ECONOMICS

MODELING OF THE AGRIBUSINESS ENTERPRISE ACTIVITY ON THE BASIS OF THE BALANCED SCORECARD

E. A. Fedulova[a], A. V. Medvedev[b,*], P. D. Kosinskiy[c], S. A. Kononova[a], and P. N. Pobedash[b]

[a] Kemerovo State University,
Krasnaya Str. 6, Kemerovo, 650043 Russian Federation

[b] Plekhanov Russian University of Economics, Kemerovo branch,
Kuznetskiy Pr. 39, Kemerovo, 650992 Russian Federation

[c] Gorbachev Kuzbass State Technical University,
Vesennyaya Str. 28, Kemerovo, 650043 Russian Federation

* e-mail: alexm_62@mail.ru

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Abstract: In contemporary economic conditions, when enterprises function in the environment of uncertainty, the search of new approaches to strategic management of enterprises becomes the objective of the management level. The formation of the mechanism of enterprise management improvement, which allows adapting management system to the changes of external environment, providing their high performance and competitiveness, is a very topical objective. The article substantiates the advisability of applying the balanced scorecard (BSC) for strategic enterprise management. The paper determines the sequence of using the balanced scorecard to assess the effectiveness of the strategies implementation of agribusiness enterprises. The authors have designed the economic-mathematical model of activity of manufacturing enterprise in the form of a multi-parameter problem of linear optimum management. It allows evaluating the strategy of its development considering the peculiarities of the agribusiness enterprise and the concept of BSC. The specified model has been approved by the example of an operating enterprise. With the help of automated software product numeric experiments have been conducted, describing various scenarios of the development of the agribusiness enterprise on the basis of the multi-parameter analysis of a number of key components of BSC, with the aim to reveal their mutual connection in the optimum regime. The authors draw conclusions about the advisability of accounting revealed parameter correlations and regularities while making a strategic map of BSC. It is stated that the application of BSC may be the basis for methodology of development and administrative decision making both at the present moment, and in the strategy of agribusiness enterprises management taking into account the specificity of their development.

Keywords: balanced scorecard (BSC), math modeling, strategic management, food resources (food)

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INTRODUCTION

Contemporary conditions of economic management, necessity to implement the policy of import substitution in the area of food security, caused by sanctions which were introduced by the West towards Russia, require reconsideration of established practice of managing agribusiness enterprises, condition the necessity of working-out scientifically substantiated recommendations to improve the efficacy of their manufactory-commercial activity. Worn-out state of capital assets, the lack of financial resources, the use of outdated technologies, low level of management are characteristic to the majority of contemporary agribusiness enterprises, that hampers significantly their development.

The improvement of agribusiness enterprise management is one of the primary objectives of effectiveness increase of their commercial activity. It is conditioned firstly by the competition strengthening on the part of foreign commodity producers, and also by the high dynamics of business environment development. The economy management in market conditions requires from business management the assimilation of mechanism of the development and strategy realization, adaptation of the current activity to strategic goals, search of new means of efficiency evaluation of effectiveness of business entities functioning.

In this connection in front of the heads of the enterprise the solution of the problem of the mechanism formation of management improvement,

which allows adapting the management system to the changes in the external environment in the conditions of uncertainty, providing their high performance and competitiveness, is very topical.

According to the authors this problem may be solved by applying the balanced scorecard (BSC) in management. It presents an innovative approach to management and allows defining the goals of enterprise development more precisely for short-term and long-term periods, coordinating all subjects' interests, which operate in the agricultural sector, and making more informed and qualitative managerial decisions.

The methodology of effectiveness assessment of organizations' strategies should be based on tools, which provide the strategy implementation in the course of a current activity. The balanced scorecard is the classical tool of practical realization of strategies [1, 2, 3]. Clearly, BSC as the technology of strategy realization is considered neither the only true, nor reliably effective, but it is a very widely spread and has become one of the standard solutions. BSC includes several key components – structuring the organization activity as a single system in four interconnected prospects (financial, cliental, internal processes, teaching and growth), building a strategic map, which reflects strategic goals in the context of these prospects and interconnection between them, the formation of corresponding goals of administrative indicators [1, 3].

BSC is applied at all stages of a management cycle – starting from targeting and planning and finishing with the analysis, control that allows using it to assess the effectiveness of strategies realization. BSC reflects an integral approach to managing a complex system. It is in the fact that a clear logic of interconnection of strategic goals and indicators is built, the factors and conditions of final results achievement become clear. The most important feature of BCS, from the authors' point of view, is not only the presence of goals and indicators in various aspects of activity, but cause-effect connections between them. They show what and in what sequence should be done (and also what shouldn't be done, since it doesn't contribute to the achievement of strategic goals). It allows putting all actions in their places, determining their significance and priority. While designing a strategic map and selecting indicators it becomes obvious what strategic goals as if "are hanging in the air", not being backed with the goals of underlying perspectives, and also what underlying goals don't make contribution into the achievement of final results [4].

