

Beyond the Iron Triangle: Revisiting Project Manager Competencies and Their Link to Project Success; A Thematic Synthesis of Empirical Evidence, 2015-2024

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ABSTRACT: Although time, cost and quality remain the key project success factors, a growing body of research suggests that the project manager is a key contributor to project success. To address three questions, including: What are the criteria used in the literature to define project success? What project manager competencies are the most frequently studied? What is the relationship between project manager competencies and project success? This review brought together thirteen empirical studies published from 2015 to 2024. The number of records identified in Google Scholar by using the PRISMA search protocol was 1040, which was first screened by title and abstract, then by full-text, and finally by thematic analysis using Braun and Clarke's approach to thematic analysis. The evidence has been drawn together in two different theoretical lenses: the Resource Based View (hard (technical) vs soft (interpersonal) competencies) and the Project Manager Competency Development (knowledge, personal and performance competencies). Stakeholder and organization-level measures are growing in importance alongside time, cost and quality as the traditional success metrics. The most common reported competencies were emotional intelligence, communication, interpersonal skills, and leadership, which were often, but not always, correlated with project success, and this correlation was not found in the bureaucratic, centrally governed settings.

KEYWORDS: Project Manager Competencies, Project Success, Systematic Literature Review, Resource-Based View, PMCD Framework

Introduction

Project management expenditures are at an all-time high, and projects continue to fail at an unacceptable rate. According to industry estimates, the rate of project failure, based on scope, schedule, or budget, is approximately 30 percent (Project Management Institute [PMI], 2023), and has not changed significantly over the past few decades. But for most of that improvement, it's been all about the process: better scheduling tools, more rigid risk registers, more robust governance structures. Much less focus has been directed at the person who is running the project day-to-day. The imbalance is one to examine as it is conclusive that the project manager and, in particular, the skills of

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the project manager have a significant influence on the success or failure of the project (Crawford, 2005; Moradi et al., 2020).

These skills go far beyond the ability to use scheduling software or a budgeting spreadsheet. Many of the other skills that are more difficult to measure, such as reading a room, keeping a project team together when under stress, or navigating scope creep without alienating a client, can be tied to specific project results. Berg and Karlsen (2016) attribute stronger project performance to the leadership behaviour of the project manager rather than to the tools at their disposal and provide an argument for the greater effect of soft skills over process and technology. This literature is nevertheless scattered across construction, IT, healthcare, and public-sector journals, each using its own vocabulary for what is frequently the same underlying idea. Anyone trying to assemble a competency framework, a training curriculum, or a hiring rubric is, in effect, piecing it together from scattered fragments.

Reviews capable of consolidating this fragmented evidence remain rare. Ahmed et al. (2021) reviewed project managers' leadership competencies specifically and concluded, importantly for the present study, that existing competency lists are neither well organised nor ranked by importance. Iriarte and Bayona (2018, 2020) reviewed IT project success factors more broadly but did not treat the manager's competency profile as the central focus. More recently, Ochoa et al. (2023) reviewed ten studies published between 2010 and 2022 and similarly found that personal and social competencies - Leadership, communication, and emotional intelligence - dominate the empirical record, noting that Pakistan alone supplied roughly half of the eligible studies. These reviews establish that a competency-success relationship exists, but none sets that relationship against a structured account of what "success" means across different organisational levels. Supplying that cross-reference is the contribution the present review sets out to make.

Research Problem

This review is not addressing a shortage of research on project management as such; Chen et al. (2019) and Moradi et al. (2020) have all added to a sizeable literature. The actual problem is that this body of work is inconsistent and fragmented in how it identifies and ranks the competencies that matter, and in how it defines the success those competencies are meant to produce. That fragmentation leaves practitioners, trainers, and researchers without a shared answer to what a competent project manager actually looks like, or to what evidence would settle the question.

Research Questions and Objectives

This review therefore pursues three research questions:

RQ1: Which criteria appear most often in the empirical literature's definitions of project success?

RQ2: Which project manager competencies receive the most research attention, and how can they be meaningfully grouped?

RQ3: How do project manager competencies relate to project success?

With respect to these questions, the review is intended to (a) uncover the most prevalent success criteria found in the literature, (b) identify and classify key project management competencies found in a variety of theories, and (c) explore the relationships among project management competencies and the dimensions of project success in various sectors and contexts.

Literature Review

Conceptualizing the Project Manager

The definition PMI gives the project manager is more of an individual who is responsible for leading a team to achieve a project's objectives (PMI, 2015), which is a bit understated of what the role entails. In reality, the role is situated at the intersection of multiple areas of management: scope, time, cost, risk and resources (Heagney, 2016), and the incumbent needs to act as a communication broker between parties that often have conflicting priorities. El-Sabaa (2001) sees the act of defining these responsibilities as an essential precondition before competency can be meaningfully placed on the project manager's job at all. If you have no idea of what a project manager does, then the label of competency may turn out to be a void adjective placed on a vague job title.

Technical prowess and industry-specific skills were long assumed to be the key to the position (Beale & Freeman, 1991), a notion that is outdated. The literature has evolved to a more holistic perspective of the project manager as a boundary-spanning and relationship-oriented role, in contrast to a purely technical role, as projects have become increasingly complex in terms of geography, discipline and stakeholder groups (Loufrani-Fedida & Missonier, 2015). As a result, the paths people take into the profession are quite varied, with some being promoted based on their leadership, some based on their technical skills, and others based on their academic training in the profession (Zaval & Wagner, 2011).

