Increasing (development) process’s capability: improving system’s immunity

Abstract
This approach is oriented to the identification of the weak links in the organization, which are allowing the improvement of the management system. Its essence is expressed by the knowledge of the means of identification of destructive forces, which do not only cause mismatching, but also introduce uncertainty, experience external influences and progress significantly. Such knowledge is accumulated by the effect of constant monitoring of the system, which is ensuring an increase in its performance. It also ensures the prevention of premature destructions of the organization, which does not allow it to acquire an unnatural state, by causing a real illness, which often leads to death. As a result, the implementation of the measures that contribute to such warnings productively affects the performance of the system and leads to a decrease in losses. Taking into account that the requirements for continuous monitoring of forces that are destroying the organization and their consequences are not consistent with the rules of the developers regarding the search for weak links in the smoothly running version of the system, the problem of the research was expressed in the following formulation: “It is impossible to make objective conclusions about the state of the organization in the absence of means for setting the objectively specified standards”. The object of the research is characterized by the means of detection of the weak link in the system. Such means ensure the timely identification of the hidden reasons for the failure in its stable functioning. Thus, the degree of the expert’s skill is manifested, which makes it possible to set limit to the accumulation of the spread of false knowledge by means of a full-scale three-level assessment of the current position before and after the localization of the place of failure in the stable functioning of the organization. As a practical result, it is worth noting that the measures taken to ensure reproducibility ensure the effectiveness of a full-scale assessment of the state of the organization. Moreover, their focus on provision of the integrity of the process includes a sequence of the interconnected tools that make it possible to move from long-term management within the framework of the cost pentagram to the implementation of a medium-term scenario as part of weighted sets of attributes, which were considered by taking into account the identified groups of critically influencing parameters that identify the degree of impact on the system of such subtle signals. The novelty of the proposed approach lies in the application of the technique of operational definitions that are supplemented by the mechanisms of the production of meaning, makes it possible to issue expert opinions on the current state of the organization within the framework of the continuous monitoring of the sustainable growth of the organization’s potential.

Keywords
Admission, exit, repetition, chronic condition, diagnosis, correction, stability

JEL: O40, O10

1 Introduction

The idea of this study arose in the course of processing of the results obtained in making an assessment of the contribution of the university branch to the region development [1–3]. In the course of such processing, it was stated that the current value of the association was used as a measure of efficiency, which included three potential participants: university, investors, business representatives. The assessment of the current value was made by discovering the effect of three Reicheld loyalties [4]. This effect involves the use of appropriate tools, including integrated business engineering technology configured to the CAPM, WACC, SGR models [5–7], as well as the use of the Copeland and Dolgoff cost management techniques [8–10] with the use of intangible asset assessment tools according to the method of Thyssen and Hull [11; 12] As a result, the distribution of the business contribution to the social capital of the region...
was stated and the final value of the cost was determined, amounting to 29 343 thousand euros [13]. Despite the effectiveness of the obtained estimates, the major drawback of cost management came out. This is related to the fact that it is difficult clearly to provide rationalization for the value standard, in which the share of intangible assets is more than 70% [12]. In addition, traditional means of value management cause violation of two properties, respectively, emergence and synergy, which are peculiar to the metasystem [13].

In this regard, the means were found, which are based on the developed rules for accompanying two actual sets of attributes. The first set represents numerous factors that affect the management system of an educational institution. The second set consists of numerous response symptoms. In addition, a special procedure was developed, which includes four chains, each of which is focused on resolution of a specific task, limited by a certain time interval. The first chain is developed for the determination of the coordinates of the organization, calculated at the current time. This determination is achieved by monitoring business information based on algorithms for collecting, analyzing, identifying technological violations and organizational deviations, with the subsequent search for the solutions to eliminate and neutralize them, as well as taking into account the development of means for prevention and subsequent avoidance. The second chain is used to improve the integrity of the process by monitoring the symptoms of impact on the parameters of the external environment. This occurs in the context of choosing the optimal option for the organization transformation, carried out in the short term. The performance standards are established, the rules for business information storage are adjusted, and the redistribution of official powers at the organization level is carried out on its basis. The third chain is intended directly to support the organization development scenarios in the medium term. In the course of the maintenance, the factors influencing the loss of stability are explored, and the solutions for the functioning restoration are proposed. The fourth chain is the hallmark of the organization being assessed. Its significance is determined by the availability of a methodology for identifying the potential of an enterprise, being developed by taking into account the means of long-term functioning. The relevance of the methodology is supported by algorithms for monitoring industry motives and market needs [14].

