Economist Intelligence Unit

The Economist

Prepare for the unexpected
Investment planning in asset-intensive industries

A report from the Economist Intelligence Unit
Sponsored by Oracle

Contents

Preface

Prepare for the unexpected: Investment planning in asset-intensive industries is an Economist Intelligence Unit research report, sponsored by Oracle. We conducted the survey and analysis and wrote the report. The findings and views expressed in the report do not necessarily reflect the views of the sponsor.

The report is based on a survey of senior executives in asset-intensive industries worldwide, research and three in-depth interviews with senior industry executives. The author was Sarah Fister Gale and the editor was Katherine Dorr Abreu.

We thank all those who contributed their time and insight to this project.

January, 2011

Introduction

Capital planning in asset-intensive industries is fraught with difficulties. Only 11% of companies surveyed by the Economist Intelligence Unit in October 2010 report delivering the expected return on investment (ROI) on major capital projects 90-100% of the time, and 12% report delivering planned ROI less than half the time. No matter how robust and far-reaching their planning processes, organisations in the oil and gas, mining and metals, utilities and chemicals industries struggle to manage risks, predict levels of ROI and reap the expected value from major capital investments.

Few companies consistently achieve planned ROI
In your estimation, what percentage of your organisation's capital investment projects deliver the planned return on investment?
(% respondents)

Source: Economist Intelligence Unit survey, October 2010.

Considering the massive scope and long duration of these capital investments, such low rates of success indicate a lack of maturity in capital planning processes. Making bad decisions when the stakes are so high can lead to huge financial losses on capital investments, an unacceptable outcome, particularly under stressful economic conditions in which already slim margins become even tighter. Shortcomings in asset-intensive companies' capital planning processes accentuate these problems. Organisations with immature practices can learn from organisations that have strategies to improve the return on their capital investment projects.

Our findings include:

- **Even companies that use the right data and people often fail to meet goals owing to ineffective decision-making**. Despite involving cross-functional teams and looking at all the pertinent data, executives are still failing to identify risks and deliver bottom-line results on capital projects. Effective processes are the missing link.

About the survey

A total of 427 respondents in four asset-intensive industries—utilities (29% of respondents); oil and gas (29%); chemicals (23%); and mining and metals (20%)—participated in the survey, which was conducted by the Economist Intelligence Unit in October 2010. The panel is quite senior: 44% of respondents hold C-suite or equivalent positions, and another 27% are senior vice-presidents, vice-presidents or directors. They carry out a range of functions, including finance (38%); strategy and business development (32%); general management (30%); and operations and production (22%).

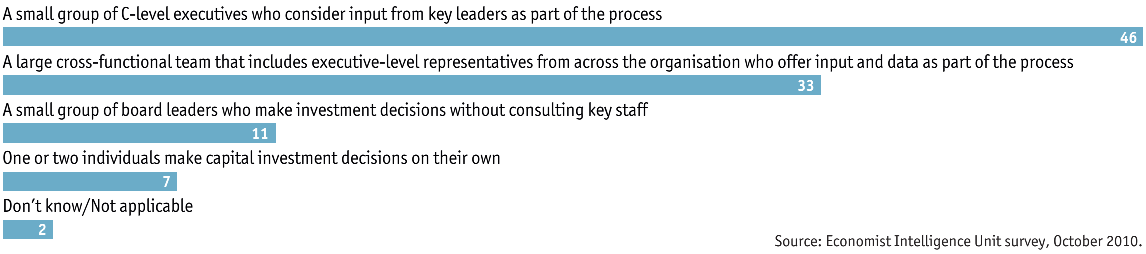
Respondents are distributed globally, with 32% located in North America; 31% in Europe; 26% in Asia Pacific; and 11% from the rest of the world. They represent a wide range of company size. Thirty-two percent are from small to medium-sized companies, with less than US$500m in annual revenue. Another 32% represent companies with US$500m-US$5bn in revenue per year, and 27% come from companies with annual revenue of US$5bn-US$100bn. Eight percent come from companies with US$100bn or more in annual revenue.

- **Upfront activities—risk management, and predicting cost and ROI—are the areas in which companies' project planning processes are weakest.** Respondents say their companies rarely achieve expected ROI on projects, and regularly experience unexpected events that derail schedules and inflate budgets. The survey shows that executives believe strongly that using more robust risk management and project planning strategies will help them avoid delays, improve ROI, and more accurately predict the true long-term cost of these initiatives.
- **The unexpected should be expected.** External factors, such as changing market conditions, evolving government policies and regulations and fluctuating input costs are difficult to forecast precisely. Building flexibility into project plans makes it easier for companies to adapt to the changes and successfully execute their projects.

Recognising the problem

Failure to achieve success with capital investments is not a matter of too few people making the most critical decisions. Most organisations in asset-intensive industries involve experts from across the company and consider a robust information set when planning. Almost 80% of survey respondents say that, when their organisations choose capital projects in which to invest, the decision is made either by a small group of C-level executives who consider input from key leaders (46%), or by a large cross-functional team that includes executive-level representatives from across the organisation (33%).

