

Optimizing Owner Organizations

The Impact of Policies and Practices on Performance for Public Infrastructure Owners

Introduction

ABOUT THIS SMARTMARKET BRIEF

Dodge Data & Analytics surveyed 174 owners from a wide variety of project types about:

- Cost, schedule and quality performance metrics from recently completed (3 years) projects.
- Information about the tools and tactics they employed to manage those projects.
- Information about how they operate their internal capital projects delivery organizations.

A report was published in 2016 citing frequency and causes of performance issues and correlating the use of specific tools, tactics, and policies with improved performance.

PUBLIC INFRASTRUCTURE FOCUS

To provide a more market-focused perspective, this report analyzes only the responses from owners who are involved with public infrastructure projects. In some instances their results are compared with the full study for a broader industry context.

We believe the findings provide unique and critical guidance to public infrastructure owners regarding tools and tactics that are correlated with better project performance, including project delivery and internal team management approaches.

RELATED RESEARCH

Also included in this report are summaries of two other Dodge studies that reinforce and amplify these findings:

- Managing Risk in the Construction Industry
- Owner Project Performance

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Message From e-builder

We are honored to have the opportunity to participate in this important research in partnership with Dodge Data & Analytics. e-Builder strives to help owners of capital projects become more efficient and ultimately reduce the cost of capital programs. By embarking on this research journey with Dodge Analytics, we aim to highlight the best practices that world-class owner organizations are implementing.

We hope you find the results from this report insightful and that it helps you deliver best-in-class projects.

*Ron Antevy
CEO
e-Builder*

*Jon Antevy
Co-Founder
e-Builder*

Project Performance

OWNERS' PERFORMANCE CHALLENGES

Public infrastructure owners were asked to select a percentage range that best describes how well their recently completed projects performed in three key categories:

COST

- Completed at or below the original budget
- Exceeded the original budget

SCHEDULE

- Completed at or ahead of the original schedule
- Exceeded the original schedule

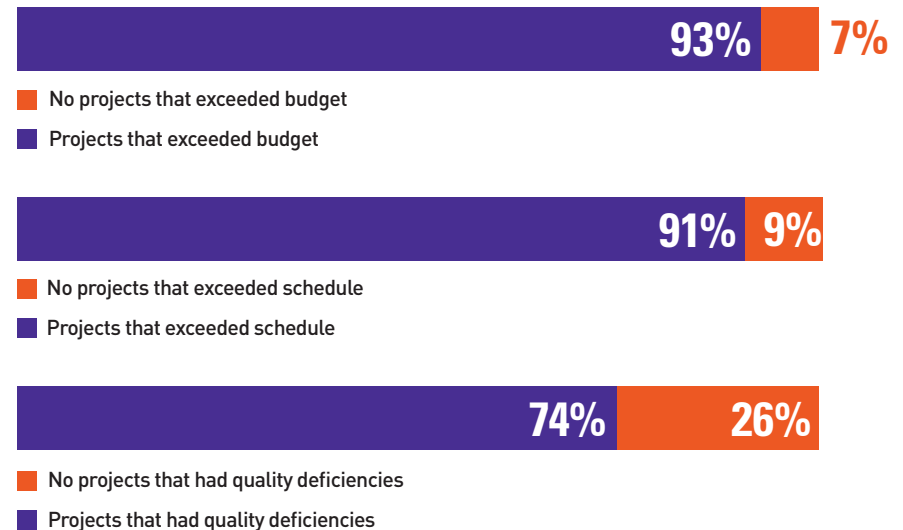
QUALITY

- Met at least the original quality expectations
- Experienced quality deficiencies relative to original expectations

As the chart on the right indicates, the majority of owners regularly experience significant performance issues, especially related to cost and schedule. The following pages examine these challenges in greater depth.

Project Performance

Percentage of public infrastructure owners with recent projects that exceeded budget or schedule, or experienced quality deficiencies



Budget Performance

OWNERS' BUDGET PERFORMANCE

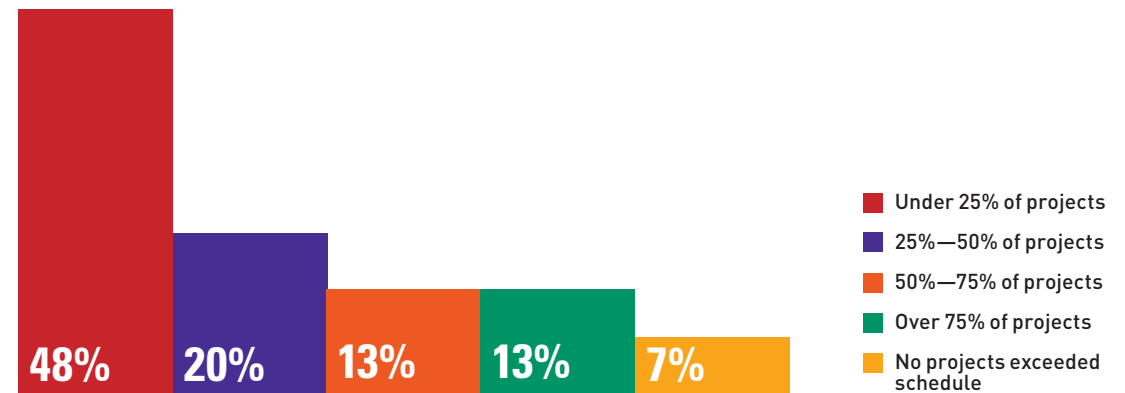
As the chart at the top right indicates, 93% of public infrastructure owners report exceeding budget. While about half (48%) of them report doing it infrequently (on less than 25% of their projects), a relatively large proportion (26%) say that a majority of their projects exceed budget, clearly establishing this as a major owner challenge.

HOW MUCH OVER BUDGET

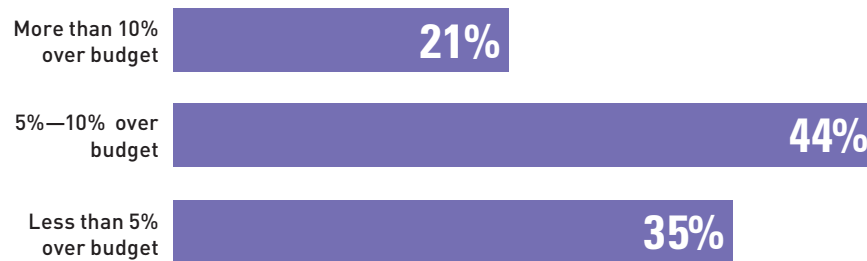
Among the projects where owners report exceeding budget, the chart on the bottom right shows that almost two-thirds (65%) are at least 5% over, with many (21%) citing a more than 10% overrun.

Projects That Exceeded Budget

Percentage of public infrastructure owners in each of five performance brackets for how often the final construction cost exceeded the budget anticipated at the time of capital allocation on recent projects



Amount that projects exceeded original capital allocation



Schedule Performance

OWNERS' SCHEDULE PERFORMANCE

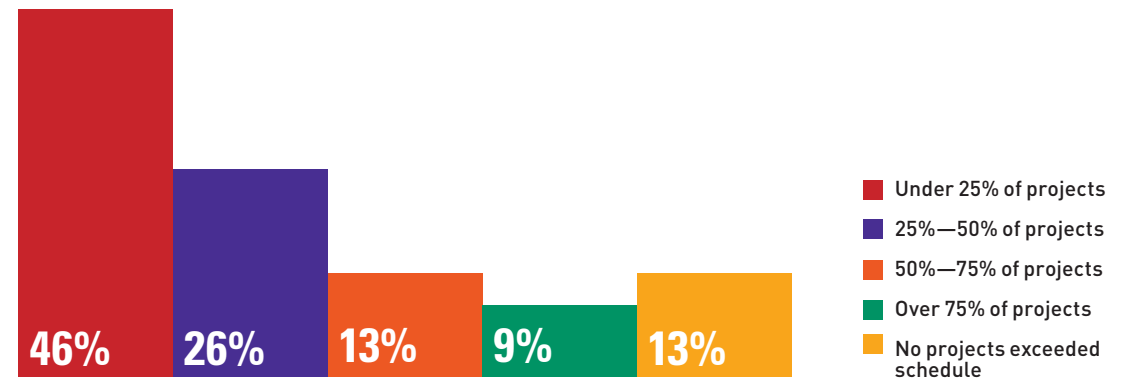
As the chart on the top right shows, very few owners (13%) report never exceeding schedule, and almost a quarter (22%) say the majority of their projects overrun schedule, making this the most difficult owner performance challenge.

