

CHAPTER 2

Sustainability—Reducing Waste, Enhancing Value, and Generating a Strategic Competitive Advantage

Is There Demand for Sustainability?

Underlying the information within this chapter is a critical assumption—there is a demand for products and services that are sustainable. Yet, this assumption begs the question of whether it is appropriate. There is strong evidence indicating that customers (especially in economically developed markets and emerging markets) are now demanding products that are more sustainable. Consider the following statistics:

- 54% of shoppers indicate that they consider elements of sustainability (sourcing, manufacturing, packaging, product use, and disposal) when they select products and stores.¹
- 80% of consumers are likely to switch brands, given that they are equal in quality and price, to ones that support a social or environmental cause.²
- In 2009, 47% of consumers said that they bought products from a socially or environmentally responsible company, with this percentage expected to go up to 76% in within one year.³

Ask yourself a question—do you want to source materials or products from poorly performing companies? If the answer is yes, then go ahead and continue paying for excessive waste that is now measured in GHG emissions or poor social impacts in the form of labor practices. If the answer is no, then look for companies in your supply chain that

are leveraging sustainability to enhance existing business models, differentiate products and services, and reduce or eliminate waste from processes.

In other words, consumers and business-to-business customers are interested in sustainable products and services, and in the companies that produce them. We should not willingly reward wasteful companies. Sustainability and sustainable supply chain management are about realizing the full value from supply chains and operations.

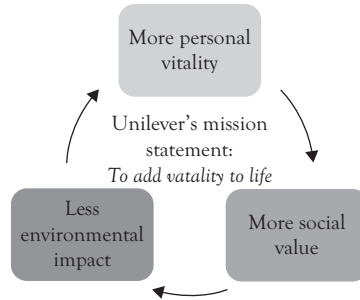
Objectives

1. Understand the notion of waste, as it provides new insight to sustainability.
2. Recognize the role of business models in making sustainability a strategic imperative.
3. Appreciate the importance of “Sustainable Value Added” for assessing sustainability.

Paul Polman Transforms Unilever

Most people know Unilever, an Anglo-Dutch multinational consumer goods company. Its products include foods, beverages, cleaning agents, and personal care products. It is the world’s third-largest consumer goods company as measured in terms of sales revenue (just after Procter & Gamble and Nestlé). One indication of the spread and success of Unilever is that over 200 million times a day someone in the world is using a Unilever product. Most CEOs would be happy to live with this status quo. Not Paul Polman.

His view is to transform Unilever from a company that does well financially to a company that positively contributes to society and the environment. To undertake this transformation, Polman is shifting the focus of Unilever. At the heart of this new focus is the Unilever Sustainable Living Plan.⁴ The Living Plan identifies seven new key strategic supply chain imperatives, with the goal to meet them by 2020.⁵



Unilever's approach to sustainability.

The key strategic supply chain imperatives

- *Health and Hygiene:* Unilever will help more than a billion people to improve their hygiene habits and bring safe drinking water to over half a billion people.
- *Nutrition:* Unilever will double the proportion of the product portfolio that meets the highest nutritional standards, thus helping people achieve a healthier diet.
- *Greenhouse Gases:* It is Unilever's goal to halve the GHG impact of products across their lifecycle (from sourcing to product use and disposal).
- *Water:* Unilever aims to halve the water usage associated with the consumer use of its products by 2020. The emphasis on this objective will be greatest in those countries that are populous and water-scarce, countries where Unilever expects much of its future sales growth to take place.
- *Waste:* Unilever's goal is also to halve the waste associated with the disposal of its products by 2020.
- *Sustainable Sourcing:* Unilever's goal is to increase the amount of agricultural raw materials sourced sustainably from 10% to 30% by 2012 to 50% by 2015 and ultimately to 100% by 2020.
- *Better Livelihoods:* Unilever's goal is to link into the supply chain more than 500,000 smallholder farmers and small-scale distributors so that they can benefit by working with Unilever.

When we look at Paul Polman's vision of Unilever's future, we see a vision that is potentially risky—one that raises the question of whether a

vision that so closely embraces sustainability (from an environmental and social perspective) can really be sustainable (as measured from a business perspective). Yet, it is a vision that Polman is now projecting onto Unilever as he looks to the developing countries to not only be the source of future demand and population growth, but also of future supply. This new vision is necessary to achieve this shift in strategic focus from the developed to developing countries.

That issue will be explored in this chapter, as we develop a deeper level of what sustainability is and is not and how sustainability can be a strategic weapon, rather than a legal constraint. This chapter is important because it is here that we establish many of the critical concepts on which the effective and efficient sustainable supply chain is built.

Understanding Sustainability

The **Triple Bottom Line** (TBL) tries to address the sustainability opportunity by measuring it in accounting terms (i.e., dollars) so that management can identify those areas where it is doing a good job and areas where more work is required. First coined by Elkington (1994), this concept demands that the company be responsible not simply to stockholders, but rather to the stakeholders. Stakeholders, in this case, refer to anyone who is affected either directly or indirectly by the actions of the firm, including customers, workers, suppliers, investors, and even the environment. The goal of the TBL is to report and influence the activities of the firm as it affects financial, environmental, and social performance.

The TBL and the approach introduced in this chapter are not substitutes; rather, they are complements. The TBL identifies the goals to be achieved (the measurement of the financial, environmental, and social performance) but not how to achieve the balance or the best level of performance. The approach laid out in this chapter helps you better understand the options available to you. It provides this with the foundations on which the TBL can be successfully implemented and maintained over time.

In some ways, the TBL may understate the focus of sustainability. The TBL views the three dimensions as areas to be measured. While important, this view may not focus attention on what these three areas truly are—investments into three forms of capital—economic, natural, and

social. As assets, these areas should generate returns that can be measured and managed appropriately to ensure positive rates of return and an integrated bottom line.

Sustainability is, in general, a poorly understood concept because it has been interpreted in many different ways. According to dictionary.com,⁶ sustainability has two definitions:

1. The ability to be sustained, supported, upheld, or confirmed.
2. The quality of not being harmful to the environment or depleting natural resources, and thereby supporting long-term ecological balance.

These two definitions highlight some of the reasons for the confusion that surrounds this concept. In the first definition, we can see the notion of *business sustainability*—developing an approach built around the business model that ensures that the value proposition (and the underlying business model) offered by the firm continues to be attractive to the key customers targeted by the firm and that this value proposition is supported by the appropriate set of capabilities. The second definition focuses on *environmental sustainability*. This is sustainability that deals with our ability to reduce the harm to the environment and to reduce the demands on natural resources (thus preserving them for tomorrow's generations). These definitions interestingly overlook the growing importance of *social sustainability*. This is sustainability that deals with an enterprise's ability to compete in the marketplace while also reducing harm to employees and communities in which the enterprise operates and engages in economic systems. While each are different, the reality is that all types of sustainability are necessary if there is to be true business sustainability—long-term viability of both the business models as well as the resources and stakeholders needed to implement such business models. This realization offers a marked contrast to what we have seen in the past and what Freedman (1970) claims “the social responsibility of business is to increase profits.”

In the past, economic, environmental, and social sustainabilities were seen as presenting managers with a critical trade-off. That is, if you wanted to do well from a business perspective, you had to be willing to sacrifice environmental or social performance. Conversely, if you focused on improving

environmental or social sustainability, you did so at the expense of profit. This perspective can be regarded as the “OR” approach—what do you want?—better profits or less pollution? We now know this is often a misleading trade-off.

