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ADAPTATION OF THE CONTROLLING SYSTEM OF THE MACHINE-BUILDING ENTERPRISE TO CHANGE IN STRATEGIC GOALS

Purpose. To improve organizational and methodological and practical approaches to the formation of a controlling system at machine-building enterprises, which will ensure its adaptation following large-scale goals and will determine the degree of the approach of the enterprise to the set goal.

Methodology. To achieve this goal, a set of general scientific and special methods was used: abstract-logical, monographic methods, induction and deduction – to define and generalize theoretical and methodological foundations of adaptive management, formation and functioning of the controlling system in adaptive management; abstraction – to determine the large-scale goals of the enterprise which characterize the stages of its development; formation of a set of indicators that will provide a clear formulation of strategic goals of the enterprise and their achievement at different stages of its development.

Findings. The proposed organizational and methodological approach to the formation of a controlling system at machine-building enterprises ensures the adaptation of the controlling system following the large-scale goals of the enterprise, allows one to determine the degree of the approach of the enterprise to the goal, as well as locally (decentralized), quickly and adequately respond to the irritant, without the participation of all departments of the enterprise. For this, the goals of the enterprise are determined according to the corresponding perspectives at the stages of “survival”, “growth”, “stability”, and “socially responsible business”. For a complete and comprehensive description of the company’s goals achievement, the balanced scorecard along with the classic perspectives – “Finance”, “Clients”, “Business processes”, “Personnel”, is supplemented by additional perspectives – “Ecology”, “Energy efficiency” and “Society”. Each degree of goals has its indicators, which differ from each other in number – for the “survival” stage, fewer indicators are used, and for the “socially responsible business” stage, more; in addition, the target values of the indicators may change.

Originality. The organizational and methodological approach to the formation of a controlling system at the machine-building enterprises has been improved, which, unlike the existing ones, provides for the possibility of adapting the controlling system following the large-scale goals of the enterprise and using a balanced scorecard.

Practical value. Using the proposed approach will provide an opportunity for enterprises to adopt the controlling system to changing goals, control the degree of achievement of the set goals in various areas of activity, decentralize, and promptly eliminate the deviations that have arisen to achieve the set operational and strategic goals.

Keywords: *adaptive management, controlling system, enterprise goals, scorecard, stage of development*

Introduction. In today’s fast-changing Ukrainian economy, enterprises are significantly increasing the requirements for the speed of obtaining information necessary for management decisions, so adaptive management is most effective in the conditions of unstable economic situation and unpredictability of the market. At the same time, operational actions should be coordinated and aimed at achieving certain long-term goals of enterprise development, for which management should correctly identify the enterprise strategy and mobilize all resources to achieve the set strategic goals.

An effective controlling system is an effective tool of adaptive management that can ensure the economic independence of the enterprise, its competitiveness and stable financial position, effective interaction with the external and internal environment, and sustainable development in the long run. The controlling system allows solving a whole range of issues on the stability of the business and its finances, the competitiveness of products, identification, and activation of existing internal reserves, prompt and effective implementation of innovations, mission, enterprise development strategies, and more. In this regard, the development of organizational and methodological approaches to the forming of a controlling system at enterprises, which provide for its adaptation to the large-scale goals of the enterprise, is of particular relevance.

Literature review. In terms of market relations, the enterprise exists and develops in an active external environment, adapting to its changes. The performance of each enterprise depends to a large extent on the management system, which ensures its competitiveness and sustainable development. The volatility of the market environment requires the enterprise to constantly improve management methods.

Adaptive management structures, compared to bureaucratic ones, are more flexible and better adapted to changing external conditions. However, the analysis of publications on the essence and importance of adaptive management revealed the lack of a clear interpretation of the subject of adaptive management. In the vast majority of scientific approaches, its essence is interpreted as a set of actions and methods characterized by the ability of the management system to respond to changes in the external environment. Based on the research by L. L. Kalinichenko, adaptive management is a separate type of management, namely, flexible, innovative management of enterprises capable of adapting to new operating conditions with the help of new management tools and methods [1]. Its purpose is to find the most effective options for making and executing decisions on the development of enterprises in a competitive environment and to maintain their internal stability in a constantly changing external environment.

Various aspects of adaptive management were reflected in the works of scientists and researchers, in particular, such as Polinkevich O. M. [2], Farshatova O., Zakharov S., Veres-

kun M., Kolosok V. [3], Zaporozhets H. V., Alkhatib F. [4], Diachenko O. P., Gab O. G., Marchuk P. V. [5], Vivdenko M. A. [6], Halytskyi O. M. [7], Pugachevska K., Lysenko E. [8], Webb J. A., Watts R. J., Allan C., Conallin J. C. [9], Mitsenko N. G., Fedyshyn M. I. [10], Maj A. [11], Stets I. [12], Williams B. K., Brown E. D. [13], Kalinichenko Z. D. [14], Kondratenko N. O., Novikova M. M., Spasiv N. Ya. [15] and many others.

Recently, there has been an active interaction of economic processes and the application of the laws of biological sciences to the description of processes that take place in business. In fact, the concept of “adaptation” has come into management from biology and is lexically defined as the ability of living organisms to adapt to ever-changing external conditions. Adaptation defines the process of changing the parameters and structure of the system in response to changes in the environment. Thus, the adaptation of an enterprise means its ability to flexibly change organizational, production, management, social, technical, technological, innovation, and financial systems following changes in the market environment [10].

