

Perspective

Detlef Schwarting  
Matt McKenna  
Mark Uffhausen  
Paul Yates

**booz&co.**

---

**Sourcing Excellence**  
*The Key to Profitability*  
*in Capital Projects*

---

---

**Contact Information**

**Beirut**

**Ibrahim El-Husseini**

Senior Partner  
+961-1-985-655  
ibrahim.elhusseini@booz.com

**Ramez Shehadi**

Partner  
+961-1-985-655  
ramez.shehadi@booz.com

**Chicago**

**Rohit Singh**

Principal  
+1-312-578-4694  
rohit.singh@booz.com

**Dallas**

**Dennis Cassidy**

Partner  
+1-214-746-6552  
dennis.cassidy@booz.com

**Delhi**

**Piyush Doshi**

Principal  
+91-124-499-8700  
piyush.doshi@booz.com

**Düsseldorf**

**Joachim Rotering**

Senior Partner  
+49-211-3890-250  
joachim.rotering@booz.com

**Detlef Schwarting**

Partner  
+49-211-3890-124  
detlef.schwarting@booz.com

**Florham Park, NJ**

**Pat W. Houston**

Partner  
+1-973-410-7602  
pat.houston@booz.com

**Hong Kong**

**Edward Tse**

Senior Partner  
+852-3650-6100  
edward.tse@booz.com

**Houston**

**Matt McKenna**

Senior Executive Advisor  
+1-713-650-4156  
matt.mckenna@booz.com

**Mark Uffhausen**

Principal  
+1-713-650-4191  
mark.uffhausen@booz.com

**London**

**Paul Yates**

Principal  
+44-20-7393-3577  
paul.yates@booz.com

**Moscow**

**Ekaterina Kozinchenko**

Partner  
+7-495-604-4100  
ekaterina.kozinchenko@booz.com

**Paris**

**Douwe Tideman**

Partner  
+33-1-44-34-3131  
douwe.tideman@booz.com

**Shanghai**

**Joni S. Bessler**

Partner  
+86-21-2327-9800  
joni.bessler@booz.com

**Tokyo**

**Kazutoshi Tominaga**

Principal  
+81-3-6757-8711  
kazutoshi.tominaga@booz.com

---

## EXECUTIVE SUMMARY

*Most companies find large capital projects difficult to manage well. Many of these projects come in over budget and off schedule, and return on investment (ROI) targets are often not met. Moreover, things are not likely to get easier anytime soon. Volatile raw material prices, the increasing complexity of capital projects, tight capital, and more challenging supplier relationships paint a picture of an arduous environment for companies hoping (or needing) to build profitability on megaprojects.*

*There's a flipside to this, though: Companies that excel in directing large capital projects can be rewarded with big paydays—as much as 25 percent profitability premiums over other companies in their industry. However, it is impossible to achieve this level of success without adroit management and execution of perhaps the most critical facet of a capital project: sourcing, which accounts for as much as 90 percent of the budget for large-scale projects, since third-party vendors are responsible for everything from engineering, materials, and equipment to construction oversight.*

*Companies must master a critical set of capabilities in eight facets of capital projects to achieve sourcing excellence: portfolio management, business integration, supplier relationship management, contracting, analytics, contract management, knowledge management, and integrated supply chain planning.*

## KEY HIGHLIGHTS

- Most capital projects are off schedule and over budget and generate a minimal return on investment.
- Capital projects are likely to become even more difficult to successfully complete as raw material prices fluctuate, capital remains tight, supplier relationships are strained, and the projects themselves escalate in complexity.
- Companies that successfully manage capital projects can enjoy as much as 25 percent profitability premiums over other businesses in their industry.
- Success in capital projects depends on capably managing and executing sourcing activities, which are responsible for as much as 90 percent of the budget for large-scale projects—including everything from engineering, materials, and equipment to construction.
- Companies must master these capabilities to achieve sourcing excellence: portfolio management, business integration, supplier relationship management, contracting, analytics, contract management, knowledge management, and integrated supply chain planning.

## CAPITAL PROJECT WOES

Look at any asset-intensive industry that depends on large capital projects for growth and, ultimately, profitability, and the most obvious conclusion to be drawn is a bit troubling: To a great degree, these projects have historically failed to meet even diminished expectations; they have frequently come in over budget and late, with minimal, if any, ROI.

To punctuate this point, a recent Booz & Company survey of 34 oil industry projects by 22 companies with an average project cost of US\$1.3 billion found that 47 percent “underperformed,” 30 percent cost more than initially projected, and 12 percent were not finished on time. Similar findings came out of a global survey of 427 senior executives in four asset-intensive industries. In that study, only 11 percent of respondents said their major projects delivered the projected ROI 90 to 100 percent of the time.

