MAXIMIZING CONSTRUCTION PROJECT BUDGETS
WITH DATA DRIVEN DESIGNS

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DESIGNING WITH VALUE IN MIND

Architects, engineers and other design professionals juggle several coexisting responsibilities and desires. They want to design and build great, innovative facilities. They want to create reputations for doing thorough, efficient work. Most importantly, they want to maximize their available budget.

Delivering a high-quality, budget-stretching product doesn't just happen. It takes the right mindset, the right process and the right tools. This guide explains how to find value and future-proof your designs to make the most of a project's budget.

KEEP YOUR EYE ON EXPECTATIONS

Before one begins tinkering with the design, it is vital to have a firm grasp on the project owner's expectations and the value the owner places on the project. Owners may have different motivations for completing a project, or several motivations at once. The purpose might be to create a revenue stream and to revitalize a neighborhood. An owner might wish to draw tourists to the area with an innovative design or give local merchants an affordable place to set up shop.

In any case, the design professional must keep the design criteria package within reach and the owner's goals, expectations and vision of the project at the forefront of his or her mind. No amount of savings or added value will be enough to satisfy the owner if his or her expectations are unmet.

FINDING VALUE

A quick history lesson: Lawrence Miles was responsible for purchasing raw materials for General Electric during World War II, when manufacturing was at its peak. Sounds like a great gig, but the war caused extreme material shortages, leaving Miles searching for suitable alternatives that functioned similarly. This was the birth of value engineering.

The practice has spread since Lawrence Miles' time and today, value engineering is used in various industries to solve problems, identify and eliminate unwanted costs and improve function and quality. In other words, the value of products increases when they meet performance requirements at a lower cost. Whether a designer wants to substitute one material for another, consider alternative building methods or limit a project's environmental impact, the process of value engineering remains generally consistent.

STEP 1

Identify the material makeup of a project. Ask yourself: What is this?

STEP 2

Analyze the functions of those elements. Ask yourself: What does this do?

STEP 3

Develop alternative solutions for delivering those functions. Ask yourself: What else could do this?

STEP 4

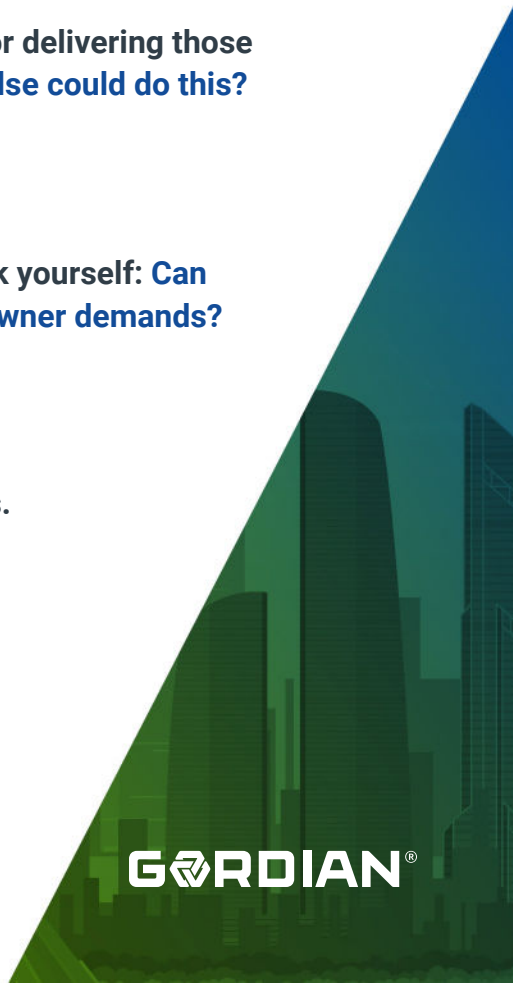
Assess the alternative solutions. Ask yourself: Can this still deliver the experience the owner demands?

STEP 5

Allocate costs to the alternative solutions. Ask yourself: How much will this cost?

STEP 6

Develop the alternatives with the highest likelihood of success. Ask yourself: What will do the best job for the longest time?



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One area where design professionals can often find value is large systems—think HVAC, lighting and electrical systems. This is not to suggest one go looking for discount systems—quite the opposite. Often, spending more on a higher-performing system early will save in maintenance costs over the building's lifespan. It would be wise to conduct a life cycle cost analysis and get input from the team responsible for maintaining the building to gather the long-term cost implications of major systems.