In the aggregate, the solution of the set tasks is carried out within the full-scale business assessment system [14]. This system requires measuring the reproducibility of the process.

2 Review of the latest scientific achievements and publications

The reproducibility according to Deming requires the ability to determine the natural limits of a process without reference to tolerances [15]. In addition, the reproducibility index is a dimensionless indicator, which is applied to assess the ability of stable processes to meet the technical tolerance [16–18].

In our case, in the context of the search for the means of assessment carried out based on a system of objectively set standards, reproducibility is explored from the position of the expert’s skill, which makes it possible to set limit to the accumulation of the spread of false knowledge. Moreover, this is achieved through a full-scale three-level assessment of the current position before and after the localization of the place of failure in the sustainable functioning of the organization. The specificity of a modern enterprise in the context of reproducibility is related to the fact that it is forced to adapt to the conditions of a constantly changing environment.

The essence of the forced changes is caused by the emergence of large-scale circumstances. In case of ignoring of such circumstances the changes in the amount of income arise. It should be also noted that any change requires timely improvement of the management system. If this is not done in time, the enterprise gradually gets itself in crisis situations [19–20]. Long stay causes the appearance of organizational pathologies and diseases. Their neutralization and treatment is associated with the organization of continuous monitoring being focused on the identification of a special kind of causes. Their research makes it possible to diagnose crisis conditions. The application of diagnostic systems allows not only to detect the prerequisites for the appearance of extremely unfavorable situations, but also to eliminate their negative impact on the organization of the whole process from gathering momentum. Such systems belong to the class of management systems that ensure the sustainable operation of an enterprise [22].

By definition, stability characterizes the ability of a system to maintain its characteristics before and after any changes in the key factors of the organization [23]. From the perspective of the requirements set for a business, its management should have a management system that makes it possible for the organization to maintain its individuality in industrial relations, including being under the influence of extremely negative factors [24]. At the same time, the elements of the system continue working for the effectiveness of the organization in general, without trying to move to solving specific tasks [25]. This is achieved by achieving a given level of quality. It should be noted that the term “quality” is considered as a set of characteristics of an object related to its ability to meet the established and consumed needs [26]. Quality assurance on the one hand and orientation to a single goal of efficiency allow an organization to conduct a continuous system improvement, by expanding its functionality [27]. As a result, the management team of the organization acquires a certain margin of safety that allows reflecting the actions of destructive forces [28]. As a result, the accumulation of the management experience occurs, which develops the skill of correcting a difficult situation under new conditions [29]. This should be done under conditions of a well-functioning system of objectively set standards.

With this express aim the approach is used that provides the issuance of a conclusion on the current assessment of the organization based on the indicator that has a dimensionless value. The decision about the operability of the current state of the organization is taken in the known field of coordinates on the basis of an objectively specified standard. In this regard, it was necessary to move on to the study of the effective technology of “Sensemaking”, which is used to reveal the content of an object functioning under conditions of high uncertainty at a specific point in time [30–31]. This technology is reduced to a certain device that makes it possible to measure the result of the convolution of a voluminous information space into a capacious form under conditions of fixation of the features that affected the change in the states of the system. In this aspect, two points...
should be taken into account. First, the investigated device allows fixing the result of the convolution of the content of numerous definitions into a dimensionless quantity in dynamics [31–33]. Secondly, the information space is formed under conditions of the adoption of two concepts: metaphors, on the one hand, and the metalanguage being formed in the process of collecting and processing of the consequences of the circumstances and life situations, on the other hand [34–35].

Thus, against the background of the listed moments, the conceptual features of the device come out [36–37]. A value hierarchy consisting of fifteen linked nodes has been selected as the source device. The features of the device are explored within the framework of mechanisms for further goal-setting and methodological tools.

