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COMPETENCES OF THE PROJECT MANAGER

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Purpose: The main objective of the research presented in this paper was to identify the managerial competences of project team managers. In order to achieve this objective, the first part of the paper explains the meaning of the term "project management" in the literature on management and quality. The second part of the paper is devoted to an analysis of the conducted research, on the basis of which an attempt is made to answer the question: which managerial competences are key in the role of a project manager?
Design/methodology/approach: The research presented in this paper is based on the analysis of the literature on project management and managerial competences. The studies in literature also included secondary sources, which were communications from research of similar scope. The combination of different research methods allowed to obtain a broader context of the studied phenomenon and ensured a higher quality of the conducted research. The diversity of methods was aimed at achieving a consistency of the empirical basis for the inference. A diagnostic survey was adopted as the leading method. The remaining methods applied in the paper were auxiliary (complementary).
Findings: An inseparable element of human life is change, which also accompanies enterprises on a daily basis. The information about changes in the market and competitors, provided every day, is a natural manifestation of economic life. Consequently, everyone has to improve their operations in the area of products, technology and organisation in order to remain on the market. As a result, every person, as well as every economic activity take actions aimed at achieving the intended goals, facing new needs and challenges. The way to achieve the desired results is a process known as a project. The efficient functioning of a project team requires the use of appropriate management support methods and tools, systematic measurement, constant comparison with competitors, removal of barriers and the exploitation of development opportunities.
Research limitations/implications: In the future, research will be continued on a larger research sample.
Practical implications: The paper presents the results of research carried out at a nationwide telecommunications operator that employs several thousand people. This company is part of a large capital group and, due to the group's communication policy, has reserved anonymity. The findings are very interesting and encourage research on a larger scale. They are a valuable source of information for managers responsible for the formation of project teams, the selection of its members, their functioning and project implementation. On the other hand, for persons

responsible for recruiting employees, the results may be useful in terms of developing a project team manager's profile, in particular when identifying the key managerial competences.
Originality/value Based on empirical research, the paper proposes an original set of systemic solutions for project management to improve organisational performance.

Keywords: project management, competences.

Category of the paper: Research paper.

1. Introduction

The dynamic changes taking place in the world also affect the organisation. In organisations, managers constantly have to adapt to changing conditions when making decisions. This presents them with many challenges and is at the same time a source of satisfaction. Competent and effective managers cause important changes in the undertaken projects and in the managed organisations, thus also influencing the environment. Traditionally perceived management functions such as planning, organising, leading and controlling are fulfilled in changing circumstances and efficient managers keep pace with new changes. The proper use by managers of their knowledge and skills as well as available management tools and techniques has a significant impact on the success of projects. Management is focused on the cooperation of the community and causes that its impact gives an effect greater than the sum of actions of individuals in the organisation. In order to increase the efficiency and reduce the risk generated by projects, the managers use the developed management methods and techniques.

Project management is used comprehensively by organisations. It enables the organisation to carry out its activities in a systematic and predictable manner, which significantly reduces the risks of its operations and allows it to undertake projects that would not be possible to implement in normal operations. The techniques used in project management by managers significantly increase the organisation's opportunities of effectively achieving project goals, while neutralising the impact of existing constraints and potential risks, as well as building the motivation of the project team and proper communication between project participants. Enterprises as complex organisations function to a large extent on the basis of interdependencies of individual units. Increasing the effectiveness of their activities is possible thanks to project management, which provides a uniform and standardised platform for cooperation for separate structures. It significantly contributes to improving the quality of cooperation between structures and expanding employees' knowledge of ongoing activities. However, simply applying standards is not enough. A competent project manager with the knowledge, skills, experience, personality traits predisposing him or her to management is required to coordinate the activities to achieve the set goal.

The knowledge of the project manager's key competences that determine his or her effective performance is an important indication in the development of managerial competences. For this reason, the aim of the research was to diagnose the project manager's key competences necessary to fulfill his or her role in project management.

2. Project management

An inseparable element of human life is change, which also accompanies enterprises on a daily basis. The information about changes in the market and competitors, provided every day, is a natural manifestation of economic life. Consequently, everyone has to improve their operations in the area of products, technology and organisation in order to remain on the market. As a result, every person, as well as every economic activity take actions aimed at achieving the intended goals, facing new needs and challenges. The way to achieve the desired results is a process known as a project. It can be concluded that a project is a temporary activity undertaken to produce a unique product, provide a unique service or achieve a unique result (Manewick et al., 2021; Project Management Institute, 2006; El Saba, 2001).

The nature of the project defined as temporary means that it is implemented on a one-off basis within a specified period of time, i.e. it has a strictly defined start and end. Another characteristic feature of the project is that it is also implemented in a manner that is relatively independent of the core economic activity.

