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**OPPORTUNITIES FOR IMPROVEMENT  
THE MANAGEMENT OF PROJECT TEAMS  
IN INDUSTRIAL ENTERPRISES**

**ABSTRACT**

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The dissertation was discussed and proposed for defense under the Act on the Development of Academic Staff in the Republic of Bulgaria and the Regulations for the Implementation of the Act on the Development of Academic Staff in D. A. Tsenov Academy of Economics, Svishtov, by the Department of Industrial Business and Entrepreneurship at the Faculty of Industry and Commerce at D. A. Tsenov Academy of Economics, Svishtov.

The author is a PhD student in a part-time form of study at the Department of Industrial Business and Entrepreneurship at the D. A. Tsenov Academy of Economics, Svishtov.

The dissertation has a total length of 208 pages and is structured in an introduction (8 pages), a main text of three chapters (162 pages), and a conclusion (5 pages). A declaration of originality and authenticity is provided. The appendices, with a total of 13 pages, are 2 in number. The information in the thesis is visualized in 35 figures and 5 tables. The list of references used is 13 pages and consists of 168 sources, of which 151 – in Latin and 17 – in Cyrillic. Of the foreign sources, 15 are online sources.

The defense of the dissertation will take place on 29.03.2024, at 13:00, in the Rector's Meeting Hall at the D. A. Tsenov Academy of Economics.

The materials on the defense are available to those interested in the Department of Doctoral Studies and Academic Advancement at the D. A. Tsenov Academy of Economics, Svishtov – <https://www.uni-svishtov.bg/bg>.

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## **I. GENERAL CHARACTERISTICS OF THE DISSERTATION**

### **1. Relevance and significance of the study**

The environment in which industrial enterprises operate is highly dynamic, non-deterministic and risky, evolving and changing intensively. Technological change, innovation, increasing competition, market changes, the global environment and policies at different levels create a need for: skilled and competent human resources with the necessary knowledge and experience; flexible and effective tools for solving organisational and management tasks. Increasingly high expectations and demands in areas such as sustainable development, environmental protection, combating climate change, etc. impose high standards. Consumers also have high demands, looking for innovative products with high quality and new functionalities. These put strong pressure on the expectations of increasing competitiveness of industrial enterprises. All these challenges require industrial enterprises to act appropriately and flexibly, to apply competitive, highly efficient structural-organisational and functional forms, management techniques and behavioural models. In such an environment, project activities and project teams become an important factor for the success of industrial enterprises and the achievement of their goals. The application of the project principle in industrial enterprises generates a number of synergistic effects, provides opportunities for optimal and efficient use of resources, cost reduction and productivity improvement, higher performance and higher stakeholder satisfaction.

The success of projects depends on good project management and in particular on adequate management of project teams. This, in turn, is linked to a number of factors that influence the requirements and expectations of the project manager and other project participants, their roles and functions, and the application of appropriate tools and techniques. In order to achieve successful projects it is necessary to focus attention on their management and the possibilities for improving management impacts.

Topics related to project activities, their managerial aspects and the use of the human factor for their improvement are important and topical, especially for the last decades of the 20th century and the beginning of the 21st century. It is the subject of increased research interest in academia, education and business practice. Its application is becoming increasingly universal in all areas and sectors of the economy. Industrial enterprises are increasingly turning to the project-oriented approach on the one hand and to the use of specific management models and working methods on the other. The role of project management is increasingly growing, and the management of different project teams occupies an increasingly important place in human resource management. The ability to effectively use the combination of professional and personal qualities, social skills and business interactions; to manage time; to organise the execution of activities

and tasks; to achieve synergistic effects of organisational-management characteristics such as adaptability, reliability, responsibility, commitment, etc. is becoming essential. Important aspects of managerial activity such as leadership and the development of project teams also fall within this theme.

The research literature focuses mainly on requirements and criteria that project managers are expected to meet in terms of special, technical skills and professional competencies. Expectations for project managers should not be limited to professional qualities and competences, but should also focus on the skills for managing project teams, which in turn should not be associated with operational management activities only. In the scientific literature, management approaches, styles and methods are also launched without taking into account a number of features related to projects (e.g.: scope, scale, specificity, importance, complexity, urgency, risk, etc.) and to specific enterprises and situations (e.g.: type, condition, factors, environment, factors, etc.). The above-mentioned arguments for the importance and growing relevance of the topic related to project teams and their managerial aspects are sufficient justification for the relevance and topicality of the theoretical and empirical issues addressed in this dissertation.

A number of authors discuss in theoretical and practical aspects the issues related to projects, project teams and their management features. Among them, foreign authors such as A. Bandura, A. Drexler, A. J. Shenhar, A. Keegan, A. Pfeiffer, A. Söderholm, B. Hug, B. M. Bass, B. W. Tuckman, C. Höhle, C. R Larson, Ch. Margerison, D. C. McClelland, D. Hellriegel, D. K. Smith, D. McCann, D. McGregor, D. Sibbet, E. C. Murphy, E. Motzel, F. Fiedler, F. Hölzl, F. T. Hartman, G. Curphy, G. Howell, G. L. Chamberlain, H. Bhasin, H. Dammer, H. Garner, H. J. Schmelzer, H. Kerzner, H. Schelle, H. Kessler, I. Hyväri, J. C. Maxwell, J. Collins, J. Hackman, J. Hansel, J. Law, J. M. Burns, J. P. Kotter, J. P. Lewis, J. Pinto, J. R. Katzenbach, J. Robertson, J. S. Mouton, J. Söderlund, J. Sullivan, J. Turner, K. Lewin, K. W. Thomas, L. C. Megginson, L. Crawford, L. Lindkvist, L. Thompson, M. A. Jensen, M. Armstrong, M. Belbin, M. DePree, M. G. Möhrle, M. Huemann, M. Langer, M. M. Chemers, M. M. Lombardo, M. Woodcock, N. Raslan, P. Darmody, P. Drucker, P. Lencioni, P. Morris, P. W. Orelve, G. Morris, P. L. Curşeu, R. B. Kaiser, R. Cartwright, R. E. Fry, R. E. Tannenbaum, R. Forrester, R. H. Kilmann, R. Hawi, R. Hogan, R. K. Wysocki, R. Kreitner, R. Kurschus, R. M. Belbin, R. Müller, R. Ottmann, R. Wagner, R. Wunderer, S. Hesselmann, S. Jackson, S. Robbins, S. Scheurer, T. Daigeler, V. H. Vroom, W. Bennis, W. M. Marston, W. Sesselmann, Y.-H. Kwak, G. M. Gröger, T. DeMarco et al. In the Bulgarian specialized literature team management has been studied by various authors such as A. Pencheva, V. A. A. Penechova, A. A. Bozhilova, V. A. Gurova, . Hristova, Drs. Boyadzhiev, E. Nikolov, I. Panteleeva, J. Iliev, K. Vladimirova, K. Kamenov, Kr. Khadzhiev, L. Varamezov, M. Alexandrova, M. Atanasova, M.

Bogdanova, M. Kuzmanova, M. Lambowska, M. Harizanova, N. Mironova, N. Jankov, P. Kanev, P. Penchev, R. Simeonova, S. S. Koleva, S. Hristov, T. Hristov, T. Hristova, Tsv. Iliev, etc.

## **2. Object and subject of the study**

**The object of research** in the dissertation is the *management of project teams*, and the **subject of research** - the *potential opportunities for improving the management of these teams in industrial enterprises*.

## **3. Aim and objectives of the thesis**

**The main objective** of this dissertation is to *explore and reveal the opportunities for improving the management of project teams in industrial enterprises. Attention is focused on exploring the managerial aspects of project teams, the problems and challenges that accompany the work of project teams, the factors influencing the opportunities for effective and successful management of project teams..*

The achievement of the objective thus defined is linked to the solution of the following **research tasks**:

1. Examine theoretical developments and clarify the essential characteristics of projects and project teams.
2. Examine the management function and management styles/types, identifying opportunities to improve the management of project teams.
3. To construct a model (create a method) for successful management of project teams, according to the type and characteristics of the project.
4. On the basis of the theoretical study to develop a methodology for analysis and evaluation of opportunities for improving the management of project teams in industrial enterprises.
5. To carry out an empirical study on the management of project teams in industrial enterprises and to identify the main problems and opportunities for improving their management.
6. Examine the factors that influence the effectiveness of the project team and offer recommendations to intensify the factors with a positive effect and limit the impact of factors with a negative influence.

## **4. Research thesis and hypotheses**

### **Research thesis**

**The main thesis advocated in** the dissertation research is that the *management of project teams can be improved by enhancing the knowledge, skills and competencies of project team members, and by considering the influence of factors related to project activities*.

## **Hypotheses**

To prove the research thesis, the following hypotheses are considered:

1. The management of project teams depends on the project and team characteristics of the organizational form for the implementation of team tasks, as well as on the specific dimensions of the factor influences on the enterprise, the project team and teamwork.
2. The realisation of the project and the achievement of the project objectives depend on the support provided by the industrial enterprise to the team members throughout the project life of the team.
3. Providing opportunities for development and improvement for the project leader and participants supports management activities.

## **5. Research methodology**

A methodological approach based on the following propositions has been applied to develop the dissertation:

- ✓ Combining a comprehensive theoretical view of the studied issues and a thorough study of the practice of creating and developing project teams in industrial enterprises of the selected economic activities; taking into account the specific features of specific projects; business entities that implement the projects; and the state of the environment.
- ✓ Combined analysis and evaluation of the combination of the theoretical knowledge about project teams and their management and the empirical information gathered about the selected issues.

The methodology focuses on the combined use of a set of research approaches: historical, descriptive, systematic, structural, target, functional, cluster, etc. approaches. On their basis, the methodology of the theoretical and empirical study is developed. The following research methods have been selected: analysis and synthesis of information, including analysis of basic data and information sources, documentary analysis, content analysis, secondary data analysis, bibliography, etc.; observation, interviewing, consulting, registration of primary information from the units of research, comparison, expert assessments, etc.; induction and deduction, logical method, formalization, etc.; modeling, graphical and tabular presentation of information, statistical analysis, etc.

The **main sources of information** for the development of the dissertation were: specialized scientific literature (books, textbooks, dissertations, scientific periodicals, proceedings of scientific forums, publications of project developments financed with public funds at national and European level, etc.); official information from the National Statistical Institute, Eurostat, Federal Statistical Office of Germany; data from empirical studies with topics and scope similar to the present study; specialized periodicals, brochures, catalogues, industry documentation on the topic of the dissertation; data from



surveys, conducted interviews and consultations; information from observations and registration of statistical data; Internet sites and databases, etc.

## **6. Limiting conditions of the study**

Due to the broad scope of the issues under study, the following limitations are introduced within the dissertation:

– *Limitations regarding the subject of study.* The dissertation examines project activities and project teams from the positions of their organizational and managerial aspects. The focus of the research results is on the practical dimensions of the organizational-managerial aspects of project teams in industrial enterprises and on the factors influencing them. Outside the scope of the study are the social-psychological and financial aspects, as well as the direct linkage and numerical measurement of the impact of project outcomes on the financial health of the industrial enterprise as a whole. The empirical study on the topic of this dissertation is aimed at establishing the real picture of project activities, project teams and their management specifics, and the respondents' opinion is sought on their work in the last project team and their participation in project teams before the last five years (2019 - 2023) as a whole. The reasons for taking such an approach within the dissertation are as follows: each project and almost every project team is unique (*on the one hand*); this uniqueness in aggregate lends itself more to qualitative than quantitative assessment, and it is difficult to match the in-depth empirical evidence on each project and project team with the appropriate specific form for a detailed yet summative picture of the state of project activity, the performance of project teams and the management of this form of work organisation (*on the other hand*).

– *Limitations regarding the object of study.* This dissertation explores the theoretical and empirical projections of the selected topic within active non-financial enterprises operating in the NCIId-2008 sector C. The number of respondents was determined based on the following *criteria*: enterprises from the group of medium and large economic entities, foreign ownership of capital, positive financial results, active project activity and a large number of projects implemented by the enterprise, the presence of significant experience in project activity; functioning and functioning project teams with participation in more than one project and the presence of experience in project activity for at least 5 years.