The need for adaptive management arises because, on the one hand, the enterprise aims at permanent and continuous improvement of its activity, on the other – the enterprise operates under constantly changing conditions that create uncertainty. In these conditions, the use of adaptive management allows the removal of the contradiction between the current state of the enterprise and the one required for successful work in the newly changed conditions. In this approach, the enterprise appears as a living organism. It is driven by purpose and builds all its actions based on the need to achieve the goal. The main task of the enterprise, as the main goal of any healthy organism, is to promote survival and development (growth) [16].

Purpose. The purpose of the study is to improve the organizational and methodological approaches to the formation of a controlling system at the enterprises, which will ensure its adaptation to the large-scale goals and will allow determining the degree of the enterprise access to the set goal.

Methods. To achieve this goal, a set of general scientific and special methods was used: abstract-logical method, monographic method, induction and deduction method – to define and generalize theoretical and methodological bases on adaptive management, forming and functioning of controlling system in adaptive management. Abstraction method was used to determine the large-scale goals of the enterprise, which characterize the stages of its development; forming the indicators set that will provide a clear formulation of the enterprise’s strategic goals and their achievement at different stages of its development.

Results. In terms of bionomics, the enterprise is a sensible social organism characterized, in particular, by the capacity for self-regulation (resistance to environmental factors, adaptation to living conditions) and self-development (activities aimed at achieving the planned goals and evolution) [16, 17]. Therefore, at domestic enterprises, systematic processes of adaptation to rapid environmental changes, adequate and prompt response to existing and new threats for normal business activities to achieve the set goals, as well as development, are necessary for application. Adaptation processes are a form of behavior that is constantly being refined and adjusted in the course of the enterprise’s operation in order to carry out the most adequate and effective actions in response to external influences, taking into account the chosen strategic goals. In this regard, there is a growing need to adapt the management system to changing the strategic goals of the company, taking into account the influence of factors of a changing external environment, the enterprise development, and its available potential.

Depending on the degree of the enterprise development, its goals will change – from the simplest ones, related to survival, to the complex ones, which will satisfy the desire to reveal the inner potential (self-actualization). By analogy with Maslow’s needs pyramid, a hierarchical pyramid of large-scale goals of the enterprise have been constructed (Fig. 1).

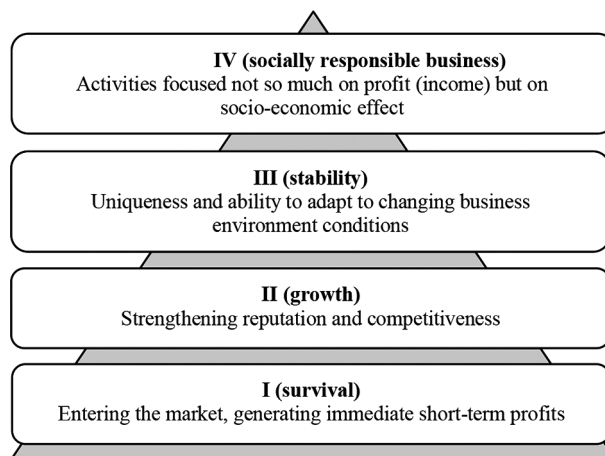


Fig. 1. The hierarchical pyramid of the enterprise goals

The proposed pyramid lists the goals of enterprises, which depend on the degree of their development, specific circumstances, and changes in the external environment. For example, the main purpose of an enterprise at some stage may not be to maximize profits but to win the market. Then profit maximization is sidelined, but in the future, in case of market conquest, the company may overcompensate for lost profits. In today’s environment, Ukrainian enterprises have completely different goals and objectives, and profit is far from the top. Managers of many enterprises believe that the most important task for them at this stage is the sale of products, the ability to pay salaries to employees of the enterprise, and be “afloat”.

Thus, large-scale goals of the enterprise are distributed according to the degree of growth, since it is not possible to strive for high-level goals without satisfying the basic ones (Table 1).

As the primary purpose of the controlling system is to orient the enterprise towards achieving the set goals, one of the most effective tools for presenting the strategy implementation process is the widely used Balanced Scorecard (BSC) method used in the scientific world. In addition, to reflect the trajectory of movement in achieving the set goals of the enterprise, and reliable diagnosis of shifts and changes occurring, there is a need in the adequate and balanced evaluation system.

A balanced scorecard ensures the integration of financial and non-financial indicators, taking into account the cause-and-effect relationships between performance indicators and the factors under which they are formed. This allows detailed monitoring of the company’s activity in strategic focus, increases the efficiency and effectiveness of management decisions, and controls the most important financial and non-financial indicators and the degree of achievement of the enterprise goal. Using a balanced scorecard helps to solve economic problems in a specific enterprise unit at the local level (decentralized) without involving all the management personnel of the enterprise. A balanced scorecard, in addition to financial metrics, includes indicators that characterize key areas of enterprise activity that depend on the successful achievement of each goal, that is, indicators that measure the achievement of goals, and indicators that reflect the processes that achieve those goals [18].

