

# Strategic Decision-Making for Dynamic Project Portfolio Management

How Quality Data, Scenario Building, and *What If* Options  
Improve Decisions and Enhance Project Success

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# Executive Summary

Project Portfolio Management today must be highly responsive, especially because decisions on project priority and funding directly impact organizational success. PPM decision-making, however, is a deeply complex process with many environmental and human factors that can either boost an organization's bottom line or derail it. When we understand PPM as a dynamic, sometimes even volatile process, requiring constant flexibility, it's clear that we must enhance and support the PMOs decision-making in as many ways as possible.

The decision-enhancing strategies presented in this paper have all demonstrated the positive organizational impact of continuously gathering and strategically incorporating data into every decision. Copious, real-time data that is presented visually will allow organizations to be fully transparent, identify and mitigate early-stage conflicts, and forecast for ideal resource allocation. When rendered in the form of multiple future scenarios, giving PMOs the fullest possible vision of what could happen when any number of variables shift, this kind of data is shown to aid in sound decision-making that brings maximum benefits.

Ultimately, organizations that contend with uncertainty need real options to guide their decision-making. They need data to help compensate for and overcome all our human shortcomings and biases, so we can make decisions based on evidence and informed predictions—data that illuminates project interdependencies, resource conflicts, and competing objectives. And data that leads to maximized resources and overall portfolio success.

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# Why You Need Dynamic, Adaptive Project Portfolio Management

Strategic projects are major investments with often high degrees of uncertainty. Put simply, they are “the core of corporate growth, change, and wealth creation.”<sup>i</sup> Enterprise-level organizations executing multiple, cross-department projects need rigorous and accurate systems to handle a large and complex portfolio.

Project Portfolio Management (PPM) focused on choosing the right projects at the right time takes place in a dynamic and ever shifting environment. An organization’s flexibility when responding to internal and external changes and developments will be their key to project completion and overall growth.<sup>ii</sup>

## PPM is Business Critical

Project Portfolio Management (PPM) isn’t just crucial for maintaining operations—it should be part of effective execution of strategic plans. Lacking PPM exacerbates the four most universal problems organizations face: 1) having too many active projects; 2) supporting the wrong projects that don’t provide value; 3) running projects that don’t align with strategic goals; and 4) imbalance of resources.<sup>iii</sup>

Optimized PPM should enhance decision-making about priorities and choosing how to invest an organization’s scarcest resources: time, people, and money. More precisely, PPM contributes to decision-making on viability, interdependencies, and sharing common resources.<sup>iv</sup> Those decisions, in turn, need to be made with “relevant, precise, and quality information.”<sup>v</sup>

Product development in an increasingly globalized, competitive, and dynamic markets is a prime example of the importance of PPM. With shrinking product life cycles, high expectations for innovation, and continual product upgrades, teams face frequent changes or additions to their roadmaps. PPM is needed more than ever to improve the success rates for product innovation activities.<sup>vi</sup>

*Research shows that not only does project portfolio management help organizations to achieve their business goals and objectives, but it also helps them to improve their project success rate.*<sup>vii</sup>

## Core Essentials for a PMO's Dynamic Capability

PPM aims to increase the contribution of projects to the overall welfare and success of the enterprise, as well as to maintain the optimal combination of projects. To do so, a PMO is responsible for the effective deployment of the innovation strategy and creating a “holistic and responsive decision-making environment.”<sup>viii</sup> In any given organization, a PMO can be responsible for:

- Maximizing the return on product development investments;
- Achieving efficient allocation of resources;
- Maintaining the organization's competitive position;
- Establishing a strong link between project selection and business strategy;
- Enabling informed, objective project selection;
- Communicating priorities effectively.<sup>ix</sup>

Given that a PMO's decisions will impact multiple objectives, their strategy must be dynamic, in that it's highly responsive and adaptable. On top of all that, PPM methods must achieve a competitive advantage by enabling deployment, integration, and building of other capabilities and organizational resources.<sup>x</sup>

## Ideal Conditions for Dynamic PPM

In order to reap maximum benefits of PPM, organizations must first build a climate for project success.<sup>xi</sup> To create such a climate—marked by adaptation, trust, collaboration, and quality of time—*flexibility* is the single most important criteria. Team members must perceive an environment in which leaders are open to change. This can be seen most clearly in teams that practice reflective *thinking* and ongoing learning throughout the duration of the project. In addition to formal and informal cost and time benefits, a climate for project success has been shown to improve stakeholder perceptions and to shorten time between deliverables.<sup>xii</sup>

