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RESEARCH ARTICLE

Bridging competency gaps in project management through importance-performance analysis

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Abstract
This research aimed to identify and address critical competency gaps in project management using Importance–Performance Analysis (IPA). The study explored key competencies essential for project success and assessed their current performance levels to provide actionable improvement insights. A survey of 257 project management professionals evaluated the perceived importance and actual performance of various competencies. The IPA methodology was applied to analyze discrepancies and categorize competencies into IPA matrix quadrants. Descriptive statistics, reliability analysis, gap analysis, and a paired-sample t-test ensured robustness. Significant gaps emerged in areas such as informal communication, visual competencies, competence control, and methodological integration, indicating a need for targeted development programs. The IPA matrix offered a strategic framework for prioritizing resource allocation, identifying urgent improvement areas and strengths. This study contributes a novel approach to optimizing resources and improving project outcomes by integrating IPA into competency evaluation. The findings support practitioners and organizations in enhancing project management effectiveness through focused training and investment.

Keywords
project management; competency gaps; importance-performance analysis (IPA); project success; skill development.

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1. Introduction

1.1. Research context and problem formulation

The evolving complexity of projects in various industries necessitates a nuanced understanding of the competencies required for project managers to achieve success. Projects inherently vary across numerous dimensions such as nature, industry, client involvement, technology, size, team composition, risk, environment, complexity, and required competencies. These variations necessitate tailored project management approaches specific to both the industry and the individual project, indicating the need for differentiated project types and diverse management styles (Shenhar, 2001; Bjelica et al., 2023). Given the diversity in project characteristics, project managers are challenged to select the appropriate methodologies that ensure successful implementation and goal achievement. Research has consistently highlighted the correlation between structured project management approaches and project success, suggesting that the application of systematic methodologies often results in more predictable and favorable outcomes (Ciric Lalic et al., 2022; Badewi, 2016; Carvalho et al., 2015; Inayat et al., 2014; Joslin and Müller, 2014; Joslin, 2019; Mir and Pinnington, 2014; Rolstadas et al., 2014). Effective project management practices are known to significantly enhance the likelihood of project success (Ciric Lalic et al., 2022; Savkovic et al., 2023; Munns and Bjeirmi, 1996).

Traditional frameworks for assessing project success, such as the "iron triangle," focus on cost, time, and quality. Projects that meet their defined scope, cost, and time parameters are typically considered successful. However, this model has evolved to incorporate broader criteria including stakeholder satisfaction, organizational benefits, and long-term environmental impacts (Maylor, 2001; Machado and Martes, 2015; Ribeiro et al., 2013). Understanding the factors that influence project success is a crucial area of research, particularly focusing on human resources such as project managers and team members. Project success is often defined differently by various managers, influenced by their experience, knowledge, and contextual factors. Some managers prioritize completing projects on time and within budget to achieve customer satisfaction, while others emphasize effective communication, collaboration, and stakeholder engagement (Ayat et al., 2021; Zozulya et al., 2021; Zuo et al., 2018; Baier et al., 2022).

While numerous studies explore project success factors and competencies, most studies tend to focus either on success criteria (e.g., time, cost, and scope) or qualitative assessments of competencies without offering a prioritization mechanism grounded in empirical data. Furthermore, there is limited integration of project manager and team member perspectives into a unified framework. To address this gap, this study introduces the Importance–Performance Analysis (IPA) methodology as a novel approach to project management competency assessment. While IPA is well-established in service quality and business performance research, its application to project management remains limited. By comparing the importance and performance of specific competencies within a unified framework, IPA provides actionable insights for targeted improvements.

1.2. Aim of the study and research questions

In light of these gaps, the scientific aim of this paper is to develop an empirically validated framework for identifying and prioritizing competency gaps in project management by integrating project manager and team member competencies into a unified model using the IPA method. This approach contributes to the project management body of knowledge by offering a diagnostic and strategic tool for competency development and resource allocation, validated through a structured statistical and methodological process.

Based on the defined aim, this study seeks to answer the following research questions:

- RQ1: Which project management competencies are perceived as most important by project professionals?
- RQ2: How do project professionals assess the actual performance of these competencies in practice?
- RQ3: Which competency areas demonstrate the largest gaps between importance and performance, and how can they be prioritized for improvement?

In operationalizing these research questions, the study sets out to: (1) empirically evaluate the perceived importance and performance of a broad set of project management competencies; (2) compare the perspectives of project managers and team members within a unified Importance-Performance Analysis (IPA) framework; and (3) identify priority areas for targeted competency development through quadrant-based analysis.

To address these objectives, a quantitative survey was conducted involving 257 project professionals from the Western Balkans region. The sample included both project managers and team members operating across various industries. A purposive sampling strategy was employed to ensure a wide distribution of professional roles, organizational contexts, and sectors. The data collection took place between late 2023 and early 2024, using a structured online questionnaire disseminated through local chapters of the Project Management Institute (PMI) in Serbia, Bosnia and Herzegovina, and Montenegro. Leveraging established PMI networks allowed access to a professionally active and engaged respondent pool, reinforcing both the timeliness and practical relevance of the dataset.

The survey instrument was structured around six competency clusters, each reflecting a key domain of project performance: communication competencies, technical competencies, managerial competencies, leadership style, project team input factors, and project team process factors. Respondents were asked to assess both the perceived importance and actual performance of each competency using a 5-point Likert scale, allowing for a systematic comparison between expectations and realities in project environments.

The collected data were analyzed using the IPA technique, which positions each competency into one of four strategic quadrants: *"Concentrate here," "Keep up the good work," "Low priority,"* and *"Possible overkill."* This mapping enables a clear visualization of where skill gaps exist and which competencies warrant immediate attention versus those that are already sufficiently developed.

Importantly, the heterogeneous composition of the sample—both horizontally (across sectors and organization types) and vertically (across levels of experience and responsibility)—enhances the external validity of the findings. This diversity ensures that the results are not only statistically robust but also broadly generalizable to varied organizational and project contexts within the region.

The remainder of the paper is structured as follows. Section 2 presents the theoretical background, organizing project-related competencies into six validated clusters for empirical investigation. Section 3 outlines the research methodology, detailing the survey design, sampling strategy, and analytical procedures, including the application of the Importance–Performance Analysis (IPA). Section 4 presents the empirical results, structured around descriptive and inferential statistics and the quadrant-based IPA matrix, with an additional subsection explicitly linking findings to the research questions and objectives. Section 5 offers a discussion of key findings in the context of international literature, while Section 6 concludes with theoretical and practical implications, limitations, and directions for future research.

2. Theoretical background

2.1. Project manager-based competencies for achieving project success

The understanding of project success is incomplete without acknowledging the pivotal role of the project manager's competencies. Turner (1999) emphasized the human-centric nature of projects, highlighting the need to organize financial, material, and particularly human resources within specific constraints to achieve beneficial change. Over time, the role of the project manager has evolved to encompass strategic alignment, stakeholder engagement, and adaptive planning amidst increasing project complexity and uncertainty (Ahsan et al., 2013).

Effective project managers are distinguished not only by their capacity to apply technical knowledge but by their proficiency in communication, leadership, and coordination. Selecting and developing managers who can lead projects to successful outcomes despite resource limitations is thus a critical organizational challenge (Sabaa, 2001; Meredith & Mantel, 2006; Menon, 2024).