Thus, a balanced scorecard will allow the management of the enterprise to associate the enterprise strategy with a set of interdependent indicators, individually designed for different levels of management and interconnected. The degree of achievement of the set goals will be characterized by indicators combined with the “classic” perspectives – “Finance”, “Clients”, “Business processes”, and “Personnel”. Each degree of goals has its indicators that differ from each other in terms of number – for purposes of degree I (survival) fewer indicators are used and for goals of degree IV (socially responsible business) more. In addition, the target values of the indicators are changing: for example, for the enterprise at the stage of “sur-

Defining the goals of the enterprise

The degree of large-scale goals	The essence of the goals	Economic characteristics
I (survival)	Capturing part of the market. Increase in sales and profits	Forming a constant customer base, increase in profitability and productivity, profit, a decrease in expenses
II (growth)	Balanced output growth. The transition to mass production. Maximum capacity utilization. Profit planning. Formation of image. Market strengthening	Accelerating growth, increasing production and sales, increasing productivity and profits, expanding part of the market, expanding the permanent customer base, increasing wages
III (stability)	Stabilization of output. Strengthening the position of the company in the developed market and balanced growth of output. Maintaining reputation among consumers. Finding ways to diversify production and investment. Environmental measures and energy savings	Systematic balanced increase in production output, preservation of production volumes, profits, and much of the market, the release of new products, the introduction of new technologies and processes, reduction of pollutant emissions and waste generation, reduction of energy consumption costs
IV (socially responsible business)	Socio-economic development takes into account the factors influencing the environmental situation. Improving energy efficiency. Measures to improve the quality of life of workers and their families, as well as to increase the well-being of society	Increased costs for environmental protection (use of clean energy, reduction of pollutant emissions) increase in the number of energy efficient and energy-saving equipment, technologies, processes, human rights, and charity

vival” the desired value of contract profitability is 25 %, and at the stage of “socially responsible business” – 15 %, since the non-financial goals become the priority.

Indicator values were established based on the analysis of expert assessments in the form of a questionnaire. As persons whose views on the object of research were studied, top management, specialists of engineering, technical, production, and economic services of machine-building enterprises were involved (a total of 47 people). The survey was conducted using a specially designed survey letter during a personal and telephone conversation. Based on the results of summarizing the received views, ratings were built.

We believe that for the full and comprehensive characterization of the achievement of these goals, the enterprise should be guided by the principle of a balanced scorecard, taking into account not only financial, client, business process, and human resources, but also environmental, energy efficient and public.

The use of the “Ecology” perspective is conditioned by the fact that the majority of enterprises are closely related to the problems of environmental pollution and emissions of harmful substances, and also following international principles of sustainable development, it allows competing in the international markets. Indicators of the environmental component may be emissions of pollutants into the environment, the amount of environmental costs, volumes of waste, taxes on emissions of harmful substances, implementation of technical and technological measures to reduce emissions, penalties for violations of environmental legislation, etc. [18].

Also, one of the reasons for the growing negative environmental impact is the increase in energy consumption by enterprises. According to many experts, energy efficiency is not only one of the most efficient but also one of the cheapest means of reducing greenhouse gas emissions, thus preserving the environment, improving health and quality of life. Introducing the “Energy Efficiency” perspective will help enterprises pursue a sound policy for the acquisition and use of energy resources and the utilization of industrial waste, thereby ensuring cost savings. In addition, more energy-saving consumption directly or indirectly contributes to the achievement of the most sustainable development goals. Indicators of the energy-efficient component may be energy efficiency of labor (the relationship between the expenses of live labor and the production consumption of energy: electrical, mechanical, and thermal, which replaces the direct use of physical strength of workers and increases its results), energy efficiency ratio, specific energy consumption per unit of output (unit of area, one worker), the energy intensity of production and production equip-

ment, the number of rational proposals and implemented energy-saving and energy efficiency projects, etc.

Socially responsible business, in addition to adherence to production standards, concern for the environment, and economic energy consumption, is characterized by additional voluntary commitments to society, that is, the enterprise’s interest in improving the quality of life of its employees and its families, in increasing the well-being of society. The realization of social responsibility is achieved by providing charitable assistance, interacting with various categories of the population, and participation in social projects. Introducing the “Society perspective” will help determine the degree of achievement of the enterprise’s socio-economic effect. Indicators of a social component may be the number of social and charitable events, the share of expenditures for public and charitable events in the expenses of the enterprise, etc.

Research on the possibilities of forming a controlling system based on the use of the balanced scorecard concept at enterprises was carried out on the example of LLC Respect Business. For this purpose, we have developed pilot models of controlling systems based on the use of the balanced scorecard in the context of the goals.

At the stage of survival, LLC Respect Business seeks to seize part of the market and increase sales and profits (I degree of scale goals according to Table 1), so the set of goals will be as follows (Fig. 2).

To control the achievement of the set goals in the stage of “survival”, indicators were selected that measure their achievement and are presented in Table 2.