Worse yet, all indications are that the environment is becoming even less hospitable for megaprojects. For one thing, raw material prices are increasingly volatile, particularly as demand grows in emerging nations. For example, from January 2010 through June 2011, steel prices rose nearly 20 percent, a substantial increase that puts pressure on companies to do a much better job of cost planning and monitoring as well as materials hedging. Pricing of rare earth elements, which are used in many renewable energy projects and electronic components, may become even dicier. It is anticipated that within a few years, worldwide demand for rare earth, which is concentrated in China, will exceed supply by 40,000 metric tons unless new sources are developed.

In addition, many of the latest capital projects are extremely complex and much more challenging than prior efforts. Offshore wind farm construction or deepwater drilling and unconventional oil plays, among many other sophisticated endeavors, require that companies develop and perfect new technologies as well as recruit world-class engineering talent, a task made more difficult by global shortages of skilled workers.

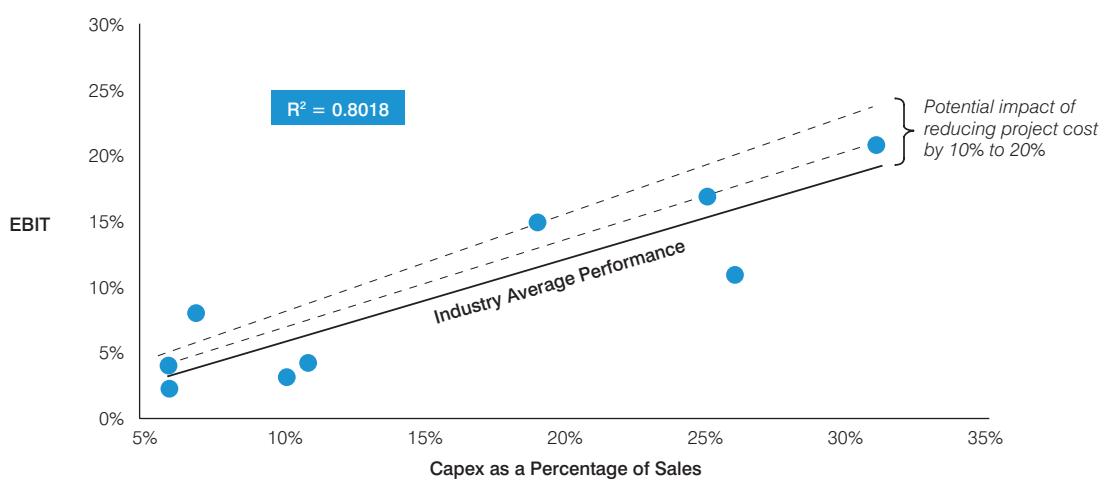
And perhaps most problematic is the scarcity of inexpensive capital for

many companies since the recession. Requirements for high credit ratings—and low-interest loans—are more stringent than ever, and companies that don't make the grade must pay substantial premiums for funding. As a result, most businesses are forced to become much more selective about their project portfolios and bow to the need to spend limited capital more effectively.

Yet, despite these obstacles, capital projects continue to command significant outlays in many industries, with no real slowdown in sight. Global spending on oil and gas exploration is expected to grow by about 12 percent in 2011, while infrastructure investments in emerging markets are forecast to total a stunning \$21.7 trillion between 2008 and 2017. Indeed, there's good reason for this

continuing emphasis on megaprojects: They are a key driver of profitability for companies that do them well. For example, data collected in the early 2000s found that oil companies that were able to complete capital projects 10 to 20 percent more cost-effectively than their rivals enjoyed gains in earnings before interest and taxes (EBIT) of as much as 4 percentage points (*see Exhibit 1*).

**Exhibit 1**  
**Impact of Capital Projects on Profitability**



Note: Company's performance was averaged over the period of 2001 to 2003.  
Source: Booz & Company

# SOURCING'S OUTSIZED ROLE

To design a successful operational model for managing capital projects, a number of different considerations must be given close attention. For starters, project classification and staffing, decision making, and governance deserve keen focus. Based on our experience, Booz & Company has identified six key elements that can play a big role in whether a capital project is successful. They are (1) classifying the projects correctly so the appropriate operating model can be used, (2) staffing and resource allocation, (3) designing an effective management structure for oversight, (4) alignment with overall short- and long-term business strategies and a system of effective governance, (5) well-planned decision-making authority, and (6) carefully drawn processes and policies.

