

MAPPING COMPETENCES FOR SUCCESSFUL PROJECT MANAGEMENT IN THE PUBLIC SECTOR: A MODEL PROPOSAL

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Abstract: The paper proposes a conceptual framework of individual competences necessary for successful project management in public sector organizations. Based on the specific characteristics of the public sector and drawing on the concepts of New Public Management, the paper analyzes project management through the lens of ICB4 (Individual Competence Baseline) and PM² (Project Management Methodology). The integrative literature review method is reflected in the structuring of the areas proposed by ICB4, exploring their applicability within PM² and vice versa. The paper examines various methods of competence assessment, including exams, reports, and differences in competence levels evaluated within the 4-L-C certification system, with the aim of proposing a conceptual framework. In addition to professional and scientific analysis, the paper provides practical recommendations for enhancing the competence framework in public sector projects. A review of the existing literature has identified a research gap - the absence of a specific conceptual framework that integrates the competences proposed by ICB and PM². The justification for this study lies in the practical application of the conceptual framework to support better-informed decision-making, increase productivity, and achieve improved results, which are key factors for developing competences among public sector personnel.

Keywords: Competences, Model, Project-Oriented Organizations, Public Sector, Conceptual frame

1. Introduction

Projects are a driving force in the market, fostering new products and services, successfully generating revenue, and creating new value for the public sector. For public projects to be successfully implemented, competent project managers must be involved, and there must be a universal standard of competences that defines the necessary skills and qualities required for success in public sector projects, programs, and portfolios. The way competences are defined

represents the skill of identifying competent individuals who will work in public sector organizations and effectively achieve the goals of the projects they are assigned to.

An analysis of existing literature reveals a gap in the integration of competences within the PM². Although many studies address various aspects of project management in the public sector, there is a lack of research focused on a specific conceptual model that would map individual competences in PM². Many models addressing individual competences in public sector project management typically refer to broad systems necessary for the country in which the competences are observed or are specific to other methodologies. In contrast, PM², with its unique approach, is rarely addressed in the literature on this topic (Skorková, 2016).

For years, organizations have been improving their ability to select and define new competences, thus enhancing the connection between projects with a focus on long-term effects in the public sector. The implications of this are that project management is established as the leading method for defining changes that the public sector can implement, with professionals in public projects being able to drive this process. The ICB (Individual Competence Baseline) competence framework is an internationally adopted standard that defines three areas of competences needed by professionals working in project, program, and portfolio management to achieve the set goals (IPMA, 2022).

A review of existing literature has identified a research gap in the absence of a specific conceptual framework that integrates the competences proposed by ICB and PM². This work focuses on identifying the competences proposed by ICB that target those needed by employees in the public sector. IPMA ICB defines competence areas that describe individuals working in the domains of projects, programs, and portfolios. One advantage of ICB is that it avoids terminology that directly refers to individual roles, steering clear of established functional titles (International Project Management Association, 2022).

The research gap that has been identified refers to the lack of a conceptual framework that integrates competences from the ICB and PM², which would allow for a clearer mapping and definition of the key skills and abilities needed for public sector project managers. Although the ICB is a recognized international standard that defines three key areas of competence, the application of these competences within specific methodologies such as PM² has not been sufficiently researched. In addition, many existing competence models are mainly related to broader, national frameworks or other methodologies, while the application of the PM² methodology in this context is rarely considered.

1.1 Prerequisites for Competence Development in the Public Sector

Assessing the current level of individual competences and subsequently determining the desired state, based on the framework used for comparison, could serve as the primary prerequisite for developing employee competences. Additionally, it is crucial to present the required competences for a specific job role to all relevant stakeholders, ensuring their involvement in the development process. This inclusive approach expands the knowledge base and contributes to expertise, fostering a culture where competences are recognized as an added value.