– *Restriction regarding the study period.* The empirical study was conducted in May-September 2023. Through the survey, interviews, consultations and discussions, information related to the opinions and evaluations of the projects implemented in the selected industrial enterprises and their participation in them during the period 2019 - 2023 was obtained.

## **7. Approval of the dissertation research**

The dissertation was discussed and directed for defense by the Department of Industrial Business and Entrepreneurship at the D. A. Tsenov Academy of Economics. The dissertation was approved by the Doctor of Philosophy and the Doctor of Economics. 1 joint study, 2 articles and 2 reports have been published on the dissertation topic in specialized publications. Parts of the dissertation have been presented at 6 scientific forums - 2 PhD sessions and 3 conferences, one of which was an external (outside the D. A. Tsenov Academy of Economics) forum.

## **II. MAIN CONTENT OF THE DISSERTATION**

Structurally, the dissertation consists of an introduction (7 pages), three chapters (177 pages), a conclusion (5 pages), a list of references (13 pages), and appendices (13 pages). In terms of content, the dissertation is structured as follows:

**List of tables used in the thesis**

**List of figures used in the thesis**

**Introduction**

### **Chapter One. THEORETICAL FOUNDATIONS OF PROJECT TEAM MANAGEMENT**

1. Project and project team background
2. Project management - nature, development, features
3. Managing project teams

*Summaries and conclusions*

### **Chapter Two. IMPROVING PROJECT TEAM MANAGEMENT**

1. Key players in the project team - importance, role and contribution to improving their management
2. Management function and management styles
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*Summaries and conclusions*

### **Chapter Three. AN EMPIRICAL STUDY OF PROJECT TEAMS AND OPPORTUNITIES FOR IMPROVING THEIR MANAGEMENT**

1. Objective, methodology and scope of the empirical study
2. Analysis and evaluation of the research results
3. Recommendations for improving the management of project teams

*Summaries and conclusions*

**Conclusion**

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**Declaration of originality and authenticity**

### III. SYNTHESIZED STATEMENT OF THE THESIS

#### Introduction

The introductory part of the dissertation justifies the relevance and practical significance of the research. It defines the object, the subject, the goal, the objectives, the research thesis and the hypotheses. The methodology, sources of information and limiting conditions of the research are presented.

#### CHAPTER I. THEORETICAL FOUNDATIONS OF PROJECT TEAM MANAGEMENT

The **first chapter clarifies the** theoretical basis related to the topic. A definitional clarification of the main concepts used in the thesis is made. Possible classifications of projects and project teams according to different attributes are presented in a systematic way. The nature and peculiarities of project management are discussed. The main aspects of project team management are explained.

The chapter consists of three paragraphs in the following sequence:

##### 1. Essential characteristics of the project and the project team

The *first paragraph clarifies* the nature of the main concepts in the field of the thesis. It adopts a working definition of the term “project” as a *specific task that is solved within a specific timeframe with the necessary processes and coordinated activities in order to achieve a certain result under predefined parameters*. The project characteristics are outlined, with the following being considered as key: temporality, uniqueness, interdisciplinarity, progressive concretization, novelty; and the following as key parameters for the formation of the “project” system (with the requirement to maintain a certain level of balance between them): scope, quality, cost, time and resources.

In the specialized literature and in business practice there is a huge variety of specific types of projects, using different criteria for their systematization. Indicators such as: size (cost, value, scale, number of participants, time of implementation, units involved), functions and objectives, field of activity, application (new products, innovation, digitalization, software development, installation of machinery, facilities, equipment), quality, place of implementation, specifics such as novelty, standard, for improvement, tactical, strategic, operational, degree of complexity, risk and uncertainty, etc. are used as a starting point for differentiating projects. (Wysocki & Robert, 2014).

The paragraph discusses the variety of specific project types and the existing classification diversity based on their different characteristics. **In terms of content**, the classical classification distinguishes projects into three groups (Schelle, Ottmann & Pfeiffer, 2005 ): *investment; R&D; and organisational*. According to their **importance**,

**volume of investment and complexity**, projects can be differentiated into (Ilejenkova, 2012, p. 148-149; Varamezov, 2013; Panteleeva, 2013; Varamezov & Panteleeva, 2022, pp. 118; Taneva, 2007, pp. 163; Nikolov, 2022): *monoprojects, multiprojects and megaprojects*. Depending on the **duration and the amount of work**, three types of projects can be identified in terms of classification (Varamezov & Panteleeva, 2022, p. 118; Taneva, 2007, p. 163): *long-term* (with a high risk assessment and potentially high assessment of the level of effectiveness - over 5 years); *medium-term* (with a medium risk assessment and a medium assessment of the level of effectiveness - up to 5 years) and *short-term* (with a minimum level of risk and a low assessment of the level of effectiveness - up to 2 years). According to the **substantive aspect of the implemented changes**, the projects are (Varamezov & Panteleeva, 202, p. 118): *hard* (related to the supply of equipment or the creation of facilities) and *soft* (related to changes in the human factor). Depending on the general **content and functional sphere of the performed activities and the nature of the achieved results**, the following types of projects can be distinguished: *economic, investment, social, organizational, scientific, educational, organizational, technical, engineering, etc.* In addition, differences can be observed from country to country in terms of the approaches and concepts used to develop the different classifications and in the application of a specific systematisation, taking into account geographical/national/locational specificities. **The content of the project largely determines its complexity, which in turn determines the specificity of project management. For larger and more complex projects, the degree of management complexity is higher, with a proportional relationship.**

Industrial enterprises can create their own classifications that are specific to them and tailored to their activities and specific situation. In this way, a better match with the specificity of the projects in the particular organisation can be achieved and a model appropriate to the organisation and its objectives can be envisaged. In addition to the classification features of individual projects, project activity also needs to be tailored to the internal environment of the enterprise, which largely determine the way project activity is carried out, the way the project is implemented, the task is solved and the desired success is achieved. The above-mentioned concreteness as a multidirectional framework for taking into account the peculiarities in the preparation and implementation of different types of projects has a significant impact on the choice of management style and methods, the way of preparation and implementation of project management. Project management is implemented in a difficult-to-determine environment, which requires the definition of various options for flexibility in the selection and implementation of the management approach (flexible management approach, extensive knowledge of different theories, extensive practical experience, prior theoretical play of different scenarios and options, continuous analysis and timely making appropriate decisions, etc.).

The paragraph discusses the different definitions and emphases of the term “team”. According to Katzenbach and Smith (2013), a team is “a small number of people with complementary skills who are committed to common goals, including good performance, using an approach that holds them mutually accountable”. Lewis (2004) views a team as “a group of people working together to accomplish a common goal, achieving high quality results by enjoying that activity”. Salas and Passmore (2017) define a team as “a collection of two or more people who adaptively and dynamically interact through defined roles while working toward common and valuable goals”. In the academic literature, the definitions of different authors are relatively similar and almost overlap, but there are also differences reflecting some team specificities. For example, researchers refer to different team sizes, recommending this as the optimal number of members. Teams perform different tasks that are characterized by different scale and complexity. Teams of different size and educational characteristics are involved in solving team tasks. By definition, the members of a team should have different characteristics, qualifications, abilities and experience. In many teams, the participants come from completely different units, which defines the team structure as a mix of different elements. In practice, it is almost impossible to form a team in which members are as similar as possible in terms of personality type and character, interests, needs, worldview, value system, etc. It is not possible to view a team in the context of an abstract or ideal environment. There is also variation in the scope and degree of complexity of the tasks assigned. However, it is necessary to note that *regardless of these differences, all team members are equally and mutually responsible for achieving team results and goals.*

A large number of **team classifications** are known in the economics literature. Individual authors consider their specificity from different positions, trying to present a certain definitional clarity in their differentiation. Katzenbach and Smith (1993), Kanev and Hristova (2009, p. 8), Panteleva, Nikolov and Kostov (2020, pp. 13-17), Bhasin (2017, August 19) and Simeonova (2008) make a classification systematization of teams by a number of features, for example: according to the **duration of functioning** (*permanent and temporary*), according to the **type of functions performed and the way of management** (*functional/vertical; cross-functional/horizontal and self-managed*), according to **the purpose** (*responsible for quality in the organization, problem-solving - functional and cross-functional, autonomous or self-managed*), according to the **choices faced, the potential possessed, the risks and the degree of perfection** (*workgroup, pseudo team, potential team, real (true) team and highly perfect (goal-adaptive) team*), according to the **purpose and the mode of emergence**: *Formal (command, task-specific, committees/commissions) and informal teams*. The project team is created for project management purposes and is a tool for the project task. The UK Project Management Association (Association for Project Management, 2019)

defines a project team as “a group of people working together in a collaborative or cooperative manner to achieve a common goal”. Within this thesis, a project team is defined as a temporary structure that is created to solve a specific task (a specific project) in a specific time, with a set quality and cost (budget). Some teams are co-located in the same geographic area, others span multiple organizations and also perform virtual teamwork. Each team, regardless of its type, is associated with certain key parameters in the process of its functioning (Panteleeva, Nikolov & Kostov, 2020).

The paragraph also reviews different classification models of teams. Team development models “describe the stages through which individuals pass from the moment they come together in a group-organizational formation to the moment when this formation becomes a truly high-performance team” (Panteleeva, Nikolov & Kostov, 2020, p. 167.). Different models have been developed in the literature: the Ley model of team development (Panteleeva, Nikolov, & Ivanova, 2017, pp. 146-147, the Tuckman model of team development (Tuckman & Jensen, December 1977; Panteleeva, Nikolov, & Ivanova, 2017, pp. 148-150), Team Development Model according to McGregor (1960), Team Development Model according to Woodcock (1979), Team Development Model according to Bass & Ryterband (1979), Team Development Model according to Homans (1951) (Curşeu, 2007, p. 44.), Team Development Model according to Garner & Orelove (10 Aug. 1994), Rocket Model™ (Curphy & Hogan), Five Dysfunctions Team Development Model (Lencioni Model) (tablegroup.com), DISC Model (Marston, 2002), Richard Beckhard's GRPI Model (1972), Thomas-Kilmann's Conflict Mode Model (1979), DIY Team Development Model (VentureTeamBuilding.co.uk), Drexler/Sibbet Team Performance® Model (Drexler, Sibbet & Forrester, 2009), etc. They focus on different aspects of teams' characteristics and parameters, presenting specific explanations of the reasons or drivers pushing teams towards subsequent positive change. . The phases through which teams are built and also the different parameters and characteristics of teams are examined. The staffing and implementation of the selection of project participants is analysed. Attention is also paid to different models of team development.

## **2. Project management - nature, development, features**

The *second paragraph* clarifies the nature of project management. The views of different researchers and their proposed definitions are examined. The view is advocated that the project principle is widespread and used in many industries/functional areas of business practice. Much of the activity in industrial enterprises is carried out through projects. Despite the fact that project management has been intensively developed in recent years, in a historical context records of its implementation can be found as far back as antiquity. However, authors differ in their views on the essential aspects and the tools used, and there is no unanimous opinion on the matter.

In the mid-20th century, a number of organizations began to apply project management tools and techniques, initially primarily in the military and NASA, and later finding application within technically oriented organizations such as construction firms, engineering companies, etc. In the 1980s they entered the information technology field - in the development of software products. The following decade marked the beginning of the widespread and mass diffusion of project management tools and techniques in many subject areas and different types of organizations. Some literature notes that the beginnings of modern project management emerged in the early 20th century. Snyder and Kline (1987) believe that project management in its modern form began in 1958, linking it to the development of the Project Evaluation and Review Technique (PERT), a project management technique, and the Critical Path Method (CPM), a critical path method (Snyder, James, Kline & Smith, 1987). Morris (1987) points out that project management has its origins in the chemical industry, from before World War II (Morris & Hough, 1987). The period in the development of project management up to the end of World War II still remains understudied. After it, project management researchers focused primarily on management tools, with research interest broadening its scope much later.