## Additional components of a climate for project success include:

### A Culture of Trust

Regular information sharing among teams is crucial for a dynamic project environment. Capturing and sharing information and supporting inter-project communication leads to a better understanding of project interdependencies. This in turn correlates with successful PPM performance, high levels of top management support, and a culture that promotes transparency. <sup>xiii</sup>

### Quality of Time

Studies show that when PMOs perceive a shortage of time, decisions tend to be rushed or not fully informed. Conversely, the same evidence draws a strong correlation between perceiving adequate time and improved decision quality. <sup>xiv</sup> A culture of project success prioritizes adequate quality of time.

### Collaboration

A truly collaborative environment gives people the tools and the professional trust and autonomy they need to thrive. An ideal environment for working across disparate departments, roles, and objectives strikes a balance between direct coordination and leaving entities enough autonomy in their own areas. <sup>xv</sup>

### Transparency

Project interdependencies must be clearly communicated, with information readily available to all parties, especially those managing resources. With a mindset of collaboration, not competition, overlapping resources and interdependent tasks and goals must be represented. Further, communication processes must include open feedback. <sup>xvi</sup>

### Portfolio Review Boards

Best practice studies indicate that high-performing organizations use carefully compiled executive-level teams, often called portfolio review boards (PRB), to help make portfolio decisions. The PRB usually consists of experienced managers who represent the breadth of functions or divisions affected by portfolio decisions, and who collaboratively consider wide-ranging impact factors across the entire portfolio. <sup>xvii</sup>



# How We Make Decisions in Dynamic Environments

It's no secret that the complexities and interdependencies of project portfolios are a challenge for decision makers. In fact, 47% of unsuccessful projects are impacted by poor decision-making.<sup>xviii</sup> While we can and should take steps to create a climate for project success, the influences of biology and culture on our decision-making processes can't be underestimated. Neither can a host of other factors like our intellect, senses, emotions, and relationships.

Behavioral science provides at least twelve different theories about how humans make decisions. Each captures an aspect of our minds or bodies that positively or negatively affects how we make choices and take action. Among those factors are certainty, uncertainty, risk, analysis, intuition, personal principles, and a host of other internal and environmental factors.<sup>xix</sup>

It's important to understand some of the science behind how our minds are wired and what influences our decision-making—especially what hinders it—so we might best position ourselves to create conditions that compensate for our deficiencies and elicit our strengths.

## What Keeps Us from Making Sound Decisions

### Cognitive Limits and Biases

Our human limitations of perception and understanding are the primary causes of less than ideal decision-making. "Experiments have revealed the limitations in human capability to recognize interdependencies...from their decisions and actions in complex systems. Complex and critical decisions are particularly affected by human cognitive constraints."<sup>xx</sup>

### Bounded Rationality

PMOs must consider vast amounts of data and various criteria to make decisions. "Bounded rationality" is a set of three conditions that limit our ability to interpret data and thereby make rational decisions. These conditions, which most PMOs experience regularly, are: lacking complete and accurate information; our human cognitive limitations; and limited time to make decisions.<sup>xxi</sup>

To compensate and push through decision-making, we tend to construct and act on simplified models of the world in our minds. We act based on a combination of this somewhat distorted reality and our prior experience, often without identifying or comparing plausible alternatives before committing to a course of action.<sup>xxii</sup>



## What Keeps Us from Making Sound Decisions (cont.)

### Planning Fallacy

This particular cognitive bias stands out because it highlights a common challenge shared across all planning contexts. The planning fallacy is our tendency to underestimate the duration (as well as cost and risk) of a task, despite evidence telling us otherwise. Essentially, our optimism almost always triumphs over our experience—resulting in rushed work, missed deadlines, or continuing to devote resources to a project, portfolio, or strategic decision despite evidence of inviability. <sup>xxiii</sup>

### Time Pressures

With limited time to fully absorb, analyze, and synthesize vast amounts of data, PMOs find their decision-making challenges compounded. Despite the name, the notion of time pressure isn't the actual amount of time allotted for work. Rather, it is the perception of scarcity of time. When PMOs feel like they have less time than they need to meet a deadline, their decision-making is impaired. <sup>xxiv</sup>

*We must “move from seeing project management practitioners as pre-eminently trained technicians, able to follow methodologies and use techniques on well-defined projects, to that of reflective practitioners, able to learn, operate and adapt effectively in complex project environments.” <sup>xxv</sup>*

# Quality Information, Data, and Scenarios Improve Decision-Making

Two things we know: we need dynamic and responsive PPM, but our limitations and biases stand in the way of fully utilizing even the best laid PPM strategies. Here, then, are several researched strategies for organizations to minimize or alleviate our human challenges and engage in strategic decision-making that responds and adapts effectively to project portfolio changes.

