

# PROJECT MANAGER DEVELOPMENT PATHS

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**Introduction/background:** Project managers have a significant responsibility both for the content of the project and for the personnel they manage. However, not everyone can become a Project Manager, because in addition to the knowledge gained through numerous courses and trainings, this person should have appropriate competences that cannot be acquired solely through learning.

**Aim of the paper:** The aim of the study was to examine the development paths of the project manager and make an attempt to determine the most effective way to acquire competences in the field of project management.

**Materials and methods:** The research was carried out in the following steps: an analysis of the literature was performed in the field of project managers' competences, their scope, significance and possibilities of confirmation, e.g. through certification. Afterwards, a survey was conducted among a group of professional project managers.

**Results and conclusions:** The result of the work is an indication of which education paths related to the project management process are useful and enable the preparation of people to become project managers.

**Keywords:** Project Manager, competences, development paths.

## 1. Introduction

The project manager (PM, Project Manager - PM) plays a very important role in the implementation and management of the project, and is described—in many publications as a leader, director, manager or leader. His decisions affect the entire process of preparing and running the project, until the final settlement.

Therefore, they have a responsibility not only for the project's success but also for the individuals affected by their decisions. For this reason, PM should have the expertise, experience and appropriate competences needed to manage the project and the people.

There are many paths for the professional development of a project manager. These include: completion of studies in project management, completion of studies not related to project management, supplementing the knowledge with postgraduate studies, completion of numerous courses and trainings, as well as licenses and certifications in the field of project management. In addition to the expertise acquired at various levels of education, professional experience is an integral part of the project manager's work. In this case, there are also several possibilities: starting from student internships through gaining experience in lower positions (e.g. a member of a project team) to gaining experience in jobs connected with the profession. Therefore, there is no single path to acquire knowledge and experience of project managers. In this work, the authors aim to examine the development paths of the project manager and attempt to determine the most effective way to acquire competences in the field of project management.

## **2. Literature review**

### **3. Project manager – characteristics of the profession**

A project is an organization established for a specific period of time with the task of creating predetermined and unique results, at a specific time, and using pre-established resources. For such an action, a person is necessary to carry it out from beginning to end. This individual is commonly referred to as a project manager, (Prince2, 2009, p. 7).

A general definition of a project manager can be found, for example, in PMBOOK - "... is the person assigned by the project organisation to lead the team responsible for achieving the project objectives" (PMBOOK..., 2017). According to Sułkowski (2011, p. 189), leadership play a significant role in the theory and practice of management. These concepts concern the issue of shaping, but also affect the vision of the development of the entire organization or group (managing people). According to the author, management in the area of management refers to the formal and informal coordination of activities of a group of employees. Its tasks serve the implementation of organizational goals. The manager's group responsible for organizational issues should have a formalized structure. The key tasks of the manager include: controlling employees, motivating them, solving problems, as well as facilitating communication between employees and the environment. The relationship is of a manager-employee nature. Involvement in the relationship between the manager and employees can take many forms – from lack of commitment to full, strong emotional involvement. To sum up, a manager is a person who has responsibility for a task or human resources. In order to achieve the intended goal, the manager must demonstrate competence and exceptional skills. The basis for the success of each task, including the project, is the cooperation between the manager and members of the project team (Słownik on-line).

**Table 1.**

*Stages of development of project management over the years*

<b>Stages of project management development</b>	<b>Characteristics of the role of the project manager</b>	<b>Criteria for selecting a project manager</b>
<b>Traditional Project Management Period (1960-1985)</b>	- full responsibility for the project, related to the expertise (substantive, technical), i.e. precisely in the field of the project, -role similar to that of a line manager, - formal rights resulting from the job description, - no influence on the assessment of team members.	high level of expertise
<b>Transitional period (1986-1993)</b>	- lack or full responsibility for the project, - independent selection of project team members responsible for individual substantive areas of the project, - informal influence on the assessment of team members.	membership in the management staff (being a functional manager)
<b>The period of modern project management (1994 -)</b>	- project manager in the role of integrator of resources, knowledge and processes, - formal influence on the evaluation of project team members together with line managers.	high level of not only substantive knowledge, but also soft skills.

Source: Piwowski-Sulej, 2013, p. 82.

According to the information provided in Table 1, the tasks and criteria for selecting the project manager have changed over the years. For many years, the project manager was not assigned so many roles, which made this profession underestimated.

Currently, PM acts as an integrator of knowledge resources and processes of a given project. They have a formal influence on the assessment of project team members. In cases where there is more than one project manager – the responsibility is distributed among all PMs. The selection of project managers now depends on such criteria as: the level of substantive knowledge and a high level of soft skills. The project manager plays the most crucial role in the project management team, as they are not only responsible for the course and implementation of individual project activities, but also coordinate, check and evaluate the work of people in lower, subordinate positions. Below is an illustration depicting various levels of management in the project team (Piwowski-Sulej, 2013, p. 82).

Minzberg (2004, p. 197) in his scientific research studied the work of a Project Manager in various organizations. According to the author, the project manager has a threefold role in the project, namely:

- 1) Interpersonal – called interchangeably, it has a representative function. PM's tasks include greeting guests, participating in ceremonies and meetings, representing the organization, giving speeches or interviews, etc.
- 2) Information – collects and disseminates information. Monitors and evaluates the behavior and work of team members, provides information about the project to external parties.
- 3) Decision-making – their task is to improve the project, counteract disruptions in the implementation of projects, distribute resources, assign tasks in the team and negotiate with other project partners.

The project manager carries a tremendous responsibility due to their position and the tasks assigned to them. The scope of PM's work includes (Wachowiak et al., 2004, p. 20):

- analysis of the project environment,
- division of tasks between employees of the project team,
- selection of team members – recruitment for positions,
- improving team members by organizing courses and trainings,
- organization of work in a team,
- integrating the team,
- taking care of positive communication in the team,
- sharing knowledge and experience,
- making decisions important for the project and the team,
- application of the incentive system for the team,
- evaluating team members,
- conflict resolution.

To sum up, a project manager is a person who plays the most important role in coordinating the entire project, starting from the selection of employees and assigning their roles to the final settlement of the project. PM has a huge responsibility associated with a large number of tasks and works. Therefore, the project manager acts as a supervisor between the project management team, contractors and people affected by the project.

#### **4. Qualifications and competences of the project manager in the context of IPMA, PMI and PRINCE2 certification.**

To achieve success, a project manager should have: knowledge, experience and skills. Spalek (2012, p. 12) believes that the choice of PM in the context of his knowledge and competences has the greatest impact on the development of the project. More broadly, a project manager – according to the author – is a person who not only has knowledge and competences, but above all, is able to use them both in terms of project management and in contacts with colleagues, subordinates, partners and clients of the project.

