Humanities and Social Sciences **2022**
Research Journal 29, No. 2 (2022), pp 79-95 **April-June**

Olga ZIEMIŃSKA[1]

PROJECT MATURITY ASSESSMENT MODEL DEDICATED TO THE ENGINEERING AND DESIGN OFFICE

The parallel implementation of many projects in an organization is a big challenge for Project Managers. While simultaneously managing many projects, it is important to define the dimensions necessary for coordination in order to obtain comprehensive management information regarding both specialized projects and all general project trends implemented across the organization. The lack of comprehensive coordination between the above factors often leads to failure to achieve the assumed results. The aim of the paper is to establish assumptions for criteria to assess the design maturity of an organization. Taking into account the need to analyse the above goal, the author developed the assumptions of the model by assessing the design maturity of the organization on the basis of research carried out in the engineering and design offices.

Keywords: systemic project management, project maturity, management, evaluation model.

1. INTRODUCTION

Research work in the field of projects was carried out in the 1940's of the twentieth century, the subject of contemporary research was most often a single project in one location carried out by one (...) or more organizations (Evaristo, van Fenema, 1999). Perceiving projects in the above-mentioned way gave the opportunity to understand the complexity of design processes. "The concepts and techniques that were born during the so-called classical project management trend turned out to be (...) incompatible with the needs of modern organizations" (Moris, 1994). Awareness of the design approach is growing at an ever faster pace and the rganizations are faced with the need to often radically change the rules of functioning (Drucker, 2000). The world, business and scientific spheres are increasingly directing their activities towards the project approach, and additionally trying to develop their ability to manage projects. Projects can take various forms, once they were only of a structural and technical nature, so in engineering and design offices the very definition of a project has been known and used for a long time, while the trend of focusing the organization on developing efficiency is constantly being improved and developed. Currently, projects occur in all areas of human activity. This forced changes in the functioning of the organization and an increase in information resources (Strojny, Szmigiel,

[1] Olga Ziemińska, MSc, Department of Project Management and Security Policy, Faculty of Management, Rzeszów University of Technology, Powstańców Warszawy Ave. 10, 35-959 Rzeszow; e-mail: o.zieminska@prz.edu.pl. ORCID: 0000-0003-3892-9635.

2015). Currently, we have an increasing number of methods, techniques and tools supporting the project approach. The turbulent socio-economic environment poses many challenges to management theory and practice (Koźmiński, 2004). It is known that Organizations operate in conditions of increasing pressure to improve the efficiency of operations (Strojny, 2019). Society is largely aware of the need for broadly understood projectification. Awareness of knowledge in this area is necessary to set further paths and directions of development specific organizations.

The aim of the article is to develop the assumptions of the organization project maturity assessment model containing the assumptions of the integrated project management methodology on the example of a engineering and design office. The maturity model (...) is a process of improvement, a path, a direction indicator of development with precisely drawn criteria defining the current and desired state based on transparent reference values (P3M3® Portfolio, Programme and Project Management Maturity Model).

The article presents theoretical assumptions of project management and the definition of projectification. It also describes commonly used methods of project management, and the division into traditional and agile approaches. The article contains research results in the form of model conceptualization based on business process modeling analyses.

In this article, the author develops universal assumptions of the model of assessing the design maturity of the organization based on the key dimensions of the organization's activity. The research can be used to conduct the above-mentioned assessment, and to learn about the basic management problems of the organization.

2. PROJECT MANAGEMENT AND PROJECTIFICATION

A project can be defined as a intention for which objectives, required resources, deadlines, costs, quality level have been given (Kerzner, 2021). The discipline of project management goes back to practical economic needs, it was created when traditional methods of the management proved to be insufficient (Pawlak, 2006). Project management is based on the method of management by objectives. A very important issue here is the correct definition of the goal system. It is necessary to define strategic priorities, which constitute a kind of roadmap for management. Confronting current decisions with established long-term directions of development allows you to focus resources on the most important tasks (Strojny, 2014). Over the years, the approach to project management has significantly evolved and new methodologies have been introduced. Project management methodologies can be defined as a source of best practices acting as standards and procedures describing the activities and processes that the project manager and other project participants must undertake in order to successively implement the project (Wyrozębski, 2014) Currently, the accumulated scientific achievements from the aforementioned scope are used on many different levels.

There is a traditional and agile approach to project management. Traditional project management methodologies (also called linear or cascade) are based on the project life cycle and certain sequences that must be realized to achieve the set goal. This approach works best in situations where the purpose and technique of operation are clearly and transparently defined and there is a low probability of changes in the project (Strojny, Szmigiel, 2015).

Agile (adaptive) project management methodologies are a response to traditional management methods and an attempt to adapt to new economic conditions, primarily

determined by technological progress, globalization of markets, dynamically changing environment, and increasing competition (Janasz, Wiśniewska, 2014).