The top management of public organizations should define a developmental pathway for competences among individuals working in the public sector. This pathway would involve

adopting standards, processes, and procedures for competence development. Competence assessment in the public sector includes identifying and analyzing competences, as well as determining potential gaps in relation to defined roles or individual profiles. It also involves defining, negotiating, planning, implementing, documenting, monitoring, and controlling development activities in agreement with stakeholders. Individuals involved in competence development in the public sector, whether independently or collaboratively, should apply similar methods to meet the requirements prescribed by the adopted standard.

The universal ICB (Individual Competence Baseline) standard is applicable across all areas of project, program, and portfolio management. However, the essence of certain competences may vary depending on the type of project (e.g., healthcare, security, infrastructure, manufacturing, research and development, marketing) and the industry (e.g., construction projects). Nevertheless, all 28 competences defined by ICB are significant for every project, program, or portfolio. The main reasons for the failure of most public sector projects often include poor planning and insufficient competence among project managers. In today's dynamic and ever-changing world, it has become essential to define a model that sets criteria for the competences of project managers. Public projects are considered successful when implemented in line with standards, sustainably, and within the planned budget and timeframe (Rolstadås et al., 2014). The success of public sector projects is a multidimensional concept that should ensure organizational success, satisfaction of users of public goods or services, and alignment with the so-called project triangle (Jovanović et al., 2007). Public project success should contribute to the economic, political, social, and ecological well-being of various involved actors (Andersen et al., 2006). Organizational loyalty within the public sector is key to maintaining its independence and achieving public goals (Obradović et al., 2019).

The development of a model for integrating competences using the PM² methodology aims to present a framework that provides sufficient information for comparative analysis of how the competences proposed by ICB can be integrated into all suggested phases of the PM² methodology lifecycle.

By integrating the competences outlined by ICB into the PM² methodology, a comprehensive model can be established for assessing and improving the knowledge, skills, and abilities within project-oriented organizations operating in the public sector. The proposed model seeks to define the essential competences of managers overseeing public projects by incorporating all three domains of ICB—perspective, people, and practice - which encompass the 28 competences. During the initiation phase, contextual competences such as governance, structures, and processes; culture and values; and compliance, standards, and regulations emerge as critical. These competences ensure an understanding of how the organizational culture and structure of project-oriented organizations align with the legislation and standards of the public sector. Furthermore, behavioral competences, such as personal communication, stakeholder relationships, and engagement, as well as teamwork, stand out as vital for understanding key stakeholders and their requirements and expectations during the early phases of a project's lifecycle. Competent project managers must have a thorough understanding of PM² as applied in public organizations. They should also possess technical competences essential for effectively managing the initiation, planning, execution, monitoring, controlling, and closing phases of a project in public sector project-oriented organizations. Among these, competences such as stakeholder management, scope, planning, and control are particularly critical.

As a result of a review of the literature in the field of individual competences (Savanevičienė et al., 2008), definitions and models of competences, it was found that individual competences are one of the basic characteristics of different behavioral patterns and that these competences are influenced by the content of work at work, the required competences of project-oriented public sector organizations, the application of project management and changes in the environment (state). In the model of individual competences in public sector organizations, it proposes a set of individual competences that can be integrated into all four phases of the lifecycle of PM² projects, depending on the type of competences required at a particular stage.