Initially, it is worth focusing on competences, i.e. the range of attitudes and skills that PM should manifest. There are many divisions and guidelines for the competence of the project manager. In their publication, Trocki and Gruzca (2007) pointed out that the project manager should be a very competent person who can manage a group, therefore the PM should have the following qualities:

- the ability to encourage colleagues to act,
- firmness,

- assertiveness,
- ability to cope with stressful situations and work under pressure,
- ability to plan and manage time,
- entrepreneurship,
- interpersonal skills.

Kandfer (2012, pp. 69-70) highlights another, in her opinion, very important skill of a project manager, which directly affects the success or failure of the project, namely – communication management. According to the author, communication management includes "the *processes* required to ensure the timely and correct development, collection, distribution, storage, retrieval of project information and its final disposal".

In turn, the article by Musioł-Urbańczyk (2010, pp. 96-97) shows an attempt to analyze models of effective competences for managers and project managers. The author has developed a list of 46 competences, which have been divided into four groups: professional competences, social competences, personal competences, and business competences. The analysis carried out by the author of the research shows that the key competences of the project manager that affect the effectiveness of activities are: communication skills, decision-making skills, leadership, ability to motivate team members, team building skills, ability to manage communication in the project, teamwork, negotiation skills, loyalty and flexibility. According to the author, social competences are of the greatest importance for the project.

In addition to scientific papers and other publications describing project manager competences, internationally recognized solutions have been developed and are being applied in practice, such as Project Excellence Baseline 4.0. developed by the International Project Management Association (IPMA, 2015), which describe such elements as: contextual competences, people and practice. Every project manager should have these competences. According to IPMA, PM's competences involve the application of knowledge, skills and abilities in order to achieve the desired result of the project. The new competency model introduced by IPMA assigns appropriate knowledge and skills to each of the above-mentioned elements of competence. To assess the level of competence according to IPMA, a model of Key Competence Indicators has been constructed. The obtained indicators are a key element in the PM certification program (Marek-Kołodziej et al., 2018, p. 264).

The first element of the project manager's competence, according to the IPMA assumptions, is human competence. This includes the general personal and social predispositions of PM needed for the implementation of the project. Human competence contains ten components, which include: self-reflection and self-management, internal cohesion and reliability, interpersonal communication, relationships and commitment, leadership, teamwork, conflicts and crises, entrepreneurship and creativity, negotiation, as well as result orientation.

The second group of components falling within the competence of the PM according to IPMA are perspectives. They concern the knowledge of the project manager about the methods, tools and techniques that PM should have in order to operate effectively (Załoga, 2013).

The last (third) component of PM's competence under IPMA certification is practical competence, i.e. the application of knowledge and skills in the field of project planning and implementation. IPMA has distinguished thirteen components, which include: project definition, requirements, objectives and benefits, scope, project time management, project organization and communication, quality, finance, resources, procurement, planning and control, risk, stakeholders, change and transformation (IPMA, 2015).

All three components of the project manager's competences are included in the key competence indicators, forming the foundation of IPMA certification. It is also worth mentioning that IPMA also introduced the concept of the eye of project manager's competence, which includes three parts: behavioral competence, technical competence and contextual competence, all of which encompass elements of project management. The figure below presents in detail the elements included in the competence of the project manager according to IPMA (Biskupek, Spalek, 2016).

**Table 2.**  
*Competences of the project manager according to IPMA*

<b>Behavioral competences</b>	<b>Technical competences</b>	<b>Contextual competences</b>
Leadership	Stakeholders	Project orientation
Commitment and Motivation	Risk	Finance
Self-control	Quality	Program orientation
Assertiveness	Resources	Portfolio orientation
Openness	Control and reporting	Permanent organizational structures
Creativity	Communication	Human resource management
Result orientation	Recognition changes	Business

Source: Biskupek, Spalek, 2016, pp. 18-19.

Another way to confirm the competence in the field of project management is to obtain the PRINCE2 certificate (Projects in Controlled Environment). It is a development of the PROMPT (Project Resource Organisation Management Planning Technique) project management methodology based on the structural approach, developed in the mid-70s. PRINCE2 contains a set of methods and criteria divided into stages that allow effective management of resources and regular monitoring of project phases, which is important because it fully describes the roles that are necessary for project management; describes the responsibilities of individual people involved in the project, and their decision-making and executive responsibility. In PRINCE2, a project manager is defined as someone authorized to lead a project on behalf of the Steering Committee. The PM's primary responsibility is to ensure that the project is implemented within certain criteria: time, costs, quality, scope, risk and benefits (Bukowski, 2008, p. 24).

To fulfill those requirements, the project manager should have competences, which PRINCE 2 methodology includes: planning, time management, personnel management, problem solving, meticulousness, communication, negotiation, conflict management (Wodecka-Hyjek, 2010).

Another certification path is described by the methodology developed by the Project Management Institute (PMI). PMI's "Project Management Body of Knowledge" (PMBOK, 2019) book devotes an entire chapter to the role of a project manager. PMI describes the canon of knowledge about project management. It contains proven and generally used, traditional, but also innovative practices in the field of project management. PMI is a system of practices, procedures, methods and principles used by people within one task. PMI's project manager's competence is illustrated in the talent triangle. It focuses on three core sets of competences, which include:

- technical project management,
- leadership,
- with strategic and business management.

Technical skills play an important role in project management, but are currently insufficient in a complex and competitive market. Therefore, the project manager must operate with technical, leadership and strategic competences in order to fully manage the project accurately.

## 5. Professional experience of the project manager

Work experience is one of the two most important aspects that employers take into account when selecting a candidate for a given position. According to scientific research conducted by Dawid-Sawicka et al. (2022), more than two-thirds of all employers (68%) take into account the length of seniority.

Oleksyn (2006) directly links professional experience with the skills that a project manager should have. According to the author, the greater PM's experience, the greater their skills. An important mention is the fact that the author believes that professional experience is not a result proportional to the years worked in one place of employment. Oleksyn claims that "twenty years of experience in the same position *is a two-year experience, repeated ten times, or a four-year experience repeated five times, because work in the same position lasting more than four or five years usually does not significantly enrich the experience*" (Oleksyn, 2006, p. 56).

Walkowiak (2004) claims that professional experience is gained both through practice and through training and observation. In addition, the author constructed a model of competence formation through experience, which shows that initial competences should be at a higher level due to the improvement of input competences in the work process. Process continuity is possible through feedback and subsequent modifications of output competences.

