MANAGEMENT OF A COMPANY'S ECONOMIC SUSTAINABILITY IN THE PROCESS OF INNOVATIVE PROJECTS IMPLEMENTATION

УДК 338.12

Juliana M. Sulejmanova,
Post-graduate student, the Department of Economics and Finance, South Ural State University
Tel.: (951) 451-59-39
E-mail: y_u_l_u_a@mail.ru

The article is devoted to management of a company's sustainability in the process of innovative projects implementation. The author suggests using dynamic index named aggregated index of a company's economic stability. Criteria of choosing innovative projects to be implemented are worked out. These criteria add traditional estimation and take into account changing company's economic stability at every stage of project lifecycle.

Keywords: economic stability, innovative projects, criteria of projects choosing.

Юлиана Маратовна Сулейманова,
аспирант каф. Экономики и финансов, Южно-Уральский государственный университет
Тел.: (951) 451-59-39
Эл. почта: y_u_l_u_a@mail.ru

УПРАВЛЕНИЕ ЭКОНОМИЧЕСКОЙ УСТОЙЧИВОСТЬЮ ПРЕДПРИЯТИЯ ПРИ РЕАЛИЗАЦИИ ИННОВАЦИОННЫХ ПРОЕКТОВ

Статья посвящена управлению устойчивостью предприятия при реализации инновационных проектов, для чего предложено использовать динамический показатель, названный интегральным индексом экономической устойчивости предприятия; разработаны критерии выбора инновационных проектов к реализации, дополняющие традиционные оценки и учитывающие изменение экономической устойчивости предприятия на разных фазах жизненного цикла проекта.

Ключевые слова: экономическая устойчивость, инновационные проекты, критерии выбора проекта.

1. Introduction

Successful innovative decisions and their effective commercialization are the basis of a company's growing competitiveness and its sustainable development. At once, the process of innovative projects implementation causes quite significant changes in a company's internal environment, and a company's economic sustainability can decrease at initiative stages of this process. In some cases this decrease can be so sizable, that it can cause crisis in a company and its bankruptcy.

To prove this hypothesis, the number of companies' bankruptcy cases in different countries is analyzed. The source of information for the analysis is Global Competitiveness Report 2011-2012 [1] and The Legatum Prosperity Index [2]. The results of the analysis show that the most innovation-active countries are also among leaders of the number of companies' bankruptcy cases (table 1).

Table 1.

The level of economic development and the number of companies' bankruptcy cases in innovation-active countries

Country	Company spending on R&D in 2010-2011, scores [1]	GDP per capita in 2010, US$ [1]	The number of companies' bankruptcy cases in 2010 [3]
Sweden	5.8	48 875	7 510
Finland	5.7	44 489	2 870
Denmark	5.1	56 147	6 460
Great Britain	4.7	36 120	17 690
Ireland	4.3	45 689	1 525
Norway	4.2	84 444	4 480

Hence, this entails the problem of how to manage the company to maintain its sustainability in the process of its innovative development.

M.K. Aristarhova, E.A. Ljaskovskaja, A.N. Ponomareva, A.V. Solomka try to solve this problem in their treatises.

In spite of last year's significant achievement in studding the problem of economic sustainability in the process of a company's innovative development, the research shows that the question of choosing innovative projects to be implemented under criteria of maintaining a company's sustainability is not yet worked out enough.

2. Aggregated index of a company's economic sustainability

In this article the term "economic sustainability" implies a company's opportunity to maintain significant level of economic indicators which provides an effective company performance and stable development, and offers the possibility to revert to initial or to transit to new balanced state after stopping of external and internal disturbances influence.

On the basis of given definition to estimate the level of economic sustainability dynamic index named index of a company's economic sustainability (I_{es} – economic sustainability index) is suggested. Index of a company's economic sustainability is an integrated rate which shows changes in the level of the set of particulate characteristics of company's financial, marketing, manufacturing and personnel sustainability.

Economic sustainability index is calculated as average weighted growth rate of the set of characteristics, estimating company's external and internal environment state:

$$I_{es} = \frac{\sum_{i=1}^{n} a_i \times x_i}{n}, \quad (1)$$

being a_i – specific weight of i characteristic of company's external or internal environment state;
x_i – growth rate of i characteristic of company's external or internal environment state, per cent;
n – a number of characteristics, included in the index.