There is a lack of consensus in academic circles on the theoretical underpinnings of project management, and there may even be judgements that such underpinnings are not available at all. Some researchers believe that project management theory is too old but limited in terms of its development, while others believe that a proper project management theory does not exist (Koskela & Howell, 2002; Lundin & Söderholm, 1998; Shenhar, 1998; Shenhar & Dvir, 1996; Turner & Keegan, 1999). The view is also expressed that project management “suffers from a meager theoretical base and a lack of concepts” (Shenhar & Dvir, 1996). Other researchers believe that there are a large number of schools and theories whose models are quite different from each other, thereby contradicting each other, and this is often cited as a reason why a unified theoretical base cannot be established (Anbari, 1985; Bredillet, 2007, 2008; Kwak & Anbari, 2008; Söderlund, 2004, 2011).

In terms of *project management theory*, **two strands** emerge. *The first strand* tends towards pluralism due to the non-homogeneous nature of project management, while *the second strand tends towards* the formation and application of a unified theory. The focus is on the understanding that project management is a highly specialised and specific field. **Project management** encompasses many different disciplines; it links and reflects a number of different aspects; it is a mix, bringing together disparate elements, making standardisation and framing almost impossible. It is *multi-layered and is a set of different components with multidisciplinary interaction*. The volume of knowledge available on the subject is extremely large, but the question arises as to whether it is possible to systematise the entire body of knowledge and present it as a complete, unified system. There are a number of models developed by authors belonging



to different research schools in the field of project management research - Anbari (1985), Söderlund (2002), Kwak & Anbari (2008), Bredillet (2007-2008), Söderlund (2011) - which present different conceptions, views and proposals to the managerial aspects of projects and project teams. At the end of the paragraph, the historical development is reviewed, and various popular theories and trends that are taking shape are presented. The stages (phases) that project management goes through are discussed.

### **3. Managing project teams**

The *third paragraph* reviews different ideas on project team management and definitions, definitions of different authors. The functions and requirements of a project manager (managerial and leadership aspects) are compared. The best option when managing a project team is to combine the manager and the leader in the person of the project manager, i.e. the project manager should be a manager and a leader, namely - to perform and combine both roles. The types of organisational and management structures and their advantages and disadvantages are discussed. *Selection of a project organization should be made on the basis of certain criteria*. For example: *size, complexity, content, to what extent this project should be integrated into the organizational structure, what strategic importance the project is for the company, are direct managers involved besides the project manager*, etc. The positioning of the project teams in the structures of the industrial front ple and the degree of their integration is important for effectiveness. The management role, functions and activities of the project manager also depend on the organisational structure, which has a significant influence on how much project managers can do and to what extent the ability to bring projects to a successful conclusion is hindered or facilitated.

Models of team effectiveness are presented, within which the necessary characteristics for a successful team are considered, namely: Marston's **DISC system of theory** (Marston, 1928), **Belbin's model of roles in teams** (Belbin, 2003), **Margerison and McCann's model** (Team Management Wheel; Margerison & McCann, 1995), **Patzak and Rattay's (2004) model of successful team characteristics**, **Kerzner's (2009) model of the identifier distinction between effective and ineffective teams**, **Meifert's criterion model of successful teams** (Meifert, Sattler, Förster, Saller & Studer, 2010), **Rubin, Plovnick and Fry's model also known as the GRPI model**, **the T7 model**, **the Five Dynamics of Teamwork and Collaboration Skills model**, **the Five Key Weaknesses in Teamwork model**.

According to Cohen and Bailey (1997), **team effectiveness** is a *function of four categories of factors*: environmental factors; project factors; team processes; and team psychosocial traits. As a result of research conducted over more than thirty years, Sullivan (2011) identified 22 factors, divided into six categories, that have a significant impact (positive or negative) on performance, individual and team effectiveness –

productivity, leadership and guidance, support, skills, communication and information, and miscellaneous/specific factors.

The paragraph also pays attention to the choice of management *method*, as it is essential for the way the project is managed, the degree of successful completion of the tasks, the level of satisfaction of team members, etc. The methods include *principles, procedures and techniques, have different structure, the processes and the way they are carried out are different, which would also lead to different results*. In selecting an appropriate model, certain criteria should be considered such as: strategic and project objectives, industry affiliation of the business organization, presence of a certain level of criticality, specific requirements, risks, scale, complexity, degree of specialization, resources, etc. At the beginning, it is possible to set a model in which, during the project implementation, the management changes if necessary. This need to adapt in response to changes in the environment applies, for example, to projects that involve unknowns and are characterised by dynamics, uncertainty, etc. Some of the most commonly used and validated project management **methods** are (Team Asana, 2022): waterfall method, *agile method, kanban method, scrum method, Lean method, SixSigma, PRINCE2* (Projects IN Controlled Environments) and *Critical Chain method*. The choice of a particular management method has an impact on management parameters and on opportunities for improving team interactions, performance and time allocations.

### ***Summaries and conclusions of the first chapter***

1. Project activity is increasingly becoming an attractive tool to help companies implement their business initiatives and achieve their goals. The number of projects in industrial enterprises is constantly growing. The application of the project approach provides opportunities for various benefits.

2. The comparative analysis and evaluation of the essential aspects of projects and project activity, formulated by a number of researchers, as well as the identification of the common and essential in their views from the terminological gistic point of view, gives grounds to argue that the definitional focus of the concept of *project* is expressed in its definition as planned and coordinated actions aimed at the implementation of a specific task by a certain number of people in order to realize the set goal with the achievement of results that meet the requirements.

3. Project team performance factors influence the specifics of project and team management. Depending on their direction, degree of influence and intensity, an environment is formed against which the project manager has to implement an appropriate management style and use specific impact tools. Such factors are: loyalty, interest, commitment, responsibility, reliability, cohesion and camaraderie, cooperation, understanding between members, trust, team spirit, purposefulness, innovation, teamwork skills, appropriate leader and members, accurate team size (pcs. members)

and appropriate structure, organizational environment and support, satisfaction, ability to express opinions, clearly defined rules and norms, motivation and incentives, conflict management, leadership style, clear and appropriate allocation of tasks, duties and responsibilities, flexibility and adaptation to change, quality of performance, level of communication, coordination and cooperation, clear project goals, etc.

4. The project manager can monitor, track, analyse and report on the various performance factors and, if necessary, make efforts to improve them by applying appropriate management. The aim is to increase team effectiveness and create further opportunities to improve the management of project teams in industrial enterprises.

5. The wide variety of projects requires the use of specific, individual management methods based on the specifics of the project, recognizing that each project is unique. Based on clear criteria and an established classification framework, it is necessary to make a preliminary typological systematization and identification of the type of project and the resulting peculiarities and constraints regarding the management of teams and the improvement of their project effectiveness.

## **CHAPTER II. IMPROVING THE MANAGEMENT OF PROJECT TEAMS**

The second chapter discusses the main actors in the project team and their role in the project activity. The management function and the different leadership styles are analysed. Author's models for improving project team management are proposed.

Chapter Two consists of three paragraphs.

### **1. Key actors in the project team - importance, role and contribution to improving their management**

The *first paragraph* advocates the view that the project manager occupies a key role on which successful project implementation depends. The project team aims to carry out the necessary work on the project that will lead to its successful implementation and the achievement of the pre-set women/defined outcomes. Each member of the team, with his/her assigned role and functions, performs the assigned tasks and contributes by his/her commitment to the achievement of the overall end goal. The project team is the engine of the project activity. It is crucial *for the successful implementation of the project. These are formations that are set up to achieve a specific goal that is linked to the performance of common, related tasks. Participants are expected to be highly cooperative, committed, and cohesive.*

The terms **project manager** and **project leader** within the dissertation will be considered as synonyms, although in certain aspects they differ and have individual specificity. A *project manager* has more responsibilities, powers and duties. The leadership component is pronounced in him/her, he/she manages the team of people and disciplinarily, with the overall responsibility for the project falling on him/her. The

*project manager* is more associated with administrative functions, having no disciplinary powers. For the most part, the requirements for the project manager are primarily focused on the technical knowledge and applied skills he or she must possess, aimed at supporting the project's delivery on time, within the defined scope and budget, and to the quality set. There is a great abundance of information on the subject, it is mainly focused on the technical part as most people consider it more important. It is only relatively recently that more attention has started to be paid to other factors that influence project management, e.g.: complementary skills and their impact on the achievement of the project objective, specifically management skills and competency mix. It is no coincidence that various training and certification opportunities for project managers are available.

Through the set of factors, elements and parameters that influence project management and project team effectiveness, the *characteristics of the project manager and team members* are indicated. It is the responsibility of the organization to select the right team to conduct the selection process and to favor the selection of the right individuals to consciously and voluntarily join the teamwork. Appropriate recommendations shall be provided. An overview of generally recognised and established standardisation and certification organisations shall be provided.

According to *the Project Manager Competency Development Framework* (PMCD) created by the Project Management Institute, the PMI Talent Triangle® includes the following core competencies (Project Management Institute, 2017): *technical management, leadership, strategic management, and business management*. Management competency is critical to achieving meaningful business outcomes, goals and performance, and to forming the capacity to improve project team management. According to the European Qualifications Framework, knowledge can be defined as a set of facts, principles, theories and practices closely related to a particular field of work or study. They are the result of the assimilation of heterogeneous information within the learning process. According to the same classification framework, skills reflect the ability to apply specific knowledge and know-how to tasks or problems. In turn, they are distinguished into cognitive and practical. Competence is perceived as 'the proven ability to use knowledge, skills and personal, social and/or methodological givens in work or learning situations and in professional and personal development. In the context of the European Qualifications Framework, competences are described in terms of the degree of responsibility and autonomy' (European Communities, 2009).

The spectrum of criteria for evaluating project participants is wide and depends on the profile of the staff sought. The focus is mainly on professional qualifications, knowledge, skills and competences. There are many models of management competences. Bhardwaj (2013) explores the specifics of the models proposed by Lala,

Smart, Pandit, Abraham et al, Hellriegel et al, Rao, Ram Charan, Hopkins & Bilimoria, Qiao & Wang, Shirazi & Mortazavi and opines that managerial competencies are made up of overarching skills. Hawi (2015) proposes a model that focuses on team leadership, problem solving, strategic skills and customer focus (Hawi, Alkhodary & Hashem, 2015). McClelland's (1973) Iceberg model divides competencies into two parts, above and below water. The above water part (which is visible) includes knowledge and skills, and the under water part (which is not visible) is made up of the components of social role, self-evaluation, personality characteristics, and motivation. Hellriegel (2005) proposes six core management competencies for a successful manager: communication competence, planning and administrative competence, teamwork competence, strategic action competence, global competence, and self-management competence. Kurschus (2012) presents a model that includes the following main categories: interpersonal skills, international competence, flexibility, intuition, and vision. In order to achieve better management of project teams, it is necessary to focus specifically on project management competencies, not on management in general.

In order to implement a workable, relatively easy to implement, yet reliable model, a four-component model is proposed, including four groups of competencies and attributes, each of which can be decomposed into separate subgroups (see Table 1).

Table 1. *Management Competence Model - Basic Assessment Criteria for Project Managers*

<b>№</b>	<b>Main components of the model</b>
1.	<i>Professional competencies (business skills, specialization, etc.)</i>
	Analytical and logical thinking, specialized knowledge, time management skills, professional experience, discipline, process and methodological competence, initiative, teamwork skills, diligence, continuous learning, technical skills and competencies, self-improvement, presentation skills, prioritization, innovation, accuracy, economic and business knowledge
2.	<i>Management and leadership competences</i>
	Flexibility, adaptability, interpersonal relationship management, ability to inspire, visionary, strategic thinking, emotional intelligence, objectivity and impartiality, fairness, principle, ability to plan, organize, coordinate, control, delegate, motivate and encourage, problem solving and conflict resolution, as well as early recognition, negotiation skills, persuasion, knowledge and skills in human resource management, awareness, innovation, decision-making skills, knowledge of management and leadership styles, methods and techniques, resource management, ability to influence others, enthusiasm and optimism,
3.	<i>Social competences</i>
	Communication skills at a very high level, feedback, empathy, building trust, intercultural competence, teamwork skills, collaboration, persuasiveness, building and maintaining relationships, authority, ethics, empathy, collectiveness
4.	<i>Personality characteristics</i>

	Intellect, creativity, intuition/intuitiveness, resilience, honesty and integrity, self-motivation, perseverance, goal-orientation, self-confidence, ambition, achievement orientation, reliability, determination, mental and emotional resilience and stability, endurance under pressure, ability to work under stress and pressure
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*Professional competence* is related to the professional skills required for the specific project, and *methodological competence* is related to project processes. These competences can be acquired. *Social-integrative competence* reflects the skills to apply procedures, the ability to organise, etc., while *social-communicative competence* indicates the skills to work with people. These two competences can be acquired through training only partially.