Increasingly we are seeing business, environmental, and social sustainability as tightly interlinked. That is, by focusing on environmental sustainability, we preserve resources, minimize negative impacts on people, and ensure our continued ability to satisfy customer demands—both today and into the future. These actions are not only conducive to business sustainability, but they help improve both top-line and bottom-line performance. Consequently, we can see the emergence of the “and” approach—an approach where all forms of sustainability are simultaneously attainable. Yet, it is important to note that the presence of environmental or social sustainability by itself is not enough to ensure business sustainability. The authors of this book take the view that environmental and social sustainabilities facilitate business sustainability. It is also this view that drives a vision of sustainability portrayed in Figure 2.1.

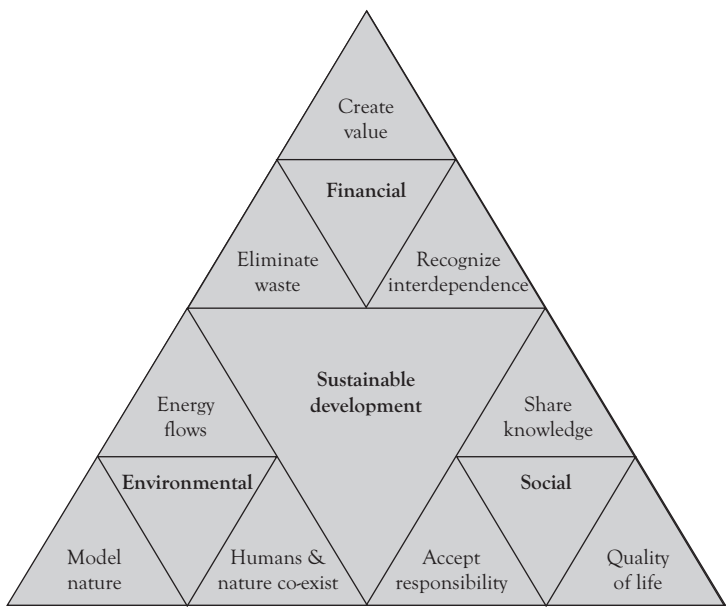


Figure 2.1. Sustainability and its business implications.⁷

Source: Sustainable Land Development Initiative (SLDI) Code™

Sustainability and Its Implications for the Firm

Sustainability is attractive because it can and does affect various aspects of corporate performance:

- **Natural resource, energy, and operational efficiency** resulting in reduced input and overhead costs, fewer regulatory sanctions, reduced waste expenses, and enhancing the ability of the firm to conserve capital for implementing long-term growth strategies.
- **Enhanced ability to attract and keep better quality employees** resulting in a better ability to retain experienced workers, preventing the loss of corporate knowledge and expertise, reduced training costs, lower employee absenteeism, higher worker productivity, and ultimately a better ability to attract and keep the best talent.
- **Reduced risks** from mitigating higher costs of energy, water, and waste, fewer exposures to supply chain disruptions, and reduced exposure to the risk of a price on carbon.
- **Better financial operations** can help improve relationships with investors and also make the stock more attractive to potential investors. Other benefits include lower insurance premiums, decreased borrowing costs, and enhanced access to financial capital.
- **Improved Revenue Streams, Better Marketing, and Communication** as sustainability offers the firm a way of expanding its customer base by attracting those customers for whom sustainability is important. Such customers are often less price sensitive. Furthermore, because these customers are often better educated and earning more, they tend to buy more and to buy more frequently. Focusing on sustainability enables the firm to differentiate its products, and to improve brand image and brand equity (important corporate assets). For a growing number of firms, the communication of results is now in the form of integration of financial and nonfinancial (sustainability) information into one report.⁸

In other words, sustainability, if implemented properly, affects both the top line (increased sales) and the bottom line (increased profit)

through the one-two punch of increased revenue and decreased costs. However, for us to develop a better understanding of how these concepts interact, we must first understand each concept in isolation—beginning with environmental sustainability.

Environmental Sustainability

Environmental sustainability involves more than simply reducing pollution; it is a broad-based approach that focuses on reducing waste while improving performance across a TBL. The concern over sustainability has influenced buying policies and sourcing requirements found in Canada, the United States, the European Union, China, and Australia. Companies such as Best Buy, Dell, Steelcase, Phillips, Wal-Mart, Coca-Cola, Ford, Toyota, Unilever, Disney Entertainment, and the Inter-Continental Hotels are now explicitly considering sustainability in their planning at both the strategic and operational levels. To appreciate the commitment that some companies have made to environmental sustainability, consider the approach taken by Walt Disney Resorts.

Walt Disney is the world's largest media and entertainment company, and increasingly a leader in environmental sustainability. To achieve this status, Disney has taken the following steps:

1. ***Cutting Emissions:*** Walt Disney plans to cut carbon emissions by half, reduce electronic consumption by 10%, reduce fuel use, halve the garbage at its parks and resorts by 2013, and ultimately achieve net zero direct GHG emissions and landfill waste. Consequently, Walt Disney World has been designated as Florida Green Lodging Certified.
2. ***Recycling and more:*** The Disney Harvest Program, founded in 1998, distributes nearly 50,000 pounds of food to the Second Harvest Food Bank every month (taken from food that has been prepared but not served at Disney's various restaurants and convention centers). All used cooking oil at Walt Disney Resort is collected and recycled into bio fuel and other products that are used by local companies. Food scraps are recycled into compost that is used locally as fertilizer. The Walt Disney Healthy Cleaning Policy has the goal of minimizing the

environmental impact of its cleaning products. The majority of props, vases, and containers used by the Disney floral team for events are made from reusable glass and plastics. Finally, every day, 10 million gallons of wastewater is reclaimed and used in irrigation systems and other similar applications.

3. ***Preserving the Wildlife:*** When building Walt Disney World Resort in Orlando, the company set aside more than one-third of the land for a wildlife conservation habitat. This habitat forms the basis for Disney's Animal Kingdom Theme Park, which is used to educate guests on the importance of conservation and preserving the future.

Ultimately, these and other steps are part of Walt Disney's long-term environmental strategy of:

1. Zero waste
2. Zero net direct GHG emissions from fuels
3. Reducing indirect GHG emissions from electricity consumption
4. Net positive impact on ecosystems
5. Minimizing water use
6. Minimizing product footprint
7. Informing, empowering, and activating positive action for the environment

One strong indication of the growth and spread of environmental sustainability can be found in Table 2.1, which lists the top 51 sustainable corporations in the world. By the way, it is interesting to note, in reviewing the listing of firms, that the first North American firm to make this list is Life Technologies Corporation (#15). Unilever is 51, with Johnson Controls Inc. at 64, Proctor and Gamble 66, and Baxter International coming in at 86. As we can see in the Unilever vignette, it is also becoming a strategic consideration—something that Polman is using to distinguish Unilever in the marketplace and to differentiate it from competition (e.g., Proctor and Gamble who also reports a broad array of sustainability activities).