In turn, Hofman (2012, p. 96) analyzed the labor market in terms of advertisements (job offers) for the position of PM, project manager and project manager from various industries. Analysis of the research results allowed the author to determine what are the required

competences, qualifications and skills of PM from future candidates. Out of 100 job offers for project manager posted on the portal: 44 ads concerned the IT industry, 20 – services, 14 – production, 11 – construction, 5 – telecommunications, 3 – banking, 2 – energy, 1 – education. This means that PM should have not only experience and knowledge in the field of project implementation but also broad general knowledge of the functioning of many industries in which projects are implemented. It is also associated with general flexibility and willingness to constantly improve.

## **6. Recommendations for improving the competences and qualifications of the project manager in the light of the subject's literature**

The workshop at the disposal of PM is very important for the functioning of the project and its results. The competences and qualifications of PM should be constantly improved and developed. Project management is a scientific field that follows innovations, looking ever newer solutions.

Improving the competences of the project manager should include:

- identifying PM competences,
- defining the model of competences,
- examination of the current level of competence,
- identifying competence gaps,
- improving competences,
- monitoring and control.

The method of improving competences can be carried out using and applying various methods and techniques. It can take place in a formal way – e.g. by participating in a professional training or in an informal way – by exchanging experiences in project work. Sitko-Lutek (2004, p. 132) conducted scientific research, which shows that PMs prefer active methods of improving their competences. Theoretical, short, external, one-off and non-independent forms of improvement prevail.

In order to improve key competences, competence gaps should be verified – i.e. those behaviors and areas where a project manager exhibits the least proficiency. The project manager should therefore analyze their behavior and then take actions that will aim at self-improvement.

To sum up, the project manager has one of the most important roles, because he has a huge responsibility for the proper implementation of the project. Currently, PMs from many industries are sought on the labor market, and the key attribute needed for employment is experience. The project manager gains experience not only during his professional work, but also by improving his key skills. When participating in various forms of professional development, it is important to gain knowledge about the individual way of learning – this will



then enable faster acquisition of knowledge that will be accumulated in a sustainable way. The project manager is obliged to continuously educate themselves in the field of their competence gaps. Thanks to this, their place on the labor market will be secure, and the projects they implement will have a greater chance of success.

## **7. How the tests were carried out**

The aim of the study was to investigate and determine the development paths of project managers. The following questions were asked in a survey:

1. What competences were emphasized during the acquisition of knowledge (education, courses, training)?
2. What was the impact of additional education activities on existing skills?
3. What are the possible further proposals for the development of competences in the field of project management by PM?
4. What is the impact of education on the scale of the managed project in terms of both the budget and the scale of people who are dependent on the decision of the PM?

In the conducted research, the method of diagnostic survey carried out by means of a questionnaire was used. An original questionnaire of the survey was developed, containing the imprint and three parts:

- Part 1. Current professional situation – comprised closed questions, the aim of which was to obtain the information from the respondents about their current education and current place of employment.
- Part 2. Professional career – included closed or conjunctive questions concerning PM's participation in courses, trainings, internships and additional activities expanding competences and qualifications.
- Part 3. Competences – contained open, closed and conjunctive questions regarding competences acquired in various ways. This section also included questions about further plans for the development of their qualifications.

The research was carried out in June 2022. The following research steps were carried out:

- sending out the surveys;
- explaining to the respondents how to complete the questionnaires;
- collecting completed surveys and their analysis.

The questionnaire was sent via a google form to 44 respondents, who were project managers working across Poland. In the further part of the publication, the results of the study are presented along with an attempt to interpret them.

## 8. Results obtained

The relevant survey received responses from 25 project managers ( $n = 25$ ). 60% of respondents ( $n = 15$ ) are men and the remaining 40% were women ( $n = 10$ ).

The largest group of respondents were people aged 40-50, constituting 40% of the total group. 32% of PMs are people aged 25-30. 20% of respondents are between 30-40 years old. The smallest group of respondents (8%,  $n = 2$ ) are people aged 50 and over. This means that respondents are expected to have professional experience that would allow them to obtain a reliable overview of the surveyed group.

Due to the small number of respondents, the following surveys should be treated as preliminary – verifying the research tool in terms of the possibility of obtaining results that could be considered reliable.

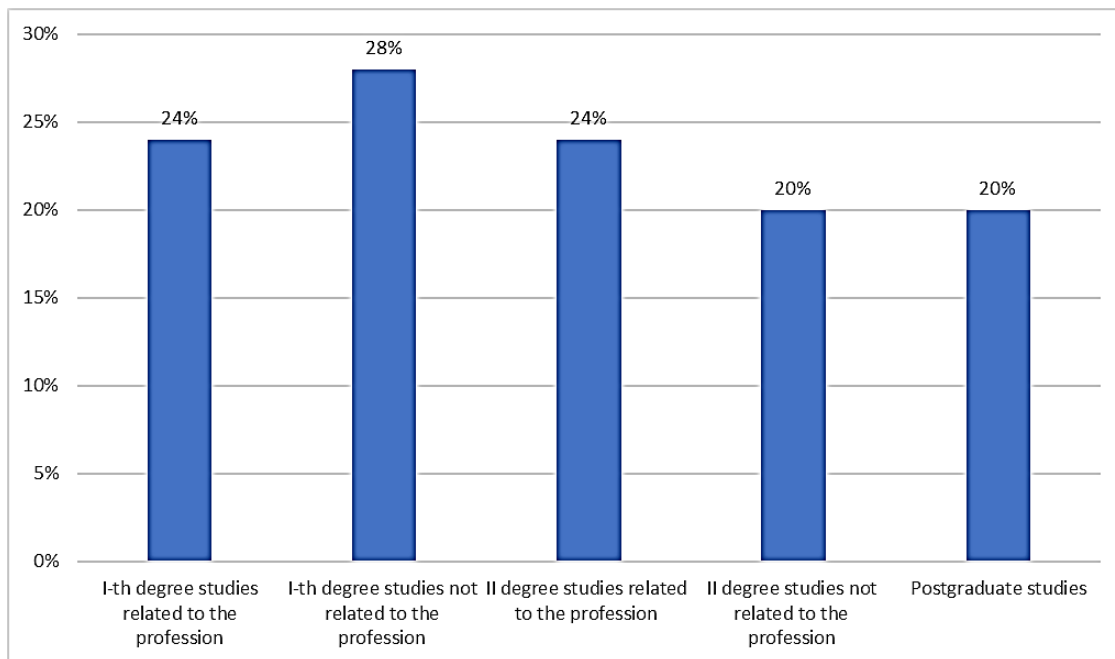
## 9. Education of project managers

The largest group of respondents are people with higher education of the second degree (completed master's studies) – 76% of respondents marked such an answer, 16% of people had first-cycle education (engineering or bachelor's degree), and 8% of people participating in the survey had a tertiary education. None of the respondents had a lower level of education.

