



Oregon Wood Innovation Center

Connecting People, Ideas, and Resources

Best Practices in Quality Management for Achieving Innovation Performance

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Outline

■ Introduction

- Evolution of quality management
- Varying approaches to TQM
- Quality and innovation 'trade-offs'
- Problem statement/motivation

■ Research questions

■ Methods

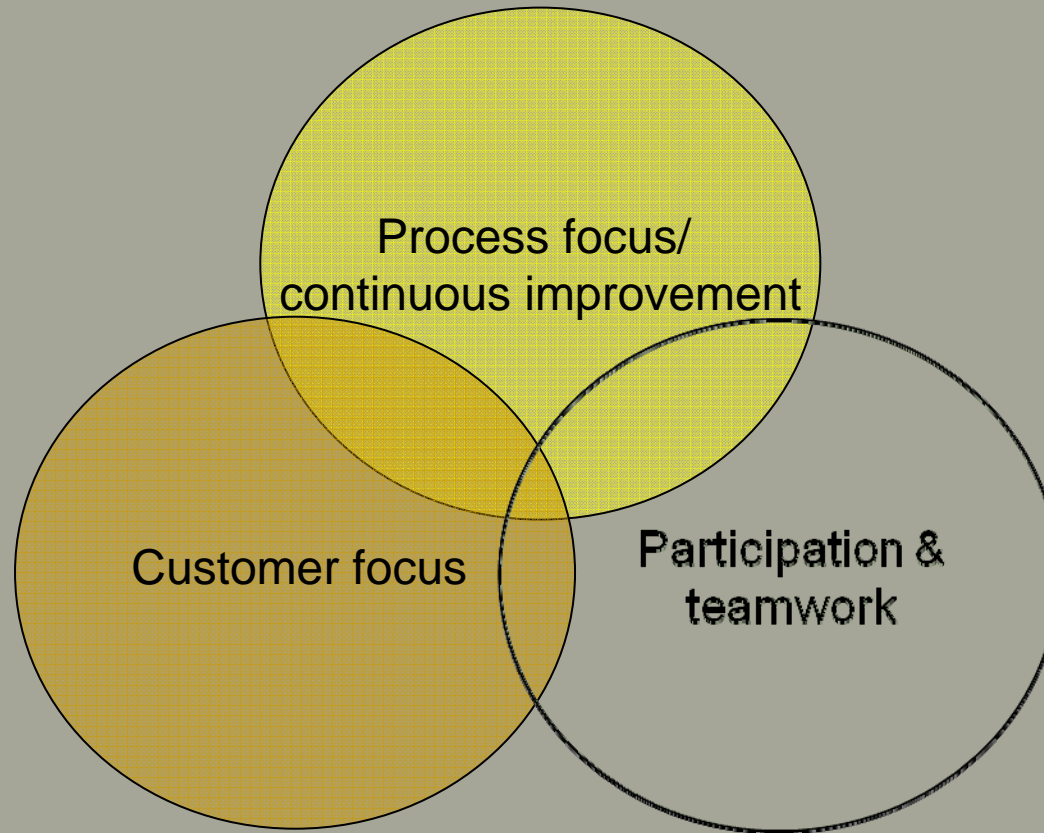
- Quantitative - selection of case study firms
- Qualitative - case study interviews

■ Results – 'best practices'

