Personnel changes and labor productivity in regulatory budget monitoring

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Abstract. The introduction of high-tech solutions leads to a change in the format and content of almost any work, as well as a rethinking of approaches to staff planning. There is a need for a special financial and economic analysis of the object and preparation of key financial indicators standards for business planning. This calculation is based on the results of an external financial analysis without taking into account planned changes in the personnel of the enterprise and options for increasing labor productivity. The goal of the research is to propose a methodology and apply in practice for external financial analysis and calculation of the regulatory budget, taking into account the forecast of personnel changes and growth in labor productivity. To develop a business plan for the withdrawal of the enterprise from the crisis, it is necessary to have a regulatory framework for planned financial and economic indicators of the company's development. The article proposes a methodology for the development and monitoring of such indicators in the form of a "normative budget, taking into account the forecast of personnel changes and productivity growth", tested by the authors in real situations. The authors recommend the development of a regulatory budget for this on the basis of the monitoring model "to cover the necessary net profit and dividend payments, taking into account the forecast of personnel changes and growth in labor productivity."

Key words: personnel changes, labor productivity, business planning.

1. Introduction

Rapid changes in high technology, the availability of communications and the growing penetration of mobile devices are leading to changes in all areas of life [1]. Organizations are exploring new ways to understand consumer behavior, digitizing the product development life cycle, transforming supply chains, and creating new digital products and services to meet consumer needs [2]. Old approaches to change management processes may not meet modern business needs for a digitalization program and the introduction of modern, innovative technologies [3, 4].

Therefore, for success in the implementation of the digital economy, enterprises need new thinking and, more importantly, the transformation of their workforce, which should contribute to achieving a sustainable competitive advantage [5].

The introduction of high-tech solutions leads to a change in the format and content of almost any work, as well as a rethinking of approaches to staff planning. The growth of production efficiency in general, labor productivity, investment attractiveness and business capitalization are associated with automation, robotization, complex technological and organizational changes.

When developing a business plan for a new enterprise, the main issues are market assessment and sales forecast, investment attraction opportunities. When preparing a business plan for an operating enterprise, one more issue that is important arises - the use of the internal resources of the company: assets and personnel. Therefore, when developing a plan for a company, there is a need for a special financial and economic analysis of the object and preparation of key financial indicators standards for business planning [6]. These indicators include profitability and financial stability ratios, planned sales and cash flows, necessary investments in assets and personnel management projects [7].

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The designation of the minimum indicators set for business planning is called - the calculation of the regulatory budget. In a broad sense, this is the calculation of the planned sales of the enterprise’s products and the necessary investments in assets at a given level of profitability. Typically, this calculation is based on the results of an external financial analysis [8,9] without taking into account planned changes in the personnel of the enterprise and options for increasing labor productivity.

The goal of the research is to propose a methodology and apply in practice for external financial analysis and calculation of the regulatory budget, taking into account the forecast of personnel changes and growth in labor productivity.

2. Methods

Business planning is part of the overall planning system in enterprises. It is based on the development of strategies and is the basis of the current annual and quarterly planning of the company (figure 1).

![Diagram of the general company planning system](image)

Figure 1. Scheme of the general company planning system

In practice, two types of business plans should be distinguished: a business plan for a project and a business development plan for a company consisting of business plans for individual projects. At the same time, the main link of all plans is three main financial documents: revenues and expenses plan (PIS- planned income statement), balance sheet plan (PBS-planned balance sheet) and cash flow plan (CFP). If it is necessary to take into account the company's internal resources, the development of an effective business plan requires a regulatory framework based on a real level of economic and financial indicators of the company. In order to interconnect the financial indicators of business plans and current plans of the company in these forms, the preliminary development of a “regulatory budget” is necessary.

In order to develop an effective business plan for taking the company out of a crisis situation, the authors have developed and used the following [10, 11]:
- assessment of the financial and organizational and economic condition of the company,
- calculation of the regulatory budget,
- development of a business development plan.
The first stage is the assessment of the financial and economic state of the company. When analyzing financial and economic indicators, the following issues should be resolved in assessing the available resources of the company and the possibilities of their use:
- the availability of own funds for development and the acceptable level of raising borrowed capital, generating profits and cash flows from current activities;
- organizational and managerial potential of the enterprise for the effective use of existing personnel and attract new ones;
- organizational and managerial capabilities of the enterprise for innovation and the development of new markets;
- acceptable level of effective work in conditions of varying degrees of financial and industrial risk.

