



EXPLORING THE FUTURE OF RESEARCH IN PROJECT MANAGEMENT

EXPLORANDO O FUTURO DA PESQUISA EM GERENCIAMENTO DE PROJETOS

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Abstract

Research in project management provides an understanding of working practices, organizational, technological, and other phenomena in the realm of projects. The present article addresses the expected development in research topics over the short to mid-range period. It starts with a look into recent predictions, then adds the currently proposed research topics of the leading academic journals in project management, and processes this into five potential streams of future research in project management. These streams cover research in the realm of Grand Challenges, the human side of project management, the general understanding of (megaprojects) project management, advanced tools and techniques (such as Artificial Intelligence), as well as anticipated new research methods and their implications for the relevance of research findings for practitioners. Practitioners will gain insight into potential topics they might be interested in and want to read more about in the future. At the same time, academics gain from various potential research topics and directions.

Keywords: Research. Research methods. Grand challenges. Project management. Megaprojects. Artificial intelligence. Human side of project management.

Resumo

A pesquisa em gerenciamento de projetos fornece uma compreensão das práticas de trabalho, organizacionais, tecnológicas, entre outros fenômenos no domínio dos projetos. O presente artigo aborda o desenvolvimento esperado em tópicos de pesquisa no curto e médio prazo. Ele começa com uma análise das previsões recentes e, em seguida, acrescenta os tópicos de pesquisa atualmente propostos nos principais periódicos acadêmicos em gerenciamento de projetos e os processa em cinco fluxos potenciais de pesquisas futuras em gerenciamento de projetos. Esses fluxos cobrem pesquisas no campo dos Grandes Desafios, o lado humano do gerenciamento de projetos, a compreensão geral do gerenciamento de projetos (megaprojetos), ferramentas e técnicas avançadas (como Inteligência Artificial), bem como novos métodos de pesquisa antecipados e suas implicações para a relevância dos resultados da pesquisa para os profissionais. Os profissionais obterão informações sobre possíveis tópicos nos quais podem estar interessados e sobre os quais desejam ler mais no futuro. Ao mesmo tempo, os acadêmicos ganham com vários tópicos e direções de pesquisa em potencial.

Palavras-chave: Pesquisa. Métodos de pesquisa. Grandes desafios. Gestão de projetos. Megaprojetos. Inteligência artificial. Lado humano da gestão de projetos.

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Introduction

This essay intends to look into the future of research in project management. In line with the Danish philosopher Søren Kierkegaard's (1813–1855) famous words that "Life can only be understood by looking backward; but it must be lived looking forward", the article starts with an attempt to 'make sense' of the past in order to cast a view into the future.

In recent decades we have witnessed projects becoming the principal way of working. Especially organizations in dynamic and complex industries foster projects as the building block for their business landscapes. Examples include those building large infrastructures, exploring space, or doing R&D in general. Simultaneously, project management accomplished recognition as a chartered profession in the UK, and project management certification became one of the world's most popular professional qualifications.

The bodies of knowledge (BoKs) underlying these education and certification programs are typically developed by professional organizations, such as the Association for Project Management (APM) or the Project Management Institute (PMI). BoKs identify and define the "elements of project management in which competent project management professionals should be knowledgeable" (Morris, Patel, & Wearne, 2000, p. 155). For that, they draw from the vast experience of their members and use published research to develop and understand state-of-the-art practices. The balance of practitioner experience and academic research as input for developing BoKs varies across professional organizations. The UK's APM BoK is perceived as most research-based because of its systematic search of empirical evidence of topics and their structure for project managers to know (Morris et al., 2000).

A third development in recent decades is the transition from process-based to principles-based project management execution standards. Again, APM (2011) led this development with its principles for governing project management. Since then, other professional organizations have redeveloped their standards to become principles-based. A "principle is a natural law, fundamental truth, or proposition that serves as the foundation for a system of belief or behavior or a chain of reasoning" (AIPMO, Joslin, & Müller, 2023, p. 6). Using principles, project management practitioners are relieved from following a predefined process and enjoy the freedom of applying their experience to find the best way to execute their tasks. With this comes the opportunity that different ways of doing things lead to the same results, also known as equifinality. Hence, allowing the project manager to self-develop their processes in situational contingency to optimize the fit to context, holds the highest chance for maximum performance.

The above summary of recent developments may indicate a relationship between a) achieving the highest status, that is, a chartered profession, b) having a research-based BoK, and c) moving away from detailed process descriptions by providing principles instead of processes. A discussion of this is beyond the scope of this essay but should be subject to future discussion in the project management community.