Environmental sustainability is important to existing companies wanting to maximize the efficient use of resources and future companies who will eventually need access to the same resources. The most widely used

Table 2.1. 2012 Global 100 List—Top 51 Firms⁹
(all North American firms noted in bold)

Rank	Company	Country	Rank	Company	Country
1	Novo Nordisk	Denmark	24	Geberit Ag	Switzerland
2	Natura Cosméticos S.A.	Brazil	25	Roche Holding Ag	Switzerland
3	Statoil Asa	Norway	26	Schneider Electric Sa	France
4	Novozymes A/s	Denmark	27	Sap Ag	Germany
5	ASML Holding Nv	Netherlands	28	Hitachi Chemical Company Ltd	Japan
6	BG Group Plc	United Kingdom	29	Anglo American Platinum Ltd	South Africa
7	Westpac Banking Corp	Australia	30	POSCO	South Korea
8	Vivendi S.A.	France	31	Vestas Wind Systems	Denmark
9	Umicore S.A./N.V.	Belgium	32	Dassault Systemes, Sa	France
10	Norsk Hydro ASA	Norway	33	BT Group Plc	United Kingdom
11	Atlas Copco Ab	Sweden	34	TNT N.v.	Netherlands
12	Sims Metal Management Ltd	Australia	35	Mitsubishi Heavy Industries Ltd	Japan
13	Koninklijke Philips Electronics NV	Netherlands	36	Scania Ab	Sweden
14	Teliasonera Ab	Sweden	37	Acciona Sa	Spain
15	Life Technologies	United States	38	Adidas Ag	Germany
16	Credit Agricole SA	France	39	Tomras Systems Asa	Norway
17	Henkel AG & Co. KGaA	Germany	40	Aeon Co. Ltd	Japan
18	Intel Corp.	United States	41	Siemens Ag	Germany
19	Nest Oil Oyj	Finland	42	AstraZeneca Plc	United Kingdom
20	SwisscomAg	Switzerland	43	Kesdo Oyj	Finland
21	Toyota Motor Corp	Japan	44	Yamaha Motor Co., Ltd	Japan
22	Centrica Plc	United Kingdom	45	L'Oreal S.A.	France
23	Koninklijke DSM N.V.	Netherlands	46	Logica Plc	United Kingdom

(Continued)

Table 2.1. 2012 Global 100 List—Top 51 Firms⁹
(all North American firms noted in bold) (Continued)

Rank	Company	Country	Rank	Company	Country
47	Suncor Energy Inc.	Canada	50	Renault Sa	France
48	Repsol YPF, S.A.	Spain	51	Unilever Plc	United Kingdom
49	Prudential	United Kingdom			

definition of sustainability was offered by the United Nations Brundtland Commission in its report. This report stated that sustainability is being able to meet “the needs of the present without compromising the ability of future generations to meet their own needs.” In other words, what we do today to satisfy current needs will affect the future. This is one reason that the “cradle-to-grave” approach is no longer adequate for environmental sustainability (see the Story of Stuff).¹⁰ Only about 1% of all the materials mobilized to serve America are actually made into products and still in use six months after sale.¹¹ With a cradle-to-grave approach, we focus on returning waste to the ground. The problem is that this waste is essentially useless—it cannot be used to fulfill the original demand. It must be replaced by new, virgin material. It also is a missed opportunity for reclaiming raw materials and closed-loop systems (also called C2C, and if done properly, cradle to cradle to cradle). We are coming to the realization that the earth’s resources are finite. As we use more today, there is less for future generations. This realization is not new; it is just becoming more prevalent and a larger opportunity for entrepreneurs to better leverage closed-loop supply chain systems to find solutions to this issue.

Social Sustainability

The second element, social sustainability, focuses attention on people, specifically human rights, health and safety, and quality of life in communities. Think of all the stakeholder groups that a typical business directly affects: customers, workers, suppliers, and investors. In addition, businesses can indirectly affect the larger community and society as a whole.

Table 2.2. Key Stakeholders and Their Expectations

Customers	Workers
Good “value” for their money Products that are safe Privacy and protection of personal information Honesty in marketing and sales communications Integrity in fulfilling contracts and obligations Quick response to questions System transparency, traceability	Fair labor practices and a “living wage” that affords a reasonable standard of living. Safe working and living environments (both for themselves and the community) Equal opportunities for advancement Support for social and economic developments (e.g., schools, arts, parks, charities)
Suppliers	Investors
Working with like-minded firms (who share similar values) Opportunities for supplier development and improvement (learning within the supply chain) Opportunities to grow—shared success Consistent application of rewards and punishments Receiving a “fair” payment for goods and services provided	Providing competitive returns on investments Having a robust business model so that investors can expect consistent returns over time Integrity in reporting operating and financial conditions Reduction of unreasonable risks and uncertainties (due to poor practices on the part of the firm and its operations management system)

Each of these stakeholder groups has their own needs and priorities (see Table 2.2).

As the examples in Table 2.2 illustrate, managers and supply chain members need to consider the needs and demands of many stakeholders when making choices about sources, process designs, labor policies, and so on. Numerous social issues are continuously highlighted by the media, pointing out potential inequities, or even the oppressive conditions businesses and their suppliers might create, either knowingly or unknowingly. For example, in recent years the media have brought attention to the exploitation of workers and small businesses in developing countries. As a result, more and more operations managers are participating in established “fair trade” practices. It also affects how companies buy and sell products. As an example, consider the experiences of Starbucks with fair trade.

Fair trade is an organized social movement that seeks to help producers in developing countries, thus making for better trading conditions

and promoting sustainability. Through fair trade efforts, farmers are paid a price for their products, increasing revenues. This allows them to invest in better equipment, better food for their families, and allows them to send their children to school (rather than keeping them working on the farm to support the family). Many of the farmers affected often grow commodity products such as coffee.

Starbucks Corporation is an international coffee company and coffee-house chain. It is currently the world's largest coffeehouse company. In 2000, the company introduced a line of fair-trade products. Since then, this practice has evolved into a corporate-wide system aimed at ethical sourcing. To this end, it has worked with Conservation International to develop coffee buying guidelines, the Coffee and Farmer Equity (C.A.F.E.) practices. This comprehensive set of guidelines focuses attention on four areas:

1. Product quality
2. Economic accountability
3. Social responsibility
4. Environmental leadership

Social responsibility measures are evaluated by third-party verification to ensure safe, fair, and humane working conditions and adequate living conditions—they cover minimum wage, child labor, and forced labor requirements.

In 2011, Starbucks bought over 428 million pounds of coffee, of which 367 million pounds were from C.A.F.E.—practices-approved suppliers. The company paid an average price of \$2.38 per pound in 2011, up from \$1.56 per pound in 2010. According to Conservation International, this premium has enabled farmers participating in C.A.F.E. practices to keep their children in school and to preserve remaining forest on their land, while achieving higher crop performance. This program spans some 20 countries and affects over 1 million workers each year and is affecting practices on 102,000 hectares each year (where a hectare is about 2.47 acres and in this case about 393 square miles a year). In terms of fair trade, Starbucks has paid an additional \$16 million in fair-trade premiums to those producer organizations for social and economic investments at the

community and organizational levels.¹² Fair trade is but one social movement and differentiation strategy involving social responsibility.

If you think no one is keeping track of the social dimensions of your operations and those of your supply chains, you may be surprised to find your company on a list of poor-performing firms. Numerous organizations are measuring and ranking the operations and supply chain performance of publicly traded firms. These organizations include the well-known American business magazine *Forbes*, and established databases of socially responsible firms such as Kinder, Lydenberg, and Domini (KLD) now owned by MSCI whose data is accessed through ESG Global Socrates. This is the same data used in socially responsible investing indices and be used to leverage other rankings by *Newsweek* purposefully looking at Environmental Social and Governance (ESG) performance.

Among the leaders in this social dimension are firms such as Starbucks, Unilever, Nestle, Walt Disney, Ben and Jerry Ice Cream, Marathon Petroleum, and Delta Airlines (to name only a few). A listing of the most and least admired companies from a social responsibility perspective is provided in Table 2.3.