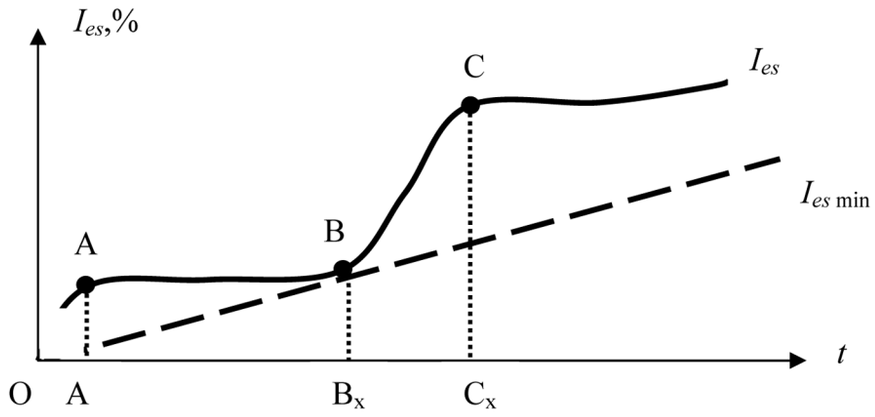

Fig. 1. The graph of a company's economic sustainability index

If the level of economic sustainability index is higher than 100 per cent, it means that company's economic sustainability grows in this period in comparison with previous one.

The graph of economic sustainability index is seen to be upward (picture 1): during project investment period (period of time A_xB_x) company's sustainability declines, but then project successful implementation causes company's sustainability growth (period of time B_xC_x).

At the picture 1 the stroked line shows minimum allowable level of economic sustainability index ($I_{es\min}$). If company's economic sustainability index level is lower than minimum allowable level of economic sustainability index, it causes negative bifurcation (bankruptcy). In other words, minimum allowable economic sustainability index level is maximum allowable economic sustainability index decrease. Minimum allowable economic sustainability index level is calculated on the basis of estimated by expertise minimum allowable levels of characteristics, included in aggregated sustainability index.

The process of management of a company's sustainability during innovative projects implementation is to maintain aggregated economic sustainability index level higher than minimum allowable rate. For this managers should forecast the economic sustainability index level for the next reporting period. If expected level of economic sustainability is close to minimum allowable rate, managers should take measures to maintain the level of economic sustainability higher than minimum allowable rate.

3. Choosing innovative projects to be implemented under criteria of a company's economic sustainability

One of important moments in management a company's sustainability in the process of innovative projects implementation is choosing projects to be implemented.

Existing methods for choosing innovative projects to be implemented, including having the widest usage UNIDO methodic, are based on estimation of project's commercial effectiveness and financial implementability. Because of innovative projects' high risks it is seen necessary to pay attention to company's current state and influence of project implementation on company's economic sustainability.

It seems that more effective projects cause more significant company's economic sustainability decline during their investment period, but at the same time they provide higher company's economic sustainability growth resulting from project implementation. That's why choosing innovative projects to be implemented it is necessary to find a compromise solution between project's economic effectiveness, company's economic sustainability decline and sustainability growth as a result of project implementation.

To compare projects under these criteria, complementary to traditional markers of economic efficiency, using such measures as "company's economic sustainability specific decline at the project investment period" and "company's economic sustainability specific growth resulting from project implementation" is suggested.

Company's economic sustainability specific decline at the project investment period is calculated as attitude of aggregated sustainability index maximum decline at project's investment period to project's net present value:

$$I_{es\,spd} = \frac{I_{es0} - I_{es\min inv}}{NPV}, \qquad (2)$$

being $I_{es\,spd}$ – company's economic sustainability specific decline at the project investment period; I_{es0} – level of company's economic sustainability before beginning of the project implementation; $I_{es\min inv}$ – minimum level of company's economic sustainability at the project's investment period; NPV – project's net present value.

As it is seen from the formula company's economic sustainability specific decline at the project investment period shows how much company's economic sustainability decline at the project investment period there are for each unit of project's net present value. Company's economic sustainability specific decline at the project investment period is measured in per cent to monetary unit.

Company's economic sustainability specific growth resulting from project implementation is measured as attitude of aggregated sustainability index change resulting from project implementation to aggregated sustainability index maximum decline at project's investment period:

$$I_{es\,spgr} = \frac{I_{esinv} - I_{es0}}{I_{es0} - I_{es\min inv}}, \qquad (3)$$

being $I_{es\,spgr}$ – company's economic sustainability specific growth resulting from project implementation; $I_{es\,inv}$ – level of company's economic sustainability resulting from project implementation.