In the engineering industry, the concept of project and project manager was first used in 1951–1953, it referred to the project of the Trans-mountain Oil Pipeline in Canada by Bechtel (Bechtel, 1989). The Civil & Civic company contributed to the development of the project approach in this industry, which was the first to create a closely cooperating project team for the implementation of the contract in the EPC formula (Engineering, Procurement, Construction), i.e. "design and build", taking responsibility for the entire investment from project development to implementation (Stretton, 2007). Those times also began with the well-known and still used planning methods, such as:

- Critical Path Method (CPM) initiated with Kelley and Walker by the du Pont think tank (Kelley, Walker, 1989),
- PERT (Project Evaluation Review Technique) method invented during the implementation of the Polaris ballistic missile project, by the team of W. Fazar (Fazard, 1962)
- PDM (Precedence Diagramming Method), also known as node activity representation, developed at Stanford University (Fondahl, 1987).

The following years were characterized by an increased awareness in the field of project management in many aspects, both in the development of the above-mentioned methods, the emergence of new techniques and tools as well as the emergence of the first organizations specializing in project management, development and education in this field, as well as certifying Project Managers. PMO's (Project Management Offices) began to appear in various types of organizations, which translated the activities of entire organizations into a project approach, and new standards of design culture began to be introduced. Currently, the awareness of the design approach is growing and is becoming more important in the modern world.

Project management is understood today as a holistic discipline, enabling the achievement of organizational efficiency, effectiveness and innovation, and not just a set of practices and tools (Svejvig, Andersen, 2015; Jugdev), which possesses a separate subject of study, its own theoretical foundations and applye specific researchmethods (Trotsky, Bukłaha, 2016).

Adopting the project orientation of the organization consists in developing those attributes of the organization that significantly increase the efficiency of the course of projects (Strojny, 2015). The concept of organizational project maturity (Lichtarski, 2015) describes the ability of an organization to efficiently manage projects. This process should last throughout the life of a specific organization (...) because the environment is constantly changing. It forces people to act and make demands on themselves (Hortensjusz, Bergenhenegouwen, Gouwenes, Jong, 2004).

Projectification is a broader phenomenon than project management, it permeates many levels of analysis, it is related to many areas of human activity. Originally, projectification was understood as the proces of transformation of an organization through projects (Midler, 1995). Midler, using the example of Renault, presented how traditional, routine activities can be pierced into projectification activities (Rapior, 2017). The development of research in this field has made it possible to see the broader context of projectification and understand it as a multidimensional phenomena of a cultural and discursive nature (Packendorff, Lindgeren, 2013). Analyzing a broad perspective covering organizational and social

aspects, projectification can be defined as the institutionalization of projects in society (Jacobsson, Jałocha, 2018). The phenomenon of projectification is developed on many levels and more often becomes the subject of scientific research.

During the development of project management science, the concept of organizational maturity became important, as a result of which organizational maturity models were created to improve the discussed process. Maturity should be understood as systematic improvement of the organization's skills and the processes implemented in it in order to increase the efficiency of the organization in a given period of time (Hammer, 2007). Maturity models can be defined as the improvement of the key factors leading to the achievement of the assumed goals (Looy, 2014). Some of the organization's design maturity models are presented in the table below:

Table 1. Selected models of project maturity

Author	Model	Model range
PRINCE2	Portfolio, Programme and Project Management Maturity Model(P3M3)	- Project management: 1) control, 2) benefits, 3) finance, 4) risk, 5) governance, 6) stakeholders, 6) resources - Program management (...) - Project portfolio management (...)
R. Gareis	Family of Project-oriented Maturity Models	Project-oriented organization model: - Project management. - Program management. - Support for the quality of project and program management. - Assignment of projects and programs. - Coordination of portfolios and relations between projects. - Designing a project oriented organization. - Process management in a project-oriented organization. - Business process management in a project--oriented organization.

Source: Own study. Based on: (Strojny, 2019).

3. RESEARCH METHODOLOGY

The aim of the article is to develop the assumptions of the organization project maturity assessment model containing the assumptions of the integrated project management methodology on the example of a engineering and design office. In the article, the author develops the discussed model based on the available literature knowledge from the models of organizational design maturity. Specifying the purpose of the article enables the direction of research and the definition of the research problem. It is presented in the form of the following question: What are the conditions for a comprehensive assessment of design maturity in an engineering and engineering and design office?

The indicated research problem has been detailed by defining the research questions within which the following research questions have been distinguished:

1. What are the dimensions of the model used to assess the project maturity of the organization?
2. What is the significance of the dimensions of the model used to assess the project maturity of the organization?
3. What are the conditions for the implementation of such a model for assessing project maturity in the organization?

In order to provide answers to the defined research issues, an empirical research procedure was carried out to develop the assumptions of the integrated project management method by preparing a research tool on the example of a specific engineering and design office.

The research was carried out on the example of one of the design and engineering offices having its headquarters in Rzeszów. The organization has been operating on the market since 2013, the main subject of its activity is the production of multi-sector design documentation and author's supervision. It is important to take into account the specificity and nature of the operation of this type of entity when detailing the concept of the design orientation model. This will allow for a reliable assessment of the surveyed organization in terms of project management maturity.