The project is also unique because the organisation can implement many similar projects in the form of a project, but each will be unique in its own way: a different client, a different location, a different team, a different way of achieving the required, expected goal.

The project has specific parameters (Trocki et al., 2003 p. 21), defined as scope, cost, requirements and time. These parameters form the so-called triple constraint. They are interdependent, which means that a change in one of them automatically implies a change in at least one of the others. Shorter project implementation time will increase costs as additional employees will have to be engaged. It may also result in a reduction in the scope of works carried out and only certain goals being achieved.

Figure 1 shows the Triple Constraint. It shows the dependencies between the basic parameters of the project. The project implementation requires that the project constraints are kept in balance. To achieve this goal, the project manager must have the appropriate approach, knowledge and skills. It can be said that the project manager is required to have adequate project management competences.

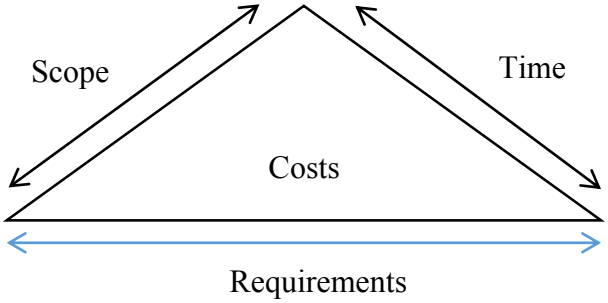

Figure 1. Triple Constraint – dependencies between the basic parameters of the project. Adapted from: Trocki M. Grucza B. Ogonek K. (2003, p. 22).

The project management is planning, delegating, monitoring and controlling all aspects of a project and motivating the people involved to achieve project goals within target performance indicators for time, cost, quality, scope, benefits and risks (Office of Government Commerce 2010, Radujković 2017).

The role of the project manager begins with the preparation of the basic assumptions of the project. The project manager is involved in setting up the project management team (Wysocki, 2013, p. 62). Then, the project initiation planning works are carried out. When the steering committee approves the project, the project manager initiates it. Throughout the project, the project manager manages the scope of the stage (SSM) through planning works (PW), stage control (SC) and stage closure (SCl). Each time it submits the final stage report for approval by the steering committee. In this way, a decision to continue the project is issued. When all stages of the project are completed, the project manager proceeds to the project closure (PC). After this stage, the role of the project manager ends. In turn, the responsibility of the steering committee lasts until the business result of the effects of entire project is completed.

The project manager works closely with the managers of the working teams who are responsible for managing the production of products (PP) (Office of Government Commerce, p. 67; Thomas et al., 2007). It is they who prepare implementation plans for the working teams they manage. Team managers receive from the project manager the groups of tasks to be performed at a given stage of the project. They report to the project manager on the performance of the assigned tasks in accordance with the communication plan in force. After completion of the assigned works, they submit a draft of the completed group of tasks to the project manager. Thanks to the role played by the managers of the working teams in the planning of project stages and risk assessment, the timeliness and quality of the project can be maintained. They, as subject matter experts, are a valuable source of information for the project manager on the proper design of the project implementation and the functionality of the end products. In the case of large and complex projects, the project manager must select the project team in such a way that the assumed business effect for the client is the most important in the project. It is also important to protect the interests of suppliers who often include representatives also from outside the organisation.

The principle of one-tier management applies to each project. It assumes that "my boss's boss is not my boss". It is applied regardless of the level of complexity of the project and regardless of the size of the project team. Thanks to this principle, all members of the project team clearly know who delegates tasks to whom and who reports and is accountable to whom. It enables to maintain order and transparency in the implementation and decision-making of the project.

The project team management is closely linked to the manager's managerial competences. According to the research that was conducted as part of the European project eLene4work in 2014, managers with well-developed soft skills are the most sought-after in the labour market (Jasińska et al., 2015, p. 16). This type of competence is highly valued, especially the soft social competences: team cooperation, interpersonal communication, assertiveness, as they allow for easier team management and adaptation to changing conditions.

The project manager must have high competences in team management and be aware that people are motivated by various factors (IPMA, 2015). The project manager does not have to meet every need of project team members, but should be aware of what motivates them and use his or her insights whenever possible for the benefit of the project. With experts in the team, they need to be given more freedom to demonstrate their professionalism. They will be able to effectively support the project by freely doing their job. This will strengthen their motivating factors, such as self-fulfilment or goal achievement, which trigger their optimal performance.