Decision makers usually get input from accross the organisation
Who makes the final decisions for major capital investments in your organisation?
(% respondents)

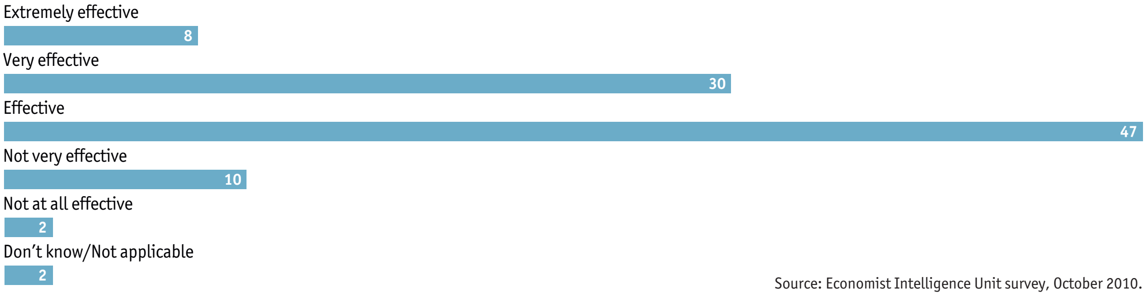


Source: Economist Intelligence Unit survey, October 2010.

And almost half consider detailed data from multiple stakeholders and resources to determine whether a project is a good investment for the organisation. That data includes financial modelling, environmental impact studies, market reports, ROI projections and other pertinent information from internal and third-party experts. Despite all that, they are failing to deliver the expected ROI for these projects.

At least executives recognise their inadequacies. A full 47% of respondents rate their organisations as only “effective” at planning, prioritising and selecting potential capital investment opportunities, compared with only 8% who say they are “extremely effective”.

Capital investment decisions merely "effective" for most
How effective is your organisation at planning, prioritising and selecting potential capital investment opportunities?
(% respondents)



Source: Economist Intelligence Unit survey, October 2010.

Doing things in smaller batches may require more labour but it gives project teams tremendous flexibility, which adds value to the planning process.

John Sun, managing director, Greater China Albermarle.

This does not surprise John Sun, managing director of Greater China Albermarle, the Shanghai-based operations of a global chemicals company, Albermarle Corp, which has annual revenue of US$2.5bn. "I'm envious of those 8%," he says.

Mr Sun faces myriad challenges on capital projects in China, including conflicting government directives, fluctuating labour and material costs, and ever-changing tax incentives and currency exchange rates. All these uncertainties hamper his team's ability to forecast risks and ROI accurately. "Even when you do good financial analysis on a project, so many things can change over five years that it's hard to predict what will happen," he says.

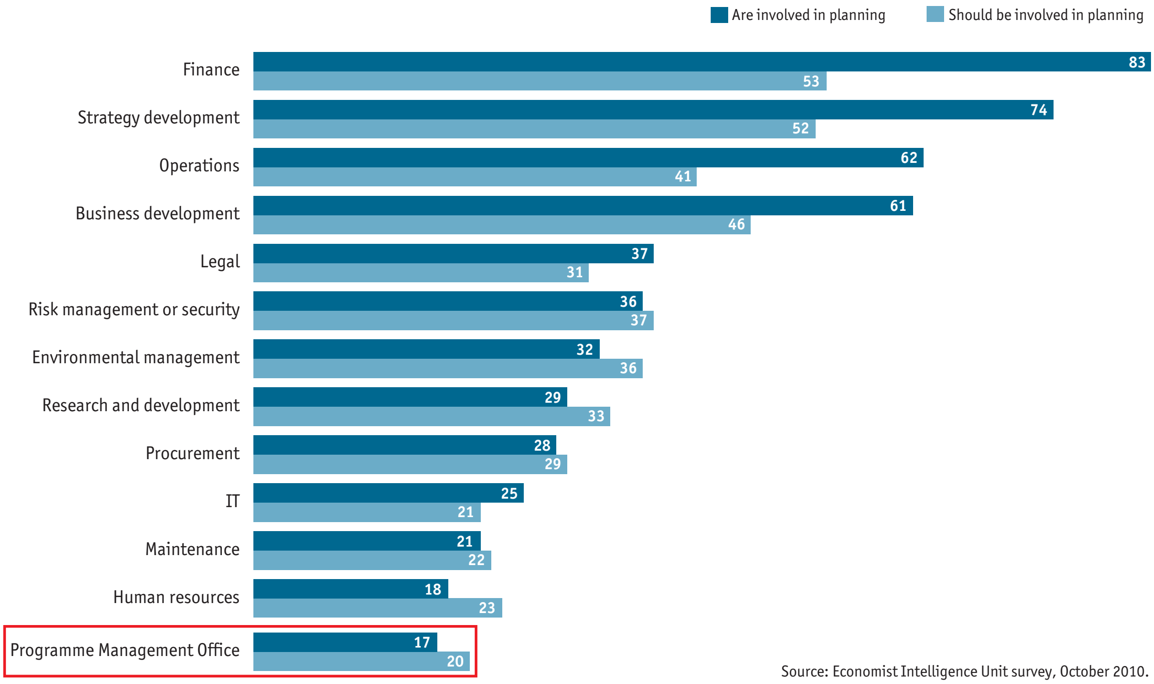
He acknowledges that such uncertainties can have significant impact on a company's bottom line and competitive advantage. Companies can mitigate these risks by building flexibility into every project plan. This involves breaking timelines and deliverables into self-contained modules, and ramping up capacity on new facilities in small segments that can be duplicated to achieve scale, or shut down if market demands change.

