Development of the Organization's Key Performance Indicators System in Order to Improve the Effectiveness of Its Human Capital and Risk Management

Rushan N. Zaripov [1], Ilnur M. Murakaev [1], Anatoly V. Ryapukhin [2]

[1]*Agat Organization, 125047, Butyrsky Val Street, 18, Building 1, Moscow, Russia*
[2]*Moscow Aviation Institute (MAI), 125993, Volokolamskoe highway, 4, Moscow, Russia*

Abstract **– In this article, the issues of improving management mechanisms, assessing and identifying the risks of an economic entity's activities by monitoring and analyzing the levels of human capital and the potential of its employees are considered. There is a hypothesis about the existing fundamental tendency of changing the status of employee of organization from the performer of standard operations to the creator of the product and associated risks. A mechanism is proposed for applying a system of key performance indicators (KPI) to assess the levels of human capital and potential in order to manage the production stability and competitiveness of organization, as well as to identify and assess the risks of its activities in time.**

Keywords **– key performance indicators, production sustainability, human capital, human resources, risk analysis.**

1. Introduction

The era of information technology, which continues its rapid attack on the classical approaches of macro and microeconomics, makes radical changes in the methods of organization, management and functioning of economic entities. Here risk management also continues to gain positions as an effective auxiliary tool for managing business processes, carrying out operational and strategic monitoring of deviations of certain indicators within financial and economic activity from planned levels and trends. Moreover, now it is being formed as an independent applied discipline and a business unit, which is associated with natural evolutionary processes occurring in the field of production management, due to the significant complication of economic relations and processes.

2. Theoretical Basis

The scientific literature has already considered the issue of irreversible development of organization management associated with the transition from a hierarchical multi-level management model to a functional (or design) one, which is associated with extremely low flexibility in decision making and inertia of processes in the first case. At the same time, due to the insufficient number of high-quality fundamental and applied research, the functional model has a number of significant drawbacks, which are still practically not amenable to control and leveling. Among them, it is necessary to note the preservation of one-man command at the level of the general director or the board of directors, presence of traditional auxiliary units (purchasing, financial and economic, technological, etc.) and marketing departments, which have a significant level of risks in their activities [1].

As a result, the forward-looking approach that a significant number of organizations around the world are currently seeking to implement is facing a classic set of risks, but at a much more complex new level. At the same time, classical risk management which was made to find effective solutions to such

DOI: 10.18421/TEM101-37
https://doi.org/10.18421/TEM101-37

Corresponding author: Anatoly V. Ryapukhin,
Moscow Aviation Institute (MAI), Moscow, Russia.
Email: ryapukhin.a.v@mail.ru

Received: 13 August 2020.
Revised: 27 January 2021.
Accepted: 02 February 2021.
Published: 27 February 2021.

© 2021 Rushan N. Zaripov, Ilnur M. Murakaev & Anatoly V. Ryapukhin; published by UIKTEN. This work is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 License.

The article is published with Open Access at www.temjournal.com

problems, in most cases is unable to do this, as evidenced by the continuing cases of financial insolvency of large, including transnational corporations, deterioration of their competitive positions, etc., despite the large-scale departments for risk management, internal audit, compliance control, etc. functioning in their structure [2].

3. Methodology

The object of this work is the organization's management system.

The subject is improving the risk management mechanism and increasing the efficiency of the system of KPI, which is extended beyond the scope of the annual incentives for employees of the organization.

The initial hypothesis is that the main risks of the organization's activities can be reduced to personnel ones, which, in turn, are managed through a system of KPI formed on the basis of factor relations or statistical analysis [3].

The purpose of the study is to analyze existing approaches and develop tools to increase the beneficial effect of introducing a system of KPI in an organization while reducing the cost of its administration.

The main objective of the study is to identify problems and risks in the existing organization management mechanisms and develop proposals to reduce them [4].

4. Results and Discussion

In order to achieve compliance of the management mechanisms of a production organization with levels 5-6 of technological structures, it is proposed to consider an employee of the organization as a creator of a product with the formation of an appropriate matrix of KPI for him, which allows carrying out a permanent assessment of the production and economic state of the organization in which this employee works, as well as identifying and assessing the risks of its functioning [5].

The existing management mechanisms of the organization associated with responding to emerging problems are focused on identifying the consequences, and not the factors that provoke the occurrence of risk events. This, in turn, is associated with two interrelated problems: poor study of the issue of proactive risk management at scientific and applied level and distorted fundamental foundations of the formation of risk management as a discipline [6].