To address these issues, the authors tested the business planning methodology based on the separation of the principles of external and internal analysis (Table 1).

### Table 1. The relationship of external and internal financial analysis with business planning

| Types of financial analysis | Groups of calculated indicators | Accounting documents | Planned Documents |
|-----------------------------|---------------------------------|---------------------|-------------------|
| **External**                | Company financial performance   | Report on the financial condition of the company | 1. Methodology for conducting internal financial analysis  
2. The regulatory budget for the withdrawal of the company from the crisis |
| **Internal**                | Economic indicators              | Report on competitiveness, profitability and costs by type of activity, goods, services and units  
Report on the organizational structure, staffing and efficiency of company personnel | Variants of an enlarged business plan for removing a company from a crisis using various forms of remuneration |

External financial analysis is based on open accounting information of the enterprise and involves the use of standard methods of calculation. The main premise here is that financial indicators of the company's sustainability and business activity reflect the final result [12]. It is with an external analysis that evaluates the opportunities for raising capital, generating profits and cash flows. Important here is the analysis period of at least two to three years. An optimum horizontal analysis must be carried out in five years. To assess the level of risks - financial stability and creditworthiness at the first stage, a period of two years is sufficient.

As a result of an external financial analysis for the enterprise, a methodology for internal analysis and a standard development budget are being developed. To develop an effective business plan, as mentioned above, a regulatory framework based on a real level of economic and financial indicators of the company is needed. As such a regulatory framework in the proposed methodology, the calculation of the "regulatory budget taking into account the forecast of personnel changes and growth of labor productivity" is considered.

The system of indicators of external financial analysis is presented in the authors' early works. In this system, indicators of external financial analysis are divided into two groups:
- to assess the financial stability of the company in terms of financial and business, or business risk,
- to assess the business activity of the enterprise based on indicators of asset turnover and profitability, return on sales and equity.

The most significant financial indicators for the development of a business plan in the methodology are:

return on equity, return on assets and return on sales;

asset turnover and labor productivity;

level of financial and operational leverage (leverage).

In addition to these characteristics, the development of a business plan based on the calculation of the regulatory budget requires the following indicators of financial stability:

financial independence ratio, as a share of the company's equity in total assets,

total liquidity ratio,

debt ratio, as the ratio of the amount of short-term loans of the enterprise to the quarterly volume of sales.

The main feature of the proposed methodology of financial analysis is that it focuses on assessing the possibilities of using existing staff, attracting new with a predicted increase in labor productivity.

An analysis of the activities of industrial enterprises showed that increasing labor productivity usually contributes to an increase in the turnover of company assets. The quantitative relationship of these indicators significantly depends on the characteristics of the enterprise and the organizational and technological content of the company's personnel management projects [13, 14].

At manufacturing enterprises, an increase in asset turnover during outsourcing of production and sales operations may exceed the real increase in labor productivity by 20-30%. Other cases are possible. Therefore, we developed a model based on monitoring. It would allow considering this dependence for various situations.

Models for the preparation of standards for enterprise development planning and forecast calculations of sales and the investments are widely presented in the literature.

The proposed methodology considers an approach to the calculation of the "regulatory budget" for existing large and medium-sized enterprises, based on the use of the model "covering the necessary net profit and dividend payments, taking into account the forecast of personnel changes and growth of labor productivity".

The first step in the development of this budget model is to establish the amount of dividend payments and other expenses from the profits of the enterprise, to determine the planned amount of net profit.

Next, the amount of profit before tax and profit from sales is calculated based on the use of tax rates on profits and property, statistical data (results of an external financial analysis) for the firm for the previous period about other income and expenses of the enterprise.

The next step is to calculate the total planned sales for the company based on the planned ROS or using the principle of operating leverage. Planned indicators of profitability, labor productivity, asset turnover are determined based on a special assessment of the main competitors and the data of the external financial diagnostics of the enterprise.

In conclusion, this model determines the necessary amounts of additional financing and investment in the assets of the enterprise. It is here that it is necessary to take into account possible changes in the personnel composition and labor productivity. Experience shows that without solving these issues, the withdrawal of an enterprise from a crisis is delayed and actually ends in failure.