Communication competencies are frequently cited as critical success factors. These include both formal and informal communication mechanisms, active listening, and the use of verbal and visual communication to ensure clarity across diverse stakeholders. Montequin et al. (2016) identified communication among the top drivers of project success, echoed by others who emphasize the value of continuous updates, stakeholder dialogue, digital communication and responsive interaction (Fisher, 2011; Clarke, 2010; Heinz et al., 2006; Kolesnikov et al., 2016; Brill et al., 2006; Oh & Choi, 2020). Recent studies further stress the importance of soft competencies such as empathy, emotional awareness, and confidence-building in communication processes within agile and hybrid environments (Kearney et al., 2023).

Technical competencies remain indispensable, especially in tailoring methodologies—agile or traditional—to specific project contexts (Chow & Cao, 2008; Belassi & Tukel, 1996). These include effective planning, assessment, systems analysis, and adaptive use of digital tools (Durmic, 2020; Ramazani & Jergeas, 2015; Girish et al., 2019; Pinto et al., 2020, Đaković et al., 2020). Newer contributions propose refining these competencies into role-specific competency constructs, such as those developed for contractor project managers (Kassa et al., 2025), underscoring the evolving specificity in technical competencies sets across industries.

Managerial competencies further contribute to success by enabling project portfolio management, conflict resolution, and resource coordination (Maqbool et al., 2017; Đaković et al., 2020; Kurniady et al., 2022; Milenkovic et al., 2023). These competencies support efficient project oversight and integration of cross-functional knowledge. Recent literature emphasizes the link between managerial agility and the adoption of digital tools for collaborative decision-making, especially in resource-constrained or multicultural settings (Rosamilha et al., 2023).

Equally, leadership style has gained prominence as a core dimension of competency. Emotional intelligence, team motivation, sensitivity, and the ability to influence and empower are crucial leadership traits (Geoghegan & Dulewicz, 2008; Maqbool et al., 2017; Thite, 2000). Effective leaders inspire shared vision (Gundersen et al., 2012; Aga et al., 2016), reduce ambiguity, and establish inclusive environments that promote engagement and cohesion (Sunindijo et al., 2007; Newton, 2009; Nguyen & Hadikusumo, 2017; Kabore et al., 2021). Recent evidence suggests that developing critical thinking and decision-making competencies early in the project career pathway significantly strengthens leadership performance (Borg & Scott-Young, 2025).

These findings are synthesized in Table 1, which presents a comprehensive view of project manager competencies grouped into four validated clusters: communication competencies, technical competencies, managerial competencies, and leadership style.

Table 1. Project manager-based competencies for project success

Clusters	Factors	Sources
Communication Competencies	Frequent and clear communication; Quality communication; Strong verbal communication competencies; Strong graphical communication competencies; Spending more time in informal conversations; Active listening; Understanding communication among all project participants; Establishing formal communication channels; Appropriate communication with different audiences;	Montequin et al., 2016; Heinz et al., 2006; Fisher, 2011; Clarke, 2010; Newton, 2009

Clusters	Factors	Sources
	Establishing informal communication channels; Explaining and continuously communicating all project plan changes throughout the project lifecycle; Giving specific instructions to team members regarding each task.	
Technical Competencies	Effective planning; Efficient use of technology; Risk management; Technical competencies; Problem-solving; Ability to use project management methodologies (process analysis, system design, etc.); Focusing on critical elements of technical management (critical success factors, deadlines, financial reports); Adapting traditional and agile tools, techniques, and methods for each project; Thorough planning and prioritization; Managing project elements including schedule, costs, resources, risks; Establishing technological solutions for the customer; Controlling individual competency availability; Selecting and controlling subcontractors; Implementing and managing schedules and their execution; Assessing technical project risks; Setting deadlines; Understanding specific requirements.	Belassi and Tukel, 1996; Spalek, 2005; Taherdoost and Keshavarzsaleh, 2015; Durmic, 2020; Güngör and Gözlü, 2016; Loufrani-Fedida and Missonier, 2015; Ramazani and Jergeas, 2015; Girish *et al.*, 2019
Managerial Competencies	Managers capable of managing agile processes; Teamwork; Conflict management; Effective planning; Effective coordination; Efficient use of managerial competencies; Effective control and monitoring; Knowledge of available resources; Ability to manage agile processes; Project portfolio management.	Chow and Cao, 2008; Maqbool *et al.*, 2017; Belassi and Tukel, 1996; Spalek, 2005; Taherdoost and Keshavarzsaleh, 2015; Durmic, 2020; Güngör and Gözlü, 2016; Heinz *et al.*, 2006
Management Style - Leadership	Self-awareness; Team motivation; Human resource management; Human resource development; Sensitivity; Team empowerment; Project manager's influence on team members; Critical thinking.	Maqbool *et al.*, 2017; Taherdoost and Keshavarzsaleh, 2015; Nguyen and Hadikusumo, 2017; Newton, 2009; Thite, 2000; Geoghegan and Dulewicz, 2008; Taherdoost and Keshavarzsaleh, 2015

2.2. Project team members-based factors for achieving project success

Beyond the competencies of the project manager, the project team itself represents a strategic unit whose capabilities significantly affect project outcomes. Effective teams are characterized by alignment, cohesion, adaptability, and a balance of technical and soft competencies.

Literature distinguishes between input and process factors that shape team effectiveness (Liu & Cross, 2016). Input factors refer to contextual and structural preconditions such as team composition, leadership support, goal clarity, diversity, and rewards (Spalek, 2005; Chow & Cao, 2008; Belassi & Tukel, 1996). These establish the framework within which teams perform and directly affect early-stage planning and mobilization (Crawford & Nahmias, 2010; Oh & Choi, 2020).

Process factors capture the dynamic, interactive elements of team behavior: communication, learning, cohesion, problem-solving, commitment, and conflict resolution (Sudhakar, 2016; Wanjau et al., 2024; Montequin et al., 2016). Effective process mechanisms enable responsiveness, integration of diverse expertise, and sustained momentum throughout the project lifecycle. These dynamics are increasingly supported by innovative pedagogical approaches—such as game-based learning—that enhance motivation and collaboration in project team environments (Jääskä et al., 2022).

Team members' individual competencies—such as leadership potential, adaptability, stress resilience, and decision-making—are critical for functioning in multidisciplinary, volatile environments (Czainska, 2020; Songa, 2020; Khan et al., 2022). Strategic thinking, flexibility, and cross-functional collaboration amplify the impact of individual capabilities on collective performance. Moreover, competency frameworks tailored to specific project types help identify which competencies are most effective under varying conditions, as evidenced by recent comparative studies (Rosamilha et al., 2023).

Diversity, when managed inclusively, is a performance enabler rather than a challenge (Yoo et al., 2023). Furthermore, strong internal communication supported by structured feedback loops contributes to alignment, trust, and a culture of continuous learning (Manyara, 2020; Wanjau et al., 2024; Barmasai & Mbugua, 2020).

Table 2 categorizes team-based factors into input and process clusters, reflecting the theoretical grounding and practical relevance of team dynamics for project success.

