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# MANAGING THE PERFORMANCE OF AN INDUSTRIAL ENTERPRISE BASED ON THE KPI SYSTEM

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## Abstract

Ineffective management is the most common internal reason that hinders Russian organizations in overcoming the crisis. An established, conservative management system gives positive results only up to a certain period of time, and in changing conditions its imperfections become obvious. This problem can be solved by increasing the efficiency of existing management models, as well as by looking for more effective organization management tools that meet modern requirements. The authors have carried out a comparative analysis of the use of the enterprise management system based on budgeting and the Key Performance Indicators (KPI) system. The article presents the results of the analysis of the management of OJSC "MMK-METIZ", operated on the basis of budgeting. The results of the study showed that the main disadvantage of the budgeting system in the budget planning and working assets management group of OJSC "MMK-METIZ" is the lack of interconnection between the strategic goals of the enterprise, its structural divisions and operating activities, as well as the lack of interconnection between budgets and indicators of bonuses for employees. The most effective method for solving these problems is the introduction of the Key Performance Indicators (KPI) system at the enterprise, which will help solve two key problems: to effectively evaluate the results of the enterprise's activities and implement the strategy. The authors developed a detailed algorithm for the implementation of the KPI system in study group.



*Keywords:* Management, strategy, key performance indicators, performance indicators, operational activities

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## 1. Introduction

The formulation of significant goals and related criteria for effectiveness assessment is one of the key tasks the management of the organization is facing to determine the development strategy. This problem can be solved by looking for more effective organization management tools that meet modern requirements. One of these tools is the introduction of a system of key performance indicators - Key Performance Indicators (KPI) - at the enterprise, instead of the existing management system based on budgeting. KPI management allows you to set, monitor, and analyze specific, industry key performance indicators to help companies measure the level of success in achieving their strategic goals.

The basic principles of measuring KPI are not very different from traditional scientific assessment methods: set a goal, find quantifiable means of achieving these goals, test these means, and check for consistency. These indicators are the most modern and preferred measure of the ability of an enterprise to set and achieve goals. In addition, KPI are used to measure customer satisfaction, productivity, and employees engagement (Balashov, 2014; Creveling, 2006; Panov, 2013; Parmenter, 2009).

Key Performance Indicators, by their very nature, convert numbers into behavioural responses (Marr, 2013). They contribute to the understanding of purposeful efforts leading to the achievement of a common goal, but at the same time, if the criteria are not chosen correctly, then you can get the opposite effect: the wasted efforts of staff when the selected evaluation criteria are achieved, and as a result, wrong strategies and loss of revenue.

The key factors for the successful implementation of the KPI system are (Sciacovelli et al., 2016):

- a pre-developed strategy, which is the determining factor of success. KPI is only a tool for information support of the management decision-making process;
- defining the goals of the organization, taking into account how much the achievement of the
- goal increases the cost of the company;
- revision of the personnel bonus system, since the system for assessing key performance
- indicators are limited to assessing the performance of a specific employee;
- availability of the information system, which is a data source and a base for determining KPI;
- introduction of the KPI system on an ongoing basis as a necessary management tool.

When setting up the KPI system, it is important to focus on the future metrics rather than the past ones. However, it must be remembered that these future indicators must be realistic, otherwise all efforts will lead to disappointment of personnel and management of the organization.

## 2. Problem Statement

The introduction of the KPI system at OJSC "MMK-METIZ" raises a number of theoretical and practical questions. OJSC "MMK-METIZ" is a part of the PJSC "MMK" group of companies. It is, in fact, a part of the guaranteed sales market of the parent company, therefore the company is forced to follow the company's policy. This dependence gives rise to difficulties when it is necessary to take corrective actions

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when circumstances change. In addition, research units or departments do not fit into the framework of the inflexible budget.

Today OJSC "MMK-METIZ" is managed on the basis of the budgeting system. The main goal pursued by OJSC "MMK-METIZ" when developing budgets is to reduce the self-cost of production. However, this does not always improve the efficiency of the enterprise as a whole. The transition to a management system using KPI is the solution to these problems. To improve the efficiency of OJSC "MMK-METIZ", the authors propose to consider the possibility of introducing a system for managing the results of the Company's activities based on KPI, taking into account the strategic goals of the enterprise.

