ROUTINIZING INNOVATION

The diffusion of lean management tools in the fuzzy front end

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**Motivation**

Application of Lean Management

- Standardizing work
- Tighter organizational linkages
- More reliable processes
- Waste reduction

Increasing manufacturing performance

Increasing R&D performance

The application of lean in R&D is causing strong organizational tensions and rarely produces the expected benefits.

**Research Questions**

1) What are the challenges of applying lean management in R&D?
   - Extensive Pilot Study

2) How can lean management be successfully implemented in R&D?

3) How can lean management be sustainably applied in R&D?

**Research Design**

- Qualitative, single case study
- Interviews with R&D managers and lean experts
- Observations of workshops, trainings, problem solving sessions, etc.
- Secondary data such as training material, guidelines, presentations, etc.
Double Nature of Organizational Routines (Nelson & Winter, 1982; Coriat & Dosi, 1999)

**Cognitive Aspect**
Coordination and problem solving aspect:
What to do and how to do it?

**Governance Aspect**
Authority exercising and governance mechanism:
Would the employees actually choose to do what is required?

State of truce is preferable as any breach in truces leads to inefficiencies. (Nelson & Winter, 1982; Z’Baracki & Bergen, 2010)

Framing Contests (Kaplan, 2008; Benford & Snow, 2000)

**Individual Frames**
- Varying interest
- Varying beliefs

**Framing Contest**
- Meaning construction
- Contested processual phenomenon

**Predominant Collective Frame**

Truce is established when there exist a predominant collective frame. (Kaplan, 2008)
**Findings (I) – Implementation**

- **2007**
  - Merger

- **2008**
  - Lean Management in **Strategy Deployment**
  - Lean Management in **Production**

**State of truce established quickly**

**Failure in the beginning**
- Top-down approach
- No experience with lean in R&D, little in transactional processes
- Engineers and managers not convinced
- Incentives and capabilities not in line

**Truces did not form**

**Creative use of Lean Management**
- External confirmation
- Bottom-up approach
- Adaptation of tools
- Step-wise change of perception
- Label ➤ Toolbox ➤ Guiding Principle ➤ ...

**Gradual formation of truces**
Findings (II) — Application

Example: “5-Why” Problem Solving Routine

Trigger ➔ Preparation ➔ Description of the problem ➔ Asking the 5 why-questions ➔ Defining counter measures ➔ Action Plan

Little acceptance in the beginning

- Insufficient training
- Unsatisfactory results
- No diffusion

“5-Why” was perceived as a reporting tool (coercive formalization) rather than an enabling tool (enabling formalization)

Routinized application for managerial and technical problems

- Proper training
- Better results

“5-Why” is now recognized as a supporting tool and routinely used

What means better? Correct and trusted! (Field work ongoing...)

Trigger ➔ Preparation ➔ Root Cause Analysis ➔ Action Plan

Individual Frames ➔ Framing Contest ➔ Collective Frame

Who identified the problem?
Who are the participants?
How do they describe/agree on the problem?
What is the role/influence of the moderator/the participants?
How does the question and answer process unfold?
What is the influence of artifacts, i.e. templates, on the process?
PRELIMINARY CONCLUSION

(Re)formation of truces

• Implementing lean management disrupts established truces
• (Re)formulating these truces is influenced by capabilities and incentives
• The alignment of capabilities and incentives happens through framing activities similar to what Kaplan (2008) is describing for strategy making processes
• Capabilities have a higher influence on the formulation of truces at operational, i.e. more technical, levels

Routinization of activities

• Macro-level: Lean management became the single choice to adapt processes
  • Top-down: lean tools had to be applied
  • Highly regulated: rules, templates, trained moderators
  • High support for lean activities
  ▶ Incentive part of the story
• Micro-level: The standardization of the problem solving process leads to more reliable and trusted results.
• At technical levels capabilities have a higher influence on the outcome
  ▶ Capability part of the story

OUTLOOK (from macro to micro)

Field experiment: “5-Why“ problem solving routine (Spring / Summer 2013)

Observations of routines \[\rightarrow\] Identification of critical sub-routines and artifacts \[\rightarrow\] Field experiment