Table 2. Project team members-based factors for project success

Clusters	Factors	Sources
Input Factors	Leadership; Management support; Rewards; Knowledge/competencies; Team diversity; Clearly defined goals.	Liu and Cross, 2016; Chow and Cao, 2008; Belassi and Tukel, 1996; Taherdoost and Keshavarzsaleh, 2015b; Durmic, 2020; Heinz *et al.*, 2006; Nguyen and Hadikusumo, 2017; Rota and Zanasi, 2011; Oh and Choi, 2020; Spalek, 2005; Taherdoost and Keshavarzsaleh, 2015a; Davis, 2016
Process Factors	Collaboration; Communication; Learning activities; Cohesion; Efforts; Commitment; Conflict resolution; Team climate; Performance.	Sudhakar, 2016; Liu and Cross, 2016; Belassi and Tukel, 1996; Montequin *et al.*, 2016; Rota and Zanasi, 2011; Oh and Choi, 2020; Zare *et al.*, 2016; Brill *et al.*, 2006; Belassi and Tukel, 1996; Durmic, 2020

2.3. Theoretical relevance of clustered competencies for empirical evaluation

The categorization of project-related competencies into four clusters for project managers (Table 1) and two clusters for project teams (Table 2) provides a theoretically grounded structure for the empirical model developed in this study. These clusters were derived by synthesizing findings from multidisciplinary literature and validated sources, allowing the study to operationalize a comprehensive set of competencies and behaviors relevant to project success.

The managerial clusters in Table 1 reflect distinct yet complementary domains: *Communication Competencies* ensure information exchange and alignment; *Technical Competencies* enable methodological precision; *Managerial Competencies* facilitate structural coordination and control; and *Leadership Style* addresses human dynamics and motivational climate. This decomposition allows for more precise identification of skill gaps and the design of tailored interventions, thereby directly supporting the paper's aim to prioritize competencies through Importance-Performance Analysis (IPA).

In Table 2, the dual classification into *Input Factors* and *Process Factors* reflects both the structural and behavioral dimensions of team effectiveness. This distinction enables the model to capture not only the presence of resources and capabilities at the outset of a project (input), but also the evolving dynamics and practices during project execution (process). By systematically relating these clusters to the performance gaps revealed in the empirical analysis, the study ensures that the theoretical framing aligns closely with the research questions and the overarching objective of guiding evidence-based competency development. Reinterpreting these in light of the IPA results offers deeper insight into which clusters drive project performance most effectively and which remain underdeveloped in practice.

3. Research Methodology

3.1. Questionnaire development

To systematically examine the competencies that contribute to project success, a structured questionnaire was developed based on a comprehensive literature review and validated measurement instruments. The questionnaire was designed to capture both the perceived importance and performance of project management competencies from the perspective of professionals involved in project work. The questionnaire consists of two main sections. The first section collects socio-demographic data (e.g., gender, education, years of experience, certification status) and organizational characteristics (e.g., presence of formal project management units, organization size), enabling deeper segmentation in data analysis.

The second section is structured around six competency clusters, each reflecting a critical domain of project performance: (1) Communication competencies (12 items); (2) Technical competencies (16 items); (3) Managerial competencies (9 items); (4) Leadership style (8 items); (5) Project team input factors (9 items), and (6) Project team process factors (8 items).

Each item was evaluated on a five-point unipolar Likert scale ranging from 1 ("complete disagreement") to 5 ("complete agreement"), assessing both the importance of the competency and its actual performance in practice. This dual measurement allows for the application of Importance–Performance Analysis (IPA), a strategic diagnostic tool for identifying skill gaps.

Importantly, the Project Manager Competencies Scale (PMSS) developed and validated by Jokanović Bajić et al. (2024) was adopted and integrated into the questionnaire to ensure psychometric rigor and content validity. PMSS is a novel and recently published instrument designed specifically to quantify the core competencies of project managers, offering a robust framework grounded in contemporary project management theory and practice.

To enhance the scope and relevance of the analysis, two additional clusters focusing on project team factors were included, thus extending the evaluation beyond the project manager and enabling a holistic, team-centered view of project competency dynamics. This structured design ensures that the collected data is suitable for robust quantitative analysis, enabling cross-role comparisons and strategic prioritization of training and development needs. The full version of the questionnaire used in the study is provided in Appendix A.

3.2. Data collection

Data collection was conducted using an online survey administered via the SurveyMonkey platform. The target group consisted of individuals with experience or involvement in projects, including both project managers and team members, to capture diverse perspectives on project management issues.

The online survey was distributed via the Project Management Institute (PMI) networks across Bosnia and Herzegovina, Serbia, and Montenegro in late 2023 and early 2024, ensuring the timeliness of data and relevance to current trends and challenges in project management. The distribution was carried out through validated respondent pools from the local chapters of the global PMI (Project Management Institute) network, ensuring access to engaged and professionally active

participants. This approach supported the inclusion of a wide spectrum of project professionals across sectors and industries.

Participants received instructions and a unique link to access the questionnaire, ensuring anonymity and preventing multiple submissions from the same device. Out of 281 completed questionnaires, 257 valid responses were included in the final analysis, excluding those with missing values or incomplete responses. This robust sample size, along with the geographical and professional diversity of respondents, ensures the reliability, validity, and representativeness of the findings and provides a solid foundation for the subsequent analysis.

3.3. Data analysis

The core objective of this research is to employ Importance-Performance Analysis (IPA) to evaluate project management competencies and identify critical areas for improvement. IPA, originally conceptualized by Martilla and James (1977), is a pivotal evaluative framework within management research. It juxtaposes the perceived importance of various competencies against their performance levels, thus identifying discrepancies and potential areas for enhancement.

The IPA methodology has been widely applied across diverse management disciplines to ascertain critical competencies and their execution efficacy. For instance, studies by Azzopardi and Nash (2013) have underscored IPA's utility in delineating priority areas for managerial action, thereby optimizing resource allocation toward competencies that significantly impact project outcomes. This approach aligns with the findings of Slack (1994), who advocated for IPA's application in identifying service quality dimensions within operational contexts, a principle readily adaptable to project management scenarios.

Applying IPA in this research offers a nuanced understanding of where to direct improvement efforts for enhancing project outcomes. By categorizing essential project management competencies into quadrants like "Concentrate Here" (high importance, low performance) and "Keep up the Good Work" (high importance, high performance), IPA serves as a foundational tool in strategic skill development. This methodological framework provides actionable insights, enabling project managers and teams to focus on critical areas that require enhancement while maintaining strengths that contribute to project success.