The projects implemented in the discussed enterprise belong to the group of infrastructure projects that are characterized by a high level of risk and are strongly determined by stakeholders – both internal and external environment. Therefore, the key in this type of projects is a thorough analysis of stakeholders in the initial phase of the project and taking care of good relations with stakeholders in the implementation phase. Properly conducted analysis of the stakeholders is of particular importance in a situation where the project goal arouses controversy in the environment, which is often troublesome in infrastructure projects (PRINCE 2, 2009).

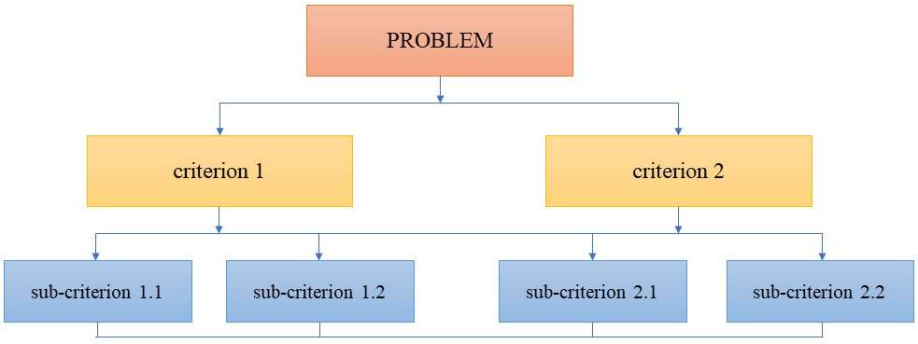

Figure 1. AHP hierarchical model diagram

Source: Own study.

The research used the AHP (Analythic Hierarchy Process) method developed by Thomas L Saaty in 1977 (Winnicki, Jurek, Landowski, 2006), which allowed to organize the decision-making problem by presenting it in the form of a hierarchical structure and

assigning individual criteria to specific weights (Rogowski, 1997) to support multi-criteria problems (Trzaskalik, 2014). The discussed method was used in the study to structure the design maturity model. The use of the AHP method will allow for the structuring of the project maturity model by defining dimensions and sub-dimensions relating to the individual attributes of the organization.

On the basis of the presented AHP model, a research tool was developed (a questionnaire attached to the article) to assess the significance of each element of the model in the context of the research problem. The tool makes it possible to compare the individual criteria of the model as well as the sub-criteria within a specific criterion.

A method of modeling business processes representing a workflow was also used to describe the process and its business environment. Business process modeling is related to the need for a graphical representation of business processes for the purposes of their optimization and archiving (www.it-consulting.pl, 2021) allows you to document processes or create their definitions (Gawin, Marcinkowski, 2013). Process modeling gives the opportunity to make a detailed analysis, thanks to which it allows to improve processes.

4. RESEARCH RESULTS

The purpose of this section is to conduct empirical researchbased on the obtained results of literature research and the analysis of selected management practices constituting the basis for building a model of project maturity assessment and the conditions of the surveyed organization.

The research began with the analysis of business processes of the project management process in the engineering and design office. When defining the dimensions of the project orientation, the project maturity models available in the literature were used, including the models discussed above: Portfolio, Programme and Project Management Maturity Model (P3M3) and Family of Project-oriented Maturity Models. When determining the dimensions of the model, several important aspects were focused on. First, the need to verify compliance was identified with the conditions and specificity of the functioning of the analyzed organization. The important issue is the integration of the model with the tools used in the organization to ensure efficient operation. This will allow for the efficient integration of the proposed solutions with the conditions of the organization. An important aspect is the systemic approach to project management understood through the implementation of projects both in the operational and strategic dimensions. The proposed project orientation model consists of two levels of detail.

The first level of detail defines the main dimensions that make up the attributes of a project-oriented organization, including: the dimension of project culture standards, the dimension of project team management, the dimension of management by objectives, the dimension of project lifecycle, and the the dimension of comprehensive approach to project management. The second level of detail consists of sub-dimensions that refine the essential elements of each of the specified dimensions. The results of conceptual work in the field of the design orientation model, significant from the point of view of the organization's operational efficiency, are presented in the figure below.

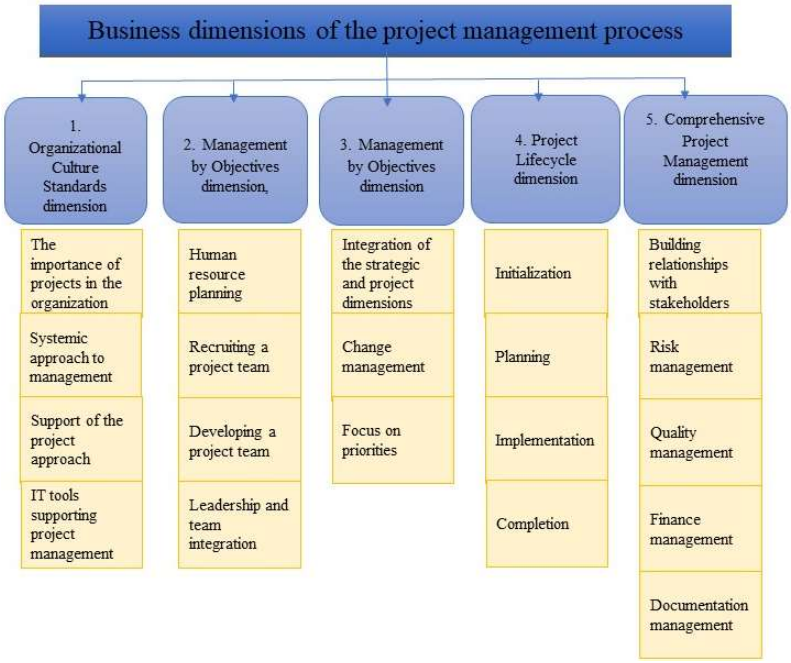

Figure 2. Model of project organization

Source: Own study.