3 The purpose and problem of the study

The purpose of the study is aimed at the development of a procedure that allows recognizing the necessary transformations, initiating and directing them, by eliminating the emerging problems as part of the implementation of the medium-term scenario that carries out a full-scale assessment of the organization state. The following tasks were formulated in accordance with the goal:

1) Development of a manual for the system operation under special conditions, configured to increase in the cost of the organization in the longer term,

2) Implementation of a medium-term scenario of system transformations carried out within the framework of established norms and consumed measures that satisfy the developed scale for calculation of the significance of attributes,

3) Selection of a set of critical parameters, on the basis of which the current assessment of the state of the organization is carried out as part of the regular version of the system.

4) Critical analysis of key parameters that cause disturbances in the functioning stability due to complacency and loss of awareness by the management team.

For the solution of the set tasks the special requirements must be developed, the presentation of which will allow developing a continuous monitoring system that ensures the timely identification of the forces that are destroying the organization. In the course of the check of their validity, not only the level of possible consequences is assessed, but also additional circumstances are identified that complicate the process of identification of weaknesses in the organization. As a rule, such circumstances cause a qualitative redistribution of the most significant system attributes. In the course of redistribution, the significance of the attributes also changes, the fixation of which should be carried out in real time. This fixation is based on a system of objectively set standards. Thus, the managers of the organization should have at their disposal the means of formation of objective conclusions about the organization state based on the task of objectively set standards. This constitutes the essence of the problem of the present study. The bearer of the real problem is the need for a set of special tools that ensure timely detection of weak links in the system. They are based on the management algorithms that are configured to identification of the hidden causes leading to the loss of sustainable functioning of the organization. The presence of such algorithms makes it possible to increase the level of the process reproducibility. The expert’s special skills are worked out, which makes it possible not only to neutralize the spread of false knowledge, but also clearly to find the places of disturbances in a stable process. It should be noted that a special methodology must be formed before the development of control algorithms.

4 Methodology

It should be noted that the present methodology is used when there is a value hierarchy formed according to special rules. In addition, the business information must be collected and processed for each of the 15 nodes of the hierarchy, which makes it possible to proceed to the assessment of the current organization state. In general, the assessment of the organization’s current position is the calculation of the value of a dimensionless quantity fixed in the space of the strategic field. The development of the procedure required the development of a control algorithm. The algorithmization process associated with the development of a procedure consists of twelve stages.

5 Results of research

The schematic diagram of the procedure is presented in Figure 1.

The first eleven stages were devoted to the identification of the current organization position. Moreover, this position was determined at a specific point in time. For this, an effective tool has been developed. This tool allows identifying a position within a given coordinate system of a specific strategic field.

An important point in the development of this tool was the remark made in the Porter’s work [38]. Its essence is that the position is a kind of path. In this regard, it has been established that the final decision on the state of the current position should be carried out when comparing several points. The analysis of the content of the coordinates of the points allowed revealing a number of important points. There should actually be three such points:

1. assessment point, obtained during the initial filling of the initial data sets in accordance with the prescribed rules (such point on the strategic field will be marked in green);
2. real state point, calculated by confirming the significance of underestimated critical factors and overestimated symptoms (such point is marked in red);
3. development point calculated upon revision of the significance of the newly formed sets of critical factors and symptoms (blue point on the strategic field).

Three points that characterize the strategic position of the organization, described in terms of Deming’s sustainability, are presented in Figure 2 [39]. Finding of coordinates of each point requires the use of a special algorithm.

At the same time, business information is formed in the course of its use, being summarized in the form of a certain table (see Table 1). Such information includes a description of the main parameters, on the basis of which an expert opinion on the state of the organization is developed.

Thus, when assessing the current position, three diagnostic procedures were performed.

