

SECTION IV

Emerging Issues in Sustainable Supply Chain Management

CHAPTER 6

Integration: Supply Chain Management and Sustainability

Scope 3 emissions are a treasure map of opportunities across the value chain.

Pankaj Bhatia, Director of the GHG Protocol,
at the Word Resources Institute

- In comparison to peers who do not actively engage employees, companies who do can measure their competitive edge in the form of increased profitability (16%), productivity (18%), customer loyalty (12%) as well as decreased employee turnover (25%), safety incidents (49%), and absenteeism (37%).¹
- The annual Sustainability Executive Survey from Green Research finds 88% of senior sustainability executives say they plan on investing in increased employee engagement.²
- Since 2008, Intel has calculated every employee's annual bonus based on the firm's performance in measures such as product energy efficiency, completion of renewable energy projects, and company reputation for environmental leadership.³ Its market share among semiconductor manufacturers has reached a ten year high.
- Working with a panel of executives and external experts, including BSR, Conservation International, Food Animal Initiatives, and World Wildlife Fund, McDonalds now publishes a Best of Sustainable Supply Chain report highlighting supply chain partners working to improve food sources, the environment, communities, and employee wellness around the world. The best suppliers are recognized based on their measureable results and innovation.⁴

So far, our focus has been on the firm in isolation. By focusing on the firm alone, we overlook the importance of the structure that supports the firm. That is like us going to a game and watching a very successful team, without realizing that the success seen on the field is due in large part to the support of the processes and systems the team created. This support takes many forms—training, scouting, and talent development, to name a few. In today’s business world, this support increasingly comes from the supply chain. That is, sustainability in the firm requires sustainability in the supply chain. This reality can be readily seen in the experiences of firms like McCormick and Company.

McCormick & Company Achieves Sustainability Through Their Supply Chains

McCormick and Company is a multinational manufacturer, marketer, and distributor of spices, herbs, seasonings, specialty foods, and flavors to the food industry. From field to fork, this company has a history of sustainability and integration. Headquartered in Maryland, McCormick consists of over 13 major brands including McCormick U.S. Consumer Products, McCormick for Chefs, Industrial Flavor Solutions, Zatarain’s, Simply Asia, McCormick Canada, Swartz, Ducros (France), Silvo (Netherlands), Margao (Spain and Portugal), and Vahine. Being an agriculture-based business, McCormick has long recognized that it is dependent on its suppliers for quality inputs into its business model and value creation process. More importantly, it is dependent on having a supply chain that is sustainable from both an environmental and a social perspective. To that end, McCormick has implemented a series of programs aimed at developing a growing, global supply chain that can support McCormick’s needs both now and into the future. Among the programs introduced are the following:

- **McCormick’s Supplier Diversity Program**—a program that seeks to develop relationships with qualified diverse businesses that are capable of meeting McCormick’s quality needs while McCormick also provides assistance to improve economic conditions to the communities that supply their raw materials.

- **Aggressive Global Sourcing**—The company's Global Sourcing team works with local farmers to ensure that they follow best practices for growing crops at the local level. Since most spices can only be grown in certain specific areas and climates, McCormick works on building and maintaining a consistent and reliable supply of high-quality products. As an example, McCormick was an early and aggressive participant in Uganda's vanilla industry. It worked with aid agencies and non governmental organizations to improve quality, increase yield, and to secure fair prices for the local farmers. The result of this long-term process was an established demand for high-quality vanilla combined with jobs for local farmers that paid a living wage. Similar activities have been undertaken in India and Indonesia.
- **Strict Adherence to a Companywide Supplier Code of Conduct**—McCormick established a standardized internal compliance system to maintain strict high-quality standards worldwide.
- **Transparency in the Supply Chain**—A practice that enabled McCormick to meet and exceed the strict requirements of the recently introduced California Transparency in Supply Chain Act of 2010—an act that went into effect on January 1, 2012. This act aimed to increase the amount of information made available by manufacturers and retailers regarding their efforts to address the issue of slavery and human trafficking.

In short, in McCormick, we see a company that has had to rely on its supply chain for more than simply product—it is dependent upon its supply chain to provide consistently high quality products grown in a sustainable manner and that are free of problems such as child labor, slavery, and human trafficking. To McCormick, the effective supply chain is the key to successful sustainability.

Objectives

When it comes to sustainability, there is no way that any firm can escape one central truth—you are no stronger or better than your weakest link. In a world where supply chain management is a given, not an option, this

means that you are no better than the weakest link in your supply chain. Therefore, sustainability must become a supply chain mandate, not simply an internal mandate. This issue forms the central core of this chapter.

By the end of this chapter, you will be able to:

1. Understand the integrated supply chain is and such tactics as supplier base management and interoperability.
2. Review the drivers, barriers, and enablers associated with integrating the supply chain into corporate sustainability initiatives.
3. Apply a systematic approach to making sustainability a day-to-day habit.

As we can see from McCormick, supply chains are critical to sustainability. However, this insight is not new nor is it limited to the food products industry. In Chapter 2, we began our journey into sustainability by describing the changes now taking place at Unilever, where Paul Polman was implementing a new direction for this very successful company. If you examine the key strategic initiatives, you find the supply chain playing a central role. Polman did not simply see the new key customers being drawn from developing countries; he also saw these same markets as being the suppliers—growing products in a sustainable fashion for Unilever. This strategy impacts Unilever in two ways. First, Unilever, like McCormick, now has a secure, sustainable supplier base that is able to support the strategic goals and aims of Unilever. Second, by developing this supplier base, and by paying them a living wage, Unilever, like McCormick, has helped create community infrastructure and a new set of customers—people who are now able and willing to buy the products offered by companies such as McCormick and Unilever.

This recognition of the importance of the supply chain to the success of sustainability is not limited to companies such as Unilever and McCormick. Others have also recognized the importance of the supply chain to sustainability—companies such as Walmart, McDonald's, Nestle, Intel, Novozymes (a producer and seller of industrial enzymes, microorganisms, and biopharmaceutical ingredients), Procter & Gamble, and Coca-Cola (to name a few) have also come to this same realization. That is, in today's business environment, the supply chain is critical; to succeed with

sustainability, the supply chain must play a major role. The rest of this chapter explores the role played by the integrated supply chain in sustainability.

Supply Chain Management—A Synopsis

Supply chain management can be viewed as the design and execution of relationships and flows that connect the parties and processes across a supply chain. Supply chains, as illustrated in Figure 6.1, consist of both upstream (from our firm back through our suppliers ultimately to the source of the raw materials) and downstream (from our firms through the various customers through to the ultimate customer—the consumer). Understanding how these activities work together, the business models and performance measurement behind them, how information flows in both directions, and how they can be integrated is important to improving the supply chain. As indicated by the definition, supply chain management includes both relationships and flows.

Relationships deal with the types of linkages that are built between partners in the supply chain. We could have close, collaborative relationships, characterized by frequent contact between partners and constant sharing of information and risk. Alternatively, we can have arm's length

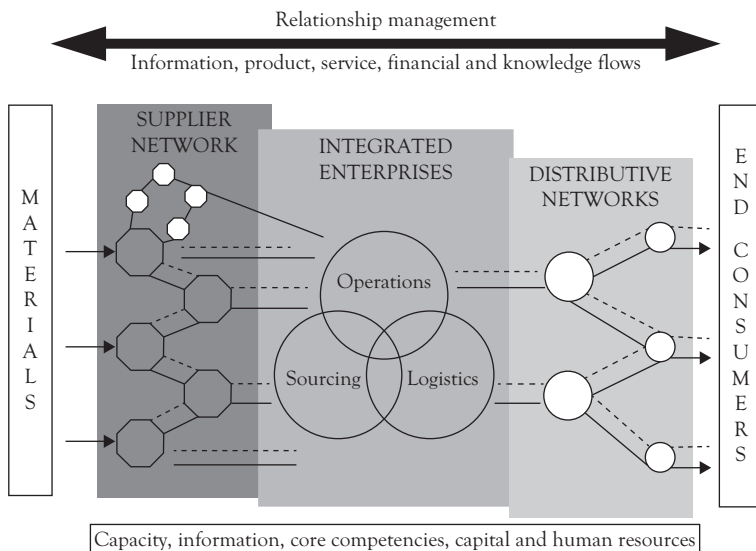


Figure 6.1. *The integrated supply chain.*

relationships. In these relationships, we have limited sharing of information and our contacts are limited to the placing and receiving of orders and the resolution of any problems associated with these orders. Flows, as shown in Figure 6.1, consist of processes used to design, supply, produce and deliver valuable goods and services to customers.