It is not a secret that the founders and leaders of the main international professional risk management communities (Committee of Sponsoring Organizations of the Treadway Commission (COSO) [7] and Federation of European Risk Management Associations (FERMA)) [8] are predominantly from the financial sector. Moreover, risk management as a direction was initially formed in the banking sector as a tool to reduce credit risks. For this reason, the professional environment still retains an approach to risk management based on the assessment and analysis, first of all, of financial indicators as a cut of an entity's instant solvency without predicting its economic stability in the medium term. Moreover, this approach remains in the assessment of innovative projects, where the issues of profitability should arise not earlier than the stage of commercialization of the developed ideas, while the risks of the development of ideas and their initial implementation are predominantly of a production nature.

As a result, at many enterprises, risk management units actually duplicate the functionality of financial and accounting services, which has to independently conduct the necessary analysis in order to identify negative patterns or factors that have had or are capable of influencing financial and economic indicators. While risk management should be based on completely different principles based on statistical methods for analyzing indicators and time series, imposed primarily on production characteristics, indicators, the development of which should be carried out with the involvement of engineering and economic specialists, which will allow building risk-oriented mechanisms for the functioning of the main divisions of enterprises and entire industries and to respond to possible deviations even at the stage of occurrence of reasons, and not when assessing the financial results of activities at the end of the reporting period [9].

Within the framework of this article, we propose considering the hypothesis of the non-financial nature of the formation of risk factors for the activity of an economic entity. Earlier, in the work "Pyramid 4K ..." [10], we proposed a hierarchy of groups of risk sources for the organization, within which 4 categories were identified: personnel, capital assets, counterparties and market conditions. These categories form a single functioning organism, organization. Thanks to their well-coordinated work, ideas are generated and implemented, value chains are formed, and a product is created that meets consumer demand. And only a consequence of the satisfied consumer demand is the generation of cash flow and the organization's receipt of profit, the formation and growth of its capitalization, as well as an increase in production and economic stability, and the satisfaction of the social needs of its employees. The risks of reducing the profits of an organization can have an infinite number of factors, but the risks

of “ideological hunger” or problems with the sale of finished products are a much smaller number of factors, moreover, having a finite number. In addition, a one-time decrease in profit or even a loss is not always a significant negative factor, especially for an organization that carries out innovative developments or has a long production cycle. Although, even for an ordinary trading organization, a decrease in profits can be associated with classical dumping and the intention to conquer new markets in order to significantly improve performance indicators in the future [11].

However, in fact, all the factors of the organization's activity can be reduced to one thing: personnel (or more precisely, to human capital and personnel potential).

The above four categories of sources of risks to the organization, ultimately, are also reduced to separate areas of personnel risks.

In particular, the risk associated with capital assets includes the risk of equipment deterioration, untimely renewal or failure, downtime, etc., and boils down to the fact that the relevant persons or divisions performed poorly on its repair, justification updating, scheduling it to work or loading.

Counterparty risk is associated with suppliers of raw materials, semi-finished products or services for the main activities of the entity and includes the risks of lack or inadequate quality of products, late delivery, overpricing, etc. If we aggregate all the main counterparty risks, it becomes obvious that they are associated with the mechanism for selecting suppliers and contractors. And the mechanism, in turn, is formed by the specialists of the customer organization, and the higher the qualifications and experience of the specialists, the more objectively the mechanism will be formed. Moreover, even force major risks are determined by the qualifications of specialists and their ability to predict unexpectedly emerging unlikely problems [12].

Market risks, on the one hand, overlap very strongly with counterparty risks, but they have a big difference, since the manufacturing organization of the finished product is located in the place of the counterparty. The main problem of this group of risks is associated with the ability to conduct the necessary market analysis in order to identify niches that best match the specifics of the organization's activities, but, at the same time, offer the maximum margin. And, obviously, the maximum of the given two-factor problem can be obtained only by attracting qualified marketers and economists, a combination of which will determine the current market needs and the trend of their changes.

Thus, the presented calculations make it possible to unambiguously identify personnel as the main and only primary source of risks for an economic entity, and it is the management of human capital and potential that should be a priority area of the organization's management.

One of the fundamental differences of the 5th and 6th technological orders from the previous ones is the revision of the status of the employee of the organization. If earlier he was considered as a performer ("cog" in the system), now he is being transformed into a creator ("generator of ideas and approaches"), which entails the need to develop fundamentally different mechanisms of management and evaluation of his activities in order to get the maximum return from his abilities and provide opportunities corresponding to them. That is, if earlier the result of work was assessed, for example, by the number of products created according to a template or services provided, which made it possible to apply simple incentive measures both in planned and market economy, now it is necessary to assess the creative potential and the result, as well as the accompanying risks of this activity [13].