Table 2.3. *Forbes’ Most Admired Companies “Best & Worst in Social Responsibility”*¹³

<i>Most admired</i>	<i>Least admired</i>
1 GDF Suez	1 China Railway Group
2 Marquard & Bahls	2 China Railway Construction
3 RWE	3 China State Construction Engineering
4 Altria Group	4 China South Industries Group
5 Starbucks	5 China FAW Group
6 Walt Disney	6 Aviation Industry Corp. of China
7 United Natural Foods	7 Dongfeng Motor
8 Sealed Air	8 MF Global Holdings
9* Chevron	9 China North Industries
9* Whole Foods Market	10 Hon Hai Precision Industry

Source: *Companies whose industry scores are equal when rounded to two places received the same rank. In cases of ties, companies are listed in alphabetical order.

Deploying Social Sustainability

The social dimension of sustainability concerns the impacts an organization has on the social systems within which it operates, for example, reporting on human rights, local community impacts, and gender. The most comprehensive and widely accepted social sustainability reporting guidance is the Global Reporting Initiative's (GRI) guidelines. Within this framework, performance indicators are organized into categories: economic, environment, and social. The social category is broken down further by labor rights and decent work practices, human rights, society and product responsibility sub-categories.

Performance indicators are the qualitative or quantitative information regarding firm results or outcomes associated with the organization that is comparable and demonstrates change over time.¹⁴ Disclosing firms will release information on their management approach, goals and performance, policies in place, who within the organization has responsibility for the performance indicators, training and awareness, and how the performance indicators are monitored. Examples of labor, human rights, society and product responsibility from the GRI include the following:

Labor practices are guided by a number of internationally recognized standards from the United Nations and the Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW). For an understanding of these practices, reporting firms can draw upon two instruments directly addressing the social responsibilities of business enterprises: the ILO Tripartite Declaration Concerning Multinational Enterprises and Social Policy, and the Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises. Practices include the composition of the workforce, full-time employees, benefits and retention rates, labor/management relations; occupational health and safety; employee training and education opportunities; diversity, equal opportunity; and equal remuneration for both women and men.

Human rights practices take into account a growing global consensus that organizations have the responsibility to respect human rights. Human

rights performance indicators require organizations to report on the extent to which processes have been implemented, on incidents of human rights violations, and on changes in the stakeholders' ability to enjoy and exercise their human rights during the reporting period. Among the human rights issues included are nondiscrimination, gender equality, freedom of association, collective bargaining, child labor, forced and compulsory labor, and indigenous rights.

Society practices focus attention on the impact organizations have on the local communities in which they operate, and disclosing how the risks that may arise from interactions with other social institutions are managed and mediated. In particular, information is sought on the risks associated with bribery and corruption, undue influence in public policy making, and monopoly practices. Within social performance, community members have individual rights based on: Universal Declaration of Human Rights; International Covenant on Civil and Political Rights; International Covenant on Economic, Social and Cultural Rights; and Declaration on the Right to Development.

Indicators of **product responsibility** address the aspects of a reporting organization's products and services that directly affect customers, namely, health and safety, information and labeling, marketing, and privacy. These aspects are primarily covered through disclosure on internal procedures and the extent to which there is non compliance with these procedures. Reporting firms have the opportunity to provide disclosure on their management approach to customer health and safety; product and service labeling; marketing communications; customer privacy; and compliance.

This summary of social sustainability can be new and uncharted territory for many. For some well-known firms highlighted in this chapter, the social performance dimension is one more way to build brand. Social sustainability is still an emerging area for many to differentiate products, measure and manage typically overlooked aspects of value creation, and become an employer of choice while simultaneously building top-line *and* bottom-line growth.

Trends in corporate transparency and reporting are such that reporting financial performance is only a starting point. KPMG and others have

demonstrated the start of integrated reporting of business, environmental, and social sustainability performance into one report.¹⁵ As we will see in the rest of this chapter, the public disclosure of these performance metrics reveals a shift in corporate reporting, emerging views of sustainability, and an opportunity to leverage lean operations to realize the value created by sustainability.

Transparency

Transparency is most notable through the broad expansion of corporate reporting. Gone are the days of producing and auditing only a financial report. Sustainability reporting is the practice of measuring, disclosing, and being accountable to internal and external stakeholders for organizational performance toward the goal of sustainable development. “Sustainability reporting” is a broad term considered synonymous with others used to describe reporting on economic, environmental, AND social impacts (e.g., an integrated bottom line, corporate responsibility reporting, etc.).¹⁶ A sustainability report should provide a balanced and reasonable representation of the sustainability performance of a reporting organization—including both positive and negative contributions. Sustainability reports based on international frameworks disclose outcomes and results that occurred within the reporting period in the context of the organization’s commitments, strategy, and management approach. Reports can be used for, but not limited to, the following purposes:

- **Benchmarking** and assessing sustainability performance with respect to laws, norms, codes, performance standards, and voluntary initiatives.
- **Demonstrating** how the organization influences and is influenced by expectations about sustainable development.
- **Comparing** performance within an organization and between different organizations over time.

The urgency and magnitude of the risks and threats to our collective sustainability, alongside increasing choice and opportunities, will make transparency about economic, environmental, AND social impacts a fundamental component in effective stakeholder relations, investment decisions,

Table 2.4. View of Sustainability Relationships

View of Sustainability	Relationship (financial, environmental, and social sustainability)
Public relationships	Trade-off; You can be one or the other; focus on one dimension Environmental or social sustainability is a constraint
Waste management	Mixed—some trade-offs; more complementary
Value maximization	Simultaneity; You have multiple types of sustainability; Environmental and/or social sustainability is an opportunity and a strategic weapon

and other market relations.¹⁷ Increasingly, it is difficult to find an annual report that omits any discussion of the sustainability activities of the firm. Yet, we must recognize that not all firms claiming to be sustainable are operating at the same level of intensity. We argue that firms operate at one of the three levels of sustainability:

- Sustainability as public relations
- Sustainability as waste management
- Sustainability as value maximization

As we move from the first to the last, we see a broader application of sustainability (Table 2.4). We also see a different view of the dynamic relationships between environmental, social, and business sustainabilities.

However, each level must be explored separately if it is to be understood.

Sustainability as Public Relations

Firms focusing on sustainability at this level are not really committed to all three dimensions. Management ultimately believes that there is a trade-off between profit and social or environmental sustainability—to do better on one dimension, you must do worse on another. They feel that they have been forced by external pressures (e.g., consumers, government, stockholders)

to show that their firms are undertaking some form of environmental program.

Such programs, when implemented, are often copied from other firms. When implemented, there is little or no modification or customization of the programs and their associated practices. Customization is important since when the firm copies a best practice from the outside, these practices must first fit their own corporate setting. They also have to be extended and transformed in ways that create new value for the key customers. These programs are there so that management can point to their presence as proof of the firm's commitment to some level of sustainability.

Sustainability as public relations is all about "show"; if you are able to dig deeper, there is little of substance behind the show. When reporting, the firm looks for whatever evidence it can find that shows the firm is securing the benefits of sustainability. When implemented, the programs tend to be superficial—focusing on the symptoms rather than the root cause of pollution. Recycling is emphasized and reported rather than pollution prevention. Investments are made in initiatives but little real progress is secured because management and corporate commitment to environmental sustainability is lacking. Sustainability as public relations sometimes manifests as "greenwashing" when stakeholders call out an organization for not truly being green.