On the other hand, in the answers to the question about the nature of their education, 28% of respondents indicated that they had completed engineering or bachelor's studies, not related to their current profession. 24% of respondents have completed engineering or high school studies related to their profession. 24% of respondents have a master's degree in a field related to their profession, while 20% of respondents have master's degrees not related to their current professional work. In addition, 20% of the surveyed people indicated that they had completed additional supplementary studies, e.g. postgraduate studies expanding knowledge and entitlements. A similar group of respondents are people with second-cycle studies related to their current profession, as well as those who have a master's degree not related to their current profession. The obtained data show that the completed field of study is not a determinant for taking up a job as a PM, however, it indicates a strong connection between the functions of a project manager who should have completed higher education, however, in many cases the field of study does not disqualify to take up a job as a PM (Fig. 1)<sup>1</sup>.

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<sup>1</sup> Let us remind you that none of the respondents declared education lower than first-cycle studies.

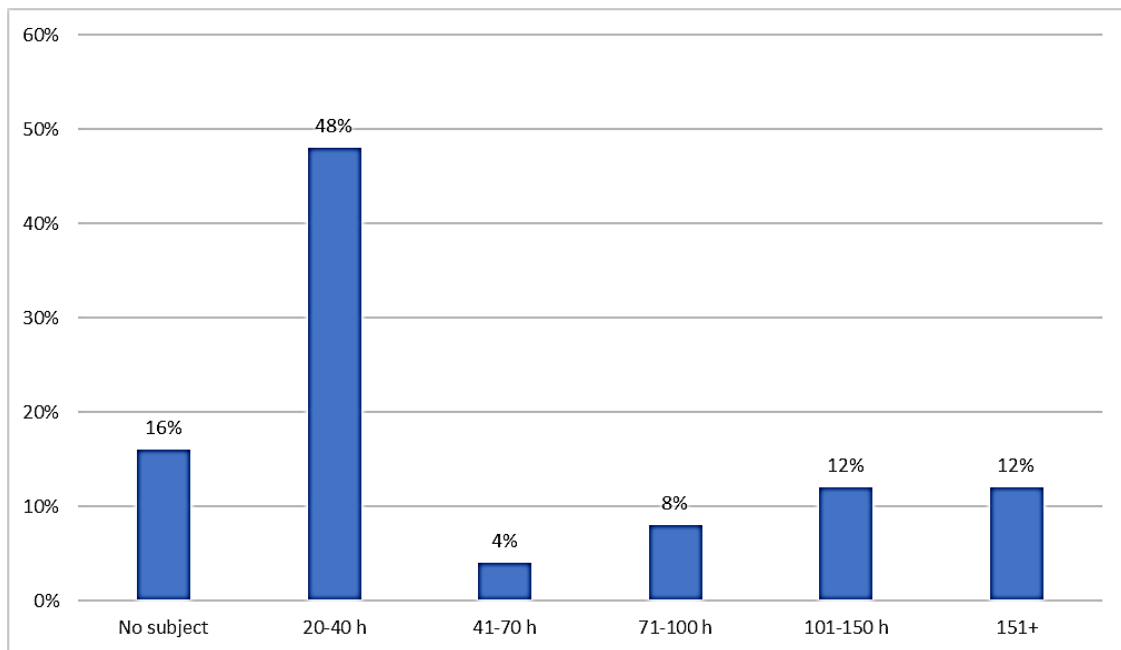


**Figure 1.** Education of PM's.

Source: own research.

It is possible thanks to specific subjects that direct knowledge and expand skills and competences. One of the questions in the questionnaire was the respondents' determination of the subjects that were carried out during their studies and the number of hours they dedicated to these classes. The respondents chose the following subjects and gave the number of their hours: project management, team management, team management. The respondents' answers were divided according to the number of declared hours of classes.

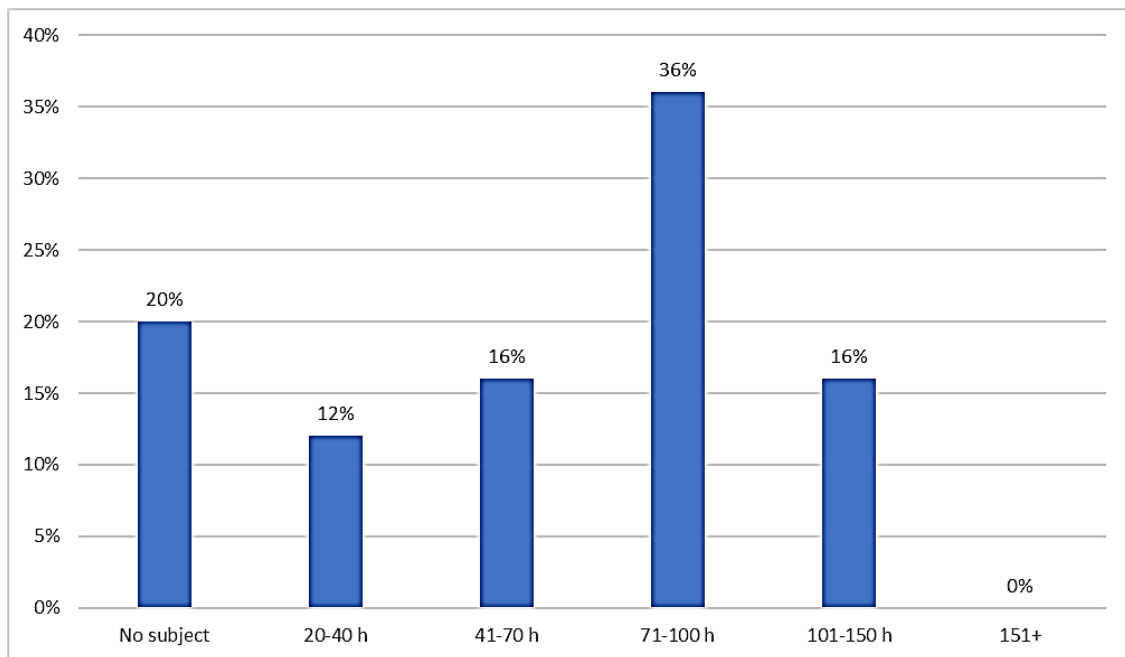
For the subject called "project management", 16% of respondents indicated that they did not have such a subject in their schedule during their studies. The largest group of respondents were people who carried out such classes in the amount between 20 – 40 hours. A large group of respondents were also people who carried out the subject of "project management" in the number of hours greater than 100. These answers accounted for as much as 24% of all acquisitions. From the obtained research results, it can be concluded that people who did not have a subject called "project management" are those respondents who have not completed any major studies related to their current profession. The remaining 84% participated in classes for at least 20 hours per semester. Consequently, it can be concluded that a very large group of respondents has knowledge in the field of project management gained during their studies. Fig. 2 presents the declared number of hours of classes in subjects related to project management in which respondents participated during their studies.



