# Strategic solutions of business innovation-driven growth mainstreaming

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Abstrakt. The method of development of the business innovation capacity and corporate culture level evaluation, that allows identification of this level growth or deterioration within the specific period of time, is the key problem of the article. The data received permit to work out the matrix "the level of corporate culture vs. the level of innovation capacity" of the business in order to reveal the business' position in this matrix and select the innovation-driven growth strategy of this business.

Key words: development, innovation capacity, corporate culture level evaluation, management solutions.

## INTRODUCTION

The business innovation-driven growth is the key factor of crisis recovery of the country's economy. On the current level of the country economic development, innovation is thought to be the main mean of preservation and enforcement of the business' market share. The experience of the world advanced nations proves that the countries, which encouraged innovation-driven growth, gained economic success. The problem of innovation-driven growth solution depends on both the state's innovation policy and efficiency of innovation resources use as well as intensity of innovation management. When solving this problem, one should pay special attention to scientific background of innovation-driven growth strategy of industrial businesses. The modern economic science does not give any ready-made clues as to formation of innovation-driven growth strategy of business development, although there is some basis for it.

## MATERIALS AND METHODS

The strategy in the management theory is under-stood as a model of actions and a set of techniques, which facilitate for businesses the achievement of their development goals. It is the compound program, which helps the business management adequately use the potential and resources of the company for achievement of their goal. The trend development selection begins with setting goals and tasks of development within the company mission. The corporate culture due to its internal force is aimed at supporting the business in its goal achievement, being part of the total system of the company development strategy.

As far as the innovation capacity of the company guarantees its competitiveness, the corporate culture boosts innovation potential development due to specific micro-climate formation. That is why, at the point of the company strategy development, misalignment of the development strategy and corporate culture could be the wrong option

We suggest the matrix "the level of corporate culture vs. the level of innovation capacity", constructed on the basis of two characteristics: the level of economic potential of the company and the level of corporate culture of this company, in order to evaluate and adopt the management decisions as to the boost of innovation-driven growth..

The notion of the innovation capacity of the company is based on the complex of factors and their characteristics. From the point of mathematic modeling, it is based on aggregate markers that completely reveal the elements of structural and economic aspects of the company capacity. The system of markers for innovation capacity evaluation forms the following four elements: set up of production, organization of work, economic efficiency of results, innovation-driven growth funding [1, 2, 3, 4].

The aggregate indicator of the innovation capacity of the company ($g$) is calculated with this formula [5]:

$$g = \sum_{j=1}^{m} b_j \left[ \sum_{i=1}^{n_j} p_{ij} \left( \sum_{k=1}^{s} a_{k_{ij}} m_k(x_{ij}) \right) \right], \qquad (1)$$

where: $j$ – index of the group of markers, $j=1,m$; $i$ – index of the indicator inside the group, $i=1,n_j$; $n_j$ – number of indicators in group $j$ i; $b_j$ – gravity of group $j$; $p_{ij}$ – gravity of indicator $i$ of group $j$; $m_k(x_{ij})$ – meaning of $k$ membership function of indicator $i$ of group $j$; $s$ – number of junctures, $s=5$; $a_{k_{ij}}$ – juncture $k$ of marker $i$ in group $j$ ($k=1,s$), which value for markers that indicate the marker growth corresponding to the characteristics improvement is calculated by the formula:

$$a_{k_{ij}} = 0,1 + 0,2 \cdot (k-1). \qquad (2)$$

For markers that indicate the marker growth corresponding to the characteristics deterioration, the value is calculated with the formula:

$$a_{k_{ij}} = 0,9 - 0,2 \cdot (k-1). \qquad (3)$$

The rule of the company level of innovation capacity identification $G$ on the basis of the aggregate indicator $g$, calculated with the formula (1), is represented in Table 1.