In contemporary economic conditions of management, the balanced scorecard is more frequently used for management of organizations, since an effective management based only on financial indicators becomes impossible. BSC allows uniting and varying financial and nonfinancial indicators of effectiveness [5]. This system may reflect all basic business processes and include internal indicators of the organization activity, through which one can regulate the market changes, the degree of consumer satisfaction, and also evaluate the development strategy of organization and its realization in the real scale of time. Despite positive moments of application, BSC requires specification and highlighting the specificity for each sector of economics. The activity of agribusiness enterprises, as a rule, is characterized by seasonality and high risks, and in consequence, the introduction of BSC requires a specific algorithm of application [6].

Representing a perspective model of strategic management, BSC allows: transferring the development strategy of agricultural organization in the system of measurable indicators and determining the sequence of actions in achieving their target values; influencing the system of personnel motivation, since formulated goals for the personnel have an impact on their behavior. At a correct goal definition, the personnel begin to understand their contribution into the achievement of company's strategic goals, thus the possibility of realization of the developed strategy is increased.

The system of key indicators of effectiveness is a tool of dataware of the process of managerial decision-making, the determination of the organization's goals taking into account how much the achievement of the set goal increases the company's worth, the availability of information system, which is the source of data and the base for defining the key indicators of effectiveness. When evaluating the effectiveness of structural units, it is necessary to reconsider the principles of stimulation of structural units, since the evaluation system of key indicators of effectiveness is limited to the assessment of the activity of each of them [7, 8, 9].

It should be noted that BSC isn't the instrument for strategy development, and is used only for the realization of an existing strategy [10, 11]. On the basis of verbal or another presentation of a ready strategy the strategic map is built, which is the foundation for BSC. If the organization strategy itself doesn't have a balanced character, it doesn't reflect various aspects of achievement of final goals, it is impossible to correct this shortcoming by means of applying BSC [4].

The main problem of effectiveness evaluation of strategy implementation based on BSC is to form data support of the calculation of indicators. BSC, according to its authors, causes essential difficulties in part of selection, in a certain sense, nonstandard, innovative indicators, which were not used in the management practice earlier (to the greatest extent it concerns leading indicators of perspectives "training and growth", "internal processes"). There are no ready patterns or tools in this sphere (at least, in the press). Besides, the appearance of new indicators requires the presence of new data in the information-communication model.

On the basis of examined approaches to defining the composition of indicators [12, 13, 14], we can draw conclusions that while developing and introducing BSC in the agribusiness enterprises of any section, one shouldn't limit oneself only by one area of activity (management accounts, personnel, the quality management system), the complex approach is necessary. The selection of indicators depends on specialization of the enterprise activity, and also on its management goals.

In general, the process of introduction of BSC in an enterprise includes the implementation of the following stages:
(1) Goal setting, the achievement of which will contribute to the realization of mission and enterprise strategy (balance).
(2) The determination of indicators, for measuring the level of achievement of each goal.
(3) Working-out activities that should provide a desired level of indicators (cascading).
(4) Introduction of BSC in the current enterprise activity.

The strategic goals of the company are "decomposed" in the set of company indicators and on this basis the strategic map of BSC is built [15]. The strategic map of the balanced scoreboard of the agribusiness enterprise is the scheme of strategy description as an iterative process, which allows an organization's specialist to formulate, specify, correct strategic goals and their modification with the help of intraeconomic decomposition methods.

However, the practice of building a map of the balanced scorecard of the enterprise activities is associated with a number of interrelated problems: the selection of strategic indicators and their distribution according to perspectives, the detection of interconnections of indicators inside one and higher perspective, the detection of the strength of interconnection between indicators; building the map in a science-based manner, but not approximately "by eye", relying often only on the practical experience.

We propose to highlight the following levels of solutions of above mentioned problems:
(1) Development of the system of indicators and detection of their target values.
(2) Multi-parameter analysis of enterprises activity taking into account BSC with the aim to reveal their mutual connection optimally.
(3) Detection of the interconnection strength between indicators and the balance of the cost according to perspectives of BSC.
(4) Building the strategic map and development of the support systems of decision making at the strategic enterprise management based on the BSC.