Project Success: A Moving Target

The success of a project is often just a binary answer: the deadline was met, or it was not, but as it always does, it's never stayed that simple for long. The first formulations that prevailed in the 1980s, suggested by Ika (2009), equated success with the "iron triangle": did the project meet its time, cost, and scope limits? These traditional metrics tell only half the story, and can be misleading on their own (Muller & Jugdev, 2012). The 1990s and early years of the 2000s saw the question of whether technical objectives have been achieved, rather than whether they were met on time, being raised, and in subsequent research, stakeholder satisfaction and, at times, environmental impact were included (Muller & Jugdev, 2012). In spite of this, across most of the studies, irrespective of project complexity and context, the three most important parameters are time, cost and quality, as Turner and Xue (2018) state in their observations: 'A project can be deemed profitable even when it goes over budget and over schedule, as long as strategic goals are achieved.'

It is not that these three factors are no longer there, but rather what has replaced them. Here, a four-level model of distinctions between project, organisation, industry and societal levels of analysis is helpful, as it makes explicit that what is considered 'success' answers a different question depending on who is asking (Zwikaël & Meredith, 2021; Volden, 2018). At the project level, success is becoming more commonplace and is increasingly characterized as efficient execution (on time, on budget, to specification), as well as safety and governance measures (Volden, 2018). At the organisational level, the success of the project is evaluated in terms of strategic fit, which is defined as the project's progress in assisting the sponsor's intended goals and the expected benefits (Zwikaël & Meredith, 2021). The success of the project at the industry level is determined by whether it has advanced the industry, such as the introduction of new practices or higher standards (Serrador & Turner, 2015). The iron triangle is almost absent at the societal level: sustainability, job creation and connection to national development concerns are much more important (Volden, 2018). This 'layered' view is important within the current review as it aids in understanding why the primary studies included do not consistently use a single success measure, but are instead addressing questions posed at varying organisational levels, implicitly.

Conceptualizing Competency

There are many different definitions of competency in the project management literature, but there is not a lot of agreement in those definitions. The International Project Management Association equates competency to the application of knowledge and capability towards an intended outcome (IPMA, 2015) and PMI's own definition closely resonates with this but also includes reference to regulatory compliance and stakeholder expectations (PMI, 2017); its more recent guidance equates competency, in part, with power skills—the attitudes and interpersonal capacities that enable a manager to align a team with organizational goals (PMI, 2023). Others, such as Hanna et al. (2016), take the concept of competency further: they agree that competency is essentially about being able to perform effectively in the face of changing project conditions, rather than following a rigid checklist of tasks. The most economical definition comes from Bashir et al. (2021): competency is the combination of skill, talent and capacity that is required to achieve the desired outcomes.

Much of this discussion remains rooted in Boyatzis' (1991) previous model. He sees competency as something that lies beneath a person's individual characteristics such as personality, aptitude, and accumulated knowledge, which predict superior performance and that the research and institutions were developed on, and not on top of. (PMI, 2017; IPMA, 2015). Although they emphasize different aspects, both definitions imply that competency is not a single element, but a package of knowledge, skill, and disposition, applied toward a specific, measurable goal (Crawford, 2005).

Theoretical Lenses: Resource-Based View and the PMCD Framework

Two theories frequently appear in the competency literature and affect the analysis to follow in this review.

The RBV was first used to account for the competitive advantage of the firm (Wernerfelt, 1984), but later adapted to the individual level. When considering project managers, RBV applies the following principles: the value of the competencies that a project manager brings to the project; the scarcity of the competencies in the workforce; and the difficulty of imitating the competencies, whether through formal training or accumulated experience or disposition. RBV is a natural way to distinguish between "hard" competencies (technical, teachable, standardised) and "soft" competencies, which are those that do not lend themselves to training and certification because they are harder to teach.

The Project Manager Competency Development (PMCD) framework was created in PMI's own body of knowledge (PMI, 2002), and structurally echoes the framework developed by the International Project Management Association (Carvalho et al., 2015), which is divided into three parts: professional, behavioural, and contextual competency. The PMCD framework raises questions about the type of competency being developed, as it distinguishes between knowledge-based, personal and performance-based competencies, and the RBV question is about whether a competency is an advantage: the language of competency development programmes is more at the practitioner level (Cartwright & Yinger, 2007). Much of the original framework of the PMCD has since been integrated into PMI's Talent Triangle, which, in the update to the seventh edition of the PMBOK Guide, changed its terminology to replace the three PMCD domains with Ways of Working, Power Skills, and Business Acumen - a change noted in Section 5, given its direct relevance to the present findings. The two frameworks are not mutually exclusive; the RBV is one way to understand that some competencies are important strategically, and the PMCD is a more operational view of where they reside, which can be viewed as a descendant of the PMCD Talents Triangle.

Positioning the Present Review

This literature highlights three gaps that recur in the interests of project manager competency that have been expressed over the last few decades. Comparing studies is not easy because there is no consensus on the meaning of project management and no consensus on what competency of a project manager is (Karlsen et al., 2005). Second, systematic reviews on the topic remain scarce, and those that exist rarely rank the competencies they identify by relative importance or empirical strength (Ahmed et al., 2021). Third, and most directly relevant here, very few reviews connect the competency literature back to a structured account of what success itself means, despite evidence that success criteria shift across organisational levels, and that personal and institutional factors - from leadership style (Abbas & Ali, 2023) to organisational culture (Adekiya & Bernardes, 2020) and knowledge-sharing norms (Imam & Zaheer, 2021) - shape how strongly competencies translate into outcomes. The present review addresses this combination directly, through the systematic and PRISMA-informed method described next.