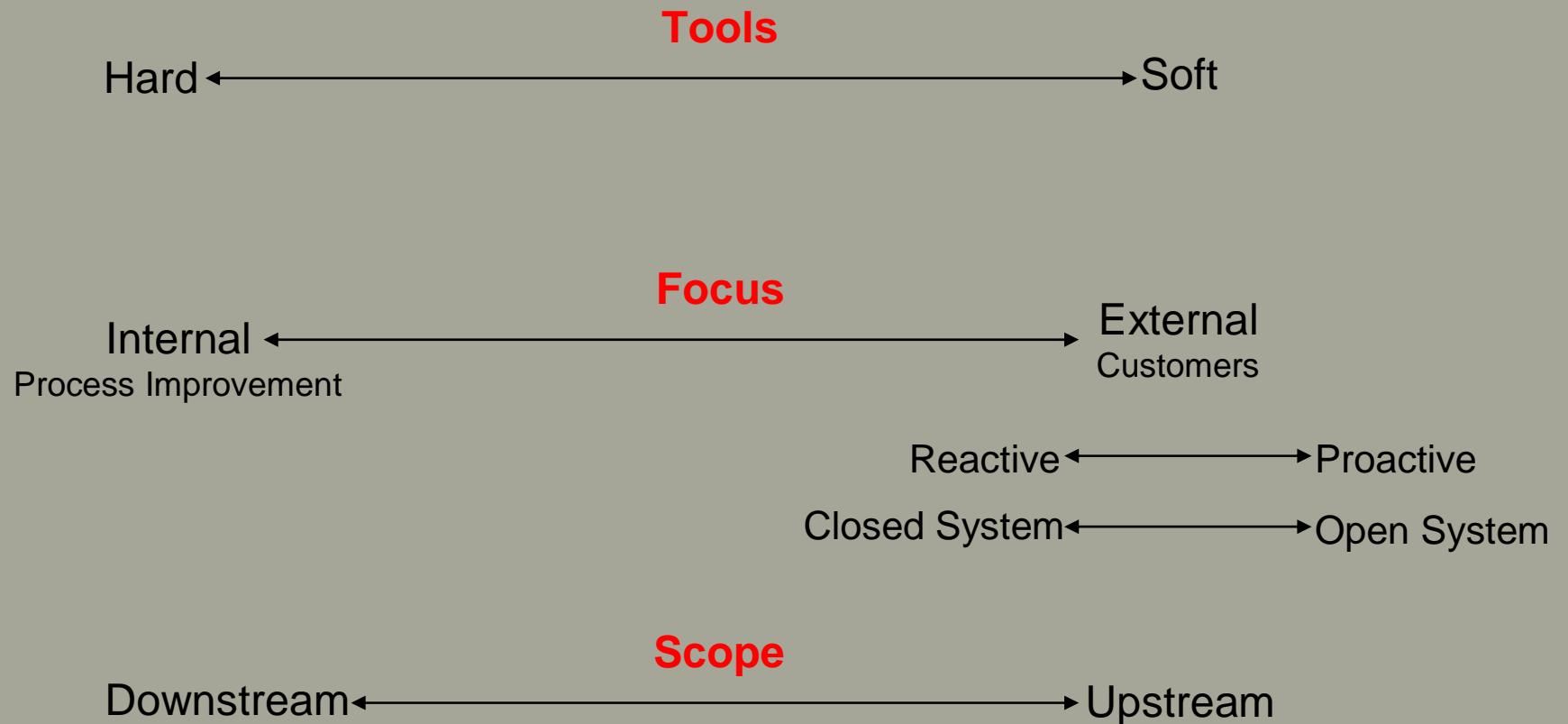
Introduction

- The 'evolution' of quality management
 - Master/apprentice → Mass prod./inspection → TQM
 - ISO, reengineering, Lean Manufacturing, Six Sigma, etc.
- Quality now a 'qualifying criterion'
 - Next competitive frontier = Innovation
 - How to manage for both quality and innovation?
 - Especially for small- to mid-sized companies

TQM – Fundamental Principles



Varying Approaches to TQM



Problem Statement/Motivation

- Widely varying approaches to TQM
- Research has explored relationships between quality and innovation
- **Motivation** - identification of specific quality management practices leading to quality and innovation performance
 - What should a manager do to achieve both?

Research Questions

- What are the best quality management practices to achieve both quality and innovation performance?
- Propositions:
 1. Firms using mixture of hard and soft tools outperform those using primarily hard tools
 2. ...companywide TQM outperform 'narrow scope'
 3. ...mix of external & internal focus outperform internally-focused firms

Model

Inputs & Outputs

Quality Management (Inputs)

X₁: Leadership

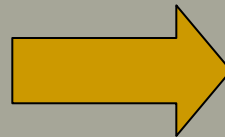
X₂: People Management

X₃: Customer Focus

X₄: Strategic Planning

X₅: Process Management

X₆: Information and Analysis



Performance (Outputs)