The consecutive solution of enumerated problems will allow working out science-based approach to building the map of BSC of the enterprise, developing typical maps of BSC and carrying out the support of decision making at strategic enterprise management of various sector orientation.

The recommended compositions of indicators of BSC for agricultural enterprises and the food industry enterprises are reflected in the works [7, 15, 16, 17] and may serve as the foundation for the solution of the second level problem, which is presented in the experimental part of our research. It should be noted that the positive solution of the second level problem may allow detecting the cost balance according to perspectives, the strength of interconnection between the indicators of BSC, that will give the opportunity to build typical strategic maps based on the objective, automated instrument.

OBJECTS AND METHODS OF STUDY

The research object of this paper is the agribusiness enterprise. The subject of the research is the efficiency evaluation of functioning of the enterprise under consideration from the point of view of BSC according to the criterion of the maximum of the present value at a given planning horizon. The goal of the study is modeling of agribusiness companies based on the balanced scorecard for detecting their optimum parameters.

The paper uses the following methods of research:
(1) economic-mathematical modeling of activity of the manufacturing enterprise;
(2) numeric investigation of the built model with the use of the software package "KARMA", described in the work [18];
(3) construction of algorithms of detecting the potential, presence and the strength of interconnection between the indicators of activity and building the strategic map of industrial enterprise with the use of BSC.

Given the above, the following algorithm of the study is offered:
(1) to select target indicators according to perspectives;
(2) to describe real numeric values of financial indicators;
(3) to describe the activity of an industrial enterprise in the form of a multi-parameter problem of linear optimum management;
(4) to investigate the constructed model with the help of a financial-analytical automated information system;
(5) to interpret the received results.

The economic-mathematical model of the enterprise activity is designed considering the following prerequisites. The implementation of the principle of pure industries is supposed: one team of workers produces one kind of goods at one type of the fixed production assets. The profit is calculated as the balance of income (aggregate revenue from products sale) and expenditure (depreciation of fixed production assets, renumeration of labor, taxes, material and financial costs, advertising and personnel training). An expert specification of a number of indicators of activity and characteristics of external environment of the enterprise is supposed. To detect the potential of its activity the problem of optimum management in the form of linear programming problem is formulated.

Let's introduce the following nominations for the economic-mathematical modeling of the activity of the agribusiness enterprise:
PV – present value of the enterprise;
n – quantity of kinds of products; k=1,…,n;
x_k – quantity of production workers of k product, x_{n+k} – production output of k product, x_{2n+1} – volume of credit, x_{2n+2} – volume of grants;
c_k – value of k fixed production assets [monetary unit/unit of fixed production assets];
P_k – product cost, produced in k fixed production assets, [monetary unit/product unit];
T_k – time of beneficial use of k fixed production assets [time unit];
q_k – actual demand on the product, made in k fixed production assets, for the period T, [time unit/product unit];

θ_k – material costs for the production of the product unit of k type [monetary unit];
V_k – worker efficiency of k fixed production assets for the period T, [product unit/worker unit];
S_k – productive wage, working on fixed production assets of k type for the period T [monetary unit /worker unit];
α_i (i=1,2,3,4) – taxation rates on the added value, property, profit and insurance contributions in state extra-budgetary funds correspondingly;
β_1 – share of proceeds from industry sales, spent on advertising;
β_2 – share of proceeds from industry sales, spent on personnel training (retraining);
T_0 – credit term [unit of time];
r_0 – annual credit rate;
S_{max} – maximum credit sum [monetary unit];
Dot_{max} – maximum grant sum [monetary unit];
DS^0 – initial amount of a producer's capital [monetary unit];
T – planning horizon [unit of time];
r – discount rate;
R – net sales of all products [monetary unit].

Using the introduced nominations and indicators, mathematical model of the enterprise activity takes the form of the following multi-parameter linear programming problem:

$$\sum_{k=1}^{n}\rho_k x_k - (1-\alpha_3)\sum_{k=1}^{n}\sigma_k x_{n+k} - \frac{r_0\ 12T_0+1}{24}\ x_{2n+1} - x_{2n+2} \le DS^0, \quad (1)$$

$$x_{n+k} \le V_k x_k, \quad (2)$$

$$P_k\ x_{n+k} \le q_k, \quad (3)$$

$$x_{2n+1} \le S_{max}, \quad (4)$$

$$x_{2n+2} \le Dot_{max}, \quad (5)$$

$$x_m \ge 0 \qquad (m=1,\ldots,2n+2), \quad (6)$$

$$PV = \frac{T}{1+r_э}\left(-\sum_{k=1}^{n}\rho_k x_k + (1-\alpha_3)\sum_{k=1}^{n}\sigma_k x_{n+k}\right) \to max, \quad (7)$$

where $\rho_k = c_k(1-T/T_k)+(1-\alpha_3)\varphi_k$, $\varphi_k = c_k(\alpha_2+(1-\alpha_2)T/T_k)+$ $+(1+\alpha_4)S_k$, $\sigma_k = (1-\alpha_1-\beta_1-\beta_2)P_k - \theta_k$, ($k$=1,…,$n$),

$1+r_э = rT \Big/ 1-(1+r)^{-T}$,

r_e – efficient discount rate, considering dynamic peculiarities of the indicator of present value PV, in assumption of approximate uniformity of exercising expenses and receiving income per time.

