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A PRACTICAL APPLICATION OF A METHOD FOR THE EVALUATION OF IMPLEMENTATION MATURITY AND COMMERCIAL POTENTIAL IN R&D PROJECTS

Key words

Implementation Maturity Level (SDW), commercial potential, technical innovation, technology transfer.

Abstract

A comprehensive evaluation of multifaceted R&D projects and their application potential should play a decisive role in the justification of research task continuation and a practical use of its results. It is therefore essential to use adequate, effective tools in directing these projects that allow assessing work progress and commercialization probability.

This article describes a practical application of simulation methods for the assessment of implementation maturity, commercial potential, and innovation for supporting the management of project implementation, based on selected examples of innovative solutions of the Strategic Programme, "Innovative Systems of Technical Support for Sustainable Development". The article presents the results of the evaluations and their interpretation, which facilitates taking appropriate corrective action. The examples of the application of assessment methods of the implementation maturity level (SDW), commercial potential (PK), and innovation potential presented in this article confirm the high suitability of the proposed methodology in the evaluation of R&D projects to rationalize product development processes. Moreover, a practical verification of assessment methods for innovative solutions facilitates the establishment of potential development directions of the methods themselves, and of the original, comprehensive assessment system of the efficiency and effectiveness of the research project implementation of innovative products as their result.

Introduction

In the era of the continuous pursuit of competitive advantage in goods, services, companies, and entire economies, it is very important to have tools that support accurate and efficient evaluation of the level of implementation readiness, commercial potential, as well as technological innovation, ventures, and research and development projects. When en route to a modern, innovative, and competitive economy, the ability to save time, labour, and primarily financial resources is of paramount importance. An investment based exclusively on intuition in all the "promising" products at some stage of their progress, in many cases, turns out to be inefficient and unreliable, and it leads to irreversible losses.

The problem of the still insufficient use of assessment tools projects R&D is essential in the context of the distribution by the government institutions of considerable financial resources from the EU funds for economic development. These tools (e.g. technology intelligence, technology acceptance model, technology foresight, foresight, technology assessment) are used with great success by the most innovative European countries [1]. The experiences of those countries confirm the importance of real assessment of the technological development and commercial potential of solutions with regard to the increase of their application efficiency and commercialisation.

Projects in research programmes still very rarely include the stage of the practical application of innovative solutions, while their results, in many cases, are not evaluated in terms of the application potential and the effectiveness of economic implementation. Therefore, the effectiveness of the practical

application of scientific research results is still not satisfactory in Poland [2, 3]. This is further confirmed by the results analysis of national innovation strategies and research [4–9] that indicate a large gap between the phases of research, the development of the prototype, industrial application, and commercialization of advanced products and technologies.

Literature on the subject [10–11] also indicates a problem with the inadequacy of standard methods (for example, direct intelligence, statistical analyses, expert panels, workshops), the methods borrowed from strategic management practice (e.g. scoring method, the SWOT method) or even intuitive methods used in the evaluation of the strategic research programmes. Frequently, it does not take into account important aspects, such as market demand assessment, field of application, competitive solutions on the market, potential benefits for producers and consumers, and the protection of intellectual property rights. Strategic government documents [12–15] and research on the effectiveness of the transfer processes of innovative solutions under development into the economy [16–20] stress the importance of a real assessment of the implementation and commercial potential.

Moreover, the methods used so far for the evaluation of technical solutions do not sufficiently take into account the specificity of innovative solutions that results from scientific research work. There is a deficiency of integrated assessment methods that would take into account all aspects of technical solutions. In practice, there are only tools to evaluate selected aspects.

An analysis of the use of assessment methods in the world, concerning the degree of sophistication of technological and research programmes indicated the following NASA methods as the foundations and premises to be incorporated in designing the SDW methodologies: *Technology Readiness Levels* (TRL) [21], and a more advanced – *Engineering Manufacturing Readiness Levels* (EMRL) [22]. Adaptations of this kind of methodology for special purposes are increasingly used for assessing the maturity of solutions at the stages of research and development of technologies [23–25]. For technologically advanced and organisationally complex endeavours, the use of TRL methods is now the common practice that distinguishes innovative economies [26–28]. Furthermore, literature on the subject indicates only a few examples of methods for assessing the commercial potential of technological and research projects (mainly the methods used for the evaluation of commercial potential of new technologies: *Quicklook* and *In-Depth* [11], expert subjective evaluation methods and objective factual analysis for identifying the commercial potential of innovative solutions [29, 30]. The methods for assessing commercial potential by using computer-based methods for the analysis of information [31, 32] have become an inspiration to develop a comprehensive, an original method to evaluate commercial potential.