Internally, sustainability is treated as a constraint—something that must be satisfied before the firm can turn its attention to what really is important. The programs and initiatives, when added, are often add-ons—present but poorly integrated. These programs are separate from the rest of the firm. Responsibility for environmental sustainability is not a total corporate responsibility (everyone is responsible) but rather something that is assigned to one department and few who are accountable for the programs. Performance is measured from the perspective of punishment avoidance or punishment incurred (e.g., number of fines, size of fines).

Finally, these firms are the first to drop or scale back initiatives in sustainability should the economy deteriorate (thus requiring firms to focus on cost savings) or should management feel that the external forces driving the emphasis on sustainability are diminishing.

Sustainability as Waste Management

This approach to sustainability traces its roots to a simple but powerful observation made in Chapter 1—waste is simply anything that does not add value to a product or service. Waste has been the focus of lean systems (otherwise known as the Toyota Production System (TPS) or JIT manufacturing). Lean systems, since they were first introduced into North America in the early 1980s, have developed a long track record of being highly successful when applied correctly.

In part, the successful spread of lean can be attributed to a three-year study on the impact of lean systems within the automotive industry. This study, conducted by Womack, Jones, and Roos (1990)¹⁸ ended the debate about whether lean systems created real, lasting benefits. As shown in Table 2.5, the results showed that in the 1980s Japanese-owned automotive plants following lean were as much as 30% more productive than US-owned plants using traditional methods—quite a turnaround from the situation in the 1930s. Furthermore, the Japanese plants delivered cars with fewer defects, lower space requirements, and lower inventories. The data also showed that the Japanese lean effect was significant whether the plant was located in Japan or in the United States.

By treating pollution as waste, firms pursuing environmental sustainability could leverage and build on their experiences with lean to simultaneously achieve improved environmental performance. They could draw on and use similar frameworks; they could also use many of the same tools. The result—a low cost and, in many cases, a proven way of reducing waste. To understand this approach, it is important that we start with the foundations on which it is built—pollution as waste.

Pollution as Waste

One of the major objectives of any lean system is to reduce waste. Waste can be identified as any activity that creates cost without contributing an equal or greater level of value. This thinking is not new and can be traced back to the work of Henry Ford in the early 1910s and 1920s. Waste consumes but does not reward.

Table 2.5. Performance Characteristics for Lean Systems

	Japanese in Japan	Japanese in North America	Americans in North America	All Europe
Performance				
Productivity (hrs/vehicle)	16.8	21.2	25.1	36.2
Quality (assembly defects/100 vehicle)	60.0	65.0	82.3	97.0
Layout				
Space (sq. ft/vehicle/yr)	5.7	9.1	7.8	7.8
Size of repair areas (as percentage of assembly space)	4.1	4.9	12.9	14.4
Inventories (days for 8 sample parts)	.2	1.6	2.9	2.0
Work Force				
Percentage of workforce in teams	69.3	71.3	17.3	.6
Job rotation (0 = none; 4 = freq)	3.0	2.7	.9	1.9
Suggestions/employee	61.6	1.4	.4	.4
Number of job classes	11.9	8.7	67.1	14.8
Training of new production workers (hours)	380.3	370.0	46.4	173.3
Absenteeism	5.0	4.8	11.7	12.1
Automation				
Welding (percentage of direct steps)	86.2	85.0	76.2	76.6
Painting (percentage of direct steps)	54.6	40.7	33.6	38.2
Assembly (percentage of direct steps)	1.7	1.1	1.2	3.1

Source: The Machine That Changed the World, p. 92, by James P. Womack, Daniel T. Jones, and Daniel Roos.

Something to think about: of the approximately 97 quads of energy used in the United States, over 55% is lost or rejected energy and the two largest contributors to this waste include 47% of this loss from electricity

generation systems, while 36%, and the second largest contributor to lost and rejected energy comes from the transportation industry.¹⁹ How much waste is within your system?

Under the lean perspective, waste is a *symptom*. That is, it is the result of problems elsewhere. It is also the result of problems within processes (the fundamental unit of analysis for lean). Wastes of all kinds, including pollution, can be grouped into one of the seven categories (Table 2.6). To these seven, many managers now add an eighth category—waste of people—not drawing or using our people to the best of their ability.

The Lean Approach

To reduce waste, we must study the processes, uncover the critical root causes, and then attack (and hopefully, eliminate) them with a goal of zero waste. We can draw on and use lean tools for attacking waste, such as the following:

- **Total productive maintenance (TPM):** The processes and systems that work to identify and prevent all possible equipment breakdown through a combination of preventive maintenance by the employees, rigorous equipment design, and regular inspection of the equipment.
- **Setup reduction:** The processes used to reduce setup and changeover times with the goal of making output in smaller batch efficient.
- **Statistical process control:** The use of various statistical tools for analyzing the capabilities of a given process, and for monitoring its performance with the goal of flagging potential problems before they occur.
- **Quality at the source (Q@S):** The practice of eliminating defects at their origination points.
- **Kaizen events:** A short-term project (usually 1–4 days) aimed at improving an existing process. In that time period, cross-functional team members document a process, assess different options for performance, and develop and document the implemented process changes.

Table 2.6. Seven Types of Waste

Waste	Symptoms	Root causes
Overproduction (processing more units than are needed)	<ul style="list-style-type: none"> • Extra inventory • Excessive floor space utilized • Unbalanced material flow • Complex information management • Disposal charges • Extra waste handling and treatment • High material, utility, waste costs • High GHG emissions 	<ul style="list-style-type: none"> • Product complexity • Misuse of automation • Long process setups • Unlevel scheduling • Over-engineered equipment/capability • Lack closed-loop systems, reuse, and recycling • Poor market forecast • Extra inventory as a demand buffer
Waiting (resources wasted waiting for work)	<ul style="list-style-type: none"> • Under utilization of resources • Reduced productivity • Increase in investment • Idle equipment • Large waiting/storage rooms • Equipment running, not producing • Unnecessary testing 	<ul style="list-style-type: none"> • Unbalanced work load • Unplanned maintenance • Long process setup times • Misuse of automation • Unlevel scheduling • Ineffective layout • Too much specialization
Transportation (units being unnecessarily moved)	<ul style="list-style-type: none"> • Extra handling equipment • Large storage areas • Over staffing • Damaged product • Extra paperwork & hand offs • Excessive energy consumption • Expedited shipments 	<ul style="list-style-type: none"> • Mislocated materials • Unlevel scheduling • Unfavorable facility layout • Poor organization/ housekeeping • Unbalanced processes • Facility location, off-shoring • Quantity discounts
Processing (excessive or unnecessary operations)	<ul style="list-style-type: none"> • Extra equipment • Longer lead time • Reduced productivity • Extra material movement • Sorting, testing, inspection • Inappropriate use of resources • Excess energy consumption, waste • Processing by products 	<ul style="list-style-type: none"> • Product changes without process changes • Just-in-case logic • Lack of communication • Redundant approvals and inspections • Undefined customer requirements • Stop gap measures that become routine • Lack closed-loop systems, reuse, and recycling

(Continued)

Table 2.6. Seven Types of Waste (Continued)