The elements presented in the above model require clarification. Each of the defined dimensions has been considered in a broader perspective, which is presented in the table below.

Tabele 2. Analysis of the dimensions of the project management process in the project and engineering and design office

Dimension name	Dimension analysis
Organizational Culture Standards dimension	The dimension concerns the definition of certain standards for the design culture in the organization. Defining standards in each of the subdimensions will allow to unify the mechanisms of operation, introduce a system approach and understand the role of projects. A systemic approach to project management is manifested in the creation of a Project Management Office in an organization or the use of systemic project control. The role of project offices in organizations is primarily to ensure the continuity of the application of methodology standards in all implemented projects (PRINCE 2, 2002). Methods and techniques of supporting the project approach are also important not only within the organization, but also with entities in its environment, e.g. in relations with the client. This support is also defined by the attitude of the management board to the implementation of projects and relations with the Project Management Office or the separation of key projects for the organization. The last subdimension indicates the need to use IT tools in individual phases of the project, serving to coordinate all project extinctions allowing to obtain comprehensive management information.

Tabele 2 (cont.). Analysis of the dimensions of the project management process in the project and engineering and design office

Dimension name	Dimension analysis
Project Team Management dimension	The dimension concerns human resource management in the organization. The starting point is the planning of human resources, so as to adapt the staff to the current requirements of the organization. The next area concerns determining the requirements for the candidate necessary for the job, the method of recruitment and the possibility of cooperation. Another subdimension is based on introducing a new employee to the team, providing feedback, motivating and enabling development. An important area is also leadership in the team and team integration which strongly determines the properly functioning group.
Management by Objectives dimension	The dimension concerns the identification of all elements affecting the integrated approach to management in the organization. The subdimension of change management refers to the quick response to risk, change thanks to the ongoing analysis of the environment. Management by objectives is carried out with the use of prioritization of activities that will allow for effective achievement of the intended goals. Therefore, the sub-dimension becomes important: focus on priorities, where identification mechanisms and methods of managing the priorities should be defined.
Project lifecycle dimension	The dimension is based on the creation of a business case, risk calculation and identification of stakeholders. It is necessary to define resources, budget, schedule, scope of duties and people responsible for them. The next area concerns organization and coordination. At this stage, it is necessary to monitor the individual elements and, if necessary, correct and improve. The activities are also related to the handing over of the finished product, the celebration of completion and the creation of a database of so-called good practices, which will constitute the knowledge developed for the implementation of subsequent projects.
Comprehensive Project Management dimension	The dimension concerns the orientation to the customer and his expectations, which is commonly required in a market economy, including the expectations of project stakeholders, i.e. external clients. It is necessary to identify design risks, measure, assess and determine an adequate response, steering and control. It is necessary to monitor the quality of products and the quality of the project management process. The next area concerns the planning of the measures necessary to implement the project's activities, the estimation, budgeting and control of costs. It is necessary to introduce consistent templates of project documentation and transparent procedures.

Source: Own study.

Conceptual work on the model allowed the author to identify areas of the project maturity model. The first of them is the diagnosis of the current state of the organization and the preparation of the organization by selecting appropriate system solutions aimed at increasing the efficiency of the organization. The appearance of these solutions in the organization proves that the limitation is aimed at strengthening efficient operation. Therefore, a controling mechanism for the solutions introduced in the organization is necessary, as well as an appropriate update of the implemented solutions adapted to the emerging circumstances. The discussed concept of the model is consistent with the

assumptions of the Deming cycle showing the continuity of the process. The concept of the model was prepared, consisting of four areas: 1) Diagnosis and Preparation 2) Implementation 3) Control 4) Improvement. The graphic structure of the model is presented in the diagram below.

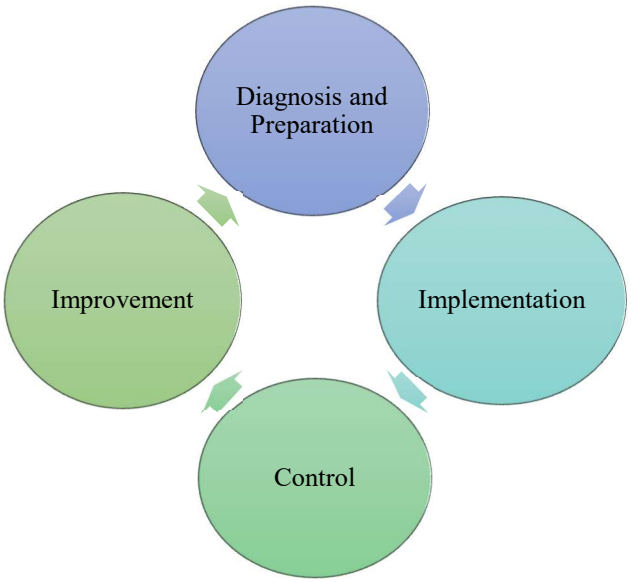

Figure 3. Project maturity control model diagram

Source: Own study.