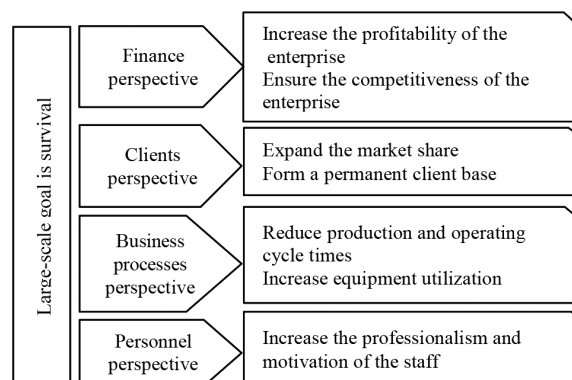


Fig. 2. A set of goals characterizing the “survival” of LLC Respect Business

Table 2

Goals and indicators for LLC Respect Business at the stage of “survival”

List of goals	Indicators	
	Name	Target values
<i>Finance perspective</i>		
Increasing the enterprise profitability	Contract profitability, %	15
	Customer profitability, %	15
	Share of profits from regular customers, %	65
Ensuring the competitiveness of the enterprise	Increase in sales, %	10
	Product profitability, %	15
<i>Clients perspective</i>		
Expanding market share	The number of new contracts concluded, units	6
Formation of a permanent client base	The average duration of the customer relationship, day	18
<i>Business Process Perspective</i>		
Reduction of production and operating cycle period	Inventory turnover ratio	4.5
	Duration of the operating cycle, days	15
Increase in equipment utilization	Equipment utilization rate	1.0
<i>Personnel Perspective</i>		
Increase in professionalism and motivation of staff	Share of complaints about staff work from clients, %	5
	Share of skilled workers of the relevant profession, %	80
	The number of awards, units/half year	15
	Percentage of premiums on wages, %	100

The list of indicators and their target values are determined directly for LLC Respect Business, based on the results of the study on the enterprise activity, its goals, and information capabilities, as well as on the basis of professional opinions of specialists of the company in the field of finance, work with clients, production process and after-sales service, personnel composition. In addition, the issue of environmental protection, energy efficiency, and participation in community charitable events were discussed.

At the stage of “growth” (II degree of scale goals according to Table 1) LLC Respect Business aims to achieve a balanced growth of output, transition to mass production, maximum capacity utilization, image formation, and strengthening the market position. This changes the goals, increases their number and the number of indicators that measure the achievement of goals. Thus, the goal of ensuring the company’s solvency is added to the “Finance” perspective, which is measured by absolute liquidity ratios (with a target value of 0.4) and the ratio between receivables and payables (with a target value of 0.8). In addition, the share of profit from new customers (with a target value of 35 %) is additionally determined to increase the profitability of the enterprise. In the “Clients” perspective, the purpose of forming a permanent client base is changed to maintaining a permanent client base and is supplemented by indicators of the share of permanent customers (with a target value of 40 %) and the average order waiting period (with a target value of 18 days).

An indicator of the share of new customers (with a target value of 10 %) is added to the “Market share expansion” goal.

Also, new goals appear: to satisfy customer requirements – characterized by the speed of servicing one customer (with a target value of 14 days) and the number of returns, fines (with a target value of 1 unit); to expand the range of products – the share of sales volume of new products (target value 20 %), the share of replacement sales of the old range with new products (target value 15 %), the growth of sales volume of the new range taking into consideration the release of new products (target value 20 %) are calculated.

The “Business Processes” perspective is expanded with goals for improving product quality, for which the product’s service life (with a target value of 7 years), its warranty period (with a target value of 3 years), failure-free and maintainability of products (target value of 100 %) are monitored, and equipment quality – the number and frequency of equipment breakdowns (target value 2 times/year), the cost of repairs (target value 2000 UAH/month) and the level of equipment wear and tear (target value 30 %) are evaluated. From the perspective of “Personal”, the goal appears to increase staff satisfaction and its indicators – the percentage of employee satisfaction (with a target value of 90 %) and the share of wages in profit (with a target value of 30 %).

Development of LLC Respect Business will lead to the need to achieve stabilization of output, strengthening the position in the developed market and balanced growth of output, maintaining reputation among consumers, continuous innovative development, maximizing the effective use of innovative potential, economical energy consumption and the desire to participate in environmental protection (III degree of scale goals according to Table 1).

Thus, in the perspective of “Finance”, the goal of increasing the profitability of the enterprise is replaced by the preservation of profitability and is characterized by the following indicators: profitability of the contract (with a target value of 15 %), the profitability of the customer (with a target value of 15 %), the share of profit from regular customers (target value of 65 %) and the share of profit from new customers (target value 35 %).

From the “Clients” perspective, the goal of expanding the market share is replaced by maintaining the market share (the supply of orders in days is estimated). To assess the preservation of a permanent customer base, an additional indicator is introduced – the return of former profitable customers, and to monitor the satisfaction of customer requirements – the share of customers who switched from competitors, the share of customer refusals from an already placed order in the total volume of sales. In addition, two new goals appear in the “Customers” perspective: attracting profitable customers (characterized by the share of particularly profitable customers) and increasing the profitability of marketing activities (the ratio of income and marketing expenses is calculated).

In the “Business Process” perspective, the goal of improving the quality of products is refined by their environmental friendliness, and new indicators are added – the safe exploitation of products ratio; the concentration of harmful substances in the composition of products to their maximum permissible values; the level of harmful (mechanical, physical) actions on the natural environment during the production of products to their maximum permissible values. Another goal is to improve the after-sales service of consumers, the achievement of which is characterized by the share of product returns in total sales; the share of costs related to the return of products in total sales; the share of after-sales revenue in total sales; the ratio of spare parts and tools needed for after-sales service; the number of complaints.

In the “Personnel” perspective, the following indicators are introduced to determine the growth of professionalism and motivation of staff: the percentage of staff training costs out of total staff costs; the percentage of employees trained in advanced training programs; the coefficient of the employee’s creativity, adaptability, and flexibility. Also, new metrics are being intro-

duced to increase employee satisfaction, such as promotion and growth; frame turnover rate; the level of stress at work.

