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Analysis of the Maturity of Sustainable Project Management in Russian Enterprises in the Transition to the Digital Economy

Svetlana N. Apenko* and Iulia A. Fomina

*Dostoevsky Omsk State University
55a Mira, Omsk, 644077, Russia*

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The subject of the study is the method of assessing and analyzing the level of maturity of sustainable project management of Russian enterprises. Having reviewed the scientific literature, the authors proved the tendency of integration between project management and the concept of sustainable development. The analysis of approaches to assessing sustainability indicators showed a lack of consistency, as well as the shift in emphasis to individual indicators and insufficient attention to institutional sustainability indicators. The problem is in the lack of a methodology for quantifying the level of maturity of sustainable project management which could become the basis for monitoring this management. The availability of monitoring is a prerequisite for a successful transition to the digital economy; while data-based management as the result of monitoring can become a platform for optimizing sustainable project management by tracking sustainability indicators. Due to the used methods of analysis of literature and international professional standards, as well as in-depth interviews with top managers of enterprises, the authors substantiated the method of assessing the level of maturity of sustainable project management, the innovation of which is the inclusion of the module of institutional indicators of sustainability and integrated quantitative assessment of economic, social and environmental indicators of sustainable project management. The technique was approbated through survey at 19 Omsk enterprises and the analysis of survey results is given in the article. A group of enterprises with high and above average maturity levels of sustainable project management was identified. The indicators of the institutional evaluation module demonstrating good potential for further development of sustainable project management are fixed. The influence of the transition to the digital economy on the increasing demand for monitoring the sustainability of project management is examined. The results can be used to optimize the processes of sustainable project management and to further improvement of the methodology of evaluation of this management in the context of the transition to digitalization of the economy and management.

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* Corresponding author E-mail address: apenkosn@yandex.ru

ORCID: 0000-0002-7618-3961 (Apenko)

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Currently, project management and sustainable development including green economy and green management are being developed in the world practice of enterprises. The trend in recent years has been the search for the integration of these two concepts and the construction of effective sustainable (green) project management in enterprises. In this case, there are many topical issues that require special research. These include measurement of the maturity level of sustainable project management, in particular, the indicators and methods of maturity assessment, so directions and ways of using the results of this assessment are of research interest. This is especially important for the transition to the digital economy, when the processes of implementation of sustainable project management should be based on constantly updated massive data on the status and factors of sustainable project management, the dynamics of maturity indicators of sustainable project management, the causes and patterns of this dynamics. The availability of such a constantly updated database through monitoring will make the process of development and functioning of sustainable project management more reasonable and effective, responsive to the monitoring findings and recommendations.

Introduction to the research problem

The term “sustainable project management” was first used by the Executive Director of the Business Council for Sustainable Development J. Hugh Faulkner in 1994 (Grevelman, Kluiwstra, 2010). This term has been used for a long time. But despite this, at the current time, the theoretical basis for the application of the concept of sustainable development at the project level is poorly represented in economic science. In Russian scientific works sustainable project management was investigated by V.M. Anshin, O.N. Il'ina, E.J. Pertzeva, E.S. Manaikina (Anshin, Pertseva, Glazovskaia, 2015; Manaikina, 2015). Along with these studies, it should be recognized that in the Russian economic science there are not enough scientific papers on sustainable project management. In foreign studies, the topic of integrating

the principles of sustainable development into project activities is also only partially touched upon. Historically, the relationship of sustainable development to project management as a separate line of research emerged as a separate topic with the works by L. Bernard, R. Gareis, H. Huemann, A. Martinuzzi, G. Silvius, C. Labuschagne, T. Taylor, etc. However, most of the works of foreign authors describe the impact of certain aspects of sustainable development on project management processes. For example, modern works are devoted to environmental issues of project management, which does not fully reflect the essence of sustainability. Or, for example, the study by C. Labuschagne and A. Brent (Labuschagne, Brent, 2005: 159–168) is related to the study of the social aspect of sustainable project management. A significant drawback of these works is that they do not reflect a systemic approach in this area. Therefore, today the systemic research concerning the comprehensive solution of problems according to specific criteria and indicators of sustainable project management, its evaluation and improvement of the maturity level has become vital.