HOW MUCH OVER SCHEDULE

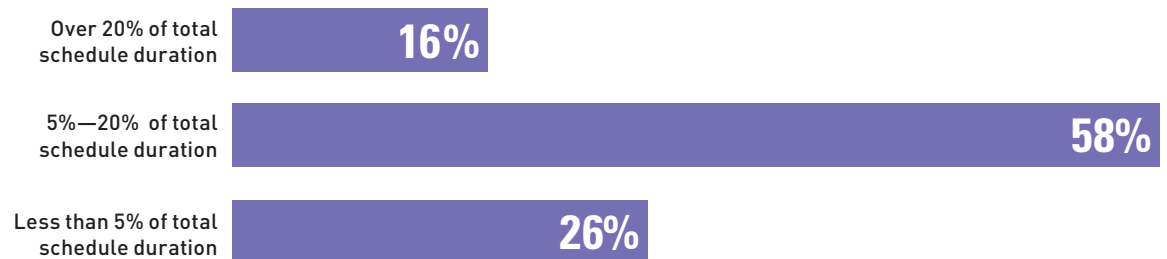
Among the projects where owners report exceeding schedule, the chart on the bottom right indicates that almost three quarters (74%) are at least 5% over schedule.

Projects That Exceeded Schedule

Percentage of public infrastructure owners in each of five performance brackets for how frequently the final completion date exceeded the schedule anticipated at the time of capital allocation on recent projects



Amount that projects exceeded original capital allocation



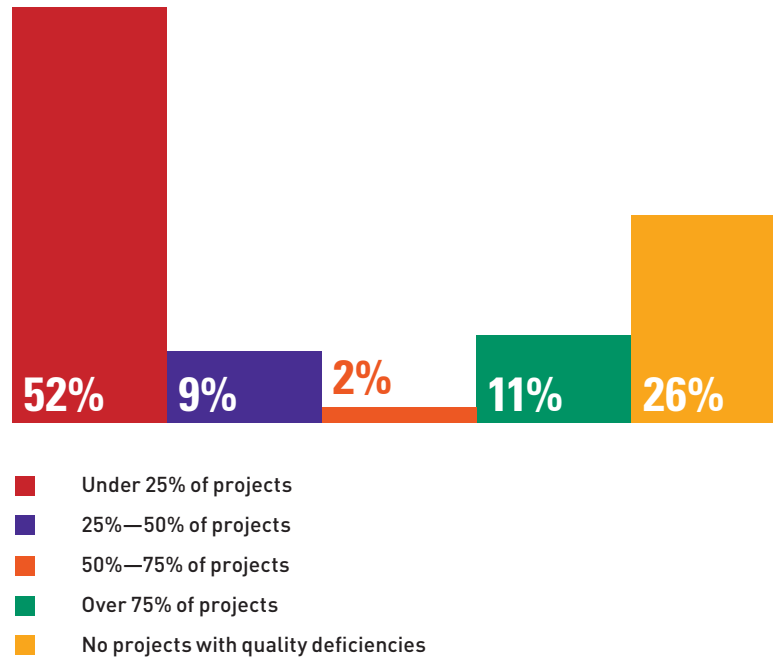
Quality Performance

OWNERS' QUALITY PERFORMANCE

About three quarters of public infrastructure owners (74%) report quality problems, which is somewhat better than the percentage that report budget (93%) or schedule (87%) performance issues. Among those, only 13% say they experience it on more than half of their projects, versus budget (26%) or schedule (22%). So while quality performance is less of an issue than cost or schedule, it is still a common and troublesome challenge.

Projects With Quality Deficiencies

Percentage of public infrastructure owners in each of five performance brackets for how frequently the quality of the completed project was below expectations set at the time of capital allocation on recent projects



NOTE: Owners were not asked to quantify the degree of quality deficiency as was asked with budget and schedule.

Factors Driving Performance Issues

OWNERS IDENTIFY TOP CHALLENGES

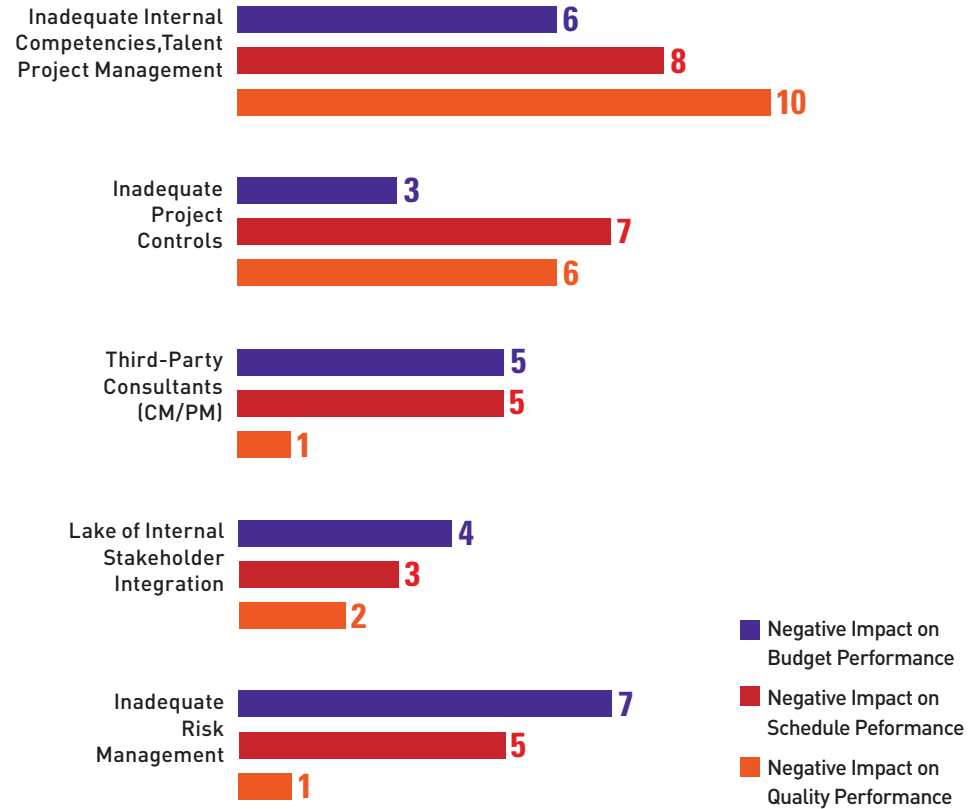
What do public infrastructure owners believe are the causes of their project performance problems?

In the study, owners were asked to identify factors which they believe most frequently contribute to cost, schedule and quality performance issues. Their responses are indexed on a 1-10 scale in the chart to show the degree of their negative impact on each of the three metrics.

- **Budget Performance:** Inadequate risk management and inadequate internal competencies, talent, project management lead, followed closely by third-party consultant performance challenges.
- **Schedule Performance:** Internal staff skills top the list, closely trailed by inadequate project controls.
- **Quality Performance:** Internal talent is by far the biggest contributor, with inadequate project controls also a major impediment.

Factors Driving Project Performance Issues

On a scale of 1-10, degree to which public infrastructure owners believe each factor causes budget, schedule and/or quality performance problems



Practices & Impacts

OWNER PRACTICES IMPACT PERFORMANCE

This part of the study examines:

- The impact on performance of specific policies, practices, tools and tactics
- The current frequency of their use by public infrastructure owners' capital projects organizations.

TOP AND LOWEST PERFORMING ORGANIZATIONS

In the original study of 174 owners, 28 were identified as top performing and 28 were identified as lowest performing based on their reported cost and schedule performance on recent projects. The chart shows the percentage of each group who report being engaged with each of 12 specific practices in three major categories. (More information on this performance ranking is in the Research Demographics section of this report.)

This analysis is intended to correlate practices with performance for a wide variety of capital projects organizations across the industry, and guide all owners in adopting or expanding their use to gain the benefits.

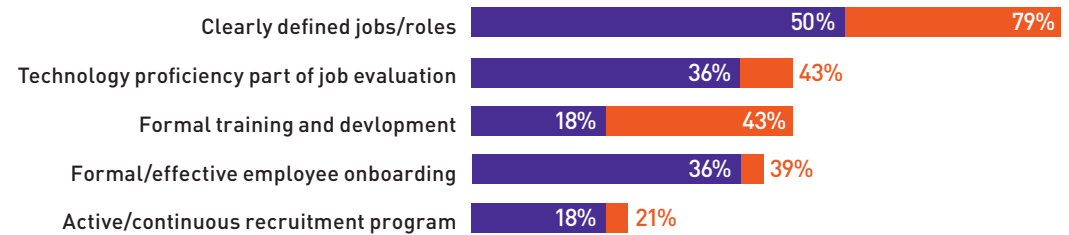
PUBLIC INFRASTRUCTURE ORGANIZATIONS

The following pages show the percentage of public infrastructure owners who report being engaged in these practices.