3.4. Sample demographics

The sample for this study was diverse and representative, encompassing a wide range of demographic backgrounds, professional roles, organizational types, and levels of project experience. The gender distribution was nearly equal, with 128 males (49.8%) and 129 females (50.2%). All respondents were highly educated: 49.8% held a Ph.D., 30.4% had completed university-level studies, 12.8% had a master's degree, and 7% had a high school education. The relatively high proportion of Ph.D. holders reflects the composition of the professional landscape in the Western Balkans, where individuals with advanced degrees are frequently employed in complex project environments, including roles that require analytical, managerial, or cross-sectoral coordination capacities. In many organizations across the region—particularly in public administration, research-intensive institutions, and consultancy-oriented roles—project responsibilities are often assigned to highly qualified staff, which is reflected in the educational structure of the sample. In terms of organizational representation, 47.1% of respondents reported that their organizations had a dedicated project/program/portfolio management unit, while 52.9% indicated the absence of such a unit. Only 8.2% of respondents held a formal project management certificate, pointing to a potential gap in certification and training in the region. Regarding roles within project teams, 35.4% of respondents were project team members, 36.6% were project managers, and the remaining 28% held other roles related to project environments. Experience in project management varied significantly among respondents, ranging from less than 1 year (13.6%) to over 30 years (3.1%), ensuring that both junior and senior professionals were represented. Respondents worked in organizations of all sizes: 39.7% were employed in small companies (1–50

employees), 35.8% in medium-sized organizations (51–200), and the rest in larger enterprises, including those with over 1,000 employees.

This heterogeneous structure of the sample ensures both horizontal (across sectors and organization types) and vertical (across experience and roles) representation, justifying the sample's representativeness. The broad distribution of respondents enhances the external validity of the study and strengthens the generalizability of the findings across different organizational and project contexts in the Western Balkans region.

4. Results

This section presents the findings of the study structured around the research questions and sub-objectives defined in the Introduction. The analysis is conducted in three main stages: (1) descriptive statistics, reliability testing, and gap analysis to explore the perceived importance and performance of competencies; (2) inferential statistical analysis through paired-sample t-tests to assess the significance of identified gaps; and (3) the use of the IPA matrix to prioritize competencies and guide strategic interventions (addressing RQ3; SO3).

4.1. Descriptive statistics, reliability and gap analysis

The Results section offers a comprehensive and systematic analysis of the essential competencies attributed to both project managers and team members that are critical to project success. Utilizing a multifaceted methodological approach—comprising descriptive statistics, reliability analysis through Cronbach's alpha, and a weighted gap analysis—this study evaluates the alignment between the perceived importance and actual performance of these competencies.

The findings demonstrate that respondents assign consistently high importance to a broad spectrum of competencies, with average scores ranging from 3.88 to 4.71. These results suggest a strong consensus regarding the relevance of these competencies in achieving successful project outcomes. In contrast, the performance scores exhibit greater variability, ranging from 3.59 to 4.17, which indicates notable discrepancies in how these competencies are being applied in practice.

The reliability of the measurement instruments is confirmed by Cronbach's alpha values exceeding the 0.7 threshold for both importance and performance dimensions, underscoring the internal consistency of the constructs measured. This methodological robustness provides a solid foundation for interpreting the performance gaps.

Unlike a simple arithmetic difference (e.g., Importance – Performance), this study employs a weighted gap formula commonly used in Importance–Performance Analysis (IPA) to emphasize competencies that are both highly important and underperformed. The formula applied is: Weighted Gap = (5 - mean performance (p) *(mean importance (I) / 5). This approach accentuates the urgency of improving competencies that are deemed highly important yet show lower levels of performance, ensuring that both dimensions are taken into account. Accordingly, the gap column presented in Table 3 is labeled as "Weighted Gap" to reflect this methodological decision. The weighted gap values thus provide actionable insights into priority areas for competency development.

The results of the descriptive analysis revealed substantial discrepancies between the perceived importance and actual performance of several critical project management competencies. These gaps provide important insights into areas that warrant immediate strategic attention and intervention.

To begin with, among the communication competencies, the largest performance gap is associated with informal communication channels. While this skill was rated with an importance score of 3.88, the performance score was slightly higher at 3.90, yielding a gap of 0.874. This indicates a considerable shortfall in the informal communication dynamics within project teams—an area that is often overlooked yet crucial for real-time coordination and fostering trust. Similarly, visual communication competencies exhibited a notable performance gap. Although respondents assigned a relatively high importance score of 4.07, the performance was rated at 3.96, resulting in a gap of 0.737. This suggests

that while the utility of visual tools and techniques is acknowledged, they are underutilized in practice. Furthermore, verbal communication competencies displayed a gap of 0.529 (importance 4.35; performance 4.07), indicating that verbal clarity and expressiveness remain an area needing further enhancement to improve overall team interaction and information dissemination.

Table 3. Importance and performance of the key competencies and factors

	Importance		Performance		
	Mean	Std. Deviation	Mean	Std. Deviation	Weighted Gap
Communication competencies	*Importance (α=.909)*		*Performance (α=.958)*		
K1 - Frequent communication	4.64	0.74	4.06	0.863	0.292
K2 - Quality communication	4.66	0.674	4.04	0.885	0.275
K3 - Verbal competencies	4.35	0.803	4.07	0.892	0.529
K4 - Visual competencies	4.07	0.895	3.96	0.876	0.737
K5 - Active listening	4.4	0.831	3.96	0.935	0.475
K6 - Informal communication	4.09	0.934	3.98	0.899	0.724
K7 - Understanding communication	4.45	0.762	4.05	0.849	0.446
K8 - Formal channels	4.1	0.862	3.95	0.939	0.711
K9 - Informal channels	3.88	0.97	3.9	0.991	0.874
K10 - Stakeholder communication	4.28	0.846	3.91	0.895	0.563
K11 - Specific instructions	4.35	0.833	3.96	0.967	0.515
K12 - Communicate changes	4.47	0.845	3.96	0.962	0.42
Technical competencies	*Importance (α=.947)*		*Performance (α=.971)*		
T1 - Use of technology	4.33	0.838	4.07	0.853	0.545
T2 - Technological solutions	4.26	0.835	3.97	0.891	0.588
T3 - Competence control	4.16	0.856	3.88	0.866	0.652
T4 - Manage schedules	4.42	0.733	4	0.896	0.464
T5 - Risk management	4.31	0.859	3.95	0.911	0.545
T6 - Combine methodologies	4.11	0.909	3.97	0.908	0.707
T7 - Planning and managing schedule	4.56	0.724	4.01	0.934	0.353
T8 - Set deadlines	4.48	0.826	3.99	0.927	0.415
T9 - Assess risks, deadlines and costs	4.53	0.816	4.02	0.92	0.378
T10 - Manage risks	4.43	0.825	3.95	0.902	0.45
T11 - Understand requirements	4.44	0.809	4.14	0.842	0.464
T12 - Solve problems	4.54	0.737	4.17	0.852	0.384
T13 - Focus on critical technical elements	4.37	0.8	4.03	0.881	0.508
T14 - Adapt tools	4.18	0.849	3.96	0.886	0.649
T15 - Planning and prioritization	4.53	0.754	4.05	0.907	0.381
T16 - Integrate methodologies	4.39	0.8	4.08	0.857	0.498
Managerial Competencies	*Importance (α=.942)*		*Performance (α=.968)*		
UK1 - Conflict management	4.45	0.752	3.97	0.951	0.437
UK2 - Resource knowledge	4.4	0.772	3.92	0.944	0.47
UK3 - Portfolio management	4.21	0.89	3.96	0.971	0.626
UK4 - Effective planning	4.52	0.754	4.04	0.987	0.388
UK5 - Effective use of management competencies	4.42	0.81	4.06	0.974	0.471
UK6 - Control and monitoring	4.4	0.825	4.01	0.969	0.481
UK7 - Coordination	4.51	0.779	4.03	0.976	0.395