But although these six elements must be taken into account, the most significant factor in reliably increasing the odds of a capital project that meets deadlines and financial performance metrics is the management and execution of sourcing, which accounts for as much as 90 percent of the budget for large-scale projects (see Exhibit 2). Typically, third parties handle everything from engineering, materials, and equipment to construction oversight. Consequently, the way a company supervises and controls suppliers and other outsourced relationships will often determine the outcome of the capital project.

Considering the broad influence of procurement on a capital project, it's not surprising that there are supplier and vendor issues that must be addressed at all stages of the project life cycle (see Exhibit 3).

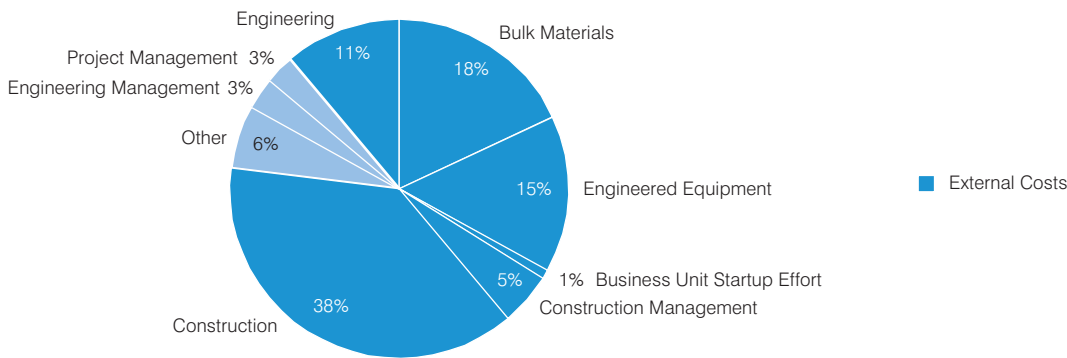
**Portfolio Planning and Design**  
Cost overruns and scheduling problems due to unexpected increases in resource prices and requirements are not unusual. Often, these issues occur because procurement is not given a broad enough role in the portfolio planning process and supplier

agreements are negotiated one-on-one between contractors and business units. Up-selling and design changes frequently occur on the fly, ignoring prior budget decisions and supply chain lead-time deadlines. In other words, forecasting lacks the insight and controls that procurement can bring to it and is not fully integrated into project management. Moreover, each project is treated like a unique effort with no commonalities that can be leveraged for scale.

Arguably, the poster child for the many poorly planned capital projects over the past few decades is the Sydney Opera House, now considered one of the world's most stunning music venues but during its development a disappointment and an embarrassment to Australians. Construction began in 1959 after getting the go-ahead from the nation's Parliament in legislation rushed through before the project's opponents got into office. In order to win approval, the project's budget was set at an artificially low level. And to ensure that the decision could not be reversed, construction began even before blueprints were available. In the ensuing years, the primary architect quit the project amid requests for

**Exhibit 2**  
*External Vendors Account for Most Capital Project Costs*

**PROJECT COST BREAKDOWN**



Note: "Other" includes transportation (3%), insurance (2.5%), and support services (0.6%). Numbers may not add up due to rounding.  
Source: Booz & Company

frequent design changes, while prices for materials and labor skyrocketed. There was very little oversight by competent project managers or supervision of up-front planning and ongoing supplier issues by procurement specialists. Indeed, because project backers completely ignored the need to assess future costs realistically and dismissed the impact of project modifications, the building was not completed until 1973, 10 years after the initial target date and more than 14 times over budget.

### Supplier Selection

Many companies find themselves in the uncomfortable position of having only a handful of suppliers that can provide the services they are looking for in a region. And with minimal competition—and the corresponding confidence that they effectively have the upper hand and will not likely lose the order—suppliers are loath to be particularly transparent about pricing or their costs. Companies frequently complain that prices can vary from one project to another by as much as 25 percent. Limited supplier development programs and the lack of ongoing supplier performance tracking—a set of metrics incorporated into the bidding process—are often to blame

for the dysfunctional relationships that companies have with their third-party providers.

