Paper 87: Maturity of Target Value Design (TVD) Implementation in Norwegian Public Building Projects

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The purpose of this study
To discover and bring awareness of the maturity of TVD implementation during the pre-project phase in Norwegian public building projects.

Research question (RQ)
  1. How is the TVD maturity in the Norwegian construction industry?

Research design
  • Literature study
  • 5 cases
  • 6 interviews (project managers from the client [OPAK AS] and the contractor)

The study does not reflect the ‘full maturity’ status of the Norwegian construction industry.
Background
TVD projects are more likely to:
✓ Completed below anticipated Market Cost (MC)
✓ Increased accuracy for conceptual estimates
✓ Lower contingency reserve
✓ Prevent ‘overdesign’.

TVD – Theoretical Introduction
Iterative design process focusing on optimizing and maximizing the client’s and user(s)’ value within constraints.
- Allowable Cost (AC) = the amount the client is willing and able to pay for a facility with a defined performance.
- Expected Cost (EC) = the amount for a facility with a determined performance provided at current best practice

Dependent on a realistic cost target:
- Benchmarking
- Knowledge of cost and value drivers
Background and Theory

Scorecard


- TVD characteristics = An element or an activity that has been identified in the literature to be part of the TVD process.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not implemented</td>
</tr>
<tr>
<td>1</td>
<td>Early implemented</td>
</tr>
<tr>
<td>2</td>
<td>Sufficiently implemented</td>
</tr>
<tr>
<td>3</td>
<td>Fully implemented</td>
</tr>
</tbody>
</table>

Average TVD maturity
# The Implementation of TVD Characteristics (1/4)

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>TVD CHARACTERISTICS</th>
<th>DESCRIPTION</th>
<th>AS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CASE 1</td>
<td>Contracting</td>
<td>Partnering, 50/50 split</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Organizing</td>
<td>Limited collaboration and co-location, no target budgets among project objects</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Defining (business case)</td>
<td>Validation not based on AC, no priority of outputs, specifying demands, constraints, and limitations</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Defining (validation study)</td>
<td>Shared understanding, align ends, means, and constraints, target scope greater than best practice</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Steering</td>
<td>&quot;Nice to have vs. need to have&quot;, targeting cost drivers, rejected optimizations due to cost</td>
<td>2.5</td>
</tr>
<tr>
<td>CASE 2</td>
<td>Contracting</td>
<td>Partnering, 50/50 split</td>
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<tr>
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<td>Organizing</td>
<td>Limited collaboration and co-location, no target budgets among project objects</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Defining (business case)</td>
<td>Validation not based on AC, no priority of outputs, debated project location</td>
<td>1.5</td>
</tr>
<tr>
<td></td>
<td>Defining (validation study)</td>
<td>Shared understanding, align ends, means, and constraints, no benchmarking, target budget lower than best practice</td>
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<tr>
<td></td>
<td>Steering</td>
<td>Limited SBD, focus on cost reduction</td>
<td>2</td>
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<tr>
<td>CASE 3</td>
<td>Contracting</td>
<td>Design-build, possibility to cancel the project</td>
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<tr>
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<td>Organizing</td>
<td>Limited collaboration, transparency, workshop model, no target budgets for project objects</td>
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<tr>
<td></td>
<td>Defining (business case)</td>
<td>Validation not based on AC, part of a master plan, priority of sustainable alternatives</td>
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</tr>
<tr>
<td></td>
<td>Defining (validation study)</td>
<td>Limited understanding, target scope greater than best practice, not standardized solutions</td>
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</tr>
<tr>
<td></td>
<td>Steering</td>
<td>Limited SBD, project goals, design-to-value</td>
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<tr>
<td>CASE 4</td>
<td>Contracting</td>
<td>Partnering during the pre-project, design-build, possibility to cancel the project</td>
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<tr>
<td></td>
<td>Organizing</td>
<td>Limited co-location, not fully implemented workshop model, four contractual milestones</td>
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<tr>
<td></td>
<td>Defining (business case)</td>
<td>Validation not based on AC, part of a master plan, a variety of alternatives</td>
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<tr>
<td></td>
<td>Defining (validation study)</td>
<td>Target scope greater than best practice, limited benchmarking, and standardized solutions</td>
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<tr>
<td></td>
<td>Steering</td>
<td>Challenging current best practice, project goals, and focus on operation cost</td>
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<tr>
<td>CASE 5</td>
<td>Contracting</td>
<td>Design-build, no incentives</td>
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<td>Organizing</td>
<td>Limited co-location, transparency, a single user with influence</td>
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<tr>
<td></td>
<td>Defining (business case)</td>
<td>Validation not based on AC, condition of satisfaction not matching the target budget</td>
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</tr>
<tr>
<td></td>
<td>Defining (validation study)</td>
<td>Limited understanding, mismatching ends and constraints, no benchmarking, standardized solutions</td>
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</tr>
<tr>
<td></td>
<td>Steering</td>
<td>No SBD, constructable design, financial expectations, uncertainty</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Gard Y. Smoge, Olav Torp and Agnar Johansen
The Implementation of TVD Characteristics (2/4)

Contracting

- The foundation for TVD implementation.
- Incentives:
  - 50/50-split
  - Additional payment for chasing and modifying the environmental targets
Organizing

- Collaborative methods (mainly ICE-meetings).
- Decision-making authority and rapid decisions.
- The need for user involvement.

Example: Case 5 shows the consequences for the client if not obtaining the full decision-making authority.

Defining (Business case)

- Closely related to the evaluation of the choice of concept process.
- A stated AC is not implemented.
- Identify project-specific elements of importance.
- Prioritized outcomes and outputs are inconsistent.
The Implementation of TVD Characteristics (4/4)

Defining (Validation)

- A common understanding among the involved actors.
- Decisions are often made based on cost.
- A realistic Target Cost (TC):
  1. target a lower cost based on current best practice, or
  2. target scope greater than current best practice.

Steering

- “Need to have vs. nice to have”
- A specific focus on value drivers.
- Focusing on achieving the outputs of cost and time.
RQ: How is the TVD maturity in the Norwegian Construction Industry?

- The scorecard is sufficient for the identification of the TVD maturity.
- The maturity within the Norwegian construction industry cannot be fully identified.
- Enhancing maximum value is a challenge due to the lack of visualization and the focus on cost reduction.
- Decision-making based on identified cost drivers should embrace project value.
The Need for Further Research

• More focus on the root causes:
  • Cost estimation and benchmarking.
  • Using a maximum AC based on the client’s willingness and ability to pay.
  • The ability to create a realistic TC.

• Correlation between cost reduction reduction in project value.

• Validation of the tool – more tests are needed

References:

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