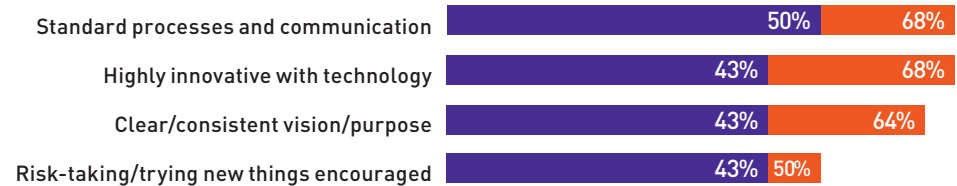
Advanced Adoption Index

The percentage of top-performing and lowest-performing owner capital project organizations that report being engaged in each of these practices.

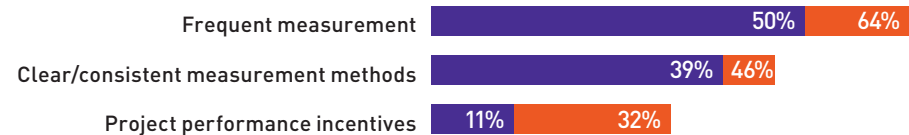
NURTURING TALENT



ORGANIZING CULTURE



PROJECT PERFORMANCE MEASUREMENT



■ Lowest Performing Owner Organizations
 ■ Top Performing Owner Organizations

Nurturing Talent

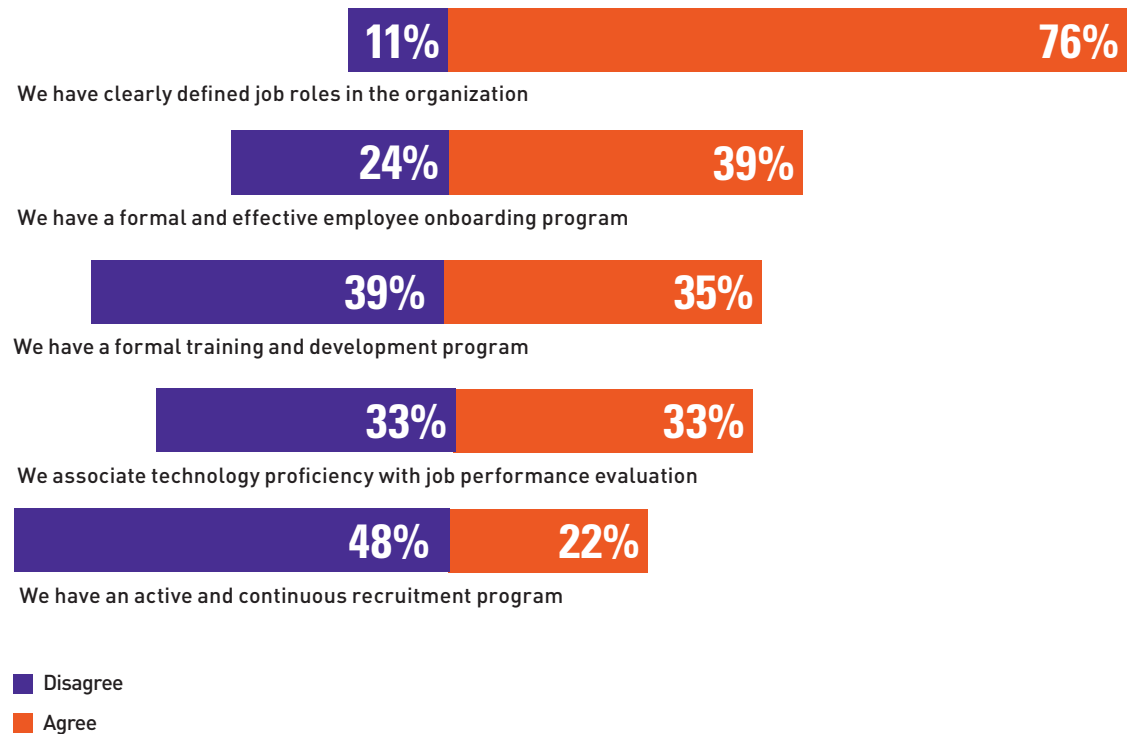
OWNER TALENT PRACTICES

To evaluate public infrastructure owners' policies and practices related to talent, they were asked how much they agree or disagree with the five statements shown in the chart. (Note that "Neutral" responses are not shown in the chart.)

- Having clear job roles is prevalent across all infrastructure respondents.
- 39% say they have a solid onboarding program for new employees which is fundamental to staff effectiveness.
- One third (33%) associate technology skill with performance and conduct formal training, which would certainly be necessary if technology skills are evaluated for performance.
- Continuous recruiting is infrequent for all infrastructure respondents.

Nurturing Talent

Percentage of public infrastructure owners that agree or disagree with these statements about activities that nurture talent



NOTE: "Neutral" responses are not included in the calculation and are not shown in the chart.

Culture of the Capital Projects Organization

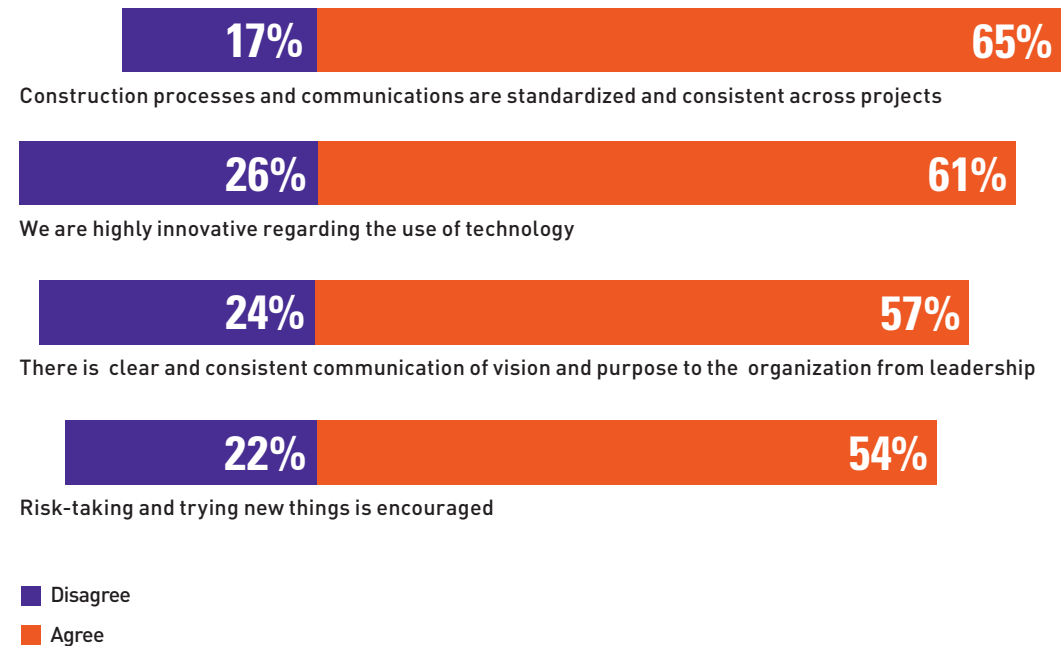
OWNERS' ORGANIZATIONAL CULTURE

To evaluate public infrastructure owners' policies and practices that impact their organizational culture, they were asked how much they agree or disagree with the four statements shown in the chart. (Note that "Neutral" responses are not shown in the chart.)

- Between half and two thirds of public infrastructure owners believe they are doing well with all these elements of organizational culture.
- Standardized, consistent project processes and communication, which ranked highest among the top performers (68%), is also the most frequently reported by public infrastructure owners (65%), which aligns well with the broader industry.

Organizational Culture

Percentage of public infrastructure owners that agree or disagree with these statements about the culture of their capital projects organization



NOTE: "Neutral" responses are not included in the calculation and are not shown in the chart.