The ITeE – PIB in Radom adopted the insufficiency of support mechanisms for commercialization and implementation, the low level of implementation and commercial maturity for the developed innovative solutions, and the lack of purpose–designed methods for detailed comprehensive assessment of developed solutions as the premises for the development of practical, useful tools for evaluating the degree of technical advancement of solutions and product readiness to implement industrial and commercialization [34].

Within the framework of the Strategic Programme "Innovative Technical Support Systems for Sustainable Development of the Economy" [33], practical methods for monitoring the product development stages and readiness level of innovation transfer into business practice were developed and verified, including a method for assessing the level of implementation maturity (SDW) [35] and a method of commercial potential evaluation (PK) [36] for technical solutions.

These methods and the computer program are permanent elements of the monitoring procedures for research projects carried out in the ITeE – PIB, and SDW and PK are the assessments of their results. These verified and modified methods are now being used in cyclical assessments of innovative solutions, which are at various stages of completion, developed within the framework of the Strategic Programme, "Innovative Systems of Technical Support for Sustainable Development". There are 173 solutions evaluated at fixed intervals and classified within a system of categories: Systems (S), Materials (M), Devices (U), Technologies (T), and Services (Z), which are further broken down into subcategories. The structure of the developed classification is open–ended, which allows its extension into further subcategories [35].

The developed system has been presented in several publications [35–38]. In this article, the authors focused on examples of the practical application of the system, and its applicability and evaluation effectiveness.

1. Examples of practical application of the developed methods for evaluating implementation maturity and commercial potential of selected innovative solutions (SDW)

Out of 173 solutions developed within the strategic programme, subject to systematic evaluation, four examples were selected that represent the different categories marked by the following letters:

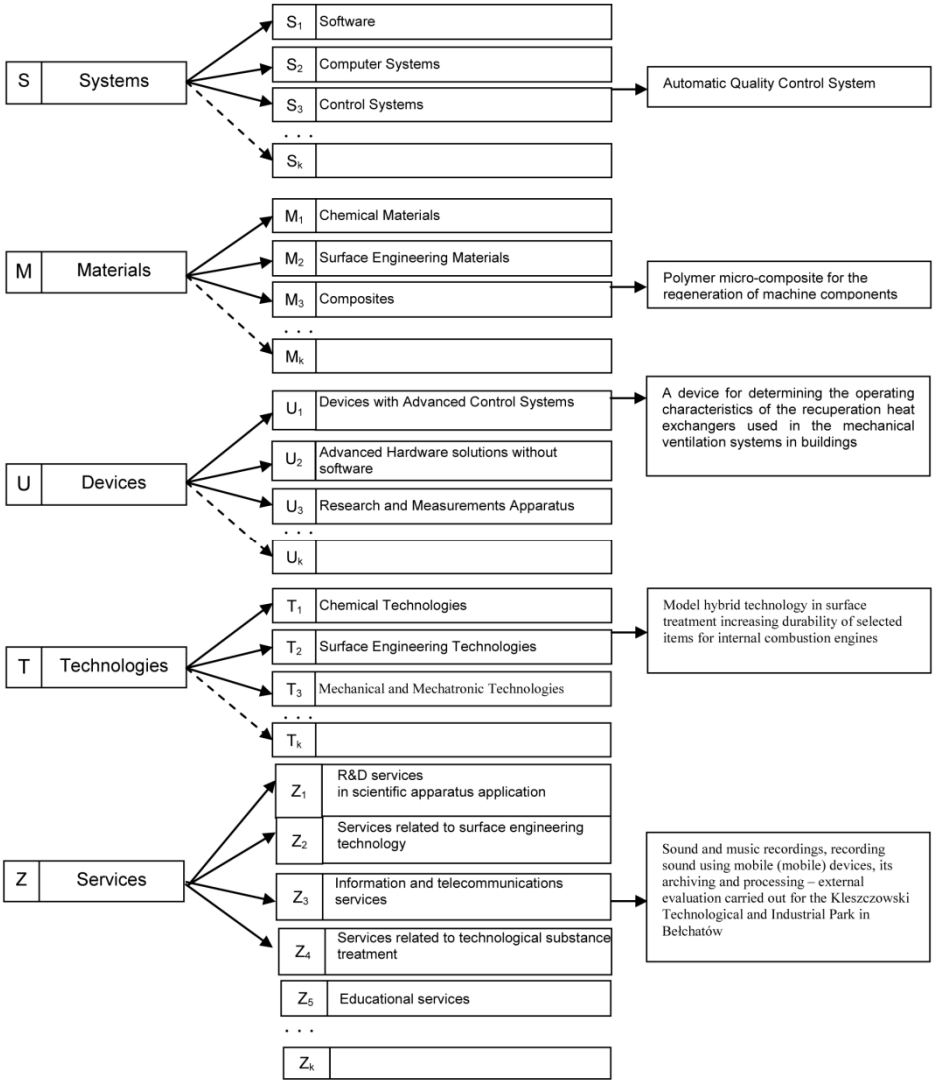

Fig. 1. Categorization of innovative solutions for specialized categories and subcategories

S: "System for automatic quality control" (category "system" subcategory "control system") developed in the framework of the research tasks of "Hybrid systems for automatic quality control in production processes; **M:** "Polymer micro-composite for regeneration of machine components" (category "materials", subcategory "composites") developed in the framework of the research task, "The use of polymer micro- and nano--composites in construction and regeneration of machine components"; **U:** "A device for determining operational characteristics of recuperation heat exchangers used in mechanical ventilation systems for buildings" (category "devices" subcategory "devices with advanced control systems") developed in the framework of the research tasks "Methods of improving environmental and engineering safety in ventilation systems"; **T:** "Model hybrid technology for surface treatment to increase the durability of selected components of internal combustion engines" (category "technology" subcategory "surface engineering technologies") developed in the framework of the research task, "Hybrid layers with higher resistance to thermos-mechanical fatigue".

The example does not include the "Service" category, since this type of product was not developed within the framework of the Strategic Programme. A detailed description of the specificities and the assessment of services constituting solutions, the effects of which are intangible products, along with a detailed assessment algorithm were presented in the publication [39].

The degree of the maturity of implementation solutions of the Strategic Programme (including selected sample solutions) was rated six times at half--yearly intervals at various stages of their development. Examples of assessment "screenshots" of SDW for selected solutions are presented in Figure 2.

The selected solutions, according to the assessment of the experts, were in the early stages of advancement in 2011: the system at level 1, micro-composite at 4, and devices and technology at 3.

With the progress of research and development, in 2012, those solutions reached the following levels, respectively: S and T – 3, that is the level of analytical and experimental verification, M – 7^{th} level, a prototype status verified in real operating conditions and readiness for initial production on a small scale, solution U – 5^{th} level, that is experimental model tested in operating, similar to real-life conditions.

The relatively small increase of S and T solutions during this period was due to the high degree of difficulty of the work related to the development of the model inspection scheme (S) and an experimental model of technology components (T). In the first quarter of 2013, S and T solutions reached level 4 (failing to reach level 5 was related to the criteria: testing the operation of the experimental model in conditions similar-to-life conditions, lack of project documentation, lack of risk analysis and management programme or arrangements with the end–user with regard to structural and functional parameters).

In the third stage of evaluation, the micro-composite (M) reached the eighth level, namely, readiness to implement in full-scale production. Having failed to meet the criteria in carrying out the integration of laboratory model, the verifying of the interaction of technology components, and verifying their compatibility, solution (T) remained at the fourth level.

For U solution, remaining at level 5 was decided by the failure to meet criteria, first and foremost, for creating the programme of risk analysis and risk management, the testing and verification of individual features and modules, testing the algorithms of the processor platform with parameters corresponding to the requirements, arranging with the end-user the constructional and functional parameters, and the development of design documentation for the manufacture of prototype.

Fig. 2. Screenshots with solutions description evaluated by the SDW method

In the subsequent stages of evaluation, solutions S and U reached levels 7 and 8, then 8 and 9 – levels of implementation readiness, during which the review was carried out for operational research prototypes in real conditions of use. Technology (T) eventually reached level 8. Micro-composite (M), with the last evaluation indicates level 9, i.e. the last stage of the verification phase, after the certification tests confirming the quality of the product, has been implemented in 38 manufacturing enterprises.

For system (S) and device (U), it was necessary to eliminate errors and faults in the prototype version, and to carry out certification procedures, after which both projects concluded in industrial implementation. The model implementation of the technology (T) was also performed. The results of subsequent evaluations of the selected solutions are presented in Figure 3, where the boundaries of the column charts indicate the gradually increasing level of implementation maturity.