## 3. Research Questions

The following questions were raised during the study:

- What are the main drawbacks of the budgeting system used at OJSC "MMK-METIZ"?
- What are the most effective fundamental provisions of modern enterprise management?
- What are the stages of implementing the KPI system at an industrial enterprise?
- What business processes of the structural unit should be taken as the basis for determining the KPI?

## 4. Purpose of the Study

It is assumed that the answers to the above questions will help achieve this goal and will contribute to the development of recommendations for the development of the performance management system in the budget planning and current assets management of OJSC "MMK-METIZ" based on the system of key performance indicators.

## 5. Research Methods

### 5.1. Main disadvantages of the budgeting system at OJSC "MMK-METIZ"

The Company is currently managed on the basis of the budgeting system. The main goal pursued by OJSC "MMK-METIZ" when developing budgets is to reduce the self-cost of production. However, this does not always improve the efficiency of the enterprise as a whole.

The enterprise budgeting system has several drawbacks. The first drawback is the lack of flexibility in budgets. Since OJSC "MMK-METIZ" is a part of the PJSC "MMK" group of companies and is a part of the guaranteed sales market of the parent company, the company is forced to follow the company's policy (Ponomareva et al., 2016). This dependence causes certain difficulties in the context of the market uncertainty. Also, the structural units engaged in research work do not fit into the framework of the non-flexible budget.

The second drawback of the budgeting system is the lack of motivation for the plant workers. Firstly, budgets were not communicated to each employee, therefore, they do not have any impact on

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motivation and performance, but are perceived exclusively as a means of assessing performance and tracking errors. Secondly, there are contradictions between achieving goals and their stimulating effect.

The third drawback is the lack of relationship between plans and resource allocation, on the one hand, and long-term strategic priorities, on the other. At an enterprise, forward-looking strategic planning and annual budgeting are two completely independent processes. As a result, resource allocation often has nothing to do with strategic priorities. The main initiatives are put forward without considering priorities or strategic influence. The monthly and quarterly analysis of the enterprise's activities is reduced to explaining the deviations between current and budget indicators of economic activity, and not to discussing intermediate results of achieving strategic goals.

The analysis of the budgeting system showed that the main drawback of budgeting at OJSC "MMK-METIZ" is the lack of interconnection between the strategic goals of the enterprise, its structural divisions and operational activities, as well as the lack of interconnection between budgets and indicators of employees bonuses.

The strategic goals of OJSC "MMK-METIZ" are:

- manufacture of products that meet modern and future requirements of consumers. Improving the quality of products;
- development of existing and development of new sales markets for metal products;
- increasing production efficiency and reducing production costs. Concentration of production resources and their optimal use. Increase in the share of products with higher added value.

Achievement of strategic goals is possible by:

- meeting the current and future needs of customers, maximizing the possibilities of the domestic and foreign markets for the sale of their products;
- effective cost management to achieve satisfactory profitability, competitive prices and optimal resource allocation;
- concentration and optimization of infrastructure and production assets while maintaining the potential of production facilities
- modern methods of project management of investments into the manufacture of products with high added value;
- Achievement of leading positions among the enterprises of the hardware industry in the development and implementation of new technologies for increasing efficiency: production, organization of business processes, management, stimulating the growth of labour productivity, motivating employees to achieve goals.

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### 5.2. Analysis of the stages of implementation of an enterprise performance management system based on Key Performance Indicators

Based on the analysis of the works of Russian and foreign authors (Ante et al., 2018; Brint et al., 2020; Chukin et al., 2007; Nikitina et al., 2018; Panov, 2013; Pereira et al., 2017; Ponomareva et al., 2016; Sciacovelli et al., 2016), the fundamental provisions of modern enterprise management are formulated:

- highlighting the problems of flexibility and adaptation to constant changes in the external environment;
- consideration of the enterprise as an integral system that allows to study the organisation in the unity of its constituent parts, since the enterprise as a system is not self-sustaining, but depends in its activities on energy, information and other resources coming from outside;
- recognition of the need to develop and implement the strategic enterprise management system;
- turning the business towards managing organizational culture as a system of values shared by the organization's personnel and related to its ultimate goals.

