive working methods. Accordingly, the accounting and management decisions of agricultural enterprises should be based on a well-thought-out market strategy, which is aimed at the formation and implementation of certain competitive advantages.

This fact implies a clear coordination between all accounting and economic services of an agricultural enterprise. This, in turn, helps to most effectively use the resources of the agricultural enterprise, to work in this market more efficiently, which will lead to the formation of the necessary base to ensure the competitiveness of the enterprise, strategic stability.

Integral budgeting is a formalized process that focuses on the main mission of an agricultural enterprise, which involves the development and implementation of a cumulative complex of interrelated actions aimed at strengthening the competitive position of this organization in the existing market. Integral budgeting is a process that involves the formation of the goals of the enterprise and their use, all the necessary resources for a given production, associated with the acquisition, distribution and use of them.

The approximate list of management, strategic and operational decisions for integral budgeting, which are made in agricultural enterprises, is presented in Table 1.

Table 1. Types of decisions to be made in an agricultural enterprise with integral budgeting

Nº	Solutions	Strategic	Management	Operational
1	Problem	Determining the type of market and product that optimize the main financial indicators on the effectiveness of the enterprise	Structuring and distribution of enterprise resources in order to maximize their effective use	Optimization of financial indicators for return on investment
2	The essence of the problem	Allocating resources to alternative markets and products	Organization of the acquisition and development of resources	The distribution of resources in the most important functional areas, the formation of plans for their consumption, management and control
3	Key decisions	Formation of goals and objectives. Market policy in the area of each strategic area of management, by target markets Applying a diversification strategy. Apply growth strategy. Applying strategy regarding the market environment. Applying administrative strategy. Applying financial strategy.	Organization: structuring authority and information. Structure of enterprise resource consumption: a system of workflows, distribution systems, the location of industrial premises. Acquisition and development of resources: measures for their financing, construction, equipment, personnel.	Formation of operational goals and objectives. Strategy and decision on a set of activities for each target market. Operational levels: production schedule, research, activities, the formation of the necessary inventory levels. Control
4	Main characteristics	The adoption of centralized decisions, lack of information, while all decisions are not repeated, decisions do not lead to the formation of such decisions	Conflict between strategy and current actions is possible. Interdependence between economic and social factors	Decentralization of decisions. The presence of risk and uncertainty. The huge volume and complexity of the decisions

*Made by authors

The implementation of integral budgeting should be carried out in agricultural enterprises at three levels: the corporate level, business and functional level.

Integral budgeting at the corporate level resolves issues in which market an agricultural enterprise needs to act, it also determines corporate goals, the resources required for this, and their placement to achieve marketing goals.

Integral budgeting at the level of the business sphere carries out the decision on the basis on which the agricultural enterprise will compete in this market and provide guidance on how different functional areas will interconnect (for

example, marketing, production, finance and personnel management).

Integral budgeting at the functional level produces the development of short-term strategies for conducting strategic budgets that have been developed at the organizational level and the business level. Successful coordination of the budgeting process at these levels helps the agricultural enterprise to determine the effective allocation of its resources and optimally coordinate the economic interests of the enterprise and the needs of the consumer.

Budgeting is the most important function of accounting and management activities. Accounting and management activities, in

addition to budgeting, should also include the implementation of the strategy, evaluation and corporate control over the implementation of the strategy.

We present the algorithm of annual budgeting using an integral approach (Fig. 2).



Fig. 2. The process of annual budgeting with an integrated approach.

According to Peter R. Dixon (Dixon, 1998), the same course of action should be followed for marketing planning purposes.

Annual budgeting has its drawbacks, as it is developed at the beginning of the year for the entire period (12 months). To compensate for the shortcomings of the listed approaches to risk assessment of budget strategies, a method is proposed based on the use of the method of analytical and statistical tests. The essence of the proposed method is discussed below.

A more accurate risk assessment can be obtained if the probability distribution of the parameters of the agricultural enterprise is known. Distribution can be obtained on the basis of statistical data on the activities of an agricultural enterprise for several previous periods. If an agricultural enterprise does not have such statistics or it is insufficient for an accurate assessment of the distribution parameters of the studied indicators, then it is proposed to use the above described simulation model of the enterprise, based on the Monte Carlo method. Using the Monte Carlo method, it is possible to determine the type and parameters of the distribution of the studied indicators of the functioning of an agricultural enterprise on the basis of modeling a business situation, conducting a series of independent implementations of the algorithm of functioning of the production system.

Within the framework of the simulation, the entire space of changes in the parameters of the production system is “probed” successively and the values of the output indicators are calculated for each set of parameters. A large number of independent tests provide a significant number of possible options for the state of the environment and the production system to be taken into account when planning. This allows achieving sufficient accuracy of estimates of the probability of success or failure of the strategy.

Results and discussion

The analysis of the considered methods for assessing business risks leads to the conclusion that not a single method has won the “immaculate status” today, and therefore, further improvement seems to be relevant.