Let's make some observations concerning correlations of the presented model. The inequation (1) reflects the condition of the enterprise solvency; (2), (3) – correspondingly the conditions of limitation of volumes of produced commodities to the level of the production capacity of fixed production assets (or, otherwise, the level of scientific-technical progress) and the level of cost demand on the production on the whole planning horizon. The inequations (4), (5) reflect limitations on the volumes of the enterprise activity financing, and (6) – natural restrictions of meaningful non-negativity of variables. The condition (7) maximizes the present value PV of the enterprise.

The model (1)–(7) is adapted to the analysis of the agribusiness enterprise activity. In particular, it contains parameters, considering:
– high material cost of agricultural production (through the parameters θ_k);
– high wage capacity (through the parameters S_k);
– increased lifetime of fixed production assets in agribusiness (through the parameters T_k);
– peculiarities of demand, being characterized by relative constancy, on the production of agricultural enterprises (through the parameters q_k);
– subsidized character of agribusiness enterprises (through the parameter $Dot_{max)}$. Besides, the possibility of application of special tax treatments is admitted, particularly, unified agricultural tax for agricultural enterprises, essentially decreasing the tax burden on agricultural commodity producers and primary processor of agricultural raw materials.

Thus, the model (1)–(7) connects key components of BSC, considers the interaction of flows of material (the number of workers and production volume) and nonmaterial (financial, advertising activity, personnel training activity) character. It allows accumulating personnel experience and knowledge, paying attention to financial stability, production development, the increase of the customers' quantity. Along with that, considering the multi-parameter character of the model (1)–(7), the decision maker has an opportunity to conduct practically unlimited number of numeric experiments according to the multi-parameter analysis of BSC.

RESULTS AND DISCUSSION

Let's examine the application of the model (1)–(7), from the point of view of BSC, by the example of the operating enterprise of an agricultural sector – pig complex, which produce two types of products (n = 2): meat in live weight on a pig farm and meat in carcass weight at slaughter hall. The approbation of the model has been done by the example of the activity of the limited company of agro-industrial complex "Chistogorskii", situated in the village Chistogorskii of the Novokuznetskii District, Kemerovo Region. The enterprise is the largest farm in the animal production and meat processing in the region. At present "Chistogorskii" Ltd. acts successfully as an industrial complex. It is built for growing 250 thousand pigs a year that makes more than 22 thousand tons of meat in live weight or 15 450 tons in carcass weight. It is the leading enterprise of the Western Siberia for breeding of highly productive breeds: Kemerovo and Krupnaya Belaya (have the status of stud farm), Landras and Dyurok (the status of breed reproducer). Since 2013 "Chistogorskii" Ltd. has been the first and the only one enterprise in Russia, which has been producing pure breeding of the super-meat pig breed "P'etren". The data for the model are taken from financial-economic accounting of the commodity producer for 2014 (Table 1).

Table 1. Target values of the balanced scorecard for "Chistogorskii" Ltd.