The changed organizational structure of the enterprise includes the establishment of high standards of activity, starting with each employee of the enterprise, and the ensuring flexible leadership with an emphasis on personal contacts, and the creation of an atmosphere of universal involvement in the affairs of the enterprise.

The introduction of the KPI system at an industrial enterprise must be carried out in several stages (Kager & Lindenbergh, 2010; Pereira, et al., 2017 Ramis et al., 2018; Schumacher & Sihn, 2020).

Stage 1. Strategy formation. The enterprise strategy should be broken down into specific strategic initiatives, within the framework of which tasks are allocated for individual structural divisions. “Why does the company operate, what tasks did it come to the market for, why does the consumer need it?” - the answers to these questions will help to determine the general goals of the enterprise in the long term. Objectives should not be associated with a specific "unit", they should be tuned to the market, and actions - to market changes.

Step 2 Definition of critical success factors. At this stage, it is necessary to determine the factors of success - these are usually parameters of the managerial and economic aspects of the enterprise, which are vital for the implementation of the strategy.

Stage 3 Determination of key business processes in the structural divisions of the enterprise.

Step 4 Definition of the Key Performance Indicators. After identifying areas of activity that are significant for the enterprise, a set of financial and non-financial indicators is determined that affect the quantitative and qualitative changes in the results in relation to the strategic goal, that is, at this stage, the selection of KPI takes place. The number of KPI should be limited, for the reality of their implementation.

Stage 5 Development and evaluation of the balanced system of indicators. The combination of KPI into a balanced indicator is determined by several conditions, primarily the object of control, which can be a production unit, as well as the need to assess the key success factors for solving a strategic task.

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Stage 6 Decomposition of targets to all levels of management. Decomposition of target indicators on employees and highlighting the processes that affect the achievement of target indicators will allow employees to focus on achieving target KPI parameters and ensure effective employees compensation.

After the analytical analysis of the budgeting system at OJSC "MMK-METIZ" and the research of the stages of implementation of the enterprise performance management system based on Key Performance Indicators, the authors developed KPI for the budget planning and working assets management (GBP and UOA), which is a division of finance and economy management of OJSC "MMK-METIZ".

## 6. Findings

The most effective way to implement the KPI system at the enterprise, in the opinion of the authors, is the implementation of the KPI system by the employees of the enterprise with the process of involving external consultants. It is recommended to develop key performance indicators in a hierarchy from top to bottom - from the main goal of the enterprise to the goals of departments and functionals.

When selecting KPI for OJSC "MMK-METIZ", it was taken into account that in most cases there are no problems when compiling a list of possible KPI, since managers are well aware of the parameters by which it is possible to assess the activities of departments. However, the main problem is to choose the most significant ones. The selection of indicators was carried out on the basis of an assessment of the significance of each KPI, taking into account their weight. The weight was determined taking into account the principle - which indicators are not just desirable, but necessary to achieve the strategic goal.

When developing the system, it is proposed to take as a basis the structure of performance indicators, which consists of three levels:

- key performance indicators;
- manufacture indicators;
- key effectiveness indicators.

Key performance indicators selected for OJSC "MMK-METIZ" are presented in Table 1.

**Table 1.** Key performance indicators for OJSC "MMK-METIZ"

| Indicators | Description |
|---|---|
| EBITDA | Earnings before interest, taxes, depreciation and and amortization<br>An analytical indicator equal to the volume of profit before deduction of expenses on the payment of interest, taxes, and accrued amortization. |
| EVA | Economic Value Added<br>An indicator of the economic value added cost of an enterprise equal to the net operating profit after taxes less than capital costs. |
| ROE | Return on Equity<br>Return on equity shows the return on shareholders' investment in terms of accounting profit |
| ROS | Return on Sales<br>Return on sales shows the share of profit in every ruble earned. |

The manufacture indicators selected for OJSC "MMK-METIZ" are presented in Table 2.