In the first case, when assessing a position with a full set of attributes, it was stated that the share of critical attributes is more than 40%, which means that corrective actions are required.
Stage 1: Disclosure of the content of the term “Position”

Stage 2: Characteristics of the composition of the position of a specific node

Stage 3: Description of the coordinates of the strategic field

Stage 4: Description of the set of symptoms of the abscissa coordinates (X)

Stage 5: Description of a set of factors of the ordinates coordinate (Y)

Stage 6: Development of the scale system for the symptom significance assessment (X)

Stage 7: Development of a scale system for the factor significance assessment (Y)

Stage 8: Competition of the X coordinate calculation form

Stage 9: Competition of the Y coordinate calculation form

Stage 10: Analysis of the user instructions for the attribute significance assessment

Stage 11: Calculation of the current position of the organization

Stage 12: Decision on the organization state

FIGURE 1 Schematic diagram of the algorithm for calculation of the current position

In the second case, a corrective procedure was carried out. Its essence was centred around the reduction of the impact of the most significant symptoms. In practice, this implies the specification of the means of neutralization of the consequences of excessive abuse of power. In addition, this requires the identification of the ways of negative spread of the influence of subtle signals on the organization. As a result, it became necessary to increase the importance of four underestimated (least important) factors. Thus, it was possible to fulfill the condition of the influence of critical factors (less than 40%), while the organizational standard turned out to be higher than the norm.

In the third case, all parameters were in norm. Point with coordinates {6.8; 7.25} characterizes the state of

FIGURE 2 Interpretation of the Decision Taken During Assessment of the Current State of the Organization
sustainable functioning of the organization. This state, in fact, makes it possible to determine the current value of the enterprise at the current point in time. In other words, the transition from a dimensionless value to a cost value is carried out. Further, knowing the coordinate of the current assessment and the corresponding cost value, the cost value is determined anywhere in the strategic field, including the cost potential.

The example demonstrating how the growth of the cost potential of an organization can be determined by the value of its market value as of the date for which the coordinate of the point is known is presented in Figure 3.

The figure shows that the calculated value of the company is 270 thousand euros. This value corresponds to the coordinate (6.8; 7.25). The limit value which can be reached by the organization should correspond to the coordinate (11.25; 11.25). Thus, the company has implemented only 62.5% of its potential. Therefore, the final goal, revealing the capabilities and purpose of the studied organization, corresponds to 430 thousand euros. In terms of passing the distance within the established strategic field, the organization should pass the distance from the point marked in blue to the point marked in red. At the same time, the maximum value that can be reached by the organization will amount to 430 thousand euros. This benchmark, expressed in value terms, is a reasonably set standard. In terms of reproducibility, the blue point representing the current position of the organization has a Capab parameter in the norm. The proportion of impact of critical attributes is outside the norm. An adjustment to critical attributes is required. After adjustment it was discovered that the organizational standard is outside the norm. All parameters are in the norm.

Table 1 Parameters of points of assessment of the current organization position

<table>
<thead>
<tr>
<th>Point</th>
<th>Abscissa (up to 11.25)</th>
<th>Ordinate (up to 11.25)</th>
<th>Deviation (up to 10%)</th>
<th>Average share of critical attributes (up to 40%)</th>
<th>Route (from 5.5 to 15.9)</th>
<th>Reproducibility 90% to 100%</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current position</td>
<td>6.69</td>
<td>6.87</td>
<td>3%</td>
<td>41.61%</td>
<td>9.57</td>
<td>60.3%</td>
<td>The proportion of impact of critical attributes is outside the norm. A dependency graph of the Capab parameter in the strategic field space of dimension N = 15 is presented in Figure 5. Thus, the range of reproducibility that is used to assess the sustainable functioning of the organization has been determined. This range is a dimensionless value that can be easily converted into a value equivalent. Thus, the set task has been solved, as the dependence of the cost on the conditional assignment of the standards has been removed.</td>
</tr>
<tr>
<td>Real state</td>
<td>5.85</td>
<td>7.73</td>
<td>32%</td>
<td>38.55%</td>
<td>9.69</td>
<td>60.9%</td>
<td>After adjustment it was discovered that the organizational standard is outside the norm. All parameters are in the norm. The proportion of impact of critical attributes is outside the norm. An adjustment to critical attributes is required.</td>
</tr>
<tr>
<td>Development point</td>
<td>6.80</td>
<td>7.25</td>
<td>6%</td>
<td>37.37%</td>
<td>9.94</td>
<td>62.8%</td>
<td>All parameters are in the norm.</td>
</tr>
</tbody>
</table>

Secondly, after sorting the attributes and conducting their critical analysis, the expert forming the conclusion has a desire to change the most significant of them. As a result, the situation gets out of control (stability area, organizational standard is not in norm). The conditions for the crisis state are being formed.