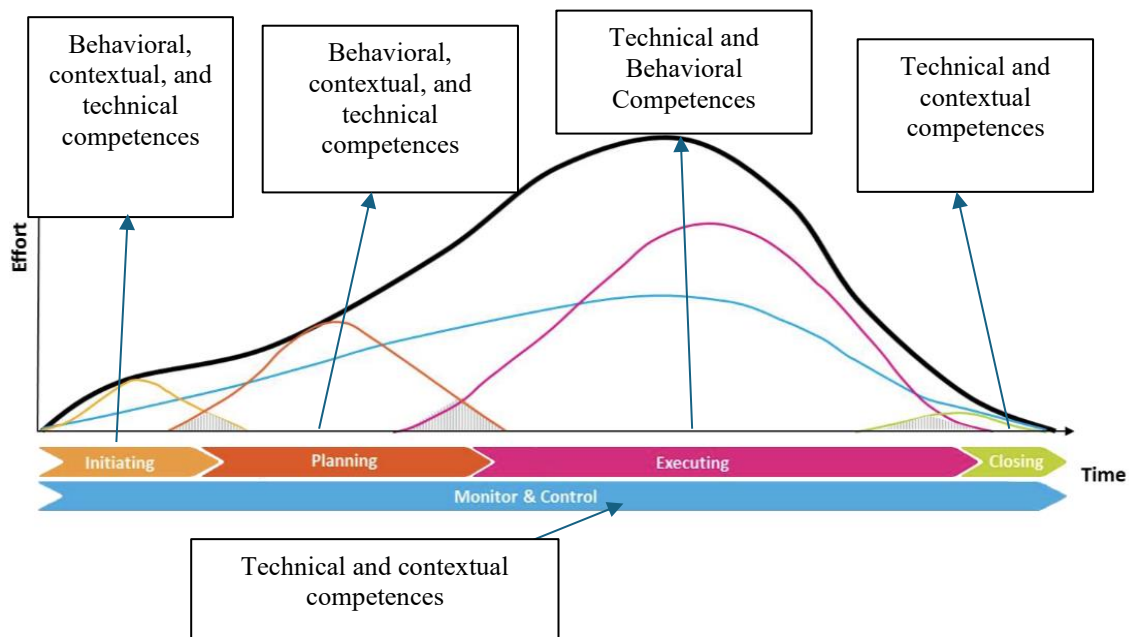


Fig. 1 Integration of ICB competences into the lifecycle of the PM² project
(Project Management Methodology, 2021)

The proposed model consists of three parts:

1. Individual competences proposed by ICB;
2. Project management phases according to PM²;
3. The interdependencies of individual ICB competences and the phases of the project life cycle in PM².

The first part, called the initial individual ICB competences, represents the foundational concept of the model as it defines the competences a public project manager in project-oriented organizations should possess. These variables are interdependent and comprise 28 competences. The second part of the proposed model consists of the project life cycle phases, which include the PM² phases of project management: initiation, planning, implementation, closure, and monitoring and control as integral activities during project execution in project-oriented public sector organizations. Finally, the last segment of the model represents the interdependence and alignment of the first two elements of the model.

The first segment of this model is of great importance for the successful management of projects in the public sector because it addresses all three competence areas. The first area,

Perspective, includes five competences categorized across different PM² phases: strategy, compliance, standards and regulations, governance, structures and processes, power and interest, and culture and values. These five competences encompass activities related to the execution of project management functions, task compliance with legal regulations, alignment of strategies with the national strategy, and strategic objectives of the state. A complex public sector project assumes that the candidate applies most of the competence elements prescribed by ICB4 (IPMA, 2024), and the candidate's competence in applying relevant processes, methods, techniques, and tools for the proposed technical, behavioral, and contextual competences must be demonstrated to a sufficient extent to substantiate the complexity of the project (Kühn, 2021).

2. Integration of ICB into PM²

2.1 Contextual Competences – Integration Conclusions

The PM² methodology offers a wide range of tools and techniques that enable the identification and analysis of stakeholders, as well as the establishment of effective communication with them (Project Management Methodology, 2021). This approach ensures project alignment with relevant political and legal frameworks, which is crucial for the successful implementation of projects in the public sector. Understanding the needs and impacts of all stakeholders requires analytical skills that allow individuals to properly interpret the demands and expectations of various actors.