Methodology

Research Design

This review follows a systematic literature review (SLR) design, chosen for the transparent and replicable way it locates, appraises, and synthesizes empirical evidence on a bounded research question (Newman & Gough, 2020). Reporting follows the logic of the PRISMA guidelines (Page et al., 2021), which set out both the sequence of screening decisions and the flow diagram conventionally used to document them (Figure 1). The use of an SLR over a narrative review is selected because of the fragmentation of the competency literature, and because there is a structured protocol that restricts how much the reviewer brings to the reading of the studies to be included and the exclusion of those that are not.

Search Protocol and Databases

Search terms were organized around two conceptual clusters: project manager competency (“project manager's competency”, “project manager's competence”, “project manager's skill”, “project manager's skills”) and project success (“project success”, “project success criteria”), combined with the Boolean operators AND and OR. Google Scholar served as the primary search engine, in keeping with earlier reviews in this field (Marcelino-Sadaba et al., 2015; Silvius & Schipper, 2014) and was supplemented by manual backward citation-tracking through the reference lists of retrieved articles to surface studies the keyword search alone might have missed.

Eligibility Criteria

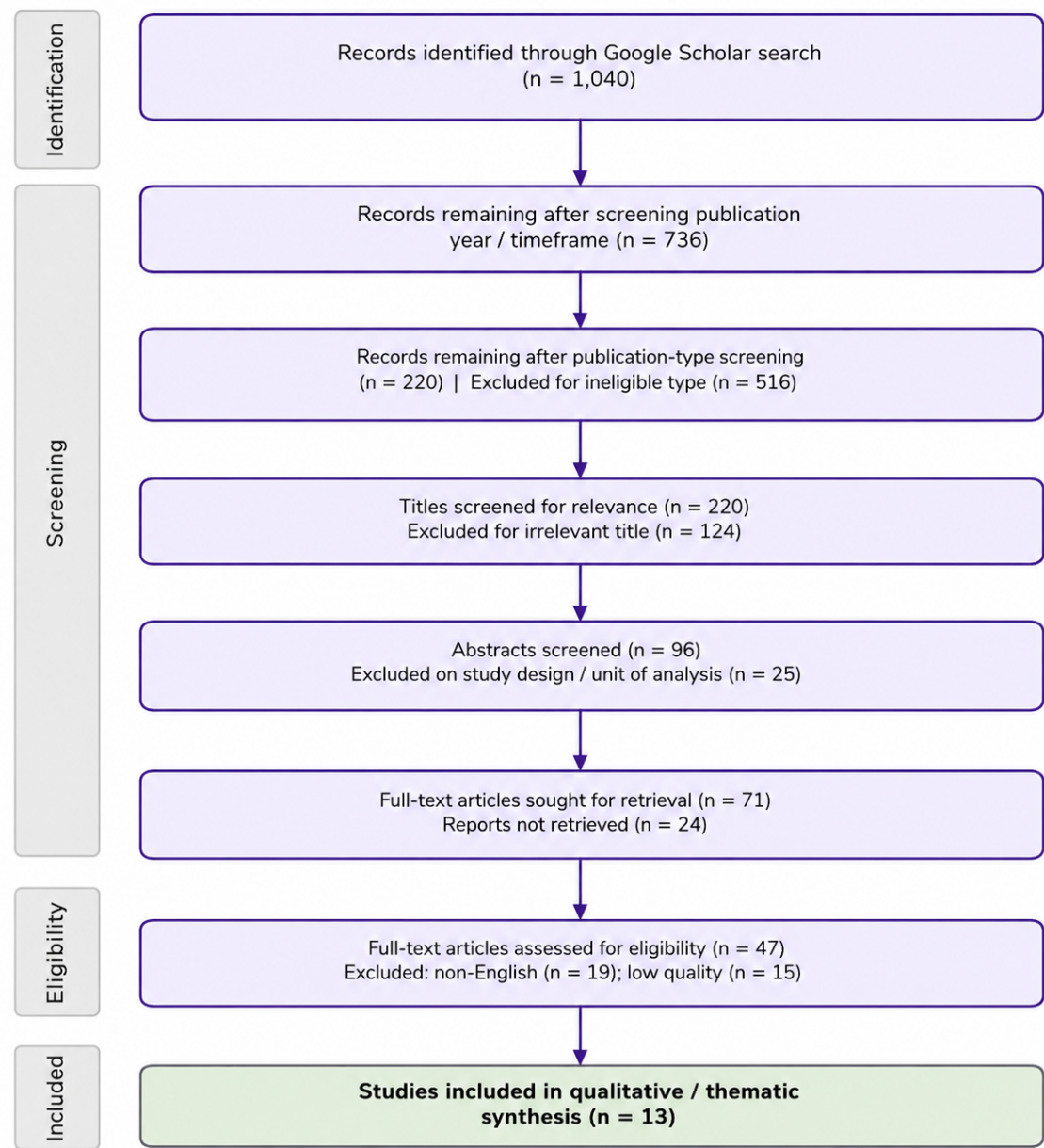
Records were retained for full review if they (a) were published within the preceding decade, (b) used an empirical, predominantly quantitative research design, and (c) reported findings linking at least one project manager competency to a project success outcome. Records were dropped at successive stages for an irrelevant title, an unsuitable study design or unit of analysis, non-English language, an inaccessible full text, or unresolved quality concerns identified during full-text appraisal.

Study Selection

Figure 2 sets out the resulting selection process. The Google Scholar search returned 1,040 records. Restricting these to studies published within the review's time frame brought the pool down to 736 records. Screening for publication type - retaining peer-reviewed empirical articles and excluding editorials, theses, and non-refereed material - narrowed the pool further to 220 records, with 516 excluded as ineligible by type. Title screening removed a further 124 records as topically irrelevant, leaving 96 for abstract review; abstract screening excluded 25 records on grounds

of study design or unit of analysis, leaving 71 candidates for full-text retrieval. Of these, 24 could not be retrieved in full text, leaving 47 articles for detailed eligibility assessment. That assessment excluded 19 records for being published in a language other than English and 15 on quality grounds, leaving a final sample of 13 studies carried forward into thematic synthesis.