	Importance		Performance		
	Mean	Std. Deviation	Mean	Std. Deviation	Weighted Gap
UK8 - Manage agile processes	4.31	0.831	3.94	0.998	0.544
UK9 - Team management	4.6	0.704	4.07	0.991	0.326
Leadership *Importance (α=.886)*		*Performance (α=.969)*			
L1 - Human resources management	4.59	0.692	4	0.976	0.328
L2 - Employee empowerment	4.62	0.673	3.97	0.985	0.302
L3 - Employee development	4.5	0.768	3.86	1.055	0.386
L4 - Employee motivation	4.6	0.736	3.86	1.082	0.309
L5 - Influence on team	4.44	0.766	3.96	1.002	0.444
L6 - Self-awareness	4.48	0.742	3.92	1.035	0.408
L7 - Sensitivity	4.18	1.003	3.9	1.105	0.64
L8 - Critical thinking	4.43	0.803	3.97	1.059	0.453
Project Team Input Factors *Importance (α=.878)*		*Performance (α=.944)*			
UF1 - Leadership	4.29	0.878	3.91	0.897	0.555
UF2 - Management support	4.5	0.731	3.99	0.918	0.399
UF3 - Rewards	4.33	0.893	3.59	1.177	0.481
UF4 - Knowledge/competencies	4.62	0.658	4.04	0.85	0.307
UF5 - Team diversity	4.37	0.905	3.9	1.017	0.491
UF6 - Clear goals	4.6	0.75	4.03	0.873	0.322
UF7 - Management competencies	4.19	0.926	3.95	0.927	0.64
UF8 - Tools and techniques	4.44	0.672	4.08	0.85	0.457
UF9 - Personal competencies	4.5	0.752	4.01	0.881	0.401
Project Team Process Factors *Importance (α=.894)*		*Performance (α=.964)*			
PF1 - Cooperation	4.71	0.63	4.09	0.909	0.237
PF2 - Communication	4.73	0.607	4.02	0.88	0.217
PF3 - Learning activities	4.51	0.773	3.84	1.012	0.376
PF4 - Cohesion	4.48	0.733	3.93	0.943	0.409
PF5 - Commitment	4.32	0.873	3.9	1.027	0.53
PF6 - Conflict resolution	4.55	0.734	4	0.985	0.36
PF7 - Team climate	4.61	0.683	4	1.032	0.312
PF8 - Team performance	4.52	0.713	4.06	0.864	0.39

Turning to technical competencies, the gap in competence control is particularly significant. With an importance score of 4.16 and a performance score of 3.88, the resultant gap of 0.652 reflects a systemic deficiency in managing and tracking the competencies of team members. This points to an urgent need for capacity-building programs focused on competence-based project staffing. Additionally, the integration of methodologies showed a substantial gap of 0.707 (importance 4.11; performance 3.97). This highlights a critical shortcoming in the ability of project managers to combine traditional and agile approaches effectively, necessitating hands-on training in hybrid project methodologies. A related issue is the adaptation of project management tools, where the gap reached 0.649 (importance 4.18; performance 3.96), indicating a failure to tailor tools to meet specific project demands in dynamic environments.

Within the cluster of managerial competencies, the most pronounced gap was recorded in portfolio management. The importance score for this skill stood at 4.21, while its performance was only 3.96, leading to a gap of 0.626. This suggests challenges in managing multiple projects simultaneously, particularly in aligning them with strategic objectives and optimizing resource distribution. Furthermore, the ability to manage agile processes displayed a gap of 0.544 (importance

4.31; performance 3.94), reinforcing the need for more robust training in agile frameworks and their practical application in project settings.

In the domain of leadership competencies, the greatest gap was observed in sensitivity, a key component of emotional intelligence. With an importance rating of 4.18 and a performance score of 3.90, the gap of 0.64 suggests that project managers may struggle to perceive and respond appropriately to team dynamics and individual needs. Likewise, critical thinking revealed a performance deficit of 0.453 (importance 4.43; performance 3.97), highlighting the necessity to foster more reflective and analytical leadership practices. The ability to influence the team also showed a performance shortfall of 0.444 (importance 4.44; performance 3.96), pointing to the need for development in motivational and inspirational leadership strategies.

Regarding project team input factors, management support emerged as the area with the largest gap (importance 4.19; performance 3.95; gap 0.64). This reflects an organizational weakness in providing adequate guidance, resources, and endorsement to project teams, which can hinder progress and undermine morale. The leadership capacity of team members also exhibited a notable gap of 0.555 (importance 4.29; performance 3.91), suggesting that teams may lack internally embedded leadership figures who can drive execution. In addition, team diversity showed a gap of 0.491 (importance 4.37; performance 3.90), indicating that while diversity is appreciated, its potential is not being effectively harnessed—calling for more inclusive practices and training in intercultural team management.

Finally, within the project team process factors, the largest discrepancy was related to team commitment. With an importance score of 4.32 and a performance score of 3.90, the gap of 0.53 underscores a lack of full engagement with project goals among team members. Team cohesion also revealed a substantial gap of 0.409 (importance 4.48; performance 3.93), suggesting a deficiency in collective unity and shared identity—both of which are crucial for effective collaboration. These findings point to the need for structured team-building activities and long-term strategies aimed at strengthening internal trust and goal alignment.

The analysis of importance-performance gaps underscores a consistent pattern: the competencies and attributes considered most essential for project success are also those that currently underperform. These discrepancies demand a targeted and strategic approach to workforce development, with a particular emphasis on communication, agile management, leadership, and team integration competencies.

4.2. The paired-sample t-test: assessing the alignment between importance and performance

The application of a paired-sample t-test in this study revealed statistically significant differences between the perceived importance and actual performance of key project success competencies. To quantify the gap, a simple arithmetic difference was calculated between the mean importance and performance scores for each factor (Importance – Performance), and this value is reported as the "Gap" in Table 4.

Table 4. Paired-sampled T-test for the means of importance and performance levels of the key performances of the project success.

	Importance (mean)	Performance (mean)	Gap (I–P)	t-value	Significance (p)
Communication competencies	4.3280	3.9875	0.3405	7.128	$p < 0.001$
Technical knowledge	4.3834	4.0174	0.3660	8.434	$p < 0.001$
Management competencies	4.4211	3.9458	0.4753	8.876	$p < 0.001$
Leadership	4.4798	3.9366	0.5432	8.738	$p < 0.001$
Project team input process	4.4228	3.9458	0.4770	9.243	$p < 0.001$
Project team process factors	4.5574	3.9799	0.5775	9.335	$p < 0.001$

*Significant at the 0.01 level.

The t-test results demonstrate that these differences are statistically significant at the $p < 0.001$ level across all competencies. This indicates that the observed discrepancies are unlikely to be due to chance, and instead reflect meaningful gaps between what is considered critical for project success and what is actually being achieved in practice.

The largest gaps were observed in competencies related to project team process factors and leadership, signaling the need for focused interventions. In contrast, smaller gaps in communication competencies and technical knowledge may reflect existing training or more routine application in practice. Nonetheless, all competencies examined exhibit statistically significant gaps, which highlights the need for improved alignment between expectations and delivery in project work.

