Methods for identifying risks and opportunities in industrial organizations

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Abstract. Many factors negatively influence the Russian economy in modern conditions. They are the instability of industrial relations, the growth of inflation, the rise in the cost of loans, a significant decrease in the state support for the sectors of the economy and the functioning of the organization, a decrease in real incomes of the population, and many others. The chosen topic is relevant because many enterprises and organizations are unable to adapt to market conditions and make informed decisions under uncertainty. This is one of the reasons for the decline in their activities. This article is devoted to modern methods of managing the efficiency of an organization, proves the importance of considering the risks of the external and internal environment, as well as a methodology for determining the risks and opportunities for organizing the real sector of the economy is presented.

1. Introduction

There are many factors that negatively impact on the state of the Russian economy in modern conditions: the instability of industrial relations, growth of inflation, and the rise in the cost of loans, significant reduction in the state support for the sectors of the economy and the functioning of the organization, a decrease in real incomes of the population, and many others. Many enterprises and organizations are not able to adapt to market conditions and make informed decisions in conditions of uncertainty were one of the reasons for the decline in their activities to the complete bankruptcy of individual enterprises. Continuous improvement of the organization's work is the key to survival in the modern market. Regardless of industry and location, organizations manage their performance. This involves a series of repetitive activities, namely the development of organizational goals and assesses progress in achieving them. At the same time, the heads of organizations rely on the ratio of economic results and used resources. In the modern world, the criterion for assessing efficiency is the satisfaction of stakeholders - internal and external stakeholders.

The available and most popular ways to manage organizational performance are:
1. process approach and elimination of cross-functional inconsistency;
2. risk-oriented thinking in strategic and operational planning, including analysis and processing of statistical data;
3. definition and continuous measurement of targets, the appointment of responsible persons, analysis and assessment of non-conformities.
All activities of an organization involve risk. Organizations manage risk by identifying it, analyzing it, and then assessing whether the risk will be modified by exposure to meet established risk criteria. Throughout this process, they share information and consult with stakeholders, observe and analyze risk and management actions that modify the risk to ensure that further risk mitigation is no longer required [2].

2. Material and methods
Industrial enterprises of the military-industrial complex occupy a special place in the structure of the national economy. The increased attention of the state to this industry is explained by the desire to create an effective innovative resource on the basis of the scientific, technical, and production and technological potential of enterprises.
When the quality management system is planned, the organization determines the risks and opportunities, considering the factors of the external and internal environment and the requirements of interested parties for:
a) ensuring confidence that QMS achieves the intended results;
b) increase the desired impact of opportunities;
c) preventing or reducing the unwanted impact of risks;
d) achieving improvement.
The organization analyzes the risks of problems expressed in non-fulfillment of requirements, failure to achieve planned results in all processes and activities of QMS, and takes actions to prevent risks or reduce their possible unwanted impact.
At this stage, an analysis of the influence of the external environment on the strategic goals of the enterprise and the QMS policy can be carried out. When the external environment is examined, it is recommended to use PESTLE-analysis (Figure 1) - studying the positive and negative influence of the following factors: P – political, E – economic, S – social, T – technological, L – legal, E – environmental [5].
Risk management in an organization without fail includes the following steps:
- Risk identification;
- Risk description;
- Search for the sources of the identified risks;
- Search for the causes of the identified risks;
- Identification of chains of consequences of the detected risks;
- Ranking chains of consequences in order to identify the most significant events;
- Selection of the most significant risks;
- Choice of a response method for each significant risk;
- Planning of preventive actions for each selected method;
- Analysis of the adequacy of planned actions;
- Implementation and control of planned activities (actions);
- Analysis and evaluation of the effectiveness of the measures taken.

Table 1 shows the classification of risks used for an industrial enterprise.