Figure 1
PRISMA-Informed Study Selection Flow



Data Analysis Strategy

The 13 studies included were analyzed using the method of thematic analysis developed by Braun and Clarke (2006), which was selected as the method best suited to identifying, organising and interpreting shared themes in a collection of qualitative, synthetic empirical studies. The process moved through six iterative phases: familiarization with each study's findings; generation of initial descriptive codes tied to reported success criteria and competencies; collation of these codes into candidate themes; review and refinement of the candidate themes against the full data set; clear

definition and naming of the final themes; and, finally, production of the thematic account presented in Section 4. Three themes emerged, each mapped directly onto one of the review's three research questions: success criteria (RQ1), project manager competencies (RQ2), and the competency-success relationship (RQ3).

Ethical Considerations

The review process was influenced by a number of ethical issues. Studies were included without excluding any in an attempt to avoid selective inclusion of studies with a desired conclusion. All authors' contributions are cited appropriately in accordance with the standards of intellectual property that hold true in scholarly works. The search method, inclusion criteria, and analysis used are described clearly so that they can be replicated and independently evaluated by others, and there was no conflict of interest in the way the review was carried out.

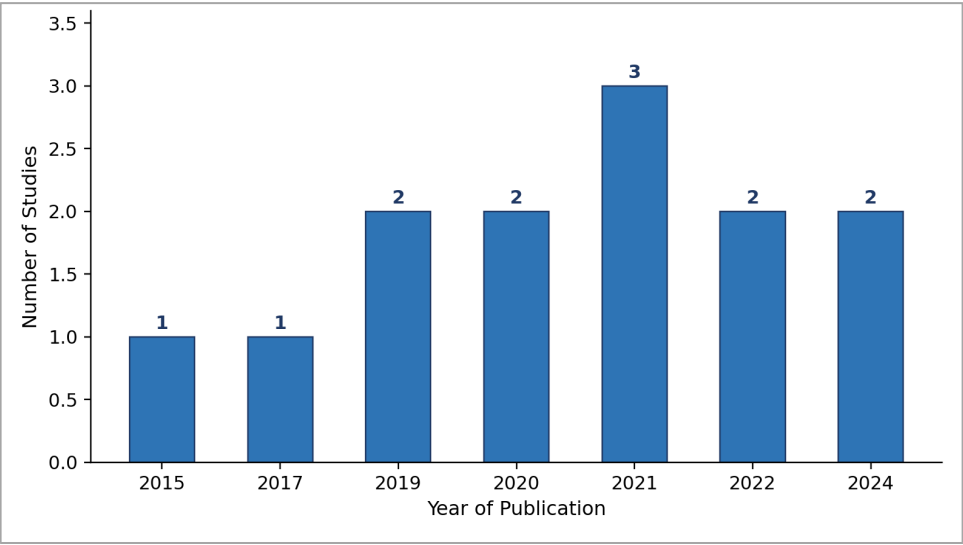
Results

Descriptive Profile of the Included Studies

The synthesis was completed on the basis of 13 studies published between 2015 and 2024, and an apparent concentration of studies is found starting in 2021 (Figure 2), suggesting that scholarly interest in the competency-success relationship has not waned but rather has increased, and possibly even gained momentum. This skew is repeated in the wider review by Ochoa Pacheco et al. (2023), which adds further evidence that it does not result from the search strategy followed in this review, but is a true characteristic of the literature.

Figure 2

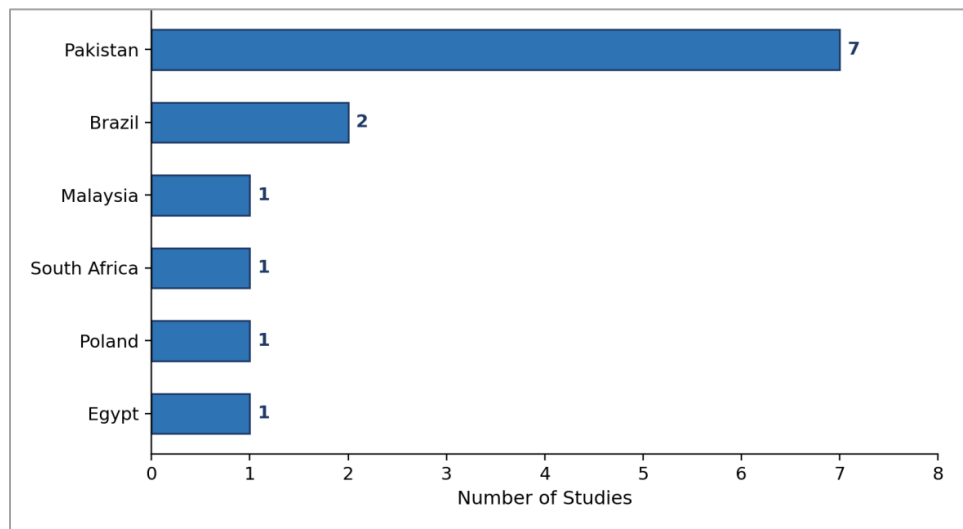
Distribution of Included Studies by Publication Year



In terms of geography, seven of the 13 (Figure 3) studies were from Pakistan, followed by two studies from Brazil, and one each from Poland, Egypt, Malaysia and Southern Africa. It's worth bearing in mind that this focus is not something that should be overlooked; as the scale of large infrastructure, energy and public-sector project activity grows, driven by projects like the China-Pakistan Economic Corridor, it is clearly giving an extra premium to those who can lead projects well – and consequently to those who manage those projects – which is attracting more attention to research in this field.