Supply Chain Management—Benefits and Risks

Supply chain management has emerged as a major business paradigm for several reasons. Understanding this paradigm is critically important to finding where and how sustainability initiatives will fit within existing systems.

First, the supply chain enables the firm to respond quickly to customers whose needs are dynamically and continuously changing. With the old approach (i.e., presupply chain), when demand changes, the firm would have to change its capacities. This, in turn, defined its capabilities, or what the firm could and could not do. To change capacities, it would have to build capacity and/or hire more people. All of these actions took time and exposed the firm to potential risk (e.g., of increasing capacity only to find that the demand was not sufficiently persistent). With supply chain management, firms now realize that they can rely on their suppliers when responding to changes in demand. This flexibility not only applies to capacity but also capabilities (specific skills that we need to meet the changing requirements of the business model). As the required capabilities change, we can turn to our supply chain to look for these new capabilities. This strategy reduces response time, costs, and potential risks.

Second, by turning to our suppliers, we can rationalize investments and focus. No firm can do everything well. Furthermore, some skills are important to our strategies and to our customers while others are not. These critical skills are referred to as **core capabilities**. For example, Honda's core capabilities lie in its ability to design and manufacture an efficient, low-vibration engine. Every product or business line that Honda enters is characterized by its demand for such an engine—cars, motorcycles, lawn mowers, snow blowers, generators, marine engines, and now jet engines. Consequently, it makes sense for the firm to focus on its core

capabilities and to outsource everything else (ideally to those having the appropriate core capabilities in these outsourced products). Furthermore, by identifying the core capabilities, any organization can develop a firm rule for what is never outsourced—your core capability. By involving the supply chain, firms can focus on becoming better on their core capabilities.

Third, by involving our suppliers and customers directly through supply chain management, the firm can draw on their insights, expertise, and problem-solving skills. This means that better solutions can be identified much more quickly and at lower costs.

Finally, we must recognize that products and information flow both ways in the supply chain. The same supply chain that brings goods and services to the market can also be used to manage the collection, disposal, and recycling of products that have reached the end of their useful life. This reverse flow goes under several different names, for example, reverse logistics or product take back (this development will be discussed in greater detail later on in this chapter). This is what we see being done by McDonald's UK, where the company uses the same trucks that deliver new goods to their restaurants to also collect cardboard for recycling. This practice has significantly reduced the amount of waste going to landfill as well as lessening emissions from transport. In 2010, McDonald's UK diverted 12,000 tons of cardboard from landfill sites to recycling facilities.⁵

Yet, against these important advantages, supply chain management does expose the firm to certain problems. First, with supply chain management, there is the issue of lack of control. Since you are now working with suppliers who are not owned by your firm, this means that you are dependent on them to work in a manner that is consistent with the dictates of your business model. This is a critical issue for firms where sustainability is core to their business model.

For example, the supply chains in some industries (including electronics, textiles, cocoa, and coffee), which involve developing countries, are plagued by human rights and health and safety violations. Human rights issues include excessive overtime, low wages, unsafe working conditions, and even forced and child labor. Unless addressed, the responsibility for these problems will be laid at the feet of the firm in whose supply chain

these problems occur. Not knowing that these problems are taking place does not protect the firm from being blamed. For instance, in 2012, an audit supported by Nestle found violations of its labor code of conduct, including the use of child labor by suppliers in the Ivory Coast, which is the world's largest producer of cocoa. Stating that eliminating child labor in its supply chain is its number one priority, Nestle is collaborating with the Fair Labor Association to train and certify suppliers, increase monitoring, and work with the Ivory Coast government.

Closely associated with the preceding point, there is the issue of lack of visibility. As we proceed further and further away into the supply chain (into lower and lower tiers—from tier 1 to tier 2 to tier 3), we begin to lose visibility into what is happening at these lower levels. Consequently, like Nestle from the preceding example, we may find ourselves faced by problems created at lower levels that can adversely affect our performance. This lesson has been painfully driven home to Mattel Toys. In August 2007, Mattel, America's largest toy manufacturer, announced the first of five recalls involving 21 million toys (most of which were made in China), with the recalls taking place from August to November. The source of these recalls—problems created within the third tier of Mattel's supply chain.

In many cases, the problems created at one level are often hidden as the products move through the various levels until they reach the final stage. Once they get there, the problems become evident—often too late for the firm to do anything about them.

It was noted earlier that the problems of visibility and control are essentially important when dealing with sustainability. The reason is that once a firm decides to compete on sustainability as its primary core value, then the marketplace holds the firm accountable not only for its performance but also for the performance its supply chain partners. The responsibility for problems in the supply chain is often directly assigned to that party that is most visible in the supply chain. This lesson has been painfully learned by companies such as the Body Shop, Apple (with its supplier—Foxcom and that supplier's history of labor management problems and violations of child labor laws), and Nestle.

Finally, by relying on the supply chain, we create the possibilities that we may be adversely affected by problems within the supply chain. That

is, a disruption at the supplier level for whatever reason (e.g., bankruptcy, labor strike, or natural disaster such as tsunami, earthquake, or fire) combined with a lack of adequate protection (in the form of excess inventory, excess capacity, or excess lead time) can result in stockouts and production problems at the firm.

As can be seen from this discussion, supply chain management is a dual-edged sword. It is becoming a necessary fact of life; it brings with it certain critical advantages; it also brings with it certain risks and potential problems. Yet, for sustainability, integrated supply chain management is a necessity for success.

The Rise and Current State of Sustainable Supply Management

Our own research based on interviews with sustainability executives from large multinational corporations (including 3M, Alcoa, Baxter, Dow, DuPont, EMC, FedEx Ground, Ford, Johnson & Johnson, H.J. Heinz, Herman Miller, IBM, and P&G to name a few) provides insight as to how they operationalized sustainability internally and work with supply chain managers to integrate supply chains.⁶ When asked how management knows if they are successful in meeting objectives for sustainability and its integration, we find the following top three primary areas of focus for these executives involves: performance measurement; the importance of rankings; and the development of sustainability reports.

As we know from Chapter 3, performance measurement is a key enabler of sustainability. When discussing the importance of measurement, the majority of participants highlighted setting goals and KPIs as the most important enablers of understanding if operations and processes are progressing toward sustainability goals. It was noted that “compliance” is something applied to regulation and known standards. Instead of looking at environmental regulations, sustainability should be everyone’s responsibility and demonstration of this can be found in meeting and exceeding goals while tracking key performance indicators. What makes new initiatives successful is a combination of leadership, short-term and long-term projects, a road map, and compensation tied to performance of natural AND social capital initiatives. While there are many different

metrics discussed by MNCs we worked with, the most frequently noted include:

1. Energy efficiency
2. GHG emissions
3. Water consumption
4. Solid waste
5. Product attributes
6. Environmental exposure
7. Benchmarking up to multiple environmental and sustainability indices
8. Carbon indexed to products and revenue

The importance of rankings cannot be overlooked. Something on the minds of managers everywhere includes the following, “how is success/compliance with sustainability measured?” The response to this question by executives and managers from the companies we have worked with demonstrates the importance of the external evaluation of a company as a measure of the integration of sustainability within a firm and within its supply chain. Some approaches to external scanning captures and looks for competitors or their own firm’s inclusion within upwards of 15 separate environmental and sustainability rankings annually. Inclusion within a ranking is leveraged by sustainability professionals to validate practices and demonstrate programs going beyond compliance. The three primary rankings or indices highlighted in this study, in order of frequency are Newsweek’s Green Rankings, the CDP, and the Dow Jones Sustainability Index with the Davos rankings also garnering attention. Managers expressed frustration with the difficulties in understanding the meaning of sustainability as there are different ranking methodologies used across industries. There is a need for commonly accepted methodologies for measuring and assessing sustainability indices and rankings. One commonly recognized approach is with the use of the GRI outlined in Chapter 3.