For the “Stability” stage, two new perspectives are introduced – Ecology and Energy Efficiency. From the “Ecology” perspective the company aims to achieve two goals – to reduce pollutant emissions into the environment (the percentage is calculated of pollutant emissions into the atmosphere) and reduce waste (the percentage is calculated of production waste in the total amount of raw materials for production). From the “Energy Efficiency” perspective, the energy intensity of output is calculated to control the reduction of energy consumption (the volume of energy consumed per unit of output produced); the ratio of energy consumption per 1 UAH of total costs; energy loss. All changes, additions, and innovations for Respect Business LLC at the stage of “stability” are presented in Table 3.

If LLC Respect Business tries to achieve socio-economic development by taking into account factors affecting the environmental situation, improving energy efficiency, participating in activities to improve the quality of life of workers and their families, and increasing the well-being of society (Level IV scale goals according to Table 1), then the set of goals will expand significantly (Fig. 3).

Table 3

New and changed perspectives, goals, and indicators at the stage of “stability” of Respect Business LLC

List of goals	Indicators	
	Name	Target values
<i>Clients perspective</i>		
To save market share**	Provision orders, days*	120
To maintain a permanent client base	Return of former profitable customers, entities*	5
To attract profitable customers*	Share of particularly profitable customers, %*	10
To satisfy customer requirements	Share of customers who have switched from competitors, %*	5
	Share of customer refusals from an already completed order in the total sales volume, %*	1
To increase the marketing activities' profitability*	The ratio of revenue to marketing expenses*	100
<i>Business Processes perspective</i>		
To improve product quality (including environmental friendliness)**	Safe exploitation of products ratio, %*	100
	The concentration of harmful substances in the composition of products to their maximum permissible values, %*	1
	Level of harmful (mechanical, physical) actions on the natural environment during the production of products to their maximum permissible values, %*	1
To improve after-sales service*	Share of product returns in total sales, %*	1
	Share of costs related to the return of products in total sales, %*	1
	Share of after-sales revenue in total sales, %*	5
	The ratio of spare parts and tools needed for after-sales service, %*	100
	The number of complaints, units*	1

<i>Personnel perspective</i>		
To increase the professionalism and motivation of the staff	The percentage of staff training costs out of total staff costs, %*	20
	The percentage of employees trained in advanced training programs, %*	10
	The coefficient of the employee's creativity, adaptability and flexibility, %*	30
To increase staff satisfaction	Promotion and growth term, months*	9
	Frame turnover rate, %*	3
	Level of stress at work, %*	8
<i>Ecology perspective*</i>		
To reduce pollutant emissions into the environment*	The percentage of pollutant emissions into the atmosphere, %*	3
To reduce waste*	The percentage of production waste in total raw materials for production, %*	3
<i>Energy efficiency perspective*</i>		
To reduce energy costs*	Energy intensity of production (the volume of energy consumed per unit of output), %*	10
	The ratio of energy consumption per UAH 1 of total costs, %*	5
	Energy loss, %*	5

* Newly introduced goals and indicators

** Changed goals

At the stage of “socially responsible business”, new goals are emerging in the “Ecology” and “Energy efficiency” perspectives and additional indicators are introduced for existing ones. In addition, a new Society perspective is being added to increase the cost of social and charitable activities (maintenance of orphanages, targeted assistance to the needy, etc.). All additions and innovations are presented in Table 4.

Thus, from the “Ecology” perspective, new goals are emerging: to increase the number of environmentally friendly equipment and technologies (the share of environmentally friendly equipment, technologies, and processes is calculated); to ensure sustainable financing of environmental measures, for which the share of environmental measures costs in the order cost and the enterprise costs is calculated; economical use of natural resources (the percentage of water use is calculated); to introduce innovative environmental technologies (to evaluate the achievement of the following indicators: the share of new technologies for the atmosphere protection, water resources, increased use and disposal of waste; the share of new systems of premises heating); and to raise environmental awareness of personnel through the environmental awareness of personnel.

The following goals are added to the “Energy Efficiency” perspective: to diversify energy sources (control over the number of energy sources and types of energy sources); to increase the number of energy-efficient and energy-saving equipment and technologies (the shares of energy-efficient and energy-saving equipment, technologies, and processes are calculated).

In addition, a new Society perspective is added, which aims to increase the cost of social and charitable events, and the indicators of its achievement are the share of expenditures on public and charitable events in the enterprise expenses and the share of costs for public and charitable events in the order cost, as well as the number of social and charitable events.