**Figure 2.** Number of hours of classes in subjects related to project management attended by respondents during their studies.

Source: own research.

The second subject that respondents were asked about was team management. The largest group of people were those who completed the subject in the number of hours between 71-100 (36% of respondents). A large group of people were also those who completed classes in the amount of 41-70 hours (16%) and 101-150 hours (16%). None of the respondents declared that they completed team management classes in more than 150 hours (Fig. 3). Based on the obtained research results, it can be concluded that a large group of surveyed project managers has basic knowledge of team management. Only 20% of the whole group did not study such a subject during their studies, presumably because their studies were unrelated to their current profession.



**Figure 3.** Declared number of study hours in the field of team management.

Source: own research.

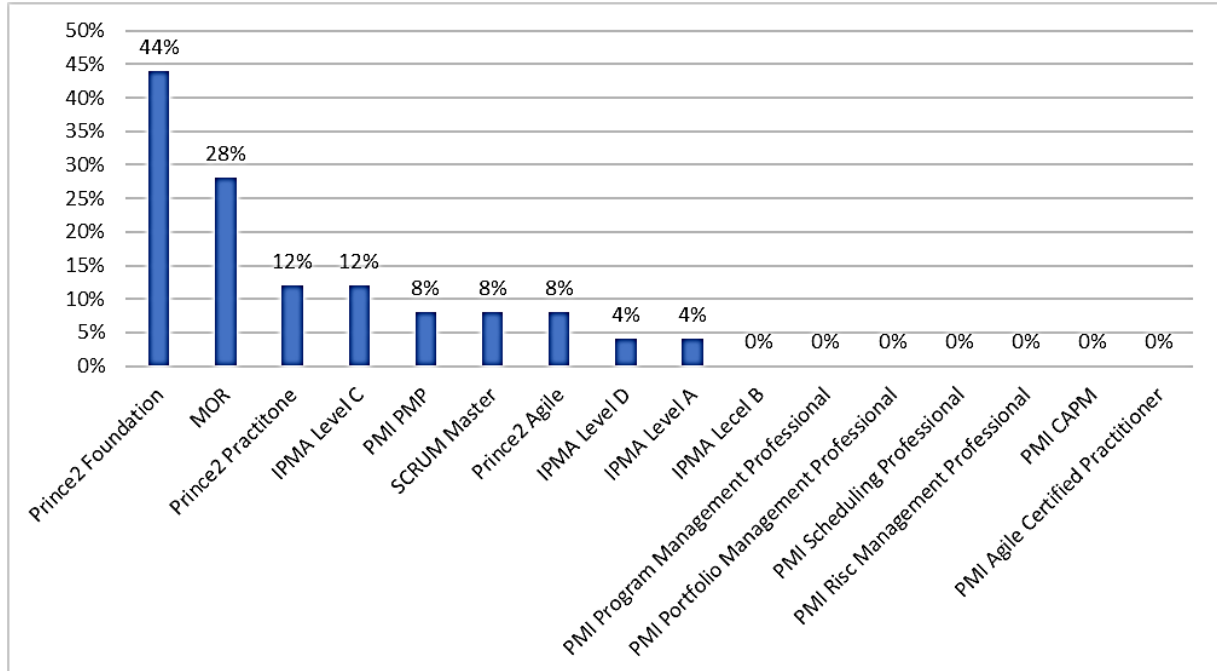
An important element of education are student internships and other internships carried out during studies. They enable students to broaden their knowledge with practical skills and gain necessary contacts that will be useful in their further career. Respondents were asked whether they carried out student internships during their studies and how long they lasted. What may be surprising, the largest group of respondents, constituting as much as 68% of all answers, marked the answer that they did not carry out student internships during their studies. Only 32% of respondents declared to participate in their higher education in student internships, where the specialties of internships included industries such as administration, industry, enterprise and the banking sector. In addition, the number of hours of internship was asked. Most answers are within the range of 120 – 200 completed hours of internships (28% of respondents). The second-largest group of answers came from individuals who completed student internships in the number of 20 hours. Lack of internships or low number of hours of classes may in the future result in a lack of practical skills in the field of project management, as well as in the lack of ability to cooperate and co-create a project team.

In summary, the surveyed project managers usually hold at least a university degree, with many having completed engineering and bachelor's studies. A large group of respondents have a directional education related to their current profession – they constitute 48% of respondents. In addition, many respondents completed studies broadening qualifications – postgraduate, supplementary studies (20% of respondents). During their studies, most of the respondents carried out classes in the field of project management, team management or project management. Only 32% of respondents declared having practical knowledge gained during student internships!

## 10. Certifications, licenses and courses completed by project managers

Another way to acquire knowledge and skills in the field of the project manager profession is to participate in specialized courses that allow to obtain additional certifications or licenses. In many industry companies, having specific courses is a prerequisite for taking up a job. In the questionnaire, respondents were asked about the trainings, courses, licenses they have and whether they plan to continue the path of self-improvement.

Regarding additional certifications and licenses in the field of project management, the largest part of respondents marked Prince2 Foundation licenses, which is 44% of all answers. The second-largest group consisted of project managers with a completed risk management license (28% of respondents). IPMA Level C and Prince2 Practitioner certifications have 12% of all respondents. Two answers constituting 8% of all answers mentioned Prince2 Agile, PMI Project Management and SCRUM MASTER. It could be speculated (and this is a conscious speculation, not supported by the discussed research but practical observations) that the popularity of the Prince2 Foundation certification results from its contractual ease of obtaining - usually training with an exam lasts 3 days in comparison to the need to devote at least 8-100 hours in certification conducted by IPMA and PMI certification involves several hundred hours (about 200-300 – based on interviews with people who obtained it).



**Figure 4.** Popularity of certificates held among survey respondents.

Source: own research.

In addition to licenses and certification, there are a number of trainings on the market that expand PM's knowledge and skills. Such trainings and courses include: communication management in the project, coping with stress, change management, coaching. The respondents

were asked whether they had completed any additional training and courses in project management. It was a multiple choice question, however it gave respondents the opportunity to add courses and trainings to the list of courses and trainings mentioned by the author of the survey, others – additional. The largest group were respondents who do not have any additional courses and trainings, constituting 36% of the entire group. 28% of respondents are people who have completed training in the field of communication management in a team. 24% of respondents have a coaching diploma. 20% of all answers fall on the courses: coping with stress and change management. Some respondents took advantage of the opportunity to add their own, not listed courses and trainings, which include: motivation, various soft skills, IT, supervision, etc and First line manager, Risk Review Process, 7 Habits of highly important people.

The surveyed project managers were also asked whether they plan to further expand their qualifications with additional training and courses. A significantly larger group of respondents answered that they still expect self-improvement (60% of respondents), while 40% of respondents do not intend to further educate themselves.