Perspective	Objective	Nomination of activity indicators	Method of calculation / comments	Indicators value at 1.01.2015 г.	Units of measurement
Finances	Maximization of the present value	PV – Present value	balance on incomes and costs, discounted on the whole planning horizon T at the rate r	r=30	thousand of rubles per cent
		α_i (i=1,2,3,4) – taxation rates on added value, property, profit and insurance contributions in state extra-budgetary funds correspondingly	α_1 – taxation rates on the added value, Chapter 21 of the Tax Code of the Russian Federation α_2 – taxation rates on property, Chapter 30 of the Tax Code of the Russian Federation α_3 – taxation rates on property, Chapter 35 of the Tax Code of the Russian Federation α_4 – insurance contributions in state extra-budgetary funds, Federal Law from 24.07.2009 No. 212-FZ "On insurance contributions into the Pension Fund of the Russian Federation, Fund of Social Insurance of the Russian Federation, Federal Fund of Compulsory Medical Insurance" *or* α'_3 – unified agricultural tax, Chapter 26.1 of the Tax Code of the Russian Federation	α_1=18 α_2=2.2 α_3=20 α_4=30 α'_3=6	per cent
		T_0, r_0, S_{max} –credit term, annual credit rate and maximum credit sum correspondingly	T_0 – at the request of the borrower r_0 – by agreement with the creditor S_{max} – according to the method of creditor	T_0= 5 r_0 = 30 S_{max} = 60 000	years, annual interest rate, thousand rubles
		Dot_{max} – maximum grant sum	according to the organization accounting	96 935	thousand rubles
		DS^0 – initial amount of a producer's capital	according to the owner's decision	2 000	thousand rubles
	Ensuring current solvency	Positive monetary flow	check of the non-negativity of the current amounts of finance means (profits, credits, grants, DS^0)	≥ 0	thousand rubles
Clients	Increase of marketing research of food market	β_1 – share of proceeds R from industry sales, spent on advertising	up to 5% from turnover – refers to cost; over 5% - after profits tax payment, chapter 25 of the Tax Code of the Russian Federation	no data	per cent
		Customers satisfaction from manufactured products: q_1 – actual demand on the product 1 for the period T; q_2 – actual demand on the product 2 for the period T	according to the data accounting of the organization	q_1 – 965 876 q_2 – 955 411	thousand rubles
Processes	Cost reduction	Product cost: P_1 – cost of product unit 1; P_2 – cost of product unit 2	marketing assessment and management accounting data, according to the data accounting of the organization	P_1 = 0.1 P_2 = 0.11	thousand rubles / product unit
		Material costs: θ_1 – material costs for the production of a product unit 1; θ_2 – material costs for the production of a product unit 2	accounting data and the analysis of business processes of the enterprise, according to the data accounting of the organization	θ_1 = 0.087 θ_2 = 0.092	thousand rubles
Personnel	Training of employees	β_2 – share of proceeds from industry sales, spent on personnel training (retraining)	according to the data accounting of the organization	no data	per cent
	Work efficiency	Worker efficiency: V_1 – worker efficiency of the pig farm for the period T; V_2 – work efficiency of the slaughter hall for the period T	the analysis of business processes of the enterprise, according to the data accounting of the organization	V_1 = 195.3 V_2 = 1 365	pigs on one worker centner on one worker

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To solve the task of application of BSC to the analysis of the agribusiness enterprise activity classical perspectives of BSC ("Finances", "Clients", "Processes" and "Personnel"), and also target values of the balanced scorecard, considering the specificity of the enterprise under examination, corresponding to them parameters and some methods of their calculation in the presented model are highlighted in the chart.

It should be noted that in the proposed model there is the balance between strategic and operating levels of management, the elements of all components, used in the BSC, are considered:

(1) the perspective "Processes" (optimum quantities of workers and manufacture of products are defined, the indicators of product cost, material expenses vary and etc.) is described with the help of generally accepted methods of assessment of manufacturing projects efficiency;

(2) the perspective "Finances" is described through the variables, determining the optimum volumes of loan resources, grants, whereas the condition of nonnegativity of equity capital guarantees the enterprise solvency on the whole planning horizon;

(3) the perspective "Clients" is described through the restrictions of production volumes with the level of consumer demand, and also the level of costs on the product advertising;

(4) the perspective "Personnel" is described through the parameters of costs on personnel training and labor efficiency.

The authors have conducted the theoretical and numeric model analysis (1)–(7). In particular, it is proved that there is the existence of solution in the presented model in all capacities of the change of its variables and parameters. The numeric analysis has been executed with the use of software package, described in the article [9]. The mentioned package represents the complex of automated information system of entering, processing and analysis of entrance information, solver and multi-parameter curve analyzer of solutions of one- and many criteria problems of linear programming.

Software package is oriented on various users. It allows a specialist mathematician to create and correct mathematical models in the form of many criteria problem of linear programming, and also to control the accuracy of entering information. It allows an economist-analytic, businessman to create one's own project configuration in a friendly manner (highlighting blocks of assets characteristic, products, project external environment, financial block and etc.), to put down entrance statistic and expert information, to present results of calculations both in the form of charts of multiparameter dependencies, and in the form of Pareto-sets in the criteria space (two or three criteria). To the significant advantages of the package one may refer the speed of calculations, which allow applying it for the operative analysis of socio-economic phenomena and systems in the framework of situation centers of expert managerial decision making.

Below there are examples, illustrating the results of optimization analysis and revealing the interconnection of parameters of activity of the chosen agricultural enterprise taking into account BSC.