### Execution/Construction

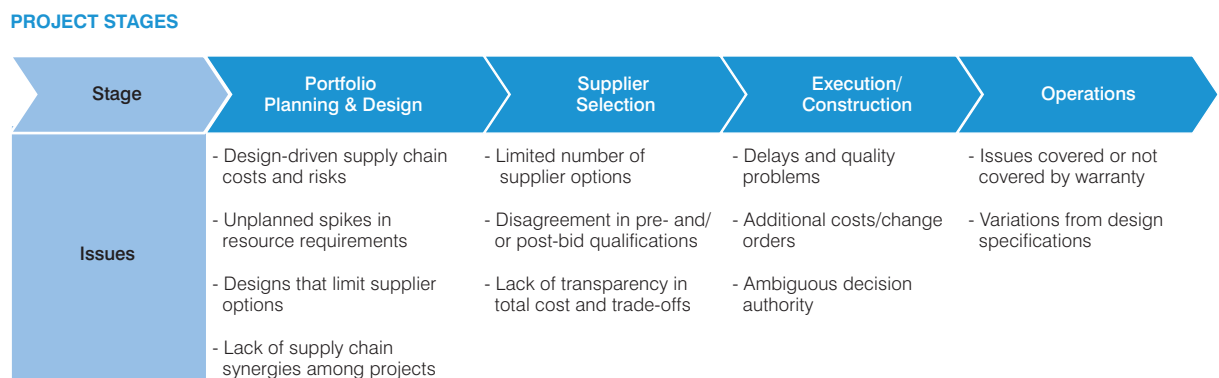
Companies typically delegate to their suppliers oversight of individual aspects of a project. Stretched internal engineering departments generally play only a limited oversight role, often approving additional costs or time delays without the capacity or capabilities to probe deeply to see if they are warranted. By not formalizing supplier expectations up front and not crafting incentives tied directly to performance throughout the contract, companies minimize their chances of celebrating a successful capital project. Much of this could be fixed if corporate silos were eliminated and procurement worked with engineering on project oversight and management, an arrangement that would also allow procurement departments to implement long-term, multiproject evaluation processes, allowing the company to learn from each effort and improve.

### Operations

Warranties tend to be ignored by both companies and suppliers, as it is generally agreed that suppliers will

fix problems that arise, sometimes billing the client company and other times swallowing the costs themselves. In fact, warranties are typically invoked only as a last resort, often in combination with litigation. In addition, although companies may have a contract with an individual supplier, the vendor might subcontract out portions of the job to any number of other operators without informing the client. These and other operational issues drive increased inefficiency and cost overruns, as virtually any errors or mistakes in a project are treated as one-time issues rather than as part of an overall performance agreement with incentives linked to schedules, costs, and quality and with specific penalties and responsibilities if these standards are not met. This situation usually betrays poor governance procedures (in part, limited procurement involvement) for capital projects, a general neglect of efficiency and continuous improvement goals, and the lack of a failure modes and effects analysis, a framework that could identify potential problem areas in a project based on past experiences with similar efforts and establish procedures, such as applying warranties, to address these faults as they arise.

**Exhibit 3**  
*Procurement Challenges at Each Project Phase*



Source: Booz & Company

---

## THE WRONG WAYS

Generally, companies try to wrestle the potential procurement problems in capital projects by one of two methods, each a bit ill conceived. First, there are *isolated efforts*, in which companies try to change distinct structural aspects of capital project management, hoping that this will be enough to assert more control over the effort. For example, a perceived integration problem between the supply chain and the project team may be addressed by dedicating additional staffers to

supporting the effort on a more full-time basis. While this may be helpful, it's often little more than a Band-Aid, masking a deeper decision rights problem that is inherently limiting the performance of the supply chain. In other words, companies often reorganize when they need to assess and then develop the missing capabilities to address the shortfall.

The second approach could be called *local optimization*. This involves maximizing procurement procedures in individual elements, or building blocks, of the capital project, often without considering the lifetime or whole project cost of these decisions. For example, if supplier prices at the component level of an oil rig are under scrutiny, procurement may be told to work out agreements with suppliers to produce these parts at

the lowest possible price. But a focus solely on price ignores the weight and volume of the components, a myopic error because bulk transport costs for the finished rig are extremely high. Lightweight components that are more expensive might be a better option in this case, as lower logistics fees would more than make up for the added cost of the parts.

Both tactics fail because they lack a formal cross-enterprise, programmatic structure to manage project risk based on institutional memory of prior projects and clear accountability for oversight and changes in a current project. In short, they are not sufficiently holistic and do not take advantage of the knowledge and skills that an empowered procurement team can bring to managing capital projects.

*Current projects can benefit from the knowledge and skills that an empowered procurement team can bring.*

# THE RIGHT CAPABILITIES

In our view, a far better approach would be to think beyond any single project and develop the capabilities needed to adequately oversee capital projects and ensure their successful conclusion. These capabilities can be broken down into eight categories (see Exhibit 4).