"A lot of people take the American view of using big equipment and large facilities to achieve economies of scale quickly," Mr Sun says. But such approaches add risks to capital projects. "Doing things in smaller batches may require more labour, but it gives project teams tremendous flexibility, which adds value to the planning process."

The hardest part

Involving programme management professionals in the planning process can also help reduce uncertainties, because they bring risk management and planning expertise to the table. Yet the survey shows that few organisations—fewer than one in five—involve programme managers in capital investment planning, or even appreciate the benefits they might bring. When asked which professionals they feel should be involved, only 20% of respondents say programme manager's input would add value; programme management ranks lowest among 13 functions.

Organisations are not leveraging programme management office expertise
In your organisation, which functions currently are (should be) involved in planning and prioritising capital investments? Select all that apply.
(% respondents)



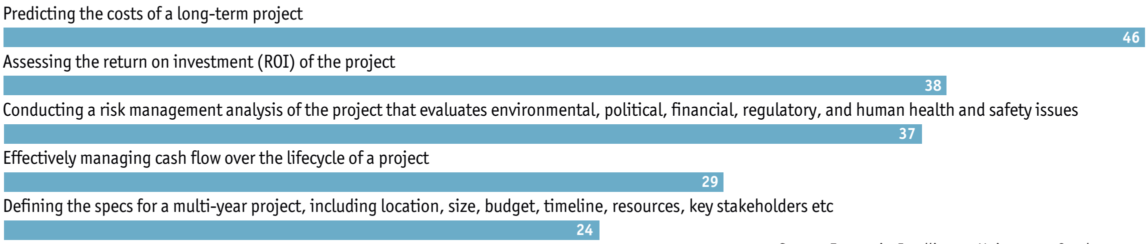
Source: Economist Intelligence Unit survey, October 2010.

> Programme managers should be a part of the investment planning process because they help reduce surprises and variances through better planning.
>
> *Charles Putz, president and CEO of Namisa*

This is a mistake, says Charles Putz, president and CEO of Namisa, a Brazilian iron ore mining joint venture between a Brazilian steelmaker, Companhia Siderúrgica Nacional, and a consortium of Japanese and Korean companies. “Programme managers should be a part of the investment planning process because they help reduce surprises and variances through better planning,” he says.

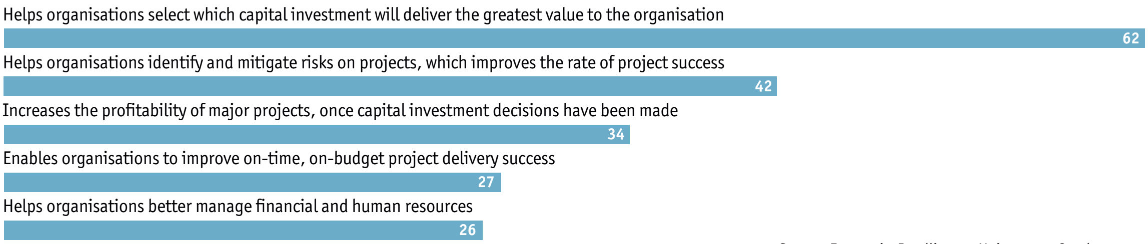
Avoiding surprises or risks is one of the many capital planning tasks with which organisations in these industries struggle. According to the survey, the three issues that present the biggest challenges are predicting costs (selected by 46% of respondents), assessing ROI (38%), and doing up-front risk management (37%)—all tasks that occur in the early stages of capital planning.

Early-stage tasks are the most difficult to master...
In your opinion, what are the greatest challenges in planning, prioritising and selecting capital investment projects? Select up to three.
(% respondents)



Source: Economist Intelligence Unit survey, October 2010.

...but are also the ones that garner the greatest benefits
In your opinion, what are the top benefits of effective capital investment planning and prioritisation for your organisation? Select up to three.
(% respondents)



Source: Economist Intelligence Unit survey, October 2010.

A stronger capital investment planning methodology will help executives improve their ability to perform these tasks, according to respondents. Good capital project planning is especially important in choosing projects that will deliver the greatest value, but it also helps them identify and mitigate risks, and increase the profitability of projects.

Mr Putz believes in the value of good capital planning, and has spent the last two years overseeing a corporate programme to improve Namisa’s planning methodology. The catalyst for change was a US$3.1bn injection of capital in 2008 from its Asian shareholders. “We had been in a pre-crisis mode up to that point, rushing to launch capital projects to attract investors,” says Mr Putz. “After we got the injection, we started looking for ways to restructure our processes and avoid surprises.”

A long road: using past struggles to prompt better planning

When a Brazilian mining company, Namisa, began a programme to improve its capital planning process, the executive team initially met with some resistance. The new process required cross-functional teams of executives and stakeholders to work closely for days at a time on planning and risk management before presenting any project proposal to the board.

Fitting these planning sessions into their busy schedules is difficult for some team members, and they get frustrated with process, admits Charles Putz, president and CEO of Namisa. "Sometimes a team will spend weeks looking at a potential problem in greater detail, only to determine that there is no better solution than the original plan," he says. "It makes them want to say, 'let's just go ahead with what we have'."

But Mr Putz knows that such impulsive decision-making leads to unexpected problems and costly delays on larger projects. So when he sees executives getting discouraged, he reminds them of a past project that foundered because of rushed planning.