One of the key aspects of working in the public sector is legal awareness, which involves a deep understanding of legal regulations and conditions that may affect the project. Knowledge of the legal framework allows project managers to avoid potential legal obstacles and ensure project compliance with applicable regulations. In addition to legal awareness, it is essential to develop social and political awareness, as social and political factors can significantly influence the course and outcome of a project. Understanding the broader context in which the project operates enables better adaptability and anticipation of potential challenges.

Effective communication with stakeholders is one of the key skills for project managers in the public sector. The ability to clearly and effectively convey information to various actors contributes to better understanding of project goals and strengthens their support. In addition to communication skills, it is important to develop negotiation skills that enable conducting constructive negotiations aimed at reaching consensus and securing project support. The ability to build partnerships and successfully negotiate with various interest groups can be critical for the implementation of project activities (Novo et al., 2023).

Conflicts are a common occurrence in projects, especially when there are many stakeholders with differing interests. Therefore, it is important for the project manager to possess the ability to identify and resolve conflicts both among stakeholders and within the project team. Effective conflict management contributes to project stability, improves team dynamics, and ensures the smooth execution of planned activities. All these competences form the foundation for successfully managing projects in the public sector and contribute to achieving the organization's long-term goals.

- PM² provides tools and techniques for stakeholder identification and analysis, as well as for establishing effective communication with them, ensuring the project aligns with political and legal frameworks.

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- Analytical skills required by individuals working in the public sector include the ability to analyze and understand the needs and impacts of all stakeholders.
 - Legal awareness, which is essential for understanding legal regulations and conditions that may affect public sector projects.
 - Stakeholder identification and analysis, coupled with effective communication skills, where public sector project managers should demonstrate their ability to clearly and effectively communicate with diverse stakeholders.
 - Negotiation skills, demonstrating the ability to lead and negotiate to achieve consensus and support for public sector projects.
 - Conflict resolution skills for addressing disputes among stakeholders or within the project team during the project lifecycle.

2.2 Behavioral Competences – Integration Conclusions

- PM² emphasizes the importance of leadership, teamwork, and communication, providing guidelines for developing these skills in project managers.
- The ability to motivate and lead a team toward achieving project objectives.
- The capacity for quick and efficient decision-making in complex situations.
- Effective collaboration with team members and other stakeholders.
- Promoting the professional development of team members and fostering a positive work environment.
- The ability to communicate clearly and effectively through various media.
- Attentive listening and understanding of the needs and perspectives of others.

2.3 Technical Competences – Integration Conclusions

- PM² outlines the processes of planning, risk management, and project control in detail, enabling project managers to efficiently handle all aspects of a project.
- The ability to thoroughly plan all project phases, including schedules, budgets, and resources.
- Clearly defining project goals, tasks, and scope.
- Identifying potential risks that may affect the project.
- Assessing the impact and likelihood of identified risks.
- Developing strategies to mitigate or eliminate risks.
- Continuously monitoring and reporting on project progress.
- Optimizing resource utilization to achieve project objectives.

To successfully implement the integration of ICB4 competences in public sector organizations, it is essential that the assessment and evaluation of project managers in the public sector meet international expectations and standards. One method of assessment involves observing team members in real-life situations, allowing for direct verification of ICB competences in practice. Additionally, collecting feedback from supervisors, subordinates, and peers using the 360° feedback model helps identify strengths and weaknesses. Public sector project managers should conduct surveys covering various ICB4 competences. The alignment of the proposed model with international frameworks and methodologies can also serve different stakeholders in gathering more detailed feedback on team members' skills and abilities.

A frequently asked question by competence evaluators is how to assess someone's competences—in this case, project manager competences. Professional associations like IPMA or PMI provide answers through the certification of project managers. The International Project

Management Association (IPMA) has been developing a universal standard for evaluating and verifying project managers' competences for years (IPMA, 2024). Depending on the complexity of the projects managed and the years of experience, project managers undergo certification processes called the 4-L-C (four-level certification) system (IPMA, 2024).