4.3. Key findings contextualized through Importance-Performance Analysis (IPA) matrix Importance-performance analysis (ipa) matrix

The IPA matrix further contextualizes these findings by categorizing competencies into quadrants, providing a strategic framework for action (Figure 1). By mapping various competencies across the four quadrants of the IPA matrix—Concentrate Here, Keep up the Good Work, Low Priority, and Possible Overkill—we have gained insightful perspectives on the current state of project management abilities. The results of the IPA analysis in IPA Matrix are presented in Figure 1.

The application of the Importance-Performance Analysis (IPA) matrix offers a structured framework for diagnosing and prioritizing project management competencies. By positioning each competency within one of four quadrants—based on its perceived importance and actual performance—this method enables a strategic evaluation of areas requiring development and those demonstrating operational excellence.

The "Concentrate Here" quadrant includes competencies deemed highly important but underperforming, thus representing critical priorities for intervention. Notably, this includes key leadership competencies such as employee empowerment, management of employee development, team motivation, influence, and self-awareness. These competencies are essential for fostering transformational leadership and maintaining team alignment with project goals. Similarly, process-oriented team factors—such as learning opportunities, team cohesion, and conflict resolution—appear in this quadrant, indicating the need for enhanced mechanisms that support collaborative team functioning and the resolution of interpersonal challenges. Also included are issues related to communication and managerial support, such as the ability to clearly communicate project plan changes and the extent of support provided to project team members. The placement of these competencies signals deficiencies in leadership infrastructure, learning culture, and stakeholder alignment.

The "Keep up the Good Work" quadrant reflects competencies that are both highly valued and well-executed. These include collaboration and communication within project teams, a positive team climate, high levels of team performance, and technical proficiencies such as planning, schedule control, and risk assessment. These competencies serve as anchors of stability and efficiency in project execution. Their presence in this quadrant suggests that organizations are successfully maintaining foundational competencies that contribute to the consistent delivery of project outcomes.

The contrast between these two quadrants illustrates the need for a dual strategic focus: one that preserves and nurtures existing strengths, while simultaneously addressing areas of strategic vulnerability. Such a balanced approach supports sustainable project performance and enables more effective capability development over time.

The "Low Priority" quadrant includes competencies with lower importance and lower performance. Examples include diversity management, formal recognition systems, and several team member management competencies. While not immediately critical to project success, these areas contribute to long-term organizational maturity and should not be entirely neglected. Also present are several communication competencies—such as visual communication, active listening, and informal communication—that, while fundamental to interpersonal effectiveness, appear to have limited perceived strategic impact within the study's context. These findings suggest a possible misalignment between communication strategies and perceived project needs, warranting further examination.

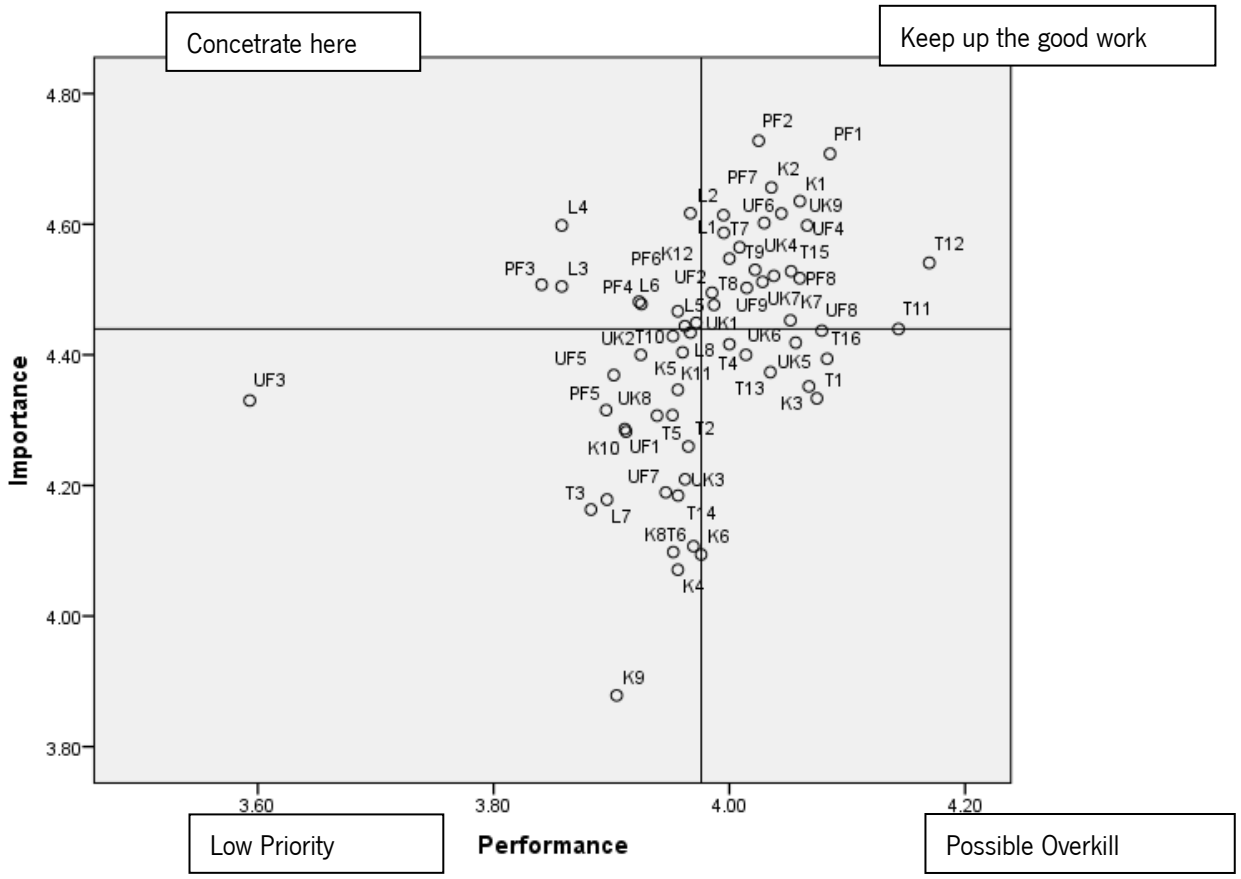

Fig. 1. IPA matrix

The "Possible Overkill" quadrant identifies competencies with strong performance but lower relative importance. These include technological fluency, advanced scheduling, integration of diverse methodologies, and control and monitoring competencies. While these competencies are operationally beneficial, the data suggest that organizations may be over-investing in areas that no longer represent the most pressing development needs. These insights call for a rebalancing of resource allocation to maximize return on training and development investments.

Through the IPA analysis, it becomes clear that specific areas require urgent attention to bridge performance gaps, while others indicate strong performance that should be maintained. This strategic approach facilitates targeted interventions, optimizing resource allocation, and enhancing the overall effectiveness of project management practices.

4.4. Summary of key results in light of the research questions and sub-objectives

The results of the conducted analyses directly address the study's three research questions and corresponding sub-objectives, offering a comprehensive interpretation grounded in empirical evidence.

