Increasing the efficiency of personnel management in municipal organizations through controlling operational risks and fixed costs

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Abstract. Personnel management at enterprises is a highly efficient process related to numerous risks. Improving the efficiency of personnel management projects requires maintaining an optimal level of risk. It is proposed to retain project risks at the planned level by controlling and regulating the amount of fixed costs at enterprises. Various systems of regulation are proposed for periods of rise and decline in economic activity of the enterprises.

1 Introduction

Personnel management is the most important element of any company's activity. Its economic efficiency is defined by a decrease in current costs and an increase in sales revenue, as well as growth in company value, and additional earnings. Personnel management at enterprises is related to numerous risks, which are generally defined by the concept of "human factor". The theory of financial management links profitability and risk in entrepreneurial activity: to improve the profitability of enterprises it is necessary to increase financial and operational risks. At the same time, practical activities of personnel management companies are dominated by projects aimed at cutting operational risks. This is usually achieved by reducing non-production personnel, rental space and other fixed costs. To ensure a high level of efficiency of personnel management projects in a company, it is necessary to monitor and maintain the optimal level of operational risks.

A large number of papers are devoted to evaluating and planning improvement of production efficiency by means of personnel management. Most of these works recommend that a variety of individual indicators should be used to analyze and evaluate personnel management [1 - 5]. These indicators are very important to assess such decisions as special methods of staff motivation, practice of personnel departments of the enterprise, methods of advanced training of different groups of personnel, detection of working time loss, inefficient costs and reduction of earnings.

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At the same time, literature review shows that not enough attention is paid to the general performance indicators and how they are connected with numerous individual indicators. In the authors’ opinion, we should clearly identify two groups of fundamentally different characteristics when evaluating personnel management projects and activities: individual ones– used for evaluation of projects and activities within separate divisions of enterprises, and generalizing ones– used for the evaluation of an enterprise as a whole. When we review specialized economic literature we find that the same is true for risk assessment. Different types of special risks are identified and classified in the papers [1,2,6,7]. Insufficient attention is paid to the generalizing risk assessment for companies’ management projects. What risk measures are generalizing for enterprises? How is it possible to take into account the changes in personnel management risks, to assess them qualitatively and quantitatively, and to develop measures to compensate them? In this work the generalizing characteristic of operational risks at enterprises is determined by the ratio of fixed and variable costs in production. It is quantified by the following indicators: operational leverage, break-even point and "financial safety margin" [6,7]. The paper presents the results of the study of operational risk management methods by regulating fixed costs of an enterprise in the conditions of economic rise, sales growth and economic downturn.

2 Experimental section

Risk management is a set of processes related to risk identification and analysis, and decision-making, which includes maximizing the positive and minimizing the negative consequences of the risk events [1,7,11-12]. Risk management involves an impact on the management object, aimed at reducing the degree of uncertainty, i.e. decreasing the number of adverse results. Risk resolution and risk reduction tools have been developed in risk management practice. The means of risk resolution are: avoidance, retention, transfer, and reduction of risk. Risk avoidance means simply the avoidance of events associated with risk. However, risk avoidance for investors often means avoidance of earning profits. Risk retention is the acceptance of a risk by the investor, i.e. the investor accepts the loss, or benefit from a risk when it occurs. It should be noted that the effect of operational risk is manifested in the fact that any change in sales revenue always generates a bigger change in profits. Therefore, risk retention is the most important factor in improving the efficiency of personnel management projects. The paper proposes a methodology for retaining the operational risks of an enterprise at the planned level. Reliable and sufficient information was needed to justify the methodology. Information plays a major role in the development of action methodology, as it allows us to make a more informed decision in a particular situation. Therefore, a special study was conducted on the relationship between changes in fixed costs and operational risks of various enterprises under conditions of growth in sales volumes and under conditions of economic recession. The most common types of quantitative assessment of these risks are: operational leverage, break-even analysis and determination of the "financial safety margin" of an enterprise.
Operating leverage (OR) is a measure that reflects the level of fixed costs in the operational activity of a company. The higher the OR ratio is and, accordingly, the share of fixed costs in the company's activities, the higher the operational risks are.

The OR ratio is determined as follows:

\[ OR = \frac{MP}{SP}, \]

where

- \( MP \) is the marginal profit (sum of the fixed costs coverage and sales profit) of the company;
- \( SP \) is the sales profit.