**Table 1.** Business innovation capacity levels classification

| Interval of meanings $g$ | Classification of the parameter levels $G$ | Degree of evaluation confidence (membership function) |
|---|---|---|
| $0 \le g < 0,35$ | Very low (Vl) | $m_1 = 1$ |
| $0,35 \le g < 0,45$ | Very low | $m_1 = 10 \times (0,45 - g)$ |
| | Low (L) | $m_2 = 1 - m_1$ |
| $0,45 \le g < 0,5$ | Low | $m_2 = 1$ |
| $0,5 \le g < 0,6$ | Low | $m_2 = 10 \times (0,6 - g)$ |
| | Average (A) | $m_3 = 1 - m_2$ |
| $0,6 \le g < 0,65$ | Average | $m_3 = 1$ |
| $0,65 \le g < 0,75$ | Average | $m_3 = 10 \times (0,75 - g)$ |
| | High (H) | $m_4 = 1 - m_3$ |
| $0,75 \le g < 0,8$ | High | $m_4 = 1$ |
| $0,8 \le g < 0,9$ | High | $m_4 = 10 \times (0,9 - g)$ |
| | Very high (Vh) | $m_5 = 1 - m_4$ |
| $0,9 \le g \le 1,0$ | Very high | $m_5 = 1$ |

The model uses the junctures of the standard five-level indistinct 01-classification code $a_k$, which are abscissas of maximal values of correspondent membership functions on 01-carrier, on one hand, and on the other hand, are evenly distant from each other on the 01-carrier and symmetrical as to the 0,5 juncture. These points act as scales when aggregating the markers systems on the level of their qualitative states.

The results of the investigation can be put in the basis of alternative models of formation of the company innovation-driven growth implementation. These findings can also help to determine the improvement

directions of the present level of the company innovation capacity.

As for the research of the second matrix parameter, the total level of the corporate culture, we suggest the method that includes the questionnaire "evaluation of the level of the business corporate culture". Characteristics correspond to our goals, specifically, authenticity of research, objectivity (mathematic analysis of the data received helps to average the diversity of individual ideas, as a result, we receive the objective information) and credibility of information received with the help of anonymous forms.

In order to identify problematic places of corporate culture of the companies, the author suggested calculating average markers, taking into consideration four elements of the company corporate culture: CEO's management qualities and style, social and psychological climate , information and communication exchange, motivation and labor ethics [6,7,8,9,10].

The next stage could be determination of the necessary selection volume (to be representative) for receiving credible result, when we know the distortion value $\Delta = 0,05$, which should be considered as inessential. Then we start determining of the standard distortion μ, and later, numerical selection.

Determine the sufficient minimum of selection, which would represent the basic qualities of the general aggregate at the given distinctiveness:

$$n = \frac{t^2 * pq * N}{N * \Delta^2 + t^2 * pq}, \qquad (4)$$

where: $\sigma^2 = pq = 0,5 * 0,5 = 0,25$

When $t = 2$, with probability belief $P = 0,954$, calculate the amount of selection on the basis of the target audience of the respondents, i.e., whether they are high-level, mid-level or low-level management of the following companies.

The three-point response scale was used for evaluation. If the respondent gives the positive answer to the question ("yes"), it is evaluated with 1 point, in case of doubt ("sometimes"), 0.5 points and if the question completely opposes his vision ("no"), 0 points.

The level of corporate culture is determined on the basis of correspondence of the total number of received responses to the number of respondents. The maximum meaning (max) shall be 1, the minimum shall be 0. According to the form, one respondent can give 25positive answers, which is the biggest possible sum of points.

As soon as the questionnaire is completed, the data are downloaded into the computer. To find the level of corporate culture, calculate the average meaning of each question:

$$\overline{X} = \frac{\sum X}{n}. \qquad (5)$$

The total meaning of average quantities of each of the questions, divided by 25 (b is the number of

questions asked), as a result, allows finding the level of the company corporate business:

$$R_{OK_1} = \frac{\sum \overline{X}}{b} \quad . \qquad (6)$$

For convenience of comparison and further research transfer the scale of measurement from 1 to zero. The scale below (with reference to Fishburne scale) reveals the further level of the corporate culture:

[1 - 0,90] – very high,

[0,89 – 0,75 ] – high,

[0,74 – 0,50] – average,

[0,49 – 0,35] – low,

[below 0,34] – very low (with deterioration tendency).

Calculation of quadratic factor of variation ($V_\sigma$) in order to reveal uniformity of the population researched, i.e. the level of corporate culture of the company will permit summarizing of the research results. If the factor is more than 33%, it means that the population is not uniform by the researched aspect, whereas the average meaning of this factor is not typical.