Monitoring the status of the implementation of the established schedules and analysing assessment sheets and the results in the subsequent stages of evaluation enabled the identification of direct causes of the difficulties of subsequent tasks at the operational level, and consequently, their modification and fulfilling the minimum of 80% of the criteria that are assigned to a given level.

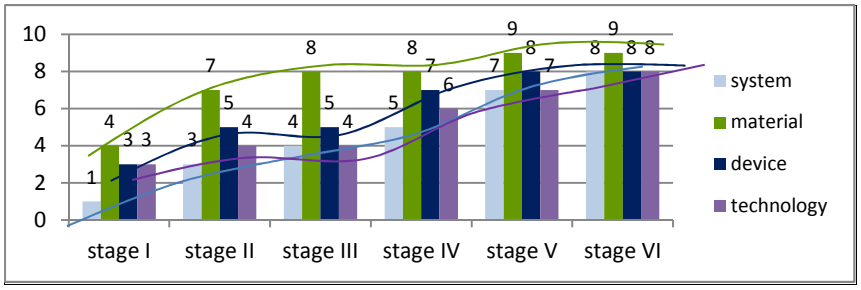

Fig. 3. The results of the six stages of the SDW evaluation of the four selected solutions developed in the Strategic Programme

The commercial potential of four selected solutions was evaluated five times in the half-yearly intervals. The results of the evaluations have been recorded in the database of the program (Fig. 4).

The analysis of the results indicated that two of the four analysed solutions already at the initial stage was characterised by low (solution M) and very low (solution S) commercial potential of respectively 45% and 39%. Technology (T) has reached the average commercial potential (55%). The device (U) obtained a high commercial potential (66%) due to its high technological level, a high level of functionality and innovation in relation to other existing solutions on the market, and a high level of market demand for a solution. In the subsequent stages of evaluation, together with an increase of work progress, there was a significant increase in the commercial potential for micro-composite (M) and technology (T) to the level of 73%. In the scale of commercial potential, achieving the set maximum level of 70% indicates high chances of commercializing the solution. The high result of commercial potential level for (M) and (T) was confirmed and verified by the market, with high market demand and the high demand for the solution.

Fig. 4. The screenshots of assessment sheets for solutions rated by PK method

In subsequent evaluations, the level of commercial potential for system (S) increased steadily, reaching 70% of the value in the last study (high level).

The results of subsequent evaluations of the selected solutions are presented in Figure 5.

A significant part of the innovative solutions developed within the Strategic Programme is single specialized solutions (often unique) of a non-repeatable or repeatable character. The former, developed to order for a specific client and in accordance with the adopted formula where their commercial potential is not tested, has a market potential of 100%. The second category of individual, specialized innovative solutions are the repeatable solutions, which are of interest to a wider range of receipts; the commercial potential of this group of solutions is subject to assessment [40].

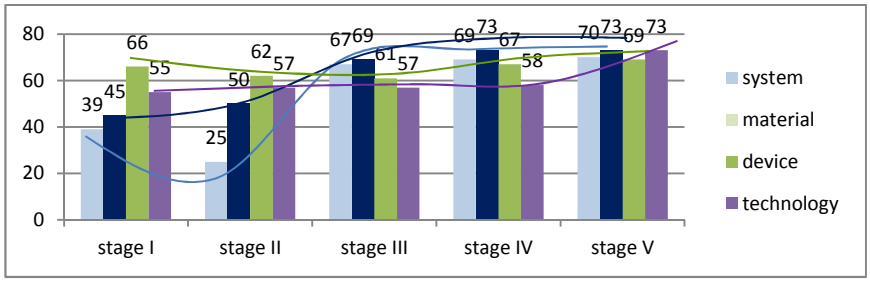

Fig. 5. The results of the five stages of commercial potential assessment of the four selected solutions developed in the Strategic Programme

The selected four solutions are assessed in terms of their level of innovation (PI assessment). However, significant modifications made to the methodology for evaluating PI make a comparison of all four evaluation results untenable. The results of the last two stages of the PI assessment indicate that innovation of T solutions increased from medium to high, solutions S and U declined slightly within the medium-level, while M maintained the same level (medium); in the last case, new areas of application were suggested allowing further development, which is a recommended strategy in creating competitive advantage.