The marginal profit (MP) of a company is defined as the difference between sales volume (SV) and the variable costs (VC) of the company:

\[ MP = SV - VC. \]

Since margin profit is the sum of fixed costs coverage and sales profit, the higher the leverage and, accordingly, the operational risk are, the greater the share of fixed costs is in the total costs of a company. The ratio between fixed and variable costs in different enterprises reflects the level of operational risk and accordingly affects the level of profitability that can be managed through the mechanism of operational leverage.

Projects aimed at improving personnel management systems at enterprises are mainly aimed at reducing the number of workers and at increasing labor productivity. Accordingly, the implementation of these projects changes the ratio between fixed and variable costs of a company, affects the level of operational risk and should be quantitatively estimated in the analysis of efficiency of different project options. This estimate is done by calculating operating leverage and is an obligatory component of economic calculation in one-stage assessment of projects.

Break-even analysis and profitability threshold estimation are used to determine the sales volume at which a company will be able to cover all its expenses without making a profit.

Break-even point is determined by the amount of annual (or monthly) sales volume, which in its magnitude is equal to the current cost of a company for the same period of time. So, the break-even point defines the lower limit of sales volume at which the company receives neither a loss nor a profit, but fully covers its own production and selling costs. Break-even point (BEP) or profitability threshold is determined by the formula:

\[ BEP = FC / (1 - Rm), \]

where

- \( Rm \) is margin ratio, which is the share of variable costs in the revenue from sales of a company's products.
- \( SR \) is revenue from sales of a company's products for a year (month).

Variable and fixed costs are calculated over the same time period as sales revenue.

This ratio, the break-even point, is very important for planning the activities of companies, as it allows quantifying the risk of reducing demand and sales volumes.

Break-even analysis is usually supplemented by calculating the "financial safety margin" of a company. This value represents the difference between the actual or planned sales volume and the profitability threshold of a company. It is this characteristic that determines the size of business risk an enterprise operates at. An increase in "financial safety margin" during personnel management projects means a decrease in production risks, while a decrease in this value characterizes an increase in these risks.

Table 1 and 2 show changes of the level of operational risks at enterprises with high and low share of fixed costs in prime costs in the conditions of growth or reduction in the planned sales volumes.
Table 1. Reduction of operational risks at enterprises if sales volumes are growing.

|                                | An enterprise with a low level of fixed costs | Change of indicators with revenue increase of 10% | An enterprise with a high level of fixed costs | Change of indicators with revenue increase of 10% |
|--------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Sales volume                   | 24 000                                        | 26 400                                        | 24 000                                        | 26 400                                        |
| Cost of products sold          | 21 600                                        | 23 112                                        | 21 600                                        | 22 464                                        |
| including variable costs       | 15 120                                        | 16 632                                        | 8 640                                         | 9 504                                         |
| fixed costs                    | 6 480                                         | 6 480                                         | 12 960                                        | 12 960                                        |
| Share of variable costs in prime costs | 0.70                                          | 0.72                                          | 0.40                                          | 0.42                                          |
| Share of fixed costs in prime costs | 0.30                                          | **0.28**                                      | 0.60                                          | **0.58**                                      |
| Sales profits                  | 2 400                                         | 3 288                                         | 2 400                                         | 3 936                                         |
| Increase in sales profits      |                                               | 0.370                                         |                                               | 0.640                                         |
| Growth rate of sales per year  |                                               | 0.100                                         |                                               | 0.100                                         |
| Marginal profits               | 8 880                                         | 9 768                                         | 15 360                                        | 16 896                                        |
| OR                             | 3.70                                          | **2.97**                                      | 6.40                                          | **4.29**                                      |
| Break-even point               | 17 514                                        | 17 514                                        | 20 250                                        | 20 250                                        |
| Financial safety margin        | 6 486                                         | 8 886                                         | 3 750                                         | 6 150                                         |
| Increase in financial safety margin | **0.37**                                      |                                               |                                               | **0.64**                                      |

Table 1 shows that with a 10% increase in sales volumes, the share of fixed costs is reduced by 2%. This makes operational risks lower. Thus, the operational leverage falls from 3.7 to 2.97 and from 6.4 to 4.29. A greater decrease in the indicator is typical for enterprises with a higher initial risk level.

The financial safety margin increases by 37% and 64% depending on the initial level of operational risk determined by the share of fixed costs in the prime costs. Reducing the level of risks in the future will lead to a relative decrease in the growth of sales profits compared to the increase in sales volume. Here it is necessary to maintain the level of operational risks at the initial, higher level to ensure sufficient efficiency of new personnel management projects at an enterprise.