Various approaches have been developed in the economics literature to identify the **system of criteria and requirements** that should be met by participants in specific project teams. Following the most popular **approaches** are the *team role approach* and *the individual teamwork competency approach*. **The team roles approach** expresses the idea that the appropriate members to perform specific team work are those who have behaviors consistent with certain team roles. It refers to the *assumption that corresponds to the specificity of the team task and the contribution that is required to be achieved by the individual team members in order to complete the project*. Techniques based on these models have also been developed that can be used to measure team roles. Working on projects creates challenges and opportunities for *mutual learning, for transferring experience between team members, for expanding the range of knowledge held, for gaining valuable and useful work experience, and for developing and improving a range of capabilities, including teamwork, improving social skills, coordination and communication with internal and external structures, networking, building good connections, relationships and working in an optimised, easy and enjoyable, efficient model*.

In *identifying associations between team member characteristics and different animal species*, different **profiles of team members** can be distinguished (classification developed by the author). The characteristics of the team members significantly influence the way the team works, the specifics of the team spirit and the professional-emotional atmosphere, and the scope of the framework for effective management influence. The author's practice shows that in different situations in project teams, positive and negative traits of the participants' profiles are manifested.

**Efficiency** is an extremely important metric for the project team. It expresses the *team's contribution to the organisation and to the individual participants*. The effectiveness of project teams can be considered based on different **criteria to evaluate the success of the project**. Such criteria are e.g. *quality of performance* (on time, within

budget, in line with expected results, etc.), *results of cost-benefit analysis, satisfaction of project participants, personal and professional enrichment and growth, realisation of synergy*, etc. The focus of team management is team effectiveness and this is where the project manager's efforts are focused.

The **effectiveness of the project team** is influenced by many **factors**, mainly through their parameters and characteristics. Some of them are: *team goals, team atmosphere, decision making, flexibility and adaptability to change, information provision, communications, constructive criticism, gaining useful experience, goal achievement, professional and personal development, leadership, management, thinking outside the box and creativity, motivation, conflict management, collaboration, trust, etc.* Team effectiveness factors reflect the extent to which the team achieves its goals. To examine the factors that facilitate or hinder the effectiveness of project teams, they can be measured according to their degree of importance and their respective influence. Measurement is not always an easy task, especially when the objects to be measured are communication, leadership, motivation, etc., which are very difficult and subjective to measure and evaluate.

## **2. Management function and management styles**

The **second paragraph discusses** basic issues related to the management function and management styles. After the formation of the project team, the leading substantive and functional point is the preparation and implementation of its **management**. The mode, model, style, and subject of management form the general enabling framework for achieving a favorable development of the project team and for realizing project success.

The project manager implements team management and performs the classic management tasks: coordinating team work, monitoring team performance and individual team members, providing feedback to team members and helping them solve problems. An important aspect of the successful implementation of the management function of the team leader is the possession of certain *leadership qualities and skills*. **Leadership** as a research area has been studied by various authors. According to Weibler (2016) it means "*to influence others through one's own socially accepted behavior in such a way that it directly or indirectly elicits the desired behavior in those influenced*". Yukl (2013) defines leadership as "*direct goal-oriented behavioral control over employees and social influence with the intention of fulfilling to the greatest extent possible both the goals of the company and the people working in it, and facilitating individual and collective efforts to achieve common goals*". Hellriegel & Slocum (1993) define leadership as "*planning, organizing, directing, and controlling the people working in an organization and the ongoing set of tasks and activities that they perform*" and also as "*the ability to influence, motivate, and direct others to achieve desired*

goals". According to the chronology of emergence, the main theories in the field of leadership are considered and systematized. Over the past 150 years, various studies have been conducted and numerous models of leadership have been developed. Universalist, behavioral, and situational theories have been presented. Hellriegel, Jackson, and Slocum ( 1999 ) systematized leadership research by distinguishing four categories of theories: *leadership trait theories, behavioral theories, situational theories, and transformational leadership theories*. According to the chronology of their emergence, leadership theories can be grouped as follows : great man theory, leadership traits theory (Shonk, K., August 14th, 2023), behavioral theory, leadership styles theory, contingency theories, and transformational leadership. *A good knowledge of leadership theories, leadership styles, models, methods, and techniques contributes to easier and effective management by applying them and finding opportunities for improvement to be used.*

### **3. Models for improving project team management**

In the **third paragraph**, based on the researched, analyzed and evaluated scientific knowledge in the field of project teams and the different aspects of their management, two models are developed and proposed, through the application of which ***a favorable environment is created for increasing the opportunities for improving the management of project teams.***

#### **☑ A model for support and development of project managers through a Project Management Coaching and Mutual Assistance Council**

It is recommended that, where possible (depending on the organisation, its structure, size and characteristics), a group of project managers should be established to meet regularly or as needed to discuss certain topics, discuss and exchange knowledge and experience from practice, ideas, useful cases, etc. This structure can be called a project management coaching and mutual assistance/support board. This council can be chaired, guided and moderated by a chairperson who is elected according to certain criteria and rules for a certain period/ term or on a rotational basis to have some equality of members. The objectives, functions, processes and overall activities of the project management coaching and mutual aid/support council can be regulated in advance. The aim is a very targeted, optimal, efficient, fast, adequate and seamless assistance (mutual aid), support, clock-ticking, case-solving, and even possibly in certain cases as an internal arbitration/committee. At the end of the projects, the project managers may present certain important topics or special cases of the project implementation to assist, enrich the knowledge and be useful to the other project managers. In this way, experience and knowledge can be transferred, shared among project managers in the



business organization and this can contribute to easier and successful building, functioning and development of successful, high-performing project teams.

☑ **A model for improving project team management based on four pillars**

Opportunities for improving the management of project teams can be seen as dependent on or based on four main pillars (see Figure 1). *The first pillar* is project type and its characteristics. It defines what the project is based on the classification criteria. *The second pillar* is the type of organisation. This includes the characteristics of the business organization, size, condition, environment, organizational and management structure, departments involved, units (internal, external), project structure, positioning, integration, etc. *The third pillar* is personnel. Personnel required (project manager and project team members), requirements, roles (rights, duties and responsibilities), method of selection, number required, specifics of the project team (after getting to know the team, depending on the specifics, the project manager applies appropriate management), etc.

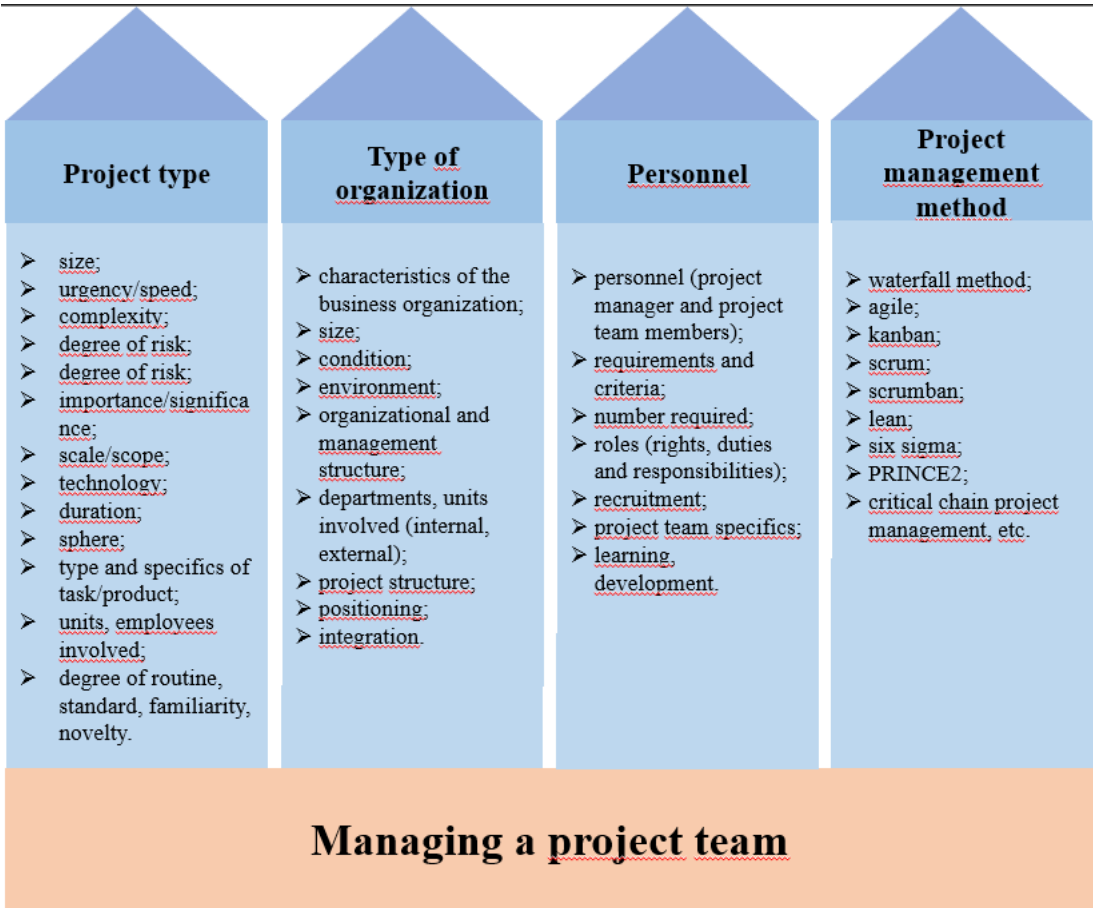


Figure 1. Author's model (with options) for better and successful management of project teams

*The fourth pillar* is the project management method. Selecting the appropriate project management method and methodology for the respective team. The management of the project team, the approach of the project manager, the management style, etc. depend on these four pillars. The success of the project team and the project itself depends on the management applied.

### **Summaries and conclusions from chapter two**

1. As a basis that can create opportunities for improving the management of project teams, and therefore - their implementation, it is necessary to consider the following elements.

- the project manager's good knowledge of the team members helps him/her to allocate roles and tasks among the project participants. When necessary, it is possible to apply an individual management approach to a specific team member.
- the good training and set of competences that the staff (project manager and members) need to have - not only “hard” but also “soft” skills.
- Good knowledge, proficiency and successful application of leadership styles, models, methods and techniques.

2. The project activity has positive and negative effects on the project team members and the manager that influence them and requires the application of appropriate management. As contributing to positive effects can be considered: *satisfaction of project participants, personal and professional enrichment and growth, providing a field for expression, for proving, self-improvement, self-realization, self-assertion, motivation, etc.* Factors having a negative effect can be: *dynamic environment, with a variety of problems for which there is no ready or played solution, working under stress and pressure, mental and emotional workload, large volume of work and multiple tasks, unevenly distributed in time, tight deadlines, working simultaneously on several topics and performing several tasks (multitasking), double subordination, prolongation of working hours, risk of burnout, etc.*

3. The industrial enterprises must provide the necessary appropriate resources and conditions for the project participants to successfully carry out their tasks. The company is also obliged to provide opportunities for work-life balance. If necessary, the employer can *build and implement a stress reduction programme through various events (sports), relaxation and other activities, which in turn will unburden the employees physically, mentally and emotionally and bring them closer together, increase the efficiency, productivity of the project team and limit negative influences and consequences.*

4. The industrial enterprise should establish a scheme for selecting project participants. It is necessary to clarify how work time will be planned, organised and how work (ongoing and project) will be implemented and executed in order to achieve a high level of coherent, harmonious, rhythmic and efficient work.

5. The opportunities for improving the management of project teams are influenced by factors from four main directions: *the type of project and its characteristics, the type of organization with its specifics, human resources and the method of project management.*

### **CHAPTER III. AN EMPIRICAL STUDY OF PROJECT TEAMS AND OPPORTUNITIES FOR IMPROVING THEIR MANAGEMENT**

Chapter three fulfils the final research task of the dissertation. It sets out the whole empirical study with all the stages it goes through.