Waste	Symptoms	Root causes
Inventory (units waiting to be processed or delivered)	<ul style="list-style-type: none"> • Complex tracking systems • Extra storage and handling • Extra rework/hidden problems • Paperwork/documents • Stagnated information flow • High disposal costs • In-process packaging 	<ul style="list-style-type: none"> • Just-in-case logic • Incapable processes (poor quality) • Unbalanced workload • Unreliable supplier shipments • Inadequate measurement and reward system • Future costs of commodities
Motion (unnecessary or excessive resource activity)	<ul style="list-style-type: none"> • Reduced productivity • Large reach/walk distances • Excess handling • Reduced quality • People/machines waiting 	<ul style="list-style-type: none"> • Poor ergonomics/layout • Machine/process design • Non standardized work methods • Poor organization/ housekeeping
Product Defects (waste due to unnecessary scrap, rework, or correction)	<ul style="list-style-type: none"> • Rework, repairs, and scrap • Customer returns • Loss of customer confidence • Missed shipments/deliveries • Hazardous waste generation • High disposal costs 	<ul style="list-style-type: none"> • Lack of process control and error proofing • Deficient planned maintenance • Poor product design • Customer needs not understood • Improper handling • Inadequate training

- **Process analysis/value stream mapping:** Graphic mapping techniques that help managers understand the material and information flows as a product and how it makes its way through the process.
- **Poka-yoke:** Also known as fool-proofing. An emphasis on redesigning processes in such a way as to make mistakes either impossible or immediately apparent to the people involved.
- **Standardization/simplification:** A program whereby non value adding steps in a process are eliminated (simplification) and each step in the process is carried out in exactly the same way by every employee (standardization) so that waste can be identified and eliminated.

With the lean approach, the emphasis shifts from the outputs (i.e., the pollution) to prevention (by focusing on the processes generating these

wastes). Since we know that waste, that is, pollution and GHG emissions, are the result of problems in one or more processes, to eliminate waste we have to focus on changing the appropriate processes. We will discuss these and other tools in more detail in Chapter 4.

This approach is highly attractive because its causal logic is straightforward, the lead time for results is often fairly short (days, weeks, months), there is a strong and direct linkage between cause and effect, and there are significant opportunities for improvement. As was discussed in the first chapter, the following relationships are important to revisit.

- In ordinary firms, for every one unit of value added (defined either from a time or cost perspective), the processes typically add 1,000 to 2,000 units of non value.
- In world-class firms, for every one unit of value added, the processes typically add 200 to 300 units of non value.

In other words, there is a lot of opportunity for improvement, waste reduction, and interrelated benefits.

Limitations of Sustainability as Waste Management

For all of its attractions, this approach suffers from two major limitations. These involve limitations of *scope* and *focus*.

Scope: Scope refers to the extent to which the costs/benefits are applied. When dealing with lean systems, we can measure costs and benefits at several levels (see Figure 2.2). First, we can measure it in terms of its impact on the performance of the department. Of all the levels of analysis, this is the simplest and most direct to determine. Here, we are not interested in whether our actions affect those of the other departments. *The goal is to improve our level of performance.* Local optimization (at the expense of overall improvement) is accepted and prized. We can increase the scope to include the company. Now, analysis and evaluation are more complex. We have to consider the impact of our actions on the integrated performance of other departments in the company. Similarly, we can increase the scope to include the supply chain and finally the community/society.

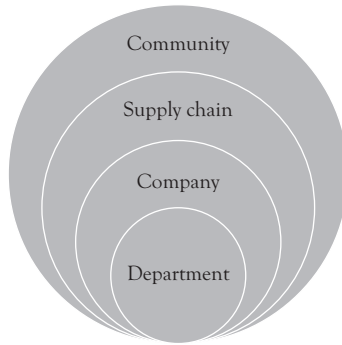


Figure 2.2. *Scope of costs/benefits.*

As we increase the scope, analysis becomes more complex. However, as we increase the scope, we increase the opportunity to measure, manage, and affect more stakeholders.

When applied, lean systems tend to limit their scope to the first two levels—to the departments and to the company. For example, we can introduce a delivery system that emphasizes “milk runs” from our suppliers. Every day, we send a truck out to pick up supplies from our vendors. The truck goes out empty in the morning, but returns full at night. In it, we have enough components for next day’s production. From a typical “lean” perspective, this is good: inventory is low; we have enough inventory to keep production going. Yet, the problem with this approach is that by running our trucks in this manner, we are creating environmental waste in the form of increased energy consumption for the trucks (along with the associated waste and GHG levels). These impacts are typically felt, but not captured at the community level—a level beyond where most organizations are focused.

Focus: In many lean systems, the impact of lean is measured in terms of cost savings or cost avoidance. These are two of the three levels in the performance pyramid (Figure 2.3). At the lowest level, the base, we have cost savings. With cost savings, we address existing problems in current products and processes. For example, we have an inefficient process. We apply the lean tools and eliminate the sources of waste; the number of steps in the process is reduced; the level of waste generated by the process is lowered. We can evaluate the impact of these changes by comparing the

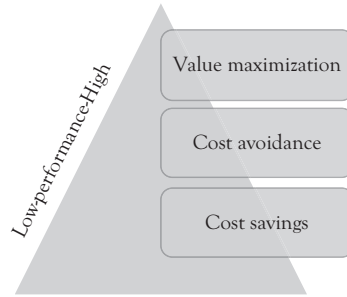


Figure 2.3. Performance pyramid.

performance of the new, revised process with the level observed for the old process.

Cost avoidance is a higher level of performance. Here, we are not correcting past problems; we are avoiding them. This is a more powerful position (but one that is more difficult to assess—how do you measure avoidance). As a sign at a well-known automotive user of lean puts it, “ $P > S$ ” (Prevention is greater than Savings).

Yet, there is a third and higher level—value maximization. To achieve this level of performance, an approach different from the ones used for the prior two must be implemented. We can achieve cost savings and cost avoidance without ever considering issues as to who is the key customer, or what is the business model driving our firm. However, to increase revenue, we have to understand these and other issues within a larger systems perspective. To increase revenue (especially over time), we have to deal with issues such as value. When dealing with value and the firm’s business model, we have changed the focus of sustainability from being tactical to being strategic. This is a critical transition and the reason that the third level of sustainability as value maximization is one in which environmental, social, AND business sustainability are simultaneously attainable.

Sustainability as Value Maximization

Of the three levels in the performance pyramid, value maximization is the most complex. Before we discuss what this level entails, we must first establish the foundations of this approach. At the heart of this approach

are three critical concepts: (a) value; (b) business models; and, (c) sustainable value maximization (this concept is defined in greater detail later on in this chapter).

Value

Value or the customer's assessment of the relative benefits and costs obtained by the acquisition of a specific good or service is becoming increasingly important in today's economy. While value begins and starts with the customer, this concept is starting to have a significant impact of supply chains. As noted by Melnyk, Davis, Spekman, and Sandor (2010),²⁰ there is a sea change taking place in supply chain management and at the heart of this change is value. In the past, supply chains were price driven (focused on cost savings) and strategically decoupled (not linked to how the firm competed in the market place). Now, they are increasingly becoming value driven and strategically coupled (linked to strategy).

It is important to recognize that value is customer specific. It is also important to recognize that not all elements of value are equally important. When a customer looks at the elements of value, how they respond and what they expect is driven by the type of traits they are dealing with. In general, these traits, which are often product-specific, can be classified into one of three categories:²¹

- **Order Winners.** These traits cause customers to choose a product or supply chain service over a competitor's offering, for example, better performance, lower price, environmental and social performance certification such as the Forest Stewardship Council, or fair trade. These are traits on which operations and the supply chain management system must excel and be transparent.
- **Order Qualifiers.** These are product or supply chain traits such as availability, price, or conformance quality that must meet a certain level for the product to even be considered by customers. The firm must perform acceptably on these traits (i.e., the products must meet certain threshold values of performance), usually at least

as well as competitors' offerings. In many cases, the customer may not be aware of any level of performance in excess of those minimum levels that they have established.