Respondents who expressed their desire to expand their competences were asked to write in which courses and trainings they would like to participate. Such courses and trainings included: Prince2, communication management in the project, coping with stress, change management, risk management, certified project management training, continuation of "soft" training in communication, Professional Scrum Master certification, Prince2 Practitioner, business analysis, IPMA certificate, Risk, Scrum master, Prince, Scrum, Agile, MBA.

To sum up, project managers gain additional certifications and authorizations in the field of project management. The number of respondents affirming this was dominant in relation to the entire group of respondents. Coupled with their willingness to participate in subsequent trainings and courses, this indicates the need to supplement the basic knowledge acquired during the studies.

## **11. Proposals for paths for the development of competences in the field of project management**

An important role in a professional self-development is to set one's own development paths. They are most often based on the observed needs, deficiencies or willingness to deepen knowledge in a given field. Development paths depend not only on understanding the possibilities of professional development but also on the time and financial abilities of the project manager.

Project managers participating in the study were asked to propose their own way of improving their competences in the field of project management. This question was an open-ended one, which means that respondents entered their own answers in the designated space.

The answers can be divided into several groups. The first one concerns precisely chosen development paths. Such answers include: "passing exams in the field of Prince2", "Dedicated studies in Project Management", "Completion of currently started postgraduate studies in the field of administration and management", "Enrolling in coaching training". These answers give information that the people writing them are oriented in the possibilities of development; they know their strengths and weaknesses enough to choose the courses, trainings or studies that might be useful in shaping or acquiring new competences. Moreover, the precise specification of the development path allows not only to set a real deadline for implementation (knowing how long a given course or studies will last), but also to determine the funds needed to implement it. Another group of answers were those related to the process of gaining experience. Such answers include: "Professional experience as a member of the project team, courses and training", "Experience. A project manager is a position for someone who has professional experience, i.e. has already experienced ups and downs and knows how to manage it. PM is not a profession immediately after graduation, due to its individual nature, a young man after graduation, should work in teams to gain experience", "Gaining two years of experience in the current company will allow me to start a further career path". This group of answers is characterized by the fact that it is time-oriented – people who set such a path know that its implementation is achievable by actively dedicating a significant amount of time to gaining experience within a particular organization or company. Most often, gaining professional experience is a free-of-charge path, and its results in most cases depend on the employee's commitment.

The third group of answers were those ones that require the involvement of another individual or a group of people. Such answers include: "cooperation with business or NGOs", "cooperation with experienced Project Directors, imitation and implementation of good practices", "getting to know the international culture of project management through contact with foreign students and completing an internship as part of student exchange – exchange of experiences". During this path, not only professional knowledge is developed, but above all the ability to work in a group, build a team or deal with conflict situations. This path exercises the so-called soft skills, and its implementation time is unspecified.

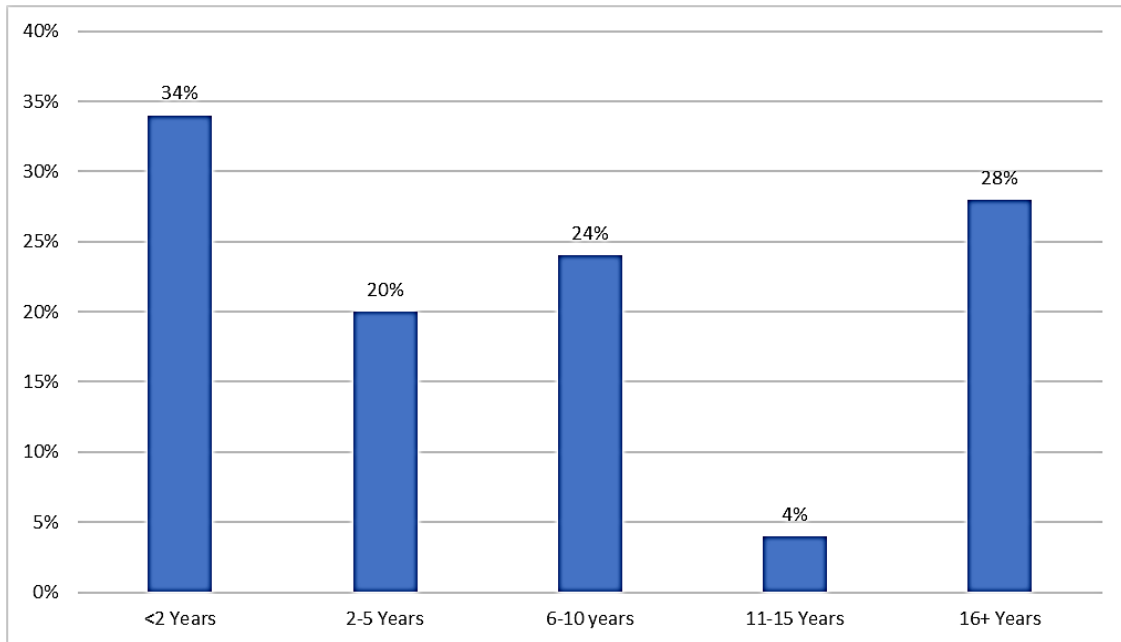
The last group of answers were those that were unspecified in time, place of implementation, costs, finances or exact development needs of the project manager. Such answers include: "Increasingly demanding projects, 100M€+ budgets", "training", "training to prepare for certification and taking up work in PMO", "practical approach to project management methodology", "active participation in ongoing projects, focus on action".

The essence of self-development lies in setting a clear goal and time for implementation. Only such a specific development path is possible to achieve and its effects are measurable. Perfunctory or imprecise answers of respondents in this group give information that the process of determining the development path has not been fully specified yet.