In Fig. 1 you can see curves of dependencies of the current present value *PV* of the enterprise on the share of proceeds from product sale, used for personnel training (retraining) β_2, and changes of the average demand level *q* on the products. The analysis of the figure lets the decision maker to answer several questions. Firstly, evaluate the potential of the enterprise activity (in the form of its present value *PV*) on the planning horizon, depending at once on two (significant in BSC) parameters – changes of the costs levels on the personnel training and demand levels on the product. Secondly, from the figure, the optimum threshold values $\beta_2 \in (0 \div 0.12)$ are visually defined for the costs parameter on the personnel training, which may suit or not suit the decision maker and be the basis for the support of current and strategic decisions of allocating financial resources on the mentioned cost item. The similar analysis, conducted, for example, according to the parameter β_1 (costs on product advertising), has shown the optimum range $\beta_1 \in (0 \div 0.07)$.

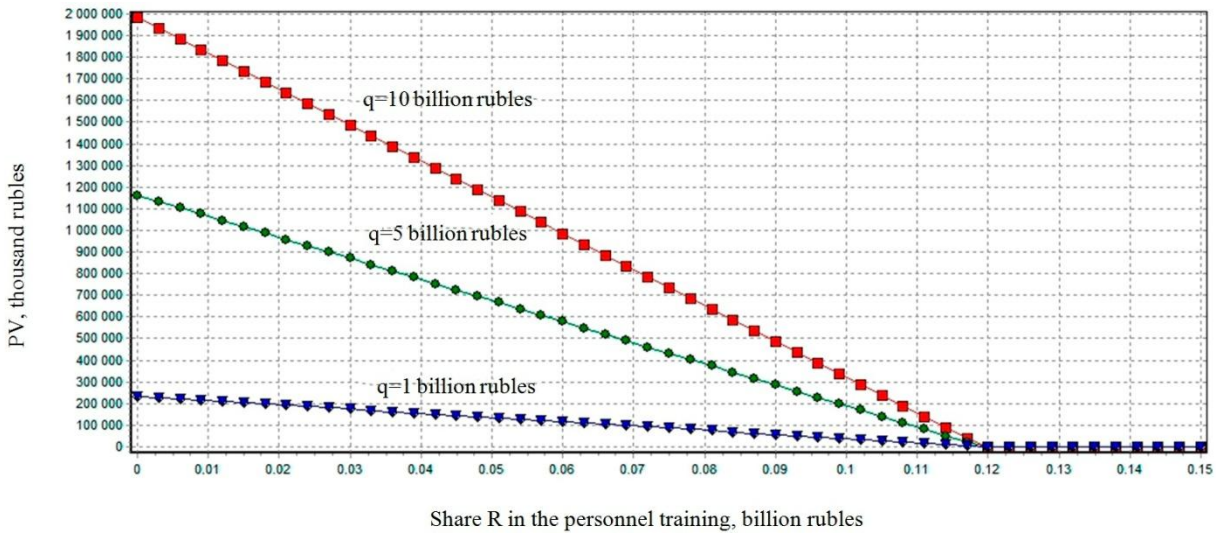

Fig. 1. Dependencies of the present value of the enterprise on the share of proceeds, spent on personnel training, and middle level of demand on product.

In Fig. 2 and 3 the results of joint analysis of the enterprise activity according to two parameters of BSC – the average demand q on the product and average worker performance V are given. From the figure 2 the decision maker has an opportunity to evaluate clearly the potential of the enterprise activity according to the parameter q, depending on a number of values V (for example, at $q \approx 8.7$ bln. rubles and $V = 16000$ the value is $PV \approx 250$ mln. rubles), and from the figure 3 – the values PV, depending on the parameter V and a number of values q. Besides, the figure 2 allows evaluating clearly the upper borders of demand, at which the further growth of its values doesn't lead to the increase of the potential of the enterprise activity in the form PV (that may be explained by achieving the maximum possibilities of the fixed production assets according to production or, in other words, the level of scientific-technical progress). The figure 3 also allows evaluating clearly the upper border of performance ($V \approx 15500$), lower which the enterprise activity loses its economic meaning ($PV = 0$). The comparison of the presented figures gives a rich information about the strategic enterprise activity in the three-parameter case of the chosen parameters of BSC.