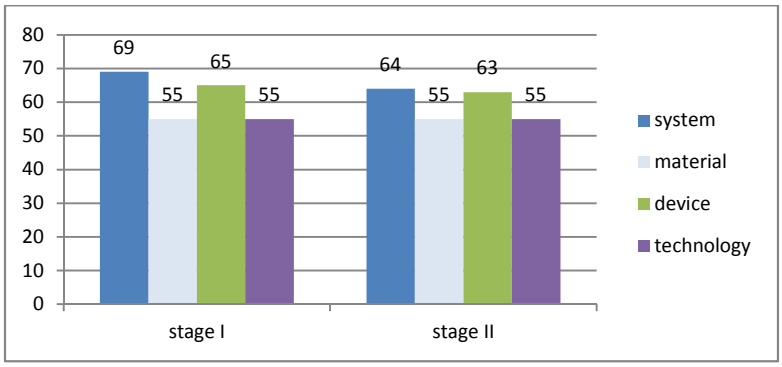

Fig. 6. The results of the two stages of innovation assessment of the four selected solutions developed within the Strategic Programme

When monitoring a large number of projects, for example, those carried out within the framework of the strategic programmes, important information about the overall progress of the work can be obtained based on the total analysis of the assessment results. The Excel Package helped to generate statistics showing the implementation and commercial potential of solutions, either globally or divided into thematic groups and categories of solutions, including the timeframe in the analysis indicated trends of observed changes. The summary results of the

implementation and commercial potential carried out for 173 solutions of the Strategic Programme (SDW assessment at six stages of implementation, PK assessment at five stages of implementation) is shown in Figs. 6 and 7.

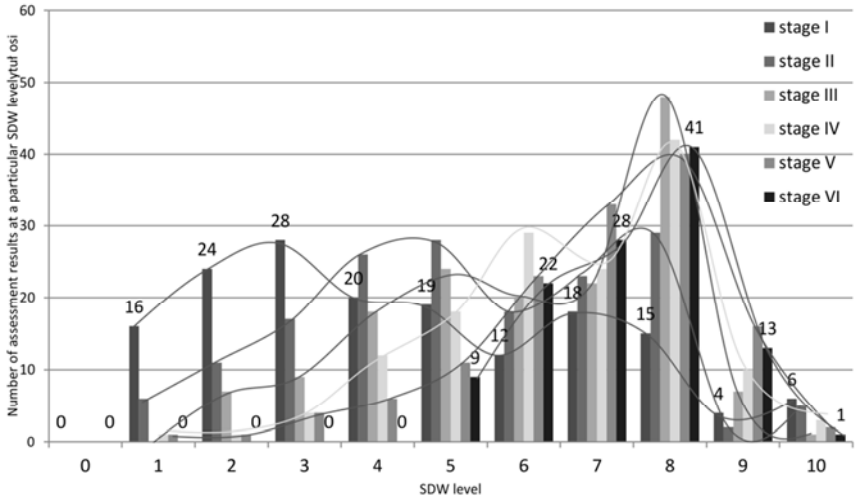

Fig. 7. The results of the six stages of the SDW assessment for 173 solutions that are the result of the Strategic Programme

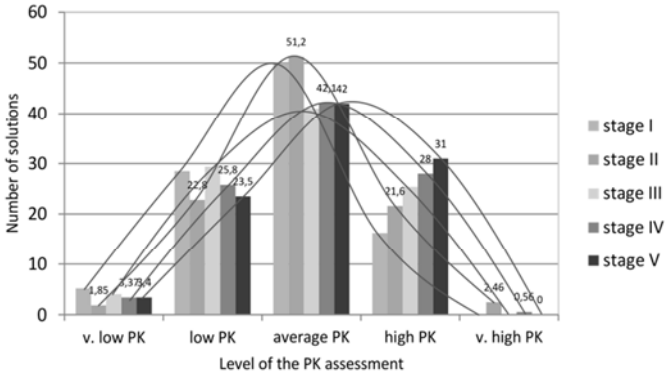

Fig. 8. The results of the five stages of the PK assessment for 173 solutions that are the result of the Strategic Programme

Based on the analysis of the results of assessment summaries of developed solutions, substantive conclusions can be formulated and appropriate decisions made in order to ensure high efficiency of the work carried out. The column bars shown in the global approach indicate the prevailing levels of advancement ranges of the developed solutions. The results of the subsequent stages of the

evaluation point to the increasing share of solutions with a higher level of implementation maturity, and an increase during the periods between the assessments of solutions with a higher commercial potential.

