Achieving Success on the Triple Bottom Line through Sustainable Purchasing

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My Interest in Sustainability

- **Conference**: “Strategy and Supply Chain Sustainability: A Stakeholder Perspective,” 32nd Annual Strategic Management Society International Conference (SMS 2012), Prague, Czech Republic, with Patrice Luoma


- **Coursework**: Integrated sustainability into operations, supply chain, logistics, purchasing management and engineering courses

- **Next steps**: further explore the role of stakeholders in sustainability decision making
Agenda

- Sustainability
- Triple Bottom Line
- Best Practices in the supply chain
  - Product design
  - Production
  - Transportation & Logistics
  - Purchasing & Supply Management
  - Metrics
Take Aways for Tonight

- Sustainability is best viewed as a broadly defined set of environmental and socially responsible practices.
- Collaboration in the supply chain enhances opportunities for sustainability in business organizations.
- Some sustainable business practices have become commonplace in industry, but the opportunity is enormous for expanding sustainability beyond current practice.
Definition: Sustainability

- Using resources to meet the needs of the present ...

- ... without compromising the ability of future generations to meet their own needs

- Three dimensions: people, environment, and performance

* Source: Linton 2007
Triple Bottom Line

- Originated in the 1990s
  - Elkington: *Cannibals with Forks*
- A firm’s ultimate success should not be measured by the traditional financial bottom line only
  - Broaden scope from creation of value on behalf of shareholders to the creation of value for all stakeholders
    - Communities, employees, customers, and suppliers
- Expands to social and environmental performance
  - All three “bottom lines” to be measured, calculated, audited and reported just as with financial performance
- Many major companies use TBL terminology in annual reports (e.g. AT&T, British Telecom, Shell, Dow Chemicals)
Sustainable Supply Chain Management

- The management of material, information, and capital flows, as well as cooperation among companies along the supply chain, including goals from all three dimensions of sustainability.

- Advances a wider set of performance objectives from the triple bottom line approach - economic, environmental, and social.

- Often associated with corporate social responsibility (CSR), green supply chain management (GSCM), environmental supply chain management (ESCM).

- Includes topics such as the environment, human rights, diversity, philanthropy, and safety.

- Typically operationalized using three R’s: reduce, recycle, reuse.
Supply Chain Management

Source: Lambert (2008a) adapted from Lambert et al. (1998)
Figure 10
Implementation of Supply Chain Management

Typical Functional Silos

Business Processes

<table>
<thead>
<tr>
<th>SUPPLIERS</th>
<th>CUSTOMERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Relationship Management</td>
<td>Marketing</td>
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<tr>
<td>Customer Service Management</td>
<td>Research &amp; Development</td>
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<tr>
<td>Demand Management</td>
<td>Logistics</td>
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<td>Order Fulfillment</td>
<td>Production</td>
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<td>Manufacturing Flow Management</td>
<td>Purchasing</td>
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<tr>
<td>Supplier Relationship Management</td>
<td>Finance</td>
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<tr>
<td>Product Development and Commercialization</td>
<td>Information Architecture, Data Base Strategy, Information Visibility</td>
</tr>
</tbody>
</table>

Note: Process sponsorship and ownership must be established to drive the attainment of the supply chain vision and eliminate the functional barriers that artificially separate the process flows.

Sustainability in Product Development/Design

- Decisions made in product design affect materials, quality, cost, processes, packaging, logistics
- Enhancing productivity in an environmentally and ethically responsible manner
- Conservation and renewal of resources through the entire product life cycle
- System view considers both production and end users - Life cycle assessment
Sustainability in Operations: A Systems View

Minimize

Raw material → Energy → Water → Waste

Concept → Design → Raw material → Transport → Manufacture → Transport → Consume → Transport → Disposal

Planet → People → Profit

Maximize the triple bottom line

Source: Heizer and Render, Operations Management, 2013, p 190
Sustainability in Product Development/Design

- Make products recyclable
- Use recycled materials
- Use less harmful ingredients
- Use lighter components
- Use less energy
- Use less material