Figure 3

Country-Wise Distribution of Included Studies (N = 13)



The findings suggest a relatively cross-sectoral reading since the sample is dominated by general project management and construction projects, but is also broadened by public-sector, IT, sustainable, transport and healthcare project types. However, in terms of the methodology, roughly six of the included studies can be classified as regression analysis (Table 2), while the rest are divided among mixed methodology, descriptive analysis, Kruskal-Wallis test, and other methods, echoing the ongoing trend of variance-based quantitative modelling methods in the field compared to qualitative or longitudinal methods. Furthermore, there is a wide variation in the number of citations received by the articles based on the sample (see Table 3), which is not surprising given the range of publication years; what is important, however, is that the earlier articles with a higher number of citations have influenced the vocabulary used by the later, less-cited ones.

Table 1

Distribution of Included Studies by Sector

Sector	Number of Studies	Percentage
General project management	5	38%
Construction	3	24%
Public sector and IT projects	2	15%
Sustainable and transport projects	2	15%
Healthcare	1	8%

Table 2

Analytical Techniques Used in the Included Studies

Analysis Technique	Number of Studies	Percentage
Regression analysis	5	38%
PLS-SEM	3	23%
Mixed methods	1	8%
Descriptive analysis	1	8%
Kruskal-Wallis test	1	8%
Other	2	15%

Table 3*Approximate Citation Counts of Included Studies at Time of Review*

In-Text Reference	Approx. Citation Count
Awan, Ahmed and Zulfiqar (2015)	2
Maqbool, Sudong, Manzoor and Rashid (2017)	506
Podgorska and Pichlak (2019)	214
Alvarenga, Branco, Guedes, Soares and da Silveira (2019)	434
Lima and Quevedo-Silva (2020)	41
Khan, Turner and Maqsood (2020)	29
Elmezain, Baduruzzaman and Khoiry (2021)	35
Irfan et al. (2021)	208
Sarpin, Hasan and Iskak (2021)	13
Rana and Shuja (2022)	9
Pretorius, Steyn and Nicholls (2022)	6
Bhatti and Durrani (2024)	2
Siddiqui, Qureshi and Shaukat (2024)	3

Theme 1: Success Criteria for Projects (RQ1)

As outlined in the theoretical review in section 2, the reviewed literature has a consensus on the three key criteria—time, cost, and quality—as key success measures to gauge project performance; nine of the thirteen studies explicitly reference time as a success measure, while six explicitly refer to cost (Table 4). All of these are key benchmarks, as are project efficiency (defined as meeting predetermined timelines and budgets), identified as a separate yet closely related criterion by Lima and Quevedo-Silva (2020) and Irfan et al. (2021), as well as by Awan et al. (2015), Alvarenga et al. (2019), Khan et al. (2020), Elmezain et al. (2021) and Siddiqui et al. (2024)

In addition to these performance measures, there is a second cluster of measures that reveal the impact of stakeholders. Client and end user satisfaction is mentioned in Podgorska and Pichlak (2019) and Rana and Shuja (2022) whereas team satisfaction (but different from it) is discussed in Podgorska and Pichlak (2019) Rana and Shuja (2022) and Siddiqui et al. (2024) The third cluster is about organizational impact, and goal attainment, project outcomes meeting the organizational goals, are found in Lima and Quevedo-Silva (2020) Rana and Shuja (2022) and Irfan et al. (2021) A smaller set of studies points to criteria that sit outside these three clusters altogether: Irfan et al. (2021) draw attention to compliance with safety and environmental regulation, and Sarpin et al. (2021) to the adoption of new practices and technologies - both signalling that sustainability and innovation readiness are entering the success-criteria vocabulary even though they remain minority concerns within the sample.

Table 4*Most Frequently Reported Project Success Criteria Across the Reviewed Studies*

Success Criterion	Studies (out of 13)	Frequency
Time	Awan (2015); Maqbool et al. (2017); Alvarenga et al. (2019); Khan et al. (2020); Elmezain et al. (2021); Irfan et al. (2021); Sarpin et al. (2021); Rana and Shuja (2022); Siddiqui et al. (2024)	9
Cost	Awan (2015); Alvarenga et al. (2019); Khan et al. (2020); Elmezain et al. (2021); Irfan et al. (2021); Siddiqui et al. (2024)	6
Quality	Maqbool et al. (2017); Alvarenga et al. (2019); Khan et al. (2020); Elmezain et al. (2021); Irfan et al. (2021)	5
Stakeholder / client satisfaction	Maqbool et al. (2017). Podgorska and Pichlak (2019); Lima and Quevedo-Silva (2020); Rana and Shuja (2022); Siddiqui et al. (2024)	6