*"The strategic performances of businesses are underpinned by decisions, and the cost of poor decisions can be high." <sup>xxvi</sup>*

## Decisions Improve with Quality Information

In the most basic terms, "the aim of decision-making is to minimize surprises." <sup>xxvii</sup> Considering and weighing many kinds of information before making a decision isn't just good practice, it actually correlates to business performance. And research shows that information quality directly impacts the decision quality. <sup>xxviii</sup>

Ideally, project data should be collected at all stages and used to predict success, track progress, measure performance, forecast, demonstrate strategic alignment, and prepare for obstacles. <sup>xxix</sup> However, even with careful information collection, surprises happen, typically as a result of one of the following: either the decision was made with the wrong information, the wrong implementation was followed, there was a change after the decision was made, or the decision itself was fundamentally flawed. <sup>xxx</sup>

*"Information is critical as an input into the decision process. A positive correlation has been established between business performance and decision-making practice." <sup>xxxi</sup>*

When measured for the greatest impact, we see that stakeholder and risk management information rank highest. The quality of a PMO's decisions are strongly influenced and improved by how they perceive stakeholder pulse and the control over a project they gain from superior risk management systems. <sup>xxxii</sup>

### Visual Data is Ideal

A significant aid in digesting and then utilizing complex information is visually rendered data. “While human capabilities are limited, research suggests that visual data representation techniques can compensate for limitations.”<sup>xxxiii</sup> Visual displays and data evaluation methods help us communicate and shape our strategic thinking by illustrating complex multi-dimensional decision factors simply, and in turn helping our attention, agreement, and retention of strategic information.<sup>xxxiv</sup>

Visual data is especially impactful when discerning and managing project interdependencies and, more importantly, resource constraints and conflicts that can amplify the challenges of PPM. The ability to gain organizational, product and/or portfolio-level perspectives is crucial. However, most current tools still treat projects as isolated entities. Even with tools for interproject dependency, it’s not always possible to identify multi-step dependencies (i.e. within three interdependent projects, PMOs need to identify the relationship between Project 1 and Project 2, Project 2 and Project 3, and Project 1 and Project 3).<sup>xxxv</sup>

*“Visual representations of data, such as...risk-reward portfolio maps are regularly used to support portfolio review board discussions and balancing decisions. The use of such visual data representations is correlated with better portfolio performance.”<sup>xxxvi</sup>*

### Scenario Building and Strategic Thinking

Scenarios are one of the most useful renderings of immense quantities of information and visual data. These future *what if* propositions are “used extensively and flexibly in a wide variety of business applications” and to “cognitively underwrite the strategic process.”<sup>xxxvii</sup>

When data is extrapolated to show different future possibilities, PMOs are essentially constructing new realities, then making those realities easier to deploy.<sup>xxxviii</sup> Most important is a PMO’s ability to generate *groups* of scenarios. Multiple scenarios give PMOs the ability to use data-driven resource planning for their current project portfolio, as well as for strategic policy planning, gap analysis, and transition analysis.

### Scenarios for a Strategic Flexibility Framework

A common method for PMOs to choose which projects to fund relies heavily on limited heuristics that often overlook how individual projects impact a larger portfolio. This usually results in less than optimal allocation of resources and exposes organizations to strategic risks. Project interdependencies get missed when PMOs simply rank projects according to a heuristic and then allocate resources according to that ranking.<sup>xxxix</sup>

Strategic Flexibility, a different kind of project selection method, “draws upon scenario-building and real-option concepts to help managers formulate and implement strategy in high-commitment, high-uncertainty environments.” It’s a framework that helps organizations prepare in the face of unpredictable futures. <sup>xi</sup>

Using four discrete phases—Anticipate, Formulate, Accumulate, and Operate—Strategic Flexibility has been shown to make uncertainties explicit, identify portfolio research gaps, and help draw guidelines for project funding. The framework ultimately formulates complete strategies for every scenario, rather than for individual projects.