## 1. Portfolio Management

Capital projects should be overseen as a group of connected efforts rather than as a series of one-offs. This creates transparency from one project to the next and allows procurement to make optimal decisions about driving standardized and modular approaches across projects when possible, improving demand management and

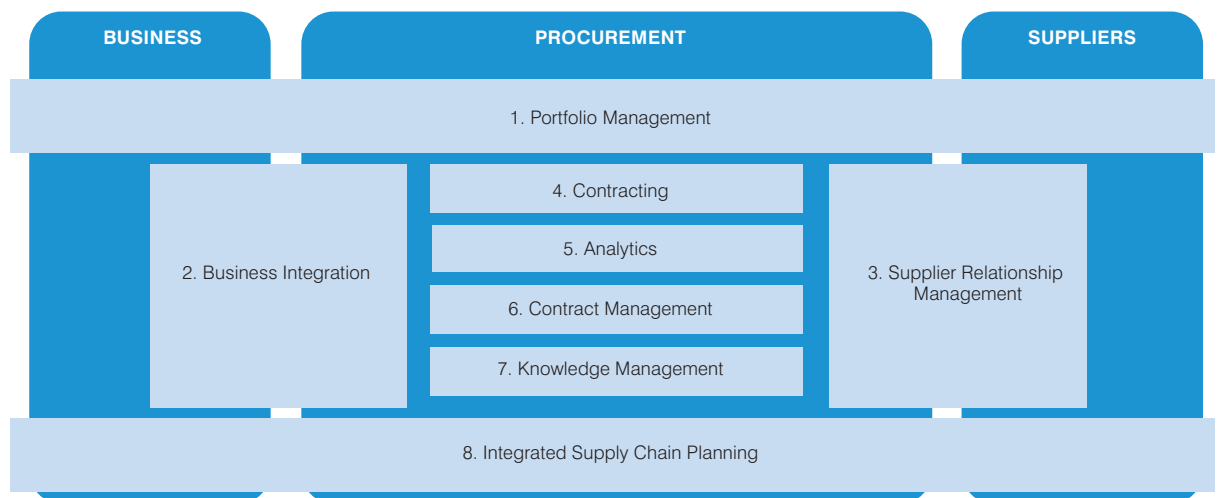
forecasting. In its simplest form, this means breaking down the portfolio's procurement needs into "smart segments": common products and services across projects; similar support requirements across projects; and unique elements for each project.

Smart segmentation provides a window for improvement by looking at demand by categories and not by projects. The first two segments allow procurement to take advantage of scale, both minimizing costs and improving efficiency, by targeting a wide range of products and services to support a large number of projects. Procurement items that fit into cross-project buckets include rotating equipment, valves and piping, and engineering and construction services. Truly unique elements—the third segment—are services and products that will have to be purchased specifically for certain projects and must be monitored closely from the beginning

of the project to avoid cost overruns and delays.

One impressive example of portfolio management is ExxonMobil's Kizomba offshore project near Angola. To operate these fields, Exxon constructed three floating production, storage, and offloading (FPSO) vessels, which are essentially immensely complex and expensive tankers that require a tremendous amount of planning and engineering to be completed. Hoping to accelerate this effort, the oil giant implemented what it called a "design one/build multiple" approach, meaning that instead of building each ship from scratch, the company would employ the same designs, suppliers, and staffers for all three. Exxon enjoyed lower prices for parts and services because the contracts covered a significant amount of work and materials and both suppliers and staff were able to carry the experience and knowledge

*Exhibit 4  
Eight Procurement Capabilities Required for a Successful Capital Project*



Source: Booz & Company

they gained from the first vessel on to the subsequent ones. With the focus on repetitive procurement and reusing skill sets, build time for all three vessels was reduced from 36 to 31 months, substantial construction savings were realized, and production revenue rose.

## 2. Business Integration

It is generally accepted that the ability to influence costs and value is at its optimum at the earliest stages of a project. Consequently, procurement should be involved in capital projects from the beginning, during planning and portfolio selection, ideally to drive and challenge specifications. This cross-functional front-end engineering and design focus on risk minimization and mitigation is a significant success factor for managing project costs.

Still, despite these results, procurement groups complain that they are not included in critical early project decisions and are brought into the process only at the contracting stage, when their ability to influence outcomes is greatly reduced. However, procurement must shoulder some of the blame for this; it is often a manifestation of the group's tendency to be reactive, assigning resources to a project only after it is well under way.

To address this situation, companies could create a capital project procurement center of excellence, which would provide a single point of contact and accountability for project procurement efforts. Teams at the center of excellence would work with the business side to develop the future pipeline of project work and, in so doing, ensure early procurement involvement in decision making. They could also

take responsibility for developing and overseeing the organization's project procurement professionals, both those directly employed by the company and contractors, and ensure that institutional knowledge about how to best manage capital projects is carried over from one project to the next.