- **Level A** – Certified Project Director
- **Level B** – Certified Senior Project Manager
- **Level C** – Certified Project Manager
- **Level D** – Certified Project Management Associate

Each certification level has specific rules defined in the corresponding documents based on internationally adopted standards. All certification rules and requirements are outlined in documents prescribed by IPMA, particularly the International Certification Regulations (World, 2016) and the IPMA Competence Baseline (ICB) manual.

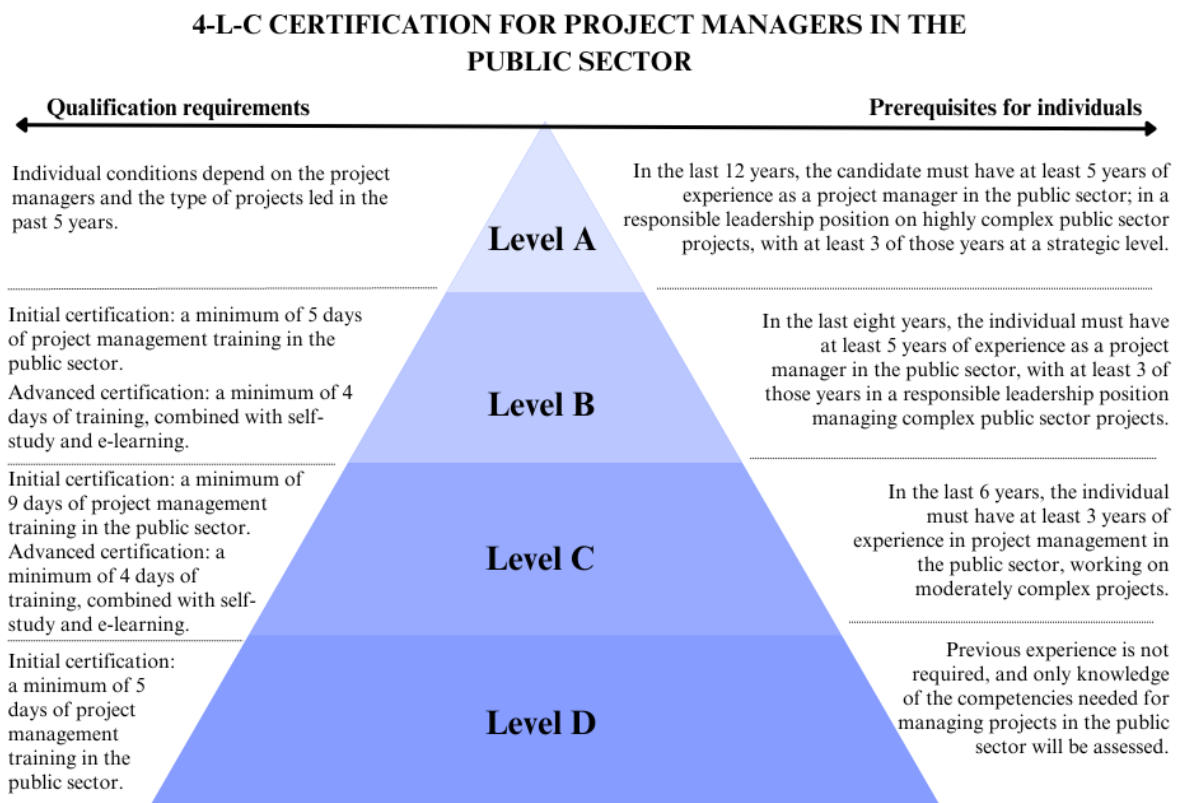


Fig. 2 Conceptual framework of the 4-L-C Certification of project managers in the public sector (*Adapted from Dittmann & Dirbanis, 2024*)

The qualification requirements for individuals and the certification prerequisites are presented in the conceptual framework in Fig. 2. The qualification requirements are adapted to the 4-L-C certification level adopted by IPMA. They represent the qualifications necessary for individuals applying for the certification process to acquire to be prepared for obtaining a specific certificate (Flyvbjerg, 2014). On the other hand, the prerequisites, which serve as essential inputs for certification under the 4-L-C system, are derived from IPMA regulations and tailored to the needs of the public sector. These prerequisites can be adjusted and modified in accordance with the legal frameworks of individual countries. They specifically apply to

individuals working in public sector organizations and represent the initial step in the certification process.