In 2008 Namisa launched a project to build a private road connecting one of the company's mines to a concentration plant. The road would cut costs and speed up the transport of raw materials, but planners spent little time evaluating the risks that could affect the project. As a result, it was launched just weeks before Brazil's rainy season began. The rains flooded the job site, slowed progress, and in some cases destroyed work that had already been completed. It also caused an uproar in the local community when soil runoff from the site spilled into a creek used as a water supply.

The project could have been a success if it had been timed differently and if enough resources had been allocated to complete it in less than a year to avoid the rains, Mr Putz says. Instead, the road is still under construction and it is unclear when it will be completed. "We use the road project to remind us that it's worth spending extra time up front to ensure that we are choosing the best solution."

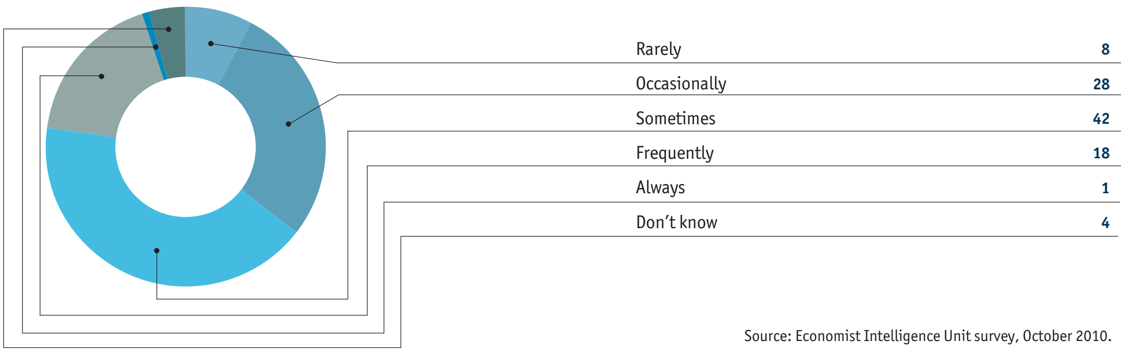
That restructuring included bringing programme managers and other experts from across the organisation into the planning process much earlier. Cross-functional teams now work together for weeks in planning sessions before presenting any capital project proposal to the board, ensuring that all possible risks and benefits have been indentified and considered. "Now we are at a very good level, but it took time," he says. "We had to learn from our mistakes in order to improve."

The price of mediocrity

Namisa is experiencing ongoing benefits that come from creating a more mature capital planning process and infrastructure. But most organisations in asset-intensive industries have not made such process improvements—and they are paying the price.

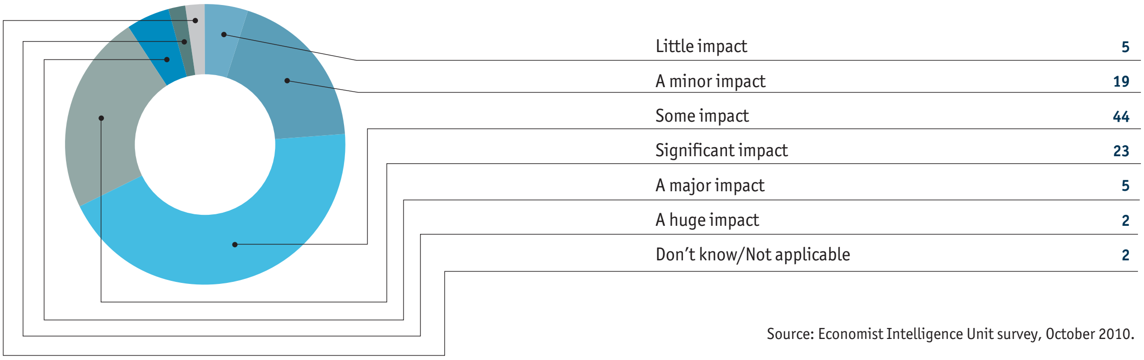
Not only do major capital investments regularly fall short on delivering the expected ROI on major capital investments, 42% of survey respondents say their capital projects encounter unexpected problems at least some of the time, including strong cost fluctuations, changes in market demand and unexpected risks. For 18% of organisations, such events happen frequently. These problems result in added costs, schedule delays and scope creep. Seven percent of respondents say their projects face “huge cost and time losses” (5%) or total project failure (2%). This underscores the enormous financial risks these executives face when making capital investment decisions.

Problems are the norm in capital investment projects...
How often do capital investment projects in your organisation encounter problems, such as strong cost fluctuations, changes in market demand or unexpected risks that were not identified as part of your upfront planning process?
(% respondents)



Source: Economist Intelligence Unit survey, October 2010.

...but their impact is usually manageable
What impact have such unplanned problems and risks had on your projects? They have had:
(% respondents)



Source: Economist Intelligence Unit survey, October 2010.

> The relentless sharing of information helps us eliminate a lot of uncertainty.
>
> *Charles Bomberger, vice president of nuclear projects, Xcel Energy*

Charles Bomberger, vice-president of nuclear projects at Xcel Energy in Minneapolis, MN, suggests that executives in asset-intensive businesses could avoid some of these problems by copying the nuclear power industry's demands for transparency. Following the 1979 Three Mile Island catastrophe, in which a partial core meltdown of a nuclear plant in Pennsylvania allowed radioactive gasses to escape into the atmosphere, the nuclear industry established the Institute of Nuclear Power Operations (INPO), which now sets performance objectives, criteria and guidelines for the industry. One of the ground-breaking results is mandatory sharing of lessons learned on projects—good or bad—with competitors across the industry, so that others can avoid making the same mistakes.

