Going Green: Sustainability and the Future of Operations Management

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Your Thoughts?

• What does the term “green” mean to you?
• What do you think of when you hear the word “green”?

New term: Sustainability
Goals of Talk

• What is “sustainability”?

• Why is it important to OM and SCM?

• What can I do about it?

Old Paradigm

• Economic prosperity vs. environmental protection

• Jobs vs. conservation

• Growth-at-any-cost vs. All-growth-is-bad
Sustainability Framework

- Responsibility
- Ecology
- Futurity

Sustainable Development

Meeting the needs of the present without compromising the ability of future generations to meet their own needs.
Why Do Firms “Go Green”?  
- Regulation/Legislation
  - EPA
  - ISO14000
  - WEEE/RoHS
- Image/Perception
  - Public relations
  - Customer preferences
- Economic
  - Waste reduction
  - Value recovery

WEEE/RoHS Directives
- WEEE
  - Purpose: collection, recycling, and recovery
  - Covers: electrical and electronic devices
  - Timing: August 2005
- RoHS
  - Purpose: hazardous material reduction
  - Covers: electrical and electronic devices
  - Timing: July 2006
Example: Logitech

- $1.5 billion in revenues
  - Keyboards, mice, etc.
  - Speakers, sound equipment, video

- WEEE/RoHS impact
  - 98% of products
  - Processes:
    - equipment
    - materials
    - vendors
    - inventory management, etc., etc.

WEEE/RoHS: Big Picture

- Operations
  - Product design
  - Process design
  - Supply Chain (forward and reverse!)

- Marketing
- Finance/Accounting
- Information Systems

This Trend Will Continue!
Example: Recycline

• Toothbrush facts
  – Brush replacement: 1.5 times/yr.
  – Impact: 50 million pounds!

• Preserve toothbrush
  – Made from recycled yogurt cups
  – Used brushes turned into plastic “lumber”

Recycline: Lessons

• Build it, and they will come
  – 25% of consumers seek eco-friendly products
  – 63 million Americans!

• To build it, you need help
  – Reliable supplier of materials
  – Partnership with Stonyfield Farms (yogurt)
Economic Incentives

• DuPont
  – Reduced greenhouse emissions by 65%
  – Cost savings: $2 billion

• BP
  – Reduced greenhouse emissions by 16%
  – Cost savings: $650 million

Economic Incentives (cont’d)

• STMicroelectronics
  – Cut energy use by 5% per year
  – Cost savings: $173 million

• Smith & Nephew
  – Scrap metal
  – Cost and liability → revenue
Where’s the Beef?

• Which of the three reasons is the most important?
• How do OM and SCM play a role?
• What lessons can we learn from these examples?

OM and Sustainability

• Product design
• Process design
• Supply chain management
  – Purchasing
  – Vendor selection
  – Location
• Quality management
• Etc.
Remember the Quality “Revolution”? 

• Try to ignore it 
  – “We don’t have any problems.”
• Try to avoid it 
  – “It’s a cultural thing.”
• Try to contain it 
  – “That’s a QC problem.”
• Actually do it 
  – “Quality has always been our #1 priority.”

Lessons from the Quality Revolution 

• Important to understand customer expectations 
• Poor quality = high cost 
• Improving quality can have unexpected benefits
SCM Evolution

Stage 1 Stage 2 Stage 3

Supply chain coordination
Internal coordination

Recycled components
Materials and energy

Capture and collection
Disposal: wastes and pollutants


2006 Northeast Supply Chain Conference & Educational Exhibition

Sustainability Revolution: Expectations

- Side benefits – perhaps from unexpected areas
- Cross-functional cooperation required
- Transition from sole-manager to organizational responsibility

2006 Northeast Supply Chain Conference & Educational Exhibition
Outlook for the Northeast

• Many industries affected
• Many types of jobs affected
  – Engineering
  – Operations
  – Marketing
• Out-sourcing and off-shoring
• New England uniquely positioned
  – Brainpower
  – Environmental concern

UMass Lowell Initiatives

• Academic programs
  – Green chemistry
  – Green design/building
• Collaboration with industry
  – Toxic Use Reduction Institute
  – Environmental Management Systems
  – Perc alternatives
UMass Lowell Initiatives (cont’d)

• New Venture Incubator
  – Alternative energy sources
  – Plastics

• Green campus
  – Green buildings
  – Energy usage
  – Materials management

Sustainability…

• Is revolutionary
• Will affect many industries, many jobs
• Makes sense
• Is happening!
Sustainability Framework

- Responsibility
- Ecology
- Futurity

Some Final Thoughts

- Think global
- Think big
- Think small
- Think GREEN …with grit.
The End

Any Questions