Why Projects Excel?
The Business Case for Lean Construction

John Pemberton
Lean Construction Institute
Objectives for Today

*Speed change to deliver better project outcomes!*

1. See how best projects differentiate from typical

2. Understand impact of project delivery strategy & management methods

3. Become a Lean change agent
The Business Case for Lean

PROJECTS with HIGH LEAN INTENSITY are MORE LIKELY to complete AHEAD OF SCHEDULE & UNDER BUDGET

3X  2X
Most who never heard of Lean think the industry is Efficient.
Lean Construction Tenets

- Optimize the Whole
- Removal of Waste
- Focus on Process & Flow
- Generation of Value
- Continuous Improvement

RESPECT FOR PEOPLE
Sat·is·fac·tion

Fulfillment of one's wishes, expectations, or needs, or the pleasure derived from this.

How satisfied are you with the delivery of capital projects?

– Always
– Frequently
– Sometimes
– Infrequently/Never
Owner Satisfaction

quality

owners

always
66%
frequently
20%
sometimes
12%
infrequently/never
2%

Architects and Contractors

always
49%
frequently
49%
infrequently/never
2%

Cost

owners

always
30%
frequently
52%
sometimes
11%
infrequently/never
7%

Schedule

owners

always
26%
frequently
52%
sometimes
12%
infrequently/never
10%

Architects and Contractors

always
57%
frequently
31%
sometimes
11%
infrequently/never
1%
Research Overview

Owner Satisfaction & Project Performance

Objectives:
1. Benchmark owner satisfaction & project performance
2. What is the impact of Lean?

Survey: 81 Owners/162 projects

IPD & Lean Motivation & Means

Objective:
3. How and why does integrated Lean succeed?

Case Study: 10 Owners/Projects
Satisfaction vs. Value

Performance from Approval of Capital Project (% of Best/Typical Projects)

- Completed Ahead of Schedule:
  - Best Project: 24%
  - Typical Project: 6%
  - Total: 21%

- Completed Behind Schedule:
  - Best Project: -21%
  - Typical Project: -61%
  - Total: -49%

- Completed Under Budget:
  - Best Project: 46%
  - Typical Project: -17%
  - Total: 10%

- Completed Over Budget:
  - Best Project: -49%
  - Typical Project: -10%
  - Total: -50%

Total (n=81)
Schedule Performance

Variance of Final Schedule vs. Allocated Capital Schedule

- Ahead of Schedule
  - 26% to 35% of schedule: 1%
  - 11% to 25% of schedule: 6%
  - 1% to 10% of schedule: 22%

- No Variance
  - 56%

- Behind Schedule
  - 1% to 10% of schedule: 33%
  - 11% to 25% of schedule: 14%
  - 26% to 35% of schedule: 6%
  - More Than 35% of schedule: 4%
Budget Performance

Variance of Final Cost vs. Allocated Capital Budget

Under Budget

- More than 20%: 3%
- 11% to 20%: 4%
- 7% to 10%: 6%
- 3% to 6%: 14%
- Less than 3%: 20%
- No Variance: 41%

Over Budget

- More than 20%: 6%
- 11% to 20%: 7%
- 7% to 10%: 3%
- 3% to 6%: 3%
- Less than 3%: 20%
- No Variance: 37%
Satisfaction vs. Value

<table>
<thead>
<tr>
<th>Satisfaction Levels</th>
<th>Typical Project</th>
<th>Best Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated 1 or 2 for Quality</td>
<td>-44%</td>
<td>-17%</td>
</tr>
<tr>
<td>Rated 3 or 4 for Quality</td>
<td>56%</td>
<td>83%</td>
</tr>
<tr>
<td>Rated 1 or 2 for Safety</td>
<td>69%</td>
<td>84%</td>
</tr>
<tr>
<td>Rated 3 or 4 for Safety</td>
<td>-31%</td>
<td>-16%</td>
</tr>
</tbody>
</table>

Best Project: 83%
Typical Project: 56%

© Lean Construction Institute
Importance of Team Cohesion

% Projects Reporting the Highest (4/4) Rating

- Perception of Team Chemistry: 68% Best, 10% Typical
- Integration of Project Team Members: 61% Best, 9% Typical
- Commitment of Team Members to Same Project Goals: 54% Best, 11% Typical
- Timeliness of Decision Making Related to Issue Resolution: 40% Best, 5% Typical

© Lean Construction Institute
Timing of Key Stakeholder Engagement

**Best Projects:**
76% engage key stakeholders before or during conceptualization

**Typical Projects:**
42% don’t engage key stakeholders until design development or later

- **Pre-business case:** 3% (Typical) 9% (Best)
- **Business case validation (pre-design):** 9% (Typical) 25% (Best)
- **During conceptualization (0-15% design):** 22% (Typical) 42% (Best)
- **During schematic design (15-30%):** 15% (Typical) 7% (Best)
- **During design development (30-60%):** 17% (Typical) 11% (Best)
- **During construction documents (60-90%):** 16% (Typical) 3% (Best)
- **End of construction documents or later (100% CD):** 9% (Typical) 4% (Best)
Key Stakeholders Selection Process

