From Teams to Organizations and Inter-organizations
Measures of Systems Thinking and Social Competencies from Production and Healthcare

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LAI Knowledge Exchange Event
April 10, 2012
I. Topic 1: People in Improvement Teams

II. Topic 2: People in Organizational Enterprises (Work Teams)

III. Topic 3: People in Multi-Org Enterprises
A Kaizen event is a focused and structured improvement project, using a dedicated cross-functional team to improve a targeted work area, with specific goals, in an accelerated timeframe.

(Farris et al., 2009)
Social Capabilities and Improvement Teams (Glover et al., 2010)

Management Support (MS)
Our team:
• Had enough contact with management to get our work done
• Had enough help from others in our organization to get our work done

Internal Processes (IP)
Our team:
• Communicated openly.
• Valued each member’s unique contributions.
• Respected each others’ opinions/feelings.

Finding: Social support and capabilities may be more important to success than task design or other technical factors.
Research Methods: Data Collection Process

**T0-Step 1:** Kickoff questionnaire

**T0-Step 2:** Report out questionnaire

**T0-Step 3:** Event information questionnaire

**T1:** Post-event information sheet

**Follow-up Mechanisms**
- Work Area Traits and Norms

**Before Event**
- ~3-5 days

**Immediately After Event**
- ~0-4 weeks

**9-18 months**

OR

0%-100%

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Research Methods: Sampled Orgs., Data Collection and Analysis

<table>
<thead>
<tr>
<th>Description</th>
<th>No. of events</th>
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<tbody>
<tr>
<td>A:  Secondary wood product manufacturer</td>
<td>19</td>
</tr>
<tr>
<td>B:  Electronic motor manufacturer</td>
<td>4</td>
</tr>
<tr>
<td>C:  Secondary wood product manufacturer</td>
<td>4</td>
</tr>
<tr>
<td>E:  Specialty equipment manufacturer</td>
<td>13</td>
</tr>
<tr>
<td>F:  Steel component manufacturer</td>
<td>7</td>
</tr>
<tr>
<td>G:  Aerospace engineering and manufacturer</td>
<td>7</td>
</tr>
<tr>
<td>Q:  IT component manufacturer</td>
<td>5</td>
</tr>
<tr>
<td>R:  Aerospace engineering and manufacturer</td>
<td>6</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>65</strong></td>
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Data Collection and Preparation

- Survey fatigue
- Survey item distributional properties

Construct Validity and Aggregate Variables

- Factor Analysis
- CATPCA
- Reliability and collinearity

Regression Analysis

- GEE (clustered data)
- OLS

Mediation Analysis

- 4-stage testing
- GEE and OLS

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Integration - Sustainability

High Performance
Results and Discussion: Work Area Attitude and Commitment

in PM (e.g., Kloot, 1997; Mausloff and Spence, 2008) and CI literature (Kaye and Anderson, 1999)

visibility/emp. awareness (e.g., Melnyk et al., 1998) and prevent deterioration of improvement (e.g., Bateman and Rich, 2003)

direct emp. participation designing lean changes (e.g., Bradley and Willett, 2004), in CI (Keating et al., 1999), and emp. understanding CI (Kaye and Anderson, 1999)

Learning and Stewardship

Performance Review

Work Area Routineness

difficulty defining PM (e.g., Beamon, 1999) or greater variability in performance (e.g., Martin and Smith, 2005)

Experimentation and Continuous Improvement

Accepting Changes

Production System Changes

e.g., management’s reinforcement of CI (Kaye and Anderson, 1999)

EXP_CI and a flexible product diff. strategy (Yeung et al., 1999) and mediation effect

<table>
<thead>
<tr>
<th></th>
<th>GEE β</th>
<th>SE GEE</th>
<th>α GEE</th>
<th>OLS β</th>
<th>SE OLS</th>
<th>α OLS</th>
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<tbody>
<tr>
<td>Intercept</td>
<td>1.653</td>
<td>0.467</td>
<td>0.000</td>
<td>1.380</td>
<td>0.437</td>
<td>0.003</td>
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<tr>
<td>Performance Review</td>
<td>0.161</td>
<td>0.064</td>
<td>0.012</td>
<td>0.168</td>
<td>0.063</td>
<td>0.010</td>
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<tr>
<td>Experimentation and CI</td>
<td>0.288</td>
<td>0.107</td>
<td>0.007</td>
<td>0.301</td>
<td>0.111</td>
<td>0.009</td>
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<tr>
<td>Accepting Changes</td>
<td>0.202</td>
<td>0.072</td>
<td>0.005</td>
<td>0.247</td>
<td>0.076</td>
<td>0.002</td>
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</table>

OLS R²= 0.504, OLS R_a² = 0.479, F3, 59=20.001***
GEE R²=0.503, GEE R_a²=0.477, p= 0.175

Integration • Sustainability
High Performance

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Background and Motivation: People in Organizations

Southwest Airlines…

- Has had only one fatality in 35 years of operation - an overrun on a snowy runway at Midway on Dec 8, 2005
- Until the purchase of AirTran, flew only Boeing 737s
  - Simplifies training, maintenance, logistics
- Has never had a layoff of employees to reduce costs, including after 9/11
- Is the most highly unionized major U.S. airline
- Has a point-to-point, not hub-and-spoke, route structure
- Consistently offers some of the lowest fares available
- Is a favorite of both investors and employees

What makes Southwest so successful?
“In this book I argue that Southwest’s most powerful organizational competency… is its ability to build and sustain high performance relationships … characterized by **shared goals, shared knowledge, and mutual respect**. Although these relationships appear simple, appearances are deceptive.”

(Emphasis added)

Relationships *shape* the communication through which coordination occurs.
Example from Healthcare: Psychological Health and the Military

Enduring Combat Operations
- 1.9 M Troops since Oct. 2001
- Prolonged combat exposure, increased deployment rates
- Technologies enabling higher combat survival rate

Mental Health Disorders
- Post-Traumatic Stress Disorder (PTSD)
- Traumatic Brain Injury (TBI)

Challenges
- Access to and quality of care
- Challenges with culture and stigma
- Consideration of families
Example from Healthcare: Psych. Health and the Military

Attempts to Solve Challenges

• Over $2 Billion Invested
• Over 450 psychological health related programs
• Known program interdependencies
• Recent integration efforts

Goal to Improve Enterprise Performance

• Efficiency $\rightarrow$ Dec. Per Capita Cost, Fewer Redundant Programs
• Quality $\rightarrow$ Inc. Population Health, Access to Care
Systems Thinking and Social Capabilities in Enterprises (Glover, Naveh, Carroll)

**Enterprise Integration**
- Climate
- Centralization
- Formal Coordination
- Informal Cooperation

**External Perspective**
- Item: [Our Organization] understands how our work fits into the bigger picture of the services provided to the servicemember

**Informal Cooperation**
- Item: We can talk to anyone we need to.
  - e.g., “My experience allows me to collaborate and share with others”

**Organizational Characteristics**
- Efficiency Climate
- Autonomy
  - Trust
  - External Perspective

**Trust**
- Item: [Our Organization] believes their performance will meet our expectations

Thanks and Contact Information

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