The developed model indicates important aspects of project and portfolio management. Examination of the organization in accordance with the assumptions of the presented model allows to assess the overall level of project maturity in the organization. As a consequence, the management staff obtains a general view on the adaptation of the organization to efficient management. The obtained results of the project maturity assessment of the organization indicate which elements of the project management process are at the advanced level and which require refinement. Thanks to this, it is possible to set directions for action in order to improve the operation of the organization. On this basis, it is possible to more consciously assume the business case for the implementation of organizational innovation in a given area. It is worth emphasizing that such projects are often a radical change. Its efficient implementation may be possible only after prior prioritization.

During the development of the conceptual model, 5 levels of project maturity of the organization were identified: level 1 – no project approach, level 2 – intuitive approach, level 3 – focus on general project management methods 4 – project conditions, 5 – system project management. Defined levels are used to determine the current stage of the organization's development. The figure below shows the above-mentioned levels of project maturity of the organization.

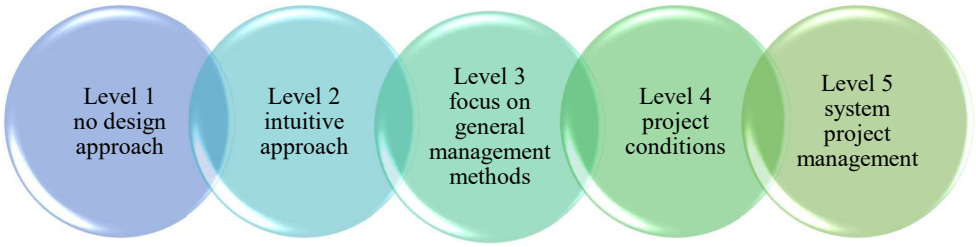

Figure 4. Levels of Organization Design Maturity

Source: Own study.

Each of the defined model elements is detailed below.

Level 1 no design approach. The activities performed in the enterprise are definitely not focused on the project approach. The areas that obtain this assessment are characterized by a rather process approach. This approach is usually characterized by systematically performing routine activities of the organization, there is a superior-subordinate relationship, a matrix or functional organizational structure, no elements of teamwork, rigidly defined positions, scopes of work and duties, a systemic approach to the client. The company does not have basic knowledge about project management and does not show the willingness to improve its operations, the only form of improving the efficiency of the organization is the experience gained.

Level 2 intuitive approach. The company has basic knowledge of project management. He can identify areas that need improvement, but he cannot react professionally, the actions he takes are based mainly on intuition. Individual work and a systemic offer for the client dominate. Projects are managed by line managers who have access to limited resources, scheduling to ols are used sporadically and partially. Lack of cost valuation in the project and analysis of possible added value, as well as risk.

Level 3 focus on general methods of project management in the enterprise. The company has general knowledge of the field of project management. The company sees opportunities and expresses a desire to improve the organization, eliminate recurring errors and improve the level of quality, tries to use general knowledge and techniques from project management for this purpose. A PMO organization is established in the company, whose task is to spread awareness of the project approach, study project risk, introduce project management as well as resource management. A financial analysis of the project is carried out, tracking the costs incurred, expenses for the project as well as the benefits that are obtained.

Level 4 design conditions. The company has knowledge of project management and skills in the use of tools. It makes every effort to improve its activities as much as possible. Formal project and portfolio managers appear in the enterprise, and there is a shared pool of resources. There is a tendency from teamwork, tools supporting group work as well as tools for scheduling, reporting and workflows are used. Projects are approved from the point of view of the portfolio depending on the adopted strategy of the organization. Additional tools are being introduced to improve project portfolio management. Financial management is carried out through cost and profit planning at the portfolio level, the use of cost optimization and response to cost changes.

Level 5 system project management. The company has extensive knowledge of project management, knows and knows how to use and integrate tools and methods to improve the quality of work. There is close cooperation and coordination between project managers and the portfolio manager, comprehensive PMO, use of consistent tools and analysis at the level of the entire organization. There is a full cost management process, cost resources allocated accordingly to individual projects.

5. SUMMARY

The main objective of this work was achieved by developing a tool for assessing the project maturity of the organization containing the assumptions of the integrated project management methodology on the example of a engineering and design office.

The developed assumptions of the organization's project maturity model are the result of seeking answers to the research problem posed: What are the conditions for a comprehensive assessment of design maturity in an engineering and design office? In order to clarify the explanation of the research problem, answers to research questions were provided.

Research question 1 What are the dimensions of the model for assessing the design maturity of the organization?