At the same time, with a decline in sales and decrease in sales volumes by 10% (the share of fixed costs (Table 2) increases by 2%) operational risks increase significantly. Operating leverage for enterprises with a relatively low level of fixed costs increases by 1.43 times from 3.7 to 5.29.

In enterprises with high initial operational risks (fixed costs 60%), operational leverage increases by 2.5 times from 6.4 to 16. Financial safety margin is reduced by 1.6 and 2.8 times for companies with low (30%) and high (60%) share of fixed costs in the prime costs. Undoubtedly, the increased risks have to be compensated, so that they could be kept them at the initial level to ensure the normal operation of the company during economic recession.
Table 2. Growth of operational risks at enterprises if sales volumes are decreasing.

|                              | An enterprise with a low level of fixed costs | Change of indicators with revenue increase of 10% | An enterprise with a high level of fixed costs | Change of indicators with revenue increase of 10% |
|------------------------------|---------------------------------------------|-----------------------------------------------|---------------------------------------------|-----------------------------------------------|
| Sales volume                 | 24 000                                      | 21 600                                       | 24 000                                      | 21 600                                       |
| Cost of products sold        | 21 600                                      | 20 088                                       | 21 600                                      | 20 736                                       |
| including variable costs    | 15 120                                      | 13 608                                       | 8 640                                       | 7 776                                        |
| fixed costs                  | 6 480                                       | 6 480                                        | 12 960                                      | 12 960                                       |
| Share of variable costs in prime costs | 0.70                                         | 0.68                                         | 0.40                                        | 0.38                                         |
| Share of fixed costs in prime costs | 0.30                                         | 0.32                                         | 0.60                                        | 0.62                                         |
| Sales profits                | 2 400                                       | 1 512                                        | 2 400                                       | 864                                          |
| Increase in sales profits    | (0.370)                                     |                                              | (0.640)                                     |                                              |
| Growth rate of sales per year| (0.100)                                     |                                              | (0.100)                                     |                                              |
| Marginal profits             | 8 880                                       | 7 992                                        | 15 360                                      | 13 824                                       |
| OR                           | 3.70                                        | 5.29                                         | 6.40                                        | 16.00                                        |
| Break-even point             | 17 514                                      | 17 514                                       | 20 250                                      | 20 250                                       |
| Financial safety margin      | 6 486                                       | 4 086                                        | 3 750                                       | 1 350                                        |
| Increase in financial safety margin | (0.37)                                      |                                              | (0.64)                                      |                                              |

3 Results

When choosing a strategy and risk management methods, a certain pattern of actions is often used, which is determined by a manager’s experience and knowledge and which makes it possible to act quickly and in the most acceptable way in certain typical situations. If there is no such a pattern, the manager should look for solutions in the conditions of uncertainty.

On the basis of the authors' research of the impact of the ratio of fixed and variable costs in the production prime costs on the level of operational risks, the pattern of risk planning for SSUP projects was taken on the basis of the impact on the ratio of fixed and variable costs of an enterprise as a whole under different conditions of economic development. This pattern implies the need to reduce non-production personnel only if there is a decline in the economic activity of the enterprise and sales volume reduces. If sales volumes grow, in order to maintain operational risks at the planned level, it is possible to introduce additional positions for non-production personnel and other elements to increase the fixed costs of an enterprise. The mechanism and changes in fixed costs are determined for each specific enterprise based on the analysis of the external and internal production situation.
4 Conclusions

1. The theory of financial management substantiates a close analytical relationship between the profitability and operational risks of enterprises. Growing risk level creates conditions for increasing the profitability of a company. An impact on the size of fixed costs of a company can be recommended as the simplest pattern of actions for regulating operational risks of enterprises in personnel management projects. These actions allow keeping operational risks of enterprises at the planned level.

2. The results of the study show that at the stages of development and growth of sales volumes, the share of fixed costs in prime costs decreases and, accordingly, the level of risks determined by such indicators as the operating leverage and break-even point decreases too. To retain the risks at this stage, it is possible to increase the share of personnel on a salary-based system of labor remuneration.

3. The opposite situation occurs during periods of decline in production and sales. In this case, there is an increase in the share of fixed costs in prime costs and a very significant increase in operational risks. Here, to retain the planned level of risks an enterprise may encounter, it is necessary to implement personnel management projects aimed at reducing the salary system and other elements of fixed costs.

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