In the Fig. 4 the results of the calculations of dependencies of the present value PV of the enterprise on the average product cost P at two systems of its taxation – general (low curve) and simplified, while applying the unified agricultural tax (upper curve), are presented. The corresponding sets of the used rates of tax and nontax costs are given in the figure. From the figure one can evaluate the quantitative level of occurring differences, reflecting the enterprise advantage from the application of tax allowances on the whole planning horizon. In particular, at $P \approx 1\,00$ (monetary unit / product unit) the enterprise advantage according to the parameter PV may make $(1600–1100)/1100 \approx 45\%$. The figure 4 also allows evaluating visually the thresholds of product cost, at which the enterprise activity loses its economic meaning ($PV = 0$).

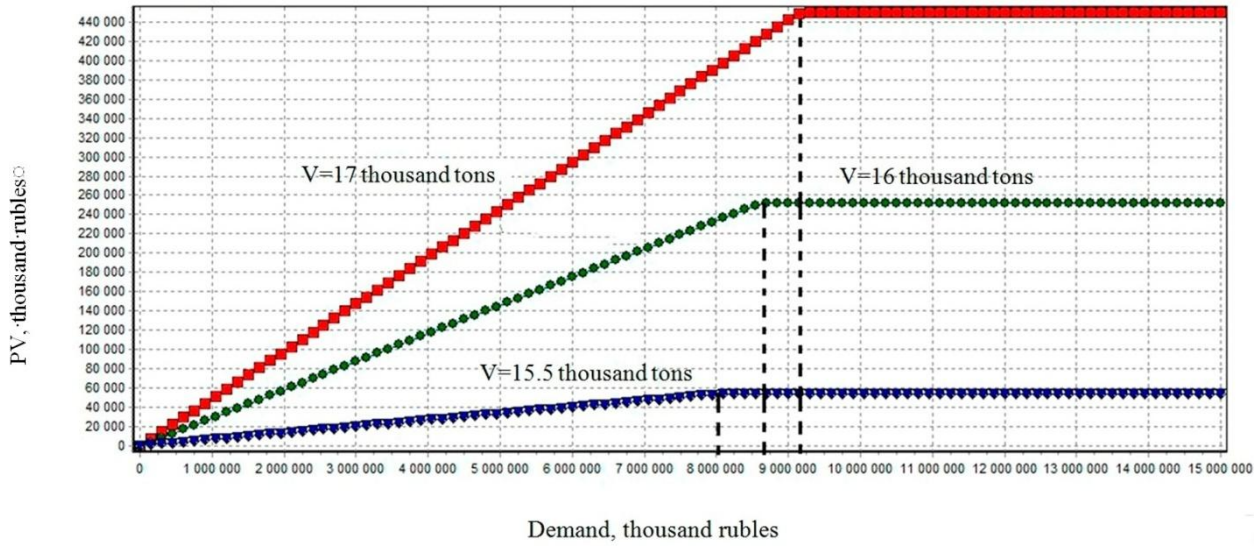

Fig. 2. Dependencies of the present value on product demand and average worker efficiency.

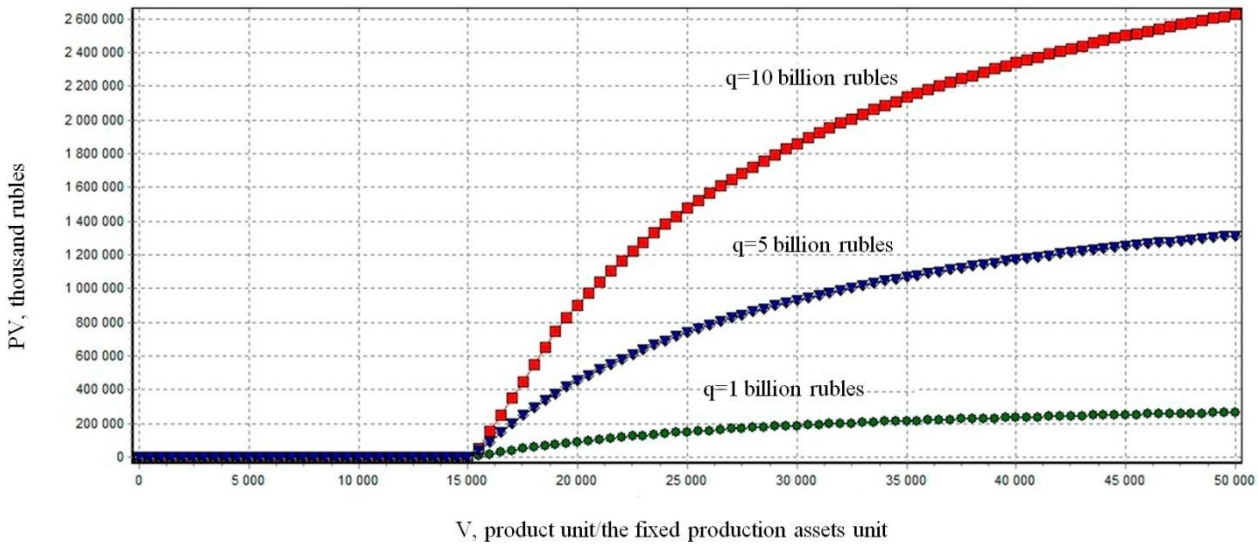

Fig. 3. Dependencies of the present value on the average worker efficiency and product demand.