Using the Monte Carlo method, accounting analysts have the opportunity to quantify the probability of success or failure of various budget strategy options and choose such a strategy to enable an agricultural enterprise to achieve the lowest risk targets in the planned (budget) period. For scenario analysis, we have developed a risk assessment methodology for implementing strategic alternatives (Fig. 3).

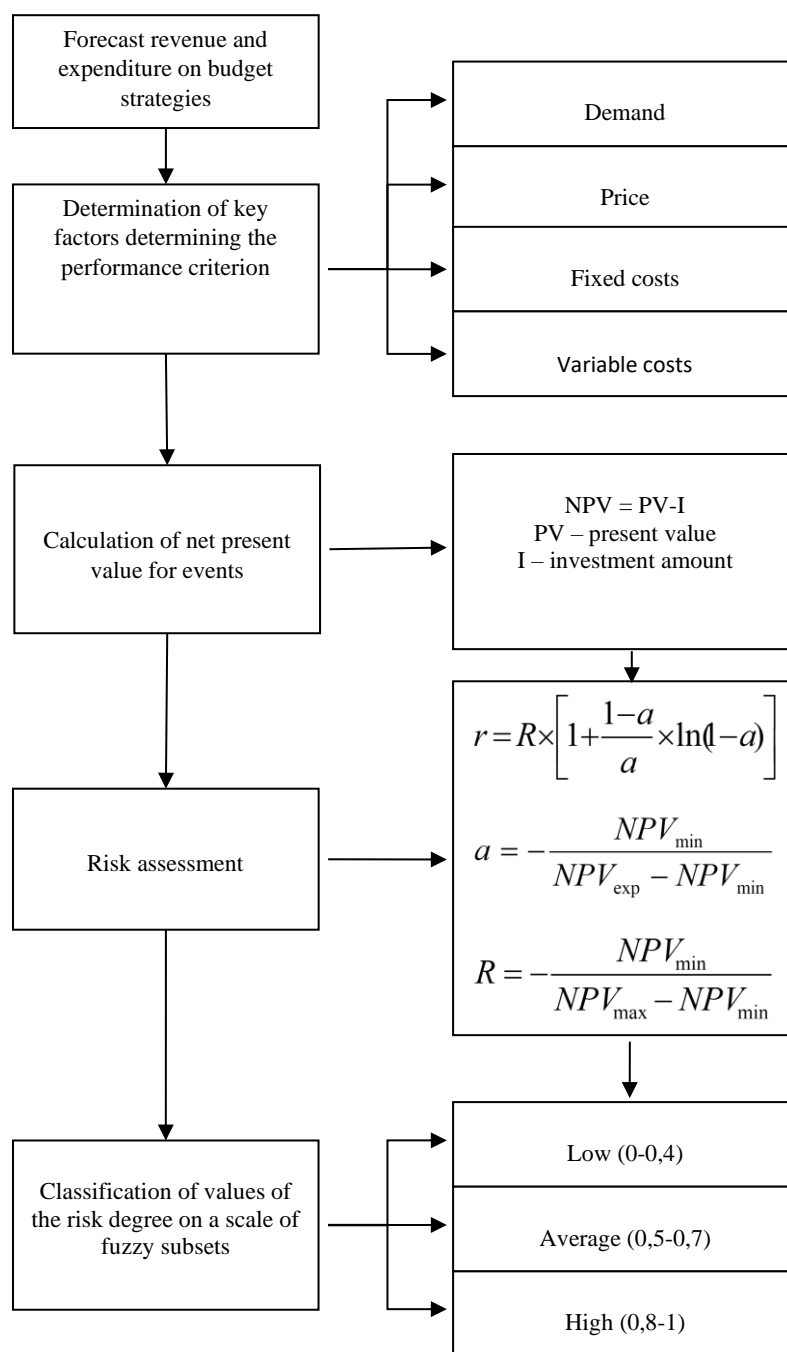


Fig. 3. Methodology for assessing the level of risk of strategic budget alternatives (made by authors)

Agriculture has a high degree of uncertainty, as it depends on climatic and weather conditions.

It is very difficult to predict which agricultural products will be successful in the market and which will not be in demand. Therefore, agricultural enterprises should carefully analyze strategic decisions to avoid mistakes and thereby reduce risk at earlier stages of budget implementation.

When budgeting, it is necessary to realize and understand which strategies are more profitable for an agricultural enterprise; therefore, we suggest using the net present value indicator for calculations.

Conclusions

An analyst who makes a strategic decision, according to his preferences, can classify the values of the degree of risk on a scale of fuzzy

subsets, giving them linguistic descriptions: minor, low, medium, high, unacceptable.

Thus, risk assessment is an important part of preventive control and testing the viability of a budget strategy. The risk assessment methodology developed by us will allow a more reasonable approach to the choice of a budget strategy and can be used in the economic practice of agribusiness entities and in the development of strategic programs at the level of economic entities and at the state level.

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