### **Scenario-Building Plus Road Mapping for Optimal Decision-Making**

Scenario building and road mapping remain two separate management tools, despite their many useful overlaps and complimentary approaches. In dynamic, or even volatile environments, researchers don’t see either reaching full potential. However, integrating these tools can position organizations to “identify the nature, timing, and implications of a range of changes,” as well as prepare for them. <sup>xii</sup>

Consider the combined value: scenarios force companies to articulate their assumptions and can lead to discovering hidden conflicts in perspectives or approaches; road mapping encourages creative thinking and cross-organizational communication. Together, the two strategies push organizations outside their comfort zones. Having the best of both worlds means organizations can gain more robust product architectures, “flex points” to anticipate necessary adjustments, and “forks in the road” where alternative scenarios can point toward new approaches. To accomplish all this, PMOs first need access to detailed pictures of alternative futures.

# Conclusions

Dynamic Project Portfolio Management is a complex matrix of strategic decision-making that relies heavily on quality data. And because the multi-project environment is ever shifting, PMOs need all the structures and support possible to make crucial decisions about project funding, prioritization, and allocating scarce resources. As a key component of dynamic PPM, data gives us enhanced perspective and objectivity, along with proven strategies to counter the environmental and human factors that inhibit decision-making. With quality data to build scenarios, forecast capacity, and optimize managing resources, PMOs can remain responsive and flexible while leveraging their significant influence on organizational success.

# Bibliography

- <sup>i</sup> Araque, Francisco, Ramon Carrasco, Alberto Salguero, Amparo Vila, and Luis Martinez. Fuzzy Extended Dependencies to Support Decision-Making in Project Management." *Journal of Multiple-valued Logic and Soft Computing* 14 (2008): 435-456.
- <sup>ii</sup> Ibid.
- <sup>iii</sup> Kharat, Vilas, & Koteswara Rao Naik Bhukya. "Best Practices in Project Portfolio Management for Dynamic Decision Making." *The Journal of Modern Project Management* 6.1 (2018): Web. 24 Sep. 2019.
- <sup>iv</sup> Ibid.
- <sup>v</sup> Araque, Francisco, Ramon Carrasco, Alberto Salguero, Amparo Vila, and Luis Martinez. Fuzzy Extended Dependencies to Support Decision-Making in Project Management." *Journal of Multiple-valued Logic and Soft Computing* 14 (2008): 435-456.
- <sup>vi</sup> Ibid.
- <sup>vii</sup> Doloi, Hemanta Kumar and Iman Baradari. "Impact of Applying Project Portfolio Management on Project Success." *The Journal of Modern Project Management* 1.2 (2013): Web. 24 Sep. 2019.
- <sup>viii</sup> Ibid.
- <sup>ix</sup> Kharat, Vilas, & Koteswara Rao Naik Bhukya. "Best Practices in Project Portfolio Management for Dynamic Decision Making." *The Journal of Modern Project Management* 6.1 (2018): Web. 24 Sep. 2019.
- <sup>x</sup> Ibid.
- <sup>xi</sup> Serrador, Pedro, Andrew Gemino, and Blaize Horner Reich. "Creating a Climate for Project Success." *The Journal of Modern Project Management* 6.1 (2018): Web. 24 Sep. 2019.
- <sup>xii</sup> Ibid.
- <sup>xiii</sup> Killen, Catherine P. "Evaluation of Project Interdependency Visualizations through Decision Scenario Experimentation." *International Journal of Project Management* 31 vol. 6 (2013): 804-16. <https://doi.org/10.1016/j.jproman.2012.09.005>.
- <sup>xiv</sup> Ibid.
- <sup>xv</sup> Baudin, Mathieu, Pierre Bonnal, Bertrand Nicquevert, & Jean-Michel Ruiz. "An Enhanced Planning and Scheduling Approach Suited to the Requirements of Collaborative Project Management." *The Journal of Modern Project Management* 1.2 (2013): Web. 24 Sep. 2019.
- <sup>xvi</sup> Ibid.
- <sup>xvii</sup> Kharat, Vilas, & Koteswara Rao Naik Bhukya. "Best Practices in Project Portfolio Management for Dynamic Decision Making." *The Journal of Modern Project Management* 6.1 (2018): Web. 24 Sep. 2019.
- <sup>xviii</sup> Cunha, José Adson O.G., Hermano P. Moura, Francisco J.S. Vasconcellos. "Decision-making in Software Project Management: A Systematic Literature Review." *Procedia Computer Science* 100 (2016): 947-54. <https://doi.org/10.1016/j.procs.2016.09.255>.
- <sup>xix</sup> Shanteau, James. "Management Decision Making." *The Corsini Encyclopedia of Psychology and Behavioral Science* (3rd ed). Ed. Craighead, W. Edward and Charles B. Nemeroff. NY: Wiley. (913-915).
- <sup>xx</sup> Killen, Catherine P. "Evaluation of Project Interdependency Visualizations through Decision Scenario Experimentation." *International Journal of Project Management* 31 vol. 6 (2013): 804-16. <https://doi.org/10.1016/j.jproman.2012.09.005>.
- <sup>xxi</sup> Ibid.