Measuring Project Performance

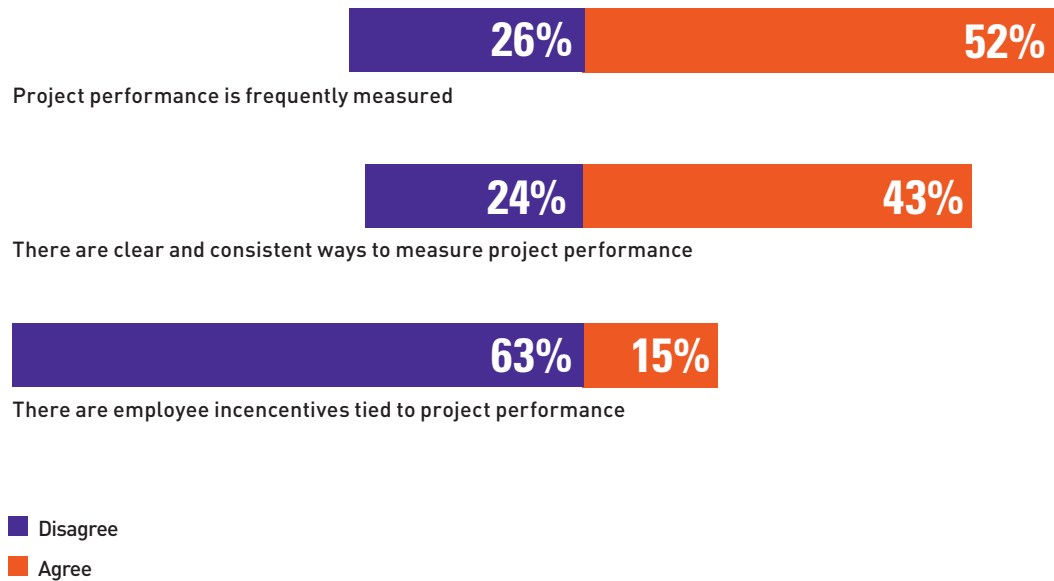
PERFORMANCE MEASUREMENT

To evaluate how public infrastructure owners measure project performance, they were asked how much they agree or disagree with the three statements shown in the chart. [Note that “Neutral” responses are not shown in the chart.]

- Frequent measuring of project performance ranked highest among the top performers (64%), but is not as widely cited by public infrastructure owners (52%), which indicates an area of focus going forward.
- Employee incentives are more challenging to implement in public organizations so it is not surprising that only 15% of public infrastructure owners currently use them, versus 32% of the top performing organizations across the industry, many of which are non-government.

Measuring Project Performance

Percentage of public infrastructure owners that agree or disagree with these statements about their approach to measuring project performance



NOTE: “Neutral” responses are not included in the calculation and are not shown in the chart.

Use of a Project Management Information System (PMIS)

OWNER ENGAGEMENT WITH PMIS

Over half (53%) of the top performing owners in the original survey are currently using a project management information system (PMIS) versus only 39% of the public infrastructure owners. This may indicate an opportunity for these owners to improve performance.

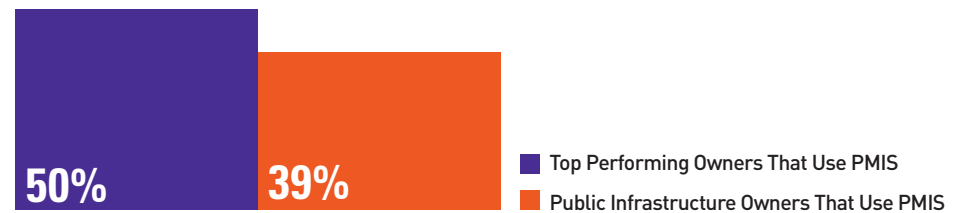
PUBLIC INFRASTRUCTURE USER ACTIVITIES

Among the public infrastructure owners who report using PMIS, the bottom right chart shows the percentages who report leveraging it for specific activities. Comparing that with top performers from the original study provides some potential areas of opportunity:

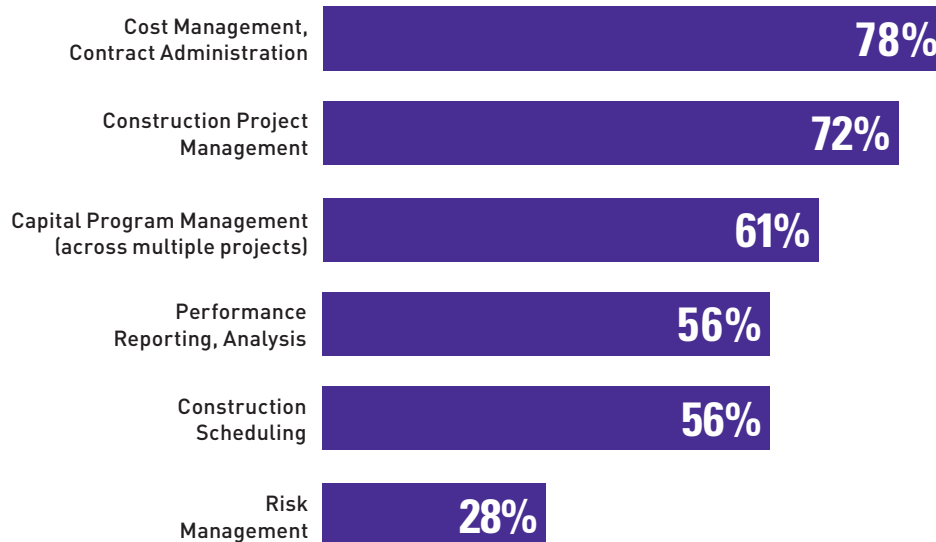
- Construction project management (72%) and performance reporting, analysis (56%) are also lesser-used than by the top performers (79% and 71%, respectively).

Use of a Project Management Information System (PMIS)

Percentage of owners currently using a project management information system (PMIS)



Among public infrastructure owners who use PMIS, percentages of those who use it for these specific activities



Effective Engagement With Internal Stakeholders

ABILITY TO ENGAGE STAKEHOLDERS

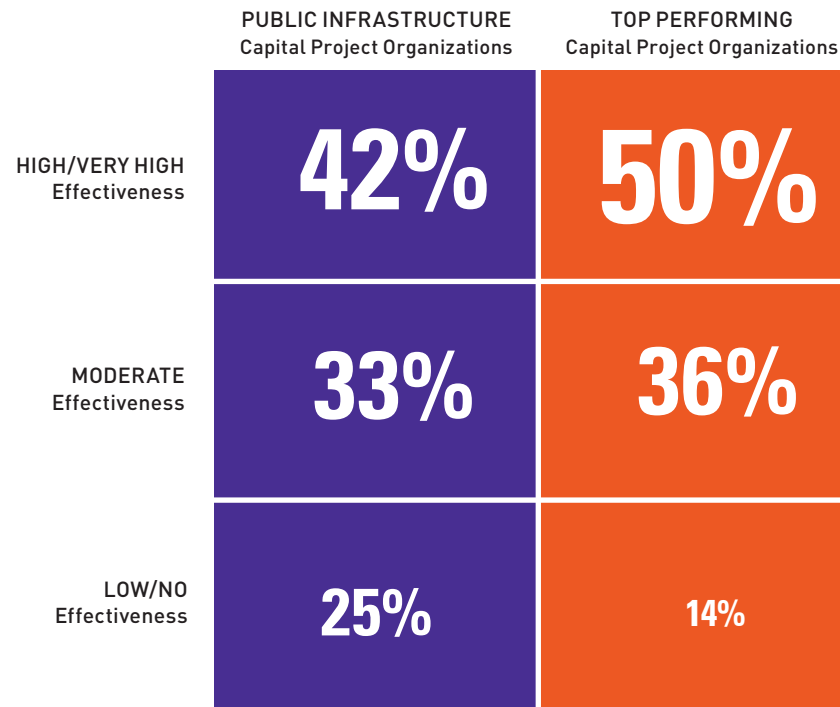
The data reveals meaningful variations in the important ability of capital project organizations to effectively engage with stakeholders, a skill which correlates strongly with project performance.

PUBLIC INFRASTRUCTURE OWNERS COMPARED TO TOP-PERFORMING ORGANIZATIONS

- Half of the top performing owner organizations cite being highly effective at effectively engaging stakeholders, versus just 42% of public infrastructure owners.
- A quarter (25%) report low or no effectiveness, which is significantly more than among the top performers.