The dimensions necessary to assess the project maturity of the organization are defined as follows:

- Organizational Culture Standards dimension,
- Project Team Management dimension,
- Management by Objectives dimension,
- Project Lifecycle dimension,
- Comprehensive Project Management dimension

The identified dimensions of project management during the analysis of business processes allow to assess comprehensive inter-dimensional coordination. As a result of the spread of an organized approach to project management, enterprises began to strive to reach new levels of maturity (Brzozowski, Kopczyński, 2011). Identifying and assessing the above dimensions allows the organization to be assessed in terms of project maturity, which in turn allows to identify the "weak points" of the organization that require a deeper analysis leading to changes in the organization. Research results and defined subsequent levels of project maturity can be a path for the development of the organization for the management. These studies can therefore also serve as a basis for defining the assumptions of a reorganization project.

The logic of the project maturity of the organization should be understood as follows: the increase in the level of project maturity of the organization is proportional to the increase in the effectiveness of project implementation and the efficiency of using resources, which in turn allows for more effective achievement of the organization's goals and leads to achieving a competitive advantage and enables the development of the organization.

The article focuses on the development of a tool for assessing the project maturity of an organization by defining transparent reference values to be evaluated. It focuses on determining the dimensions of organizations that should cooperate with each other in order to achieve an increase in the level of project maturity.

The research has some limitations resulting from the analysis of a selected organization specializing in a specific activity, however, a cognitive gap can be observed in the scope of

broadly understood studies to assess the design maturity of the organization. Therefore, the article is the basis for conducting further research in the discussed direction in the field of increasing the level of project maturity of the discussed organization or conducting research constituting the development of a project maturity assessment tool on other types of organizations.

REFERENCES

Bechtel, S. D. J. (1989). *Project Management – Yesterday, Today, and Tomorrow.* PMNETwork, t. III, nr 1, January.

Brzozowski, M., Kopczyński, T. (2011). *Zarządzanie projektami i zmianami w przedsiębiorstwie.* Poznań: Advertiva.

Drucker, P. F. (2000). *Zarządzanie w XXI wieku.* Warszawa: Muza.

Evaristo, R., van Fenema, P. C. (1999). *A Typology of Project Management: Emergence and Evolution of New Forms". „International Journal of Project Management",* Vol. 17, No. 5.

Fazard, W. (1962). *The Origins of PERT.* The Controller.

Fondahl, J. W. (1987). „*Precedence Diagramming Methods: Origins and Early Development. "Project Management Journal",* nr 2, t. XVIII.

Gawin, B., Marcinkowski, B. (2013). *Symulacja procesów biznesowych. Standardy BPMS i BPMP w praktyce.* Gliwice: Helion.

Hammer, M. (2007). *The Process Audit. "Harvard Business Review*", Vol. 85, No. 4.

Grela, G. (2013). „*Ocena poziomu dojrzałości procesowej organizacji". „Nierówności Społeczne a Wzrost Gospodarczy".*

Hortensjusz, D., Bergenhenegouwen, L., Gouwenes, R., de Jong, A. (2004). *„Towards a Generic Model for Integrating Management Systems". "ISO Management Systems",* Vol. 4, January-February.

Jacobsson, M., Jałocha, B. (2018). A Literature Review on Projectification: „*Trends, Emerging Ideas and Avenues for Future Research, Paper presented at the the 14th International Research Network on Organizing by Projects (IRNOP) Conference"*. Australia: Melbourne.

Janasz, K., Wiśniewska, J. (2014). *Zarządzanie projektami w organizacji.* Warszawa: Difin.

Kelley, J. E. J., Walker, M. R. (1989). *The Origins of CPM: A Personal History.* PMNETwor, nr 2, t. III.

Kerzner, H. (2001). *Strategic Planning for Project Management Using a Project Management Maturity Model.* New York: John Wiley & Sons.

Koźmiński, A. K. (2004). *Zarządzanie w warunkach niepewności: podręcznik dla zaawansowanych*. Warszawa. Wydawnictwo Naukowe PWN.

Lichtarski, J. (2015). *Praktyczny wymiar nauk o zarządzaniu.* Warszawa: PWE.

Looy, A. (2014). *Business Process Maturity: A Comperative Study on a Sample of Business Process Maturity Model.*

Midler, Ch. (1995). *Projectification of the Firm – The Renault Case. „Scandinavian Journal of Management",* Vol. 11, No. 4.

Morris, P. W. G. (1994). *The Management of Projects*. London: Thomas Telford.

Office of Government Commerc (2009). *Managing Succesful Projects with PRINCE2 2009.* London: Ofice of Government Commerce.

Packendorff, J., Lindgren, M. (2013). *Projectification and its Conseqeunces – Narow and Broad Conceptualization*. *„SAJEMS",* Vol. 17.

Pawlak, M. (2006). *Zarządzanie projektami*. Warszawa: Wydawnictwo Naukowe PWN.

PRINCE2 (2002). *OGC Manual*. Office of Government Commerce.

Rapior, W. (2017). *Życie w projekcie Projekt jako narzędzie przekształcania świata i rama instytucjonalna rzeczywistości społecznej.* Poznań: Uniwersytet im. Adama Mickiewicza w Poznaniu, Wydział Nauk Społecznych Instytut Socjologii.