"We are unlike any other industry in that we are adamant about sharing lessons learned," says Mr Bomberger. As a result of this requirement, any time his team considers a major capital project, it reviews all similar projects conducted across the industry as part of its evaluation process.

This transparency allowed his team to avoid serious mistakes in 2008 when it upgraded the power range monitoring system at the Monticello nuclear plant in Minnesota with a digital control system. The technology was new. Before launching its own project, Mr Bomberger's team reviewed every implementation that had occurred across the industry, and made benchmarking trips to observe similar systems in Sweden. They discovered that the technology had never been implemented without glitches or shutdowns. By reviewing the choices other plants made, and getting their recommendations for improvement, his team was able to roll out the project successfully, on time, without any problems.

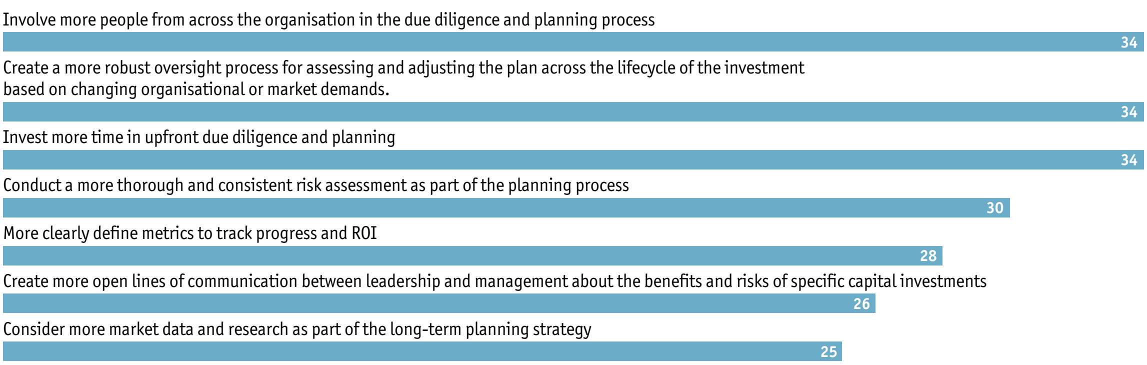
"The relentless sharing of information helps us eliminate a lot of uncertainty," he says. It is also one of the reasons Mr Bomberger's group delivers the expected ROI on capital projects 90-100% of the time.

The pressure is on

Being able to make such claims to success is critical in the current economic climate. Shrinking margins and global competition mean huge capital investment projects can no longer extend beyond their scope and budget without consequences. Executives are being pressured to deliver better results and they are looking at every aspect of their capital investment planning processes to help them make improvements.

When asked which areas of their capital planning would benefit from improvements, respondents give every category high marks. The top three choices are investing more time in upfront due diligence and planning; creating a more robust oversight process for assessing and adjusting the plan across the lifecycle of the investment; and involving more people from across the organisation in due diligence and planning (each was chosen by 34% of respondents). This indicates that executives see room for improvement everywhere and are eager for a solution that will help them rein in costs, mitigate risks and get a clearer picture of ROI.

No single measure is sufficient to improve capital investment planning and prioritisation
In your opinion, what measures would most improve the way your organisation plans and prioritises capital investment projects?
My organisation should:
Select up to three.
(% respondents)



Source: Economist Intelligence Unit survey, October 2010.

When you have limited capital funds, you have to make sure you choose the right option based on your priorities.

Charles Bomberger, vice president of nuclear projects, Xcel Energy

In the nuclear industry, Mr Bomberger has felt growing pressure to control his spending and deliver more cost-effective results. "Until five or six years ago, there was too much focus on meeting site expectations without enough time spent properly managing scope," he says. But that began to change when a major capital project went well beyond scope, forcing the group to take a write-down on its value.

"That event helped us focus on what needed to be done," he says. "When you have limited capital funds, you have to make sure you choose the right option based on your priorities."

Part of the problem for utility companies is that utility staffs may not be as experienced as commercial architecture/engineering firms in estimating the cost of a project. As a result, planning teams may not put enough thought into the best allocation of budgets, Mr Bomberger says. "In the past, we have been too focused on managing the completion of the project and not focused enough on rigour in our cost estimate."

He points to a 2004 project to address environmental concerns with a water treatment system at one of Xcel's nuclear plants. Instead of improving the protections on the system, which was fully operational, Xcel replaced it with a brand new US$10m reverse osmosis system.

"The new system addressed the problem, but in hindsight there may have been more cost-effective alternatives that the project team didn't consider," says Mr Bomberger. "Such solutions may make sense to the engineer in charge," he says, "but may not be the best use of resources."

His team has been attempting to change that way of thinking by using a prioritisation process to consider the importance of a problem, as well as possible solutions, before making investment decisions. Projects with only moderate priority may warrant maintenance and monitoring, leaving more resources for high-priority projects, such as security improvements. "We look at a robust evaluation of the options available and use that to drive decision-making," Mr Bomberger says.

Conclusion

It takes strong leaders with long-term vision to implement improvements in capital investment decision-making, says Mr Sun. "Thinking strategically takes guts."