The third chapter consists of three paragraphs.

#### **1. Objective, methodology and scope of the empirical study**

The **first paragraph clarifies** the main methodological and organizational aspects of the study, presents the scope and methodology with the indicator framework of the study. Through the **empirical study**, it aims to investigate the *management of project teams in industrial enterprises, identify the problem areas and make recommendation to solve the problems aimed at improving management.*

For the purpose of the empirical study, a model was developed based on the processes involved in its implementation, which include planning, organizing, conducting and is composed of the following stages:

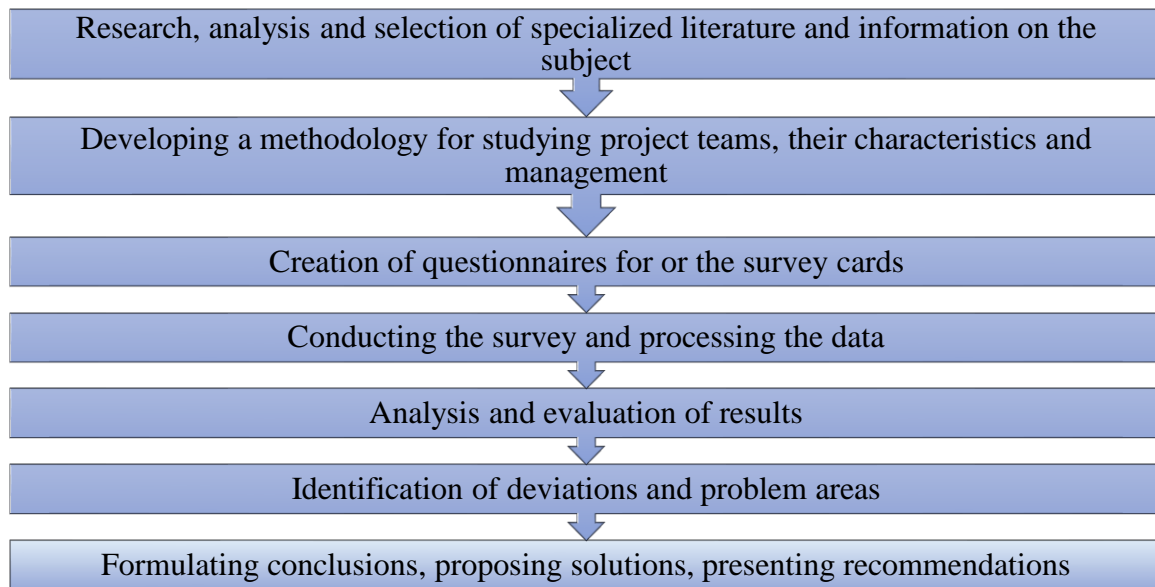


Figure 2: Methodological stages of the empirical study

Two questionnaires were created to conduct the empirical study. One relates to the most recent project on which the respondents worked and is made up of 67 questions. The second questionnaire covers an empirical picture survey to establish the respondents' position on their involvement in various projects implemented by industrial enterprises in the last five years. The second questionnaire consists of 74 questions. Both questionnaires are made up of open and closed questions. A methodology has been developed which covers the main significant areas affecting project management (see Table 2).

Table 2. Indicator framework of the first empirical study

Indicator area	Indicator	Meter
<i>Profile of project participants</i>	Structure of project participants by gender, age and education	Share, %
	Department in which the participants work	Name of department
	Position held in the enterprise	Job title
	Type of respondent ( <i>participation as project manager or project team member</i> )	Article from Project Manager
<i>Characteristics of the studied projects</i>	Golemina	Small, medium, large; share, %
	Complexity, urgency	Small, medium, large; share, %
	Name	Project name
	Sphere	Sphere in which it takes place
	Objective	The aim of the project
	Duration	Time

<i>Project team and its characteristics</i>	Organizational structure	Share, %
	Project team size by number of participants	Share, %
	Determining the size of the project team by number of participants	Too large, large, regular size, small, too small; proportion, %
<i>Presentation of project members</i>	The objectives were achieved within the project; Implementation within the set deadlines; Realisation within the set quality	1 - completely disagree; 2 - rather disagree; 3 - neither agree nor disagree; 4 - rather agree; 5 - completely agree; share, %
<i>Team environment</i>	Respect; clearly defined roles and responsibilities; the right people in the right jobs; shared responsibility; pursuit of the right goals; confusion about responsibilities; clarity about priorities for use of resources; efficiency of the decision-making process; clarity about who is doing what, where, when, and for what purpose; review and exploration of proposals made; maintaining a regular open exchange of ideas; openness to experimentation; working together seamlessly and moving in the same direction; mutual support when needed	1 - completely disagree; 2 - rather disagree; 3 - neither agree nor disagree; 4 - rather agree; 5 - completely agree; share, %
<i>Characteristics of project members</i>	Clarity of team purpose; use of talents; clarity of expectations; fits within the team; individualism; goals not openly expressed; taking team interests into account; doing what is said to be done; reliability; honesty; notions of different vision; disagreement about decision making; overwhelm; importance and meaning of teamwork; learning from experience to spread and apply;	1 - completely disagree; 2 - rather disagree; 3 - neither agree nor disagree; 4 - rather agree; 5 - completely agree; share, %
<i>Management</i>	Project management method	Name of the method
	Department(s) in which he/she/they has/had a career	Name of department(s)
	Organizational structure	Functional, matrix, pure design; share, %

A second questionnaire was developed to gather information from respondents on the projects the teams had worked on. The questions are aimed at obtaining

information on the overall evaluation of the participation in the project teams over the last five years. The scope of the main indicator areas is presented in Table 3.

Table 3. *Indicator framework of the second empirical study*

Indicator area	Indicator	Meter
<i>Profile of project participants</i>	Structure of project participants by gender, age and education	Share, %
	Department in which the participants work	Name of department; share, %
	Position held in the enterprise	Job title
	Participation as project manager or project team member	Member Project Manager
<i>Characteristics of implemented projects</i>	Size	Small, medium, large; share, %
	Duration (execution time)	Indication of time
	Complexity	Small, medium, large
	Strategic importance	Small, medium, large; share, %
	Sphere	Naming
	Average number of participants	
<i>Characteristics of the project manager</i>	Giving feedback	1 - completely disagree; 2 - rather disagree; 3 - neither agree nor disagree; 4 - rather agree; 5 - completely agree; share, %
	Providing freedom, opportunity for expression, for creativity	
	Recognising members' potential	
	Knowledge of ways of obtaining company support for the team	
	Openness and honesty with members	
	Effective delegation of responsibilities	
	Fair distribution of tasks and responsibilities	
	Possession of qualifications for the position	
	Professional conduct	
	Good working together	
	Communication	
	Justice	
	Objectivity and impartiality	
	Principality	
	Accepting and dealing with criticism	
Problem and conflict resolution, crisis management and crisis resolution skills		
Managing interpersonal relationships and conflicts and dealing with them		
Takes care of team awareness		

	Possession of social. Competence, interpersonal and communication skills	
	Professional competence	
	Procedural and methodological competence	
	Timely and adequate response to changes	
	Motivation skills	
	Using the right management style	
	Making the right management decisions	
	Providing assistance to members	
	Possession of leadership skills	
<i>Characteristics of project team members</i>	Possession of qualifications for the position	
	Professional conduct	
	Honesty towards each other	1 - completely disagree;
	Communication	2 - rather disagree;
	Trust	3 - neither agree nor disagree;
	Openness to criticism	4 - rather agree;
	Clear and direct expression of wants and needs in conflict	5 - completely agree;
	Motivators	share, %
	Demotivating factors	
	Good project team management	
	Simultaneous work on more than one project	Yeah, no.
	Simultaneous work on regular tasks and project	Yeah, no.
<i>Project Team and environment</i>	Clearly defined standards and norms of behaviour	1 - completely disagree;
	Availability of a deviation response and control system	2 - rather disagree;
	Open consideration and clarification of conflicts	3 - neither agree nor disagree;
	Effectiveness of the meetings held	4 - rather agree;
	Frequency of meetings (meetings)	5 - completely agree;
	How the company supports the management of project teams	share, %
	Ways, methods and actions to improve team management by the company	Too much, moderate, too little; share, %
	Average number of participants	Naming the ways
	Size by number of participants	Naming
<i>Management</i>	Decision-making/management style	Naming
	Project management method	Too large, large, right size, small, too small; proportion, %
	Authoritarian, patriarchal, deliberative, consultative, partisan, delegative, democratic; share, %	
	Project management method	Name of methods used

	Problems in project team management	Naming the problems
	Opportunities to improve team management	Naming the opportunities
	Suggestions for improving the management of the project team	Naming of proposals
	Suggestions for solving problems in team management	Naming of proposals
	Time allocation for regular and project duties	Naming the way
	Factors positively/negatively affecting management	Naming
	Department(s) where implemented	Naming
	Structure	Functional, matrix, pure design; share, %

## 2. Analysis and evaluation of the research results

The **second paragraph** presents the results of the two questionnaires. The first questionnaire covers 67 questions. The possible answers are distributed from 1 to 5 (1: disagree; 2: rather disagree; 3: neither agree nor disagree; 4: rather agree; 5: strongly agree). The survey was conducted in different industrial enterprises. Regarding the profile of respondents in the first survey, the data can be summarised as follows: responses were received from 30 respondents working in different departments of foreign-owned industrial enterprises with experience in project development. The projects included in the empirical study were implemented in industrial enterprises from different fields and had different activities and project objectives. Half of the respondents described the last completed project they worked on as medium-sized. For 40% of the respondents, the size of the last project they were involved in was large. The focus of the study is on this group of projects, as their size implies a larger number of project participants and a richer empirical material on the management aspects of project teams. 10% of respondents worked on a small project.

Based on the indicator „*degree of complexity of projects*“, the data show a significant percentage of projects with a medium degree of complexity (80%). One in five projects was implemented at a high level of complexity, suggesting greater research interest in this group of respondents as a source of in-depth and practically relevant information for the study. None of the respondents had worked on a project of low complexity.

The combination of responses on the indicators of project size and complexity shows that half of the large projects were also of high complexity, while the remaining large projects were implemented at a relatively medium level of complexity. All the small projects implemented were also at a medium level of complexity. This lends



credence to the argument that given the complexity of project implementation (as an empirical framework for manifesting the behaviour of project teams) they are a relatively fertile environment for drawing information and for drawing meaningful conclusions.

For most of the projects (70%), the level of urgency was average, with the data indicating a relatively well-organized project implementation whose complexity was mainly driven by the dynamics in the environment and the impact of unexpected factors. A high level of urgency in the 20% of projects that were at least of medium complexity indicates insufficient preparation to respond quickly to emergencies. Few of them reacted on the spur of the moment, given the surprising manifestation of adverse factors external to the industrial enterprises. A dominant proportion of project teams operated under a constructed matrix organisational structure - in 8 out of 10 projects. In only one out of ten projects did project team members perform their tasks with a functional structure (within a single department) and the same proportion with a pure project structure. For a small number of projects, team members, including the project manager, numbered up to three in total. Also for a small number of projects, team members numbered up to six participants, and for 50% of projects the number of team members was up to ten. A non-significant proportion of projects had team members of more than 10 people.

The most preferred method for managing project teams was *agile* (50%), but Critical Chain (10%) and SixSigma (10%) and Kanban (30%) methods were also used. From the data obtained, it is clear that the projects were implemented with the participation of individuals from different departments. The team goal was quite clear for almost all of the respondents (90%), and clear for a very small proportion (10%). A small percentage (10%) were confident about what was expected of them as a team and almost all (90%) were completely unsure. Absolutely all participants identified themselves as a good fit and felt they fit well within the project team. Ten percent perceived themselves as more of an individual than a team (project managers' response), 20% perceived themselves as more of an individual, 40% were neutral and 30% did not perceive themselves as 'more of an individual than a team' at all.