Conceptual foundations of the study (Theoretical Framework)

Sustainable development aims to ensure the economic efficiency of the organization or project in the long term, while ensuring a high level of environmental and social responsibility. According to J. Carboni, “By only slightly changing our view on the implementation of projects, we can create a global system that conserves natural resources, positively influences the society and strengthens the world economy” (Carboni, González, Hodgkinson, 2013: 7).

In addition to the above works, our research is based on the specialized standard for green project management GPM P5, developed by the international organization Global Green Project Management (GPM Global). From the standpoint of GPM Global, “sustainable project management includes management tools and methods to achieve a certain balance between limited resources, social and environmental responsibility. Sustainable project management ensures the achievement of business goals while reducing the negative impact on the environment” (Carboni, González, Hodgkinson, 2013: 5). According to GPM Global, “sustainable management is applicable from the local to the global level and is based on the principles of transparency and responsibility” (Carboni, González, Hodgkinson, 2013: 5).

Thus, “the concept of sustainable project management seeks for harmonization of economic, social and environmental interests both in the long and the short term” (Silvius et al., 2017).

The concept of sustainable development, developed in Agenda 21 and approved at the 1992 Earth Summit (UN Conference on Environment and Development) included three main aspects: social, economic and environmental.

Hence, the definition of sustainable development reflects three aspects, namely environmental sustainability, economic opportunities and social integration (Robertson, 2017: 5). The fourth institutional component was included by the UN Commission on Sustainable Development in the system of sustainability indicators. The fourth component of sustainability has not yet received such widespread acceptance and recognition as the three main ones; in addition, the development of sustainability indicators for the institutional component represents the complexity of the matter.

The institutional component is sometimes difficult to be distinguished from the social component, since in a broad sense both components imply access to information, exchange of information, respect for human rights, access to justice and transparency of decision-making. In this study, we will consider the institutional aspect of sustainability in a narrow sense – as the adoption by the organization of institutions of sustainable management, as the organization's desire for sustainable development and the balance of economic, social and environmental goals.

Consequently to assess sustainable project management at the organization level, we will use four criteria of sustainable development – environmental, economic, social and institutional ones through the prism of project management processes and project results. Such an approach is the development and adaptation of the GPM Global methodology for assessing sustainability (Carboni, González, Hodgkinson, 2013: 30).

Statement of the Problem

The problem considered by the authors in this study is rooted in the lack of methodology as well as methods for assessing and analyzing the level of maturity of sustainable project management, which are based on quantitative measurements of sustainability indicators of project management, on the one hand, and the expressed need for enterprises to quantify the level of maturity of the process of sustainable project management in order to optimize this process and include measurements in the overall policy of digitalization of organizational management, on the other hand. The available methodologies and methods relate either to the assessment of sustainability indicators without reference to the specifics of the project activity or they do not assume integral quantitative values of the maturity level of sustainable project management. In

addition, the available developments are often devoted to a limited, far from complete set of sustainability indicators.

In accordance with the formulated problem, the aim of the study was to develop a methodology and methods for quantitative assessment and analysis of the level of maturity of sustainable project management in enterprises.

Methods

Our research questions are as follows:

- What indicators will make it possible to assess the sustainability of project management in the organization comprehensively?
- How to achieve a balance between economic, social, environmental and institutional principles of sustainable development in the management of an organization or project?
- What factors lead to the successful implementation of sustainable development principles in the business strategy and project management processes of the organization?

To answer our research questions regarding the sustainability assessment of project management, we used a qualitative approach (Patton, 2002). The phenomenological approach to the assessment of sustainability has been applied by various scientists in their qualitative studies (Gareis et al., 2013; Gibson, 2016; Robertson, 2017).

To conduct our research, we used the method of in-depth personal interviews with top managers of three companies operating in the petrochemical and chemical industries of Omsk. The choice of companies is not accidental – these companies are industry leaders and have a significant impact on the Omsk economy. These companies successfully implement the best management practices, including those in the field of project management. The position of these companies in the field of sustainable management is significant for their partners and the region. The task of the in-depth interview was to clarify our hypotheses about the probable indicators of sustainability, the degree of their importance and priority, the possibility of quantitative evaluation of indicators. The initial justification of the indicators that became the subject of our interview was made on the basis of works devoted to the assessment of sustainability criteria and professional standard for green project management.

