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Beyond the Generalist:
The Overlooked Importance of Technical Expertise in IT Project Management

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ABSTRACT

International frameworks and accreditations define the core competencies required of information technology (IT) project managers. Among these, technical skills are often cited as important, particularly in IT-focused projects. However, the technical competencies required—and the extent to which project managers should possess them—remain unclear. The literature on this topic is limited, though existing studies indicate that technical proficiency contributes to project success in technical domains. To explore this gap, semi-structured interviews with IT project managers and project participants were undertaken to examine perceptions of technical skills. Findings reveal a divide between participants with technical education, who emphasized the necessity of technical expertise, whereas those without technical qualifications highlighted communication, motivation, and attitude as most critical. The study contributes insights into the strategic value that technical capability adds to IT project management effectiveness through the strategic capability model for technical project management.

KEYWORDS

Information Technology Project Management, Project Manager, Technical Skills, Certification, Competencies, Attributes

INTRODUCTION

Project management has been widely accepted for decades as a domain requiring a suite of skills and specialized competencies applicable across diverse industries (Carter, 1988; Hodgson, 2008; Reed, 1996, 2007). However, in the context of information technology (IT) project management, a duality often arises wherein project managers are expected to possess not only generalist competencies but also sufficient technical expertise to engage meaningfully with complex systems and technical teams. These skills and capabilities have been increasingly standardized, refined, and credentialized to acknowledge both the threshold capabilities and the higher functioning capabilities common to the project management skill set. This distinction has become increasingly pronounced with the rise of agile methodologies and the proliferation of digitally intensive projects.

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Although frameworks such as the Project Management Institute's (PMI) Project Manager Competency Development Framework and the International Project Management Association's (IPMA) Individual Competence Baseline offer comprehensive models of project management competence, they tend to be domain-agnostic and arguably underemphasize the role of technical skills in complex IT environments. The PMI Project Manager Competency Development Framework explicitly describes the framework as "designed to apply generically to all project managers, regardless of the project's nature, type, size or complexity" (Cartwright & Yinger, 2007). IPMA's Individual Competence Baseline describes a global, cross-domain competence baseline of people, practice, and perspective (Rezende & Blackwell, 2019). Delphi and empirical studies of IT project managers by Ahmadi-Eftekhari et al. (2022) and Keil et al. (2013) revealed IT-specific skills as critical for IT project success. These authors argued for competency models that capture the special demands of IT projects and highlighted the need for targeted competence research.

While established skills for the project manager role include project management knowledge, interpersonal skills and attributes, social competencies, management capabilities, cognitive skills, influencing skills, team working, contextual skills, and emotional skills, among others, there is a noticeable lack of empirical research detailing the specific technical skills required of project managers operating in IT environments. Competency studies (such as Abramo et al., 2017) tend to generalize competencies across sectors (e.g., construction, healthcare, business, technology), failing to account for the distinct demands of technical IT projects that involve complex systems, evolving technologies, and interdisciplinary coordination. The appointment of a project manager who fits the needs of a project has become a known factor in success (Ahmadi Eftekhari et al., 2022; Carlton, 2017; Pollack & Adler, 2016; Varajão & Takagi, 2024).

Authors, such as Varajão and Takagi, (2024), have argued that it is "…important to define strategies for improving and developing information systems (IS) project manager's technical capabilities in an organization" (p. 280). Ribeiro et al. (2021) argued that the project manager role needs to be accompanied by new technical, contextual, and behavioral competencies addressing the need to adjust to a paradigm shift from the fourth technological revolution (*Industry 4.0*). They cited several enabling technologies considered to be the main pillars of Industry 4.0: cyber-physical systems, Internet of Things, cloud computing, big data and data analysis, additive industry (3D printing), robotics, virtualization and simulation, cybersecurity, augmented reality and the applications of artificial intelligence (AI). Similar thoughts were offered by Lele et al. (2019). Đajić et al. (2024), in their development of a Project Manager Skills Scale, also argued that technical knowledge-based competence is recognized as part of the project manager competence profile in IT projects. Koi-Akrofi et al. (2024) further supported the claim that project manager competence is more than just the soft, behavioral, or leadership skills embedded in the project manager role. They saw what they called hard technical computing skills as being complementary with the knowledge of project management processes. They established computing skills as a recognized part of their core competence profile. However, their review is generic in terms of which hard computing skills are considered necessary, and the review is highly project-management-process-oriented, rather than offering an exploration of the specific technology domain or IT-specific expertise required.

Given this gap, there is a case to be made that, for complex IT projects, more specialized technical expertise (such as knowledge of systems, architecture, and technical domain) should be considered a *strategic capability* beyond generic computing or project management tool literacy. In the context of global software development (GSD) projects, Alqahtani et al. (2024), identified and prioritized critical success factors for managing software projects in GSD environments. They argued that traditional project management practices often fail to address the unique challenges of GSD projects (such as the effects of time zones, distributed teams, communication barriers, cultural barriers, and issues of technical heterogeneity) and thus argued that project managers need relevant technical capabilities aligned with GSD's complexity.