Rogowski, G. (1997). *Zastosowanie metody hierarchicznej analizy problemu do planowania lokalizacji placówek bankowych. „*Bank i Kredyt", 1.2.

Saaty, T.L. (1977). *A scaling method for priorities in hierarchical structures. "Journal of Mathematical Psychology", 15*(3).

Stretton, A. (2007). *A Short History of Modern Project Management. "PM World Today",* nr X, t. IX.

Strojny, J. (2013). *Kultura projektowa – parametry oceny i wpływ na przebieg projektów*. *„Humanities and Social Sciences", 1*.

—— (2015). *Dimensions of Project Orientation. Case-Study in Polish Local Government. "Procedia-Social and Behavioral Sciences".*

—— (2019). *Orientacja Procesowo-Projektowa Organizacji Samorządu Lokalnego*. Rzeszów: Oficyna Wydawnicza Politechniki Rzeszowskiej.

Strojny, J., Szmigiel, K. (2015). *Analiza porównawcza podejść w zakresie zarządzania projektami*. Rzeszów: Oficyna Wydawnicza Politechniki Rzeszowskiej.

Svejvig, P., Andersen, P. (2015). *Rethinking Project Management: A Structured Literature Review with a Critical Look at the Brave new World. „International Journal of Project Management",* Vol. 33, No. 2.

Trocki, M., Bukłaha, E. (red.), (2016). *Zarządzanie projektami – wyzwania i wyniki badań.* Warszawa: Oficyna Wydawnicza Szkoła Główna Handlowa w Warszawie.

Trzaskalik, T. (2014), *Wielokryterialne wspomaganie decyzji. Przegląd metod i zastosowań".* „Zeszyty Naukowe. Organizacja i Zarządzanie". Katowice: Politechnika Śląska, Katowice.

Winnicki, K., Jurek, A., Lamdowski, M. (2006), *Zastosowanie metody analizy hierarchicznej problemu*. Instytut Geografii Uniwersytetu Pedagogicznego im. Komisji Edukacji Narodowej w Krakowie.

Wyrozębski, P. (2014). *Zarządzanie wiedzą projektową.* Warszawa: Difin.

www.doktoraty.pl/metody-techniki-narzedzia-badawcze-badania-ankietowe-wywiad/ [Access: 13.01.2022].

www.it-consulting.pl [Access: 13.01.2022].

APPENDIX 1.

On the basis of the conducted analyzes and using the AHP research method, a research tool in the form of an survey questionary has been developed to assess the level of project maturity of the design office.

to what extend

In order to complete the survey, you must answer the following question by means of an assessment:

To what extent are the statements (marked in black) in the following survey reflected in the organization?

Select the one most appropriate rating from the scale described below.

Scale interpretation: The assessment is made on a 5-point scale, where:

1 – means “definitely not”;
2 – means “probably not”;
3 – means “neither yes nor no”,
4 – means “rather yes”;
5 – means “definitely yes”.

Lp.	Assessment of the organization's design excellence	Assessment
1.	**Dimension of design culture standards**	
1.1	**The importance of projects in the organization**	
1.1.1	Projects play an important role in the organization's activities	
1.1.2	The Management Board disseminates project activities	
1.1.3	Management by objectives	
1.1.4	Customer focus	
1.2	**Systemic approach to project management**	
1.2.1	The organization knows and applies methods and tools for project management	
1.2.2	Use of project categorization	
1.2.3	Using the PDCA cycle (Plan-Do-Check-Act)	
1.2.4	Using a coherent management system to coordinate projects	
1.3	**Support for the project approach**	
1.3.1	The Management Board supports the project approach	
1.3.2	The organizational structure and principles of the organization strengthen the importance of projects and the project managers	
1.3.3	Functioning of the PMO	
1.3.4	Improving project management practices	
1.4	**IT tools supporting project management**	
1.4.1	Use of basic tools for project management, e.g.: Excel, PowerPoint, GanttProject,	
1.4.2	Using scheduling tools, reporting milestones, e.g.: MS Project, GanttChart, Trello, Jira	
1.4.3	Additional use of project portfolio management tools, reporting tools, e.g.: SharePoint; OneDrive; GoogleDrive	