Regarding RQ1 – Which project management competencies are perceived as most important by project professionals – the descriptive analysis showed that respondents consistently rated all six competency clusters as highly important, with average importance values ranging from 4.32 to 4.73. Particularly high scores were attributed to process-related team factors such as cooperation, communication, and clear goal setting, confirming the central role of interpersonal and team dynamics in contemporary project environments. These findings fulfill Sub-objective 1 by empirically identifying which competencies are perceived as most critical across industries and roles.

Regarding RQ2 – How do project professionals assess the actual performance of these competencies in practice – the data revealed substantial variation in performance scores (ranging from 3.59 to 4.17), indicating significant misalignment between perceived importance and day-to-day application of key competencies. This gap was especially evident in areas such as informal communication, leadership sensitivity, and competence control. The paired-sample t-test confirmed that the differences between importance and performance are statistically significant across all clusters ($p < 0.001$), thus validating the presence of measurable skill deficits in practice. These results address both RQ2 and Sub-objectives 1 and 2, as they not only measure but statistically compare the importance and performance across project roles.

Regarding RQ3 – Which competency areas demonstrate the largest gaps between importance and performance, and how can they be prioritized for improvement – the IPA matrix enabled the strategic categorization of competencies. The "Concentrate Here" quadrant identified high-priority gaps in leadership (e.g., employee empowerment, team influence), team process factors (e.g., cohesion, learning), and communication (e.g., communicating changes). These competencies are both highly valued and underperforming, making them urgent targets for intervention. Conversely, competencies such as planning, scheduling, and risk control were positioned in the "Keep up the Good Work" quadrant, confirming their continued relevance and effective implementation. These insights directly respond to RQ3 and achieve Sub-objective 3, by identifying which competencies should be prioritized for development based on quadrant-based analysis.

The triangulation of descriptive, inferential, and quadrant-based methods confirms the study's core argument: while project professionals widely agree on which competencies are most important, these competencies are not always executed effectively in practice. This evidence provides actionable insights for the design of competency-based training, team development strategies, and future research on skill-based project performance.

5. Discussion

The findings from the descriptive statistics, reliability analysis, and gap analysis offer deep insights into the current state of project manager and team member competencies required for successful project implementation. By employing the Importance-Performance Analysis (IPA) framework, this study provides a strategic understanding of which competencies are being effectively applied and which require urgent attention. The revised discussion explicitly connects these findings to the broader international literature, drawing clear parallels and contrasts with recent global research to emphasize both their contextual relevance and broader applicability.

5.1. Key findings and their alignment with international research

The analysis revealed substantial gaps in key competencies essential to project success, most notably in the areas of informal and visual communication. These findings reinforce existing global research that underscores communication as a foundational pillar of effective project management (Montequin et al., 2016; Fisher, 2011). Although the centrality of communication is widely acknowledged, recent research suggests that its practical significance can vary across different project contexts. For example, a systematic review of 173 competencies spanning 14 project types showed that communication, while universally important, may carry different weights depending on the specific project type (Rosamilha et al., 2023).

Among communication competencies, the gap in informal communication is particularly concerning. Informal exchanges are vital for enabling real-time collaboration and fostering trust within teams—especially in fast-paced, dynamic environments (Fisher, 2011). The underperformance in this area may indicate structural or cultural barriers that restrict open and spontaneous interaction. As suggested by Heinz et al. (2006), creating organizational cultures that actively promote informal dialogue—through initiatives like team-building activities or open-door policies—can enhance transparency and coordination. These conclusions are further reinforced by Kearney et al. (2023), who identified informal

and interpersonal communication as part of the five essential soft competencies for project managers in modern work environments.

Similarly, the underutilization of visual communication competencies—despite their high perceived importance—points to a need for greater emphasis on visual clarity in project management. This may stem from limited training in visual tools or an over-reliance on text-based communication. Addressing this gap requires intentional investment in visual communication training and the integration of visual aids into day-to-day project practices (Brill et al., 2006). In today's hybrid and remote project settings, the prominence of such competencies is only increasing, as emphasized again by Kearney et al. (2023).

Beyond communication, significant gaps were observed in technical proficiencies such as competence control and the ability to combine methodologies. These findings are consistent with Durmic (2020), who stressed the importance of continuous competence tracking to ensure team alignment with evolving project demands. Kassa et al. (2025) further reinforce this by demonstrating how top-performing project managers—particularly in the construction sector—are those who score highly in communication, leadership, and technical competencies. Their work supports a more individualized, development-focused approach to training, which our findings indicate is needed across sectors.

The necessity for tailoring training based on project type is also echoed in the systematic review by Rosamilha et al. (2023), who argue that competency requirements differ significantly between traditional, agile, and extreme project environments. This supports the idea that generalized training programs may be insufficient and that more targeted, context-sensitive development paths are needed (Camilleri, 2012). Embedding continuous, competency-based assessments into organizational routines could provide a structured way to identify these gaps and respond with tailored learning initiatives.

The observed difficulties in integrating diverse methodologies align with broader concerns in international literature. Ramazani and Jergeas (2015) highlight the growing need for flexibility in project environments, where project managers must draw upon a wide range of methods. Similarly, Menon (2024) emphasizes that project professionals should be equipped to manage various types of projects—traditional, agile, and extreme—requiring not only awareness of methodologies but also the ability to fluidly combine them. Our findings suggest a persistent gap in turning this theoretical knowledge into practical capability, a gap that Chow and Cao (2008) previously identified in their performance framework for agile project management. Kearney et al. (2023) and Jääskä et al. (2022) offer potential solutions: incorporating experiential learning, gamification, and hands-on exercises into project management training to better bridge the theory-practice divide.

Likewise, the gaps in portfolio management and agile process management underscore the need for improved strategic and adaptive capabilities. The former is crucial for aligning multiple projects with organizational strategy, a view long supported by Maqbool et al. (2017) and Güngör and Gözlü (2016). The latter—agile implementation—remains essential for navigating complexity and change (Belassi and Tukel, 1996; Chow and Cao, 2008). Our findings suggest that while agile principles are conceptually valued, many organizations fall short in embedding them into routine practice, necessitating more robust, practical training programs and continuous professional support.

When it comes to leadership competencies, deficiencies in areas such as sensitivity, critical thinking, and team influence highlight the enduring importance of emotional intelligence. As Maqbool et al. (2017) and Thite (2000) note, emotionally intelligent leadership is indispensable for managing diverse teams and sustaining morale. The gap in sensitivity uncovered in this study may point to inadequate preparation in managing interpersonal dynamics. Leadership development programs should thus incorporate modules focused on emotional intelligence and self-awareness.

Critical thinking, another domain where a significant gap was observed, is vital for effective decision-making in uncertain environments (Nguyen & Hadikusumo, 2017). However, recent international research points to a general lack of structured interventions for developing this skill. Borg and Scott-Young (2025), in their systematic review, argue that although critical

thinking is frequently cited as a top competency, its actual development remains poorly supported. They suggest practical interventions—such as mentoring, gamification, and targeted feedback—as promising pathways. Our findings support this and indicate an urgent need to translate these approaches into training practice.