The currently implemented mechanisms for assessing employee performance based on KPI give a twofold result. On the one hand, the fact that there are quantitative criteria for assessing the achievement of certain goals is positive, allowing management to see a clear picture of performance and identify the reasons for deviations, however, on the other hand, a significant number of managers are critical of KPI due to their subjectivity and the complexity of selecting optimal indicators for each employee.

In our opinion, within the framework of the current economic structure, KPI system is the only mechanism for assessing individual's activities, but for its full use, it is necessary to solve two problems:

1. To introduce differentiated periods for the analysis of the achievement of indicators;
2. To develop a mechanism for determining the most objective and effective KPI.

As for the first task, now in a lot of organizations, only annual KPI are being introduced, according to the results of which employees can have a bonus. But in this case, the mechanism solves only the problem of fulfilling the annual plan of the stated goals of the organization. Although it would be more correct, in addition to annual indicators, to introduce quarterly, monthly, weekly and, possibly daily, which would be indicative, but would allow timely identification of deviations in business processes and risks of achieving the final strategic indicators. This approach significantly complicates the entire process of implementing and administering KPI system, but allows getting much useful effect [14].

The second task is much more difficult. Until now, the main mechanism for the formation of KPI lists is expert opinion, which is formed by the head,

involved consultants and in some cases by the employee himself. The disadvantages of this approach are obvious and consist, firstly, in the probable subjectivity of the choice of indicators, secondly, in a formalized approach often used in the implementation of KPI, and thirdly, in a long period of obtaining a result from the implementation of the system.

For example, the approval of a list of KPI throughout the hierarchy of a medium-sized company (with a staff of 2000-3000 people) takes from several weeks to several months. The result of using the system will be received and visualized in another 13-14 months (reporting year + time for data processing). In this case, the result can be either positive or negative. So, KPI may not be achieved, employees will not receive a bonus at the end of the year, but the main problem will be associated with the fact that precious time is lost, since a company can spend up to 16 months only on one iteration of approving KPI, trying to achieve them and getting feedback on the results of the reporting period. In addition, in the context of a changing market environment, there is a possibility that either the selected KPI initially do not sufficiently objectively reflect the organization's targets, as a result of which their achievement does not give the necessary synergistic effect, or in the process of activity they have lost their relevance [15].

Thus, we believe that, firstly, KPI should have different time horizons, depending on the level of their significance and relevance, allowing timely responses to deviations from the planned dynamics, which will also allow identifying risks of sustainable functioning of the organization. Secondly, it is advisable to form the list of indicators using the tools for analyzing correlations and statistical analysis, which will make it possible to form an understandable model of achieving the organization's KPI based on the indicators of individual employees and to validate it. So, the approved list of indicators should be formed on the basis of quantitative model or statistical dependencies, which make it possible to explicitly determine relations and determining factors. Currently, this approach is quite costly, since it becomes necessary to perform large-scale work related to the formation of a list of KPI for each employee of the organization and their verification based on the created model of the organization's KPI. However, the unification of indicators for staff units performing similar functions will significantly reduce costs. So, the system should be unified by positions and grades, which will allow creating two-dimensional matrix with a limited number of elements. In addition, such an organization's KPI model is static and does not require frequent revision due to the fact that the indicators should be "sewn in" dynamic elements that determine not only the current production and qualification state of the employee, but also the possibilities for changing it. In addition, it is advisable to include indicators reflecting the risks of the organization's activities in the KPI management structure, which will reduce the current load on the internal audit and internal control departments and supplement it with the functionality of participating in the formation, verification and assessment of the achievement of KPI [16].

5. Conclusion

Thus, within the framework of this article, we hypothesize the expediency of using the KPI system not only as a tool for the annual assessment of employee performance for incentive purposes, but, first of all, as a comprehensive auxiliary toolkit for management and owners of an organization, focused on permanent monitoring of dynamic production and the economic state of the organization and its deviations from the planned levels based on a quantitative factor assessment of the state and activities of individual employees, which will allow, firstly, to have a dynamic register of assessments of human capital and the organization's potential, and secondly, to monitor the achievement of tactical and strategic goals of the organization, thirdly, to control and respond in a timely manner to the entire range of risks associated with core activities. In addition, the introduction of this approach will optimize the classical administrative hierarchy in an organization based on the formation of departments and divisions and bring it to a more dynamic design form.

In subsequent works in this area, it is planned to develop factorial mechanisms for selecting KPI employees with the aim of their algorithmization and the possibility of creating an information product that allows performing this work in automatic mode with an optimal result.