- **Order Losers.** Poor performance on these traits can cause the loss of either current or future business, for example, customers who shop at Target instead of Walmart due to labor practices.

In reviewing these categories, there are several factors to remember. First, order winners and order qualifiers form the basis for customers' expectations. Order losers, in contrast, result from customers' actual experiences with the firm and its operations management processes. They represent the gap between what the firm delivers and what customers expect. Second, order winners, order qualifiers, and order losers vary by customer. An order winner to one customer may be an order qualifier to another. Third, these traits vary over time. An order winner at one time may become an order qualifier at another point in time. Being able to identify and act on order winners offers the firm a critical strategic advantage.

While important by itself, the value concept becomes especially critical when implemented within a business model.

Business Models

The business model (as illustrated in Figure 2.4) can be viewed as the firm's method for doing business. It is the framework used by the firm for creating and maintaining dynamic environmental, economic, and social forms of value. Business models have also come to be recognized as a form of *intellectual property*—an asset that can be protected through a patent.

There are numerous examples of business models. For example, there is the “razor and blades” business model first developed by Gillette—give away the razor but make your money on the blades. There is also the “direct sales” business model so successfully used by Dell—sell computers directly to the end consumer. As a final example, there is the “loyalty” business model. This model has been widely implemented in the airline

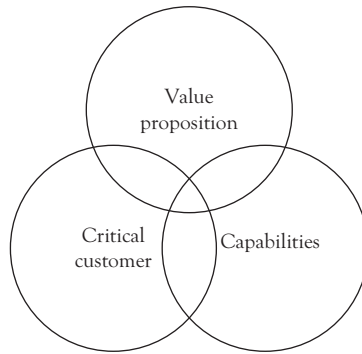


Figure 2.4. *The foundations of the business model.*

industry (through the frequent flier program) and in the retail trade (e.g., as in Best Buy's Reward Zone program). With this model, consumers are rewarded for continuing to deal with the firm.

Business models are part of business strategy, innovation, and sustainability.²² The business model, by its very nature, is highly integrative in that it brings together into a meaningful whole the three elements—the key customer, the value proposition, and capabilities. To this point, this book has focused primarily on the capabilities element. Capabilities, while important, are not enough by themselves. As capabilities change over (due to factors such as technological innovation, capital investments, and process improvements), these changes have to be evaluated in terms of how they affect the other two dimensions. Furthermore, if the firm targets sustainability initiatives as a way to attract a new key customer, it must reevaluate the appropriateness of the current value proposition and capabilities (and make any necessary changes).

Increasingly, managers are talking about the need for better business models for three important reasons. First, there is strong empirical evidence that demonstrates the impact of business models of corporate performance. *Business Week* published a study, which showed that a firm with an innovative business model consistently outperformed competitors with innovative products, processes, and customer experiences (see Figure 2.5).²³

Second, business models are inherently dynamic. They are intended to help two important groups of firms. For existing firms, it is recognized that they have to develop new and innovative business models to compete

Innovation type	Aver. stock return 2004–2007	Aver. revenue growth 2004–2007
Process	1.4%	1.6%
Product	3.1%	2.1%
Customer experience	2.5%	5.1%
Business model	16.6%	7.2%

Figure 2.5. *Assessing the relative impact of an innovative business model.*

against growing competition. For new firms trying to get into an existing market, business models are important because they identify unique niches in the marketplace.

Third, business models are attracting attention because they provide a vehicle for converting new technology and innovations into economic value.²⁴ Innovation and new technology, in turn, are important because of the potential they offer the firm and the way in which they enable sustainability practices.²⁵

- To serve new or existing customer segments whose needs have been neglected by existing competitors and their offerings.
- To serve new or existing customer segments whose needs are being poorly met by existing competitors and their offerings.
- To provide new ways of producing, delivering, or distributing existing (or new) products to existing (or new) customer segments.

Components of the Business Model

As we can see from Figure 2.4, the business model consists of three elements. It is important to understand what each element is and why it is important.

Key Customer(s): The starting and ending point for any effective and efficient supply chain operations is the customer. A *customer* is a person or organization who consumes the products of a process. A customer is not necessarily the end user; it could be the store manager or the purchasing agent. Almost all firms deal with multiple customers having varied desires and needs that change over time. This creates the dual challenge of keeping track of changing needs and identifying which customers'

needs should be addressed and which should be ignored. Each firm has to identify its *key customers*.

The key customer is that group or segment that the firm has identified as being important. As Hal Mather, a manufacturing consultant, once said: the key customer is that customer segment that the firm “will profitably delight.” When there is a conflict in meeting customer needs, it is always resolved in favor of the key customer.

Customers can be deemed key for a number of reasons. For example, a key customer may be responsible for largest current or future sales of the firm, or it may be the one with the highest prestige. In the automotive industry, Toyota is often such a customer because of its very high quality and performance standards; a supplier working with Toyota is often viewed as a top-rate supplier.

Value Proposition: To attract these key customers, the firm must formulate and implement a *value proposition*, or a statement of what the firm offers the customer that is viewed attractive to the customer and is different from what is offered by its competitors. The value proposition is critical because it not only defines how the firm competes but also determines and shapes the types of products that the firm will (and will not) offer.

A well-designed value proposition possesses four traits: (a) it offers a combination of features that customers find attractive and are willing to pay for; (b) it differentiates the firm from its competitors in a way that is difficult to imitate; (c) it satisfies the financial and strategic objectives of the firm; and (d) it can be reliably delivered given the operational capabilities of the firm and its supporting supply chain. The value proposition reflects the order winners, order qualifiers, and order losers for a key customer segment, and thus it greatly influences the competitive priorities for all the related operations across the supply chain. In making the translation from value proposition to competitive priorities, operations managers need to clearly specify what the operations management system must do well (key success factors), what it must do adequately, and what it must avoid doing (because it will jeopardize customer satisfaction and orders).

Outcomes and Value Proposition: Central to value proposition is the set of outcomes to be delivered by the firm and its supply chain. As recently noted by Melnyk et al. (2010),²⁶ supply chains are not simply cost driven;

they are outcome driven. That is, all supply chains are built around six basic, major outcomes:

- **Cost**—Reducing price (initially) and cost (ultimately) is the key focus. Delivery and quality, while important, are secondary considerations and considered part of this outcome. It is important to recognize the difference between price and cost. Price focuses on what you pay for the good or service—it is the price found in the contract or on the tag. In contrast, cost represents all of the costs incurred including acquisition, storage, rework, and all other associated costs over the life of the product or services. As such, cost is a broader concept.
- **Responsiveness**—The ability to change quickly in terms of volume, mix, or location in response to changing conditions. Typically, responsiveness warrants a higher cost and price.
- **Security**—This involves supply chains that are safe and protected from external disruptions. Security is a relatively new requirement but has gained a great deal of attention recently, with cases of tainted food products from China and generic drugs from India.
- **Sustainability**—This outcome is different from security; it involves supply chains that are measuring and managing both environmental AND social dimensions.
- **Resilience**—This refers to supply chains that can deal with unexpected disruptive conditions or threats to supply, ranging from natural disaster to bankruptcies or even political embargos.
- **Innovation**—In recent years, many firms have increasingly relied on their supply chain as a source of product and process innovation. For example, IKEA long ago generated a competitive advantage by changing how products were delivered. More recently, Proctor and Gamble involved both suppliers and customers in its highly successful new “connect and develop” innovation process.