Thirdly, the work only with the lists containing the critical sets of symptoms and factors allow finding the ways out of a crisis state before its occurring. This approach reveals the effect of the inverted hierarchy, which provides a description of the reasons for the corruption of the organization. Such reasons form the control points that form the basis of the anti-crisis management methodology [40 – Blank].

Three parameters (1) – (3) were identified during the study of the discovered prerequisites, the values of which are taken into account when forming an expert opinion.

Average proportion of critical attributes \( \text{Capab}_k \) at \( k \) critical symptoms \( A_i \) and \( l \) critical factors \( B_j \):

\[
\text{Capab}_k = \frac{\sum A_i + \sum B_j}{2} \leq 40\%
\] (1)

The distance of the route in the zone of stable growth \( M \), given for the coordinates of the assessment \( X, Y \):

\[
M = \sqrt{X^2 + Y^2}; \quad 5.3 \leq M < 15.9
\] (2)

The measurement ranges of the parameter have been obtained analytically (see Figure 4).

\( \{X, Y\} \) within the strategic field of dimension \( N \): The third parameter used when issuing an opinion is the reproducibility of a stable process \( \text{Capab} \). Condition (3) contains the conditions for calculating the \( \text{Capab} \) value for the assessment coordinates \( \{X, Y\} \) within the strategic field of dimension \( N \):

\[
\text{Capab} = \sqrt{\frac{N^2}{2} + \frac{N^2}{4}} \quad ; \quad 33.3\% \leq \text{Capab} < 100\%
\] (3)

A dependency graph of the \( \text{Capab} \) parameter in the strategic field space of dimension \( N = 15 \) is presented in Figure 5.
6 Conclusions

Within the framework of this study, a new approach has been proposed for the assessment of the strategic position of an organization that is determined relative to the final specified destination point. Its relativity is set by specifying the coordinates of the point and the system of comparison of the current value of the enterprise relating to the potential value.

A multi-stage procedure was developed in this regard, used both for a full-scale assessment of the current position of the organization, and for the examination of the value potential of the organization.

The application of the procedure allows not only to calculate the strategic position, but also to coordinate more than two hundred provisions of the metasystem concept and more than two hundred grounds of the decision-making methodology.

An important result of this agreement was a specially developed system of scales for assessment of the significance of both symptoms and factors. Four scales were used to calculate the significance of the coordinates of the strategic position, as well as the corresponding rules for setting expert assessments.

The correctness of the strategic position is determined on the basis of the developed methodology for confirmation of the certainty of each calculated coordinate. Such confirmation is carried out by means of the effective means of identifying critical groups of attributes, which are further used as the parameters of rise in value, as well as for finding indicators of IFE and EFE models [41].
7 Recommendations

The practical value and novelty of this study consists in the fundamental approach to identification of the reasons leading to the loss of performance of an operating enterprise, taking into account the application of new projects to its activities. Such reasons are revealed on the basis of the conversion of the values of dimensionless coordinates into a cost equivalent. In turn, the system for localisation of the location of the current coordinate allows not only to identify the weak links of the organization, but also to set important foundations to prevent the organization from getting into crisis situations. This forms the basis for the development of means of protecting the organization from the influence of negative large-scale circumstances. This refers to the so-called “immune control system”. Its signs are genuine stability, which is manifested in the fact that the destructive forces, that is, mismatch and deception, by experiencing external influences, do not pose a threat to the system support. Moreover, each new state requires a recalculation of the capitalization rate, which grows with the reproducibility of a stable process. This establishes the foundation for the disclosure of the Glazer’s paradox, the essence of which comes to an increase in the value of an enterprise along with the increase in the capitalization ratio \([42]\).

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