Lp.	Assessment of the organization's design excellence	Assessment
1.4.4	Use of workflow tools, adaptation of tools, coordination of project tools with general organizational ones	
2.	Project team management	
2.1	**Human Resource Planning**	
2.1.1	Forecasts of the need for workers in a given project are known	
2.1.2	The employee market is analyzed in terms of specialists	
2.1.3	Ways of development in the company from a lower-level employee to higher positions are possible	
2.1.4	Recruitment planning starts well in advance of the project	
2.2	**Acquiring a project team**	
2.2.1	The organization determines the requirements for the candidate for the project team	
2.2.2	The organization ensures clear employment conditions	
2.2.3	Persons are appointed to the project team on the basis of their competence and experience	
2.2.4	The project team is aware of the specifics of the project it implements	
2.3	**Developing of a project team**	
2.3.1	The organization conducts talent management	
2.3.2	The organization provides training	
2.3.3	An incentive system is applied to employees	
2.3.4	Employees have a specific development path in the organization	
2.4	**Leadership and team integration**	
2.4.1	The mission and vision of the company is known to all employees	
2.4.2	Organized projects are in line with the mission and vision of the company	
2.4.3	The project manager communicates well with the project team	
2.4.4	Relations in the project team are good	
3.	Management by objectives	
3.1	**Integration of strategic and design dimensions**	
3.1.1	The organization has a set budgetary and quality goals	
3.1.2	The behavior of competing enterprises is analyzed	
3.1.3	The company's strategy is known	
3.1.4	Each employee knows the scope of the project and the methodology	
3.2	**Change management**	
3.2.1	Changes for each employee are clear and understandable	
3.2.2	Ongoing update of changes in the project	
3.2.3	Adaptation of procedures to change the law	
3.2.4	The organization reacts quickly to changes in the project	
3.1	**Focus on priorities**	
3.3.1	The organization knows the expectations and requirements of the project concept	
3.3.2	The organization prioritizes tasks	
3.3.3	The organization sets the project schedule	

Lp.	Assessment of the organization's design excellence	Assessment
3.3.4	Decisions and arrangements are clear	
4.	Project life cycle	
4.1	**Initiation**	
4.1.1	Projects carried out in the enterprise are a response to customer requirements	
4.1.2	The head of the project knows exactly the scope of his competences and the size of available resources.	
4.1.3	The reason for running the project agrees with the real need to run it	
4.1.4	The conditions for conducting the project are accurately identified	
4.2	**Planning**	
4.2.1	The organization defines the boundary conditions for planning, controlling and supervising the implementation of the project	
4.2.2	All necessary resources for the implementation of the project are specified	
4.2.3	Project milestones are set	
4.2.4	The responsibilities of individual team members are precisely defined	
4.3	**Implementation**	
4.3.1	The achievements of the project groups are monitored by the project manager	
4.3.2	Reports and statements are meticulously prepared	
4.3.3	There is a correct flow of information in the project team	
4.3.4	There are no deviations between the planned and the actual course of the project	
4.4	**Conclusion**	
4.4.1	The organization collects reviews and opinions on the course of the project	
4.4.2	The dissolution of the project team and the submission of thanks for the joint work takes place officially	
4.4.3	Project documentation is properly organized and archived	
4.4.4	The summary of the obtained project result is consistent with the assumptions of the project plan	
5.	Comprehensive approach to project management	
5.1	**Building relationships with stakeholders**	
5.1.1	Projects are customer-oriented.	
5.1.2	The organization conducts environmental interviews.	
5.1.3	The organization has and applies models of conduct regarding customer relations.	
5.1.4	Through relations with stakeholders, the organization's strategy is implemented.	
5.2	**Risk management**	
5.2.1	The organization updates the schedule on an ongoing basis.	
5.2.2	The organization updates the budget on an ongoing basis.	
5.2.3	There is no resistance to change among employees.	
5.2.4	The organization analyzes the sensitivity of the planned budget.	
5.3	**Quality Assurance**	
5.3.1	The organization monitors the level of quality in the implemented projects.	

Lp.	Assessment of the organization's design excellence	Assessment
5.3.2	The organization produces products of the highest quality.	
5.3.3	The organization has a competitive advantage due to the quality of the products.	
5.3.4	The organization continuously improves the quality management process.	
5.4	**Financial management**	
5.4.1	The organization has no problems with financial liquidity.	
5.4.2	The organization is not in arrears with payments.	
5.4.3	The organization implements budget plans.	
5.4.4	Accounting records shall be kept without reservation.	
5.5	**Documentation Management**	
5.5.1	The business case is the basis for the implementation of the project.	
5.5.2	Project documentation is created without delay.	
5.5.3	Employees have full access to documentation related to the scope of their competence	
5.5.4	The provisions in the project documentation are clear and unambiguous.	

Source: own study.

The results should be edited as shown below.

- The assessment of a given subdimension is the arithmetic mean of the detailed questions and is calculated on the basis of the following formula.

$$\boldsymbol{Assessment\ of\ the\ subdimension} = \\ = \frac{\boldsymbol{sum\ of\ answersto\ questions\ in\ the\ subdiemension}}{\boldsymbol{number\ of\ questions\ in\ the\ subdimension}}$$

- The assessment of a given dimension is the arithmetic mean of the subdimensial assessments and is calculated on the basis of the following formula.

$$\boldsymbol{Dimension\ score} = \frac{\boldsymbol{sum\ of\ scores\ for\ each\ subdimensions}}{\boldsymbol{number\ of\ subdimensions}}$$

- The design maturity assessment is the arithmetic mean of the dimension assessments and is calculated on the basis of the formula below.

$$\boldsymbol{Design\ maturity\ assessment} = \frac{\boldsymbol{sum\ of\ assessments\ for\ individual\ dimensions}}{\boldsymbol{number\ of\ dimensions}}$$

DOI: 10.7862/rz.2022.hss.14

The text was submitted to the editorial office: January 2022.
The text was accepted for publication: June 2022.