

Assessment of Owner Organization's Impact on Project Success

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Introduction:

Owner organizational characteristics (e.g. organizational complexity and risk tolerance) and their decision-making culture play a significant role in successful project delivery. However, these qualitative elements of project delivery have not been fully explored to determine if and how they impact project success and where an owner's organizational characteristics create specific tensions with different delivery method strategies. This research is part of a larger project to develop a digital tool for owners to assess their decision-making profile and understand the challenges and alignments between their profile and project delivery for improved selection and management of project delivery strategies. This tool is named the Building Owner Assessment Tool, or BOAT for short.

The development of the BOAT was an iterative process which followed an extensive literature review and a survey built to validate our findings and further inform the existing relationships between the owner organization profile characteristics and project delivery criteria. An extensive literature review from the management, organizational science, and construction and design literature informed the survey which targeted North American owner organizations with the goal of understanding how owner decision-making characteristics impact project delivery. This was based on the five prominent delivery methods currently used in the industry (Design-Bid-Build, Design-Build, Progressive Design-Build, Construction Manager at Risk, and Integrated Project Delivery). The survey aimed to gather qualitative data on the experiences of industry owners in order to further inform and refine the BOAT. With the development of such a tool, individual owners can select delivery methods that best align with their organization's decision-making profile, while also providing them the ability to predict areas of tension within their selected project delivery method that they can then plan for and manage in advance. The BOAT tool sheds light on the organizational strengths and weaknesses to better inform decision-making and the selection and use of the best fitting project delivery method.

Survey Development:

The goal of the survey portion of our research process was to validate the results of our literature review and to conduct an analysis assessing construction owner profiles of decision-making and their relationship to project delivery method criteria. Our survey gathered responses from over 180 owner organizations distributed over the five project delivery methods. The survey included owners' self assessment of their decision-making profiles and assessed the alignments and misalignments between decision-making characteristics and project delivery

typologies. In order to create this survey, our research team developed an owner decision-making framework that includes characteristics from the management, organizational science, and construction and design literatures. The goal of this framework was to target the most impactful characteristics of an owner organization that may influence the way decisions are made. The determined most impactful owner decision-making characteristics based on our literature review and survey are described in the following table:

Owner Decision-Making Characteristic	Description	Subsections
Decision-making Authority	Concerns how final decision-making is distributed across the owner organization. Decision-making power is about who controls and feels empowered to make final project decisions.	
Decision-making processes	Concern the degree of formalization for making and communicating decisions, which can impact clarity and responsiveness.	
Decision-making Style	The organization's approach to incorporating information, communication, and relationships in the making of decisions. Decision-making styles are about how an owner organization approaches decision-making in relation to what types of information are deemed important for final decision-making and the nature of the relationship between employers and employees when making decisions.	-Analytical Style -Participation Style -Adaptive Style -Authoritative Style
Decision-making Culture	Guides values used in decision processes. The types of cultures owner organizational leaders and managers promote shapes decision-making. Within an organization, there may be several subcultures, but the overall culture type reflects the predominant patterns.	-Command Culture -Symbolic Culture -Formal Culture -Experimental Culture -Learning Culture
Owner Flexibility	An organization's ability to adapt their processes for making decisions. Owner flexibility is measured by the owner organization's openness to new ideas and willingness to change decisions once made.	-Open to new ideas -Open to change
Risk Tolerance	The organization's appetite for risk. This measures how comfortable an organization is taking on investments that are high risk, high reward on projects.	
External Business Environment	The larger business context for the owner organization. External business environment is measured by the level of sustained growth, whether the owner organization is in a high-risk industry, and the level of industry stability. The external business environment can impact how much risk an owner is willing to take on and how fast decisions may be made.	-Sustained Growth -High-risk Industry -Industry Stability
Organizational Complexity	Measures by the size of an organization's structure (e.g., number of employees, number of assets) and number of interrelated parts (e.g., number of locations, number of departments, layers of management).	

With the framework above aimed to identify and dissect the most impactful owner decision-making characteristics common to North American owners, our team additionally set out to determine the most prominent project delivery method criteria based on the five industry dominant project delivery strategies. In other words, our team identified the most impactful project characteristics that influence the success of project delivery within each project delivery method (PDM). Our determined PDM criteria are identified and described in the table below:

PDM Criteria:	Description:
Delivery Timeframe	The total time it takes from project inception to project completion, in addition to total time duration for activities.
Predictability	The ability to infer the outcomes of events based on accurate forecasting and analysis in relation to hitting cost and schedule targets, as well as other owner requirements.
Size/Scope Clarity	The physical size of the project and how well defined the project scope is in relation to the project's vision including goals, deliverables, tasks, deadlines, etc.
Management Flexibility	Project leaders' willingness to change, make modifications to projects, and compromise. The ability to make flexible choices, use flexible processes, and work iteratively.
Owner Involvement	The owners desired level of involvement in the project, including communications, leadership, decision making etc.
Project Risk Tolerance	The owner's readiness to take risks on a project and make potentially risky modifications in a project.
Technical Complexity	The technical difficulty and intricacy of building systems, which could be brought out by sustainable initiatives, in a construction project.
Early Collaboration	The involvement of stakeholders (e.g., end users, maintenance) and construction team members earlier in the design process from the project onset.
Stakeholder Complexity	The diversity of stakeholders and team members involved in the project, who come with their differing project objectives, goals, desires, and add complexity to goal alignment.