The influence on team members is also critical for effective leadership. As Geoghegan and Dulewicz (2008) suggest, it is among the key predictors of project success. However, our results reveal that many project leaders may lack the capacity to inspire or mobilize their teams. Gundersen et al. (2012) advocate for transformational leadership models that engage team members more fully—an approach that could directly address the deficits identified in our study.

Finally, the findings related to project team input and process factors—such as management support, leadership within the team, diversity, and commitment—highlight persistent gaps in organizational support structures. These align with global evidence showing that strong management support is vital for project continuity and morale (Liu and Cross, 2016). The deficiency in intra-team leadership parallels results from Taherdoost and Keshavarzsaleh (2015b), who emphasize the importance of empowering team members with leadership responsibilities. Moreover, our findings on team diversity echo Yoo et al. (2023), who found that while diversity brings innovation potential, it often goes untapped due to poor integration practices.

Low commitment among team members may signal a lack of motivation or engagement, a challenge widely documented in international studies. Wanjau et al. (2024) stress the importance of clearly defined goals and recognition mechanisms for enhancing team commitment—strategies that could be readily adopted to close this particular gap.

6. Conclusion

This study offers a comprehensive empirical examination of project management competencies by applying the Importance–Performance Analysis (IPA) framework to identify critical gaps between perceived importance and actual performance. Based on responses from 257 project professionals across the Western Balkans, the analysis revealed pronounced discrepancies in areas such as informal and visual communication, methodological integration, competence control, portfolio and agile process management, and leadership sensitivity. These findings emphasize the persistent mismatch between what is considered essential for project success and the competencies currently applied in practice. By operationalizing theoretical competency clusters through empirical methods, this research confirms the diagnostic potential of the IPA matrix and contributes to building a context-sensitive, evidence-based framework for competency development.

6.1. Implications for theory and practice

The identified gaps have significant implications for both project management research and professional practice. Theoretically, the results reaffirm the value of competency-based frameworks while advocating for their evolution to better reflect soft competencies, such as emotional intelligence, adaptability, and communication—particularly in hybrid and agile environments. The IPA matrix proves useful as a strategic lens through which organizations can evaluate and prioritize competencies that yield the highest impact on performance.

From a practical standpoint, the findings suggest that many organizations are underinvesting in foundational, yet underperforming, competencies—most notably those related to informal communication, visual clarity, and competence monitoring. Training programs should be strategically redesigned to emphasize these areas, alongside agile management practices and transformational leadership. Leadership development initiatives should integrate experiential learning, mentoring, emotional intelligence training, and structured critical thinking exercises. The IPA quadrants also provide a tangible tool for resource allocation, allowing practitioners to distinguish between competencies that require urgent attention and those that may be currently overemphasized.

6.2. Main contributions and relevance

This study offers several contributions to the project management field. First, it introduces an empirically grounded, quadrant-based diagnostic tool for prioritizing competency development. Second, it addresses both individual-level and team-level factors, bridging a gap in existing literature that often isolates project manager capabilities from team dynamics. Third, it provides a replicable methodological framework applicable in both academic and organizational settings.

The results are particularly relevant to project managers, HR professionals, training providers, certification bodies, and researchers. Practitioners can use the IPA matrix to inform targeted upskilling initiatives, while organizations may benefit from the insights when designing training pathways, job profiles, and recruitment strategies. Certification agencies and policymakers may also draw on the findings to realign curricula and standards with real-world demands.

6.3. Limitations and future research directions

Despite the methodological rigor, this study is not without limitations. The reliance on self-reported perceptions introduces the possibility of social desirability or recall bias. Future research should consider triangulating data sources through peer assessments, 360-degree evaluations, or behavioral observations to enhance validity. Additionally, the study's regional focus on Bosnia and Herzegovina, Serbia, and Montenegro may limit the generalizability of the results to broader international contexts. Expanding the dataset to include a more diverse global sample would enhance external validity and facilitate cross-cultural comparisons.

Future research should also explore the longitudinal evolution of competencies—particularly how targeted interventions influence skill acquisition over time. Comparative studies across industries and project types could help isolate contextual factors that shape competency needs. Moreover, extending the IPA framework to emerging project roles (e.g., sustainability coordinators, agile coaches) could further enrich the theoretical and practical discourse on project success in contemporary settings.

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Appendix A. Project Management Competency Questionnaire

Section 1: Demographic questions

1. Gender:
   ☐ Male ☐ Female
2. Age: _____
3. Highest level of education completed:
   ☐ High School ☐ Bachelor's Degree ☐ Master's Degree ☐ PhD
4. Does your organization have a dedicated PM unit?
   ☐ Yes ☐ No
5. Do you hold a project management certification?
   ☐ Yes ☐ No
6. Your current role:
   ☐ Project Manager ☐ Project Team Member ☐ Other: _____
7. Years of experience in project management:
   ☐ <1 ☐ 1-2 ☐ 3-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ 21-30 ☐ >30
8. Number of employees in your organization:
   ☐ 1-50 ☐ 51-200 ☐ 201-500 ☐ 501-1000 ☐ >1000
9. Number of projects your organization is currently implementing:
   ☐ 1 ☐ 2-10 ☐ 11-20 ☐ 21-30 ☐ >30
10. Organizational structure:
    ☐ Organic ☐ Mechanistic ☐ Mixed

Please rate each of the following items twice: first for Importance and then for Performance, using the scale below:

1 = Not important / Not performed at all

5 = Extremely important / Performed excellently

Section 2: Communication Competencies

Competency	Importance [1–5]	Performance [1–5]
Frequent communication		
Quality communication		
Verbal communication competencies		
Visual communication competencies		
Active listening		
Informal communication		
Understanding of communication		
Formal communication channels		
Informal communication channels		
Communication with stakeholders		
Giving specific instructions		
Communicating project plan changes		

Section 2: Technical Competencies

Competency	Importance [1–5]	Performance [1–5]
Use of technology		
Establish technological solutions		
Competence control		
Manage project schedules		
Risk management		
Combine project methodologies		
Planning and managing schedules		
Set deadlines		
Assess risks, deadlines, and costs		
Manage risks		
Understand project requirements		
Solve problems		
Focus on critical technical elements		
Adapt tools and techniques		
Thorough planning and prioritization		
Integrate traditional and agile methodologies		

Section 3: Managerial Competencies

Competency	Importance [1–5]	Performance [1–5]
Conflict management		
Knowledge of available resources		
Project portfolio management		
Effective planning		
Use of management competencies		
Control and monitoring		
Coordination		
Manage agile processes		
Team management		

Section 4: Leadership Competencies

Competency	Importance [1–5]	Performance [1–5]
Human resources management		
Empowerment of employees		
Employee development		
Employee motivation		
Influence on team members		
Self-awareness		
Sensitivity		
Critical thinking		

Section 5: Project Team Input Factors

Competency	Importance [1–5]	Performance [1–5]
Leadership		
Management support		
Reward systems		
Knowledge and competencies		
Team diversity		
Clear project goals		
Management competencies		
Tools and techniques		
Personal competencies		

Section 6: Project Team Process Factors

Competency	Importance [1–5]	Performance [1–5]
Cooperation		
Communication		
Learning activities		
Cohesion		
Commitment		
Conflict resolution		
Team climate		
Team performance		

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