The 4-L-C certification for project managers in the public sector is adapted and flexible to meet the specific needs of project management staff. The conceptual model allows certification to take place beyond the home certification body, for instance, in another country. As shown in Fig. 2, the prerequisites include e-learning, which does not require the physical presence of instructors or candidates. The 4-L-C certification in the public sector would facilitate mutual and reciprocal learning among individuals undergoing this certification process.

3. Professional, Scientific, and Practical Application of Competence Model Integration

3.1 Professional Application of the Individual Competence Model

In modern public sector organizations, the competences of project managers play a crucial role in achieving strategic goals and delivering public services. This model is essential for the development and advancement of human resources in both private and public organizations, as it provides a systematic approach to talent management and organizational development.

Considering the professional application of the individual competence model, public sector organizations can significantly improve their project management practices. Competent project managers, alongside team members with clearly defined roles and responsibilities, can more effectively plan, allocate resources, and manage timelines. The competence model aids in identifying key team roles and the competences required for each. When competences are clearly defined according to international standards, teams can self-organize more quickly and efficiently, making timely decisions accordingly. This reduces delays and increases project success rates. Additionally, competent teams applying this model can better identify and manage potential risks, thereby enhancing the likelihood of successful project outcomes.

Further refinement of the certification model could potentially improve the quality of public sector service delivery. By developing the proposed competences based on the ICB (Individual Competence Baseline), organizations can ensure that their employees possess the necessary skills to deliver high-quality services. As a result, competent employees can better personalize the services they provide to meet specific user needs and are more inclined to adopt innovations and apply new technologies and methods.

Increasing transparency and accountability

Applying the competence model enhances transparency regarding the expectations and responsibilities of project managers in the public sector. This facilitates the process of monitoring and evaluating performance while fostering a culture of reliability and integrity. Through the certification model, objective performance evaluations would be conducted, thereby reducing subjectivity and bias during assessments.

3.2 Scientific Application of the Individual Competence Model

The scientific application of the competence model involves rigorous validation and standardization methods by external evaluators to ensure that the proposed competences align with the actual needs of the public sector. The application of the model can also be monitored

through scientific methods, which are used for empirical research and validation. Specifically, the individual competence model ensures that the competences are relevant and measurable. Scientific research enables the application of the individual competence model in different project contexts and sectors, thereby increasing the model's flexibility and usability.

Developing new theoretical models that link competences with organizational performance and the success of public projects allows managers to make better decisions when selecting project team members. By combining knowledge from various disciplines, such as psychology and management, for a deeper understanding of competences, project managers can more easily and accurately conduct competence tests for lower organizational levels. Scientific research contributes to the advancement of methods for evaluating competences, including more precise measurement and individual competence development.

Using the proposed individual competence model allows for the development of validated tools and techniques for competence assessment. This enables external evaluators to identify the developmental needs of individuals, facilitating targeted and efficient planning of training and development programs for public sector employees (Broadbent, 2020).

3.3 Practical Application of the Individual Competence Model

Selection and development of personnel

The practical application of the individual competence model in project-oriented organizations enables better selection and development of personnel within the public sector. By identifying the required competences, project-oriented organizations can better align employees' capabilities with job specifications. The individual competence model can be used to identify the key competences needed for specific positions, allowing for more precise and targeted recruitment. Understanding employees' competences is a critical aspect, as it facilitates more effective planning for career development and individual advancement within the public sector (Bolander & Sandberg, 2013).