The most effective and sustainable supply chains are a blend of these outcomes—a blend that is attractive to the key customers (and for which these same customers are willing to pay) and that differentiates them in the minds of the customer. Achieving and delivering the desired blend of

outcomes to the customer cannot be achieved by accident. It requires not only strategic planning and intent but also having the “right” supply chain and the “right” supplier base in place.

In reviewing these outcomes, it is important to recognize that, like the elements of value, not all the outcomes are equally important. Rather, recent research conducted by one of the authors has led to the finding that in mixing these outcomes, a 1-2-3 approach should be used. That is:

- One (1) of the outcomes must be critical. This forms the core of the firm’s value proposition. It is that outcome that the firm will never compromise. It defines the essence of the firm and its supply chain.
- Two (2) of the outcomes are important. While not as critical as the prior outcome, they are important in that they describe how the outcomes will be delivered. These three describe the essence of the firm’s value proposition and should include sustainability if the organization’s view of sustainability is going to be more than public relations or waste management.
- Three (the remaining outcomes) are necessary. We do not have to do a great job on these outcomes; we simply need to be good enough.

Capabilities: The third element of delivering value is capabilities. Capabilities are unique and superior operational abilities that stem from the routines, skills, and processes that the firm develops and uses. Usually, abilities to deliver superior performance come from investments and developmental efforts in one or more of the following areas: processes, planning systems, technology, performance measurement, people and culture, and supply chain relationships.

Driving the effective and successful business model is the notion of “fit.” That is, the highest level of value is delivered when what the key customer expects (order winners, order losers, order qualifiers) is addressed by the value proposition and delivered by the capabilities of the firm.

Value Added

If we were to focus only on value, we look at what something is worth to the key customer, independent of the costs (level of waste and impacts)

incurred to provide this outcome. The concept of economic value added is well known to most if not all business leaders, but this concept does not go far enough. To ensure that the pursuit of value is sensitive to the issues of total value generated and waste, we use the concept of Sustainable Value Added (SVA), where:

$$\text{Sustainable Value Added} = (\text{Level of Financial AND Environmental AND Social Value Generated}) - \text{Total Waste}$$

The concept of total cost of ownership fits well with SVA. This more encompassing approach to value creation has simply been defined as value that is created whenever benefits exceed costs.²⁷ Total waste, as used in this context, is the cost and is broader than the notion of waste previously introduced in this chapter. Within the context of SSCM, and rather than focusing only on economic waste alone, total waste includes attempting to value *all* social, environmental, and economic waste (our negative impact on the environment and people, relationships, suppliers, and customers). An example of this can be found in Puma's release of information regarding their environmental impacts from their own operations, and those of their tier-1 through-4 suppliers for water use, GHG emissions, land use, other air pollution, and solid waste with an associated cost of 145M EUR, or almost \$192,000,000 US.²⁸ As of the writing of this book, Dow Chemical is poised to also release its environmental impacts as part of a phase-I Environmental Profit and Loss statement also called an EP&L. While these valuations of environmental impact are not a full measure of the sustainable value added, they are a logical step in this direction and part of a trend toward integrated reporting and a new performance measurement frontier.

We already know that "brand" is a valuable asset. The Coca-Cola brand is worth more than half the market value, and a staggering 10 times the book value of its parent company.²⁹ If companies such as Coke or Microsoft can put brand on their books for umpteen billion dollars, what is the enhancement from more sustainable practices worth? When we start answering that question, then firms and their supply chains have a new opportunity to monetize the amount of value created from environmental and social actions as we move toward better performance metrics as

indicators of sustainability and firm performance ... or what we want you to start thinking about as SVA.

What this approach forces on management is the twin onus of sustainability—satisfying a real customer need while simultaneously reducing total waste. With this approach, we can see the limitations of prior approaches—at best, they focus on waste reduction and pollution prevention, and they do little for value maximization. The approach that forces management to focus on SVA is that of sustainable supply chain management and value maximization—the third and highest level of the performance pyramid.

Sustainable Value Maximization

At this level of supply chain management, sustainability is integral to the business model.

That is:

- The key customer targeted is someone for whom sustainability (one of the six supply chain outcomes) is either an order winner or at a minimum an order qualifier.
- The value proposition explicitly identifies sustainability and offers it as something that the customer is willing to pay for.
- The firm has organized its capabilities to ensure that value is being delivered. This means that it focuses on both the maximization of value and the elimination of waste/pollution within the production system.
- Performance measurement goes beyond the firm to include the supply chain and ultimately the community.

When viewed from this perspective, it becomes clear that environmental and social sustainability are integrated and simultaneously inclusive of business sustainability. This is the image that we see when we review the vision put forth by Polman for Unilever. It is a vision that emphasizes SVA; it is a vision that focuses both on value creation and waste reduction. It also represents a vision that seeks to ensure that the community benefits from sustainability—both as consumers and as suppliers. It also represents a situation where environmental and social sustainability are viewed as not

only being critical for the firm and the planet but as essential to developing and maintaining a sustainable competitive advantage. For a synopsis of 20 studies showing the business case for sustainability, see “Sustainability Pays,” a project by Natural Capitalism Solutions.³⁰

These are the goals that every firm should aim for when developing a sustainable supply chain and the attainment of these goals will be the focus of the rest of this book.

Summary

This is a book about developing and maintaining the sustainable supply chain. Given the growing importance of sustainability, it is also important that we develop a thorough and well-grounded understanding of this business paradigm. That has been the goal of chapter two. In this chapter, the following points were made:

- How sustainability implementation and achievement affects the extent to which environmental and social performances are viewed as complementary or as trade-offs.
- Sustainability can be implemented in one of the three ways: as public relations, as waste management, or as sustainable value management.
- When focusing on SVA, think in terms of the business model and strategy of the organization, value creation, and waste elimination.
- The business model forces us to think in terms of aligning three interrelated entities:
 - The key customer
 - The value proposition
 - The capabilities of the system
- We have chosen to focus on the notion of SVA, or value adjusted for waste. This approach has been used to force managers to recognize that they must deal with both the elements—value and waste.
- It is when we implement sustainable supply chain management as sustainable value delivered that we see a system for synchronizing financial, environmental, and social sustainability.

With chapter two as a foundation, we are now able to move toward the challenge of developing a sustainable supply chain. As we do so, there is one more foundational element to introduce—performance measurement and metrics. That is the focus of the next chapter.

Applied Learning: Action Items (AIs) and Audit Questions (AQs)—Steps you can take to apply the learning from this chapter

- AI: What companies in your own industry do you consider leaders in sustainability? Why?
- AI: What is your business model: key customer, value proposition, and capabilities?
- AI: How can you start measuring value creation and waste to enable the concept of SVA?
- AQ: Who are your organization's key stakeholders? Why?
- AQ: Conduct a self-audit of your firm's environmental and social sustainability practices.
- AQ: How many and what types of waste are within your own operations?

For a more in-depth assessment, and to receive summary information of your AQs relative to others, you can access the Sustainable Supply Chain Assessment tool for this book at: www.duq.edu/sustainable-supply-chain-management

Further Readings

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- McDonough & Braungart (2002). *Cradle to Cradle*. North Point Press.
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