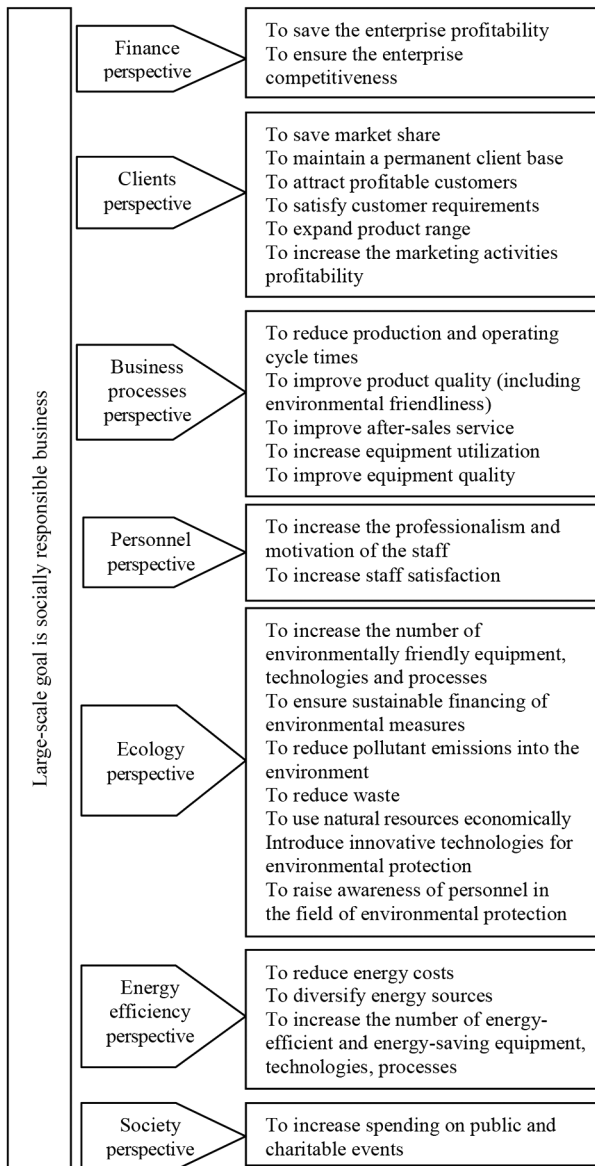


Fig. 3. A set of goals that characterize the “socially responsible business” of LLC Respect Business

All indicators that participate in a balanced management system are linked by a causal chain that describes the strategy of the enterprise. The financial component indicators are the “starting point” for the implementation of environmental, energy and public strategic goals, which are the “final destination”. In turn, achieving the goals of the client, staff and business processes components will lead to improved company financial results.

It is possible to increase the profitability of LLC Respect Business by reducing losses from marriage; reduction of production costs due to more rational use of material resources, production capacities and areas, labor and working time; sale or lease of unnecessary equipment and other property; competent building of contractual relations with suppliers, intermediaries, buyers; reduction of non-production costs; implementation of measures to increase the workers productivity.

Competitiveness can be achieved through improved product quality; constant analysis of the market, consumer behavior, and competitors; improving the marketing system (in particular, to group products based on profitability and focusing on highly profitable products).

To ensure the solvency of LLC Respect Business, it is necessary to work in the direction of increasing the value of current assets and speed of turnover and reducing the number of

Table 4

New perspectives, goals, and indicators at the stage of “socially responsible business” of LLC Respect Business

List of goals	Indicators	
	Name	Target values
<i>Ecology perspective</i>		
To increase the number of environmentally friendly equipment, technologies, and processes*	Share of environmentally friendly equipment, %*	10
	Share of clean technologies and processes, %*	10
To ensure sustainable financing of environmental measures*	Share of environmental measures costs in the order cost, %*	5
	Share of environmental measures costs in the enterprise cost, %*	5
To use natural resources economically*	The percentage of water use, %*	2
To introduce innovative technologies for environmental protection*	Share of new technologies for protecting the atmosphere, water resources, increasing the use and disposal of waste, %*	3
	Share of new systems of premises heating, %*	3
To raise awareness of personnel in the field of environmental protection*	Level of awareness of personnel in the field of environmental protection, %*	15
<i>Energy efficiency perspective</i>		
To diversify energy sources*	The number of sources of energy supply, units*	4
	The number of types of energy resources, units*	3
To increase the number of energy-efficient and energy-saving equipment, technologies, processes*	Share of energy efficient and energy saving equipment, %*	15
	Share of energy efficient and energy saving technologies and processes, %*	15
<i>Society perspective*</i>		
To increase spending on public and charitable events*	Share of expenditures on public and charitable events in the enterprise expenses, %*	5
	The number of social and charitable events, units*	2
	Share of costs for public and charitable events in the order cost, %*	5

* Newly introduced goals and indicators

** Changed goals

current liabilities. For example, to reduce the number of current liabilities, it can agree to extend credit for a longer period.

Because a large number of enterprises are in a crisis, it is difficult for businesses to have stable profits as well as stable business partners and customers. The basis of the “Clients” strategy for LLC Respect Business is the goals of expanding the market share by increasing the volume of concluded contracts, as well as retaining permanent and encouraging new clients, returning former profitable clients; customer satisfaction by improving service speed and product quality; expanding the product range, conducting effective marketing activities.

The business processes of the enterprise are the basis of its activity and determine its competitive advantages. To achieve customer goals and, ultimately, financial goals, performance metrics are developed to track the business processes of the enterprise. LLC Respect Business plans to improve the business processes efficiency by improving the quality of production and order fulfillment; use of quality production equipment and increase its workload. Maximum load of equipment is possible due to the even distribution of large orders over time, and execution of single orders of individual clients.

Enterprises will not be successful and competitive without quality staff. LLC Respect Business should pay attention to increasing its professionalism and motivation, as well as to increasing satisfaction for the effective use of the personnel. The company must create conditions that will give each employee an understanding of the importance of advanced training, and a properly designed system of motivation will not only activate

the potential of the person towards the goal but also bring satisfaction to the employee in the work process to meet their needs and provide competitive advantages, efficiency, and productivity of the enterprise as a whole. Motivation should include not only premium and social components but also opportunities for growth and promotion, the level of stress at work, and the overall atmosphere in the team.