The following data, regarding evaluation of the innovation capacity, have been received from the companies researched: PJSC «Konveyer» and PJSC «Zolochivskyi Radiozavod» H (g) = 1 have the low level of innovation capacity; JV LLC «Sferos-Electron» C (g) = 0,53 and B(g) = 0,47 – high level and LLC "LEONI Baering Systems UA Gmbh» H (g) = 0,06 i C (g) = 0,94 average level of innovation capacity.

In the process of the corporate culture research the following results have been received: LLC "LEONI Baering Systems UA Gmbh» - 68,4; JV LLC «Sferos-Electron» - 70,4; PJSC «Konveyer» - 53,7; PJSC «Zolochivskyi Radiozavod» - 54,6. The quadratic factor of variation is lower than the overriding criterion, which is characterized by the average level of the corporate culture in the companies concerned, average staff unity, sharing of established values, norms and rules of behavior by the majority of employees, concurrence of goals of the employers and their employees. As far as PJSC «Zolochivskyi Radiozavod» and PJSC «Konveyer» are concerned, this index can sometimes exceed the overriding criterion (33%), which can be explained by lack of knowledge about the situation and the corporate culture from the side of some employees with a big turnover rate, in which case the population can be considered as non-uniform while the average results achieved are not typical.

The selection of the company innovation-driven growth direction is based through its correspondence to specific factors (criteria), with the following major ones: the goals of the company, recourse basis sufficiency (integral estimation of funds sufficiency, material resources, personnel, information, etc.), and level of the corporate culture. Accordingly, the following directions of the company innovation-driven growth are included

in correspondence with the company position in the matrix "the level of corporate culture vs. the level of innovation capacity", which contains three sectors: Field A- the most attractive one, the growth strategies are recommended for the company development. The corporate culture strategy should be aimed at team integration and its needs satisfaction;

Field B – the company has to develop its corporate culture in order to lessen the level of the employees' resistance either to innovation or to corporate structure changes, which are potent to take place when the integration is present. It is recommended to use integration strategies of the company development. In order to reinforce the level of the corporate culture, it is worth using the strategy, aimed at the integration, control and function stability;

**Table 2.** Directions of the innovation-driven growth of the business

| Levels of innovation capacity and corporate culture of the company | Evaluation of the constituent level | Directions of the company development |
|---|---|---|
| Very low | $0 \le IC < 0,35$<br>$0 \le OK < 0,35$ | - search for investors or production diversification;<br>- outsourcing implementation;<br>- change of the business style;<br>- staff changes. |
| Low | $0,35 \le IC < 0,5$<br>$0,35 \le OK < 0,5$ | - new considerable financial input;<br>- consideration of the merger or takeover option;<br>- search for new distribution area;<br>- change of the personnel policy. |
| Average | $0,5 \le IC < 0,75$<br>$0,5 \le OK < 0,75$ | - change (enforcement) of the company technical basis;<br>- development and implementation of the new innovation projects;<br>- creation of favorable climate for the whole personnel capacity revealing ; |
| High | $0,75 \le IC < 0,9$<br>$0,75 \le OK < 0,9$ | - takeover of the other companies (competitors) with high intangible assets;<br>- improvement of the existing corporate culture and enforcement of both internal and external image of the company. |
| Very high | $0,9 \le IC \le 1,0$<br>$0,9 \le OK \le 1,0$ | - the company occupies the leading position and can provide any strategy of its development. |

*Source: the author's research*

Field C – means that developing the corporate culture, the level of innovation capacity can be increased. The subsidiary enterprise option, which would deal with PTI (Process technology and innovation), should be considered. It would be the proper thing to use strategies of diversification here;

Field D – is the signal for the company to think about essential changes of their corporate culture and use the innovation outsourcing. It should be mentioned that these indexes range can be acceptable on one level of the company development and unacceptable on the other level. For the company on the juvenile level or the level of growth,the rate of 0.5 for the corporate culture and innovation capacity is more than satisfactory.

Possible strategies of the business innovation development with different combinations of the company level of readiness for innovation and corporate culture organization are represented in Table 2.

The businesses can provide their sustained development only due to the timely formulated strategy, which should take into consideration different development options.

## CONCLUSIONS

The overall attention to the strategy formation grows constantly, as the competition intensifies and requires fast and adequate reaction for the market condition change. It accentuates the need of the new methods of the company's strategy formation both in terms of complex and verified processes inside the company and in terms of external surrounding and integration of the functional strategies into the single strategy of the company development.

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