The GRI is highlighted as the leading approach to measuring and disclosing information. Other important highlights include the use of integrated financial, environmental, AND social reporting, and the ISO

certification also demonstrating assurance of performance within known standards. To this end, environmental management systems (ISO 14,000) continue to be important enablers of measuring and managing performance. These management systems are a formal system and database that integrate procedures and processes for the training of personnel, monitoring, summarizing, and reporting of specialized environmental performance information to internal and external stakeholders of the firm. The documentation of this information is internally focused on practices such as design, recycling, pollution control and waste minimization, training, reporting to top management, and the setting of goals. The use of this information for external stakeholders is primarily found in annual reports, focuses on the outputs of the firm, and is used to enhance firm image.⁷ There is a growing recognition of opportunities for integrated financial and sustainability reporting. This trend of integration and transparency has caught the attention of many through recent surveys and published empirical evidence.⁸

Other notable areas of importance in the integration of sustainability include viewing this paradigm through the eyes of multiple stakeholders. One way of assessing the ability to meet objectives is to measure the extent to which sustainability is integrated and understood across all areas of a company. The use of employee surveys, stakeholder feedback, and engaging communities are all important measures of this extent of integration. With the importance of measurement, rankings, annual reports, and stakeholder engagement to understanding the extent to which organizations are sustainable, managers are now better able to understand this paradigm. This understanding is due to the scrutiny of sustainability in measuring and managing processes and its application into formerly uncharted territory. To take this stakeholder perspective across functions, supply chain transparency provides a complex and global perspective to sustainability.⁹ To what extent companies can measure supply chain impacts is fundamental. The scale of this issue grows exponentially if you imagine trying to assess performance and impact of up to 25,000 suppliers to a company within the constraint of not being able to audit each supplier. Given the dynamic and complex environment of global supply chains, we need to leverage financial, operational,

and predictive metrics awaiting sustainability professionals when pursuing integration and collaboration in the name of sustainability.

We see sustainability professionals from leading companies have translated this management paradigm into a diverse set of actionable practices. A conceptual model (Figure 6.2) of our work with MNCs highlights the primary drivers of sustainability from Chapters 1 and 2 while linking drivers to performance (Chapter 3), and the need for design and collaboration (highlighted in Chapter 5).

It is worth noting management’s responsibility in providing clarity and attention to sustainability initiatives. Through defining and aligning sustainability with company mission and performance metrics, supply chain managers and the growing ranks of sustainability professionals will better organize teams to enable new initiatives and to better integrate social and natural capital measurement across functions. This measurement drives success with voluntary initiatives and improved performance with internal and external opportunities to report results for recognition and enhanced brand image. Compliance is not the best label for companywide integration of a voluntary paradigm and instead, a focus on “performance” and the ability to meet and exceed goals is a better approach. To ensure improved performance, supply chain and sustainability professionals must work across their organization and into their supply chains to also measure and manage the contributions of a supply chain to a company’s natural capital, full life cycle impacts, social capital, and performance.

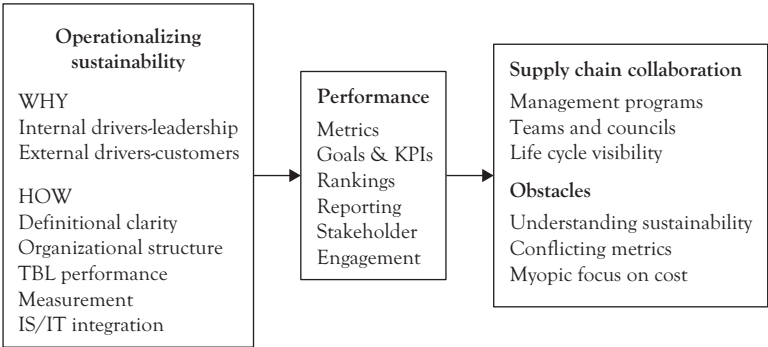


Figure 6.2. Integration of sustainability.

There is little doubt that both the significance and prevalence of instituting sustainability practices, within the organization overall as well as in the supply management group, is on the rise as is evident in the following.

- The 2011 MIT Sloan Management Review Research Report based on their Sustainability & Innovation Global Executive Study found that despite difficult financial times, 68% of organizations increased their overall sustainability commitments during the course of 2010, up from 59% in 2009, and only 25% in 2008.
- According to a series of surveys and interviews of large European corporations carried out by HEC and EcoVadis, 90% of supply management directors consider sustainable supply management to be an important or critical priority in 2009, vs. 60% in 2005 and only 40% in 2003.
- The CDP's 2011 supply chain report, created by A.T. Kearney, found that the time period between 2009 and 2010 saw a 40% jump, from 46% to 86%, in the number of supply organizations who worked with their suppliers on carbon-related activities, and that 45% of the surveyed companies are tracking and reporting on their supply chain emissions, double those in 2009.

Supply Chain Implications for Sustainability

For the preceding findings to become viable, then managers have to recognize the need to take a more active role in developing suppliers that can support the objectives of sustainability. Specifically, this means that firms must develop and implement:

- An active supplier base management system
- A system for managing system interoperability
- A system for ensuring that we manage for more than pollution

Supplier Base Management

Supplier base management, as proposed by Melnyk, Griffis, Macdonald, and Phillips (2010),¹⁰ is a proactive strategy developed by firms for

Table 6.1. The Supplier Base—Old and New Views

Key issues	Old view	New view
<i>Which suppliers to focus on</i>	Current major suppliers (those that we do the most business with or who are important to our business)	Current major suppliers Minor suppliers Potential suppliers “Past” suppliers Go beyond first tier
<i>Relationships</i>	Current	Current AND Future
<i>Attention spent on past suppliers</i>	Minimal (since they are past, they are no longer important)	Great (knowledge transfer, discussion/decision on technical support)
<i>View of the supplier base</i>	Static (change not considered)	Dynamic (supplier base constantly changing)
<i>How supplier base Performance is measured?</i>	Cost Quality	Multiple dimensions including sustainability (depending on desired outcomes)
<i>Awareness of other supply chains</i>	Low	High

developing and managing its supplier base (i.e., the upstream portion of the supply chain) so that this base is supportive of the firm’s business strategy and business model. Supplier base management refers to a new, emerging view of the supplier base. These differences between this new view of the supplier base and the old view are summarized in Table 6.1.

As this table suggests, the new view underlying supplier base management takes a more holistic approach. It focuses on a larger set of suppliers (current and potential), recognizes that the supplier base and supplier relationships are dynamic, and that the desired outcomes from the supplier base may include multiple competitive dimensions. Supplier-based management consists of four major activities: (a) managing the majors; (b) developing the minor suppliers; (c) scouting; and (d) transition management.

Managing the Majors: For most firms, this forms the major focal point. Major suppliers are the current set of suppliers with which the firm is working. While we assume that this set of suppliers is fixed and stable, we must recognize that these assumptions are neither appropriate nor desired. A stable supplier base at this level is attractive because we know the suppliers that we are working with. Yet, without some degree of

turnover in suppliers, there is the ever-present danger that this supplier base will become complacent, generate less innovation, or be more likely to take advantage of us. Furthermore, there is also the danger that the skills present in our existing supplier base may not be consistent with our new emphasis on sustainability. In addition, a stable supplier base may not be able to respond quickly enough to changes in demand. Finally, we must recognize that suppliers can and do drop out. They do so for a number of valid reasons—bankruptcy, changes in strategic direction, or acquisition by other firms (to name a few). Consequently, we need a system for “feeding” this set of suppliers—this system is the process of minor supplier development.