Overall, value engineering demands that architects and builders view a project with a wider lens and scrutinize materials, plans and processes to identify cost-effective alternatives to that meet the requirements of a project. But finding alternatives takes work. You have to know what you're looking for and where to look.

"The level of detail that we are able to generate with RSMeans data shows that [our] company understands the details of the designs we do and the impacts that the choices made during the initial design as estimated through final design."

Architect John Bolton

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ACCURATE COST DATA: A CRUCIAL TOOL FOR FINDING VALUE

In order to effectively value engineer, design professionals need to know where costs lie. To help assess feasible solutions, many architects, owners, engineers and other construction professionals rely on accurate cost data from a reliable industry expert. RSMeans data from Gordian is a highly-trusted construction cost database with more than 85,000 labor, material and equipment costs. Such a robust resource is ideal for value engineering because it contains tens of thousands of viable alternatives that can be placed in assembly units. Those units can be swapped out in square foot models, making for more realistic Rough Order of Magnitude estimates.

There's a reason value engineering has been popular since Lawrence Miles introduced it to the world in the 1940s. Value engineering maximizes client budgets, routing resources to other facets of the project or lowering final costs. All of those outcomes make clients happy.

BUILDING TRUST

Accurate third-party cost data is an invaluable resource for building reliable Rough Order of Magnitude estimates. That same data is also great for building client trust. Accurate cost information demonstrates the impact of design decisions and shows project owners the team has exhausted all of its options in pursuit of creating the best possible design within budget parameters. Sharing objective, third-party cost information with a project owner shows that you're more than a vendor; you're a partner that cares about the bottom line.

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FUTURE-PROOF YOUR DESIGNS

Design work is tricky from a time perspective. Architects and design professionals create drawings and conceptual designs in the present and the structures are built in the future. And that's assuming everything goes as planned and the project doesn't drag out because of approvals, permitting, weather or other unforeseen circumstances. Projecting costs and other economic conditions into the future is complicated. Until recently, these forecasts have been guesswork at best.

Traditional forecasting data, developed during a time of far less computing power and available data, does not meet today's needs for accurate planning and budgeting. These older methods simply do not predict market swings or sharp cost escalations well. But technology advances have resulted in a new, incredibly useful tool: predictive data.

By using predictive data, design professionals can consider all future factors at play in a region, including local labor rates and material costs. This makes it much easier to complete a project within the planned budget.

Let's dig in to how predictive cost data is an improvement on traditional forecasts. Fair warning: This is going to get a little math-heavy.

PREDICTIVE COSTS: MACROECONOMICS AND DATA MINING MAKE THE DIFFERENCE

Although based on econometric principles and modeling techniques, predictive cost data differs from traditional econometric forecasts in two ways. First, traditional forecasts are based on macroeconomic theory, even though analysis of those macroeconomic indicators demonstrate them to be statistically insignificant predictors. Predictive cost models disregard theory altogether and are based exclusively on data-driven empirical evidence instead.

This empirical evidence is the result of extensive exploratory data analysis and pattern-seeking visualizations of historical cost data with economic and market indicators. This updated approach has been extensively researched and validated by Dr. Edward Leamer, Professor of Global Economics and Management at UCLA. Only economic indicators that have "proven themselves" in exploratory analysis become candidates for model development, testing, validation and predictive cost estimates.