Our research lies at the intersection of the owner decision-making profile and PDM criteria in order to determine the impact of the owner's decision-making preferences/tendencies on PDM characteristics and where organizational strengths and weaknesses lie within each unique delivery method. The survey served the purpose of verifying and building on the relationship between decision-making characteristics and the elements that impact project delivery. The results of this survey shed light on the relationships we expected to see through the literature review and validated our anticipated results. As mentioned above, our survey gathered responses from over 180 owner organizations distributed over the five project delivery methods to validate the framework from the literature and assess what owner decision-making characteristics impact project delivery and in what ways.

The Building Owner Assessment Tool (BOAT):

The physical deliverable of this research was to develop an owner assessment and innovative visualization tool that will improve the project delivery selection process as well as improve project management as a whole. This tool improves the project delivery selection process as it allows individual owners to select delivery methods that best align with their organization's decision-making characteristics, while also providing the ability for owners to predict areas of tension within their selected project delivery method that they can then plan for and manage in advance. This will allow owners to identify their weaknesses and to be proactive. This research can inspire the development of innovative project management approaches that target organizational tensions.

Research Methodology and Approach:

This research is a qualitative study in that we relied on information gathered from expert opinions of industry owners in order to draw conclusions. The goal of our research was to identify patterns and commonalities between aspects of owner decision-making, organizational culture, and project delivery through a survey of over 180 industry owners. Our research methodology included three major tasks described below:

1. **Literature review:** Focused on owner and organization decision-making from literature in management, organizational science, construction management, and team's prior work. Additionally focused on the construction management literature to identify the most impactful project delivery method criteria.
2. **Survey:** Deployment of a survey to industry owners to conduct an analysis assessing construction owner profiles of decision-making. This survey included owners' self assessment of their decision-making profiles. In addition, this survey assessed the alignments and misalignments between decision-making models and project delivery typologies through owner impact variables.
3. **Tool Development:** The research team then developed a digital tool that supports an owner's analysis of their organization and the relationship between decision-making profiles and project delivery methods.

Key Findings:

In this research, we have identified 9 owner decision-making variables including Decision-making Authority (e.g. centralization, formalization), Decision-making Processes, Decision-making Style (e.g. participation vs authoritative), Decision-making Culture (e.g., command, symbolic, experimental), Flexibility (open to new ideas, open to change), Risk Tolerance, External Business Environment (e.g. industry stability and risk) and Organizational Complexity (e.g., number of employees and number of offices). These work in concert to impact projects across a variety of impact variables including delivery timeframe, predictability (cost and schedule), size/scope clarity, management flexibility, owner involvement, technical complexity, early collaboration, project risk tolerance, and stakeholder complexity.

In general, we found that highly collaborative project delivery methods align with more owner involvement, more flexible and informal decision-making characteristics. Inversely, owners with centralized and formal decision-making profiles found that this style is at times in tension with collaborative delivery. More centralized and formal owners might find higher risks in project delivery when using more collaborative delivery methods. High levels of owner command culture, authoritative style, and formal decision-making processes generally lead to increased risks among project impact variables for more collaborative delivery methods. Our survey analysis further showed that certain elements of both owner decision-making and the project delivery characteristics do not impact our industry which led to the refinement of our tool and the falling out of elements such as management styles like coercion and organizational slack for example.

In addition to the above, we found that certain owner profile characteristics seem to pose similar risks on projects across delivery types. For example, our findings depict that low levels of management flexibility (openness to new ideas and change) seem to pose more risks on project outcome variables regardless of the delivery method. We further found that low risk tolerance within an owner organization generally leads to higher risks among the PDM criteria across delivery methods, similar to what was observed with flexibility.

Implications:

In the realm of project delivery, there has been a focus on studying how the structure of the team and contracts impact project performance. This research shifts the focus to studying the impact that the owner organization and its culture has on project delivery. The implications of the findings suggest that this is a complex question with many confounding variables that interrelate and impact project success. However, we can distill some patterns that can improve our understanding of project management and how the owners' organizational structure, culture, style etc. influence project teams and performance. This research has the potential to improve the project delivery selection process as it allows individual owners to select delivery methods that best align with their organization's decision-making profile, while also providing the ability for owners to predict areas of tension within their selected project delivery method that they can then plan for and manage in advance. This will allow owners to identify their weaknesses and to manage them properly before costly and stressful issues appear on site. This also set out new lines of project management research to focus on the development of innovative project management approaches that target organizational tensions.

The results of this research show that measurable performance metrics are not enough to understand the elements of project success, but rather more qualitative characteristics of owner decision-making also play a major role in the successful final delivery of a project. This research sets out a framework for these qualitative characteristics and begins to define the relationships between owner profiles and the impact that these characteristics have on project success. Future research is needed to further understand the relationships, in particular the ways that these variables interact.

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