Developing Minor Suppliers: Minor suppliers can be viewed as potential replacements for current major suppliers. Supplier base management fulfills a number of critical functions for the buying firm regarding its suppliers: (a) it facilitates evaluation of these suppliers by identifying capabilities, strengths, and weaknesses; (b) it allows the buying firm to shepherd these suppliers along in their development, thereby providing the buying firm a chance to encourage those good suppliers to either fill currently unmet needs, or to challenge current active suppliers for their place in the supply chain; (c) it creates an environment for supplier education, to teach the supplier about how the buying firm’s system operates, how suppliers are evaluated, and the goals and core values of the buying organization; (d) it facilitates supplier integration, to smooth the process of integrating the supplier and its systems into the buying organization’s system; and (e) it allows the firm to develop suppliers with capabilities different from those currently offered by major suppliers and which may be demanded in the future.

Changes in the desired outcomes (as captured in the business model) can result in the firm requiring capabilities different from those found within its current system. Critical to assessing these capabilities are the capabilities offered by its existing suppliers. That is, our capabilities are determined by both our internal factories and external factories (the suppliers). When new or changed supplier capabilities are required, managers must realize that these new capabilities may not exist in the current supply base; and that new suppliers may be needed to provide the necessary

capabilities. Thus, we need to understand the difference between supplier capabilities and our own, then adjust our planning and execution systems to maximize sustainability?

Scouting: Scouting does more than simply help the firm identify potential suppliers that the buying organization can work at recruiting for itself. Scouting includes two other critical activities. First, it seeks to enhance the attractiveness of the firm as a potential partner and buyer to these desirable potential suppliers. Furthermore, scouting carries out a competitive intelligence function regarding the supply chains of major competitors. Scouting can identify potential trends, developments, and changes taking place at competitors, better positioning a firm to assess the implications of these changes. Scouting can help the firm identify what its competitors are doing with sustainability in their supply chains. Such practices and approaches may be ones that we can also use in our supply chains. More importantly, these practices and approaches may shape the expectations of our customers, when it comes to judging and understanding sustainability in our supply chain. It is ironic that while marketing encourages such activities (in the guise of marketing intelligence), such activities have received almost no notice in the supply chain management literature.

Transition Management: The last element, transition management, focuses on moving suppliers into and out of the various levels of the supplier base. The objective is to limit problems created during transition. Too often firms depend on their major suppliers for innovation, developing and maintaining drawings and material and/or product specifications with no existing plan for transferring knowledge. When a major supplier moves out of the supplier base, the buying organization may have to address such issues as the management of intellectual property or any other knowledge that is critical to the buying organization but that resides with the supplier. Ensuring that intellectual property is protected, as well as uncovering invisible factories the buying firm may be unaware of can lead to significant challenges during supplier transition. Suppliers take with them detailed knowledge that the buying organization relies upon, knowingly or unknowingly, to ensure product quality. Exiting suppliers may not always be willing to provide this information to the buying firm or the replacement supplier, depending upon the reason for their exiting a

supply chain. In other cases, departing suppliers may even hold firm assets “hostage.”

A System for Managing System Interoperability

Interoperability refers to the extent to which different organizations can interface with each other. This concept exists at three levels:

- Data (can we share and use the same data)
- Processes (can we interface key processes with supply chain partners)
- Expectations (are the expectations of partners sufficiently consistent with each)

Past research has focused on the first two dimensions. Developments such as electronic data interchange (EDI) and the SCOR (Supply Chain Operational Reference) Model developed by the Supply Chain Council (<http://supply-chain.org/>) and discussed in Chapter 3 have played an important role in addressing the concerns raised by the first two levels. Consequently, this leaves us with the last form of interoperability—alignment of expectations.

The alignment of expectations is a new and increasingly critical dimension. What this dimension recognizes is that the parties entering into any relationship such as a supply chain relationship bring with them different expectations. If these expectations are sufficiently different between the parties are sufficiently different, then the relationship will not likely start.

Yet, the differences in expectations can occur in several different ways:

- We enter the relationship with different expectations and they remain different;
- We enter the relationship with different expectations and these change over time;
- We enter the relationship with similar expectations and these change over time; or,
- We enter the relationship with different expectations and they converge over time.

All of these instances, except for the last case, can create problems with any business model that is built around sustainability. The reason is that the parties may take actions that are consistent with their expectations but not with systems thinking and the expectations of the other parties involved.

To deal with these differences in expectations, firms can draw on a number of tools:

- Frequent communication, visibility, and transparency within the supply chain.
- On site visits with the aim of seeing if the actions being taken are consistent with the goals/expectations of the other party.
- Metrics and performance measurement. As pointed out in Chapter 3, metrics and performance measurement communicate what is important in a relationship and what is not important. It also facilitates the identification of potential problems and development of corrective actions.
- Standards that the other parties are expected to conform to it. As we have shown earlier in Chapter 4, these standards identify minimum levels of acceptable practices and processes that the parties are expected to implement and conform to.

By implementing these and other tools, we seek to develop a situation where the actions taken by our supply chain partners support our sustainability-based business model and they do not reflect negatively on this goal.

Integration—The Key to the Sustainable Supply Chains

Critical to the success of the sustainability initiative, as deployed within the supply chain, is the notion of integration, or the manner in which we link the various components that make up the supply chain. Integration is an important term that is frequently found in discussions pertaining to the supply chain. It is also a term that is often used without any definition. Consequently, it is one of the most misunderstood terms in supply chain management.

Integration occurs at various levels: legal, processes, data, systems, information flows, and the extent to which the participants invest in each

other's systems. Integration can be “tight” where the parties work together to ensure that their actions and flows are closely and continuously synchronized. Integration can also be “loose”—where the parties are bound by some set of general agreements over they will strive to achieve when working together. Integration is important because it influences three critical supply chain traits: **visibility**, the **ease of information flows**, and the resulting **relationship structure**.

Visibility (previously discussed in chapter 3) determines how far into the supply chain both upstream (through the supplies) and downstream (customers) you can affect see. As such, visibility is important because it serves as an early warning system. That is, the greater the visibility, the earlier that the organization can identify a potential problem before it becomes serious. Visibility is akin to your ability to look down the road when driving. The farther down the road that you can see, the earlier that you can identify a change in conditions (e.g., cars slowing down) and take appropriate corrective actions. Visibility gives you the time to evaluate the situation and to consider alternative actions open to you. Without visibility, you are faced by the need to take immediate actions now, often without a lot of evaluation of the situation or the options available. Decisions made without visibility are seldom the best.

The second trait, ease and openness of information flow, refers to how easily and openly information and data flows between the various parties in the supply chain take place. Information flows are important since they help shape expectations and ensure that these expectations are aligned. The ease and openness of information flows contribute to the timeliness of information (i.e., early warning) and the extent to which important information is provided in advance or is made available after the fact.

The third element, relationship, focuses on the structure or governance under which the parties involved in the supply chain relationship work together. Relationships are important because they affect such supply chain traits as:

- Duration of the relationship
- Obligations of the parties involved
- Expectations of the parties involved

- How the parties interact and communicate with each other.
- How planning and the setting of goals across the supply chain takes place
- Performance measure and analysis
- Sharing of benefits, costs, and risks.

Relationships can take many forms (transactional/arm’s length versus collaboration and strategic). For the sake of simplicity, we will focus on and compare arm’s length versus collaboration, as summarized in Table 6.2.

Alignment of expectations and sharing of information are easier under a collaboration relationship. But, it is also more resource intensive in that the firm has to identify the “right” partner, evaluate the partner, work on building trust and credibility, and then work on maintaining the relationship—all of which requires time, management commitment, and resources.