Environmental issues are important for most businesses because their activities are related to environmental pollution. Thus, the goals of LLC Respect Business are aimed at reducing the volume of waste and pollution, and ensuring sustainable financing of environmental activities. To measure the achievement of these goals, the indicators will be measures relating to the introduction of innovative technologies to reduce environmental pollution, economic use of natural resources, and awareness of personnel in the field of its protection. To ensure the competitive advantages of their products, engineering com-

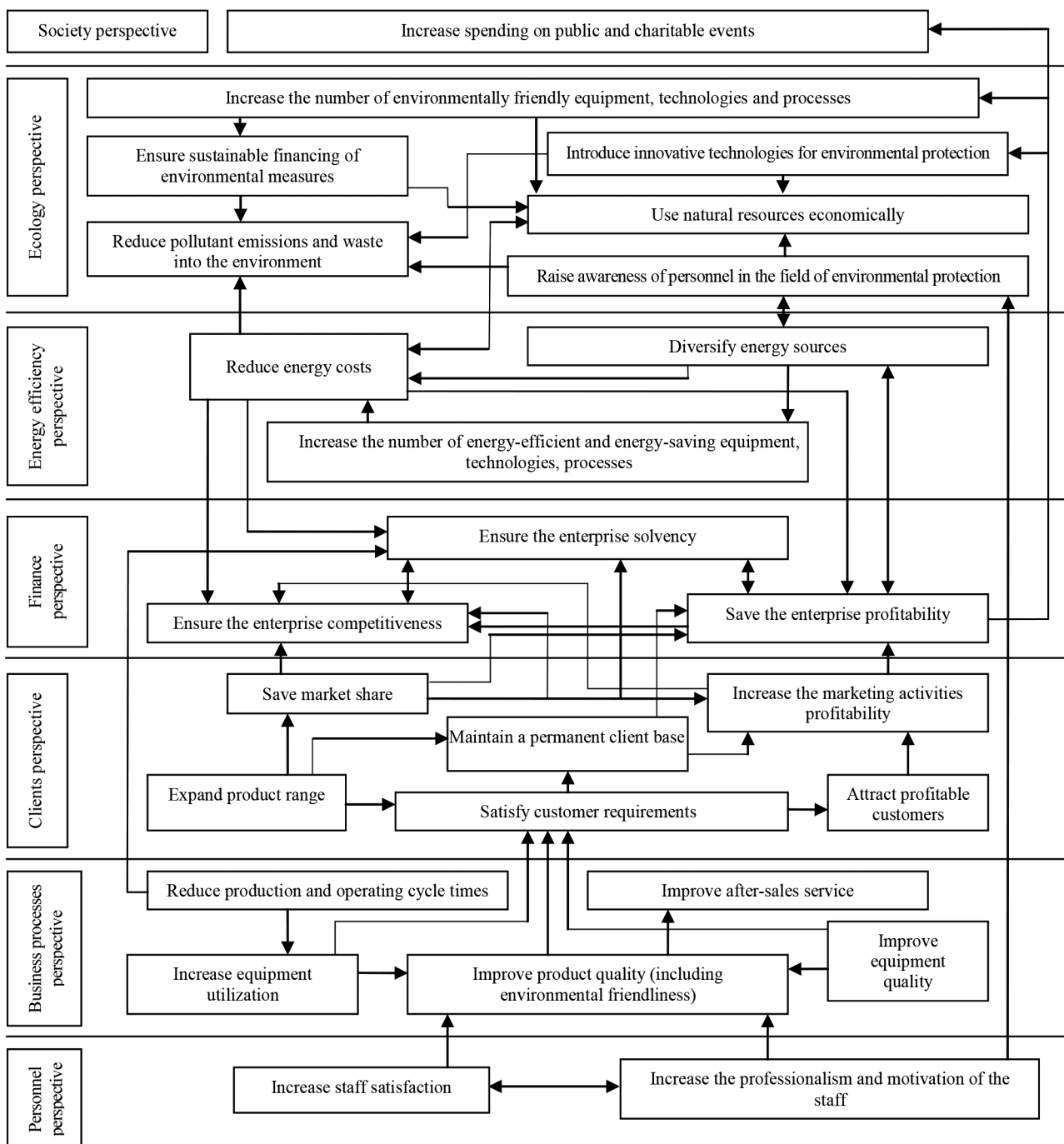


Fig. 4. Strategic map of LLC Respect Business for the stage of “socially responsible business”

panies seek to reduce cost. This can be achieved through the economical use of energy resources. Therefore, LLC Respect Business is introducing energy-saving equipment, optimizing the technological process for reducing the loss of fuel and energy resources, and achieving the savings of fuel and energy resources, using secondary energy resources.

It should be noted that in the process of implementation of the listed measures at LLC Respect Business, in addition to the energy-saving result, there is a secondary socio-ecological effect, expressed in reducing the negative impact of energy supply and energy consumption on the environment. In particular, energy-saving results in the emission of greenhouse gases (water vapor, carbon dioxide, methane, ozone, nitrogen oxides, sulfur oxides) into the atmosphere, as well as the content of harmful substances in combustion products, which will not only have a beneficial effect on the environment but also increase the social effect. It is obvious that such an environmental effect will be directly proportional to the saved fuel – the result of energy-saving activities and technologies. At the same time, improving the environment will lead to an improvement in the social conditions expressed in improving safe working conditions in the workplace and improving the quality of life.