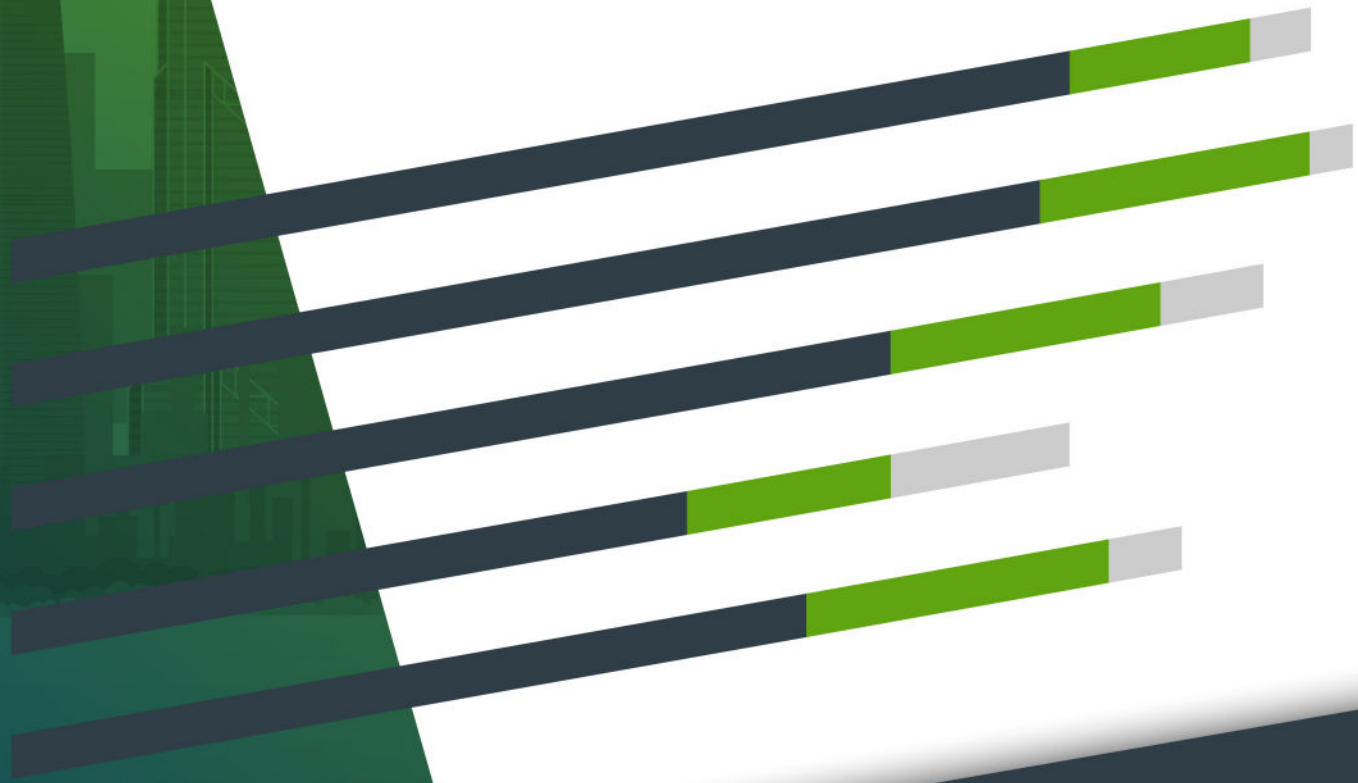
Second, predictive cost data uses mining techniques and principles to improve traditional econometric modeling practices. Since the 1990s, this family of processes and analyses has evolved from a mix of classic statistical principles, more contemporary computer science and machine learning methods. Data mining takes advantage of recent increases in computing power, data visualization techniques and updated statistic procedures in order to find patterns and determine drivers of construction material and labor cost changes. Measures of these drivers and their relationships to each other and to construction costs, along with their associated lead or lag times, are represented in a statistical algorithm that predict future values for a defined material and location. This is a far more robust methodology.

PREDICTIVE DATA AND DESIGN

What does all this—the econometric principles, empirical evidence and data mining—mean for design professionals? The ability to use predictive data that accounts for real market conditions (amount of construction versus labor availability) and commodity price impacts on material costs is critical to keeping designs in line with budgets. Construction professionals are already using predictive data to more accurately forecast the cost of construction up to three years before the project breaks ground. By using predictive data, project costs are not only forecasted accurately, but clients have more confidence in designs and the people who deliver them.

DATA MAKES THE DIFFERENCE

The quest to make the most of a project budget can feel like a long uphill climb. Accurate cost data can make it feel more like a walk in the park. Using trustworthy pricing information helps to find viable, value-creating alternatives. Integrating predictive cost data into the design process keeps today's plans in line with tomorrow's financial realities. When it comes to maximizing project budget, accurate data makes all the difference.



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Gordian is the leading provider of Building Intelligence™ Solutions, delivering unrivaled insights, robust technology and expert services to fuel customers' success through all phases of the building lifecycle. Gordian created Job Order Contracting (JOC) and the industry-standard RSMeans Data. We empower organizations to optimize capital investments, improve project performance and minimize long-term operating expenses.

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