

Capital Projects Succeed through Planning and Predictability

Why do enterprises undertake capital projects? Because engineering, designing, and building a new industrial facility (like an oil, gas, or chemical plant) is expected and intended to produce a certain cash flow, and other reliably identified benefits, for the enterprise. Yet, independent data suggests that many large capital projects around the world do not live up to expectations in terms of cost, schedule or performance. Project managers admit that project costs and schedules are often missed, and resources are wasted, due to a lack of priority and focus on planning and monitoring.



It's a simple truth: the extent to which a capital project is executed in a predictable manner governs the extent to which the capital project's anticipated cash flow and other benefits are realized.

The contractor's ability to deliver on time and at cost has a big effect on realizing the projected cash-flow benefits justifying the project. Contractors that deliver predictable performance permit owners to better manage and maximize today's tighter cash flows and profit margins. Yet, even for these contractors performance can hinge on the project owner's decisions and planning capabilities, matters outside the contractor's control. Thus, to maximize overall project cash flow owners must also establish the right executive team and the right plan, and contractors must likewise, early on in the process, focus on implementing practices that ensure the project is delivered in a predictable manner and provide owners with as much information and guidance as possible in this regard.

While contractors with a record of *predictably* executing projects are rare, they're well worth finding and engaging – for they deliver the best overall value to project owners. Owners who understand the financial impact (benefits) of predictable project costs and schedules are willing to pay the comparably modest extra expense of contractors offering this expertise to gain significantly enhanced overall project cash flows. It's no longer sufficient to have just a select base of contractors (5.4%) providing such predictability, and as owners better understand these predictability matrices they will increasingly engage "best value" contractors and flee the "lowest price" contractors (who will be forced to improve their predictability performance or lose their market position).



The Construction Industry Institute (CII) has conducted its Performance Assessment Program since the mid-1990s with the aim of understanding and improving capital-project performance, execution, and predictability. It suggests that to maximize the intended benefits that flow from undertaking a capital project, project owners and project managers, and their contractors and suppliers, need to understand and quantify:

- What works and what doesn't in project management.
- The value of predictability in project execution.
- The consequences and impact of project execution that doesn't conform to expectations.
- The economics of project execution and how they affect project value.

Delivering Value to the Enterprise

Projects must be executed and managed in a way that actually delivers value to the enterprise, and that ensures predicted cash flows are realized. Predictable execution should be a key factor in all project-delivery decisions. Studies indicate that selecting more qualified contractors and conducting detailed front-end planning can cost 1-3% more than the "lowest cost" model, but can generate 6-25% savings in both costs and schedule and help insure predictable delivery; driving the lowest total project cost and best value for the owner. Competently evaluating, monitoring and assessing project performance enables execution with certainty. In short, complex capital projects should be managed like a business, rather than just a project.

The need for accuracy in planning and execution is especially important today since cash flow from capital projects is generally declining for a number of reasons, including increased M&A activity, regulatory complexity, costs, risk aversion in today's low-growth and uncertain economy, and the effect of uncertain taxation and long and unpredictable government-approval processes on planning, budgeting, and timelines. Changing labor costs and limited talent availability also trigger unforeseen delivery delays and cost overruns.

Underscoring the importance of ensuring that expected financial returns are realized, studies show that the value that can be derived from capital projects is shrinking. On average, cash flow from operating activities (CFFOA) and construction in progress spending (CIP) increase proportionally. But, CII's trend lines from 1996 through 2016 indicate that CIP will grow faster than CFFOA in coming years.



Illustration:

After studying 975 capital projects over 17 years (with a combined value of \$133B) CII developed a hypothetical “average” owner with an “average” project cost of \$65M. It determined that such owners, with average project predictability, could expect NPV benefits of \$6.45B associated with their capital project portfolio over a 5-year planning horizon. But, owners whose projects perform with high predictability (within the +or- 3% margin) could expect to attain close to the targeted NPV benefits for the project portfolio of \$7.65B.

Lesson:

Failure to deliver capital projects with high predictability on both cost and schedule results in a loss of 16% NPV on the “average” owner’s capital project portfolio, or a stunning \$1.2B.

The CII research also suggests that failing to use best practices and highly qualified contractors could reduce NPV by up to \$2.1B for the same project portfolio.