## 3. Supplier Relationship Management

There is real value in requiring deep integration of suppliers into a capital project at its very first phases. Suppliers should be asked to offer their views on specifications and designs, and the best suppliers should be cultivated in long-term relationships aimed at improving commitment. An essential goal is to move some of the supplier activity, such as the acquisition of long-lead-time materials and the prefabrication of common subsystems, out of the critical path of the construction stage and into the developmental phase. Doing this can reduce project cycle time by as much as 25 percent.

In addition, improved supplier relationships are necessary to increase levels of innovation. Suppliers that have key skills in emerging technologies, or the ability to develop these skills, should be encouraged to develop new ideas for ongoing and future projects either separately or in joint efforts. Suppliers that play a greater role in project innovation can be rewarded with greater compensation and larger orders for materials and services. In addition, because of their advances, these suppliers will likely have a leg up on rivals when bidding on projects for other companies.

Smart supplier relationships were responsible for the successful completion of Munich Airport

Terminal 2, a second hub for Deutsche Lufthansa that handles 25 million passengers a year. Lufthansa and the airport management company, Flughafen Muenchen GmbH, contracted with suppliers that in prior projects had demonstrated they had the skills to be active and creative partners from beginning to end—in other words, to add a tangible amount to the project's success rather than just play a routine role that adds little to the effort. For example, the companies worked with Honeywell to implement an integrated technology-based facility management network based on the advanced system that Honeywell had installed in Terminal 1, which had won the Intellex Award from the Intelligent Buildings Institute Foundation.

## 4. Contracting

Typically, capital project supplier contracts for engineering, procurement, and construction (EPC) have been straightforward affairs, giving companies one-stop, turnkey service for a flat fee—or relatively flat, because cost escalation clauses have often been built in to deal with inevitable cost overruns. While this approach has its positive features—very little management and oversight required—it is rife with potential problems, including the risk of linking the success of a project to the performance and long-term stability of individual contractors that are not being monitored particularly closely. In addition, because of large order backlogs, the market environment has shifted in favor of suppliers, which are less willing to take on lump-sum EPC contracts, which require that they cover some or much of the future labor and commodities costs, both of which are on the rise.

To overcome these problems, contracting strategies should be redesigned to include the following:

- Win-win long-term relationships between companies and suppliers with incentives developed by both sides that offer suppliers additional work through follow-on projects if they meet certain cost, scheduling, innovation, and quality goals
- Supplier involvement in the initial phases of project development to facilitate risk minimization and mitigation, cost control, and greater oversight by companies over suppliers
- Jointly identifying with suppliers regulatory, pricing, scheduling, environmental, safety, and quality risks, and developing risk mitigation strategies led by those best able to oversee them (for example, the buying organization may be more adept at regulatory management, while suppliers may excel at supervising their own work to meet specific quality standards)
- Leveraging different types of contracts to produce the best results, including hybrid contracts with full reimbursement on the front end to encourage innovation and prepare for inevitable design changes, and fixed price at the

back end when the project is expected to run smoothly without any surprises; target or fixed-price contracts for routine projects with tight margins that must come in on time and on budget; and fully reimbursable time and material contracts for projects that involve technologies that have never been tried and are too new to set a hard price on

- Breaking large contracts into individual components (such as material, labor, and logistics costs) so their performance can be more easily tracked

In one intriguing and efficacious contractual arrangement, Sydney built a 20-kilometer tunnel under its harbor to clean up the sewage in its rivers, beaches, and waterways in preparation for the 2000 Olympics by establishing a fixed budget for contractors and suppliers with a raft of incentives that kicked in if they performed beyond baseline criteria. In essence, vendors took on financial risk for their work and materials in exchange for potentially higher returns if they exceeded benchmarks on any of five key facets of the project: cost, schedule, safety, community regulations, and environment. Because of this unique contract, in which all sides shared in a positive outcome, an extremely

beneficial culture marked the effort, represented by two core values—“best for project” and “no blame.”

## 5. Analytics

Rigorous modeling tools should be developed to better predict costs, risks, and returns in capital projects. Among the analyses that must be undertaken are asset comparisons to determine if specific standards and anticipated outcomes are met; efficient capital deployment metrics to regulate the level of outgoing capital against a series of norms and benchmarks; and decision-making criteria to facilitate asset choices based on value at risk.

Also, the viability of project materials and services should be assessed on a total cost of ownership (TCO) basis, going beyond acquisition costs to include operations and maintenance expenses as well as decommissioning costs. For example, some materials may be less expensive to acquire than similar items, but the TCO could be much higher when failure rates, repairs, and decommissioning costs—almost always neglected—are factored in.