As the result of in-depth personal interviews, we identified some indicators that ensure an all-inclusive quantitative assessment of the maturity of project management sustainability, taking into account the importance of the balance of economic, social,

environmental and institutional sustainability criteria. Also, the in-depth interview helped to identify the factors of successful implementation of sustainable project management. These findings allowed us to justify our own original methodology and methodology for assessing the level of maturity of sustainable project management in enterprises.

Discussion: the author's point of view and research

Description of the methodology for integrated assessment of the maturity level of sustainable project management in organizations.

The initial justification of the system of indicators for assessing the level of maturity of sustainable project management was based on the analysis of scientific literature focused on the assessment of sustainable development, as well as on the principles of the international standard for green project management, in particular, the methodology of assessment of sustainable project management maturity based on standard GPM Global (Carboni, González, Hodgkinson, 2013).

The technique is divided into two modules. The first module is General or institutional issues of sustainable project management (Carboni, González, Hodgkinson, 2013; Gareis et al., 2013; Maltzman, Shirley, 2010; Robertson, 2017; Hák, Moldan, Dahl, 2007). The second module is special issues divided into three groups of sustainability criteria – economic, social and environmental (Carboni, González, Hodgkinson, 2013; Cohen, Eimicke, Miller, 2015; Maltzman, Shirle, 2010; Silvius et al., 2017; Hák, Moldan, Dahl, 2007). The analysis of the institutional component in the module of General issues is an innovation of our methodology for assessing the maturity level of sustainable project management. The description of the method is given in one of our works, namely in (Apenko, Fomina, 2018).

The objective of the first module is to determine the overall level of sustainable project management in the organization, which shows the strength of the institutions of sustainable project management in the organization. Accordingly, the first module includes issues allowing the assessment of the following indicators of sustainable project management: “the use of the concept of sustainability in project management of the organization; the presence of a long-term sustainable development strategy in the organization; whether the development strategy includes in addition to economic goals environmental and social ones; at what stages of project management strategy (principles) of sustainable development and management is actively used; whether project objectives are set as sustainable; what the priority economic, social and environmental objectives

in projects are set as tasks (principles) of sustainable management; the impact of the principles of sustainable management on the project success and on reducing the project risk; the value of the project results; the quality of project management; the influence of the state and other external factors on the implementation of sustainable project management practices” (Apenko, Fomina, 2018: 21).

The objective of the second module is to define private levels in three main areas of sustainable project management: economic, social and environmental.

To assess the level of social direction, questions have been developed reflecting such indicators of green project management as “the use of social indicators in project management; corporate social responsibility; access to new knowledge; non-discrimination and respect for human rights, ensuring labor safety” (Apenko, Fomina, 2018: 21).

The assessment of the level of the environmental direction was carried out on the basis of questions about such indicators of project management as, “the presence of the programme/active policy of the organization in the field of environmental protection; the use of environmental indicators in project management; whether calculations of carbon dioxide emissions and other emissions into the atmosphere are carried out; whether recycled materials, products of local producers, renewable energy sources are used; whether sorting and processing of garbage within the organization is realized” (Apenko, Fomina, 2018: 21–22).

The assessment of the level of sustainable economic direction was carried out on the basis of questions “concerning the following aspects of project management: the impact of project management on the economic performance of the organization; economic sustainability of projects” (Apenko, Fomina, 2018: 22).

All questions of the first and second modules were formalized, which allowed us to calculate the level of maturity of sustainable project management in the organization in points. The score was not shown to respondents, but was used to process the data. This technique increases the objectivity of the score system, which is used without the subjective influence of opinions and preferences of respondents.

A questionnaire was chosen as a method of data collection for evaluation. It consisted of 25 formalized questions to assess the level of sustainable project management. The authors identified five levels of maturity of sustainable project management in the organization ranging from high to low.

Results of approbation of the comprehensive assessment method as regards maturity level of sustainable project management in Russian organizations.