Planning training and employee development

The individual competence model serves as a foundation for planning training and development programs, ensuring that these initiatives address the actual needs of project-oriented organizations and the public sector. Public organizations can create personalized development plans for employees, tailored to their specific needs and objectives (Stojčić et al., 2019). If project organizations identify the need for competence improvement among employees in a timely manner, they can subsequently allocate resources for training and development more effectively (World Bank Group, 2019). Identify and address requirements across all phases of project management (initiation, planning, execution, monitoring, and closure) as defined by diverse internal and external stakeholders (Obradović, 2022).

The proposed individual competence model contributes to improving team dynamics by enabling a better understanding and management of roles within the team. This leads to greater team cohesion and more effective project work in the public sector. Clearly defined competences help delineate roles and responsibilities within project teams, reducing conflicts and increasing workplace productivity. Additionally, competent teams with clearly defined

roles are more inclined toward effective collaboration and knowledge sharing within the project team.

Elements of individual competence models in public sector organizations include:

1. The full name of the competence and its detailed description.
2. Descriptions of activities or behaviors associated with each competence.

Table 1 Contextual competences in the public sector

Competence	Understanding ICB competence	PM ² integrated competences
Strategy	Understand the organization's strategic goals and how they affect the project.	Aligning project goals with the organization's strategy according to PM ² standards
Governance, structures and processes	Management of organizational structures and processes in the public sector	Applying project procedures and methodologies in accordance with the internal processes of the public sector
Compliance, standards and regulations	Implementation of relevant laws, regulations and standards in projects	Ensuring legal and regulatory compliance with EU standards through PM ²
Power and interests	Understanding the dynamics of power and influence among stakeholders	Analysis of stakeholders and influencing factors towards PM ² management
Culture and values	Understanding the organization's culture and values	Implementation of project activities in accordance with the values and culture of the public sector

Table 2 Behavioral competences in the public sector

Competence	Understanding ICB competence	PM ² integrated competences
Self-reflection and self-management	Awareness of one's strengths, weaknesses, emotions, and behavior; ability to regulate and improve oneself	Self-discipline, stress management, adaptability, and emotional intelligence in project execution
Personal integrity and reliability	Ethics and integrity in business and project management	Project management with reliability, adherence to rules and trust according to PM ² frameworks
Personal communication	Communication skills with team members and stakeholders.	Transparent and effective communication towards PM ² communication plans – artifacts
Relations and engagement	Develop and maintain good relationships with key stakeholders of the project	Participation and involvement of all relevant stakeholders through PM ² stakeholder management

Leadership	Leading the team and motivating team members towards a common goal	Effectively leading the team through recognized PM ² roles, such as project manager
Teamwork	Encouraging collaboration and collaborative work in project teams	Collaboration and teamwork within PM ² structures and project roles
Conflict and crisis	Managing conflicts and crisis situations in the team	The use of PM ² techniques for crisis management and conflict resolution
Resourcefulness	Ability to adapt to unforeseen changes in the project	Flexibility and resourcefulness to PM ² change management frameworks
Negotiation	Negotiation skills with stakeholders.	Negotiation with stakeholders in accordance with the templates proposed by PM ²
Results orientation	Focus on achieving concrete and measurable results.	Focus on achieving goals and outcomes in line with PM ² performance metrics

Table 3 Technical competences in the public sector

Competence	Understanding ICB competence	PM² integrated competences
Design	Defining the objectives and structure of the project	Design of the project structure through PM ² planning techniques
Goals, objectives and benefits	Develop specific requirements and set goals.	Collection and documentation of PM ² requirements
Scope	Defining the scope and tasks of the project	Project coverage management in accordance with pm ² coverage control processes
Time	Time managing time and schedules in a project	Planning and monitoring of deadlines according to PM ² schedules
Organization and information	Structure of information and organization of project activities	Structure of information management through PM ² documentation standards
Quality	Ensuring the quality of delivered results	PM ² standards for quality control and assurance
Finance	Managing the financial aspects of the project	Budget planning and cost control according to PM ² standards
Resources	Human and technical resource management	Optimization and allocation of resources through PM ² processes
Procurement and partnership	Management of procurement processes and suppliers	Harmonization of the procurement process with PM ² procedures for public procurement
Plan and control	Planning activities and controlling their implementation	Application of PM ² tools for project planning and control