In addition, opportunity costs are rarely considered, even though they can be significant. This category includes the cost of lost production when equipment is idled because of

*Rigorous modeling tools should be developed to better predict costs, risks, and returns in capital projects.*

repairs, maintenance, or scheduling delays, as well as costs of potential increases in environmental, health, and safety risk incurred as part of operations and maintenance efforts. These additional elements can add more than 50 percent to the overall TCO equation and should be a routine aspect of initial project design and planning.

Further, improved analytics can be used in supplier selection. Instead of merely cost and punctuality history, a whole range of more qualitative elements can be explored when choosing a contractor. Among them are behavior and attitude, innovation competence, systems, and experience. In case after case, when these qualitative criteria were used along with more traditional selection yardsticks, chosen suppliers acted more like partners than adversaries and project cost savings of more than 25 percent were possible.

#### 6. Contract Management

Contract governance is a complex undertaking because, in effect, each contract is different and each must be actively managed once the work is under way to ensure that cost targets, time lines, and quality standards are met. The most

important thing to accomplish is strong oversight of suppliers through an unambiguous set of agreements in the contract, including project goals and responsibilities, schedules and deadlines, incentives to perform above predetermined benchmarks, index-based pricing triggers, and ensuring that risks are monitored and mitigated.

Change order control is critical as well. Some change requests are inevitable, but they should be managed quickly and unambiguously so that alterations to a project do not lead to failure. The needs and rights of suppliers and the company overseeing the project must be considered so that change orders do not lead to disagreements that can threaten to derail the effort, add unacceptably high costs and tight deadlines, or create a contentious relationship that will only keep the two sides from working well together.

Given the desire to use fixed-price contracts, companies should ensure that project scope and responsibilities are clearly defined during the selection and design phases of the project. If ambiguity is present during project implementation, the

risk of scope changes can increase significantly, quickly taking the project well beyond initial cost estimates.

However, not all issues can be foreseen, and some change of scope may be inevitable during project implementation. To minimize its impact, companies and suppliers should ensure that they make use of appropriate scope escalation routes. Specifically, qualified engineering, construction, and design managers who are close to the project and understand its time line, priorities, and supplier capabilities should make technical scope decisions. Any other process could slow down the project and stretch deadlines and costs.

On the other hand, scope concerns involving commercial issues, such as increased material costs in design changes, can usually be addressed with less urgent escalation strategies involving the business side of the company, assuming that they do not have a significant impact on project timing and costs. By leveraging appropriate escalation routes for different change control issues, companies can minimize the damaging effect that scope changes can have on the project outcome.

*Some change requests are inevitable, but they should be managed so that alterations to a project do not lead to failure.*

## 7. Knowledge Management

For most companies, similar megaprojects are clean sheets of paper, to their detriment. Anecdotal information, data, and experience gleaned from one project are almost never adequately captured or used as learning opportunities for projects that are analogous in character and features. The result is limited improvement from project to project in terms of completion cycle and cost benefits.

The performance of new technology, the resources required to run the technology at peak efficiency, and the staff training to use the technology well are the types of technical information that can be extremely valuable across numerous similar projects. Equally important is knowledge about environmental conditions, regulations, supply chain challenges, and the availability of resources.

To illustrate how vital strong knowledge management is, consider the difference between two recent major projects. The first involved a multinational company that built three large compressor booster stations over a period of three years. Each station was constructed with virtually no input about the successes and failures, the pros and challenges, of the prior project. In fact, a different project manager was hired for each booster station and the same type of compressor was used only by chance, rather than by design, in more than one project. The outcome was predictable: The second project took longer than the first to complete, and the last one was completed just a bit more quickly than the previous two.

By contrast, construction of the Delhi Metro rapid transit system serving Delhi, Gurgaon, and Noida in the National Capital Region of India was a model of efficiency and competence. The project was completed in a mere six years; 100 miles of track was laid, and 135 stations were built, 31 of them underground. Two decisions are widely credited for the relatively hiccup-free project: First, the developers studied the experiences of the engineers, designers, contractors, and suppliers on the Kolkata Metro, built some 20 years earlier, to better anticipate pitfalls and avoid obstacles that were encountered in the earlier project. Second, prominent engineer Elattuvalapil Sreedharan, who had already supervised the building of the Konkan railway from Mumbai to Mangalore on schedule and without cost overruns, was named managing director of the Delhi Metro. In both cases, the desire to take advantage of the most valuable precepts of knowledge management—the need to embed the new project with all the intimate details of what went right and wrong with a prior consumer rail line construction effort—was the guiding force behind the decision.