Stakeholder Engagement by Performance Tier

Percent of public infrastructure owners reporting each level of effectiveness at stakeholder engagement compared with top performing owner organizations



Key Findings

CHALLENGES AND OPPORTUNITIES FOR PUBLIC INFRASTRUCTURE OWNERS

Key challenges faced by public infrastructure owners include the following:

PROJECT PERFORMANCE CHALLENGES

Public infrastructure owners frequently experience performance challenges, especially with cost and schedule:

- 93% have projects that exceed budget, with 26% experiencing that problem on over half their projects
- 91% have projects that exceed schedule, with 22% experiencing that problem on over half their projects

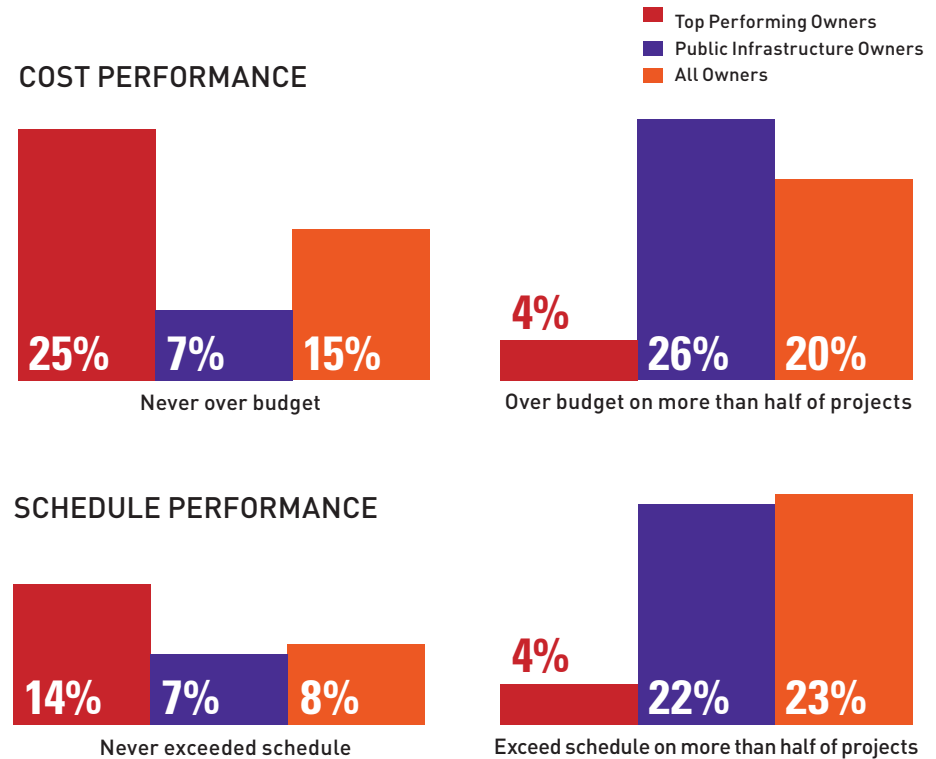
KEY DRIVERS OF PERFORMANCE ISSUES

The most impactful causes of performance issues for infrastructure owners include the following:

- **Inadequate internal competencies, talent, project management** is reported to be the overall most frequent and harmful cause of performance problems.
- **Inadequate risk management** is cited as especially damaging to cost performance. The Related Research section of this report focuses on owners' approaches to risk management.

Comparison to Top Performers

The charts below highlight how public infrastructure owners compare to the top performing owners and all respondents for cost and schedule performance



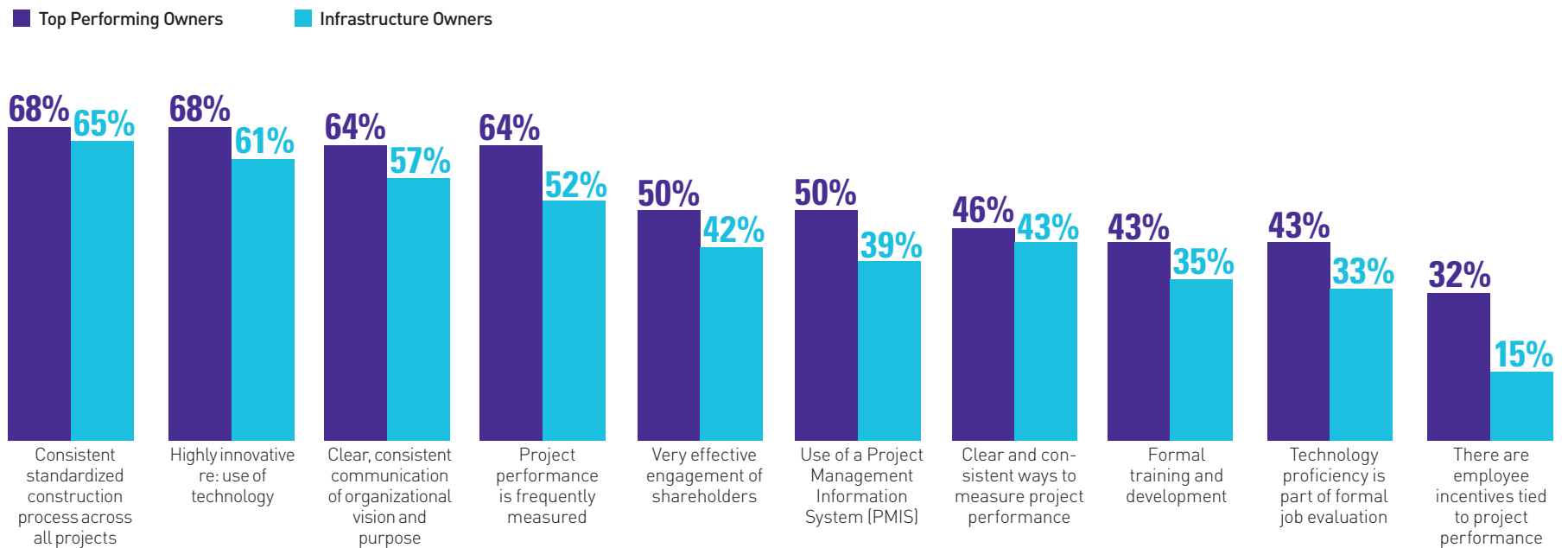
Key Findings

CHALLENGES AND OPPORTUNITIES FOR PUBLIC INFRASTRUCTURE OWNERS

Infrastructure owners report significantly more use of specific practices and policies that this research indicates correlate to improved project performance. The chart below shows how their use compares to top performing owners.

Of note are the higher percentages of top performing owners who frequently measure project performance and provide staff incentives for it. Also, those who use a project management information system and embrace technology innovation.

Infrastructure Owners Compared to All Owners for Top Practices That Improve Performance



Related Research

MANAGING RISK AND IMPROVING PROJECT PERFORMANCE FOR OWNERS

Owners face a variety of challenges managing risk and improving performance on their construction projects. The following pages provide key findings from two major research studies by Dodge Data & Analytics that identify successful practices in both areas:

MANAGING RISK IN THE CONSTRUCTION INDUSTRY

The evaluation and mitigation factors which are most effective for four types of risk (strategic, operational, financial, hazards) from the unique perspectives of owners, GCs and trade contractors.

This study was sponsored by Alliant and e-Builder, and is published as a Dodge SmartMarket Report, available on e-builder.com.

IMPROVING PROJECT PERFORMANCE FOR OWNERS

The project team-related factors (contractual, organizational, operational) which have the greatest impact on project outcomes (cost, schedule, quality, safety) according to owners.

This work was sponsored by the Lean Construction Institute, which has a video about it on its website (www.leanconstruction.org/learning)



**Lean
Construction
Institute**
Transforming Design and Construction

Managing Risk and Improving Project Performance for Owners

MANAGING RISK

With over 500 owners, GCs and trade contractors participating, this study represents a broad view of which specific types of risk are most important to each group, and the practices those companies find most effective to evaluate and mitigate their top concerns.

VARYING PERSPECTIVES ON HIGHEST RISK FACTORS

For owners, implementing planning or scope changes while a project is underway creates the most risk. This same finding is echoed in other Dodge research as being highly disruptive¹.

General contractors focus most on risk created by labor and subcontracts, which makes sense because that represents the majority of a construction budget they are responsible for managing. But owners should note that #2 is a high concern about contractual specification of risk, which comes directly from the owner’s approach to contracting.

Trade contractors also rank that factor second, because of the traditional “waterfalling of risk” to them from GCs. Alternative contracting methods can help to address these concerns, and are discussed later in this section.

Also interesting to note is trade contractors’ concern about schedule changes, which they ranked first. Since they are providing the actual labor across many projects, a change in one trade contractor’s schedule can be disruptive to all the others.

1. Managing Uncertainty and Performance Expectations in Building Design and Construction, SmartMarket Report, Dodge Data & Analytics, 2015

Highest Risk Factors (by Company Type)

Top three factors (from a total list of twelve in four categories) which create the greatest risk, as identified by owners, general contractors and trade contractors

	OWNERS	GCs	TRADES
1st	Planning or Scope Changes	Labor Procurement/ Subcontract Management	Schedule Changes
2nd	Schedule Changes	Contractual Specification of Risk	Contractual Specification of Risk
3rd	Cost Escalation	Schedule Changes	Delays in Payments or Claims

Managing Risk and Improving Project Performance for Owners

EVALUATING RISK

To be effective at managing risk, it is critical that owners, GCs and trade contractors identify and understand the key risk factors that they are likely to face on each project.