| Risk                          | Main reasons                                      | Results                                                                 |
|-------------------------------|---------------------------------------------------|-------------------------------------------------------------------------|
| Risks in procurement activities | - working with an unscrupulous supplier           | - failure to meet the planned production targets for finished products, disruption of the state assignment; |
|                               | - procurement of goods at inflated prices          |                                                                          |
|                               | - refusal of planned suppliers from drawing up supply contracts |                                                                          |
-increased costs for the purchase of raw materials and materials for the production of finished products;  
-non-recognition of the organization's expenses in full due to inspections by fiscal authorities

| Risks in production activities | -insufficient design and technological preparation of production  
-irregular operation of production  
-insufficient qualification of personnel  
-insufficient level of production automation  

| Risks in innovation | -the need to improve the competitiveness of production  
-the need for the development of civilian products  
-the wrong choice of innovative projects  
-insufficient innovative activity of personnel  

| Financial management risks | -lack of highly liquid operating assets  
-ineffective accounting system (management, accounting)  
-the complexity of obtaining credit resources  

| HR risks | -insufficient qualification of personnel  
-lack of staff  

Sources of information for identifying risks can be results of the analysis of the functioning of the QMS processes; supplier assessment results; internal and external audit reports; analysis of nonconforming products and ones returned by consumers and complaints from consumers; information about violations of technological discipline; analysis and assessment of customer and employees of the organization satisfaction; minutes of meetings of the Quality Council, meetings of scientific and technical councils. Actions that can be used to implement risk response methods include:

Correction is the action taken to eliminate the inconsistency that has arisen. Corrective actions are used to eliminate the causes of existing nonconformities of products, processes, QMS procedures, and prevent these nonconformities in the future. The organization's improvement process using corrective actions includes:

1) setting specific goals;  
2) control (assessment) of the implementation of the set goals;  
3) accumulation of data based on the results of control (assessment);  
4) identification of existing inconsistencies;  
5) identification (registration) of non-conformities;  
6) analysis of inconsistencies, including consumer claims, and identification of their causes;  
7) elimination of detected inconsistencies (if necessary);  
8) assessment of the need for action to avoid recurrence of nonconformities;  
9) development of corrective actions to prevent the causes of nonconformities;  
10) implementation of corrective actions;  
11) control of the implementation of corrective actions and registration of their results;  
12) analysis of the effectiveness of the taken corrective actions. Preventive actions are used to eliminate the causes of potential nonconformities of products, processes, QMS procedures, which may entail nonconformities of various natures. For using preventive actions, "weak", "insufficiently reliable", "potentially dangerous" and similar areas of already ongoing activities are identified.
The order and methods for taking preventive actions may include:
- using appropriate sources of information to identify, analyze and eliminate potential causes of nonconformities;
- analysis of the risks of problems with the quality of military products at all stages of its life cycle and the development of measures to reduce these risks;
- the procedure for initiating (submitting and registering proposals) preventive actions;
- providing relevant information about the actions taken to analyze their effects on the part of management.

The risk management process should be consistent with the culture, processes, structure, and strategy of the organization. An internal situation (context) is something within the organization that can influence how the organization will manage risk. Table 2 shows a typical generalized process model of risk management in an industrial enterprise.

**Table 2. Stages of the risk management process at the industrial organization.**

| Input                                                                 | Process algorithm                  | Output                                        |
|-----------------------------------------------------------------------|------------------------------------|-----------------------------------------------|
| 1.1. The strategic goals of the enterprise                            | 1. Risk management planning in QMS | 1.1. Risk management plan for the year        |
| 1.2. QMS policy, QMS goals                                            |                                    |                                               |
| 1.3. Objectives of quality projects and programs                      | 2. Risk identification             | 2. Risk register                              |
| 1.4. Goals of QMS processes                                           | 3. Analysis and assessment of risks| 3.1. Risk register                            |
| 1.5. Report on risk management in the enterprise                      | 4. Response planning               | 3.2. Risk map                                |
| 2. Risk management plan                                               |                                    | 3.3. Summary of the risk map                 |
| 3.1. Risk register                                                    |                                    |                                               |
| 4.1. Risk register                                                    | 4.1. Response plan                 | 4.2. Risk register                            |
| 4.2. Risk map                                                         |                                    |                                               |
| 5.1. Response plan                                                    | 5.1. Report on the results of response actions | 5.2. Problem registry                        |
| 5.2. Risk register                                                    | 5. Monitoring and control of risks |                                               |
3. Conclusion
The analysis of the experience of the best organizations that have implemented a risk-based approach would show that their success is due to the mandatory personal participation of decision-makers in risk analysis.
It should not be forgotten about the involvement of all stakeholders in the development of targets. This allows to create an open and trusting environment within and around the company. This approach would help build a cross-responsibility system for meeting targets in end-to-end processes and increase customer satisfaction.

References
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[5] Yashin N S and Andreeva T A 2017 Understanding the context of the enterprise within the quality management system Bulletin SSTU (№3 (67)) pp 115-124