The technique we had created was tested at 19 enterprises in the city of Omsk. The main criterion for the selection of enterprises was the presence of project activities and their experience in at least partial use of the principles of sustainability. That is, the sample includes enterprises with developed or developing practice of sustainable project management. Experience of leaders in this direction is presented. Therefore, the results cannot be extrapolated to other enterprises of Omsk, in particular, to those which do not yet have sustainable development practices.

The research at the enterprises was conducted using the method of expert survey. The criteria for selection of experts were the following: experience of participation in projects for at least 1 year, experience of participation in programs and activities for sustainable development of the enterprise, good knowledge of the situation at the enterprise, in particular concerning environmental issues, social responsibility, economy.

First of all, we evaluated the integral indicator of the comprehensive assessment of the maturity level of sustainable project management. The results suggest that:

- 1 enterprise has a high level of maturity (5 %).
- 2 enterprises have the above average level of maturity (11 %).
- 6 enterprises demonstrate average maturity level (32 %).
- 5 enterprises show the level of maturity below the average (26 %).
- 5 enterprises have a low level of maturity (26 %), one of them has an extremely low level.

In general, we can assert that different enterprises with different levels of green project management maturity have been chosen for the study. In the sample there are a lot of enterprises ranging from medium to high level of maturity (8 enterprises). This selection of enterprises was not accidental, as it was important to consider different situations and cases depending on the maturity stages of sustainable project management. One of the promising objectives of the study is the establishment of a set of typical criteria of the maturity levels of green project management. This will help to monitor the dynamics of the project management sustainability and move the project management through programme measures to the new, higher levels of maturity.

In addition to the integrated complex indicators, a number of particular indicators were analyzed during the course of the study. Inter alia, we considered the institutionalization level of sustainable project management in enterprises.

The Fig. 1 shows that more than a half of the enterprises use the concept of sustainability and have a conscious intention to achieve a balance of economic,

environmental and social objectives simultaneously, which corresponds to the principle of sustainability. The rest of the enterprises either do not use this concept, or can not yet clearly answer the question asked. This situation is typical, the experience of many foreign and Russian enterprises shows that the concept and terminology of sustainability is being implemented slowly. However, the poor use of the concept of sustainability does not mean that the company does not implement the principles of sustainability; they can be implemented at the intuitive not institutionalized level.

Despite the fact that not all enterprises use the concept of sustainability, nevertheless, the strategy declares the principles of sustainability. As the Fig. 2 show, many enterprises have a strategy or plan for sustainable long-term balanced development.

The Fig. 3 shows that the strategy of sustainable development of enterprises includes not only economic, but also social, environmental principles, although to

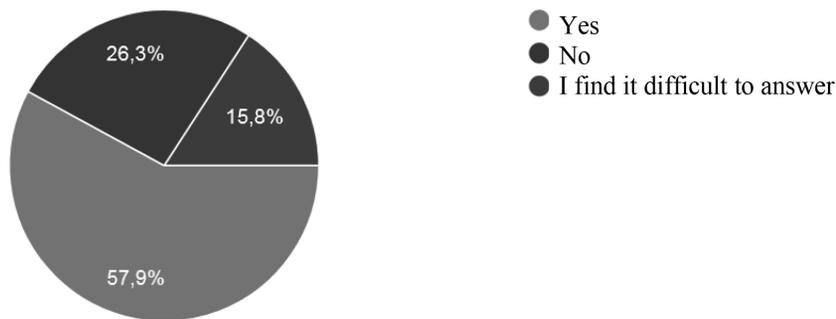


Fig. 1. Answers to the question: Does your organization apply the concepts of sustainable project management, sustainable management, does the management achieve a balance of economic, social and environmental goals?

