

The Sustainable Supply Chain



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Introduction

- Sustainability is the ability to preserve present resources for future generations to equally enjoy. (Sustainable means “to endure”).
- While sustainability might sound like a noble cause better left to non-profits, it has emerged as business process beneficial to all stakeholders.
- Through life cycle analysis, enterprise thinking, and a focus on the three P’s (people, planet & profits), corporations large and small have profited from a focus on sustainability.

Dimensions of Sustainable Business

- Sustainable in terms of long term environmental and social impact of business (i.e. resource and waste reduction).
- Sustainable in terms of long term sustainability of business model (i.e. survivability of the business).
- Sustainability should be viewed as two shades of green: ecologically beneficial, and financially profitable.



Sustainability Myths

- Nobody knows what sustainability really means.
- Sustainability is all about the environment.
- Sustainable is a synonym for green.
- It's all about recycling.
- Sustainability is too expensive.
- Sustainability means lowering our standard of living.
- Consumer choices and grassroots activism, not government intervention, offer the fastest, most efficient routes to sustainability.
- New technology is always the answer.
- Sustainability is ultimately a population problem.
- Once you understand the concept, sustainability is a breeze to figure out.

Obstacles to Sustainability

- Past technologies
- Past products
- Past production systems
- Past processes
- Waste streams
- Impacts



The Triple Bottom Line

- Phrase coined by John Elkington in 1989 stating that companies need to measure their impacts on society and the environment, in addition to economic profit.
- **People** – human capital
- **Planet** – natural capital
- **Profit** – economic value created



Life cycle thinking (LCT) and framework

- Life cycle thinking (LCT) is an intellectual methodology for examining, assessing, and improving technologies, products, and processes.
- LCT focuses on operational considerations while enterprise thinking focuses on strategic management considerations.
- LCT explores what the situation “will be”, “has to be”, or “could be”, instead of “what it is”.

Life Cycle Thinking (LCT) & Life Cycle Analysis (LCA)

Cradle to grave analysis of:

- Raw material acquisition and distribution through the supply networks.
- Materials handling, processing, fabrication and assembly.
- Distribution.
- Sale, use and service of the product, including secondary and tertiary applications.
- Recycling, retirement, and disposal.

(Raw materials >>> Retirement)

LCT in the Supply Chain

- Traditional life-cycle model focuses on inputs/outputs including the flow of materials, information, energy, and water across the supply chain (beginning to end).
- Most business systems were designed to maximize benefits by focusing on outputs, not defects and burdens created by system.
- Focus is with the minimization of defects and burdens generated by system by taking a holistic view of formal and informal relationships within entire production process/supply chain.

Improving SCM performance through LCT

A holistic view of the implications of a process, product, technology, or system that provides the best understanding of:

- Opportunities – using capabilities, resources, and intellectual capital.
- Challenges – demands and indirect needs of business environment.
- Constraints (limitations) – environmental regulation, inadequate technologies, poor designs, process inefficiencies.
- Concerns – perceptions that may/may not be valid.

Eco-efficiency in the Supply Chain

- **Eco-efficiency** (maximizing outputs and minimizing inputs and wastes) guidelines:
 - Reduce material intensity
 - Minimize energy intensity
 - Reduce dispersion of toxic substances
 - Undertake recycling
 - Capitalize on use of “renewables”
 - Increase service intensity



Fundamental principles of life cycle considerations

- Resources should be deployed in the most effective and efficient means possible, given availability, processes, and best practices.
- Resources should be used in a manner that minimizes the potential for environmental degradation, depletion, disruption, and destruction.
- The materials used in products and processes should be nontoxic and safe to use during extraction, processing, manufacturing, transportation, application, and disposal.
- The quantity of waste generated in processes should be close to the theoretical minimum, and plans to further reduce the amount of waste produced should be made.

Fundamental principles of life cycle considerations (continued)

- Products should be designed and produced in ways that provide the highest level of quality, reliability, safety, longevity, durability, maintainability, serviceability, and disposability.
- Communications with customers and stakeholders should provide the full factual information needed for safe and effective use, reuse, recycling, retirement and disposal of the products.
- The impacts of the technologies, products, processes, and operations should not adversely affect the quality of life of the local, regional and global communities, or the natural environment, in a significant manner.