In the case of project managers, their project management competences, tools and techniques are a very important factor leading to project success. It should be stressed that managing a project team involves a number of tasks, i.e.: team building, analysis of project resources, division of tasks, pre-project training of team members, organisation of work, communication, knowledge sharing, decision making, effective motivation and evaluation, application of a proper project monitoring system and control of the planned task implementation, conflict resolution (Nicholas et al., 2012).

3. Methods and characteristics of the research sample

The research was carried out at a nationwide telecommunications operator that employs several thousand people. This company is part of a large capital group and, due to the group's communication policy, has reserved anonymity. Since the 1990s, the company has been constantly developing organically and through acquisitions, continuously expanding the range of services provided. It currently provides comprehensive online communication solutions such as: TV services and multimedia entertainment, high-speed access to fixed and mobile Internet for private users, companies and institutions.

The research presented in this paper is based on the analysis of the literature on project management. The literature studies also included secondary sources, which were research communications of similar scope.

The diagnostic survey and literature analysis, secondary sources allowed us to obtain a broader context of the phenomenon under study and ensured a higher quality of the research conducted. The variety of methods was intended to achieve consistency in the empirical basis of inference. A diagnostic survey was adopted as the guiding method. The other methods used in the paper were ancillary (complementary).

In the conducted diagnostic survey, an important element was a questionnaire dedicated to the definition of the key competences of the project manager by the respondents based on a five-point scale. This procedure was used to establish the existing situation declared by the respondents. The analysis of the own research was to identify those of the presented competences of a project manager, which most significantly influence the effectiveness of his or her actions. For better clarity, the 46 competences included in the questionnaire were grouped into four thematically coherent blocks as: professional (P), social (S), personal (O) and business (B) competences. The first category included 19 professional competences (representing 41.3% of all surveyed competences). The next one, social competences, had 9 items (representing 19.6% of all surveyed competences). The third category comprised 14 personal competences (representing 30.4% of all surveyed competences). The last category was represented by 4 business competences (representing 8.7% of all surveyed competences). The competences were rated by the respondents on a five-point scale of significance, where 1 meant irrelevant competences and 5 meant very important for the effectiveness of the project manager's actions. The research resulted in an objective source of data for further analysis in order to diagnose the key competences of the project manager.

Project managers of a company operating in the telecommunications industry who manage large projects for the construction of modern infrastructure fibre-optic networks were invited to the research. In order to maintain the anonymity of the company, the questionnaire sheet was sent electronically to the human resources manager for e-mail distribution to project managers in the regions. The questionnaires completed by the project managers were returned to the human resources manager and forwarded collectively to the person conducting the research. Due to this solution, there was a high response from the respondents. Of the 31 questionnaires sent out, 30 were completed. One project manager (woman) from the northern region did not participate in the research due to maternity leave.

Table 1.
Number of respondents by gender and region

Region	Number of respondents		TOTAL respondents
	women	men	
Western	-	8	8
Southern	1	3	4
Central	1	7	8
Eastern	1	4	5
Northern	-*	5	5
TOTAL	**3**	**27**	**30**
*did not participate in the research.			

Source: Own research.

The selected research sample consisted of 31 respondents, of which only 13.3% were women and the rest were men. The research was conducted in the western, southern, central, eastern and northern regions. Among the respondents, the largest group were project managers in the age group 26-35 – 43.3% of all respondents. The next two age groups (36-45 and 46-55) had 26.7% of people in each. Only in the western region there is one project manager over 55 years of age. The highest percentage share of young project managers is in the northern and central regions, and the lowest in the southern region. The half of the respondents declared their work experience ranging from 6 to 15 years, 25% of the respondents indicated the age range below 5 and from 16 to 25 years. In total, 13% of the project managers have more than 25 years of work experience – one in the northern region and two in the western region.

The adopted diagnostic procedure also allowed to collect data on the respondents' project experience. Only six respondents were a member of the project team before taking up the position of project manager, five of them have project management experience ranging from 1 to 5 years, and only one has less than one year of experience. Table 2 contains data on the experience of the respondents in project management (in years) by regions.

Table 2.
Experience of the respondents in project management (in years) by regions

Region	Experience of the respondents in years				TOTAL respondents
	below 1	1-5	6-10	Over 10	
Western	-	3	2	3	8
Southern	-	1	1	2	4
Central	-	3	3	2	8
Eastern	-	2	1	2	5
Northern	1	2	-	2	5
TOTAL	**1 - 3.3%**	**11 - 36.7%**	**7 - 23.3%**	**11 - 36.7%**	**30 - 100.0%**

Source: Own research.