Eighty percent of survey participants indicated that they had complete respect for other project team members, 10% rather respected them, and 10% took a middle position between respect and disrespect. Twenty percent fully shared the view that some project team members had goals that they did not express openly. Twenty percent agree with this statement, 10% disagree strongly, 20% rather disagree, and another 20% disagree completely. According to 50% of the respondents, not everyone in the team considers and accommodates the interests of others (the team). For 30% of the respondents, team members showed respect and consideration for the interests of others in the project when implementing projects with their participation, and 10% could not give a definite

answer, probably due to different manifestations in different situations of specific attitudes and behaviors regarding considering or not considering the interests of other team members in the project. There is also a 10% proportion who state frustration with the fact that team members do not consider the interests of others.

The study of the presence of *matching between words and deeds* shows relatively positive results. Just under a third (30%) of empirical units state that people in the team do what they say they will do. Overall, it can be generalized that for about 70% of the respondents, project team members strive and make efforts to adhere to the match between intentions and actions, i.e. one can trust that stated intentions will translate into team actions, to plan and anticipate expected outcomes. Consistent with and supportive of this structural distribution of responses is respondents' views on the *extent to which they can trust and rely on their colleagues in the project team*. For 40% of respondents, there is a strong endorsement of the view that they can rely on other team members and a further 40% tend to agree. Only 10% of respondents stated that they did not particularly trust and could not fully rely on their colleagues in the team. Despite the small proportion indicating the latter response, this is a worrying finding. Given the specific characteristics of the teams, such a situation will inevitably complicate the normal course of project activities, and the achievement of team results (if achieved) will result from an intense pace and under conditions of high tension, possibly accompanied by multiple conflicts. A tenth of respondents (10%) openly stated that they could not rely on their teammates in the project, and it is likely that the positive results, similar to the previous group, were realized at the cost of a lot of effort.

All managers surveyed confidently stated that the *roles and responsibilities of team members were clearly defined*, 20% felt that they were rather clear, and 10% of units could not give a clear answer. Regarding the assessment of whether the *right people occupy the right places in the team*, 60% (of which 50% - project managers, and 50% - team members) fully confirm that an objective and correct allocation has been made and the right people have occupied the right positions for them, 20% rather agree with such assessment, 10% cannot unequivocally assess whether this process has been correctly implemented and the allocation has contributed to positive team/project results. However, there was a 10% proportion of respondents who clearly indicated that they disagreed, and in their view the assessments of the existence of a match between required and possessed qualities and competencies were not aligned, therefore the allocation of team members was conducted in the wrong way, and the structural positioning of individuals by position, role and team sub-processes was an adverse factor for successful project work.

Regarding the extent to which respondents perceived *team members to be honest with one another*, 20% perceived their colleagues to exhibit honesty and sincerity in their team behavior. Half of the respondents (50%) rather agree, 20% are neutral, and

10% rather disagree. Overall, the structural distribution of responses indicated a dominant environment of honesty, but in at least one-third of the project teams honesty was not among the elements of team culture and part of team members' values. Comparison with the survey results on the level of trust showed similar results, with teams lacking trust also not demonstrating honesty towards other project participants. A similar finding is indicative of the presence of a 30% proportion of teams that perform project tasks in an environment of risk.

Regarding the *sharing of task responsibility*, 20% stated that project team members fully shared responsibility, 40% rather shared responsibility, 30% were neutral and 10% expressed the opinion that responsibility was rather not shared. Absolutely all respondents are adamant, that the *right goal is being pursued*. There is consensus and *sharing of a common unambiguous perception of the vision by all project team members* (100% of respondents), there is *complete clarity about the allocation of responsibilities* (all respondents believe that project team members know and understand their responsibilities accurately) and about the *prioritization of resource allocation* (financial, human resources, time parameters, etc.). There is also a *clear understanding of: the content and scope of the overall team goal; the individual involvement of each in its implementation; and the type, scope and timing of the assigned tasks*. Half of the respondents strongly agreed with the *way decisions were made* and one-fifth of the respondents (20%) disagreed, but all respondents shared the view that *the project team had an effective decision-making process*. Within all project teams, suggestions made by team members are considered, explored and discussed. Although, there was disagreement in one-fifth of the project teams on how individual decisions were made, ultimately the management process was effective. It is likely that the reason for these types of responses can be sought among participants whose suggestions were not approved or preferred by the team leader and the team as a whole. However, these respondents acknowledged that the decisions made, although not their suggestions, were the right ones.

A large proportion (80%) of the project teams surveyed maintained a regular open *exchange of ideas* with each other, and 20% of respondents did not indicate whether they supported or rejected the statement. There was a 10% proportion of respondents who found the dominant proportion of team members rather not open to *experimentation and innovation in* contrast to all others who claimed to be. Not all (10%) agree that team members *work seamlessly together and move in the same direction*. Most believe that there is mutual support among team members when necessary, with *respect and consideration for differences in positions on the work being done, respect for the different talents* of team members, and *courteous treatment* when said differences manifest. Only 10% are not of this opinion. The prevailing view is that work, attitude to it and behaviour in its performance should be directed towards

achieving team results and towards subordination to the common team goal. At the same time, individuality should not be suppressed, and preferably there should be a comfort zone within which team members can be themselves.

There are divergent views on the manifestation of *tolerance for misbehaviour*. A significant proportion (30%) of respondents felt unequivocally that there was a high degree of tolerance, with a further 40% strongly agreeing with such an assessment. However, a fifth of respondents (20%) felt that tolerance could not be said to exist and 10% did not venture a definitive answer. The structural distribution of responses shows a positive overall picture, but also indicates the existence of a significant set of teams (40% in total) where the lack of a perceived tolerance and is a prerequisite for a lower level of satisfaction with teamwork, a reduction in positive sharing of team spirit and an attitude of full participation in the implementation of project objectives

Completing *difficult tasks* is a *challenge for the team* (for 90% of respondents), with 10% giving no clear answer. *Their execution has increased the mobilizing ability to use the available resources*. According to 60% of the respondents, *mutual competition in the team does not hinder but has a stimulating effect*, 30% have the opposite opinion and 10% did not define unequivocally. In all project teams there was *responsible execution of the tasks and meeting the planned project deadlines, whereby they had the necessary instructions and working materials*. The predominant statement (70%) was that the team worked in a disciplined manner and followed the same plan, 10% had the opposite opinion, and 20% did not definite. In all projects, the team adapted quickly to changing priorities.

Although, there is clarity about tasks, roles, expectations and outcomes, and there is constant review to make timely adjustments, the survey shows a different distribution of responses about the *perceived level of commitment and intensity in teamwork*. According to some respondents (40%), there is a high level of workload and irregularity during different periods in terms of the intensity of teamwork. Teams whose projects had a high degree of complexity and a significant number of tasks were carried out on an urgent basis worked with a sense of overload. Half of the respondents indicated that they did not feel overwhelmed and 10% did not give a clear answer. Respondents' overall assessment shows that project teams worked within a framework of clearly defined standards, well-defined common requirements and individual expectations of project participants. Notwithstanding the problems encountered and the complicated operational environment during some of the project implementation periods, there was a consensus of opinion among respondents (100%) that the teams often achieved more than was expected of them.

All project managers (30% of respondents) stated that *good performance is recognised and rewarded*, 20% felt they rather agreed, 20% rather disagreed and 30% could not give a clear answer. The structure of the responses shows that project

managers consider the activities of evaluating work performance, showing recognition and providing fair rewards in terms of team performance to be sufficient and well organized. The fact that there are no participants in the teams who are fully satisfied with the recognition of contribution and the level of pay indicates an antagonistic dilemma of the two subjective perspectives, that of the subject and object of management. Among the 70 per cent of respondents who are team participants, 50 per cent do not share the project managers' position or cannot claim to be sufficiently appreciated and paid. There was, however, a 20 per cent proportion of respondents who also had higher expectations of their project managers, but were in a more favourable position than other team members, received higher remuneration and felt that their rate was almost close to what they worked/earned. The summary profile of respondents shows that some project team members (30%) are reserved, willing to reject proposed changes in the way the team works, in contrast to the other part (60%) who are open to change. Ten percent did not indicate a clear opinion. Time for sharing experiences, for introducing and disseminating good practices is insufficient or sometimes underestimated (30%), while 40% make time for such purposes. Thirty percent did not give a clear answer. Participants (60%) in the teams have received the necessary training, 10% have not, and 30% did not give a clear answer.

**The results of the second questionnaire are also presented.** The fieldwork was conducted between May and September 2023 and the period covered by the data collection covers the last 5 years. The second questionnaire is used to investigate the empirical projections of the projects implemented by the selected industrial enterprises and the performance of the participants. The questionnaire is composed of 58 questions. The possible answers range on a scale between 1 and 5 (1 - disagree; 5 - strongly agree). 28 respondents (project managers and project team members) were interviewed. The respondent population was dominated by men, with a smaller proportion of women. The projects are implemented in different areas in industrial enterprises, have different scope of activities and specific objectives. The share of medium-sized projects is dominant, followed by small projects, with large projects coming last. The numerical values of the shares of projects by size reflect the respondents' answers about the involvement of the respondents in more than one project. In this case, all respondents had worked on medium-sized projects and just under a quarter had not been involved in any large projects.

All respondents were involved in short-term projects lasting up to 1 year. The vast majority of respondents (around 86%) had also gained experience in implementing projects of up to 2 years, and just over a quarter of respondents (around 29%) had been involved in at least one project lasting more than 2 years. All respondents were members of project teams that had implemented projects of medium complexity. Just over half of the respondents (around 57%) had carried out team tasks within projects of relatively

low complexity. The data show that at least 28.6% of the respondents had implemented projects of medium complexity in addition to small ones; 42.9% of the respondents had participated in projects of significant complexity in addition to small ones; 85.7% of the surveyed units had implemented tasks in projects of medium and large complexity in the last 5 years. Summarizing the data to the last two cuts, we can claim that 85.7% of respondents have performed at least once in the last 5 years large projects with a high level of complexity and a significant level of urgency. For 14.2% of the units, in the last 5 years, their participation in project activity was related to the implementation of a small urgency but at a medium or high level of complexity. All respondents had been involved in projects of medium strategic importance, over half (57.1%) had been involved in projects of strategic importance, approximately two in three had also gained experience of working on projects that were important to the enterprise but of low strategic importance.

The average number of participants in the study teams (including the project manager) varied widely. Respondents were involved in projects with the smallest number of 3 people and the largest number of 16 people. The largest number of respondents were involved in project teams with 7 people. When asked about the *respondents' judgement of the size of the teams*, almost three quarters (71.4%) felt that the size of the teams they had been involved in was correctly defined and appropriate for the volume and specificity of the team work. At the same time, the data suggest that there was a fairly large population (at least 42.9%, with the possibility of as many as four-fifths of respondents) for whom a slightly different size could have been suggested for at least one of the projects in which they were involved. Proper organisation of team activities and effective work of project managers is essential for the realisation of the set objectives. According to the dominant proportion (57.2%) of respondents, the project manager possessed the necessary qualifications, demonstrated an open and honest attitude towards team members (42.9%), used appropriate methods for the fair distribution of team tasks and responsibilities (14.3%), and delegated certain responsibilities effectively (28.6%). An alarming finding is the presence of a rather large proportion (42.9%) of respondents who believe that the project manager did not provide freedom of action and the opportunity for creativity; the potential possessed by team members to generate team effectiveness was not fully identified (28.6%), and in a very large number of cases (57.2%) - team members did not receive feedback from the project manager.

Regarding the ability of project managers to *resolve problems and conflicts, to manage and overcome crises*, respondents declared that during the implementation of the projects, managers communicated well with the participants; provided the necessary information; were fair, objective and impartial; accepted calmly and dealt with the criticisms addressed to them; some of the conflicts were discussed and clarified openly

(42.9%). At the same time, the survey data showed that only about half (57.2%) of the project managers possessed or rather possessed conflict resolution skills, being able to overcome crises that arose. Worryingly, one in seven managers clearly do not possess such skills, with a further 42.9% saying they would rather agree with such a statement. Also worrying is the fact that, in the opinion of the respondents, less than half of the project managers assessed (40.3%) possessed *social competence, good interpersonal and communication skills* to the maximum extent, while 28.6% were rather inclined to accept such a statement as true. More than half of the respondents believed that project managers did not possess this kind of competencies and skills, while another half (28.6%) could not give a definite answer and were unsure about the managerial and social skills of project managers. A relatively small proportion of managers (57.2%) also possessed good process and methodological competence or were able to motivate their members well. The study shows that project managers in the industrial enterprises surveyed prefer to apply an agile management method (85.7%), and in certain cases (14.3%) - the *waterfall method*.