RISK EVALUATION STRATEGIES

Collaborative approaches to project delivery are gaining traction throughout the industry, and risk evaluation is no exception. Holding formal brainstorming sessions with key stakeholders is not only a very frequent evaluation strategy, but over half those that do it say it is the most effective. The top three benefits of formal brainstorming about risk cited by owners are:

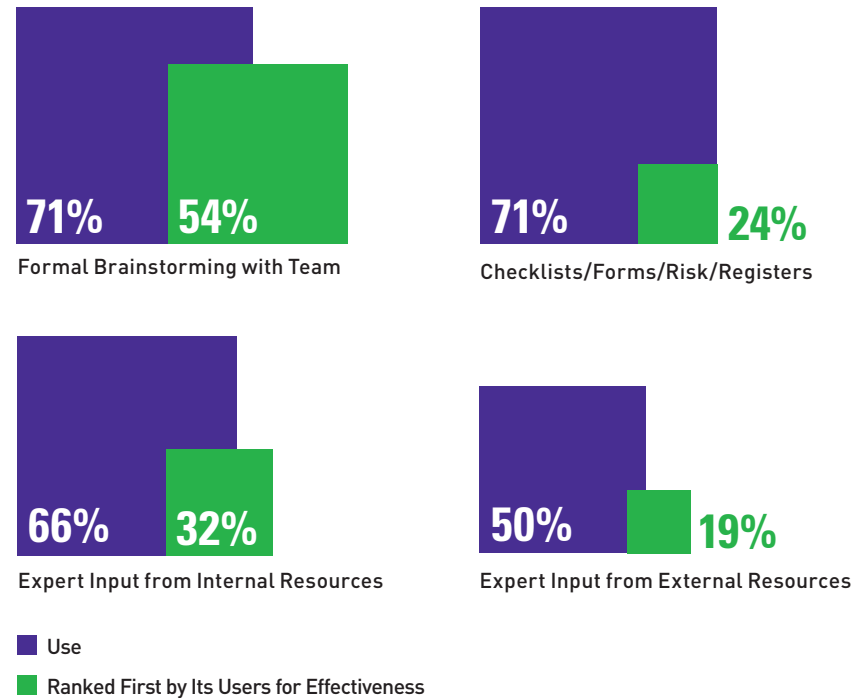
- Increased Reliability in Overall Project Performance
- Reduced Cost of Construction
- Improved Project Schedule

Use of checklists, forms and risk registers is equally frequent, but judged to be less effective as a strategy on its own. A logical evolution is to use them to document and track the specific risk findings of a formal brainstorming session.

Half or more of respondents seek additional expertise to augment their risk evaluation process, with a focus on internal resources versus external ones.

Use and Value of Risk Evaluation Strategies

Percentage of all respondents who use each strategy, and the percentage of those users who rank it as the most effective among the four strategies



[NOTE: The 1st place numbers don't total 100% because each strategy is only ranked by those who report using it, so each 1st place ranking percentage is unique to that group of users.]

Managing Risk and Improving Project Performance for Owners

MITIGATING RISK

Once key potential risks are identified, project teams need to implement **strategies to mitigate them.**

RISK MITIGATION STRATEGIES

The collaborative approach is again highlighted with regular team meetings on risk being most frequent, and over half of its users ranking it most effective. Developing a risk management plan is nearly as frequent, and also cited to be effective. Using the risk management plan as the focal point of regular risk meetings would seem to be a natural way to leverage the value of both strategies.

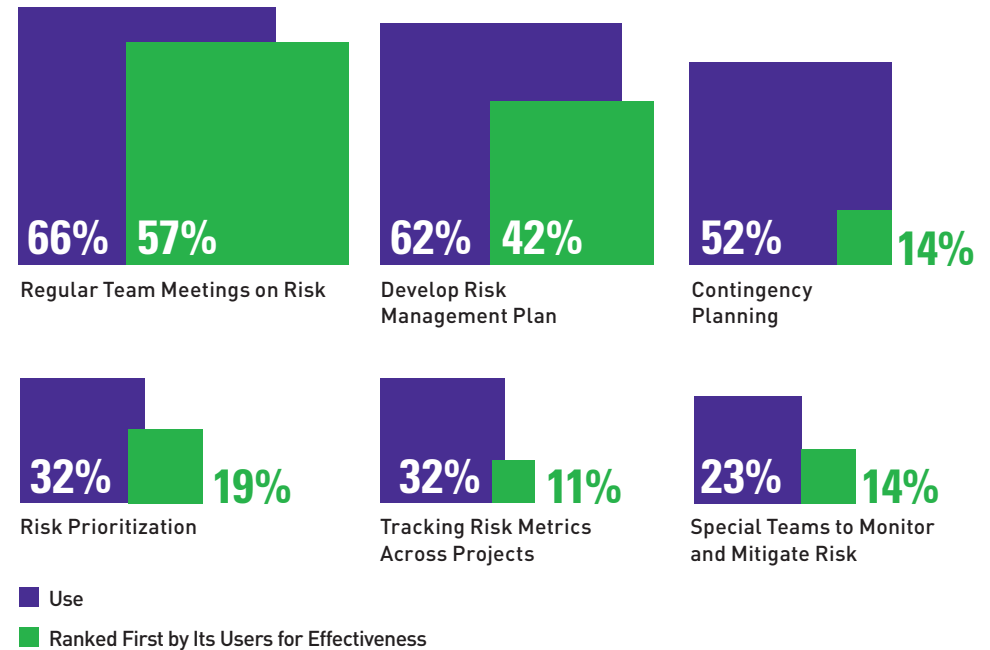
Owners (64%) are the most frequent users of contingency planning (versus just 37% of trades), but it ranks low for effectiveness among owners and contractors. A related Dodge study¹ showed that only 24% of owners have a formal method for determining construction contingency. This points to an area where owners can improve their project planning process to everyone's benefit.

The other three mitigation strategies are still emerging as industry practices, but as measurement and awareness of their benefits grows they can be expected to show increasing use.

1. Managing Uncertainty and Performance Expectations in Building Design and Construction, SmartMarket Report, Dodge Data & Analytics, 2015

Use and Value of Risk Mitigation Strategies

Percentage of all respondents who use each strategy, and the percentage of those users who rank it as the most effective among the six strategies



NOTE: The 1st place numbers don't total 100% because each strategy is only ranked by those who report using it, so each 1st place ranking percentage is unique to that group of users.

Managing Risk and Improving Project Performance for Owners

IMPACT OF COLLABORATION, BIM, LEAN ON RISK

Besides specific risk-oriented activities, owners are reporting positive impact on risk from the use of several project-execution based activities.

COLLABORATION IS POWERFUL

Collaborative approaches related to risk-specific activities scored well throughout the study, as did a broader question about the positive impact of project team collaboration during design and construction.

MODEL-BASED PROCESSES REDUCE RISK

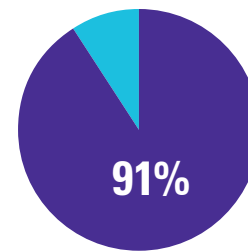
BIM is becoming common, especially on complex projects. Multiple Dodge studies have shown that numerous benefits accrue to projects where the team effectively leverages the value of data in models and embraces digital workflows. Demonstrated benefits include better construction documents, better coordination, fewer field changes/rework, and better compliance with cost, schedule and quality goals. All of these contribute to reduced risk for owners.

LEAN IS EMERGING AS A POTENT FORCE TO REDUCE RISK

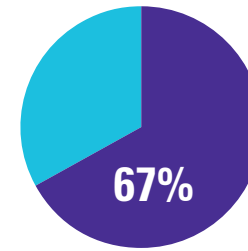
Adapted to the construction industry from many decades of successful use in manufacturing, the Lean approach is demonstrating significant value in mitigating risk and improving project performance. The relatively lower percentage of respondents citing its value (39%) is more an indicator of its lack of widespread familiarity than an informed rating. The following pages address more details about the positive impact of Lean.

Owners: Impact of Collaboration, BIM, Lean on Risk

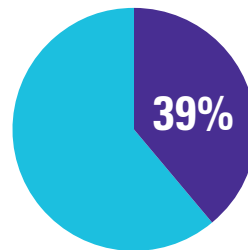
Percentage of owners who agree that use of collaboration, BIM and Lean practices reduce risk



Increased collaboration on the project team reduces risk on my construction projects



Use of BIM by the project team reduces risk on my construction projects



Lean practices deployed by the project team reduce risk on my construction projects

■ Agree
■ Disagree

Managing Risk and Improving Project Performance for Owners

IMPROVING OVERALL PROJECT PERFORMANCE

Owners' capital project organizations are expected to meet cost and schedule targets established at the point of capital authorization. Dodge conducted a study of 81 experienced owners with active building programs to:

- Establish the degree of variance owners are experiencing between expected and actual performance.
- Determine what contractual, organizational, and operational tools and processes correlate to better performance.

To achieve this, the owners provided performance information and details on what tools and processes were used on their best recent project, and one they consider typical.