Y₁: *Quality* (conformance, performance, durability, reliability)

Innovation:

Y₂: Product

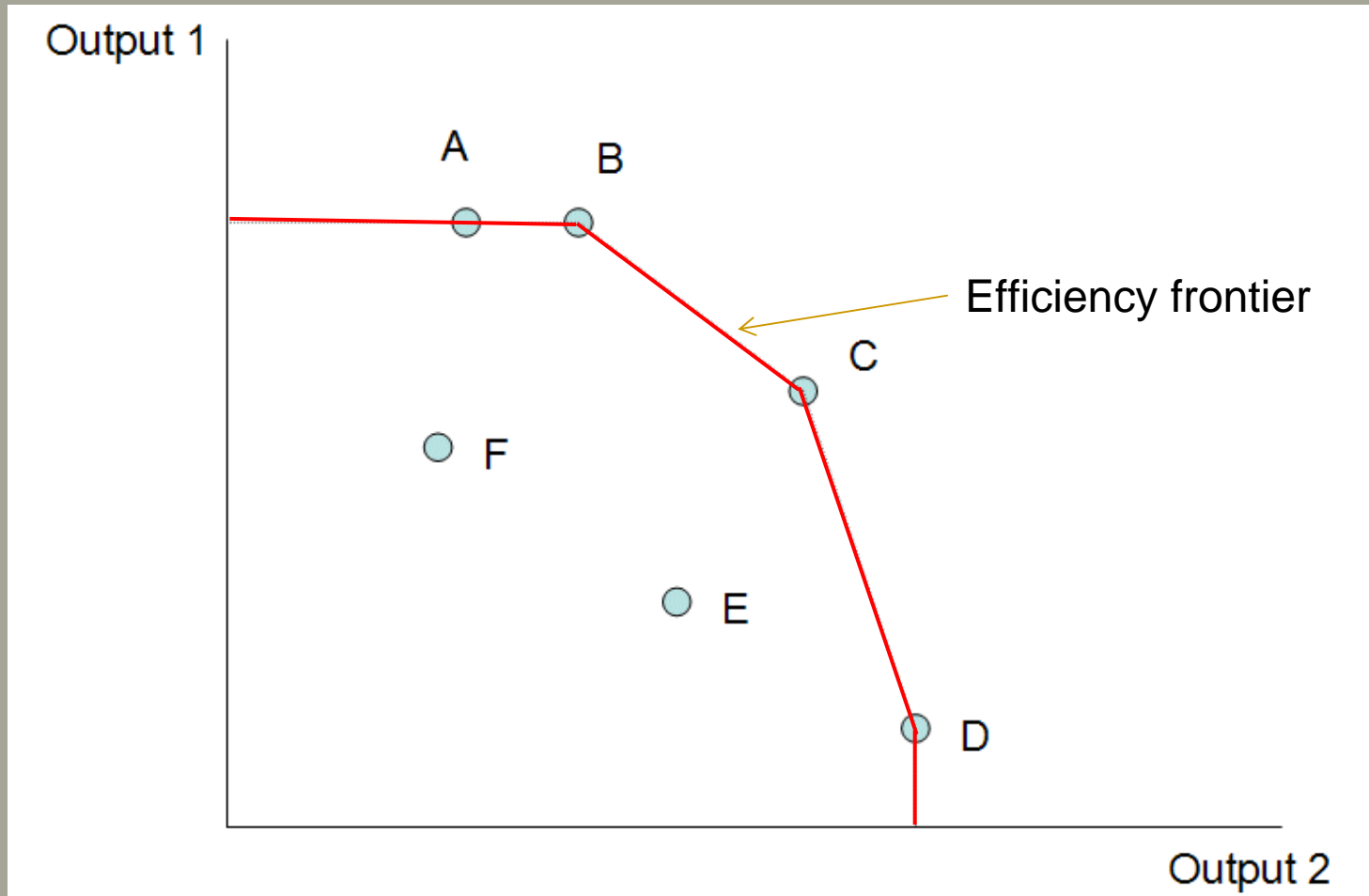
Y₃: Process

Y₄: Business systems

Methods

- Phase 1 – selection of case study firms
 - Data collection
 - Target group: west coast U.S. forest industry
 - Mail survey (2 mailings); reply by hardcopy/fax/web
 - Data analysis - DEA & cluster analysis
 - Identify firms primarily focused on quality ('quality-oriented') and firms focused on both ('balanced')
 - Phase 2 – case studies
 - Develop interview questions
 - In-person interviews
 - Analyze to identify differences in practices
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Data Envelopment Analysis (DEA)