Current perspectives

About 15 years ago, Cleland and Bidanda (2009) published their edited volume on "Project Management Circa 2025", where more than 40 well-known authors attempted to project the developments in project management over the coming 15 to 20 years. The book's five parts covered geographical and industry applications, project management systems applications, organizational applications, project management in government, and the likely growth of project management. The writers predicted a steady growth of project management in all its application areas, with the increasing importance of human aspects, such as leadership (e.g. Brown, 2009) and emotional and social intelligence (e.g. Boyatzis, Fambrough, Leonard, & Rhee, 2009). Project management reality and the trends in research publications in recent decades support these predictions well. Interestingly, the authors did not predict strong growth in automation and tools for project management. This is another aspect they foretold well, as automation in project management is still in its infancy, fifteen years after the book's publication, and mainly practiced in industry-specific applications, such as Building Information Systems (BIM) in the construction industry.

More recently, Jeff Pinto (2022) published his view of the near-future developments in project management. By using Roger's (2003) bell-shaped model of "Diffusion of Innovations", he predicts that ad-hoc practices, professionalism through professional organizations and their practice standards, as well as formal bodies of knowledge, are quite mature and adopted by most organizations. Agile marks the peak of the curve, at the borderline between the early and late majority of adopters, while themes like governance and dynamic systems are on the rise in the majority of early adopters. Concepts like continuous flow and gymnastic organizations are experimented with by innovators and thus are potential subjects for research on the future of project management.

A similar view is offered in the recently published "Manifesto for project management research" (Locatelli et al., 2023), which aims to foster collaboration across scientific fields. For

that, the authors claim that project management and its research have long passed the times of tasks, tools, and techniques. Recent decades have shown that project management research has bridged the gap between project theory and organizational and psychological sciences. The former is evident through the work of Turner and Miterov (e.g., 2019) in designing project-based organizations and Aubry and colleagues (e.g., 2022) in designing project management office (PMO) implementations, such as in the public sector. The latter is shown by identifying new and project-specific leadership, such as balanced leadership theory (Müller, Drouin, & Sankaran, 2022) and psychological profiles of successful project managers (Müller & Turner, 2010).

Another source of information about near-term developments in project management research are the recent calls for papers for special issues and collections of academic project management journals. They continue the above trend in broader and more contemporary directions. By the time of writing this article, the *Project Management Journal* asked for articles on human resource issues in light of diversity (Nauman, Zheng, & Le, 2023) or Industry 5.0 implications for project management (Sankaran et al., 2023). Another perspective is taken by the *International Journal of Managing Projects in Business*, by soon publishing a call for papers on AI (artificial intelligence) and project management (Khan, Farrukh, & Soomro, to appear). A steady growth of studies on Grand Challenges topics parallels these developments. Here, the *International Journal of Project Management* solicited submissions on projecting for sustainability transitions (Winch, Geels, Locatelli, & Sergeeva, 2023).

A look into the future

The above indicates a near-term emphasis on human-related, Grand Challenges related, and technology-related studies. Besides this is the steady increase in megaproject studies and a trend to more collaborative research, as indicated in the above-mentioned manifesto and, for example in Müller and Klein (2020).

This identifies five major focus areas for the future of project management research:

- Research on project management and the Grand Challenges
- Research on the human side of project management
- Research on the general understanding of project management
- Research on advanced tools and techniques
- Emerging research methods and approaches

These topics are addressed in the remainder of the article.

Research on project management and the Grand Challenges

Grand Challenges are "formulations of global problems that can be plausibly addressed through coordinated and collaborative effort" (George, Howard-Grenville, Joshi, & Tihanyi, 2016, p. 1880). The problems they create are "wicked, complex, uncertain, messy, and boundary-crossing", and research on them is under-represented in project management studies (Ika & Munro, 2022, p. 601). Given the importance for organizations, humanity, and the planet, research on how to tackle Grand Challenges individually and in combination with each other is indispensable.

Discrete attempts were made primarily in light of the Covid-19 pandemic, such as the research on understanding the expedited development process for Covid vaccine through radical changes of existing practices in project organizing and compression of schedules (Winch et al., 2021), or the fast-paced construction of hospitals, such as the Huoshenshan Hospital in Wuhan, China which maximized speed by aligning collaboration, concurrent engineering, and organizational structures without the use of advanced technology (Tan, Mills, Hu, & Papadonikolaki, 2021).