He notes that adhering to a strategic vision can be difficult over the long term, particularly in US companies that are so focused on quarterly reports and investor dividends that they lose track of long-term goals. "Some capital investment projects take 20 years," he points out. "You can't let them be derailed by one or two bad quarters."

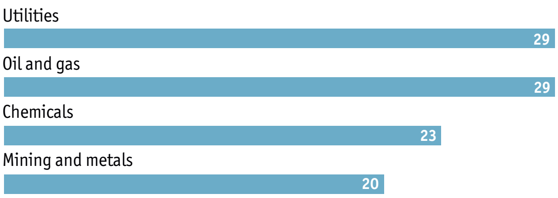
To achieve better results, executives should consider the following.

- **Set long-term goals, but recognise the need for flexibility over the duration of a project**. "When you do capital planning, you have to anticipate that the market landscape will morph over the lifecycle of the project," says Mr Sun. Companies that build flexibility into project plans—such as being able to reduce scope in response to economic changes—are more able to adjust to changing demands.
- **Gather and use all the information and expertise available when making decisions**. Organisations must involve professionals from across the company, as well as outside experts in the assessment process, Mr Putz says. "Getting an outsider's viewpoint can help you understand all of the issues impacting your industry."
- **Include programme managers in the decision-making process**. Programme managers add valuable insight to capital investment planning, Mr Putz says. "They help facilitate communication and make sure all of the important issues are addressed from the beginning."
- **Balance long-term strategies against current cash flow and financial analysis**. "Resources are limited and everyone is trying to fight for their projects," says Mr Sun. A mature decision-making process compares the goals of individual projects with the goals of the business to identify the best possible use of resources.
- **Review lessons learned to avoid making the same mistakes**. Whether information comes from within your organisation or from your industry, "taking the time up-front to review the problems other projects have faced will save time and money down the line," says Mr Bomberger.

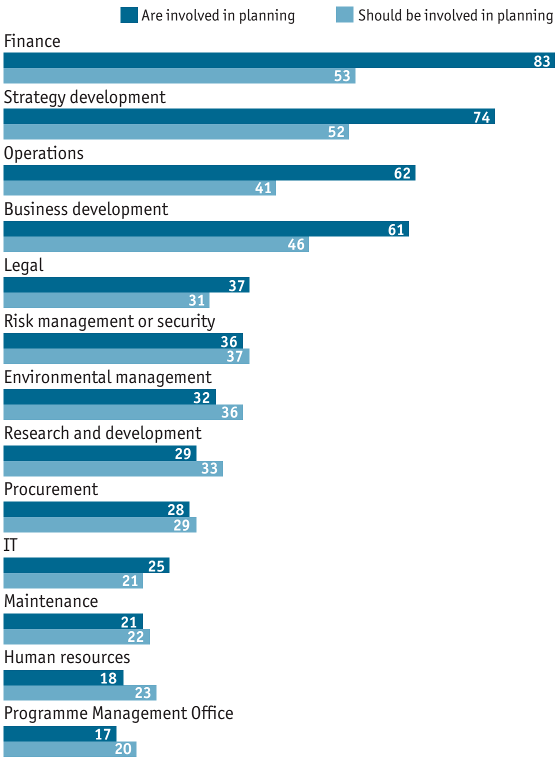
Appendix: Survey results

Percentages may not add to 100% due to rounding or the ability of respondents to choose multiple responses.

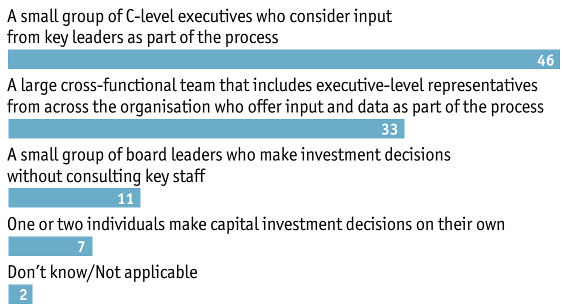
What is your industry?
(% respondents)



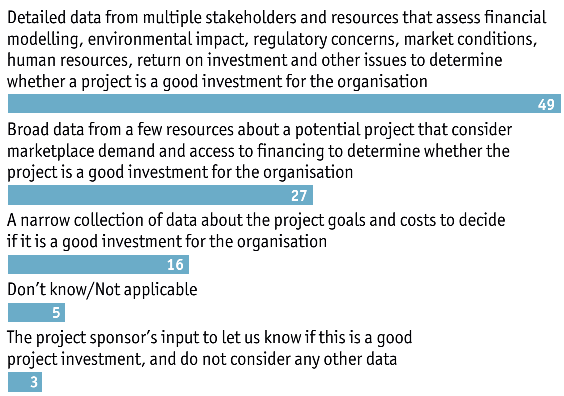
In your organisation, which functions currently are (should be) involved in planning and prioritising capital investments?
Select all that apply.
(% respondents)



Who makes the final decisions for major capital investments in your organisation?
(% respondents)

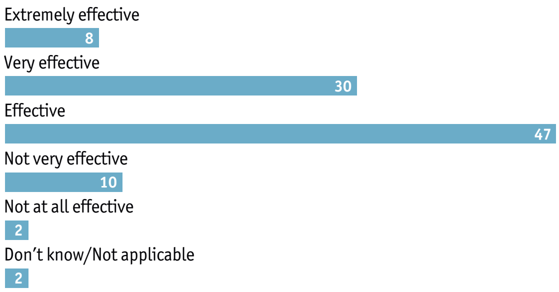


Which statement best describes the set of data that your organisation uses to plan and prioritise potential capital investments?
(% respondents)