A second consideration is that of how tightly linked the relationships are. When we talk about tightness, we are talking about such issues as:

- Sharing of information
- Extent to which information is “pushed” or “pulled”—that is, is information provided without being asked for (i.e., pushed) or is it provided in response to specific requests (pulled through the supply chain)?

Table 6.2. Relationships: A Comparison of Arm’s Length and Collaborative

Arm’s Length/transactional	Collaborative/Relationship
Short term (year or less)	Long term (often exceeding a year)
Legally defined (often by the contract)	Based on expectation of mutual benefits and trust
Limited information sharing	Extensive information sharing
Relationship viewed as a zero-sum game	Relationship viewed as a “win/win”
Relatively resource light (i.e., does not use an extensive amount of resources)	Very resource intensive
Appropriate for commodities	Appropriate for strategically important products or services

- Extent to which the information is symmetrical or asymmetrical.
- Extent to which firms make investments in each other's systems.

Relationships span a spectrum ranging from a modular system on one end to a unified system on the other. With a **modular system**, the firm has limited visibility into the supply chain. In most cases, this visibility can be best described as being “one up and one down”—that is, we are integrated with our immediate customers and with our immediate suppliers. Yet, beyond these, we have almost no visibility. Underlying the modular system is the implicit demand that our partners manage the problems beyond our span of attention. That is, the first-tier supplier is responsible for managing any supplier problems occurring below them; similarly, the immediate customers are required to deal with any demand-side problems. This puts a great deal of responsibility on these partners. Modular integration is relatively cost efficient. Yet, it does expose the firm to greater risks since visibility is very limited.

In contrast, there is the **unified approach** where relationships are being built through the various stages, with the goal of coordinating the activities. This approach gives greater visibility. With visibility, we can see beyond the first tier and identify potential problems before they can affect us. We can intervene and prevent a minor problem from becoming a major one. Yet, this visibility comes at a cost in the form of greater resources and time needed to develop this visibility. The point being raised here is that of trade-offs.

The analysis between these two competing approaches is further complicated by the increasing presence of business analytics. Business analytics is the culmination of three important trends:

- More powerful, lower-cost computers
- More powerful software packages that are based on advanced mathematics, statistics, and other similar quantitative tools
- Greater availability of information (also called big data).

The result is that companies such as IBM, L'Oreal, McDonalds, P&G, Unilever, and Walmart to name a few, have implemented analytics aimed at providing firms with greater visibility into their supply chains.

Supply Chain Management's Integration Opportunity

Despite ongoing attempts to integrate supply chains, many individuals and teams can be overwhelmed by the organization of data required for effective analysis to fully understand sustainability issues and opportunities. The competitive advantage a firm can derive from supply chain integration and optimization is from understanding and leveraging the emerging methods, guidelines, and standards now available to supply chain and sustainability professionals outlined in this book.

Requirements for successful supply chain management integration require communication and trust as information exchange is essential for supply chain members to understand each other, share common goals, and make decisions that are mutually beneficial. As Senge, Lichtenstein, Kaeufer, Bradbury, and Carroll, (2007) found meeting the challenges of sustainability “writ large” would require not only supply chain integration, but also cross-sector collaboration for which there is no real precedent.¹¹

Additional requirements for successful analysis require supply chain visibility leveraging information systems and data sharing with supply chain members to see into any part of a supply chain to access data on inventory levels, or the status of shipments. This visibility within supply chains is growing more expansive of both social and environmental metrics. These metrics are now included in firm performance and are solicited as part of supplier assessment programs and audits including examples such as Walmart's 2011 initiative in Table 6.3.

An important part of any analysis will be performance metrics as they are necessary to confirm whether a supply chain is functioning as planned and help identify opportunities for sustainability and performance improvement. Signaling through the Walmart supplier assessment signals the importance of energy and climate; material efficiencies; natural resources; along with people and the community. There are a variety of traditional supply chain measures used, including but not limited to reliability; asset utilization; costs; quality; and flexibility. Performance metrics involving sustainability are gaining prominence as stakeholders including supply chain customers are asking for disclosure of social, governance, and environmental information more than any previous time in history. The pressure to measure and

Table 6.3. Walmart's Supplier Sustainability Assessment: 15 Questions for Suppliers¹²

<p>Energy and climate: reducing energy costs and GHG emissions</p> <ol style="list-style-type: none"> 1. Have you measured your corporate GHG emissions? 2. Have you opted to report your GHG emissions to the CDP? 3. What is your total annual GHG emissions reported in the most recent year measured? 4. Have you set publicly available GHG gas reduction targets? If yes, what are those targets?
<p>Material efficiency: reducing waste and enhancing quality</p> <ol style="list-style-type: none"> 1. If measured, please report the total amount of solid waste generated from the facilities that produce your product(s) for Walmart for the most recent year measured. 2. Have you set publicly available solid waste reduction targets? If yes, what are those targets? 3. If measured, please report total water use from facilities that produce your product(s) for Walmart for the most recent year measured. 4. Have you set publicly available water use reduction targets? If yes, what are those targets?
<p>Natural resources: producing high-quality, responsibly sourced raw materials</p> <ol style="list-style-type: none"> 1. Have you established publicly available sustainability-purchasing guidelines for your direct suppliers that address issues such as environmental compliance, employment practices, and product/ingredient safety? 2. Have you obtained third-party certifications for any of the products that you sell to Walmart?
<p>People and community: ensuring responsible and ethical production</p> <ol style="list-style-type: none"> 1. Do you know the location of 100 percent of the facilities that produce your product(s)? 2. Before beginning a business relationship with a manufacturing facility, do you evaluate the quality of, and capacity for, production? 3. Do you have a process for managing social compliance at the manufacturing level? 4. Do you work with your supply base to resolve issues found during social compliance evaluations and also document-specific corrections and improvements? 5. Do you invest in community development activities in the markets you source from and/or operate within?

Source: Walmart Supplier Sustainability Supplier Survey, (2013). *Walmart Supplier Sustainability Assessment: 15 Questions for Suppliers*, http://az204679.vo.msecnd.net/media/documents/r_3863.pdf

disclose provides a proving ground for new and innovative ways to analyze the performance of a firm or a supply chain along multiple dimensions.

The continued global interest in improving business management through the reduction of GHG is driving sustainability-focused companies and suppliers to measure and manage their carbon footprint. While environmental and social responsibility is predominately voluntary in North America, environmental mandates in regions such as the EU have a far-reaching impact on manufacturing and logistics in the United States. The proliferation of US corporate acquisitions by European and Far Eastern companies results in the sustainability policies of these parent organizations

reaching around the world. In addition, suppliers of both goods and services to the leading edge sustainable organizations are beginning to see the shift from optional GHG improvement initiatives to required sustainability strategies to remain a viable supply chain partner.

Companies today are focused on shareholder and customer values while maximizing the velocity of information transfer, reduction of waste in the system, and minimizing response time. Supply chain integration involves working across multiple enterprises or companies to remove waste, and shorten the supply chain time in the delivery of goods and services to the consumer or customer. Until recently, supply chain analysis has overlooked opportunities for systems thinking and the ability to include forward-looking strategies for firms and their supply chains involving the primary elements of sustainability, that is, the ethical management of financial, environmental, AND social capital so firms can better measure and manage supply chains with an integrated approach to performance.

Collaboration

Now, we're seeing firms such as Nestlé take the concept of "shared value" and turn it into genuine, in-depth supplier collaboration. Its work with Golden-Agri Resources on palm oil in Indonesia (a difficult operating environment to get good news stories from) could soon become a model or benchmark for supply chain transparency.

In the equally complicated and low-margin clothing industry, companies such as New Look have done amazing work with suppliers, helping them understand how to run better factories. What have better factory management practices got to do with sustainability? Everything. If you want to cut forced overtime for workers, increase productivity, reduce accidents, increase profits, and lower environmental emissions and impacts—that's all about sustainability and efficient business practices.

That's easy to say, but your average stressed shift manager or factory owner doesn't usually know how sustainable business practices can or should be applied to their workers or business operations. We must remember that most developing-country entrepreneurs and managers didn't go to business school. They didn't have much, if any, real training. They saw opportunities, and they made it up as they went along.