## 12. The impact of PM education on the size of the project managed

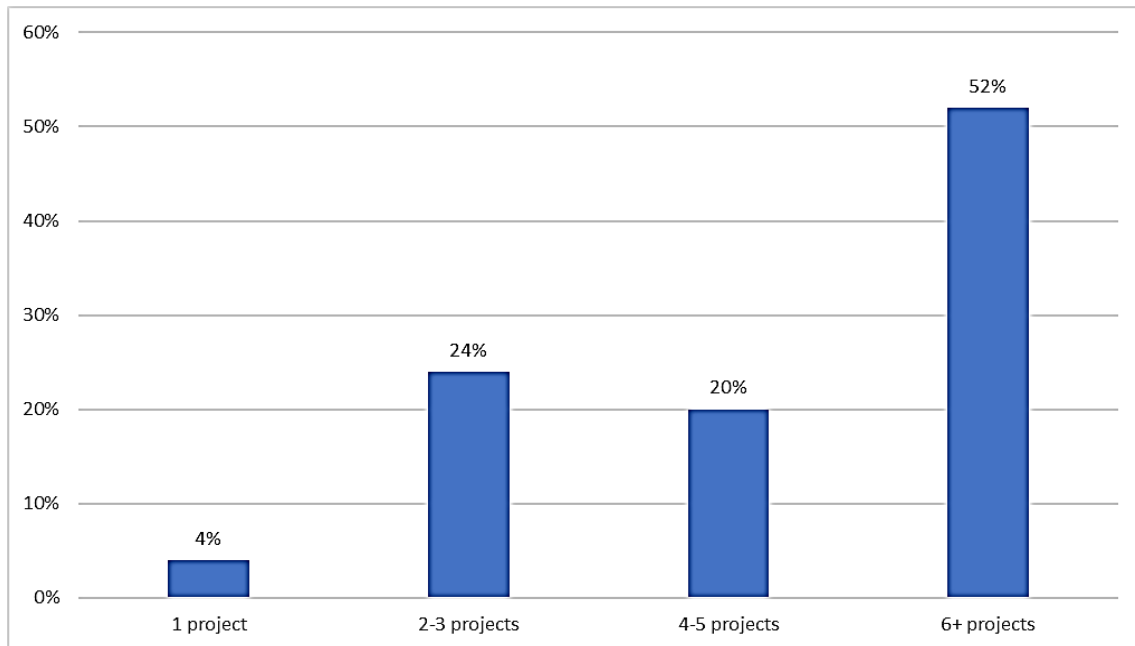
Respondents were asked how long they have been involved in the project management process. The largest group of respondents (34%) manages projects for up to two years. 28% of respondents have a very long work experience of 16 years or more. 24% indicated that they manage projects in the period of 6-10 years, 20% for answers 2-5 years and 4% for answers 11 – 15 years, a large group of people have work experience in the range of 16 years and more, which may mean that higher education of the second degree (Fig. 5).



**Figure 5.** Time to collect project management statements among respondents.

Source: own research.

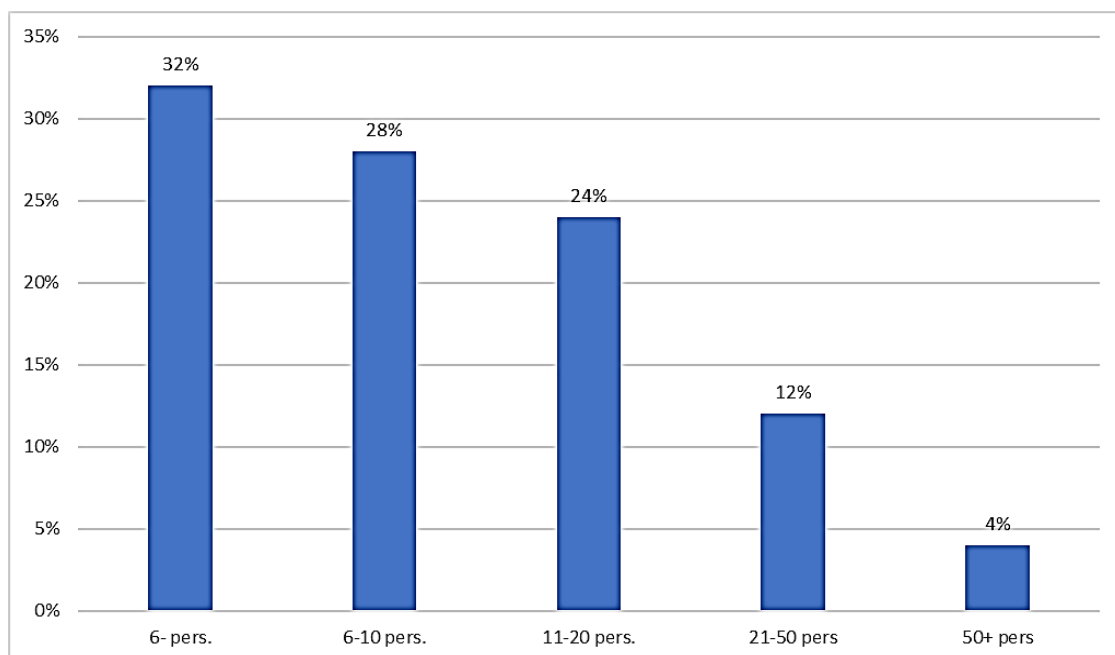
The next question concerned the number of projects in which a respondent had participated so far. The was a closed question. The largest group of respondents – 52% took part in at least 6 projects. 20% of responses were for the range of 4-5 projects. 24% of people indicated that they had participated in 2 or 3 projects so far. Only one person constituting 4% of the group is currently involved in 1 project (Fig. 6).



**Figure 6.** The number of projects in which the respondents have participated so far.

Source: own research.

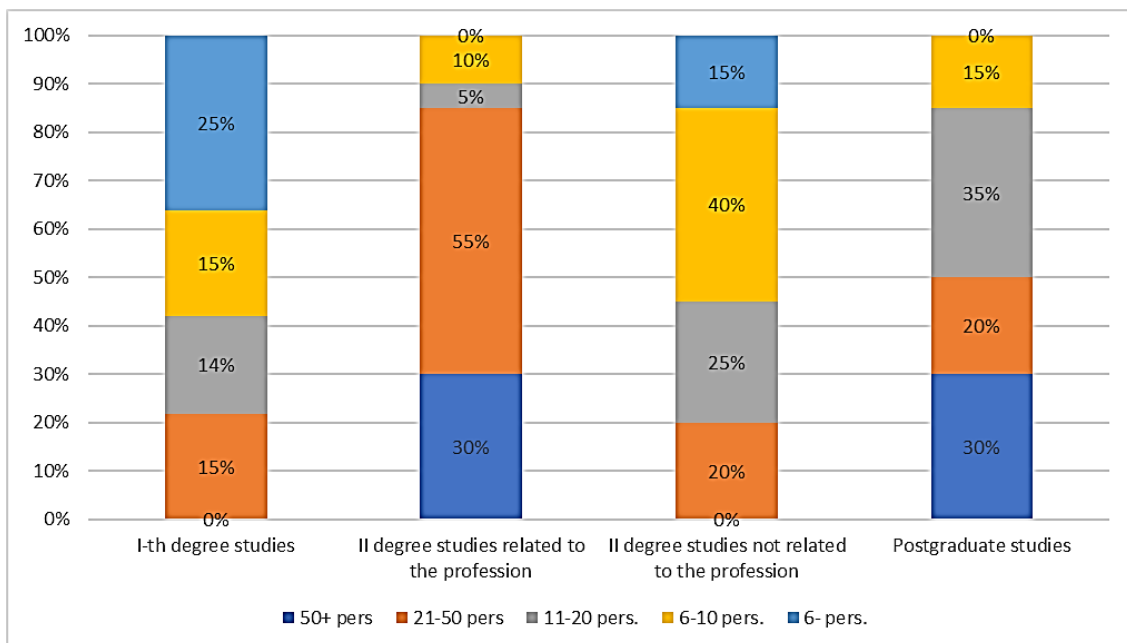
A project manager is a person who not only supervises the project and is responsible for it, but also a person who manages the entire project team. PM sets goals and tasks for others and is also responsible for their implementation. Fig. 7 shows the size of the project teams with which respondents cooperate. Based on the obtained results, it can be observed that the largest group are teams of up to 5 people – 32% of responses. The second group is composed of teams consisting of 6-10 people – 28% of responses. The least numerous answer pertains to teams consisting of 51 members or more – this answer was indicated by 4% of respondents.