A related upcoming stream of research studies addresses sustainability and social responsibility aspects, primarily related to megaprojects, for example, by suggesting a 'sustainability sublime' for megaprojects to achieve the UN SDGs (Sankaran, Müller, & Drouin, 2020). Other studies attempt to avoid greenwashing attempts by identifying contradictory sustainability constraints in project management execution and developing dedicated strategies to deal with them (Sabini & Alderman, 2021).

Yet other studies looked into suitable personalities for managing Grand Challenges-related projects (Konstantinou & Müller, 2023) and megaprojects in general (Drouin et al, 2021).

Future research should attempt to integrate at least the above three streams a) understanding practices (as in the case of processes), b) building awareness for and interest in sustainability-related outcomes (i.e., a sustainability sublime), and c) identifying suitable managers at all levels to deal with the multi-level, multi-dimensional problems created by these projects. This will provide the foundation to broaden the view to higher-level models, theories,

and practices that may find their way into the institutions dealing with Grand Challenges, such as World Economic Forum, UN Climate Change Conferences etc.

Research on the human side of project management

In line with Slavinski, Todorovi and Obradovi (2023), who did a co-word analysis of 40 years of research published in the *International Journal of Project Management* to develop a projection for the future, the analysis above indicates a continuation of studies on the human side of project management.

Indicators of this include the natural progression from Industry 4.0, which emphasized adopting more technology for efficiency and productivity improvements, such as the Internet of Things (IoT), Big Data, Artificial Intelligence etc. Industry 5.0, which is "a combination of organizational principles and technologies to design and manage operations and supply chains as resilient, sustainable, and human-centric systems", refocuses on human wellbeing at the levels of plants, networks, and societies for resilience, sustainability, and human centricity. To that end, Industry 5.0 "frames a new triple bottom line: resilient value creation, human wellbeing, and sustainable society" (Ivanov, 2023, p. 1683). Understanding and possibly influencing these long-term developments requires steady research on the role of humans in the realm of projects and the organizational forms developing from them over time (see above). This includes studies on classic themes, such as organizing, human roles, technology, and new areas, like the relationship between humans and AI applications, legal implications, or changing values, like the shift from effectiveness to resilience due to the Covid-19 pandemic.

The far-ranging transition to Industry 5.0 will also impact leadership in its various expressions. After decades of investigating leadership in projects solely from the perspective of leadership theories developed in the context of permanent organizations, the first leadership theories specific to projects occurred recently. These include horizontal leadership, whereby the project manager appoints a team member to lead the project through a crisis or issue and subordinates himself/herself to the appointed leader during that time. Another project-specific leadership theory, balanced leadership, proposes that leadership authority transitions dynamically between leaders, such as the project manager, team members, subteams, externals etc., in situational contingency. That allows to appoint the best possible leader at any time in the project (Müller et al., 2022). Through that, balanced leadership proposes an explanation of why dynamic and fast-changing project teams can be performant, even though traditional

leadership theory suggests that all teams must go through a development cycle of form, storm, and norm until they can perform (Tuckman, 1965). Future research will continue to identify the particularities of leadership in projects, which sets it aside from general leadership theory developed in and for permanent organizations. This includes studies on the role of time left in a project and its leadership, the 'fit' between different governance contexts and leadership exercised in projects in order to maximize performance or other, yet unknown, types of leadership found in projects.

Research on the general understanding of project management

Studies on general project management practices will continue but diversify by project types, as indicated by the steady increase in studies on megaprojects. At the beginning of this article, I referred to the Manifesto, which claims that project management has passed the era of being mainly about tools and techniques. In line with that, studies on generic tools and techniques, such as control or planning techniques, or methods like agile, will decrease but not disappear. However, higher abstract levels, such as contributions to UN SDGs, sustainability, or climate change, will be pursued. For example, research on megaprojects has, for decades, investigated possible reasons for project failure and is currently emphasizing governance and structural questions. Soon the emphasis will turn to leadership and megaproject portfolio issues, including a growing interest in the role of megaprojects in society and their contribution to sustainability.

As discussed above, principles have replaced traditional process-based approaches in project management. This development indicates the need for studies on the 'right' principles and their implementation, equifinality issues, and how to educate junior project managers to transition principles into methods and processes.