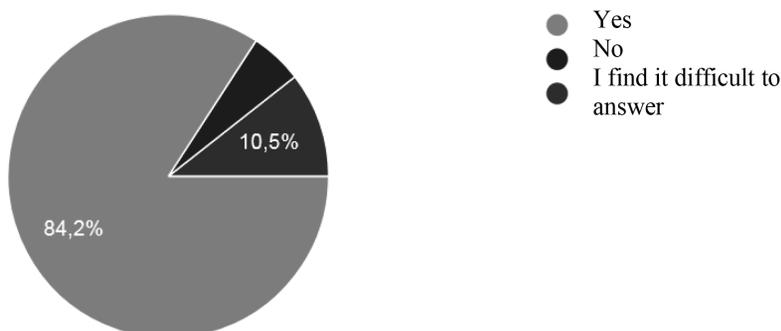


Fig. 2. Answers to the question: Has your organization adopted a strategy (plan) for sustainable (long-term balanced) development?

a lesser extent than economic ones. This is a typical situation for enterprises in the country and regions which are just beginning to implement a policy of sustainability.

One of the sustainability criteria is planning of positive effects not only for the current period of time, but also for the long-term prospects. That is, the effect should be received not only here and now, but it should be prolonged to the future generations. As the Fig. 4 proves, many projects of enterprises involve long-term effects.

The Fig. 5 shows how balanced the projects are in terms of economic, social and environmental objectives. As you can see, about every fourth company does not set three types of tasks at once. About 16 percent of enterprises always set all three goals. The others, depending on the projects, set all three tasks.

One of the noteworthy results was revealing the impact of digitalization of the economy and data-based management on the need to monitor the level of maturity of sustainable project management. As can be seen in Table 1, the experts of the studied organizations verify the hypothesis that the transition to data-based management requires

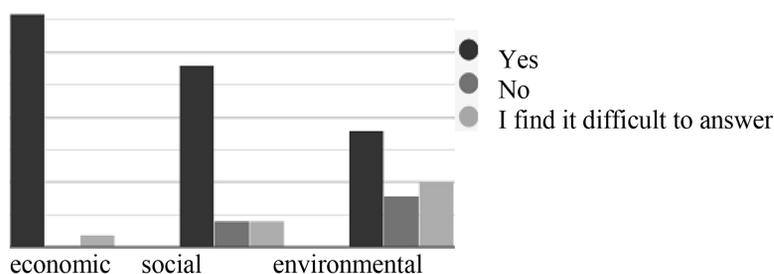


Fig. 3. Answers to the question: Does your sustainability strategy include the following principles (goals)?

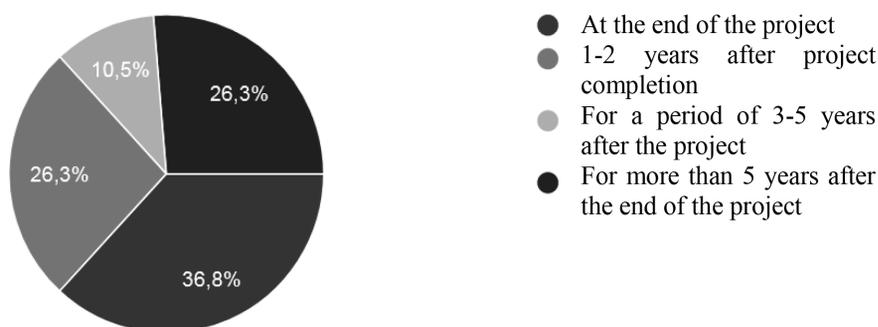


Fig. 4. Answers to the question: When planning the results and effects of projects for what period do you tend to focus?

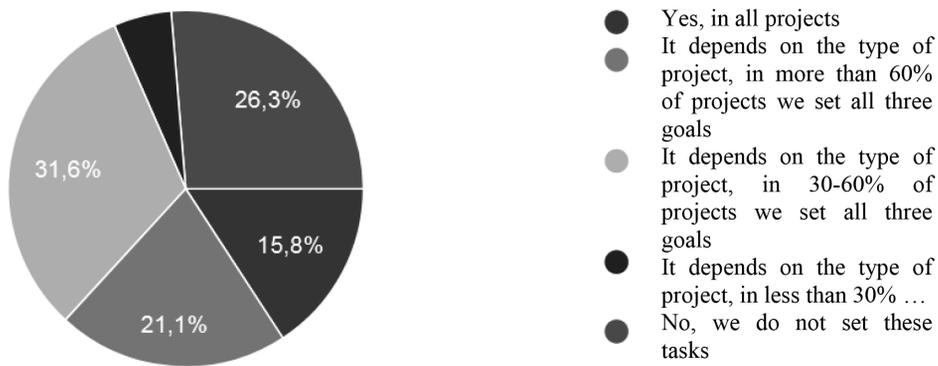


Fig. 5. Answers to the question: Do you set economic, environmental and social goals in your projects at the same time?