COST AND SCHEDULE PERFORMANCE IS A CHALLENGE

The findings reveal that cost and schedule performance on owners' best projects are significantly better than on their typical projects.

- Half or more of typical projects are late or over budget, and just 10% or fewer perform better than expected.

But even the best projects show challenges:

- About 20% of owners' best projects fail to meet expectations.
- While almost half of the best projects came in under budget, only a quarter of them were ahead of schedule.

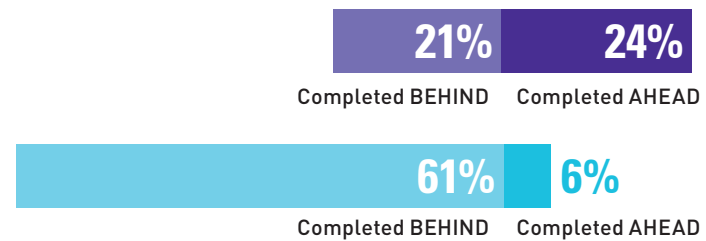
This finding clearly establishes that owners would benefit from data on which tools and processes can provide reliably better performance.

Owners: Performance of Best and Typical Projects

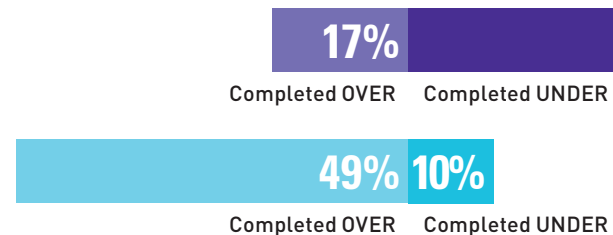
Percentage of owners' best and typical projects that completed ahead versus behind expected schedule, and under versus over expected cost

- BEST PROJECTS
- TYPICAL PROJECTS

SCHEDULE



BUDGET



Managing Risk and Improving Project Performance for Owners

TIMING OF TEAM FORMATION

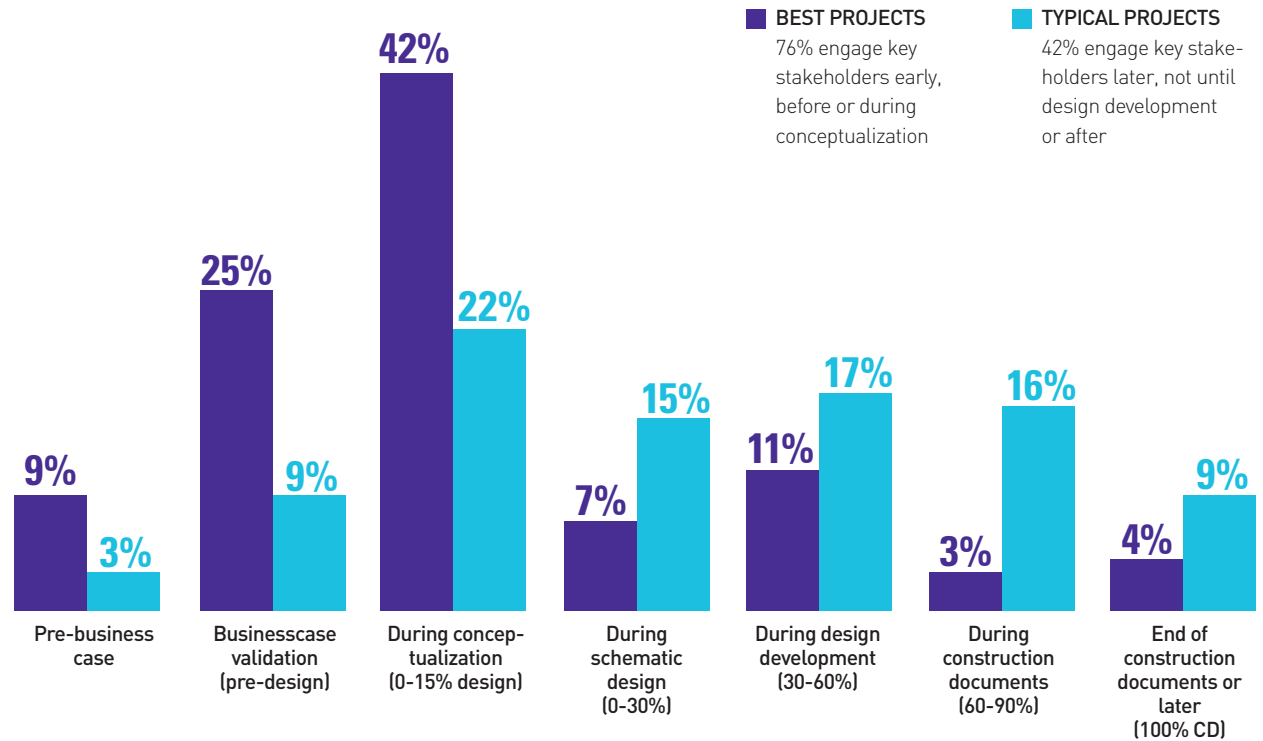
One of the strongest correlations between owner practices and project performance is the timing of team formation.

- Key stakeholders were engaged before or during the concept phase on over three quarters (76%) of owners' best performing projects.
- This contrasts sharply with typical projects, where key stakeholders were not engaged until design development or later almost half (42%) of the time.

Earlier team formation enables far more productive collaboration, which was already established to have a positive impact on reducing risk.

Owners: Impact of Team Formation Timing on Project Performance

Percentage of owners' best and typical projects that completed ahead versus behind expected schedule, and under versus over expected cost.



Managing Risk and Improving Project Performance for Owners

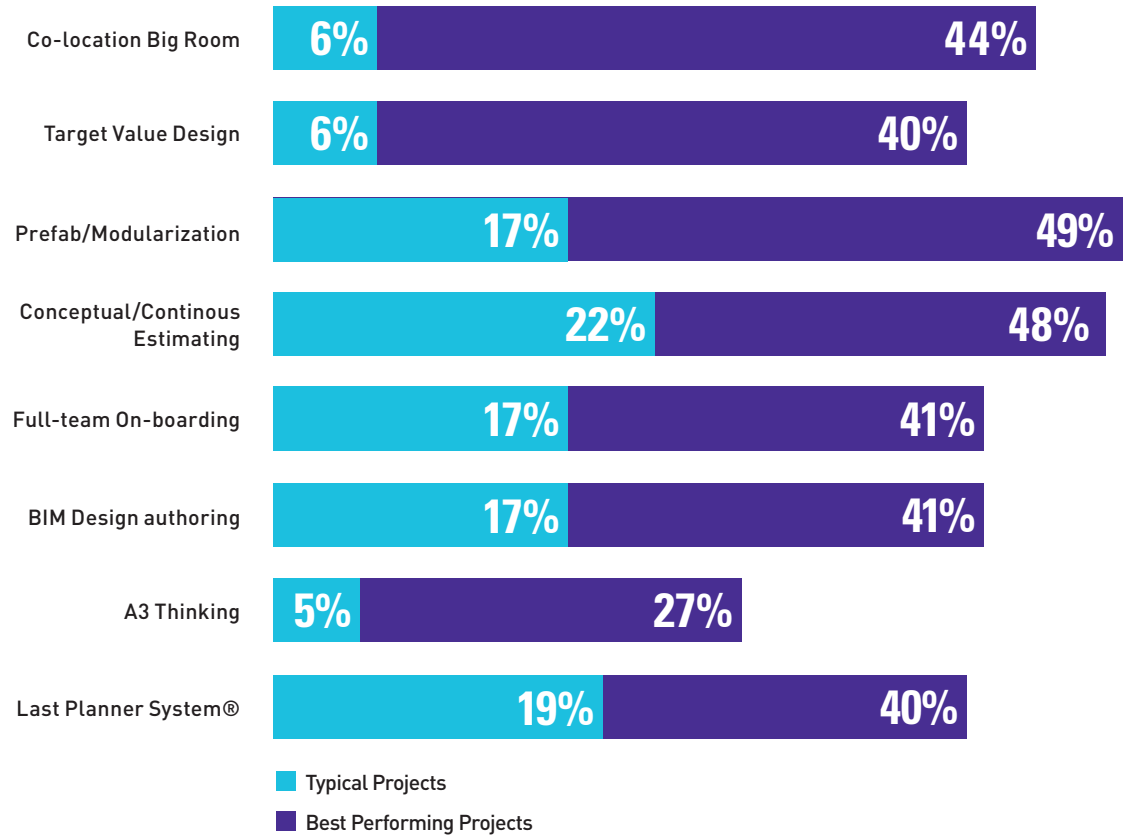
IMPACT OF TEAM PRACTICES

Owners can increase the likelihood of improved project performance by encouraging (or requiring) their project teams to use of a number of beneficial practices that show strong correlation to better performance.