Examples
- P&G’s Tide Coldwater
- Ford’s F150 redesigned with aluminum as an alternative material to reduce weight and improve fuel economy
Environmentally Friendly Designs and Sustainability

Source: Heizer and Render, Operations Management, 2013
Sustainability in Order Fulfillment/Production

- Reducing resources is a key focus
- Energy, water, and environmental contamination
  - Alternative energy
  - Energy-efficient machinery
- Examples
  - SC Johnson’s power plant runs on natural gas and methane from nearby landfill
  - PepsiCo ReCon tool helps managers understand and reduce in-plant water and energy usage
  - Frito-Lap extracts water from potatoes and reuses it in factory production
Environmental Initiatives at Staples

- Reducing energy use in operation
- Use of third party expertise
- Eco-efficient
  - Goal of US carbon footprint 7% below 2001 level also reduces energy cost
- Conservation initiatives at
  - DCs: skylights, motion sensors, variable-speed motors, intelligent control systems, reflective roofing material, solar power
  - Stores: adjusted lighting levels and HVAC loads
  - Transportation: speed regulators on fleet, electric trucks
Sustainability in Transportation

- Mode selection
- Fuel sources
- Vehicle aerodynamics
- Fuel economy improvements
- Routing
- Reduced vehicle idling
- Scheduling to reduce partial loads and empty backhauls
- Some traffic manager, some transportation carrier, some collaborative
Sustainability in Logistics

- **Traditional Supply Chain**: materials and finished goods typically move “down-stream” in a supply chain
  - Increasing occurrence of goods flowing “up-stream”: returns, damaged goods, empty containers, etc
  - Stakeholders interests, including green laws in the EU, increasingly require reverse flows of packaging and end-of-life goods

- **Reverse logistics**: from final forward destination to capture remaining value or for proper disposal

- **Closed loops supply chains** - designed and managed to explicitly consider both forward and reverse flows
Product Categories of Reverse Flows

- **Failed**: are unwanted, damaged, or defective; but can be repaired or remanufactured and resold
- **Old**: obsolete, or near the end of their shelf life but still have some value for salvage or resale
- **Unsold**: from retailers, usually referred to as overstocks that have resale value
- **Recalled**: due to a safety or quality defect that may be repaired or salvaged
- “Pull and replace” repair before being put back in service
- **Recycled**: such as pallets, containers, computer inkjet cartridges, etc.
- **Remanufactured** and resold
- **Scrap**: metal that can be recovered and used as a raw material for further manufacturing
Reverse Logistics: Principles & Practices

- **Avoidance**—Producing high-quality products and developing processes to minimize or eliminate returns
- **Gatekeeping**—Checking and screening merchandise at the entry point into the reverse flows process to eliminate unnecessary returns or minimize handling
- **Reducing reverse cycle times**—Analyzing processes to enable and facilitate compression of time for returns to enhance value recapture
- **Information systems**—Developing effective information systems to improve product visibility, reduce uncertainty, and maximize economies of scale
- **Returns centers**—Developing optimum locations and facility layouts for returns centers to facilitate network flow
Reverse Logistics: Principles & Practices

- **Asset recovery**—Classifying and disposing of returned items, surplus, scrap, and obsolete items to maximize returns and minimize cost
- **Pricing**—Negotiating the best price for products being returned and resold
- **Outsourcing**—Considering a relationship with a third-party organization to handle and manage reverse flows in cases where existing personnel, infrastructure, experience, and/or capital may not be adequate to implement a successful program
- **Zero returns**—Developing a policy to exclude returns by giving a returns allowance and/or “destroying” the product in the field
- **Financial management**—Developing guidelines and financial procedures to properly account for charges against sales and related financial issues when items are returned by customers
Closed Loop Supply Chain for Cartridges

Source: Center for Supply Chain Research, Penn State University.
Closed Loop Supply Chain for Tire Retreading

Source: Center for Supply Chain Research, Penn State University.
Sustainability in Purchasing & Supply Management

ISM Principles of Sustainability and Social Responsibility

- **Sustainability**: the ability to meet current needs without hindering the ability to meet the needs of future generations in terms of economic, environmental and social challenges