## 8. Integrated Supply Chain Planning

Today, major capital projects often involve global, multitiered supply chains. For example, valve parts may be made in China, assembled into valves in eastern Europe, and integrated into subassemblies in a shipyard in Korea. Historically, capital project managers have had limited visibility into extended supply chains, relying instead on third-party EPC firms or equipment suppliers to manage the network and deliver quality materials on time. However,

as supply chains extend farther and farther around the world and companies are increasingly doing business with firms that they may not know particularly well, EPCs are having greater difficulty keeping track of materials, schedules, quality, and costs. In turn, capital project managers cannot afford to abdicate this job any longer to EPCs; the stakes are too high.

To compensate, some EPCs and the capital project managers they work for have pushed for delivery times well in advance of when the equipment and materials are really needed. But that strategy ties up working capital and can lead to deterioration in the condition of materials as they sit around unused. A better solution is for capital project owners to work closely with their contractors and suppliers to better understand and quantify the cost, quality, and delivery risks in the extended supply chain—and to develop proactive risk mitigation actions. Such integrated planning should encompass all capital projects planned and under way to provide options and scale that could be applied across the portfolio. For example, if equipment for a nearly completed project is delayed, it may be possible to fill the void with items slated for a later project, thus maintaining the schedule on the immediate effort. In addition, integrated planning should extend into post-project disposition so that surplus equipment or unused spare parts can be redirected to other capital endeavors.

---

## CONCLUSION

In light of the significance of sourcing in capital projects and the lack of returns on investment in projects, it is ironic that companies pay so little attention to managing sourcing well. Perhaps preferring the easy path, most companies pay lip service to fixing a supplier relationship, learning from prior projects, or managing portfolios of projects holistically, but in reality do little to follow through. Unfortunately, what these companies

are left with is a lot of reason to complain.

Building the eight capabilities required to attain excellence in capital project sourcing is an ongoing and long-term effort, to be sure. But the results may be evident almost immediately: Just by beginning to improve capabilities that were long ignored should bring tangible profit improvements, enough ROI to see the wisdom of further efforts to improve.

---

### **About the Authors**

**Detlef Schwarting** is a partner with Booz & Company based in Düsseldorf. He leads the firm's sourcing team in Europe and has 20 years of experience working in a wide range of industries.

**Matt McKenna** is a senior executive advisor with Booz & Company based in Houston. He specializes in helping asset-intensive companies improve operational performance, including capital project planning, procurement strategies, and project execution.

**Mark Uffhausen** is a principal with Booz & Company based in Houston. He works in the firm's operations practice, helping energy clients enhance their supply chain capabilities and identify and deliver sustainable value from their organizations.

**Paul Yates** is a principal with Booz & Company based in London. He focuses on working with the energy, chemical, and utility sectors to improve the performance of supply chains and procurement teams.

The most recent list of our offices and affiliates, with addresses and telephone numbers, can be found on our website, [booz.com](http://booz.com).

#### Worldwide Offices

##### Asia

Beijing  
Delhi  
Hong Kong  
Mumbai  
Seoul  
Shanghai  
Taipei  
Tokyo

##### Australia, New Zealand & Southeast Asia

Auckland  
Bangkok

Brisbane  
Canberra  
Jakarta  
Kuala Lumpur  
Melbourne  
Sydney

##### Europe

Amsterdam  
Berlin  
Copenhagen  
Dublin  
Düsseldorf  
Frankfurt

Helsinki  
Istanbul  
London  
Madrid  
Milan  
Moscow  
Munich  
Paris  
Rome  
Stockholm  
Stuttgart  
Vienna  
Warsaw  
Zurich

##### Middle East

Abu Dhabi  
Beirut  
Cairo  
Doha  
Dubai  
Riyadh

##### North America

Atlanta  
Boston  
Chicago  
Cleveland  
Dallas  
DC

Detroit  
Florham Park  
Houston  
Los Angeles  
Mexico City  
New York City  
Parsippany  
San Francisco

##### South America

Buenos Aires  
Rio de Janeiro  
Santiago  
São Paulo

---

**Booz & Company is a leading global management consulting firm, helping the world's top businesses, governments, and organizations. Our founder, Edwin Booz, defined the profession when he established the first management consulting firm in 1914.**

Today, with more than 3,300 people in 60 offices around the world, we bring foresight and knowledge, deep functional expertise, and a practical approach to building capabilities and delivering real impact. We work closely with our clients to create and deliver essential advantage. The independent White Space report ranked Booz & Company #1 among consulting firms for "the best thought leadership" in 2010.

For our management magazine *strategy+business*, visit [strategy-business.com](http://strategy-business.com).

Visit [booz.com](http://booz.com) to learn more about Booz & Company.

---