**Figure 7.** The number of project teams with which respondents cooperate.

Source: own research.

In the next step, a comparative analysis of the obtained research results was carried out, categorizing them into distinct educational groups. The largest group of people with education (45% of respondents) leads a project team of 11 to 20 people. Respondents with upper secondary education graduating from faculties related to their current profession manage staff of over 51 people (30%), 21-50 people (55%), 11-20 people (5%) and 6-10 people (10%). A relationship can be observed between people with higher education in the second field of study and education not related to their profession. People from the first group oversee more staff than respondents with a master's degree in a field different from their current work. The research results for a group of respondents with tertiary education are also important. None of the people declared to manage a team of up to 5 people. It can therefore be concluded that the level of education and the field of study similar to the subject of the project has an impact on the size of the project team.

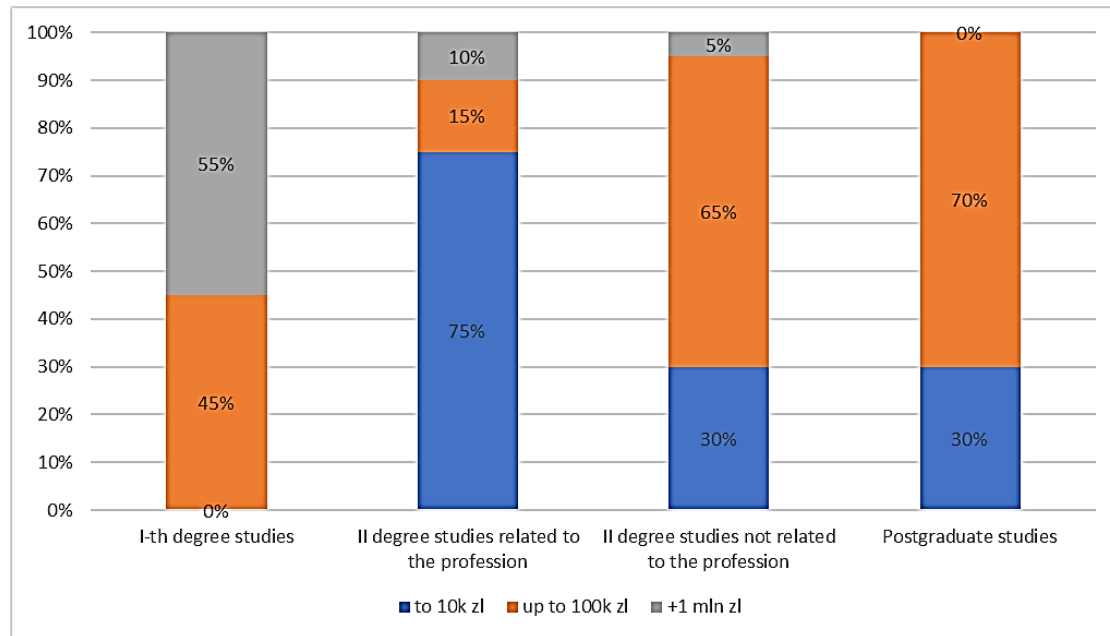


**Figure 8.** Size structure of project teams in relation to project managers' education.

Source: own research.

The budget of the project, which is currently managed by PM, means a lot of responsibility. It can be assumed that the higher the project budget, the greater the responsibility of project managers. During the survey, respondents were asked about the project budget they currently manage. The majority of respondents selected the option that the budget they currently manage in the project is above 1 million PLN which accounts for 48% of all responses. 32% of respondents manage a budget worth over PLN 100,000. Only 20% of respondents marked the answer "up to PLN 10,000". The research results show that projects managed by the surveyed project managers are expensive and involve a lot of responsibility.

The highest percentage of responses regarding the highest project budgets (over 1 million) concerns people with second-cycle higher education related to their current profession. People who have completed second-cycle studies, but the field of their studies was not related to their current work, mostly manage projects above PLN 100,000. People with first-cycle education are not in the group of people managing projects above PLN 1 million.



**Figure 9.** Structure of the size of the project's budget in relation to the education of project managers.  
Source: own research.

### 13. Results discussion

The conducted research indicates the importance of the project manager's role in business, as they are responsible for the transformation of the organization and the correct spending of significant financial resources. The presented research provides analyses that shed light on the described process of building the competences of the project manager, but it is necessary to take into account one significant limitation of the presented research, which the authors are aware of, namely the participation of only 25 respondents in the study. This sample size does not reflect the situation in the whole group of people who are professionally involved in project management. It also means the need to develop, expand, and publish the results of research. They are interesting because they indicate the importance of the process of improving competences among individuals who take an active part in the project management process, particularly in a business environment characterized by a constant intensification of economic changes.

## 14. Conclusions

On the basis of the obtained results of our own research, the following conclusions can be drawn:

1. Domestic and foreign literature clearly indicates the need to have and improve the competences of the Project Manager. Continuous competence enhancement is one of the most important tasks to be carried out by the Project Manager, who can be realized by university model, competence model (IPMA or PMI) or independent development. All respondents have higher education, often complemented by certification in project management.
2. People with higher education, second-degree education and people with third-degree education usually manage a larger number of service personnel in the project, and run projects with a higher budget than people who have completed first-cycle studies. This may suggest that thanks to the acquired substantive qualifications it is easier for them to manage the scope of large projects.
3. The research shows that additional activities that mainly influenced the current knowledge and skills of project managers are primarily their professional work and the experience gained therein, as well as participation in numerous self-financed courses and trainings. It is very surprising that the majority of respondents, representing 68% of the total, indicated that they did not participate in student internships during their studies.
4. The method used in the study proved to be successful, allowing people to participate in the study anonymously, which likely led to their honest answers. The research also made it possible to verify a simple research model, which allows - as it seems - to quickly obtain verification of the relationship - the competences associated with the Project Manager and, consequently, how to shape it in the future.

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