Top 3 Selection Processes: Best Performing Project
- 35% Best value (price + proposal)
- 17% Negotiated
- 12% Self-selected team

Top 3 Selection Processes: Typical Project
- 24% Pre-Qualified open bid
- 21% Best value (price + proposal)
- 16% Open bid
Support the Team

Top Project Delivery Methods on Typical and Best Projects (20% or more usage on either)

- Construction Management at Risk: Typical 38%, Best 31%
- Design-bid-build: Typical 41%, Best 11%
- Integrated Project Delivery: Typical 22%, Best 1%
- Design-Build: Typical 23%, Best 14%

Top Contracting Types on Typical and Best Projects

- Lump Sum: Typical 44%, Best 20%
- Guaranteed Maximum Price (with or without shared savings): Typical 44%, Best 38%
- Cost Reimbursable With Target and Shared Risk/Reward: Typical 19%, Best 1%
Learn as a Team

Methods with Most Degree of Difference Between Usage

- **Co-location Big Room**: Typical 6%, Best 44%
- **Target Value Design**: Typical 6%, Best 40%
- **Prefab/Modularization**: Typical 17%, Best 49%
- **Conceptual/Continuous Estimating**: Typical 22%, Best 48%
- **Full-team On-boarding**: Typical 17%, Best 41%
- **BIM Design authoring**: Typical 17%, Best 41%
- **A3 Thinking**: Typical 5%, Best 27%
- **Last Planner System®**: Typical 19%, Best 40%

**Part-time co-lo more common than full time**

**LPS more common in construction than in design**

© Lean Construction Institute
Succeed as a Team

Correlation of Lean intensity to outcomes (% likelihood on best projects)

- Completed Ahead of Schedule:
  - Low Lean Intensity: 3X
  - High Lean Intensity: 2X

- Completed Under Budget:
  - Low Lean Intensity: 3X
  - High Lean Intensity: 2X

© Lean Construction Institute
How and Why: IPD creates need to collaborate
Lean provides the means
Common Project Myths...

1. Delivery matters less than choosing the right people – behaviors can’t be dictated by a contract.

2. IPD contracts are too complicated, Lean tools are too rigid.

3. IPD only works on large complex healthcare projects – Teams new to IPD and Lean are at a disadvantage.

4. Owners aren’t getting best value – or – Owners are getting value but the team is not making profit.

5. IPD and IPD-lite are essentially the same; financial incentives and release of liability are no big deal.
Case Study

T. Rowe Price
Campus Building 1

111,000 SF
Building Renovation
$20M  12 Months

Team experience
Prior experience together & with owner
Most first IPD project & some Lean experience
Case Study

Why?

• T. Rowe Price unsatisfied with tenant build-outs

• Despite early collaboration still playing mediator

• Inspired by “Commercial Real Estate Revolution”
Case Study

How was team formed?

• Owner selected Architect, Contractor, Furniture
  – Willingness to adapt business practices

• Initial team selected key consultants and trades
  – RFP for Highly integrated, jointly managed IPD team

• IPD team later added other scopes (ductwork)
Case Study

How was project delivery strategy established?

• IPD Coach: boot-camp with counsels & refresher

• SMT formation of customized contract using standard IPD template

• Key issues: insurance carrier, cost transparency, liability waivers
Case Study

How did the team manage the work?

• Team led: Two day Lean workshop

• Key team tactics:
  – SMT and PMT Dashboards
  – Measured team performance (PPC, Constraint Log)

• Opportunities for improvement:
  – Co-location, Last Planner® System, BIM
Case Study

What were key outcomes?

• Team relatedness - “Stay at the table”

• IT continuity during construction & move-in

• Met budget & schedule targets (+ 2.5% scope)

• Learning and improvement for Building 2
Value for T. Rowe Price Senior Manager?

“made a big difference on how we spend our money” to have an impact on the quality of the spaces
Tactical Takeaways for Projects

1. Set targets: Define owner’s business case & goals at c-suite

2. Build the team: Contract (using best value) key stakeholders prior to/during concept design to validate targets & unify the team

3. Learn as a team: Provide training and coaching for the team to increase adoption of Lean methods

4. Support the team: Contracts should support (not thwart) a good team culture and adoption of Lean methods
CAPTURE AND LEVERAGE THE LEAN ADVANTAGE

19TH LCI CONGRESS
OCTOBER 16-20 • ANAHEIM, CA

LEARN MORE: lcicongress.org/2017
Questions?

John Pemberton – jrpemby@outlook.com

Bevan Mace – bmace@balfourbeattyus.com