It is necessary to consider a simplified calculation example for the proposed model, taking into account the forecast of changes in the personnel and labor productivity. Table 2 shows the economic indicators of the unprofitable food processing industry of the Leningrad Region at the end of the reporting year (beginning of the planned year). ROS s for the reporting year was 2%.
Table 2. Economic indicators of the enterprise for the reporting period

| Company performance and labor efficiency       |       |
|-----------------------------------------------|-------|
| Total assets thousand.                        | 810   |
| Equity thousand.                              | 270   |
| Sale thousand                                 | 1200  |
| The average headcount, people                 | 245   |
| Labor productivity/ person per month          | 408.2 |
| ROS,%                                         | 2     |

The company's equity is at the beginning of the planned period - 270 thousand, the assets of the company - 810 thousand, sales for the previous year - 1200 thousand cu. The average payroll number for the reporting year is 245 people. The proceeds from the sale of products per 1 wage will amount to 7.42.

Based on the development of an enterprise development strategy, dividend payments are planned at a rate of 25% per annum of equity, and investments and expenses from net profit of no more than 50% of dividend payments. Then the net profit in the planning year should be:

\[ 270 \times 0.25 + 270 \times (0.25 \times 0.5) = 101.25 \text{ thousand cu} \]

Based on the data on income tax - 20% and the average excess of other expenses over other income for the enterprise in question - 10 thousand cu it is possible to determine the planned value of profit from sales:

\[ 101.25 \div (1.0 - 0.20) + 10 = 136.56 \text{ thousand cu} \]

With the planned ROS of 8%, sales in the planning year should be at least for our company:

\[ 136.56 \div 0.08 = 1707.0 \text{ thousand cu} \]

When planning investments in assets and forecasting numbers, there may be two assumptions:
- asset turnover, headcount and labor productivity remain unchanged,
- asset turnover increases (or decreases), labor productivity grows in accordance with the strategic development plan of the company.

When planning an unchanged amount of asset turnover (Table 3, the regulatory budget option No. 1)

\[ 1200 \div 810 = 1.48 \text{ turnover per year} \]

their total amount in the planned year should be

\[ 1707.0 \div 1.48 = 1153.3 \text{ thousand cu} \]

Those to ensure planned revenue and profit in this case, additional investments are required in the assets of the enterprise in the amount of

\[ 1153.3 - 810 = 343.3 \text{ thousand cu} \]

The number of personnel under the project with constant productivity will be 349 people, i.e., additionally, during the implementation of the project

\[ 349 - 245 = 104 \text{ people} \]

This will require, while maintaining the average monthly wage of personnel, an increase in labor costs by 1.42 times.

The amount of investments, additional staff and labor costs can be significantly reduced in the company's development projects when planning to increase productivity and asset turnover based on the use of innovative production and organization technologies [15, 16].
Table 3. Planned indicators of the enterprise and labor efficiency for the regulatory budget options

| Planned performance indicators of the enterprise | Regulatory Budget Option №1 | Regulatory Budget Option №2 | Regulatory Budget Option №3 |
|-------------------------------------------------|-----------------------------|-----------------------------|-----------------------------|
| Dividend Payments (DIV)% of equity thousand cu  | 25                          | 25                          | 25                          |
|                                                 | 67,5                        | 67,5                        | 67,5                        |
| Investments and expenses from net profit, %     | 50                          | 50                          | 50                          |
| Net profit thousand                             | 101,25                      | 101,25                      | 101,25                      |
| Planned ROS, %                                  | 8                           | 8                           | 8                           |
| Sales, thousand                                 | 1707,03                     | 1707,03                     | 1707,03                     |
| Planned increase in labor productivity%         | 0                           | 10                          | 20                          |
| The increase in turnover compared to the increase in labor productivity | 1,0                        | 1,2                        | 1,2                        |
| Assets mln.u.                                   | 1153,3                      | 1028,8                      | 929,2                       |
| Investments in assets                           | 343,3                       | 218,8                       | 119,2                       |
| Headcount                                       | 349                         | 317                         | 290                         |
| The increase in the number of staff              | 104                         | 72                          | 45                          |
| The coefficient of growth of costs for labor     | 1,42                        | 1,29                        | 1,19                        |

Options No. 2 and No. 3 of the regulatory budget (Table 3) provide for an increase in labor productivity by 10% and 20%. The increase in asset turnover is associated with an increase in productivity and is 12% and 24% for the options under consideration. As a result, while maintaining indicators of planned net profit and profitability, the standard for investment in assets decreases from 343.3 to 218.8 and 119.2 thousand cu respectively. And the additional staff required is reduced from 104 to 72 and 45 people.