- **Social Responsibility**: A framework of measurable corporate policies and procedures and resulting behavior designed to benefit the workplace and, by extension, the individual and the organization in: Community, Diversity, Environment, Ethics, Financial responsibility, Human rights, and Safety

- **Practices**
  - Integrating environmental and social considerations into purchasing policies, programs, and actions
  - to facilitate recycling, reuse, and resource reduction for both supplier and focal organization

- **Metrics**: both internal and supplier performance
Procure to Pay Process Map

Start

Forecast and Plan Requirement

Need Clarification/ Requisition

Supplier Identification / Selection

Approval/ Contract/ P.O. Generation

Receive Material & Documents

Settle, Pay, and Measure Performance

End

Projects

Internal Customers

Operations

Supplier Need Fulfillment

Enablers: Finance, Legal, Human Resources, Information Technology

Source: Monczka et al., 2011, Purchasing & Supply Chain Management
The Strategic Sourcing Process

**GOAL:**
- Develop a statement of work and plan
- Understand the supply market
- Classify suppliers and define sourcing approach
- Negotiate a win-win contract
- Continuously improve performance

**INPUTS & TOOLS:**
- Project leader; Other team members
- Interviews; Online research; Conferences
- Market research; Portfolio matrix; Forecasted spend
- Negotiation plan; Supplier evaluation tool
- Contract; Supplier scorecard

**OUTPUTS:**
- Baseline data; Project charter; Work plan
- Report on supply trends, changes, pricing, capacity, etc.
- Supplier evaluation tool
- Signed contract
- Supplier development plan; Communication

Source: Monczka et al., 2011, Purchasing & Supply Chain Management
Sustainability in Purchasing & Supply Management

- **Material Procurement**
  - buying environmentally friendly materials and components
  - buying recycled materials
  - buying packaging materials that can be more easily recycled or reused
  - using early supplier design involvement
  - participating in the design stage and suggesting alternative sources of supply

- **Supplier selection** (ethical sourcing, socially responsible buying, purchasing social responsibility)
  - choosing suppliers based on sustainability criteria
  - integrating sustainability language into contracts
  - requiring suppliers commit to sustainability goals, e.g. waste reduction
Sustainability in Purchasing & Supply Management

- Supplier evaluation
  - Environmental: green competence, environmental efficiency, green image, life cycle cost
  - Socially Responsible Buying (SRB): labor equity, healthcare, safety and philanthropy at supplier plants, ethical behavior of top managers, incentives, code of conduct
  - ISO 14000: UN Global Compact for human rights, labor, environmental and anti-corruption

- Supplier measurement process
  - Assessment oriented, via questionnaires and site visits
  - Collaborative, via partnering and mentoring, with exchange of personnel and technical assistance
Sustainability in Supply Management at Gap Inc.

- Apparel industry
  - Comprises numerous governments, cultures, firms, decision makers
  - Highly competitive and fragmented ownership of factories, mills, ginners and farmers
  - Lack of effective government regulation, poor management practices, unethical owners
  - Violations in safety, nonpayment of wages, child labor, pollution
- Initial compliance approach failed: labor standards and code of conduct for vendors
- Collaborating with stakeholders successful
  - NGOs to gain expertise and knowledge in global standards SA8000
  - Coalition of organizations to address non-compliance of hidden suppliers’ using tracking and visibility tools in the SC
Ford’s Blueprint for Sustainability

- To promote and maintain sustainability related programs over the near-, mid-, and long-term
  - Reduce CO$_2$ emissions by 30% by 2020 (2006 baseline) from new vehicle fleet
  - Develop new engine technologies
  - Accelerate development of battery powered electric vehicles

- Social
  - Mobility
  - Human rights - Aligned Business Framework
  - Vehicle safety
Emerging Best Practices in Sustainability

- Sustainability is made a part of the daily conversation
- Sustainability integrated and fits well with business model
- Materials traceability in the supply chain
- Certification process developed in-house
- Supplier-to-supplier interaction is the status quo
- Ensure supplier continuity - sustainable from economic standpoint
- Supplier development stresses sustainability goals

Source: Pagell & Wu, 2009
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