Fundamental principles of life cycle considerations (continued)

- Products should be designed and produced to maximize the ability to reuse, recycle, remanufacture, and refurbish the products, components, parts, and materials.
- Safety and human health should be primary considerations when designing and operating facilities, plants, and processes and when designing and producing products.
- Increasing performance and benefits and decreasing defects and burdens are the critical factors in improving outcomes.

Creating an SCM life cycle framework

Critical elements of LCT framework that exceed conventional supply network view:

- Entities involved are responsible for their inputs and outputs beyond simple contractual responsibilities defined in accordance with the prevailing commercial codes.
- Producers have the duty to provide full disclosure of information to ensure the best use of the products and processes.
- The process is dynamic, with the participants proactively discovering and curing the negative aspects and mitigating any implications and impacts.

Creating an SCM life cycle framework

Factors influencing continued improvement of supply chain:

- An articulated framework for integrating all of the tiers in the supply chain.
- Well-defined processes with well-defined principles and decision-making guidelines for all participants.
- Action plans that drive supply chain improvements.
- Early visibility of the impacts and consequences of processes and products along the supply chain to allow an integrated and effective understanding of causality.

Guidelines for establishing LCT criteria for supply networks

- Benchmark suppliers
- Determine evaluation criteria
- Link criteria with product design, production, marketing, and finance
- Prioritize criteria in terms of needs and effectiveness
- Develop action plans for implementation
- Communicate the action plans

LCA implications for Sustainable Supply Chain

- Value creation across time.
- Eco-efficiency across the supply network.
- Eco-efficiency during applications.
- Eco-efficiency at end of life.
- Equity from customer's perspective.
- Equity from stakeholder's perspective.
- Equity from society's perspective.

Four elements of Sustainable Business Development

- **Enterprise thinking:** Examine the whole business and its context.
- **Strategic thinking and business integration:** Crafting strategies and linking all of the essential elements into a comprehensive system.
- **Visionary, exceptional leadership:** Having the knowledge, analytical skills, creativity, and learning to think strategically and lead change that exceeds present requirements, and achieves sustainable competitive advantages and success in the future.
- **Leading change through innovation:** Creating new solutions that create extraordinary value and are sustainable from social, economic, and environmental perspectives.

When combined, the four elements provide a sophisticated management model for long term success.

Enterprise Thinking

- Define, assess, and improve the whole business enterprise to achieve superior sustainable performance that:
 - Exceeds present challenges.
 - Exceeds future expectations.

(This does not mean that you put one person in charge of sustainability. It involves the entire enterprise).

Objective: To create value and sustain the benefits of investments, contributions, and achievements over the long term for customers, stakeholders, value networks, employees, and shareholders.

The implications of enterprise thinking and SBD

Near-term actions being developed and implemented:

- Expanding the reach of the corporation to include suppliers and the suppliers of suppliers.
- Creating a product retirement system that provides effective solutions for post-customer handling, recycling, and disposal of residuals.
- Linking stakeholders and other constituencies with information flow and an awareness of impacts and consequences.
- Expanding network concepts to include all of the value-creating relationships from the beginning of the supply networks to the end of the product life cycle.
- Partnering with related industries to provide a complete solution when products combine two or more technologies and/or products.
- Building or renewing infrastructure assets to ensure that products and processes can be used in the most effective manner and to mitigate negative impacts to the greatest extent possible.
- Deploying LCT and accepting cradle-to-grave responsibilities to improve design considerations and decisions.

Benefits of a Sustainable Business Strategy

- Gaining competitive advantage from goodwill
- Preference of green brands by consumers
- Recruiting and retaining good employees
- Saving money from efficiency and waste reduction
- Making money from creative forms of waste re-generation
- Sustainability as a point of differentiation
- Shaping future of industry
- Becoming preferred supplier
- Providing competitive edge to customers
- Changing image and brand (Senge, 2008).

Success Stories

- The ecomagination initiative at global giant General Electric produced savings of \$350 million, and sustainability-related revenue of \$200 billion over a ten year period.
- BMW – almost 90% of the car is recycled and reused when its lifecycle ends.
- Gexpro (Rexel Holdings) branch in Orlando – supplemented traditional electrical construction sales with solar panels during great recession. Sales of solar panels nearly offset loss in construction – related sales (\$400K to \$14M in three years).

Conclusion

- Sustainability make sense from a social and environmental perspective.
- Sustainability makes “cents” from a business perspective.
- More and more of your customers and suppliers are talking about sustainability, SO...

Market your sustainability: After you have done it – talk about it and use it as a money-making marketing tool!