The main advantage of the regulatory budget model developed and proposed by the authors is the ability to monitor various situations and select standards for the development of a feasible business plan for moving the enterprise out of a crisis.

The performance plan is established on the basis of the analysis of statistics on the main competitors of the enterprise. After that, the regulatory budget is monitored for various growths in asset turnover. To develop a business plan, a variant of the regulatory budget is adopted with a planned amount of investment in assets, providing an acceptable level of financial stability.

3. Results and Discussion

The methodology proposed in the article was developed and tested in the process of working with numerous crisis enterprises of small and medium-sized businesses in St. Petersburg and the Leningrad Region from 2003 to 2016. At the same time, for the financial and economic analysis, development of a strategy and business plans for resolving enterprises from the crisis, the standard software products of the Voronov and Maximov consulting group were used: “Master of Finance: Analysis.” and “Project Wizard: Budget Approach”. When preparing materials for business planning, the monitoring model “Normative budget” was used, developed by the authors to expand the capabilities of standard software products. To apply the proposed methodology, it is also possible to use the standard software product “1C: Accounting 8.3.” with significant improvements for each specific enterprise.
Table 4 presents the results of work with one of the crisis companies of St. Petersburg in accordance with the methodology proposed in the article.

| Performance indicators of the enterprise and labor efficiency | 2014 | Regulatory Budget | 2016 |
|-------------------------------------------------------------|------|------------------|------|
| Total assets million rubles                                 | 256  | 322              | 298  |
| Equity million rubles                                       | 138  | 145              | 145  |
| Sales million rubles                                        | 448,6| 610              | 564  |
| Net profit million rubles                                   | 2,9  | 31,0             | 28,9 |
| Return on equity ROE,%                                      | 2,1  | 21,4             | 19,9 |
| The average headcount, people                               | 129  | 146              | 136  |
| Specific volume per 1 ruble of the salary of manufactured products | 7,32 | 7,60             | 7,68 |

At the enterprise producing special devices “SRP”, in 2014, the efficiency of operations sharply decreased: the return on equity ROE fell to 2.1%. This level of profitability is unacceptable to owners.

To get the company out of the crisis, financial diagnostics were carried out and a standard development budget was developed. In developing the regulatory budget, the authors developed the model of “covering the necessary net profit and dividend payments, taking into account the forecast of personnel changes and growth in labor productivity”.

Monitoring and analysis of various situations made it possible to recommend a regulatory budget with a planned increase in labor productivity by 20% and an increase in asset turnover by 8% for the development of a business plan for the company. The main indicators of this regulatory budget are given in table 4.

A business plan to get the company out of a crisis was developed based on the norms. Already by 2016, its implementation allowed to bring ROE return on equity to 19.9% compared to 21.4 in the regulatory budget (table 4).

Scientists widely discuss the problem of the methodology for effectively bringing crisis enterprises to a normal level of work [5, 10, 11, 14, 16]. The position of the authors is completely consistent with the opinion of scientists who believe that the solution to the financial issues of this work should be associated not only with investments in fixed assets of enterprises, but also with the planning of labor productivity [5, 10, 11, 12, 17]. The authors support the view that the planning of staff costs carried out in order to identify the organization’s reserves to increase its competitiveness in the occupied market segment [18].

The proposed system for monitoring the regulatory budget of crisis enterprises based on the model of “covering the necessary net profit and dividend payments, taking into account the forecast of personnel changes and labor productivity growth” allows to accurately establish the sales of new products and the necessary amount of investment in assets. This, in turn, allows investors to reduce the risks of financing such projects and achieve their real effectiveness.

4. Conclusions
To prepare a sound business plan to get the company out of a crisis, it is necessary to develop a regulatory framework for the existing financial and organizational capabilities of the enterprise [19],
the level of risks and market conditions [20]. The authors recommend the development of a regulatory budget for this on the basis of the monitoring model "to cover the necessary net profit and dividend payments, taking into account the forecast of personnel changes and growth in labor productivity."

To effectively solve this problem, the following work procedure is proposed:
- conducting an external financial analysis of the company to assess the financial capabilities of the enterprise,
- the development of planned indicators of labor productivity for the enterprise based on the analysis of statistics on major competitors,
- monitoring the regulatory budget with various growth in labor productivity and asset turnover,
- for the development of a business plan, a version of the regulatory budget is adopted with the planned value of investments in assets, providing an acceptable level of financial stability.

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