The respondents are experienced project managers with at least several years of experience in this position. As many as 11 respondents declared that they had worked as a project manager for over 10 years. Seven respondents marked their work experience as a project manager between 6 and 10 years, eleven respondents between 1 and 5 years and just one below 1 year. The respondents of the research constitute a group of experienced project managers, which

provides a solid basis for conducting a research for the purpose of examining the key competences of the project manager.

The value of the research group is also determined by the number of projects managed by the respondents as project managers. As many as eighteen respondents out of thirty respondents managed more than 10 projects in their professional careers, eight of which managed more than 20 projects. Only six managers managed up to 5 projects which represents 20% of all respondents. Among them, there is a correlation between short work experience and the smallest number of managed projects.

An additional value of the project manager is the range of his or her management. This parameter was declared by the respondents in response to the question about the maximum size of the project team managed by the project manager. The half of the respondents managed project teams of between 6 and 15 members. Only one project manager from the central region managed a project team of more than 35 people. This is a large and challenging experience in his or her career. Only 10% of the research participants managed teams from 26 to 35 people. The range of managing a team of more than 26 people is a wide range and requires high managerial competences from the manager. In project management, the project manager is supported by the developed methodologies that standardise the series of actions taken, supporting a greater number of interactions.

The characteristics of the research sample in the area of project experience are complemented by the question of the maximum budget managed by the respondents. The data presented in Table 3 were obtained in response.

Table 3.
Maximum project budget managed by the respondents (in PLN)

Region	Maximum project budget managed in PLN				TOTAL respondents
	up to 100 thousand	100 thousand – 1 million	1 million – 10 million	over 10 million	
Western	-	2	4	2	8
Southern	-	-	3	1	4
Central	-	2	5	1	8
Eastern	-	1	4	-	5
Northern	-	1	3	1	5
TOTAL	**-**	**6 - 20.0%**	**19 - 63.3%**	**5 - 16.7%**	**30 - 100.0%**

Source: Own research.

The vast majority of the surveyed project managers improve their competences through self-education (Table 4). This response was indicated by as many as 20 out of 40 indications. Of these, 10 replied that they had also participated in the trainings. Unfortunately, 10 of the project managers declared that they did not improve their competences. Only in the southern region, all project managers are improving their competences. As many as half of the respondents in the western region said that they did not improve their competences. None of the respondents indicated other forms of improving their project manager competences

apart from trainings and self-education. Table 4 summarises the data on the ways in which the surveyed project managers improve their competences by regions.

Table 4.
Ways of improving competences by the project managers by regions

Region	Ways of improving competences				TOTAL indications
	do not improve	trainings	self-education	other	
Western	4	2	4	-	10
Southern	-	3	4	-	7
Central	3	2	5	-	10
Eastern	2	1	3	-	6
Northern	1	2	4	-	7
TOTAL	**10**	**10**	**20**	**-**	**40**

Source: Own research.

Summing up, it should be stated that the surveyed group consists of project managers mostly with extensive experience in project management (eleven out of thirty have over 10 years of experience), both in terms of project management and team management. The majority of respondents have competences that have been confirmed by international certificates (more than 86% of the respondents). It is worth emphasising that the respondents themselves care about the development of their competences. Men predominate among the respondents, accounting for as much as 90% of the research sample, which is significantly different from the company's employment characteristics. The average age of the respondents is statistically higher compared to the demographic data of the company, in which the research was conducted.

4. Key competences of the project manager in the context of own research

Assuming the achievement of the research objective, which was to identify the managerial competences of project team managers, the results obtained from the respondents were analysed using the questionnaire described above.

The research proposed a set of project manager competences following the categorisation proposed by Musioł-Urbańczyk (2010) in research on the same issue. The detailed part of the analysis refers to the results obtained for the individual competences studied. Table 5 presents the competences studied, which are ranked according to their assigned ranks. The lowest sum of ranks proves the highest significance of the project manager's competences affecting the effectiveness of his or her actions.