The concept of socially responsible business is considered as a means of improving business processes, technologies, business, and general public reputation of the enterprise, increasing the motivation and productivity of employees, improving the efficiency of management, and ensuring balanced development of the enterprise. LLC Respect Business can participate in charitable events aimed at assisting and supporting socially disadvantaged groups or individuals in need of assistance, in collaboration with government agencies, non-governmental organizations and foundations. At the same time, voluntary directing of their own resources for charity and social purposes will help to achieve improvement of corporate image, an increase in sales volumes, prevention of negative information spreading, and easier access to new markets.

Enterprise goals are not independent and detached from one another; on the contrary, they are closely linked and affect one another. Achieving one goal contributes to the achievement of another and so on, forward to the highest enterprise goal. The links between different goals are visible through the cause-and-effect chain. To graphically relate the perspectives and goals of LLC Respect Business at the stage of socially responsible business, a strategic map was developed in which the cause and effect relationships of the balanced scorecard explain the enterprise strategy (Fig. 4). The result of the fulfillment of all the planned goals will give the LLC Respect Business the desired result.

Conclusions. The organizational and methodological approaches to the formation of a controlling system at the enterprises, based on the use of a balanced scorecard, which ensures the adaptation of the controlling system to the large-scale goals of the enterprise and allows determining the degree of the approach of the enterprise to the set goal, are improved. For this purpose, the models were created which reflect the goals of the enterprises with appropriate perspectives at the stages of “survival”, “growth”, “stability”, and “socially responsible business”.

For a complete and comprehensive characterization, the achievement of the enterprise goals, a balanced scorecard along with the classic perspectives: “Finance”, “Clients”, “Business Processes”, and “Personnel”, is supplemented with additional perspectives: “Ecology”, “Energy Efficiency”, and “Society”. The use of the “Ecology” and “Energy Efficiency” perspectives is caused by the specificity of the activity of the enterprises being closely connected with the problems of environmental pollution and excessive energy consumption, and it meets the international principles of sustainable development and allows competing in the international markets.

The “Society” perspective also reflects the goals of a socially responsible business, which, in addition to meeting pro-

duction standards, caring for the environment, and saving energy, is characterized by additional voluntary commitments to society. Each level of goals has its indicators that differ from each other in terms of quantity – fewer indicators are used for the “survival” stage and more for the “socially responsible business” stage; in addition, the target values of the indicators change. Also, using a balanced scorecard enables one to respond locally (decentralized), quickly, and adequately to the irritant, without involving all business units.

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Адаптація системи контролінгу машинобудівного підприємства до зміни стратегічних цілей

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Мета. Удосконалення організаційно-методичних і практичних підходів до формування системи контролінгу на підприємствах машинобудування, що забезпечить її адаптацію відповідно до масштабних цілей і дозволить визначати ступінь наближення підприємства до встановленої мети.

Методика. Для досягнення визначеної мети застосовувався комплекс загальнонаукових і спеціальних методів: абстрактно-логічний, монографічний, індукції й дедукції – для визначення та узагальнення теоретико-методичних засад щодо адаптивного управління, формування й функціонування системи контролінгу в адаптивному управлінні; абстрагування – для визначення масштабних цілей підприємства, що характеризують етапи його розвитку; формування сукупності показників-індикаторів, що забезпечать чітке формулювання стратегічних цілей підприємства та їх досягнення на різних етапах його розвитку.

Результати. Запропонований організаційно-методичний підхід до формування системи контролінгу на підприємствах машинобудування забезпечує адаптацію системи контролінгу відповідно до масштабних цілей під-

приємства, дозволяє визначати ступінь наближення підприємства до встановленої мети, а також місцево (децентралізовано), швидко й адекватно реагувати на подразник, не залучаючи всі підрозділи підприємства. Для цього визначені цілі підприємства за відповідними перспективами на стадіях «виживання», «зростання», «стабільність», «соціально-відповідальний бізнес». Для повної та всебічної характеристики досягнення цілей підприємства збалансована система показників наряду з класичними перспективами – «Фінанси», «Клієнти», «Бізнес-процеси», «Кадри», доповнена додатковими перспективами – «Екологія», «Енергоефективність» і «Суспільство». Кожному ступеню цілей призначені власні індикатори, що відрізняються один від одного за кількістю – для цілей стадії «виживання» використана менша кількість показників, а для цілей стадії «соціально-відповідальний бізнес» – більша. Крім того, можуть змінюватися цільові значення індикаторів.

Наукова новизна. Удосконалені організаційно-методичні підходи щодо формування системи контролінгу на підприємствах машинобудування, які, на відміну від існуючих, передбачають можливість адаптації системи контролінгу відповідно до масштабних цілей підприємства й використання збалансованої системи показників.

Практична значимість. Використання запропонованого підходу надасть підприємствам можливість адаптувати систему контролінгу до цілей, що змінюються, контролювати ступінь досягнення поставлених цілей за різними напрямками діяльності, децентралізовано та оперативно усувати відхилення, що виникли, з метою досягнення поставлених оперативних і стратегічних цілей.

Ключові слова: адаптивне управління, система контролінгу, цілі підприємства, система показників, етап розвитку

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