

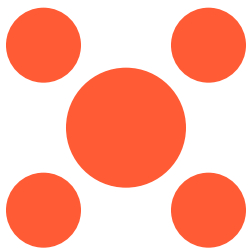
What Are the Causes and Cures of Poor Megaproject Performance?

A Systematic Literature Review and Research Agenda

This research project, funded by the Project Management Institute (PMI), aimed to understand the reasons why megaprojects often run over budget, over schedule, and fail to deliver their intended outcomes.

It is well-known that most megaprojects fail to achieve their objectives, but we know surprisingly little about why they fail and what can be done to rectify it. This research consolidates the megaproject management literature in the world's largest systematic review of the field to date. The review analyzes 6,007 titles and abstracts and 86 full papers, identifying a total of 18 causes and 54 cures to address and improve poor megaproject performance.

The research contributes by categorizing what is known about megaprojects, unpacking what is unknown, identifying emerging strategies and practices, and outlining a novel research agenda. We found significant knowledge fragmentation and that no single concept or framework—no matter how far we stretch it—can account for the multiple and varied causes of and cures for poor performance.



Method Summary

This is the most comprehensive systematic review of megaproject performance to date. Our approach is novel and original because it extends the traditional way of conducting systematic literature reviews (SLRs) by validating the findings with world-leading academics and practitioners. We developed several dynamics to engage expert advice and capture their reflections on our findings. Our six themes were assessed and validated with the former Chief Construction Adviser to the UK government and in two workshops. The first workshop was held at UCL, and the second workshop was hosted by the president of the Association for Project Management (APM), involving leading academics and some of the United Kingdom's most senior practitioners (the CEO of High Speed Two, Europe's largest megaproject). The experts encouraged us to think beyond traditional disciplinary silos and are acting as ambassadors of our research, implementing the findings and recommending it to others.

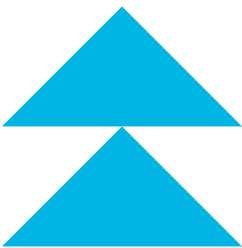
The investigation considers prior research not only on megaprojects but also adjacent literature on large engineering projects, major projects, grand-scale projects, and other related terms (see the List of Synonyms in Appendix 1 of the article). We developed the

most comprehensive list of synonyms regarding megaprojects to date, identifying 34 terms by tracking academic papers and books dating back to the 1950s, when terminologies were commonly associated with different terms such as large-scale, major, complex, and system of systems. The 34 terms for megaprojects were systematically searched in academic databases against synonyms of success and failure.

Key Findings and Practical Implications

The article identifies six themes, which reveal 18 causes of poor performance (three for each theme) and 54 solutions (three for each cause):

1. Decision-making behavior
2. Strategy, governance, and procurement
3. Risk and uncertainty
4. Leadership and capable teams
5. Stakeholder engagement and management
6. Supply chain integration and coordination



The study found that no isolated factor was responsible for failure in megaprojects, with a number of interrelated factors contributing equally to poor performance. The research highlights the importance of changing the narrative of measuring megaproject success only by its final cost, shifting toward unpacking the problems and solutions throughout different stages of such long endeavors. Despite some great research on optimism bias and inadequate front-end planning, we still don't know why megaprojects fail to achieve their cost, time, and quality objectives. This article is one of the first studies to systematically unpack what goes on inside the "black box" of megaproject delivery, recognizing that successful performance depends on what happens (strategies and practices) during megaproject planning, execution, and handover to operations.

We suggest that megaprojects should be understood and explored as production systems, encompassing all stages of the life cycle, from planning to operations. Researchers and managers are encouraged to develop future studies to explore the interdependencies among the megaproject themes identified in this systematic review. The exploration might consider lessons from other industrial sectors, contributing to challenge our thinking and continuously improve the performance of megaprojects.

The review suggests a research agenda with five avenues to advance the successful delivery of megaprojects:

1. Designing the system architecture
2. Bridging the gap with manufacturing
3. Building and leading collaborations
4. Engaging institutions and communities
5. Decomposing and integrating the supply chain

The detailed discussion of all themes and future avenues can be accessed in the article published in *Project Management Journal*[®] (PMJ), and through a webinar at Project Management Institute.

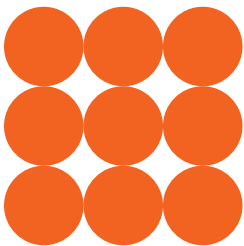
Impact

This is currently the most read *PMJ* article, with more than 33,000 downloads and is on track to be one of the most read and cited of the field. It has one of the highest altmetric scores (302) of all papers in project management journals, as well as all journals in the adjacent fields of construction and infrastructure management.

The research was used by the Infrastructure and Projects Authority to develop two of the core modules for the UK government's new Project Routemap: Setting up projects for

success. Our theoretical contribution informed the UK's Institution of Civil Engineers' major new initiative called the "Systems Approach to Infrastructure Delivery."

The article was immediately and extensively covered by policy outlets, which often takes several years and featured in publications from the European Commission, Resolution Foundation, and Stockholm Environment Institute. It also attracted the attention of the Organisation for Economic Co-operation and Development (OECD) and The Global Infrastructure Hub, a G20 initiative. The research attracted significant media attention from countries as diverse as the United States, Pakistan, and Colombia, including mainstream outlets (*Daily Mail* and *The Tribune*) and the trade press (*New Civil Engineer*, *Engineering News Record*, and *Management Today*). The article featured as the leading story in the Government Project Delivery Newsletter on 15 May 2020. The article has been cited in several written submissions of evidence to the UK Parliament, including inquiries on major projects from the Public Accounts Committee (PAC), and the Public Administration and Constitutional Affairs Committee (PACAC). The Department for Transport (DfT) recently cited the research to support their written evidence submitted in the inquiry *Major transport infrastructure projects: appraisal and delivery*.



Overall Takeaway

What is missing in current research and practice is an understanding of megaprojects as a complete production system—from planning through design, manufacturing, and construction, to integration and handover to operations. Thinking about megaprojects as production systems may help us understand how the different dimensions—the six themes identified in our research—work together to achieve a project's goals and deliver valuable outcomes.

Acknowledgments

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Research Paper

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Webinar

The Ingredients of Successful Megaproject Management

<https://www.projectmanagement.com/videos/639306/The-Ingredients-of-Successful-Megaproject-Management>

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