Table 5.
Ranking of competences according to the sum of ranks

No.	Code	Competence	Sum of ranks
1	P9	Ability to define project goals	272.0
2	O14	Accuracy	273.5
3	P19	Ability to make decisions	288.5
4	B1	Entrepreneurship	308.5
5	O7	Intelligence	325.0
6	B3	Creativity	336.0
7	O10	Persistence	363.5
8	P1	Experience in project management	391.0
9	P3	Ability to manage time in a project	392.0
10	S8	Ability to negotiate	394.0
11	S1	Ability to motivate team members	412.0
12	O1	Self-confidence	439.5
13	P4	Ability to manage costs in a project	441.0
14	P5	Ability to manage quality in a project	444.5
15	O11	Assertiveness	450.0
16	P2	Ability to manage the project scope	508.0
17	B2	Flexibility	520.5
18	S6	Teamwork	606.5
19	O3	Self-regulation (self-control)	623.0
20	P12	Ability to build a team	634.0
21	P7	Ability to manage risks in a project	663.5
22	S3	Ability to communicate	667.5
23	S7	Ability to resolve conflicts in a team	730.5
24	P8	Ability to manage orders in a project	740.5
25	P18	Knowledge of the methodology used in the company implementing the project	744.0
26	S2	Leadership	745.0
27	P13	Ability to apply an appropriate project management style	748.5
28	O4	Integrity, fairness	753.0
29	S5	Ease of making contacts	753.5
30	O9	Coping with stress	776.5
31	P14	Ability to use project management software	787.5
32	P6	Ability to manage communication in a project	802.5
33	O2	Self-awareness	808.0
34	O8	Ambition	834.5
35	P10	Client orientation	910.0
36	P11	Focus on self-development and colleague development	915.5
37	O12	Courage	943.0
38	O5	Loyalty	1,056.5
39	O6	Showing trust	1,071.5
40	S9	Ability to "blend in" with the organisational culture	1,088.5
41	S4	Empathy	1,137.0
42	O13	Optimism	1,139.0
43	B4	Ability to create a vision	1,205.0
44	P16	Legal knowledge	1,230.0
45	P15	Technical knowledge about the implemented project	1,275.0
46	P17	Foreign languages	1,342.0

Source: Own research.

The research also showed that the competences in the business competence category were rated highest, with an arithmetic mean of rating of 4.08 for the entire population surveyed. The lowest arithmetic mean was recorded for rating of professional competences with a score of 3.77. The range of means is 0.31 and represents 6.2% on a five-point scale. Table 6 presents

the aggregate statistical data on the average rating obtained in the competence categories by regions.

Table 6.
Average rating in the competence categories by regions

Region	Competences				Range
	professional	social	personal	business	
Western	3.74	3.76	3.48	3.81	0.33
Southern	4.03	4.06	4.16	4.25	0.22
Central	3.67	3.93	4.10	4.22	0.55
Eastern	3.81	3.71	3.87	4.15	0.44
Northern	3.75	3.89	4.04	4.05	0.30
Arithmetic mean in the surveyed population	**3.77**	**3.86**	**3.90**	**4.08**	**0.31**

Source: Own research.

According to the sum of ranks assigned to competences, 10 competences have been identified that have the greatest impact on the effectiveness of the project manager. Table 7 shows their significance hierarchy and the results of calculations of the coefficient of variation for each competence.

Table 7.
Highest rated competences according to the respondents

No.	Code	Competence	Sum of ranks	Coefficient of variation
1	P9	Ability to define project goals	272.0	0.09
2	O14	Accuracy	273.5	0.09
3	P19	Ability to make decisions	288.5	0.08
4	B1	Entrepreneurship	308.5	0.10
5	O7	Intelligence	325.0	0.10
6	B3	Creativity	336.0	0.11
7	O10	Persistence	363.5	0.12
8	P1	Experience in project management	391.0	0.12
9	P3	Ability to manage time in a project	392.0	0.11
10	S8	Ability to negotiate	394.0	0.13

Source: Own research.

In order for the identified competences to be considered key, they must be characterised by a low coefficient of variation. The 10 competences indicated mainly include: the ability to define project goals, accuracy, ability to make decisions, entrepreneurship, intelligence, creativity and persistence. According to the respondents, the experience in project management, the ability to manage time in a project and the ability to negotiate are also important.

Additionally, a coefficient of the generalised opinion of the respondents K_{max} was calculated for each of the listed competences. According to the formula:

$$K_{\max} = \frac{m_{\max\ j}}{m_j}$$

where:

m_{maxj} – the number of respondents who gave the maximum number of scores when assessing j-th competence,

m_j – the number of respondents who assess j-th competence.

This coefficient indicates the frequency of granting the highest possible rating obtained by the j-th competence. The value of the coefficient K_{max} for individual competences is presented in Table 8.

Table 8.
Highest rated competences and their coefficients K_{max}

No.	Code	Key competences	Mean	K_{max}
1	P9	Ability to define project goals	4.87	0.90
2	O14	Accuracy	4.87	0.90
3	P19	Ability to make decisions	4.83	0.83
4	B1	Entrepreneurship	4.80	0.83
5	O7	Intelligence	4.77	0.80
6	B3	Creativity	4.73	0.77
7	O10	Persistence	4.67	0.70
8	P1	Experience in project management	4.67	0.70
9	P3	Ability to manage time in a project	4.60	0.60
10	S8	Ability to negotiate	4.60	0.67

Source: Own research.