The software system designed and constructed to support the developed, integrated methods for assessing implementation maturity, commercial potential, and innovation of engineering solutions is supported by an Internet application.

The system is divided into modules to assess SDW, PK, and PI that are expandable with other modules, for example, a module that takes into account environmental aspects, or the risk of implementing innovative solutions, or aspects of the social environment [41]. Each module allows creating multiple assessments of the same product (multi-stage assessments), and also exporting assessment sheets and aggregate results to external files in PDF format. The access to the system is authorized, with various levels of permission for users.

The functioning of the system has been tested both in the development phase of the system, as well as practically, while carrying out evaluations of innovative solutions of the Strategic Programme and the assessments outsourced by external entities. As a result of the tests, necessary modifications were introduced designed to increase the functionality of the system. As part of the testing system, verification was also conducted for assessment methods, which included, among others, the efficiency of the developed methods in applications for designated categories of solutions, the adequacy of the criteria for the assessment of individual modules, and the choice of weights for the individual criteria.

The flexible structure of the software allows modifications of the system and its adaptation to specific applications.

Conclusions

The developed comprehensive solution in the form of methods of assessing the degree of implementation maturity SDW, commercial potential PK, executive procedures, and information system, is a tool to assist the transformation of knowledge and the transfer of technology, within the framework of the measures taken for the improvement of competitiveness and innovation economy, through more effective use of the results of scientific research.

The assessment methods can be used at different levels of the formation of innovative solutions, from the planning of research and development and developing the concept of a solution, to a detailed application in the assessment of innovative products at various stages of their completion. These methods have the typical nature of an application and can be used (as a complex or singly) in the systems for the development and implementation of the research results into practice, primarily to evaluate the maturity of technologies and new products at universities, institutes of scientific research, and the evaluation of the

implementation of development projects in the industry. These methods provide a means for in-depth analyses of the progress of research and development projects and their degree of adaptation for practical applications, thus substantially reducing the risk of failure in implementing and commercializing of innovative solutions. The developed solution is an important element of the evaluation of the strategic research programmes in the ITeE – PIB in Radom. Due to its versatility, it can find broad applications in results assessment of research work and their readiness for application in the economy. The flexible structure of the software allows modifications of the system and its adaptation to specific applications. This is confirmed by examples of external implementation methods, including small and medium businesses (e.g. the SDW study of the IT system *Xerius* dedicated for business management) or in Bełchatowsko--Kleszczowski Industry – Technology Park. Many evaluation procedures have been carried out with the use of the developed system.

The authors foresee its further improvement and a development of optional solutions for other categories of research results, including educational projects. A risk assessment module of innovative ventures is in the process of development.

Scientific work executed within the Strategic Programme "Innovative Systems of Technical Support for Sustainable Development of Economy" within Innovative Economy Operational Programme.

Bibliography

1. Karczewska M., Materzok, J., Skonieczny J.: Współczesne narzędzia oceny technologii. Materiały konferencyjne „Innowacje w zarządzaniu i inżynierii produkcji", Zakopane 2011.
2. Założenia polityki naukowej i naukowo-technicznej i innowacyjnej państwa do 2020 r., Ministerstwo Nauki i Informatyzacji, Warszawa 2004.
3. Mazurkiewicz A. (red.): Prognozy rozwoju kierunków badań, Radom 2008.
4. Strategia Rozwoju Kraju 2007–2015, Ministerstwo Rozwoju Regionalnego, Warszawa, listopad 2006.
5. Strategia Rozwoju Nauki w Polsce do 2015 r. Warszawa, lipiec 2008.
6. Program Operacyjny Inteligentny Rozwój, 2014–2020, Ministerstwo Infrastruktury, Warszawa 2014.
7. Raport „Polska 2030. Wyzwania rozwojowe. Kancelaria Prezesa Rady Ministrów, lipiec 2009, http://www.wrpo.wielkopolskie.pl/zalaczniki1 /2012/Raport_Polska_2030_wyzwania_rozwojowe.pdf
8. Raport 'Polska 2030. Trzecia fala nowoczesności. Długookresowa strategia rozwoju kraju. Ministerstwo Administracji i Cyfryzacji. Warszawa, 9 listopada 2012 r.