References

[1]. Sinyuk, T. Yu., & Kazimirova, N. G. (2020). KPI i KTU kak bazis formirovaniya motivatsionnoy chasti sotrudnikov sovremennoy organizatsii. *Vestnik Akademii znaniy, 37*(2), 306-309. [in Russian].

[2]. Zemlenaya, V. A., & Tretyakova, L. A. (2020). Primeneniye sovremennykh instrumentov motivatsii personala na osnove greydov i KPE. *Aspirant, 52*(1), 47-51. [in Russian].

[3]. Volkov, M. O. (2018). Sovershenstvovaniye sistemy stimulirovaniya truda personala na osnove upravleniya effektivnost'yu. *Ustoychivoye razvitiye nauki i obrazovaniya, 4*, 43-51. [in Russian].

[4]. Ibragimova, V. R., Nelson, A. Yu., & Alexandrova, O. A. (2018). Formirovaniye kompleksnogo podkhoda k otsenke chelovecheskikh resursov predpriyatiya. *Akademicheskaya publitsistika, 11*, 94-101. [in Russian].

[5]. Taleb, N. N. (2015). Chernyy lebed. Pod znakom nepredskazuyemosti–2-e izd. dop.(The black swan. The impact of the highly improbable). *M.: Kolibri. Azbuka-Attikus*. [in Russian].

[6]. Kobernik, E. G., & Akhmetova, G. Z. (2017). Individualizatsiya motivatsii sotrudnikov kak faktor povysheniya organizatsionnoy rezul'tativnosti. *Mezhdunarodnyy nauchno-issledovatel'skiy zhurnal, 11*(65), 168-170. [in Russian].

[7]. Coso.org (2020). *COSO standards "Integrated enterprise risk management systems", Committee of sponsors of the Treadway Commission.* Retrieved from: www.coso.org/documents/coso_erm_executivesummary_russian.pdf [accessed on 28 June 2020].

[8]. Ferma.eu. (2020). *A Risk Management Standard, FERMA.* Retrieved from: http://www.ferma.eu [accessed: 25 June 2020].

[9]. Zaripov, R., Murakaev, I., & Ryapukhin, A. (2020). Industrial Enterprise Risk Management Mechanisms Aggregation and Integrated Visualization of Risk Assessment Results. *Revista Inclusiones*, 32-41.

[10]. Zaripov, R. N., Murakaev, I. M., & Ryapukhin, A. V. (2017). Kontseptsiya upravleniya riskami sovremennogo promyshlennogo predpriyatiya – «Piramida 4K». *Ekonomika i predprinimatel'stvo, 11*(88), 827-830. [in Russian].

[11]. Bolshakov, D. A., & Bolshakova, A. Yu. (2012). Upravleniye riskami na innovatsionnom predpriyatii. *Aktual'nyye voprosy ekonomicheskikh nauk, 26*, 45-49. [in Russian].

[12]. Khrustalev, E. Y., Slavyanov, A. S., & Khrustalev, O. E. (2016). Sistematizatsiya, klassifikatsiya i metody kompensatsii riskov v zhiznennom tsikle slozhnykh naukoyemkikh proyektov na primere raketno-kosmicheskoy tekhniki. *Ekonomicheskiy analiz: teoriya i praktika, 5*, 29-40. [in Russian].

[13]. Ivanova, N. V., & Klochkov, V. V. (2010). Ekonomicheskie problemy upravleniya vysokoriskovymi innovatsionnymi proektami v naukoemkoy promyshlennosti [Economic problems of management of high-risk innovative projects in hightech industry]. *Problemy upravleniya [Problems of management]*, *2*, 25-33. [in Russian].

[14]. RM, K. (2012). Upravleniye ekonomicheskim riskom: teoreticheskiye osnovy i prilozheniya [Management of economic risks: the theoretical foundations and applications]. Moscow, Nestor-Istoriya Publ. [in Russian].

[15]. Badalova, A. G., & Panteleev, P. A. (2011). Primeneniye nechetkogo vyvoda dlya opredeleniya tipa krizisa v adaptivnoy sisteme strategicheskogo upravleniya riskom. *Nauchnyy vestnik Moskovskogo gosudarstvennogo tekhnicheskogo universiteta grazhdanskoy aviatsii, 169*, 33-40. [in Russian].

[16]. Hubbard, D. W. (2009). *Kak izmerit' vse, chto ugodno. Otsenka stoimosti nematerial'nogo v biznese.* Moscow: Olymp-Business. [in Russian].