reliable technologies and methods of data collection, including those concentrated on the sustainability of project management. One hundred percent of the experts of the enterprises with high and above average level of maturity of sustainable project management have confirmed that the transition to digitization in the economy and management will require the introduction of systemic monitoring of indicators of the projects' sustainability. Other companies at least reduce their level of maturity in the sustainable management of the projects, so the need for monitoring them is declining.

Table 1. Answers to questions about the extent of severity of the need to monitor the level of maturity of sustainable project management with the transition to the digital economy and data-based management (percentage of respondents)

Enterprises with the varying maturity level of sustainable project management:	There is a need to monitor the maturity level of sustainable project management with the transition to digitalization:		
	expressed need	partially expressed need	no need
High level	100	0	0
Above average	100	0	0
Average level	34	50	16
Below average	0	40	60
Low level	0	20	80

Conclusion/Results

Thus, the author's original methodology and methodology of comprehensive assessment of the maturity level of sustainable project management in organizations are proposed. The advantage and distinctive features of the methodological basis of assessment are the following: firstly, the possibility of quantitative assessment of the

maturity level of sustainable project management; secondly, the complex nature of the applied evaluation indicators, including not only economic, social and environmental, but also institutional indicators of sustainability. The proposed methodological framework has been tested at the Omsk enterprises and the results of the analysis of the level of sustainability indicators of project management are shown. The analysis includes a comprehensive overall assessment of the maturity level, and can be carried out, taking into account many specific indicators of maturity of sustainable project management.

The results of the analysis showed the presence of a group of advanced enterprises, which in their practice are already using project management, integrated into the concept of sustainable development of the organization. Currently, the number of such enterprises is not high and they are leaders in Russia in the implementation of sustainable project management. The data obtained can be considered as the generalized experience, which shows both progressive achievements in sustainable project management and problem areas, prospects for growth and changes in these processes. The findings require further reflection. It is also necessary, taking into consideration the lessons learned and the findings of the study, to adjust the methodology for assessing the maturity level of project management. In particular, we plan to strengthen the set of quality indicators of motivational readiness of enterprises to implement sustainable project management. In the future, we are also interested in issues related to the reasons for the appeal of enterprises to the sustainability of project management, the impact of various factors on such practices. More specifically, the relevant question is whether public policy can influence the implementation of sustainable project management or whether it should be primarily market motives for such practices. Also an important direction of future research can be in-depth study of the impact of digitalization on the needs of enterprises for monitoring the maturity level of sustainable project management. Our research has put forward a basic hypothesis that this impact exists and will increase as we move towards the digital economy and data-based management. In general, it can be argued that the study of the assessment of sustainable project management in connection with the transition to the digitalization of the economy and management is a promising direction for economic science and practice.

References

Anshin, V.M., Pertseva, E. Iu., Glazovskaia, E.S. (2015). *Proektnyi podkhod k realizatsii kontseptsii ustoichivogo razvitiia v kompanii* [Project approach to the

implementation of the concept of sustainable development in the company], Moscow, Infra-M, 268 p.

Apenko, S.N., Fomina, Iu.A. (2018). Teoreticheskie osnovaniia i razrabotka sistemy otsenki ustoichivogo proektnogo upravleniia [Theoretical foundations and development of a system of evaluation of sustainable project management]. In *Fundamental'nye nauki* [*Fundamental Sciences*], 10, 18–25.

Carboni, J., González, M., Hodgkinson, J. (2013). PRiSM. *Project integrating Sustainable Methods. The GPM® Reference Guide to Sustainability in Project Management*, GPM Global, 162 p.

Cohen, S., Eimicke, W., Miller, A. (2015). *Sustainability Policy. Hastening the Transition to a Cleaner Economy*, Jossey-Bass, 288 p.