9. Mazurkiewicz A., Poteralska B.: Budowa scenariuszy rozwoju Polski do 2020 w Polu Badawczym „Zrównoważony Rozwój Polski". W: M. Kleiber (red.) Wyniki Narodowego Programu Foresight „Polska 2020". Ministerstwo Nauki i Szkolnictwa Wyższego, Warszawa, czerwiec 2009.
10. Łopacińska L.: Ponadstandardowe metody ewaluacji strategicznych programów badawczych. Problemy Eksploatacji. No 3/2011.
11. Gwarda-Gruszczyńska E.: Quicklook™ jako metoda oceny potencjału komercyjnego innowacji i technologii Acta Universitatis Lodziensis Folia Oeconomica 234, 2010.
12. Narodowe Strategiczne Ramy Odniesienia na lata 2007–2013; Program Operacyjny „Innowacyjna Gospodarka". Ministerstwo Rozwoju Regionalnego, Warsaw 2006.
13. Krajowy Program Badań Naukowych i Prac Rozwojowych (KPBNiPR); Kierunki zwiększania innowacyjności gospodarki na lata 2007–2013; Założenia polityki naukowej i naukowo-technicznej i innowacyjnej państwa do 2020 r.
14. Belina B.: Strategiczne programowanie rozwoju innowacyjności i konkurencyjności polskiej gospodarki. Problemy Eksploatacji no 2/2008. ITeE – PIB, Radom, 2008.
15. Program „Horyzont 2020 – program ramowy w zakresie badań naukowych i innowacji"; Rozporządzenie Parlamentu Europejskiego i Rady ustanawiające program ramowy w zakresie badań naukowych i innowacji (2014––2020); Brussels, 30.11.2011.
16. Bandarian R.: Evaluation of commercial potential of a new technology at the early stage of development with fuzzy logic. Journal of Technology Management & Innovation, Vol. 2, no 4, 2007.
17. Balachandra R., Friar J.: Factors for success in R&D projects and new product innovation: a contextual framework, IEEE Transactions on Engineering Management, Vol. 44, 1997.
18. Jain R.K., Martyniuk A.O., Harris M.M., Niemann R.E., Woldman K.: Evaluating the commercial potential of emerging technologies. International Journal Technology Transfer and Commercialization, Vol. 2, no 1, 2003.
19. Martyniuk A.O., Jain R.K., Stone H.J.: Critical success factors and barriers to technology transfer: case studies and implications. International Journal Technology Transfer and Commercialization, Vol. 2, no 3, 2003.
20. Cooper R.G.: The dimensions of industrial new product success and failure. Journal of Marketing, Vol. 43, 1979.
21. Mankins J.C.: Technology Readiness Levels: A White Paper. Office of Space Access and Technology, NASA, April 6 1995.
22. Defence Research and Development Canada "A Technology Maturity Measurement System for the Department of National Defence. The TML System". Contract Report DRDC Atlantic CR 2005–279; 2006.

23. Mankins J.C.: Technology readiness and risk assessments: A new approach. Acta Astronautica, 2009, v. 65, Issue 9–10, pp. 1208–1215.
24. Department of Homeland Security Science and Technology Readiness Level Calculator. Final Report. Homeland Security Institute, 2009.
25. Determining the Lines of System Maturity, System Readiness and Capability Readiness in the System Development Lifecycle. Conference Paper. CSER 2009.
26. Mankins J. C.: Approaches to strategic research and technology (R&T) analysis and road mapping. Acta Astronautica, 2002, v. 51, Issue 1–9, pp. 3–21.
27. UK Environmental Transformation Fund Strategy, 2008. http://www.berr.gov.uk/files/file47575.pdf
28. El-Genk M.S.: Energy conversion technologies for advanced radioisotope and nuclear reactor power systems for future planetary exploration. Thermoelectrics, 2002. Proceedings ICT apos; 02. Twenty-First International Conference. Issue 25–29. 2002, pp. 375–380.
29. Lucheng H., Yafei L., Feifei W.: A Conceptual Framework of Identifying the Commercialization Potential of Emerging Technology Based on Subjective Judgment and Objective Fact. Management Science and Engineering, Portland, 2007.
30. Ji-wu W., Lu-cheng H., Li jian, Wen-guang W.: An Integrated Method for Commercialization Potential Evaluation of Emerging Technology Based on TFA. Management Science and Engineering, Portland, 2007 Założenia polityki naukowej i naukowo-technicznej i innowacyjnej państwa do 2020 r., Ministerstwo Nauki i Informatyzacji, Warszawa 2004.
31. Hongjun W., Xiaofei Z., Rui L., Guiwu W.: An Approach to Potential Evaluation of Emerging Technology Commercialization with Uncertain Linguistic Information. Journal of Convergence Information Technology, No 7/2007.
32. Rui L., Xiaofei Z., Hongjun W., Guiwu W.: Model for Potential Evaluation of Emerging Technology Commercialization with Hesitant Fuzzy Information. Journal of Convergence Information Technology, No 4/2007.
33. Raport nr RC/7/I.3.1/PS z realizacji zadania badawczego pn. „Metody analizy potencjału wdrożeniowego i komercyjnego innowacyjnego produktu technicznego lub procesu technologicznego" realizowanego w ITeE–PIB w ramach Programu Strategicznego pn. "Innovative Systems of Technical Support for Sustainable Development."
34. Mazurkiewicz A., Karsznia W., Giesko T., Belina B.: Metodyka oceny stopnia dojrzałości wdrożeniowej innowacji technicznych. Problemy Eksploatacji 1/2010, s. 5–20.
35. Mazurkiewicz A., Belina B., Giesko T., Karsznia W.: Operational system for the assessment of the implementation maturity level of technical innovations. Problemy Eksploatacji 4/2013, s. 79–92.