According to the respondents, the most preferred competence is *the ability to define project goals*. The project goal is defined by the project manager at the project initiation stage, allowing the business case to be clarified. This is a critical moment of the entire project, on which the success of the entire project depends. For this reason, this competence was considered the most important by the surveyed population of professionals. The project manager's high level of professionalism will enable him or her to precisely define the goal in the project initiation documentation, which will serve as a base reference at all stages of the project works for all project stakeholders.

The *accuracy* required in this respect was emphasised by the respondents also in the form of another key competence in the second position of the ranking. The obtained results for the first two competences are very similar. Both competences have the same mean of the obtained rating (4.87) and a very low coefficient of variation amounting to 0.9 in both cases. Similarly, the coefficient Kmax is equal to 0.90, which proves that both competences received the highest rating the same number of times.

The third rank is the *ability to make decisions*. This competence accompanies the project manager at every stage of the project life cycle and in the many interactions taking place with project stakeholders. It should be noted that the role of the project manager is based on his or

her decision-making capacity. Therefore, the quality of work and its effects in other members of the project team depends to a large extent on the level of this competence held by the project manager. It seems justified that project management practitioners declare such a high significance of this competence.

The set of the project manager's key competences also includes two more professional competences: *experience in project management and* the ability *to manage time in a project*. In each area of management, the manager's *experience* is extremely important for the effectiveness of his or her actions. It allows the project manager to accurately select the available techniques and tools that will support him or her and the structures subordinate to him or her in carrying out the tasks. In project management, especially for projects as large and complex as infrastructure investments, the experience of the project manager has a positive effect on the project from the beginning of its initiation (Scott-Young, Samson, 2008). Each passing of the project management procedure gives the project manager a package of new experiences, and the project management methodologies themselves formalise these aspects in the form of recommendations for preparing a register of experiences. The high rating given to this competence by a group of project managers with many years of experience is therefore justified.

The same is true for the competence, which is the *ability to manage time in a project*. Project managers acting within the framework of accepted standards, which support them significantly in the implementation of projects, have time management procedures and tools at their disposal. They are responsible for their timeliness and the timeliness of other members of the project team. The timeliness of the entire project may be based on the high level of the aforementioned competence of the project manager. The indication of this competence as a key one can orient the adepts of project management to the significance of scheduling.

In addition to *accuracy,* two other personal competences were included in the project manager's list of key competences. The first competence is *intelligence* with a high fifth rank. This competence in project management supports the ability to actively process a lot of information that a project manager has to deal with. It enables to efficiently respond to emerging changes while maintaining the primacy of striving to achieve the project goal. The predisposition to multi-threaded work using expert knowledge and skills is a competence that requires a project manager to have a high degree of intellectual disposition.

The above competence goes hand in hand with another personal competence, *persistence,* which has been considered as a key competence. Projects are complex undertakings implemented on various levels and at many stages. They require the project manager to work persistently during long systematic implementation of tasks as well as in periods of dynamic unforeseen changes. The persistence can be based on the determination of a project management novice as well as on the many years of experience of a practising project manager. Whatever the motivation of the project manager may be, the need for persistence is determined by the role the project manager plays in the project. Dividing the project implementation into

stages requires the active presence of the project manager at each stage. Other members of the project team are included in the implementation in accordance with their assigned tasks, for longer or shorter periods of time. The awareness of the significance of this competence, which is *persistence*, will allow the project manager to successfully complete each stage of the project.

The least numerous group of business competences among all the project manager's competences surveyed has two representatives among the key competences. *Entrepreneurship* was ranked fourth, and *creativity* was ranked sixth. The surveyed group of experienced project managers implementing large and complex investments in fibre-optic infrastructure throughout Poland is often confronted with the need for a business approach to the implementation of these demanding projects. Other project managers implementing projects, even in different industries, should also demonstrate entrepreneurship and creativity.

The key competences of the project manager identified as a result of the conducted research can be assessed as consistent and logical relationships can be found between them.

The applied division of competences into four thematically coherent categories, namely professional, social, personal and business competences, was introduced in order to achieve greater clarity. The research showed that, on average, the competences in the least numerous category of business competences were rated highest (4.08) and the competences in the most numerous category of professional competences were rated lowest (3.77). This shows how important the business approach is for the effectiveness of the project manager's actions.

All other competences should also be considered as dedicated to project managers, with particular emphasis on those that have been identified as key competences.