Research on advanced tools and techniques

Research in this area mainly includes the transition to and use of AI in various expressions. In their attempts to predict the use of AI in project management, the literature provides a very diversified view. This is partly due to the nature of the studies, which in their majority, are asking for peoples' opinions about the potential role of AI, rather than looking at actual implementations in organizations. Modeling these studies on a continuum, one end proposes that AI will only marginally impact project management, mainly through new features

in existing software packages (Niederman, 2021). At the other end are studies (e.g., Holzmann, Zitter, & Peshkess, 2022) that propose changes to project management functions on a much broader scale, impacting almost all performance domains as defined by the Project Management Institute (PMI) (PMI, 2021). In between these extremes are studies predicting that AI can replace some of the rational and mechanical project manager tasks, such as planning and control. In contrast, relational functions will remain within the domain of human beings (Wang & Stewart, 2022).

Looking into the future from the perspective of current publications indicates that much research is needed on subjects like AI strategies for projects, human-machine interfaces, the distribution of authority for decision-making, the handling of ethical issues, and the integration of traditional and emerging practices, all in the realm of projects. One of the key questions with this will be the legal role of AI. As projects are predominantly based on contracts, the legal responsibility lies with organizations and their representatives. Thus, they will be held accountable for the decisions made for, by, or in projects. Research is needed to investigate the risk balance regarding automated versus human-made decisions, the situational contingency of human control efforts and authorities for automated decision-making.

A further area of investigation is the inter-organizational collaboration using AI. Current studies indicate that organizations' level of AI adoption is an essential criterion in selecting partner organizations for projects (Whyte, 2019). This opens the door for issues like required restructuring, levels of openness, transparency of data and their accuracy, and decision quality. All these require studies to guide practitioners and help academics to build suitable theories to understand practices, their contingencies, and implications.

Emerging research methods and approaches

In 2020, my colleague Gary Klein and I wrote an editorial for the *Project Management Journal* to predict project management research practices after the Covid pandemic. Part of this included questions on the changing nature of research. For that, we did a small survey among the journal editors. The results indicated four streams of changes (Müller & Klein, 2020, p. 580):

- *Expanded or newly developed data collection techniques*, such as social media or AI-based collections, but also narratives and electronically collected data;

- *Methods to capture phenomena in real time and acceleration of the dissemination of results*, making use of, for example, social media interaction patterns, surveillance technology, or other automated collection systems;
- *Increasing practical relevance of research findings through actionable, tangible, and implementable results* by expanding initial case study research into context contingent practices and theories in clearly defined settings;
- *New research processes to integrate new technologies and methodologies*. This includes research on new ways of collaboration and new forms of organizing in (what is called today) projects and its transition in other organizational forms over time, such as described above using the example of Jeff Pinto's (2022) predictions.

Aside from these methodological changes, a social change is foreseeable in terms of more cross-discipline research executed collaboratively between project management scholars and other industry scholars. The *Manifesto for Project Management Research* (Locatelli et al., 2023) outlines the motivation behind this by emphasizing, among others, the importance of collaborative studies for more relevant research results and theories, but also the maturity that project management research has accomplished in recent decades, through which it provides valuable insights and new perspectives to the existing neighborhood and industry disciplines.

Conclusion

This article aimed to shed some light on the potential future research topics and methods in project management. For that, the article followed Kirkegaard in starting with a short look backward to understand the past predictions, then looked into currently raised topics in the project management research literature, and processed these findings into a perspective towards the future. Five streams of future research crystallized out. In the context of Grand Challenges, the appropriateness of practices, the awareness for and interest in sustainability, and the identification of suitable managers. Research on the human side of project management included investigations on the role of humans in projects in the Industry 5.0 transition and related new leadership styles. The general understanding of project management is proposed to be increasingly focused on megaprojects, their role in society, and their contribution to sustainability. Moreover, the transition from process-based to principles-based project management provides a wide field for further study. In its various expressions, AI provides a major field of investigation to develop, integrate, and legitimize new tools and techniques for

supporting or automating some parts of project management. Finally, an outlook on the migration to future research methods emphasized the impact on the relevance of research results for practitioners.

The process applied in this article aimed to maximize rationality in identifying future research topics. However, the five streams are necessarily subject to the subjectivity of the predictor, as with all predictions of the future. To that end, readers will miss some topics, see others as necessary, or put different priorities on the topics listed. This is fine, as the article is nothing more than the author's subjective opinion about future developments, which may or may not be as right or wrong as any other reader's.

Irrespective of the correctness of the above prediction, research must continue to question existing knowledge and understanding to develop further our project management, personal, organizational, and societal capabilities to aim for the UN SDGs and a better planet in the future.

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