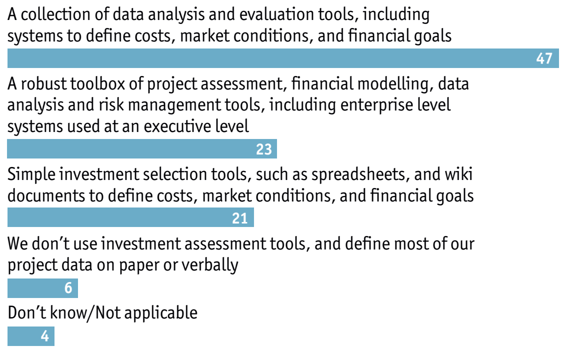


In your opinion, what are the top benefits of effective capital investment planning and prioritisation for your organisation? Select up to three.
(% respondents)

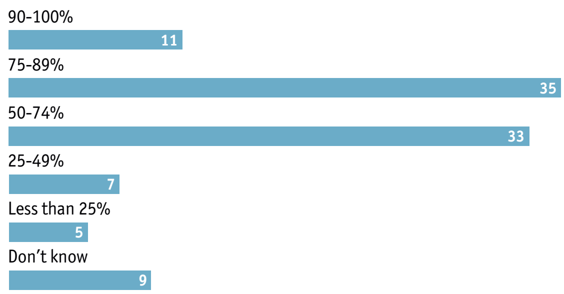
How effective is your organisation at planning, prioritising and selecting potential capital investment opportunities?
(% respondents)



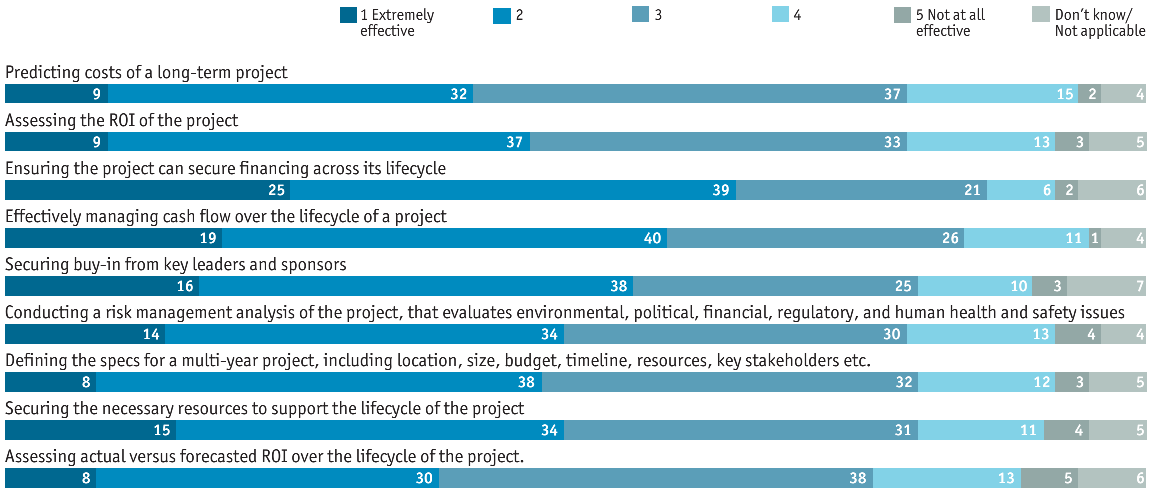
Which statement best describes the range of approaches your organisation uses in its capital investment assessment and selection process? We rely on:
(% respondents)



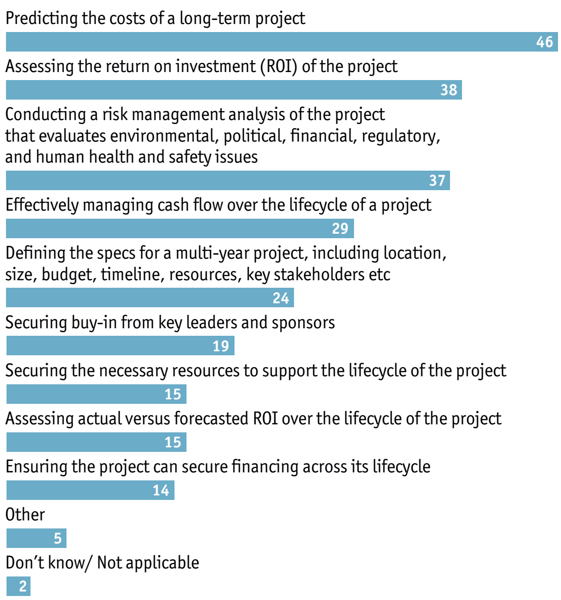
In your estimation, what percentage of your organisation's capital investment projects deliver the planned return on investment?
(% respondents)



How effective is your organisation at these aspects of planning, prioritising and choosing capital investment projects?
Rate on a 1-5 scale where 1= extremely effective; 3=neutral; 5=not at all effective.
(% respondents)

