Lean Construction Professional’s Profile (LCPP): Understanding the Competences of a Lean Construction Professional

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Introduction

- Most implementations of Lean Construction have been very fragmented (Pichi & Granja, 2004; Alarcón et al, 2006)

- Chilean case: main problems have been related to cultural, organizational and human issues

- *Organization development program*, including:
  - Review of Project Managers (PM) role
  - Develop a training program for their professional staff to become a “lean organization”
Propose a way to support lean construction in contractor organizations (people perspective)

Create a Lean Construction Professional Profile (LCPP)

Expand the focus centered in projects toward a holistic vision of the implementation, that will include:

- Culture
- Organization
- People
### Background: why do research on people issues?

Companies need to evolve from “Scenario 1” to “Scenario 3”, but for doing so they need to generate capabilities to support this change.

<table>
<thead>
<tr>
<th>Implementation Phases (Seguel, 2004)</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fragmented tools applications</td>
<td>Integrated job site application</td>
<td>Lean enterprise application</td>
</tr>
<tr>
<td>Phase A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University team responsibility</td>
<td>● Company 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phase B</td>
<td></td>
<td>● Company 1</td>
<td>● Company 3</td>
</tr>
<tr>
<td>Shared implementation responsibility</td>
<td>● Company 3</td>
<td>● Company 4</td>
<td>● Company 5</td>
</tr>
<tr>
<td>Phase C</td>
<td>● Company 5</td>
<td>● Company 6</td>
<td></td>
</tr>
</tbody>
</table>
Research methodology

- Analysis of a theoretical framework (executives roles)
  - Management science approach
  - Construction industry approach
  - Lean Construction approach

- Analysis of Chilean construction project managers’ job (executives roles)
  - Skills needed by effective PMs
  - PM time use

- Elaboration of a preliminary LCPP
  - Definition of areas of competence
  - Definition of a preliminary LCPP

- Expert panel for judging the preliminary LCPP
  - Presentation of the LCPP on the 14th IGLC
  - Application of a questionnaire to lean experts

- Consolidation of the LCPP
  - Analysis of the results of questionnaire
  - Consolidation of the LCPP
Step 1: Analysis of a theoretical framework

- Management science approach
  - Executive functions (Mintzberg, 2005)
  - The effective executive (Drucker, 2004)
  - Administration and leadership (Covey, 2005; Kotter, 1990)
  - Lider level 5 (Collins, 2001)
  - Emotional intelligence on leadership (Goleman, 2004)
  - Personal integrity on leadership (Covey, 2005)

- Construction industry approach
  - Skills needed to be an effective project manager (Odusami, 2002)
  - Competences for a high performance project manager (Dainty et al., 2005)
  - Project manager competences development (Edum-Fotwe & McCaffer, 2000)

- Lean construction approach
  - Lean leadership (Orr, 2005; Howell et al., 2004)
  - Managerial competences to introduce innovations in construction (Lantelme, 2004)
Step 1: Analysis of a theoretical framework

Key elements of executive work

Enterprise vision
- Shared values and goals
- Aligned personal and organizational actions

Technical capacity
- Technical knowledge
- Applied knowledge
- Systemic contextualization

Management capacity
- Manage simultaneously resources, process and people according to certain objectives

Social competence
- Self-domain
- Social skills
### Step 2, Empirical analysis: Chilean construction project managers job

<table>
<thead>
<tr>
<th>Empirical evidence from Chilean reality</th>
<th>Enterprise vision</th>
<th>Technical capacity</th>
<th>Management capacity</th>
<th>Social competence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skills needed to be an effective PM (Pavez, 2007)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PM’s time use (Alarcón &amp; Pavez, 2006)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Step 3, Elaboration of a preliminary LCPP

Social competence
Management capacity
Technical capacity
Lean vision
Enterprise vision

Mental models and behaviors that must drive people acting in the organization
Generic competences

Competences and capacities people have to develop and/or apply at work to reach high performance
Specific competences

Mental models
Behaviors

Performance
Action
Step 4, Expert panel for the preliminary LCPP

Regarding the preliminary LCPP, a formal questionnaire was sent by e-mail to analyze three issues:

1. The importance of the competence areas for a lean professional
2. The adequateness of the competence areas proposed
3. The definition of specific competences associated to each competence area
## Step 4, Expert panel for the preliminary LCPP

<table>
<thead>
<tr>
<th>Expert</th>
<th>Country</th>
<th>Experience in construction</th>
<th>Academic experience</th>
<th>Experience in lean construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert 1</td>
<td>Brazil</td>
<td>20</td>
<td>28</td>
<td>10</td>
</tr>
<tr>
<td>Expert 2</td>
<td>Brazil</td>
<td>24</td>
<td>20</td>
<td>9</td>
</tr>
<tr>
<td>Expert 3</td>
<td>USA</td>
<td>11</td>
<td>19</td>
<td>11</td>
</tr>
<tr>
<td>Expert 4</td>
<td>USA</td>
<td>40</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Expert 5</td>
<td>Brazil</td>
<td>30</td>
<td>22</td>
<td>10</td>
</tr>
<tr>
<td>Expert 6</td>
<td>Israel</td>
<td>8</td>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>
Step 4, Expert panel for the preliminary LCPP

Brief of the lean experts opinion…

- Social competence
- Management capacity
- Technical capacity
- Lean vision
- Enterprise vision

Areas conceptually clear

Areas conceptually confused
Step 5, Consolidation of the definitive LCPP

Areas conceptually clear

They were held as the base of the model

Areas conceptually confused

They were re-defined (lean vision and management capacity) and the “lean management” concept was introduced

¿What is lean management?

It is the base for building a lean organization (Womack, 2006)

Business purpose  Processes  People
Lean Construction Professional’s Profile (LCPP)
Conclusions

- This research investigated the way in which people could support the transformation of the lean organization by defining the LCPP.
- The LCPP provide the competence areas needed by a lean construction professional (change agent) consistent with the elements of “lean management”; which is defined as a new understanding of how to be a lean organization (Womack, 2006).
- The conceptualization of the LCPP provides a good framework to drive people development inside construction companies, because it presents a complete model of the competence areas needed by lean professionals and a clear definition of the focus that each competence area must have.
Recommendations for future research

- Identify specific competences for each competence area
- Study the differences among professional’s positions by each competence area
- Define the most important competences in each competence area regarding the better way to support lean construction in contractor organizations
- Design training programs to develop each competence area in the professional staff of the companies
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