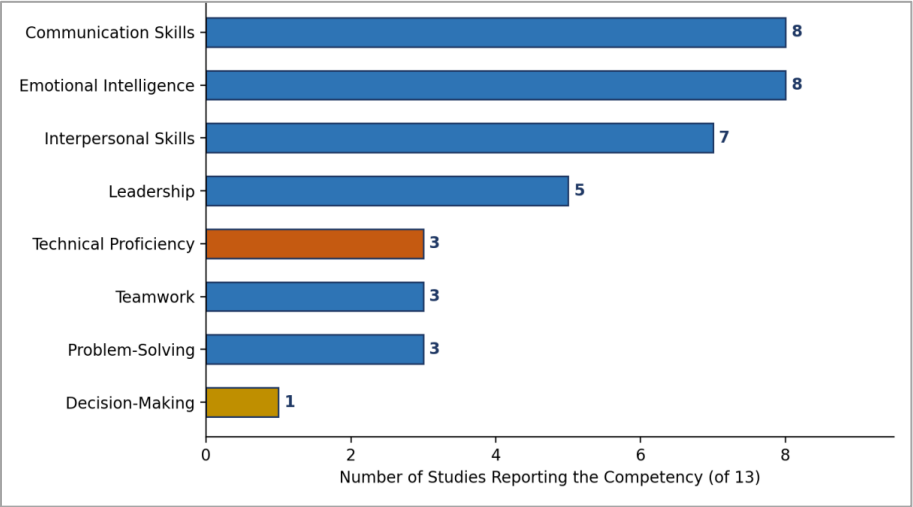
Success Criterion	Studies (out of 13)	Frequency
Goal attainment	Podgorska and Pichlak (2019). Lima and Quevedo-Silva (2020); Rana and Shuja (2022); Siddiqui et al. (2024)	5
Compliance with safety / environmental regulation	Irfan et al. (2021)	1
Adaptation of new practices	Sarpin et al. (2021)	1

Taken together, these findings point to project success criteria as multi-dimensional rather than singular: performance, stakeholder, and organizational considerations each add a distinct, non-redundant piece of the overall picture, and a small but growing minority of studies are beginning to fold sustainability and adaptability into that picture as well.

Theme 2: Project Manager Competencies (RQ2)

Eight distinct competencies recur with sufficient frequency across the sample to warrant discussion: emotional intelligence and communication skills (each reported in eight of the 13 studies), interpersonal skills (seven studies), leadership (five studies), teamwork, technical proficiency, and problem-solving (three studies each), and decision-making (one study) (Figure 4).

Figure 4
Frequency of Project Manager Competencies Reported Across the Reviewed Studies

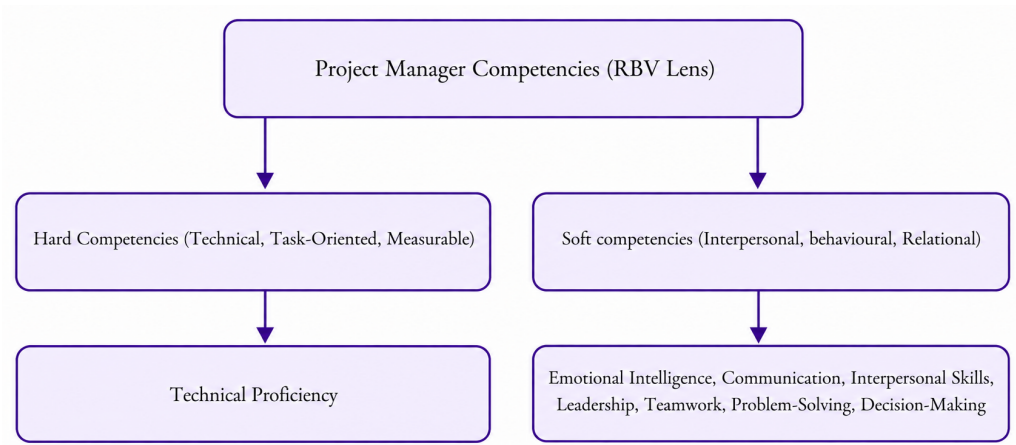


Categorization under the Resource-Based View

Under RBV, a resource must be valuable, rare, inimitable, and non-substitutable (the VRIN criteria) to generate sustained advantage; applying this lens to the reviewed competencies produces a reasonably clean split between hard and soft competencies (Figure 5). The clearest example of a hard competency, as pointed out by Elmezain et al. (2021) and Alvarenga et al. (2019) is one in which the skill can be measured, it can be taught and can be linked to specific tools and methodologies; and the skill is therefore valuable and not particularly rare once it is formally trained, but while valuable, it is not necessarily unique. By contrast, the latter are more numerous in the sample, and seem to acquire their strategic worth just from being more difficult to standardise. For instance, emotional intelligence and interpersonal skills rely a lot on individual disposition and accumulated experience, making them rare and hard to imitate in the case studies presented in Maqbool et al. (2017) and Lima and Quevedo-Silva (2020)

on effective stakeholder management under pressure. Communication skills are vital, though not rare, in the sample (Awan, 2015; Khan et al., 2020; Siddiqui et al., 2024), but at the level of fast-moving, multi-stakeholder projects, it appears to be a much stronger skill with better performers than with weaker ones. Finally, leadership is tied to the ability to build trust and to maintain collaboration in uncertain environments, both by Alvarenga et al. (2019) and by Rana and Shuja (2022), a skill that is hard to impart to another leader through training.

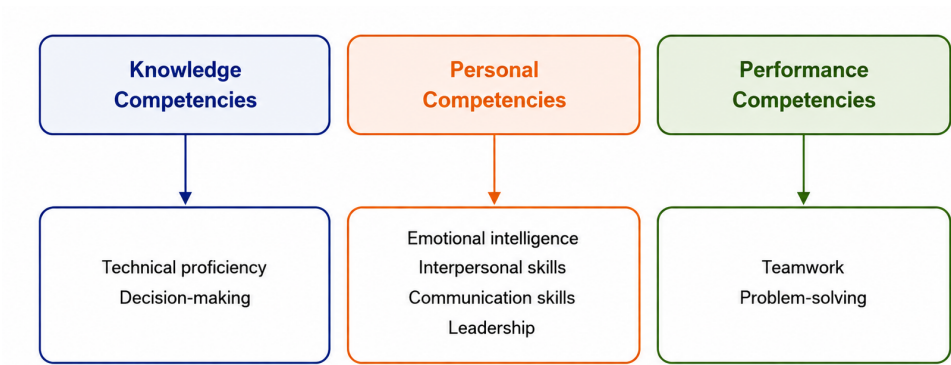
Figure 5
Categorization of Project Manager Competencies under the Resource-Based View



Categorization under the PMCD Framework

The PMCD framework provides a complementary and more operational categorization and sorts the competencies into knowledge, personal and performance domains (Figure 6). Technical proficiency and decision-making sit most comfortably within the knowledge domain, since both depend on understanding tools, methodologies, and the information needed to make timely, well-founded choices. The personal domain, which is tapped by emotional intelligence, interpersonal skill, communication, and leadership, each reflects how a manager builds a relationship, resolves conflict, and leads a team, and was found in the literature reviewed to be correlated to team satisfaction and ultimately to project outcomes. Whereas teamwork and problem-solving round out the performance domain, representing the team's overall, action-oriented skills and abilities that encompass individual competencies and combine them into actual performance.