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**Table 2.** Manufacture indicators of OJSC «MMK-METIZ»

| Strategic goal | Indicators | Description |
|---|---|---|
| Manufacture of products that meet modern and future consumer requirements. Improvement of the quality of manufactured products | Costs of production | Ensuring the fulfillment of the budget for the production of commercial products, not less than the established limit |
| | Repair costs | Ensuring the implementation of scheduled maintenance and repair activities, not less than the established limit |
| Development of existing and opening new sales markets for metal products | Sales volume | Ensuring the fulfillment of accepted orders for the shipment of metal products to the domestic and foreign markets, not less than the established limit |
| | Sales structure | Ensuring an increase in sales of products with high added value by a certain percentage |
| Improving production efficiency and reducing production costs. | Production self-cost | Ensuring a decrease in the production self-cost by a specified percentage |
| Concentration of production resources and their optimal use. Increase in the share of products with higher added value | Labor productivity | Labor productivity Ensuring labor productivity, not less than the established limit |

The activities of the budget planning and current asset management group (GBP and UOA) are based on the following business processes:

- business process "Budget planning and management of current assets in terms of management of accounts receivable and accounts payable";
- business process "Budget planning and management of current assets in terms of inventory management";
- business process "Budget planning and management of current assets in terms of budget planning and analysis."

After analyzing these business processes, key performance indicators were determined, presented in Table 3.

**Table 3.** Key performance indicators for GBP and UOA

| Indicators | Calculation |
|---|---|
| Total bonus rate for the group: | |
| Gross Margin Percentage (GMP). | GMP = (GP / SR) × 100%<br>where GP -Gross Profit; SR - Sales Revenue |
| *Indicators of bonuses to employees carrying out the business process "Budget planning and management of current assets in terms of management of accounts receivable and accounts payable":* | |
| Receivable Turnover (RT). | RT = SV / AR<br>where SV -Sales Volume (annual turnover of the company) ;); AR – average annual value of the Accounts Receivable |
| Accounts payable ratio | К к.з. = Total Debt / EBITDA |

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| | |
|---|---|
| | Where EBITDA − profit before taxes, interest, depreciation and amortization. |
| *Indicators of bonuses for employees carrying out the business process "Budget planning and management of current assets in terms of inventory management":* | |
| Stock Turnover (ST). | ST = U / C<br>where U is the cost of products sold; C - the average annual cost of inventories. |
| Indicators of bonuses for employees carrying out the business process "Budget planning and management of current assets in terms of inventory management": | |
| Percentage of budget execution accuracy | Fixed value of the indicator |
| Number (percentage) of errors in management reporting | Fixed value of the indicator |

## 7. Conclusion

The research showed that the management of an industrial enterprise is a complex process, requiring a unified focus of all departments on the strategic goals achievement. A well-formulated strategic goal determines the competitive advantage of an enterprise, which will allow it to successfully develop in an aggressive business environment. However, the ability of an enterprise to implement a strategy is much more important than the strategy itself, since without a clear mechanism for its implementation, the intended goals will remain only good intentions.

Tactical management, based only on operational financial management, using the enterprise budget as the main, and sometimes the only criterion for achieving the set goals, is deprived of the opportunity to assess the intangible component of the success of the activity and the trend of changes of the created value. Today an enterprise needs a new type of management - strategic, not tactical.

In the course of the research, the management system of one of the largest specialized enterprises for deep processing of rolled metal OJSC "MMK-METIZ" was analyzed and the main drawbacks of the existing system were identified, namely:

- complexity of the budgeting system;
- lack of flexibility;
- lack of personnel motivation;
- contradictions between the achievement of goals and their stimulating effect.

The main drawback of the budgeting system at OJSC "MMK-METIZ" is the lack of interconnection between the strategic goals of the enterprise, its structural divisions and operating activities; and the lack of interconnection between budgets and indicators of bonuses for specific employees. The most effective method for solving these problems is the implementation of the Key Performance Indicators system at the enterprise.

The introduction of the KPI OJSC "MMK-METIZ" system will enable the company to translate its concept and strategy into understandable and feasible tasks for employees of all structural divisions. It will help optimize efforts. Strategic planning and annual budgeting will be interrelated processes. Analysis of the enterprise's activities will be reduced not only to explaining the deviations between current and budget

indicators, but also to discussing intermediate results of achieving strategic goals. When developing budgets, attention will be focused not only on its implementation, but also on achieving long-term strategic goals. The KPI system will motivate personnel to improve the efficiency of their activities in general.

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