36. Belina B., Giesko T., Łopacińska L., Walasik M.: Setting of criteria in the commercial potential assessment method of innovative technological solutions. Maintenance Problems, 2/2013, pp. 221–234.
37. Belina B., Łopacińska L., Karsznia W.: Commercial potential oriented evalutaion of innovative products. Maintenance Problems, 4/2012, pp. 23–32.
38. Belina B., Karsznia W.: System supporting the assessment of the degree of implementation maturity of technical innovations. Problemy Eksploatacji 3/2013, s. 87–102.
39. Mazurkiewicz A., Karsznia W., Giesko T., Belina B.: System operacyjny oceny stopnia dojrzałości wdrożeniowej innowacyjnych rozwiązań w zakresie usług. Problemy Eksploatacji 3/2011, s. 61–73.
40. Walaszczyk L.: Model ewaluacji programów badawczych w obszarze innowacji technicznych. Praca doktorska. Politechnika Warszawska 2015, s. 277–278
41. Belina B., Mazurkiewicz A., Giesko T., Karsznia W.: Tracking and predicting solution evelopment in r&d projects using a complex assessment method (artykuł złożony do opublikowania).

Praktyczne zastosowanie metody oceny stopnia dojrzałości wdrożeniowej oraz potencjału komercyjnego w realizacji projektów R&D

Słowa kluczowe

Stopień Dojrzałości Wdrożeniowej SDW, potencjał komercyjny, innowacje techniczne, transfer technologii.

Streszczenie

Kompleksowa wieloaspektowa ocena realizacji projektów R&D oraz potencjału aplikacyjnego uzyskanych wyników powinny odgrywać decydującą rolę w odniesieniu do zasadności kontynuacji podjętych zadań badawczych oraz praktycznego wykorzystania ich rezultatów. Dlatego istotne jest zastosowanie w sterowaniu tymi projektami odpowiednich, skutecznych narzędzi pozwalających na ocenę stanu zaawansowania prac oraz urealnienie szans komercjalizacji.

W artykule opisano praktyczne wykorzystanie autorskiej metody oceny dojrzałości wdrożeniowej, potencjału komercyjnego oraz innowacyjności do wspomagania zarządzania realizacją projektu na przykładzie wybranych, innowacyjnych rozwiązań stanowiących rezultat Programu Strategicznego pn. „Innowacyjne systemy wspomagania technicznego zrównoważonego rozwoju

gospodarki". Zaprezentowano wyniki ocen oraz ich interpretację umożliwiającą podjęcie właściwych działań korygujących. Przykłady zastosowań metod oceny stopnia dojrzałości wdrożeniowej (SDW), oceny potencjału komercyjnego (PK), a także potencjału innowacyjnego zaprezentowane w artykule potwierdzają wysoką przydatność proponowanej metodyki w ewaluacji projektów R&B do racjonalizacji procesów rozwoju produktu. Praktyczna weryfikacja metod oceny innowacyjnych rozwiązań pozwoliła także wyznaczyć potencjalne kierunki rozwoju samych metod i autorskiego systemu kompleksowej oceny skuteczności i efektywności realizacji projektów badawczych i innowacyjnych produktów stanowiących ich wynik.