Figure 6
Project Manager Competencies Mapped to the PMCD Framework



Together, the three domains jointly determine a project manager's capacity to influence project success across performance, stakeholder, and organisational criteria.

Theme 3: The Relationship between Competencies and Project Success (RQ3)

There was a generally positive correlation between project manager competencies and project success; however, there were some mixed findings. Emotional Intelligence, Leadership and interpersonal skills were the strongest and most consistent positive links with success across contexts (Maqbool et al., 2017; Khan et al., 2020; Bhatti & Durrani, 2024). Leadership competency is well defined by Podgorska and Pichlak (2019) as consisting of three parts – the intellectual, managerial and emotional aspects – with the relative importance of each aspect depending on the type and complexity of the project. This is a general model that resonates with the approaches to competency described above (RBV and PMCD), because both frameworks focus on the strategic value of competency in the abstract and allow for a degree of flexibility in the practical importance of this competency depending on the specific context.

One striking exception to this harmonious convergence is, however, worth attention. The findings of Rana & Shuja, (2022) for the transport infrastructure sector in Pakistan stand in contrast to the wider sample, as leadership competency didn't have any significant effect on project success in this sector. The most likely reason is that, in a sector with well-documented bureaucratic and hierarchical decision-making (De Jong, 2001), leadership competency is pushed to its limits where the right to make decisions is centralised, and results are determined by government policy, regulatory compliance or funding constraints, and not managerial discretion. This exception is not a mere 'noise', but directly highlights the boundary conditions of the competency-success relationship, which is not defined by generic models like the PMCD model or RBV.

Table 5
Key Contributions of Project Manager Competencies to Project Success

Competency Dimension	Key Contribution to Project Success	Representative Studies
Emotional intelligence	Enhances communication, conflict resolution, stakeholder engagement, and adaptability	Maqbool et al. (2017). Lima and Quevedo-Silva (2020); Podgorska and Pichlak (2019); Bhatti and Durrani (2024)
Communication skills	Improves clarity, stakeholder engagement, conflict mitigation, and team coordination	Awan (2015); Maqbool et al. (2017); Podgorska and Pichlak (2019); Khan et al. (2020); Siddiqui et al. (2024)
Leadership	Supports strategic decision-making, team building, and adaptability in complex projects	Podgorska and Pichlak (2019); Rana and Shuja (2022); Irfan et al. (2021); Sarpin et al. (2021)
Interpersonal skills	Facilitates teamwork, negotiation, conflict resolution, and stakeholder satisfaction	Awan (2015); Khan et al. (2020); Lima and Quevedo-Silva (2020); Irfan et al. (2021); Elmezain et al. (2021)
Technical competencies	Supports project efficiency, quality maintenance, and technical problem-solving	Alvarenga et al. (2019); Elmezain et al. (2021); Sarpin et al. (2021)
Problem-solving skills	Enables effective handling of unforeseen challenges and timely delivery	Awan (2015); Alvarenga et al. (2019); Sarpin et al. (2021)
Sectoral/contextual limitations	Leadership showed an insignificant relationship in a centrally governed transport-infrastructure setting.	Rana and Shuja (2022)

To summarize, this competency-success relationship found here is a real one and positive, for the majority of competencies, across sectors, but context dependent. The evidence for emotional intelligence, communication and

leadership is the strongest and most consistent, and the importance of any individual competency seems to vary, depending on the type of project, the complexity of the project and the extent to which the sectoral context allows for managerial discretion.

Discussion

Integrating the Findings with Theory

The overall trend that emerged from this synthesis is that soft competences were in the majority, even if hard competences were not in the majority, and both soft and hard competences were found to be generally grouped around the same four key competencies, namely emotional intelligence, communication, interpersonal skill and leadership. This pattern is broadly consistent with the predictions of RBV. The competencies that are hard to learn and teach are the ones that require a lot of interpersonal experiences and disposition, and they're the ones that RBV would expect to last as a source of advantage once an organization's rivals catch up. There is a complementary (more operational) interpretation of the three domains of the PMCD framework: knowledge competencies are the minimum level of technical competence, while personal and performance competencies seem to do most of the work in turning the minimum level into delivered project outcomes.

Recent Developments (2023-2026)

The studies included in this review cover the period from 2015 to 2024, and it would be incorrect to take the competency vocabulary they develop for granted. The above picture is complicated and extended by several recent developments. Salimimoghadam et al. (2025), in their review of 43 studies published between 2005 and 2025 with the framework of PRISMA 2020, arrive at a surprisingly uniform conclusion: Emotional intelligence, communication, and adaptability continue to be at the core, with strategic thinking and empowerment added as capabilities that have not been identified as separate categories in the previous and smaller body of research. On the technical side, Martin et al. (2025) identify 37 different technical competencies that have been identified as important for IT project management, a more granular taxonomy than the single “technical proficiency” category which is used in the present synthesis, and report that these technical competencies are not being applied consistently across industries despite their value.