The development of competences is a continuous process (Balcerzyk, 2018), and their development results in the gradual transition to a higher and higher level of mastery. There is no closed list of competences in organisations. The researchers only create various sets of their combinations, profiles of competences that relate to the specific needs of the organisation and its specificity (Balcerzyk, 2021; Balcerzyk and Karczewski 2022; Czaińska, 2021; Simerson and Venn, 2010; Sus and Sylwestrzak, 2021). To a large extent, the diversity of approaches results from the specificity of research areas and the extensive management science, which allows to describe these issues. However, it is indisputable that an effective leader, a manager, must have specific competences and play various roles in order to successfully find himself or herself in a variety of difficult and unexpected situations.

5. Discussion

Based on the developed profile of the project manager's competences, the question can be answered: *Does the project manager have the key competences required for his or her position and are they at the appropriate level*? It is a useful tool for HR structures, which can be used

in the personnel selection of employees for the position of project manager, in periodic evaluation of employees in this position, in developing a development path for project managers and preparing competence trainings, as well as in motivating interviews and coaching.

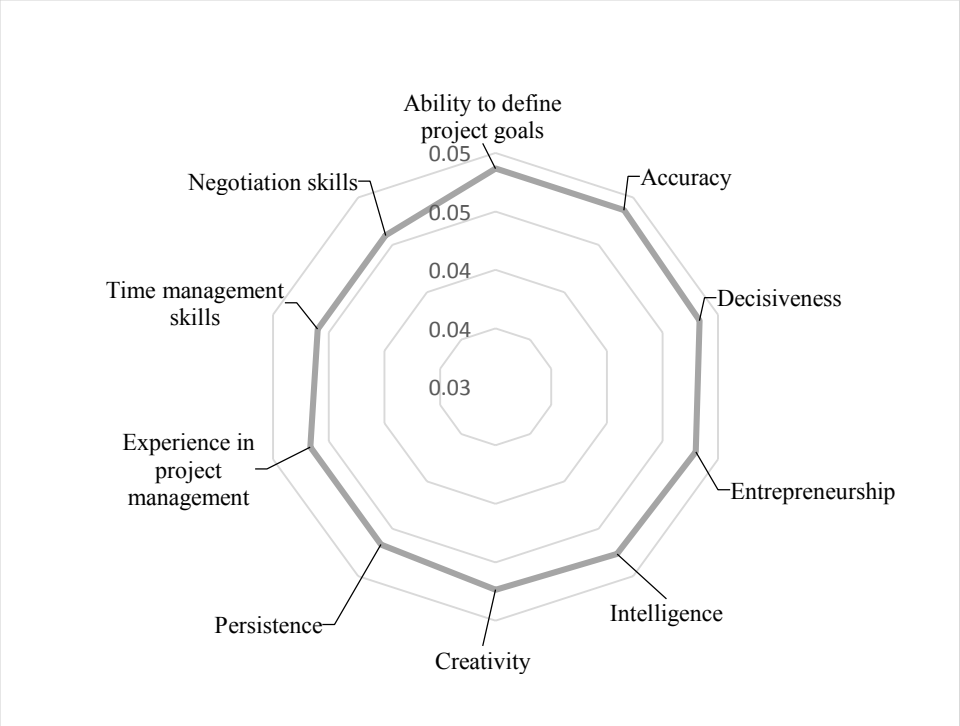

Figure 1. Project manager's profile of competences. Source: Own research.

The project manager's profile of competences will allow recruiters to formulate and publish a targeted job offer that includes a description of the competences sought. Applicants will know what is expected of them in the offered position. In the planning of internal promotions, it will be possible to make a precise selection of the employee who is best suited for the vacant position.

With a defined profile of competences for a project manager, it will be easier for the superior to formulate expectations for subordinates and to find an explanation for recurring failures in project implementation. All respondents indicated that their competences are assessed by their superior, and 75% of them also by project stakeholders. Only 16% of the respondents indicated that their competences are verified by the HR department, and 7% of them also by recruiters.

The competences held are also verified to some extent in the certification process. In the surveyed population of project managers, 86% had a project management certificate issued by an international certifying authority. Each certificate is a confirmation of high competences in the area of project management. One of the surveyed project managers boasted the prestigious project management professional (PMP) certificate, which is recognised as the gold standard of project management certification. The PMP certificate confirms high competences to perform the role of a project manager and to manage projects and teams. This fact demonstrates the respondents' knowledge of advanced project management techniques.

6. Conclusions

The definition of the project manager's key competences is important for the effectiveness of the recruitment process for this position, for conducting periodic employee evaluations and for developing a dedicated training programme. Above all, however, the knowledge of the project manager's key competences is essential for the project managers themselves to take effective actions to implement the project. The profile of competences will allow the targeted development of managerial traits and, as a result, will increase project managers' satisfaction with effective management.