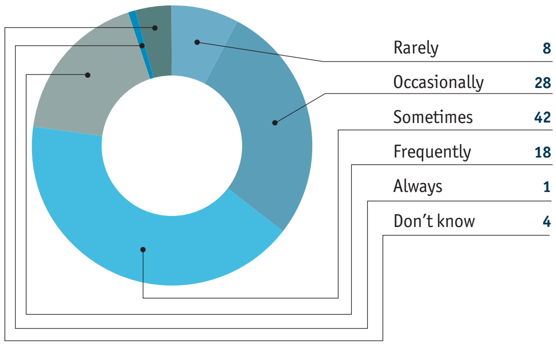


In your opinion, what are the greatest challenges in planning, prioritising and selecting capital investment projects?
Select up to three.
(% respondents)

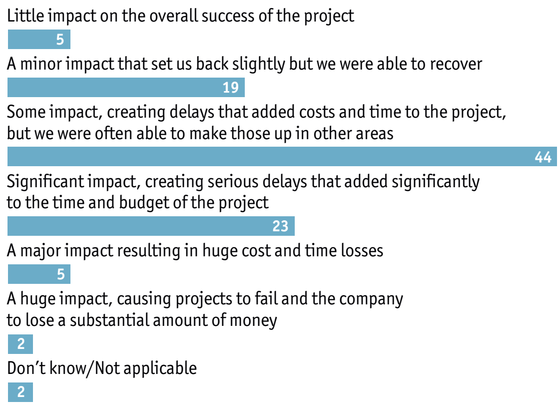


In your opinion, what measures would most improve the way your organisation plans and prioritises capital investment projects? My organisation should:
Select up to three.
(% respondents)

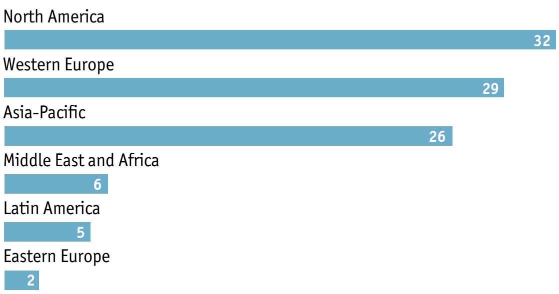
How often do capital investment projects in your organisation encounter problems, such as strong cost fluctuations, changes in market demand or unexpected risks that were not identified as part of your upfront planning process?
(% respondents)



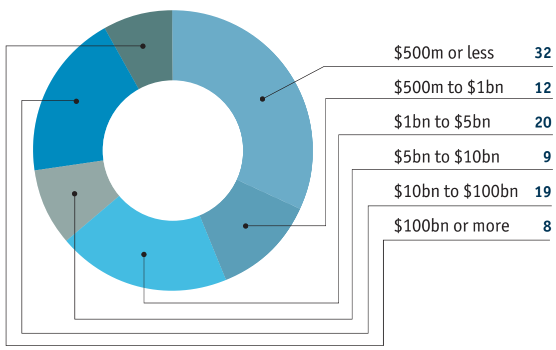
What impact have such unplanned problems and risks had on your projects? They have had:
(% respondents)



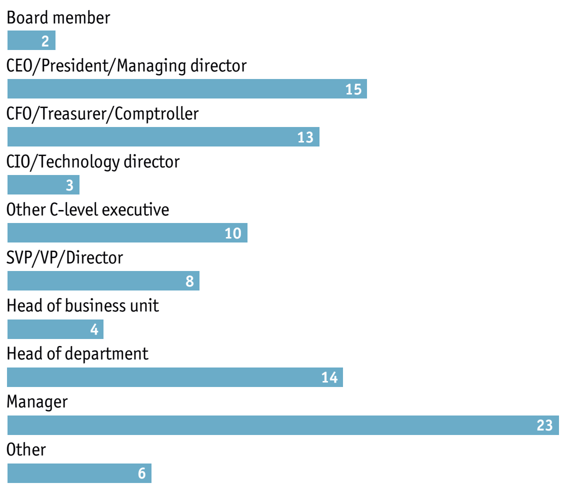
In which region are you personally located?
(% respondents)



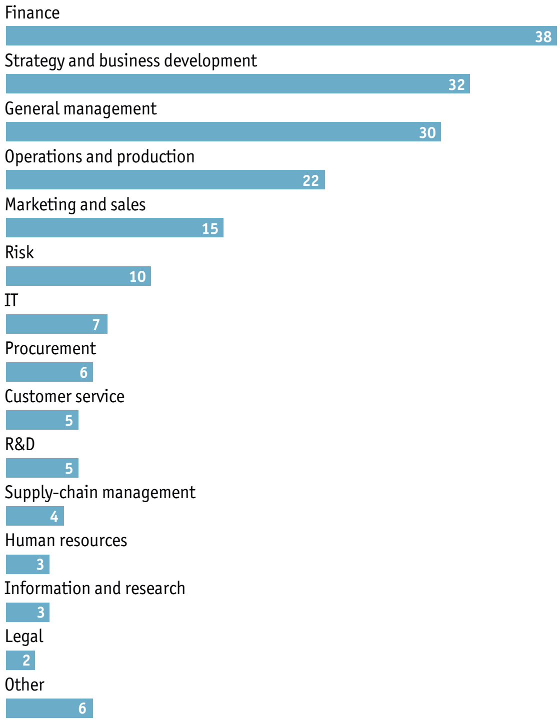
What are your company’s annual global revenues in US dollars?
(% respondents)



Which of the following best describes your title?
(% respondents)



What are your main functional roles? Choose up to three.
(% respondents)



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