However, the most significant recent addition is artificial intelligence literacy. However, the use of AI-based tools has become a significant component of forecasting, risk management, and resource allocation—areas where the PMCD model's competencies were originally defined—which makes AI literacy a new competence in its own right, one that is just as central to the learning and practice of the programme as the performance, interpersonal, and personal competencies (Mariani et al., 2026). This aligns with PMI's own restructuring of the Talent Triangle into Ways of Working, Power Skills, and Business Acumen, and with survey data that demonstrates that business acumen is the only competency that correlates with a tangible success premium: Business Acumen is the only competency that is linked to a measurable success premium; project managers with strong business acumen report a materially higher project success rate than those without it (PMI, 2025). Together with the above findings, this indicates that the competency set identified through 2024 is not a wrong one but rather incomplete: while communication, interpersonal skills and leadership are still the most empirically valid predictors of success in the reviewed sample, a plausible fourth competency – digital and AI-related fluency – is now appearing on the periphery and could be added to the future competency frameworks of other disciplines in a manner more akin to a characteristic of the discipline than to a technical add-on.

Boundary Conditions: When Competency Does Not Translate into Success

The Rana and Shuja (2022) finding, mentioned in Section 4.4, should be revisited here as it tells us that we cannot assume a relationship between competency and success. Even if a manager's leadership competency is well developed, its role may have less latitude in a highly regulated environment where the project is governed, as in Pakistan's transport infrastructure sector, or one that is bureaucratic. It is an appropriate counterpoint to models like RBV and PMCD that define competencies as 'general' but do not explicitly explain the situational factors in which the value of the competency can be realized within an organization. For future competency models, it would be good to treat managerial discretion as a variable, rather than competence, to be measured directly.

Theoretical and Practical Implications

Theoretical Implications

This review does not suggest that RBV and PMCD are mutually exclusive, but rather, it adds to the theoretical knowledge of the competency of the project manager. RBV offers an understanding of what this advantage is, and PMCD, and its subset of the Talent Triangle, provides the more detailed domain structure required to interpret this advantage into a development programme. The distinction between levels of success in the project, organizational, industry, and societal level taxonomy in the above section suggests that future competency studies should clarify which level of success is expected to be influenced by a particular competency, instead of considering success as a one undifferentiated outcome variable.

Practical Implications

Organisations that are involved in recruiting, training, and promoting project managers can make three changes from the findings. First, the reliance on technical certification as a hiring and promotion criterion may disadvantage the competencies most associated with project success – emotional intelligence, communication and leadership – as revealed in the evidence of this review. Second, competency development program are likely to be more effective when they are customized to project type and sectoral context rather than implemented uniformly; a one size fits all leadership curriculum would be an obvious exception to this, as witnessed by Rana and Shuja (2022) Third, as more evidence emerges about AI literacy and business savvy (Mariani et al., 2026; PMI, 2025), organizations refreshing their PM competency frameworks in 2026 and beyond should consider digital fluency as a business addition to – not a replacement of – interpersonal business acumen, which this review has found is most frequently associated with project success.

Limitations and Future Research Directions

The conclusions of this review have several limitations. In comparison to the existing literature on project management competency, the final 13 studies are still modest, but a one-reviewer search strategy, primarily focused on Google Scholar, may have missed relevant studies that were mostly indexed in other bibliographic databases (e.g., Scopus or Web of Science), due to the limited range of search terms. The geographical mix of the sample is also heavily skewed, and the findings are greatly over-representative of Pakistan, where more than half of the studies included are from, and where institutional and regulatory conditions are already difficult. This paper also looked at the competency-success relationship largely without the context of other plausible moderators such as job satisfaction, organizational culture and work-life balance, which the literature reviewed in Section 2 identifies as relevant to project success on their own.

Future research could usefully expand the database coverage and reviewer team to reduce selection bias, and could deliberately sample studies from outside South Asia to test whether the competency rankings reported here hold in more decentralized or less infrastructure-driven project environments. Given the developments discussed in Section 5.2, a dedicated systematic review of AI literacy and digital competency in project management - an area barely represented in the 2015-2024 evidence base synthesized here - would be particularly timely. Comparative research across developing and developed economies could also test directly whether the boundary condition identified in the Rana and Shuja (2022) case generalizes to other bureaucratic or centrally governed sectors, or is specific to transport infrastructure in Pakistan.

Conclusion

This review set out to answer three questions about project manager competency and project success, drawing on a thematic synthesis of 13 empirical studies published between 2015 and 2024. On success criteria, the evidence confirms that time, cost, and quality remain the dominant benchmarks, but increasingly alongside stakeholder-level measures such as client and team satisfaction and organizational-level measures such as goal attainment. On competencies, emotional intelligence, communication, interpersonal skill, and leadership emerged as the most frequently reported and most consistently discussed, with the Resource-Based View and the PMCD framework offering complementary explanations for why these particular competencies recur: RBV in terms of the value, rarity, and non-substitutability of soft skills, and PMCD in terms of how those skills map onto knowledge, personal, and performance domains. The overall pattern of the relationship between competency and success is generally positive but not consistent, with sectoral and governance context often determining the extent of influence a competency can have on success - as most clearly demonstrated by the Pakistani exception of transport infrastructure.

The main takeaway from this review is that the competency profile of a successful project manager is not static, and ultimately not fully described by any one competency framework – this is confirmed by reading alongside that in Section 5, which covers AI literacy, expanded technical taxonomies and PMI's own reorganization of its Talent Triangle around business acumen. Organisations and researchers alike would do well to treat competency development as an ongoing, context-sensitive process rather than a checklist to be completed once and left unrevised.

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