Company's economic sustainability specific growth resulting from project implementation shows how much company's economic sustainability growth resulting from project implementation there are for each percentage point of aggregated economic sustainability index decline at the project investment period. Company's economic sustainability specific growth resulting from project implementation is measured in unit fraction.

Of course, the most appropriate to be implemented concerning maintaining company's economic sustainability are the projects, which guarantee the highest company's economic sustainability specific growth resulting from the project implementation, the least company's economic sustainability specific decline at the project investment period and the shortest investment period.

Consequently, in the process of choosing innovative projects to be implemented multi-criteria problem arises: to choose for implementation such projects, which meet at once three

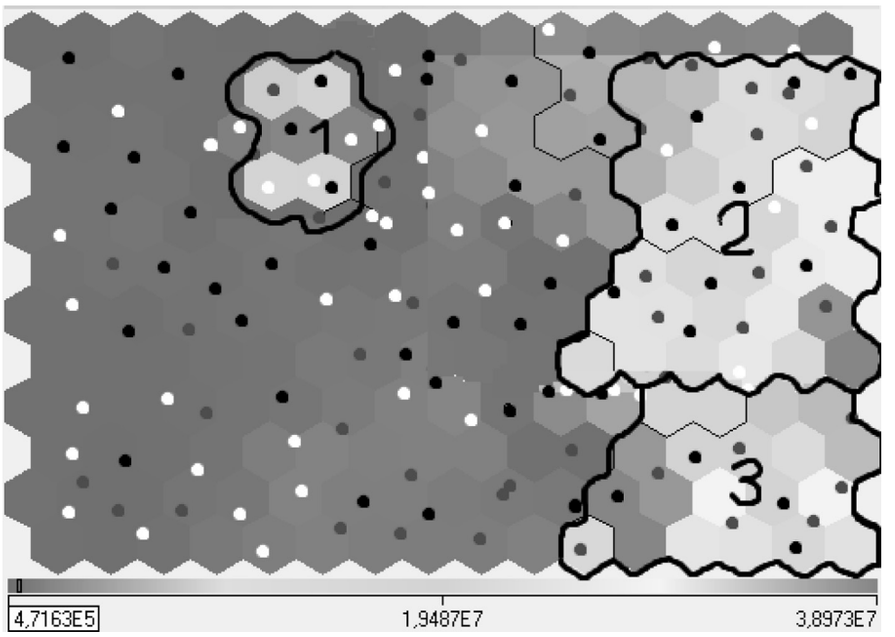

Fig. 2. Composite Kohonen's map

criteria. Of course, all the projects chosen must be economically effective and financially implementable.

To solve this problem it is offered to use Kohonen's self-organizing maps, which can be drawn for example in software program Deductor Studio. After drawing up Kohonen's map for each of the criteria and choosing the zones with projects with the best criteria values, composite Kohonen's map is drawn (pisture 2).

At the picture 2 projects with the highest company's economic sustainability specific growth resulting from project implementation are situated in zone №1, projects with the least company's economic sustainability specific decline at the project investment period are situated in zone №2, and projects characterized by the shortest investment period get into zone №3. On the map innovative project are shown as points. The color of the point characterizes the volume of investment in the project. Node's color is determined by criteria values.

With help of composite Kohonen's map the projects to be implemented are chosen, the preference of this or that criterion depends on the current level of company's economic sustainability.

4. Conclusion

Absence of economic sustainability management tools in the process of choosing and implementing of innovative projects can lead to serious negative afterwards for a company because of choosing highly efficient project with absolutely new innovative idea. Necessitate changes in company's internal environment during investment period of such project can cause not only decline but even total loss of company's economic sustainability. When using the dynamic rate "index of a company's economic sustainability" for estimation innovative company's sustainability level and offered methodical approach to innovative project choosing will make it possible to solve this problem.

References

1. http://reports.weforum.org/global-competitiveness-2011-2012/ (accessed data – 25.05.2013 г.).

2. http://egzt.ru/science/science_104.html (accessed data – 25.05.2013 г.).

3. http://www.credit–reformrus.ru/ru/content/press/information7910/Presseinfo_Russland_im_Maerz_2011_RU.pdf (accessed data – 25.05.2013 г.).

Литература

1. http://reports.weforum.org/global-competitiveness-2011-2012/ (дата обращения – 25.05.2013 г.).

2. http://egzt.ru/science/science_104.html (дата обращения – 25.05.2013 г.).

3. http://www.credit–reformrus.ru/ru/content/press/information7910/Presseinfo_Russland_im_Maerz_2011_RU.pdf (дата обращения – 25.05.2013 г.).