Respondents answered the **open-ended questions on the questionnaire** as follows:

- ***What motivates the project team members?***

Respondents indicated that the achievement of *the final goal* plays the role of a leading motivating factor, along with the factors: *good working environment and teamwork; good opportunities for expression, realization and development; proper distribution of tasks in the project; timely and adequate response to changes (flexibility, efficiency), etc.*

- ***What demotivates the project team members?***

As demotivating factors, the respondents mentioned: *insufficient commitment of the team members; low or different workload of the individual team members, the sole decision-making of the team members; lack of fairness; lack of development opportunities; insufficient level of pay; lack of sufficient time to perform the team tasks and the need to spend extra time; poor attitude of the supervisor or some of the team members; lack of appreciation, etc.*

For slightly more than half of the project managers evaluated (57.2%), team members' evaluations were positive, affirming the presence of *motivation skills* or declaring a willingness to agree with such a statement. A worrying finding is the low percentage of positive evaluation. Almost 44% do not give high marks for the motivation skills of their project managers, and within this response, twice as many are adamant in their negative opinion (28.6%). According to the responses of 57.2% of the respondents, the assessment of the managerial success of the project managers was positive or rather positive (14.3% and 42.9% of the respondents, respectively), forming the opinion that the managers demonstrated good *project management*, implemented successful management decisions, and provided support and assistance when needed.

However, for 14.3%, the ratings were extremely negative, with respondents strongly responding that project management was not up to scratch. The ability to engage and persuade others, to steer in the right direction, to assist with expert opinion, to inspire confidence, etc. has a key role to play in the successful realisation of project objectives. Not all managers were rated as having or exhibiting good *leadership skills* (just under a third of respondents' ratings: 14.3% + 14.3%).

The preferred *organizational structure for the projects implemented* is the *matrix* (both ongoing/regular and project activities), followed by the *functional* structure (projects are carried out within one department). The data on the preference for the matrix structure show that for industrial enterprises, a suitable organizational structure option is one that allows the combination of commitments and the simultaneous execution of tasks both within existing departments and within the respective projects.

Regarding the **management style** applied, the survey results indicate the dominance of the *authoritarian management style* (single-person decisions, without consultation and coordination with project team members), followed by equal shares of respondents who believed that project managers used a *patriarchal* (the manager decides and tries to convince members of his decision before setting the instruction) and an *advisory style* (the manager decides, however encourages for questions about his decisions, primarily to achieve continuity). The third most frequently used style is the *consultative leadership style*, in which the project manager informs team members of his intentions regarding the decisions to be made, and members can express their opinions before he has made the final decision. The *participative and delegative decision-making styles* follow in the sequential preference order.

Respondents gave the following answers to the open-ended questions on the questionnaire:

- ***Problems in project team management:*** in summary, according to the respondents, the problems in project team management are due to the following reasons: lack of sufficient time required for timely response; excessive workload and commitment of individual members, incompetence of project participants; short deadlines for certain tasks; more competent project managers; poor coordination; problem participants, undisciplined, tasks not completed on time and with the specified quality; lack of good coordination and communication in certain

- ***What can be improved in project team management?*** Respondents gave the following answers: equal involvement of all team members; clear allocation of tasks and taking responsibility for specific actions; more effective allocation, involvement and execution of project tasks; better information and coordination of tasks; more time to work with the team; greater involvement of individual team members; inclusion of more trained and appropriate staff in project teams.



- ***Means, methods and actions to improve the management of project teams by industrial enterprises:*** the respondents suggested the following solutions: changing team members for the next project and setting the same composition; if necessary, including more participants in the team; organizing training for project managers; involving more qualified staff; providing larger budgets; if necessary, providing expert assistance; ensuring a constant link between the project team, management and the Human Resources Department.

- ***Factors that have a positive influence on project team management:*** according to the respondents included in the study, the following factors can have a positive influence on the management of project teams: extensive experience, high qualifications and strong commitment of the team members; a competent manager with leadership qualities; good relationships within the team; appropriate incentives, including financial; a strong link between a positive team atmosphere, effective communication between team members and the team results achieved

- ***Factors negatively influencing the management of project teams:*** the respondents formulated the following factors as a source of deterioration in the management of project teams: excessive workload and lack of sufficient time; the inclusion of incompetent and inappropriate members in the project team; the lack of specific rules in the team; the manifestation of personal attitude; the lack of interest and commitment from team members; the incorrect allocation of tasks; the existence of a poor working environment and atmosphere; the lack of clear regulations and rules; the lack of a

### **3. Recommendations for improving the management of project teams**

In the **third paragraph**, after conducting the research and identifying the specific problem areas, recommendations are formulated to solve the problems and improve the management of project teams. Recommendations are made for each of the following identified problems:

- 1. Strong manifestation of individual characteristics and behaviors (dominate over team ones)***
- 2. The project team does not recognize the potential and use the talents of all team members***
- 3. Project team members do not share responsibility for tasks***
- 4. There is disagreement with the way team decisions are made***
- 5. There is a clear tolerance of misbehaviour***
- 6. Team members are overloaded***
- 7. Real contribution is not recognised and reward for good performance is insufficient***
- 8. Team members don't always get the training they need to perform well***

9. *Team members tend to reject changes and proposed new ways of working*
10. *No time is spent on sharing experiences and disseminating (introducing) good practices.*
11. *Team members do not receive feedback from the project manager*
12. *The project manager does not give freedom of action, opportunity for expression and creativity*
13. *The project manager does not delegate responsibilities effectively*
14. *Tasks and responsibilities among team members are not distributed fairly*
15. *The project team includes insufficiently qualified participants*
16. *The project manager is not fair, objective and impartial*
17. *There is no system for signaling deviations and for monitoring*
18. *Team members are not (mutually) open to criticism*
19. *The project manager does not accept or deal well with criticism*
20. *Conflicts within the team are not addressed and clarified openly*
21. *The project manager does not know how to resolve problems and conflicts, manage and overcome crises*
22. *The project team holds too few meetings (meetings)*
23. *The project manager does not provide the required level of team awareness*
24. *The project manager lacks social competence, interpersonal and communication skills*
25. *The project manager lacks good process and methodological competence*
26. *The project manager does not know how to motivate team members*
27. *The project manager does not have good leadership skills*

### *Summaries and conclusions from chapter three*

1. For the most part, project activity in the industrial enterprises studied is carried out through multidisciplinary (cross-functional) teams. They are composed of experts from different fields, who are positioned in different departments and occupy different positions.

2. The projects carried out are characterised by a wide variety, different objectives, areas and technologies. Most projects were of medium complexity, urgency and strategic importance.

3. The number of participants in the project teams varies from 3 to 16 people. The most commonly used project management method, in almost all cases, is agile. In the realization of a significant part of the projects, the structure used is matrix. The largest number of projects were up to one year in duration. Almost all respondents determined that the size of the project team in terms of number of participants was the right size. All project participants felt that they fit well into the project team.

4. All project team members are pursuing the right goal and have no different vision for the team than the others. The responsibilities of the project participants are clear to all.

5. For most of the project team, the priorities for how resources are used are clear. All have the working materials they need to do their jobs. In most cases, projects are completed within the set timeframes.

## Conclusion

In the conclusion are presented summaries and conclusions from the theoretical and empirical study on the topic of the dissertation and are formulated specific recommendations to industrial enterprises. As a result of the research done in the dissertation, certain conclusions and **generalizations** are reached:

✓ Project activity is increasingly becoming an attractive tool for the implementation of the business initiatives of industrial enterprises and the number of projects carried out by them is also increasing.

✓ Every business organisation is unique and is influenced by a number of factors from the external and internal environment. The characteristics, composition, structure, and condition of industrial enterprises at a given time differ. Applying the same approach, method, model, technique may lead to different results in different companies and could not guarantee success. There are no universal methods for managing project teams that can be used in all enterprises and lead to the same results or success.

✓ The management of project teams should be aimed at creating opportunities and a field of expression for the project team members, motivation to get the most out of them and to get the job done in the best way, satisfaction, awareness that the work being done is important and that their contribution is significant.

✓ The use of specific methods and techniques in the management of certain types of projects can increase efficiency, achieve better results, reduce costs and risks. According to Adrian McKnight, "Achieving business results is realized through project success, and in fact this is how project management strategies lead to organizational success." (McKnight, 2010). The more aligned management is with a particular project, the more effective the management itself. For each project it is possible to develop a specific project management concept according to the type and specifics of the project – specific management for a specific project.

✓ The team is an attractive organizational formation whose development goes through different phases, and the process of reaching team effectiveness is characterized by a gradual, evolutionary type of increasing indicators, required in well-defined time parameters. In the economic literature there are different models for the development of

project teams can be identified. Each of them focuses on different aspects, proposes different tools for managerial influence and, specifically, a benchmark to follow to assist in the realization of team effectiveness in a project. Recommendations are prescribed based on the different roles and specific impacts of individual organizational aspects, resource-personality parameters, and social-psychological interactions. Regardless of the well-established principals, the set of factors is highly specific and the strength/direction/duration of their impact is individual and probabilistic. Despite all the prescriptions, precise planning and preparation, following certain patterns and knowing a wide range of techniques, having the necessary knowledge and tools, in an unpredictable environment, the project team members have to deal with unexpected events. They need to be able to react appropriately and in the best possible way, and also to improve their response, reaction and action to unforeseen events, which can be of a variety of natures and with varying degrees of impact.

✓ The composition, structure, functions and management of the project team depend on the characteristics of the individual project. Team management methods cannot always be put into practice in project teams due to many factors and circumstances, and a highly perfect team is difficult to achieve. Project teams exist for a limited time, after which they are disbanded, and the possibility of developing the team by reaching a degree of high performance is unrealistic in most cases. Important criteria for team success are the expertise and training of both the project manager and the team members, and on the other hand social skills. Social competences are often neglected, but they are of utmost importance. Managing project teams is essential for successful project implementation. The more complex the project, the more complex the management.

✓ The effectiveness of project teams is also complex. Accurate adherence to recommendations and prescriptions is an essential factor, but it is not sufficient for project teams to function well. At the same time, having a well-functioning project team does not guarantee successful project implementation, but it is a necessary prerequisite and a positive factor that contributes to increasing the chance of achieving successful project outcomes. Project teams exist for a limited time, after which they are disbanded and the possibility to develop the team by reaching a high degree of effectiveness is "unrealistic" in most cases. High effectiveness can be achieved in a subsequent project cycle in a different format, based on experience gained, brought in as an introductory factor when starting subsequent project initiatives. Trust can also be used as a mechanism to increase efficiency, which is increasingly receiving research interest.

✓ One of the biggest management challenges in a multi-project environment is managing project teams. It is multi-layered, complex, interdisciplinary, involves multiple components and depends on a variety of factors. The type of projects, complexity, specificity, scope, scale, type of organization, status must be considered. A

characteristic of the multi-project environment is that organisations work simultaneously on multiple projects that are diverse, with different characteristics, and also at different stages of their life cycle. The projects differ significantly from each other, which implies that the requirements for the participants, the leader, the organisation and the management methods must also be different and appropriate to the type of project identified. With newer and unfamiliar products, newer technologies, more complex, large-scale and urgent projects, a larger number of participants are involved in the team, it is more difficult to manage and more difficult to implement the projects. Different projects need to be managed differently. Successful management can be achieved through good prioritization, coordination, effective and proper communication, good cooperation and commitment of the participants. In certain cases, leadership is more important than administrative management of the team for various reasons. The challenge for the leader is to deal with emerging difficulties, problems, conflicts, changes, uncertainty, risk and to find the optimal balance between the opposing influences. By taking a holistic approach, the project team manager is able to tailor and adapt the management style not only to the specifics of the project and certain factors, but also to adjust and adapt it to the needs of the team, the nature of the work activities, the specific situations and requirements at each stage. The set of possessed qualities and competences, broad general culture, logical thinking, knowledge in multiple scientific fields and disciplines are prerequisites for high efficiency and success.