Results

- n=2654, 215 respondents (response rate ~8%)
- DEA/cluster analysis results
 - 28 'efficient' firms
 - 6 firms for quality & innovation ('**balanced**')
 - 2 firms primarily for quality ('**quality-oriented**')
- Case studies – in-person interviews (~90 min.) with 2 firms in each category

Characteristics of Case Firms

	Balanced	Quality-oriented
Years w/company	4, 5 years	21, 25 years
Employees	10-15, ~75	10-15, ~50
Sector	Cabinets, lumber	Trusses, reman.

Interview Questions

People Management

- Moderate emphasis area (3.1/2.8): Balanced higher than quality-oriented for organization-wide training & development; all low on measuring employee satisfaction

Interview Questions:

- *Regarding employee training & development:*
 - *How do you identify training needs?*
 - *How are new employees trained?*
- *How do you assess employee satisfaction?*
 - *Describe the process (e.g., questionnaires, focus groups, interviews, etc.)*
 - *How often do you assess it?*
 - *How do you use the information obtained?*

Results

- Interviews help validate questionnaire responses and categorization:
 - All 4 case firms emphasize quality
 - “if anybody was eyeing quality and not just low-bid, I think we were by far the best value”; “do it right the first time”
 - **Balanced:** “the core of our business is our technology”
 - **Quality-oriented:** “technology is wonderful when it’s proven”; **not interested in innovation**

Results - Propositions

■ Tools - hard vs. soft

- Inconclusive – balanced firms slightly higher on soft tools, but only one firm talked about hard tools

■ Scope – companywide vs. narrow

- Some support – quality-oriented firms moderate on process management; balanced firms more emphasis on customer focus

■ Focus - internal vs. external

- Some support – balanced firms more proactive with customer focus; but all firms see firm context broadly
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Strategic Planning

- Balanced

- “we focus on facility development, what services and products to provide, market development, developing strategic partnerships with clients,... financial planning, business control procedures.”

- Quality-oriented

- “Well, to try and survive we just cut costs everywhere we can.”

Information & Analysis

Benchmarking

- **Balanced**

- “We try and benchmark our uptime for a... complex industrial process. We compare very well. We’re running around 98.5% of total available time in a day... So we’ve got a really really good technology and we find ways to keep it running continually.”

- **Quality-oriented**

- “I don’t care what my competitors do. I don’t look at them. I don’t think about them. Fifteen years ago I did. And that was a mistake. I think that you do what you do and you run hard”

Customer Focus

■ Balanced

- “if we saw sticks in the air... we could stop by, measure it up... and as long as we’d get their contact information then we could do the bid. And we’d do a set of drawings.”
- “our main customers, we try to get them out here once a year and let them tour the facility.”

■ Quality-oriented

- “Word gets back quickly.”
- “It’s real simple – if they keep buying from you, they’re satisfied.”

Results

- Some key differences between firms:
 - **Balanced:** Proactive, forward-thinking, risk-takers
 - Innovation – a means to achieve quality, cut costs, grow business
 - **Quality-oriented:** Reactive, meet present needs, risk-averse
 - Innovation – ‘technology is wonderful when it’s proven’; focus on people over technology

Best Practices

- Assuming a firm wants to pursue innovation:
 - ❑ Change perceptions of innovation – from ‘technology’ to one path to quality & profitability
 - ❑ Develop culture that is amenable to risk (managers lead by example)
 - ❑ Engage in strategic planning (beyond cost-cutting)
 - ❑ Benchmark the competition
 - ❑ Focus on customers - *proactively*
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Limitations

- Low response rate & number of cases
 - Bad timing for such research
 - Limited sample frame (forest industry, west coast U.S.)
 - Did not consider financial performance of case firms
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Questions?