Risk and opportunities	Identifying and managing risks and opportunities	Proactive management of risks and opportunities towards PM ²
Stakeholders	Relationships management with key stakeholders	Identification and management of stakeholders through PM ² processes
Change and transformation	Project Change Management	Application of PM ² methods for monitoring changes and adapting project strategy

The integrations presented in Tables 1, 2, and 3 represent contextual, behavioral, and technical competences integrated into PM² and are designed to combine the following:

1. ICB 4.0 (Individual Competence Baseline) – The IPMA framework developed by the International Project Management Association as a standard for individual project management competences. ICB 4.0 defines the technical, behavioral, and contextual competences that project managers must possess.
2. PM² methodology guide – PM² was developed by the European Commission to standardize project management within EU institutions and public sector organizations. It includes tools, techniques, and processes needed for the successful implementation of projects, as well as for managing risks, stakeholders, and resources.
3. ISO 21500:2012 - Guidelines on Project Management – ISO 21500 (Varajão et al., 2024) provides universal guidelines for project management applicable to any sector, including public organizations. This standard is used to further validate the technical and process elements of PM² and ICB competences.

Based on these three sources, all three integrations of individual competences have been developed for project-oriented public sector organizations.

4. Discussion

In the modern public sector, project managers often work on complex tasks requiring coordination between various stakeholders and institutions. Therefore, identifying and developing individual competences plays a crucial role in enhancing the efficiency and effectiveness of project teams (Roehl & Crompvoets, 2024). Integrating individual competences into the PM² methodology enables public sector organizations to:

- Precisely identify the skills and knowledge needed for each project task.
- Develop tailored training programs to strengthen employee competences.
- Increase the adaptability and agility of project teams in dynamic conditions.

Given that this work also references the IPMA (International Project Management Association) 4-L-C (Four-Level Certification) system, the individual competence model provides a structured framework for assessing and developing project managers' competences. With this model, project-oriented organizations can map the skills required for each level of IPMA certification. Specifically, the basic competences needed for IPMA Level D include foundational understanding, while higher levels (C, B, A) require deeper and more specific competences, along with evidence of experience on more complex projects depending on the certification. Organizations can use the individual competence model as a reference framework

for career development and professional advancement by assessing the current and desired competence levels of individuals. The certification of project managers not only confirms their competences but also motivates employees toward continuous learning and development.

By utilizing this model and integrating it into the IPMA certification system, project-oriented organizations are supported in adapting training programs that enhance individual competences required for various project roles, thus increasing the overall efficiency and effectiveness of project teams.

5. Conclusion

The individual competence model in public sector organizations, which integrates ICB into PM², provides a systematic approach to skill development and evaluation. By using various assessment methods, such as on-site evaluation, self-assessment, 360-degree evaluation, testing, mentoring, and coaching, it ensures that team members meet expectations and standards. Connecting this model with IPMA levels A, B, C and D provides an additional framework for understanding and applying competences, thereby improving efficiency and success in project management within the public sector.

Future research directions may include analyzing the impact of digitalization and new technologies on the required competences in public sector project management, as well as exploring the role of digital competences. These sources and future research directions will help further develop and implement the individual competence model in project-oriented public sector organizations, ensuring sustainable development and project success. Although there are numerous papers dealing with various aspects of project management in the public sector, research dealing with specific integration of competences from the PM² methodology and ICB (Individual Competence Baseline) is very limited, thus creating a research gap that this paper sought to fill.

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