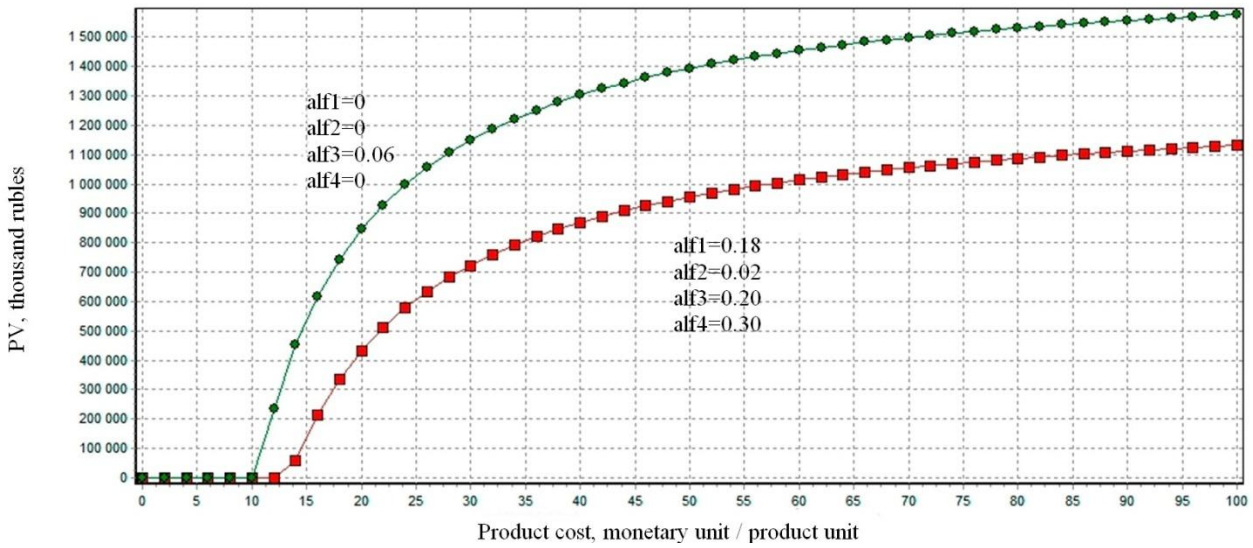

Fig. 4. Dependencies of present value on the product cost of the applying taxation system.

The results of modeling and numeric analysis of the activity of "Chistogorskii" Ltd. let us make the following conclusions, which are advisable to consider while designing a strategic map of BSC:

– the present value of the enterprise (perspective "Personnel") depends both on share of proceeds, spent on personnel training, and the average demand level on the product (perspective "Clients"); at the same time the optimum level of costs on the personnel training for the enterprise is no higher than 12 per cent from the volume of recoverable revenue;

– the present value of the enterprise (perspective "Finances") depends both on the share of costs on the product advertising (perspective "Clients") and the average product demand level (perspective "Clients"); at the same time the optimum level of costs on the product advertising for the enterprise is no higher than 7% from the volume of recoverable revenue;

– the present value of the enterprise (perspective "Finances") depends both on the average demand level on the product (perspective "Clients") and the average worker efficiency (perspective "Personnel"); in this case the threshold values of average productivity and average level of demand, which have an influence on the decision making in the management of the studied agribusiness company under study, are clearly determined from the graphical analysis;

– the present value of the enterprise (perspective "Finances") depends both on the average product cost (perspective "Processes") and the applied taxation system (perspective "Finances"); at the same time in the current market prices, on the planning horizon of 10 years, the discount rate 30%, the effect according to the parameter of the present value of the enterprise, while using a simplified taxation system, reaches 45%.

The proposed model, algorithm tools, based on BSC, may be used to solve more difficult problems of strategic management of agribusiness enterprises in future – revealing optimum cost balance according to perspectives BSC, strength of interaction between indicators, building a strategic map and developing the support system of managerial decision making. Furthermore, in our opinion, one may expect to obtain quantitative parameters of optimum distribution of BSC components, which automatically detect socio-economic potential of the enterprise functioning, groups of companies, branches, areas of economic activity at the local, regional and national levels.

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