Several of these practices are affiliated with the Lean approach to design and construction. (More information is available at www.leanconstruction.org.) But others such as the use of BIM by the design team and the use of prefabrication and modularization are commonly practiced and show here to correlate very strongly to owners' best projects.

Owners: Impact of Project Team Practices on Project Performance

Comparison of owners' usage of beneficial team practices on best versus typical projects



Managing Risk and Improving Project Performance for Owners

SUMMARY: MOST EFFECTIVE OWNER ACTIVITIES

Across all the project performance data in the two studies, these are the most effective activities for improving project outcomes for owners.

TOP RISK MANAGEMENT ACTIVITIES

The chart at the top right shows the top three risk-related practices to achieve three specific goals, according to the owners who participated in the study.

EXCEEDING EXPECTED PERFORMANCE THROUGH “HIGH LEAN INTENSITY”

Dodge analyzed which combination of project-team related practices reported by owners correlates with projects where owners out-performed cost and schedule expectations. Using many of these practices is classified as running a project with “high lean intensity.” While over thirty practices were included in the study, the top seven practices are:

- A3 Thinking; Conceptual/Continuous Estimating; Full-Team On-Boarding; Last Planner System; Prefabrication/Modularization; Target Value Design; Visual Management

High lean intensity projects were twice as likely to complete under budget, and three times as likely to complete ahead of schedule. More information on these methods is available from the Lean Construction Institute (leanconstruction.org)

Most Effective Risk-Related Practices

Top three activities that target specific performance goals

GOAL	#1	#2	#3
INCREASE OVERALL RELIABILITY OF PROJECT PERFORMANCE	Formal brainstorming with team	Regular meetings of full project team focused on risk	Expert input from internal resources
REDUCE COST OF CONSTRUCTION	Expert input from internal resources	Formal brainstorming with team	Expert input from external resources
IMPROVE SCHEDULE PERFORMANCE	Checklists, forms and risk registers	Expert input from internal resources	Contingency planning

“High Lean Intensity” Projects Have Better Outcomes

Increased likelihood of exceeding expected performance



Research Demographics

SURVEY

An online survey was fielded in April 2016.

RESPONDENTS

Respondents include 174 owners, five of whom are developers, and all from the U.S.

Respondent roles include the following:

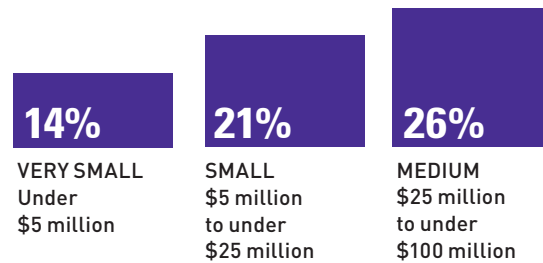
- 18%: CEO, President, Owner, VP, Senior Executive
- 51%: Director
[of Construction, New Development, Facilities, Physical Plant]
- 9%: Chief Engineer, Director of Public Works
- 17%: Project Manager
- 14%: Other (e.g., Project Controls Professional, etc.)

The total sample has good distribution across program size and volume activity ranges, and contains statistically significant proportions of public and private owners, as well as those involved in building and non-building projects.

The charts on this and the next page provide greater detail on project types, owner organization types, sizes and relative volumes of activity.

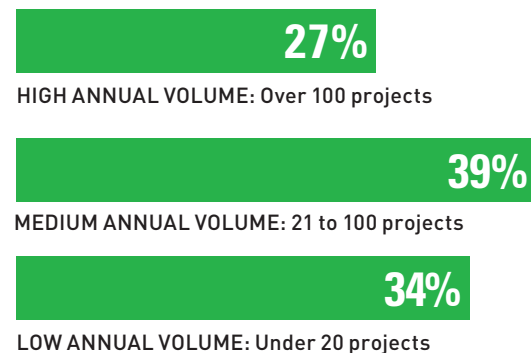
Size of Annual Owner Programs

Percentage of owners by size of typical annual construction program



Annual Volume of Projects

Percentage of owners by number of projects typically completed annually



Research Demographics

TOP PERFORMING OWNER ORGANIZATIONS

To correlate the performance of owner organizations with their policies, practices, tools and tactics, Dodge Data & Analytics evaluated the responses from all 174 owners that participated in the survey to identify the top performers. The evaluation focuses on budget and schedule performance, which this research shows to be significantly more challenging than quality performance.

CRITERIA FOR TOP PERFORMERS

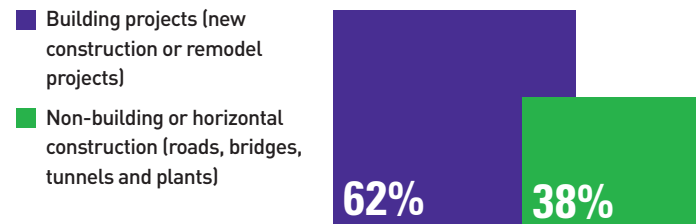
The findings of this study indicate that schedule performance is more challenging than budget performance. As such, the criteria for inclusion in the top performing group are weighted as follows:

- 25% or more of a top performing owner's projects were completed **ahead of schedule**
- 50% or more of a top performing owner's projects were completed **under budget**

Among the 174 owners surveyed, 28 met both of these criteria. These organizations comprise the top performing owners tier and their metrics are referenced for comparison purposes throughout this report.

Project Types

Percentage of owners doing mostly building or non-building projects



Owner Types

Percentage of public and private owners



Contacts+Resources

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Donna Laquidara-Carr
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Research Director
Industry Insights

ADDITIONAL RESOURCES



e-Builder provides a cloud-based, construction program management solution for capital projects that delivers trusted insight into performance across the entire project lifecycle. Facility owners improve project outcomes by streamlining business processes and centralizing project information. Business intelligence provides on-demand forecasts for informed decisions, improved change control and fewer unwanted surprises. The company is privately held and headquartered in Plantation, Florida. Further information on e-Builder is available at

www.e-Builder.net.

Construction Users Roundtable www.curt.org

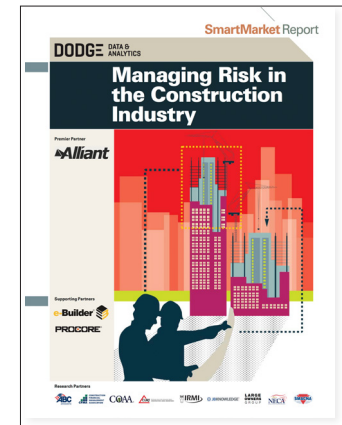
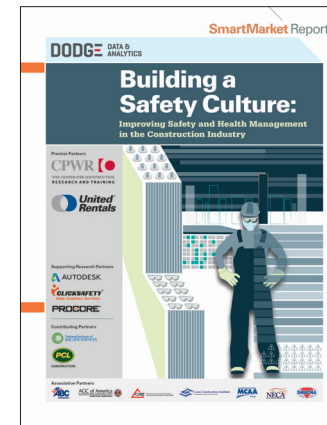
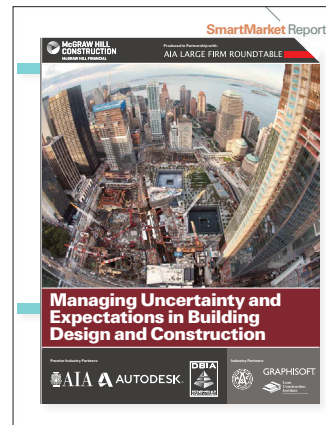
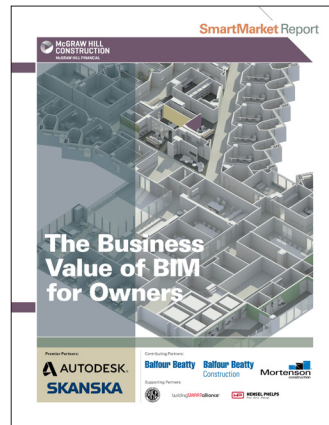
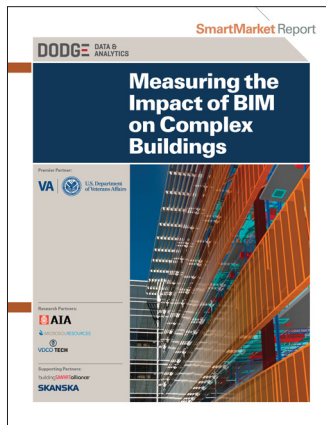
Construction Owners Association of America www.coaa.org

Lean Construction Institute www.leanconstruction.org



Dodge Data & Analytics: Main Website: construction.com **Dodge:** construction.com/dodge
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Industry Insights



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