That makes them heroes in many ways: for taking risks, creating jobs, and lowering prices. But, the unintended consequences of that created demand have been serious impacts on the environment and human well-being, as we all know. These managers are not bad people. They just didn't understand how to do business any other way, and most still don't. Big companies must help them find out, and push them to improve. Resource efficiency, environmental impacts, and the need to hang on to workers have created a pressing business case.

We don't know of a manager or business owner anywhere who would turn down practical help to become more efficient. Making sustainability stick has to be framed in those terms. Get that right and put the resources into doing so in a five-year timescale with annual reporting and measurement, and you'll be amazed at the results, for both your business, community, and the planet.

It really can be that simple. Invest in processes and practices while measuring the SVA, and get a massive return on investment.

Sustainable Supply Chain Management Integration

Over the past two decades, there has been an exponentially increasing amount of published research regarding sustainability in both practitioner and academic circles. Authors in the field of supply management have increasingly come to recognize the pivotal role which the supply management professional plays in bringing to fruition an organization's sustainability vision. Yet, many organizations are overwhelmed by this information and struggle to implement basic sustainability programs.

We turned to the literature to identify trends that both explain the current state of sustainable supply management, as well as highlight positive steps that could be taken to ease this transition.¹³ We reviewed over 200 of the most pertinent articles taken from both journals and special publications. A summary of this work provides a framework illustrating the internal and external focus necessary in order to successfully achieve the significant benefits of sustainable supply management (see Figure 6.3). To realize these benefits of integrating sustainability, internal sustainability champions will have to: (a) identify and articulate the organization's drivers, (b) mitigate existing and potential barriers, and

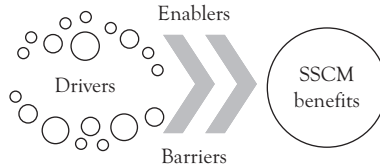


Figure 6.3. Important attributes of supply chain management integration.

(c) embrace the enablers for this process. Within the context of these categories, we next summarize and draw lessons learned from publications spanning almost two decades.

Drivers are those actions providing motivation for sustainable supply management. The main drivers tend to be external to the organization itself, and most are reactive in nature. The most commonly cited external drivers are: (a) the reactive need for regulatory compliance, (b) proactive considerations to avoid environmental impacts, and (c) reactive replies to customer and competitive pressure.

Not surprisingly, of the drivers internal to the organization, by far the one most commonly cited is that of cost savings. However, it is interesting to note that the next three most prevalent internal drivers are pressure from employees, commitment of the founder, and championing from senior management. This points to the fact that although ideally there is alignment across the organization for the need to implement sustainable sourcing management practices, it is possible to successfully approach this in either top-down or bottom-up fashion.

Barriers are typically anything that restrains or obstructs progress and barriers garnered much attention in the literature. Within this area, the most cited barriers to the implementation of sustainable supply management practices pertains to internal organizational issues including:

The presence of competing and incompatible corporate objectives within various supply chain participants. For sustainability to be effective, the various participants must agree that sustainability is critical. This agreement must not only be at a strategic level; but also at a cultural level. There should be a “gut” feeling among everyone in the firm that sustainability is not only strategically and economically the best option, but it is also the “right” option. In a past discussion with Dr. Robert Spekman of the Darden School of Business, the University of Virginia (and one of the research

leaders into B2B relationships and collaboration), it was noted that the first and major determinant of the success of a supply chain relationship is that of similarity of corporate cultures. If you see sustainability as critical but your supplier is more interested in cost, then you will not achieve sustainability. The importance of this consistency in culture (especially when dealing with key partners) is so important that it demands that the firm visit these potential partners directly to evaluate their corporate culture and their core values (with special attention being paid to sustainability as part of the core values). As Edgar Schein¹⁴ observed, corporate culture cannot be observed and assessed from a distance.

Incentive systems focused on short-term profits. In Chapter 2 of this book, we focused on Polman and Unilever. What is interesting about Polman's approach is that he has discouraged the use of quarterly reports. The reason—focusing on such results can divert attention from sustainability to, in most cases, cost. When this occurs, we send confused messages to the rest of the organization and to the supply chain. The message that we send—sustainability is important *only as long it does not negatively affect profit*. This implicit message communicates to everyone that profit, not sustainability, is the key strategic motivator.

Cultural resistance to change. Corporate culture, as previously noted, is critical. In many cases, when we introduce sustainability, we are effectively introducing a significant shift in strategy. If the firm has been successful with a previous strategy (most often cost based), the corporate culture that develops over time institutionalizes the practices and approaches that made the firm successful with this prior strategies. As the corporate culture is spread through on-the-job socialization, it often creates a force for stability. Such a force is important during periods of change. However, we must recognize that culture can also act as a source of resistance when the change being introduced is both fairly significant and different. Under such conditions, to overcome the resistance offered by corporate culture requires that we must first discredit the current ways of doing things. Unless this is first done, then people will fall back to the patterns of behavior supported by the existing corporate culture. Suffice to say that discrediting the current ways of doing things (especially when the firm has been successful over the long term with these approaches) is not easy to do.

Lack of top management support. Any strategic initiative such as sustainability requires a strong message from the top that: (a) this initiative is important to the firm; (b) the initiative is one that firm is committed to; and (c) you should be prepared to support this initiative or else you leave either voluntarily (through resignation) or involuntarily (through termination). For top management support to be effective, it must be visible to everyone involved; it must be active in nature (where top management is seen as actively involved in the initiative); and it must involve both rewards and punishment. That is, the top management must be ready to reward those who work to support the implementation and attainment of the new objectives. More importantly, the top management must be seen as being prepared to act when there is credible evidence that some people (especially those people who are seen as either opinion leaders or who occupy important positions within the firm) are resisting the new initiative. As a top manager put it to one of the authors, top management must be prepared to carry out a few “public executions” (terminations that become widely known throughout the firm).

Concerns over credibility/consistency. This issue specifically refers to the supply chain. Here, we are looking at a simple issue—it is impossible to credibly ask your support chain partners to do something that you, as a corporation, are not willing to undertake. You cannot ask the supply chain to pursue sustainability initiatives and objectives when your firm is not doing so. McCormick and Company, Unilever, Steelcase, and Herman Miller can ask for sustainability from its supply chain because they themselves are leaders in their industry in pursuing and embracing sustainability internally.

Supply management not having a strategic role within the organization. Finally, if the supply chain is seen as being strategically decoupled and driven by concerns of reducing price, improving quality, or ensuring on time delivery, then we cannot expect to see the supply chain embrace sustainability. To these partners, sustainability is something that will not affect them because at the end of the day, they are asked to deliver the same outcomes: price, delivery, and quality.

Other commonly cited barriers include: cost, both in terms of time and resources; an acknowledged skills and expertise gap on the part of employees; and issues around measurement and reporting such as the lack of

consistent standards and the difficulty in understanding and applying consistent measures. The overarching theme from the literature indicates that sustainable supply management practices will require an organization-wide paradigm shift from established ways of doing business, and that the leaders in this area have already undertaken such a shift.

Enablers supply the means, knowledge, or opportunity for operational, sustainable supply chains. This definition is consistent with the use of enablers of reverse logistics;¹⁵ supply chain performance measurement system implementation,¹⁶ and current research in sustainable supply chains.¹⁷ This area of sustainable supply management practices has received the most attention over the years. Important internal enablers for you and your management team to focus on starts with (a) linking sustainability to overall organizational strategy, (b) making supply management a strategic activity within the organization, (c) gaining and maintaining top management support, and (d) adopting a proactive approach together with a long-term perspective toward both the business itself as well as to issues of sustainability.

Important external enablers include opportunities to increase the following to support any sustainability initiative: cooperative, trusting, and transparent communication with suppliers; establishing effective supplier evaluation systems that include both rewards and penalties; using cross-functional teams for collaboration in the areas of innovation and process improvement; and increasing cross-functional education in the area of sustainability.