The identification of the project manager's key competences and assigning them to the level indicated in the research made it possible to design the profile of competences of the project manager. This profile can be a useful tool in the hands of an experienced human resources specialist, for recruiters and management staff supervising the implementation of projects. In training structures, this profile will support the preparation of training programmes assisting in the development of these specific competences. It can also serve as a basis for further research, in order to further identify the key competences of the project manager, which are important for the effectiveness of project management.

References

1. Balcerzyk, R. (2018). Wpływ kompetencji oficerów na rozwój ich na rozwój ich kariery zawodowej. *Zarządzanie Zasobami Ludzkimi, nr 3-4*, pp. 122-123.
2. Balcerzyk, D. (2021). The Role of a Leader in Contemporary Organizations. *European Research Studies Journal, Vol. XXIV Iss. 1,* pp. 226-240. DOI: 10.35808/ersj/1959.
3. Balcerzyk, D., Karczewski, D. (2022). The competencies of a manager as a factor contributing to the success of a company in the VUCA environment. *Scientific Papers of Silesian University of Technology – Organization and Management Series, No. 157,* pp. 9-23, DOI: http://dx.doi.org/10.29119/1641-3466.2022.157.1.
4. Czaińska, K. (2021). ICT Labor Market Needs: The Gap in Secondary School Graduate. Soft Skills as a Challenge for the Educational System. *Human Resource Management [Zarzadzanie Zasobami Ludzkimi], Iss. 1/2,* pp. 195-220.
5. El-Saba, S. (2001). The skills and career path of an effective project manager. International *Journal of Project Management, Vol. 19, Iss. 1,* pp. 1-7. https://doi.org/10.1016/S0263-7863(99)00034-4.
6. IPMA (2015). Individual competence baseline for project, programme & portfolio management. Version 4.0. Zurich, p. 5.

7. Kaufmann, C., Kock, A. (2022). Does project management matter? The relationship between project management effort, complexity, and profitability. *International Journal of Project Management, Vol. 40, Iss. 6,* pp. 624-633. https://doi.org/10.1016/j.ijproman.2022.05.007.
8. Marnewick, C., Marnewick, A.L. (2021). Digitalization of project management: Opportunities in research and practice. *Project Leadership and Society, Vol. 2, 100026*, https://doi.org/10.1016/j.plas.2021.100026.
9. Musioł-Urbańczyk, A. (2010). Kluczowe kompetencje kierownika projektu. *Marketing i Zarządzanie, 2(10),* pp. 93-108.
10. Nicholas, J.M., Steyn, H. (2012). *Zarządzanie projektami. Zastosowanie w biznesie, inżynierii i nowoczesnych technologiach*. Warszawa: Oficyna a Wolters Kluwer business, p. 18.
11. Office of Government Commerce (2010). *PRINCE 2TM – Skuteczne Zarządzanie Projektami.* London: The Stationery Office (TSO).
12. Podgórska, K., Jasińska, M. (2015). Między oczekiwaniami a rzeczywistością. Umiejętności miękkie u osób wchodzących na rynek pracy. *e-mentor, nr 5(62)*, pp. 16-20.
13. Project Management Institute Inc. (2006). *Kompendium wiedzy o zarządzaniu projektami. PMBOK® Guide III edycja*. Warszawa: MT&DC, p. 5.
14. Project Management Institute Inc. (2017). *A guide to the Project Management Body Of Knowledge. PMBOK® Guide VI edycja.* Warszawa: MT&DC.
15. Radujković, M., Sjekavica, M. (2017). Project Management Success Factors. *Procedia Engineering, 196,* pp. 607-615.
16. Scott-Young, Ch., Samson, D. (2008). Project success and project team management: Evidence from capital projects in the process industries. *Journal of Operations Management, Vol. 26, Iss. 6,* pp. 749-766. https://doi.org/10.1016/j.jom.2007.10.006.
17. Simerson, B.K., Venn, M.L. (2010). *Menedżer jako lider*. Warszawa: Oficyna a Wolters Kluwer business.
18. Sus, A., Sylwestrzak, B. (2021). Evolution of the Labor Market and Competency Requirements in Industry 4.0 versus the Covid-19 Pandemic. *European Research Studies Journal, Vol. XXIV, Iss. 1,* pp. 494-506.
19. Thomas, J., Mullaly, M. (2007). Understanding the Value of Project Management: First Steps on an International Investigation in Search of Value. *Project Management Journal, 38(3),* 74-89. https://doi.org/10.1002/pmj.20007.
20. Trocki, M., Grucza, B., Ogonek, K. (2003). Zarządzanie Projektami. Warszawa: PWE.
21. Wysocki, R. (2013). Efektywne zarządzanie projektami. Tradycyjne, zwinne, ekstremalne. Gliwice: Helion, p. 62.