The Predictability of Costs and Schedules is Essential

The ability to predictably plan and execute capital projects at the highest levels of accuracy should be the objective of every serious project owner, manager, and contractor. The predictability of *both* costs and performance schedules is crucial to attaining a project’s planned financial objectives (outcomes). After all, a company’s financial performance can be seriously compromised, both in real dollars and indirect impacts (i.e., cost of money, escalation, product to market concerns, etc.), when schedules or costs deviate substantially from the plan.

Despite their critical role, anticipated financial returns from capital projects often turn out to have been “optimistic.” Insufficient statements of scope or inadequate business planning are known to jeopardize project performance, and full project funding authorization should be withheld until these elements are appropriately satisfied.

The first step in sound project management (and enabling predictability and assessment) is this: capital budgeting must be brutally deliberate in analyzing and projecting financial outcomes, including the underlying project’s costs and schedules, and prospective sales associated with the project. It must be done accurately, conservatively, and realistically, with a thorough understanding of the market(s). The veracity of capital-project financial projections and underlying assumptions shouldn’t become a victim of overzealous project pitches in the boardroom or overly optimistic project managers (owners and/or contractors) who present only best case, world-record-setting scenarios.

How many capital projects are executed in a predictable manner? Unfortunately, very few. CII’s review of 975 owner-submitted capital projects “revealed that only 5.4% (53) met both their authorized cost and schedule within a reasonable (+or- 3%) margin.” In fact, 70% of these projects had either costs or schedules that deviated by more than 10% from what was anticipated when the project was authorized.

Cash Flow Impact of Predictability

What's the cash flow impact if a project is not executed in a predictable manner (i.e., according to the plan)? If your project's costs and schedule deviate from the plan by increasing (i.e., by taking more time and costing more money), it causes an average net 25.3% loss in the project's NPV, according to CII's analysis of actual project results. Given this, most would think that if a project *costs less and takes less time* than planned that the opposite would occur, namely, an *increase* in the project's NPV.

Perhaps surprisingly though, this is not what happens. In fact, this deviation from the plan, although time and money are saved, *also caused a measurable average 11.1% loss in NPV*. Why is this so? Because if the capital project had been better planned, the project owner would have avoided allocating resources and time to the project that weren't needed. With proper planning and execution, these improperly allocated resources could have been used on *other* capital projects to generate additional cash-flow benefits.

Avoiding Poor Outcomes

Negative NPV outcomes are driven by poor management practices and processes that leave many aspects of project execution to chance, permit change during project execution, or reduce execution quality. Fortunately, it's completely avoidable. Some contractors have developed, implemented, and are fully committed to robust internal programs that strive to deliver projects in a more consistent and predictable manner. These contractors are not necessarily "lowest bidder" firms though.

Also, training and education in capital-project planning and management processes and practices are available through various organizations, which can arm owners with the tools to make the best project-planning and contractor-selection decisions, and which contractors can use to advance their processes and procedures and enhance their ability to execute projects in a predictable manner. The benefits of an international understanding of predictable project execution and a best-value mentality in contractor selection are significant to the owner.

Beyond training, owners can avoid poor outcomes by spending wisely on a world-class contractor with fully integrated delivery capabilities. This is a great investment when one considers the potential negative impact of a mediocre contractor on the project's life-cycle cash flow.

Example:

An owner with an average \$65M project spends \$3-4M more on engineering and proactive construction management to ensure predictable project delivery, and successfully avoids a prospective \$1.2B NPV loss (portfolio-wide) had such projects not been delivered predictably.

The conclusion is clear.

Predictable projects deliver intended financial outcomes. Any deviation from the plan has an adverse effect on the project's expected financial returns. The key to ensuring that a capital project's planned cash flow is realized is to ensure that the project plan is sound in the first place and that the project is executed in accordance with the plan. According to CII studies, optimizing project predictability could increase the NPV of expected financial returns by as much as 24%, as compared to today's average capital project.

More predictable project execution that drives owner value and improves cash flows is within reach.

Attaining predictable project execution through rigorous planning and monitoring, and the use of highly-skilled contractors, is a major value to enterprises engaged in capital-project development, and can avoid serious damage to company cash flow. Owners, managers and contractors that fail to deliver capital projects "predictably" cost the owner significant amounts of money, far more than the comparably small investment needed to improve predictable project delivery.