Gareis, R., Huemann, M., Martinuzzi, A., Weninger, C., Sedlacko, M. (2013). *Project Management and Sustainable Development Principles*, Project Management Institute, 187 p.

Gibson, R.B. (2016). *Sustainability Assessment: Applications and opportunities*. 1st edition, Routledge, 296 p.

Grevelman, L., Kluiwstra, M. (2010). Sustainability in Project Management A case study on Enexis. In *PM World Today*, 12, available at: <http://www.pmworltdoday.net>

Hák, Moldan, B., Dahl, A.L. (2007). Challenges to Sustainability Indicators. In *Sustainability Indicators: a scientific assessment. SCOPE67*, Washington, Island Press, 1–24.

Labuschagne, C., Brent, A.C. (2005). Sustainable Project Life Cycle Management: The need to integrate life cycles in the manufacturing sector. In *International Journal of Project Management*, 23(2), 159–168.

Maltzman, R., Shirley, D. (2010). *Green Project Management*. Boca Raton, FL, CRC Press, 209 p.

Manaikina, E. (2015). *Upravlenie proektami v kompanii s uchetom printsipov kontseptsii ustoichivogo razvitiia: dissertatsiia ... kandidata ekonomicheskikh nauk: 08.00.05* [*Project management in the company, taking into account the principles of the concept of sustainable development: Thesis of Candidate of Economic Sciences: 08.00.05*]. Moscow, National Research University “Higher School of Economics”, 196 p.

Patton, M.Q. (2002). *Qualitative Research and Evaluation Methods*. 3rd ed., Thousand Oaks, CA: Sage, 208 p.

Robertson, M. (2017). *Sustainability Principles and Practice*. 2nd edition, Routledge, 418 p.

Silvius, G., Kampinga, M., Paniagua, S., Mooi, H. (2017). Considering sustainability in project management decision making; An investigation using Q-methodology. In *International Journal of Project Management*, 35, 1133–1150.

Silvius, G., Schipper, R., Planko, J., Brink, J., Köhler, A. (2012). *Sustainability in Project Management*, 1st edition, Routledge, 182 p.

Анализ зрелости устойчивого управления проектами предприятий России в условиях перехода к цифровой экономике

С. Н. Апенько, Ю. А. Фомина
Омский государственный университет
им. Ф. М. Достоевского
Россия, 644077, Омск, пр. Мира, 55а

Предметом исследования стала методика оценки и анализа уровня зрелости устойчивого управления проектами предприятий России. С помощью обзора научной литературы доказана тенденция к интеграции управления проектами и концепции устойчивого развития. Анализ подходов к оценке показателей устойчивости продемонстрировал отсутствие системности, смещение акцентов на отдельные показатели и недостаточное внимание к институциональным показателям устойчивости. Поставлена проблема отсутствия методики количественной оценки уровня зрелости устойчивого управления проектами, которая могла бы стать базой для мониторинга данного управления. Наличие мониторинга является условием успешного перехода к цифровой экономике и управлению, основанному на данных, так как результаты мониторинга способны стать платформой для оптимизации устойчивого управления проектами с помощью отслеживания показателей устойчивости. В результате методов анализа литературы и международного профессионального стандарта, а также глубинного интервью с топ-менеджерами предприятий авторами обоснована методика оценки уровня зрелости устойчивого управления проектами, новшеством которой является включение модуля институциональных показателей устойчивости и комплексной количественной оценки экономических, социальных и экологических показателей устойчивого управления проектами. Приведены результаты апробации методики методом анкетирования на 19 предприятиях г. Омска. Выявлена группа предприятий с высоким и выше среднего уровнями зрелости устойчивого управления проектами. Зафиксированы показатели институционального модуля оценки, демонстрирующие хороший потенциал для дальнейшего развития устойчивого управления проектами. Проанализировано влияние фактора перехода к цифровой экономике на формирование потребности в мониторинге устойчивости управления проектами. Результаты могут быть применены для оптимизации процессов устойчивого управления проектами и для дальнейшего совершенствования методики оценки этого управления в контексте перехода к цифровизации экономики и менеджмента.

Ключевые слова: проект, устойчивость, управление проектами, оценка зрелости устойчивости, цифровизация.

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