✓ The effectiveness of project teams is complex. Exact adherence to recommendations and prescriptions cannot guarantee a well-functioning team, and a well-functioning high-performing team cannot guarantee successful project implementation. But a well-functioning team is a prerequisite and condition for successful projects. In management, it is not always worth investing a lot of time and effort in striving to achieve an ideal team, and in some situations absolute priority is given to the objectives. Important factors for the success of a project team are the expertise, good professional background of the project manager and the team members, as well as their personality profiles and characteristics. Another important factor with a positive impact is the availability of social skills, which are often "neglected". Good management of project teams is essential for successful project implementation. However, it is to a large extent of a consequential nature, determined by professional and social, personal competences, skills and specificities, expertise, experience and team communication skills. The more complex the project, the more complex its management and the greater will be the importance of the appropriate educational and personal profile of the team members and their manager in achieving project effectiveness and the effectiveness of the team itself. Working in a project team can also be defined as a kind of art, which is conditioned by many factors, including intelligence, way of thinking, ability to deal with different situations, to act successfully in solving certain tasks and problems that arise in different situations in relation to the

work of the project team, etc. Managing project teams can also be defined as an art form. It is not universal, it is multilayered, complex, interdisciplinary, involves multiple components and depends on various factors. There is no single approach, model or scheme for managing project teams that can be valid and appropriate for every project, case, task in organizations and successfully applied and ensure effective project implementation.

The results of the study show that the objective has been achieved - placing research emphasis on exploring the managerial aspects of project teams, the problems and challenges that accompany the work of project teams, the factors influencing project management have been explored and opportunities for improving the management of project teams in industrial enterprises have been revealed. The research tasks have been completed. The research thesis that the management of project teams can be improved by increasing the knowledge, skills and competencies of project team members, and by considering the influence of factors related to project activities has been proved. It is also confirmed by proving the three hypotheses.

#### **IV. A REFERENCE OF THE MAIN CONTRIBUTIONS IN THE THESIS**

1. Based on a comprehensive and critical study, the theoretical knowledge on project teams is enriched by outlining opportunities for improving their management. An original systematization of team member profiles is made based on identified associations between team member characteristics and different animal species. The profiling of team members is aimed at increasing opportunities for improving project work and management aspects of project teams.

2. Based on the study, systematization and comparative evaluation of the existing models for team management, two author's models for project team management are proposed, through the application of which a favorable environment is created for the increase of opportunities for improving the managerial aspects of project activity and teamwork - Model for support and development of project managers through a Council for project-managerial coaching and mutual assistance, and Model for improving the management of project teams, based on four pillars (according to

3. On the basis of the theoretical study, a methodology for analysis and evaluation of opportunities for improving the management of project teams is developed. The methodology has been approbated. The main problems of the project teams and the improvement opportunities for their management are identified.

4. The factors that influence the effectiveness of the project team are defined, and recommendations are proposed to intensify the factors with a positive effect and limit the impact of factors with a negative influence.

## V. LIST OF PUBLICATIONS ON THE TOPIC OF THE THESIS

### *Studies:*

1. Varamezov, L., Panteleva, I., Vranchev, K., **Vranchev, B.** (2023). Investigating the impact of German direct investments at the regional level (on the example of AURUBIS BULGARIA). *Research Almanac. Svishtov, Tsenov Publishing House*, 31, 38-69. ISSN 1312-3815.

### *Articles:*

1. **Vranchev, B.** (2021). Managing project teams – opportunities and challenges. *Annual Almanac PhD students Scientific Researches. D. A. Tsenov Academy of Economics*. Svishtov: Tsenov Publishing House, XIII, 624-640. ISSN: 1313-6542.
2. **Vranchev, B.** (2022). Effectiveness of project teams. *Annual Almanac PhD students Scientific Researches. D. A. Tsenov Academy of Economics*. Svishtov: Tsenov Publishing House, XIV, 315-331. ISSN: 1313-6542.

### *Reports:*

1. **Vranchev, B.** (2021). Managing project teams in a multi-project environment. *The International Scientific and Practical Conference “Sustainable Development and Socio-economic Cohesion in the XXI Century – Trends and Challenges”, dedicated to the 85th anniversary of D. A. Tsenov Academy of Economics, Svishtiv*, 08-09.11.2021, II, 409-415. ISBN: 978-954-23-2069-2 (print), ISBN: 978-954-23-2070-8 (online).
2. **Vranchev, B.** (2022). Socio-demographic characteristics of the municipalities of the Srednogorie region as a basis for the development of a strategic development plan. Proceedings of the *International Scientific Conference “Strategic Planning and Marketing in the Digital World”*, UNWE – Sofia, 11.11.2022, 136-145. ISBN 978-619-232-725-5.



**VI. REFERENCE FOR FULFILMENT OF THE MINIMUM NATIONAL REQUIREMENTS IN RELATION TO THE PROCEDURE FOR OBTAINING THE DOCTORATE**

Indicator	Points
<b>Group of indicators A.</b>	
<i>Indicator 1. Dissertation for the award of educational and scientific degree "Doctor".</i>	
Opportunities for improving the management of project teams in industrial enterprises	50
<i>The dissertation has been discussed and the procedure for its defense has been opened.</i>	
<b>Group of indicators D.</b>	
<i>Sum of indicators 4 to 10</i>	
<b>7. Articles and papers published in non-refereed peer-reviewed journals or published in edited collective volumes</b>	
<b>Vranchev, B.</b> Managing project teams - opportunities and challenges. <i>Annual almanac Annual Almanac PhD students Scientific Researches. D. A. Tsenov Academy of Economics, Svishtov. XIII, 624-640. ISSN: 1313-6542</i>	10
<b>Vranchev, B.</b> Effectiveness of project teams. <i>Annual Almanac PhD students Scientific Researches. D. A. Tsenov Academy of Economics. XIV, 315-331. ISSN: 1313-6542.</i>	10
<b>Vranchev, B.</b> Managing project teams in a multi-project environment. <i>The International Scientific and Practical Conference "Sustainable Development and Socio-economic Cohesion in the XXI Century - Trends and Challenges", dedicated to the 85th anniversary of D. A. Tsenov Academy of Economics". Volume II, 409-415. ISBN: 978-954-23-2069-2 (print), ISBN: 978-954-23-2070-8 (online)</i>	10
<b>Vranchev, B.</b> Socio-demographic characteristics of the municipalities of the Srednogorie region as a basis for the elaboration of a strategic development plan. <i>International Scientific Conference "Strategic Planning and Marketing in the Digital World"</i> , Proceedings, UNWE – Sofia, 11.11.2022, 136-145. ISBN 978-619-232-725-5.	10
<b>9. Studies published in non-refereed peer-reviewed journals or published in edited collective volumes</b>	
Varamezov, L., Panteleeva, I., Vranchev, K., <b>Vranchev, B.</b> (2023). Investigating the impact of German direct investments at the regional level (on the example of AURUBIS BULGARIA). <i>Research Almanac. Svishtov, Tsenov Publishing House, 31, 38-69. ISSN 1312-3815.</i>	3,75
<b>Total points scored - sum of indicators 4 to 10</b>	<b>43,75</b>
<b>Required number of points - sum of indicators 4 to 10</b>	<b>30</b>

## VII. LIST OF PARTICIPATIONS IN NATIONAL AND INTERNATIONAL SCIENTIFIC CONFERENCES AND FORUMS

### Conferences:

1. Zoomtopia Annual Conference 2023, Zoom Video Communications, Inc., 03-04.10.2023
2. Online conference "SoftUni's AI Summit 2023", Software University Sofia, 29-30.04.2023.
3. DIGITAL X 2023. Cologne, DIGITAL X, 20-21.09.2023.
4. Online conference "Who is driving the change? Social Entrepreneurship and the 2030 Agenda", Alumniportal Deutschland, 17-18.11.2022.
5. International Scientific Conference „Strategic Planning and Marketing in the Digital World“, UNWE - Sofia, 11.11.2022.
6. DIGITAL X 2022, DIGITAL X, 13-14.09.2022, Sofia Cologne.
7. The future of doing business in and with China, WU (Vienna University of Economics and Business), Competence Center for Emerging Markets & CEE, Vienna University of Economics and Business, 03.06.2022.
8. The International Scientific and Practical Conference „Sustainable Development and Socio-Economic Cohesion in the XXI Century - Trends and Challenges“, dedicated to the 85th anniversary of the D. A. Cenoff". Svishtov, 08-09.11.2021.
9. Conference „Transition to Green Economy and Employment in Bulgaria - Direction, Goals, Policies, Opportunities and Challenges“, WWF Bulgaria and GBITC, 24.11.2020.

### Seminars:

1. DOAK ZoomTalk mit NXRT, topic „Transformieren Sie Ihren Showroom in eine digitale Erlebniswelt“, Andrea Patzelt (DOAK), 25.05.2023.
2. DOAK ZoomTalk mit Masterplan.com, topic „Wie interne Weiterbildung Ihr Recruiting und Ihr Mitarbeiterbindungsproblem lösen kann“, Andrea Patzelt (DOAK), 10.05.2023.
3. Webinar „Die elektronische Rechnung“, ELO Digital Office GmbH, 25.04.2023.
4. Online seminar „DevOps: Building Skyscrapers in the Sand“, Software University Sofia, 21.03.2023.

5. Emerging Markets Talk „Innovative Africa“, The Competence Center for Emerging Markets & CEE and the Institute for International Marketing Management, Vienna University of Economics and Business, 16.01.2023.
6. Deutscher Online Autohaus Kongress (DOAK), Andrea Patzelt (DOAK), 09-10.01.2023.

### **Webinars:**

1. Webcast “Presentation Time Control App in Verbindung mit Workflows“, CompData Computer GmbH, 24.08.2023.
2. Webinar "Embracing the Future of Work: How to Adapt and Thrive with Artificial Intelligence for a Happier Career" Zoom Video Communications, Inc., 07/20/2023.
3. Webinar “Scaling Success: How Generative AI is Revolutionizing Customer Experience (CX)“, Zoom Video Communications, Inc., June 29, 2023.
4. Webinar “Hybride und virtuelle Veranstaltungen nach Bedarf mit Zoom Webinars, Sessions & Events“, Zoom Video Communications, Inc., 31.05.2023.
5. Webinar “Automatisierung im Kundenservice: Anfrageschwankungen meistern und Wachstumschancen nutzen“, organized by ThinkOwl Europe GmbH, Germany, 16.02.2023.
6. “Race to the Cloud“ webinar, Zoom Video Communications, 17.01.2023.
7. Deutscher Online Autohaus Kongress (DOAK), organized by Andrea Patzelt (DOAK), 05-06.04.2022.
8. Webinar “Improving digital skills in companies“, organized by CVETNET Project and GBITC, 25.11.2020.
9. Webinar “Economic consequences of the COVID-19 pandemic and business support programs“, organized by Raiffeisenbank and GBITC, 08.10.2020.

### **Doctoral Research Sessions:**

1. Doctoral Scientific Session 2022, ECONOMIC ACADEMY "D. A. CENOV" - Svishtov, 02.12.2022.
2. Doctoral Scientific Session 2021, ECONOMIC ACADEMY "D. A. CENOV" - Svishtov, 17.12.2021.
3. Doctoral Scientific Session 2020, ECONOMIC ACADEMY "D. A. CENOV" - Svishtov, 20.11.2020.

## VIII. DECLARATION OF ORIGINALITY AND AUTHENTICITY

by Boyan Dimitrov Vranchev

In connection with the procedure for obtaining the degree of Doctor of Education and Science in the Doctoral Programme in Economics and Management (Industry), I declare:

1. The results and contributions in the dissertation on “The Team Approach in Industrial Enterprises” are original and not borrowed from research and publications in which the author has no participation.

2. The information presented by the author in the form of copies of documents and publications, personally compiled reports, etc. corresponds to the objective truth.

3. The results obtained, described and/or published by other authors are duly and extensively cited in the bibliography.

Declarant:

Svishtov

Boyan Vranchev