What Are the Benefits of Sustainable Supply Chain Management?

Paradoxically, the benefits of sustainable supply management form the fundamental reason for undertaking the sustainability challenge. It is not surprising that in this area both direct and indirect financial benefits are given the most attention. Overall, the most commonly found benefits include: (a) a reduction of costs, including a product's whole life costs and the organization's overall operating costs; (b) increased competitive advantage and differentiation; (c) increased profits; (d) decreased damage to the environment and human health, (e) increased levels of innovation, (f) the potential to gain new customer market segments, and (g) risk mitigation.

Transforming supplier business models is the corporate strategy of the future. Because much of your firm's impacts are likely to be in your supply chain (there are exceptions), it makes sense to integrate the chain as early as possible. Today, lots of large companies, including 85% of the global 250, have or are developing sustainability reports with specific goals and targets. Many even have holistic "plans" with ambitious 2020 and 2050 targets across their business. But for many businesses, making these plans happen and making them have an impact internationally are going to be about sustainable change in how suppliers operate.

Companies that lead the way on sustainability have been pioneering longer-term and more in-depth supplier relationships for years. For them, this is not new. These companies include Nike (technical training for suppliers), Unilever (smallholder farmers), Marks & Spencer (eco factories) and Sainsbury's (bananas). Cadbury, before being acquired by Kraft, was also developing long-term supplier partnerships with cocoa-producing villages in Ghana. One long-standing approach to sustainability and closing the loop on supplier relations involves the concept of reverse logistics.

Reverse Logistics—Managing Returns of Material through the Supply Chain

For most firms, their responsibility to a product or service is largely defined by their position of title. Title legally defines ownership—when you have title to something, you own that entity. Physical possession is not enough to define ownership (e.g., shoplifting is possession without title and is considered a crime). Responsibility is that state where we are liable to answer for how we manage an asset or activity. In the past, the possession of title was seen as defining ownership. When you had title to a product, you were responsible; when you sold something, you were no longer responsible for it. Today, with sustainability, that is no longer the case.

Firms are now realizing that their responsibility is present in nearly all stages of the product life cycle. However, increasingly managers are looking to the end of product life stage as an opportunity for improving sustainability and fully integrate closed-loop supply chains. Firms are now realizing that by taking better control of returns and products that are being disposed, they can gain certain major advantages, namely,

- Opportunity to learn why products are returned or why they reach the end of their lives. When a product is thrown away or incorrectly returned, the firm has no opportunity to uncover why the product was returned or thrown away. Such information could positively influence product design and quality.
- Opportunity to return useful products back to the market. Customers return products for a number of reasons. By taking control of these products, firms can evaluate them to identify the reasons for the returns. For those products that are still useable, these items can be returned at a discount to the marketplace. For those products that are in need of repair, these can be repaired and returned. In other cases, the products or the components contained within them can be remanufactured and sold/used for other uses such as repairs.
- Opportunity to properly dispose of waste and sensitive material. For those products that must be disposed of, the firm can ensure proper disposal. During this stage, the firm can potentially recycle the raw materials or it can ensure that, if there are any potentially damaging items (i.e., hazardous materials or sensitive data), they are appropriately dealt with. Consequently, the firm can reduce its exposure to end-of-life risks.
- Opportunities to recycle products and/or their components. McDonald's UK has been able to improve its performance by using the same trucks that delivered products to its stores to collect cardboard for recycling. This approach is not unique to McDonald's. Companies such as Shaw, Mohawk, and Monsanto are now making carpets from recycled materials. In many cases, old carpets are being converted into new carpets. By capturing these returns, firms are able to prevent these old products from being thrown away in landfills. Product take back and recycling have also been embraced by the electronics industry and by such companies as Acer, Apple, Cisco, Dell, Hewlett-Packard, Lenovo, Mitsubishi, Panasonic, Philips, Samsung, Sharp, Sony, Toshiba, and Vizio. This initiative has also been embraced by retailers such as Best Buy and Target.

These and other considerations have driven firms to consider such initiatives as reverse logistics.

...the process of planning, implementing, and controlling the efficient, cost effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal. More precisely, reverse logistics is the process of moving goods from their typical final destination for the purpose of capturing value, or proper disposal. Remanufacturing and refurbishing activities also may be included in the definition of reverse logistics.¹⁸

The successful implementation of such initiatives requires the active involvement of the supply chain. In some cases, the firm can outsource the recovery activities to other firms that are experts in this area. In other cases, the firm must depend on the stores to help in the returns and must work with its supplier to ensure proper disposal of the returned product.

Putting Sustainability into Practice

We know business sustainability works best when cross-functional teams and entire supply chains are involved and enabled. Sustainability is here to stay, and the supply management group is a significant player in any organization's success in this arena. Based on our review of published research and our own insight from working with companies integrating sustainability, we recommend that you take the following steps in order to reap the benefits of sustainability-based supply management:

1. Identify and engage your internal champions of sustainability at whatever level of the organization they may be.
2. Conduct a self-audit to identify the primary drives in support of sustainability initiatives within your organization.
3. Scrutinize and create a plan to mitigate or overcome the barriers you will encounter.
4. Research, operationalize, and maximize the available enablers.

Employee Engagement

We have always been measuring processes and practices, but we still do not fully understand metrics and engagement. Juran and others over time have repeatedly told us that the greater the level of detail we go to for a process, the better we understand and can manage for efficiency and effectiveness. To this end, many companies are changing internal practices to align with sustainability.

Intel has been pushed by investors for years to address issues of say-on-pay, the human right to water, and sustainability as part of a board's fiduciary obligation. So, it's not surprising that Intel links employee compensation to sustainability results. What is surprising is that Intel is doing this *for its entire workforce*. Since 2008, every single employee's annual bonus is calculated on the basis of the firm's performance on measures like product energy efficiency, completion of renewable energy and clean energy projects, and the company's reputation for environmental leadership. Last year, Intel added into the equation performance on reducing the company's carbon footprint. This is a smart move that will empower employees up and down the organization to find reductions big and small.

National Grid is an energy management and delivery company focusing on meeting the needs of customers in Massachusetts, New York, and Rhode Island. Its compensation model shows how to embed sustainability practices into a company's DNA. In talking with company president Tom King recently, we asked how he knows that sustainability is really being addressed in his company. His instant response was that it's part of everyday conversation at National Grid, and that there are no executive meetings that don't touch on environmental performance. Like Intel, National Grid has tied CEO and other executive compensation to performance on the company's GHG reduction goals. But, what's most interesting here is how aggressive those goals are: an 80% reduction by 2050, with 45% by 2020. That's a lot of executive pay at stake—and this from a major electric power utility.

A Proven Approach to Integrating Problem Solving

Juran is well known for developing a systematic approach to TQM. His goal, in developing this approach, was to make quality into a habit. For

quality to become a habit, it had to be the result of a repeatable process. This process was termed the **Universal Breakthrough Sequence** (UBS). This logic applies equally well to sustainability as a focal point as it applies to the proven benefits of TQM.

The very first step in this process is the creation of an awareness of need for a change. Without this awareness, people and organizations would not change. After all, a person changes when faced with compelling evidence that the current ways of doing things were no longer succeeding. The way to create this awareness is through a self-audit (Figure 6.4). Such a self-audit helps show the participant where they are doing a good job and those areas in which they are encountering problems. It enables the participant to answer a simple but critical question: Is our system (or are our current practices) adequate to help the organization achieve its desired outcomes (and, if not, where are the changes most needed)?

Without such an audit, no change is possible because you have not shown the person or the organization that the current systems or practices are no longer sufficient. Consequently, no change will take place because no compelling reason for change has been provided.