# Bibliography

- <sup>xxii</sup> Shanteau, James. "Management Decision Making." *The Corsini Encyclopedia of Psychology and Behavioral Science* (3rd ed). Ed. Craighead, W. Edward and Charles B. Nemeroff. NY: Wiley. (913-915).
- <sup>xxiii</sup> Buehler, Roger, Dale Griffin, and Johanna Peetz. "Chapter One: The Planning Fallacy: Cognitive, Motivational, and Social Origins." *Advances in Experimental Social Psychology*. Ed. Mark P. Zanna and James M. Olson. Academic Press 43 (2010): 1-62. [https://doi.org/10.1016/S0065-2601\(10\)43001-4](https://doi.org/10.1016/S0065-2601(10)43001-4).
- <sup>xxiv</sup> Killen, Catherine P. "Evaluation of Project Interdependency Visualizations through Decision Scenario Experimentation." *International Journal of Project Management* 31 vol. 6 (2013): 804-16. <https://doi.org/10.1016/j.ijproman.2012.09.005>.
- <sup>xxv</sup> Crawford, Lynn, Peter Morris, Janice Thomas, and Mark Winter. "Practitioner Development: From Trained Technicians to Reflective Practitioners." *International Journal of Project Management* 24.8 (2006): 722-733, <https://doi.org/10.1016/j.ijproman.2006.09.010>.
- <sup>xxvi</sup> Eweje, John, Rodney Turner, and Ralf Müller. "Maximizing Strategic Value from Megaprojects: The Influence of Information-feed on Decision-making by the Project Manager." *International Journal of Project Management* 30, vol. 6 (2012): 639-51. <https://doi.org/10.1016/j.ijproman.2012.01.004>.
- <sup>xxvii</sup> Ibid.
- <sup>xxviii</sup> Ibid.
- <sup>xxix</sup> Vanhoucke, Mario, José Coelho, & Jordy Batselier. "An Overview of Project Data for Integrated Project Management and Control." *The Journal of Modern Project Management* 3.3 (2016): Web. 24 Sep. 2019
- <sup>xxx</sup> Eweje, John, Rodney Turner, and Ralf Müller. "Maximizing Strategic Value from Megaprojects: The Influence of Information-feed on Decision-making by the Project Manager." *International Journal of Project Management* 30, vol. 6 (2012): 639-51. <https://doi.org/10.1016/j.ijproman.2012.01.004>.
- <sup>xxxi</sup> Ibid.
- <sup>xxxii</sup> Ibid.
- <sup>xxxiii</sup> Killen, Catherine P. "Evaluation of Project Interdependency Visualizations through Decision Scenario Experimentation." *International Journal of Project Management* 31 vol. 6 (2013): 804-16. <https://doi.org/10.1016/j.ijproman.2012.09.005>.
- <sup>xxxiv</sup> Ibid.
- <sup>xxxv</sup> Ibid.
- <sup>xxxvi</sup> Ibid.
- <sup>xxxvii</sup> Powell, John H. "System/scenario Duality—a Supporting Equivalence." *The Journal of the Operational Research Society* 65.9 (2014): 1344-360. <http://www.jstor.org/stable/24505096>.
- <sup>xxxviii</sup> Ibid.
- <sup>xxxix</sup> Raynor, Michael E. and Ximena Leroux. "Strategic Flexibility in R&D." *Research Technology Management* 47. 3 (2004): 27-32. <http://www.jstor.org/stable/43238106>.
- <sup>xl</sup> Ibid.
- <sup>xli</sup> Strauss, Jeffrey D., and Michael Radnor. "Roadmapping for Dynamic and Uncertain Environments." *Research Technology Management* 47. 2 (2004): 51-57. <http://www.jstor.org/stable/43240848>.

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