Juran defines breakthrough as “the organized creation of beneficial change” and has observed that all breakthrough follows a universal pattern:

Proof of the need: draw attention to the “heavy losses” incurred by companies not effectively managing the systems they are charged with leading. Show the “dangers of managing by visible figures alone” and that “the most important figures for management are the unknown and unknowable.” Sustainability remains so elusive to many managers that this “unknown” performance opportunity may be the key to unlock the performance measurement revolution. The question sustainability invokes is how to draw manager’s attention to a sustainability project when they are so busy living with “business as usual” that they have learned to endure the levels of chronic waste? Juran suggests using quick estimating approaches to assess the costs of waste with the aim to “bring chronic troubles out of their hiding places and convert them to alarm signals.”

Yet, central to this overall sequence is proof of need. Critical to audits are metrics. Metrics are not simply used for control; they also facilitate communication. When we measure something, we strongly indicate to

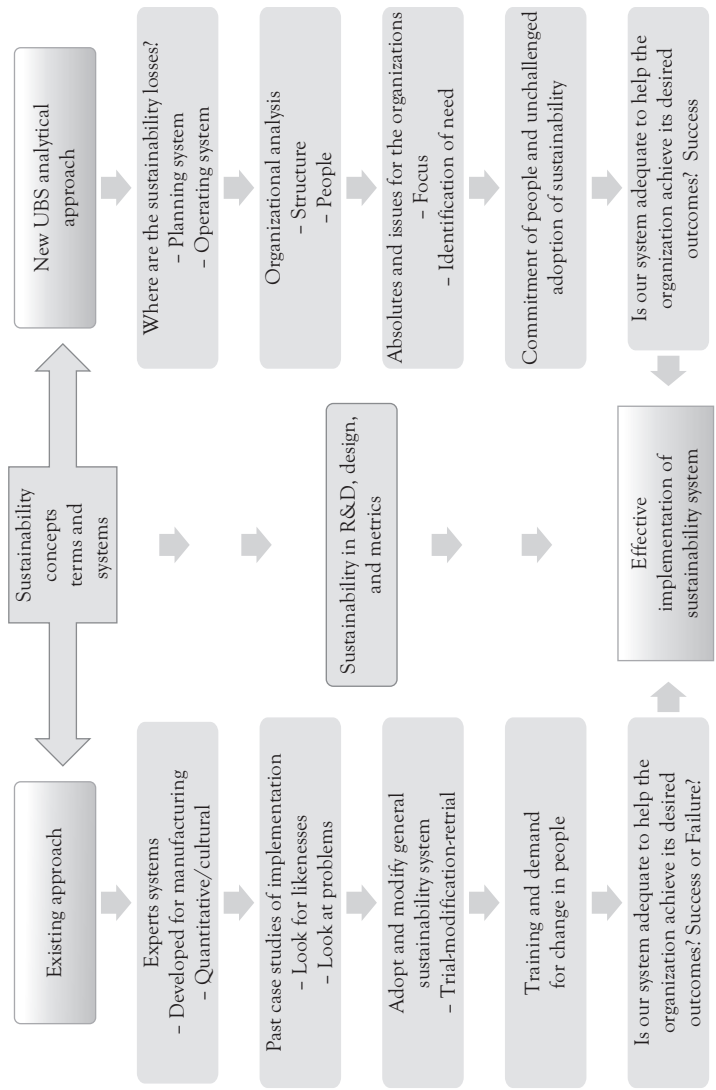


Figure 6.4. Modified UBS approach to make sustainability a habit.

Source: Modified from Taylor and Pearson (1994).

everyone that what we are measuring is important; conversely, the act of not measuring something indicates that the issue is not important (purposeful communication). Metrics facilitate communication between four stakeholders:

1. Top management
2. Subordinates
3. Customers
4. Suppliers

Project identification: use Pareto principles to find the sustainability opportunities that will have the greatest impact. Separate the vital few projects from the useful many. To help do this, understand the differences between symptoms of problems and finding underlying problems. The vital few are inter departmental and can have multi-firm performance metrics that become the responsibility of management. A starting place for where to find opportunities comes from the key metrics outlined earlier in this chapter within the section on the rise and current state of sustainable supply chain management (energy efficiency, GHG emissions, water consumption, solid waste, product attributes, environmental exposure, benchmarking sustainability indices, and indexing carbon to products and revenue) as these metrics and associated projects are already used by successful multinational companies recognized as leaders in sustainable practices.

Organization to guide each project: establish a sustainability team to take responsibility for nominating projects, assigning teams, providing resources, assessment of progress, dissemination of results, and to revise merit systems to include sustainability improvement. Simultaneously, upper management must serve on the team, approve strategic goals, allocate resources, review progress, give recognition, serve on some project teams, and revise the merit system accordingly.

Diagnosis—breakthrough in knowledge: for analysis of symptoms, formulate theories as to the causes of the symptoms, test the theories.

Remedial action on the findings: When seeking remedies, choose alternatives, take remedial actions, then deal with resistance to change, and

then establish controls to hold the gains. New metrics should be the basis of a business case for a project, align with the business model, and include sustainability. Metrics consist of measures, standards, and consequences. Metrics can be measures at the end of a process. The measure represents the numbers, while the overall metric provides an opportunity for understanding and managing which leads to auditable consequences. Metrics become the basis for constructing a business case around a program or process and, when we drill down deep enough, become the basis for providing a business case behind an initiative. Keep in mind, in a world of no mirrors and no scales; we are all thin and beautiful. We need metrics to help us manage and make decisions that align with our chosen business model and integrated sustainability initiatives.

Breakthrough in cultural resistance: getting people to change deeply held beliefs is difficult. Take for example Juran, who uses the story of the Earth-centered believers of the 14th Century. The believers rejected the logical argument of the astronomers that the Earth revolved around the Sun, partly because they could see the Sun revolving around the Earth. The idea that the Earth was the center of the Universe had come down from revered religious teachers. In the light of such evidence the old beliefs could not be rejected—it was easier to burn the astronomers! Juran recommends providing participation, starting small, providing enough time, work with the recognized leadership, and dealing directly with the resistance.

Control at the new level: continuously improve, change, and adapt to new opportunities through understanding systems and the interconnected process linking supply chains and value chains.

Paradoxically simple, yet deeply difficult, this approach to continuous improvement and the integration of sustainability into supply chain management provides a roadmap for any new program rollout or project.

Summary

In today's business environment, we must recognize the need and importance of supply chains and supply chain management. The advantages

that they bring are too important to be ignored. This observation applies to sustainability. We need to incorporate the supply chain into the sustainable business model since the supply chain significantly influences the capabilities component of the business model. It offers the firm access to critical resources; it enables the firm to draw on the problem-solving and skill capabilities of its suppliers. By recognizing the supply chain, we also recognize the fact that any problems created by a supplier may become attributed to the firm (especially if these problems affect the firm's goal of competing on sustainability).

To be successful with sustainability requires that management become involved in the supply chain. This involvement takes several different forms:

- The introduction of an active supplier base management strategy.
- The alignment of expectations through frequent communication, appropriate metrics and measures, and the introduction of suitable standards.
- The firm must work to integrate the supply chain into its business model.
- The firm must focus on the broadest implementation of sustainability—a sustainable supply chain, as discussed in Chapter 1, incorporating financial, natural, and social forms of capital.

For any organization to be truly sustainable, it must ultimately have a sustainable supply chain.

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

After reviewing this chapter, you should be prepared to assess internal and external supply chain integration opportunities. To aid you in this assessment, please consider the following questions:

- AI: How many tiers of suppliers do you have in your supply chain, and do you know where all of your materials and components come from?

- AI: What management systems are already in place that will enable sustainability as a collaborative part of how you operate your business rather than having sustainability as a peripheral activity?
- AI: How would the UBS help integrate sustainability into your operations and supply chain?
- AI: How will you know when you have a sustainable supply chain?
- AQ: To what extent are supply chain professionals included in sustainability initiatives?
- AQ: What is your perception of the amount of integration within your existing supply chain?
- AQ: In what ways have customers asked your organization for social or environmental information within RFQ or RFPs?

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

Further Readings

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