

MEMORIAL UNIVERSITY OF NEWFOUNDLAND - MARINE INSTITUTE

FINAL REPORT

The Triple Bottom Line

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1 Introduction

Sustainability is a modern day concept. One of the first definitions of sustainability surfaced in 1987 from a report of the World Commission on Environment and Development (WCED). WCED (1987) defined sustainability as “meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.” Business-oriented variants of this definition have been derived since 1987 and generally summarize sustainability as the integration of social, environmental and economic responsibilities. This is referred to as a company’s triple bottom line (Tang & Zhou, 2012, p. 585).

As both the global economy and population continue to rapidly expand there has been an increased strain put on natural resources and energy (Tang & Zhou, 2012, p. 585). Global energy usage is expected to increase by approximately 50% in the next two decades and the world’s population is expected to reach 7.8 billion by year 2020. As emerging economies in countries such as Brazil, Russia, India and China continue to evolve, these forecasts are likely to increase. In order to address these new strains on global resources and energy, businesses will need to ensure that their activities are sustainable and minimize waste when possible (J. Brown, 2006, p. 8, 42).

There are a number of incentives for businesses implementing sustainable operations. Businesses could expect reduced operating costs, decreased resource usage, maintained legal obligations, and improved brand reputation. However, in the pursuit of sustainability, they can also expect to face several barriers to successfully implementing a sustainability strategy that allows them to remain competitive.

The issue of sustainability is becoming more important to consumers who are now more knowledgeable on the subject than past generations. This is particularly the case as communication barriers continue to erode with the advent of the Internet and social media (Jones, 2001). Consequently, consumers are seeking more transparency and accountability from businesses. In addition to customers becoming more eco-savvy, government agencies and departments are beginning to

use their regulatory and legislative powers to enact sustainable policies that impact the day-to-day operational activities of businesses. Businesses are being forced to build new relationships with their stakeholders in order to encourage trust in their products and services (Bengtson, 2009). These external pressures continue to drive sustainability.

Sustainability is becoming more than a company’s need to appease governments and eco-savvy customers. It is now considered to be an “emerging megatrend” by Lubin and Etsy (2010, p. 2) where executives need to become more aware of sustainability and its importance to ensure that they remain competitive and can survive as an organization. Large companies such as Dell, Microsoft, IKEA and Hewlett-Packard have to continue to embrace sustainability in order to avoid any negative repercussions.

2 Sustainable Operations

A sustainable operation is defined as one that can carry on for an indefinite period of time. A simple example of a sustainable operation would be a logging company that replants a tree for each one it cuts. For sustainable operations, businesses strive to address three factors: (1) Economy; (2) Social; and (3) Environment (Souza, 2012). Figure 2.1 highlights these three integral factors.



Figure 2.1: Three components of Sustainability

Sustainable operations is important for two main reasons: (1) businesses need to be held accountable for their energy and resource use, as well as the footprint they leave in their wake; and (2) businesses need to ensure the health and safety of their employees while minimizing their impact on the external community.

A business that seeks sustainability in its operations could expect to benefit in a number of ways as outlined in Section 2.1; however, it should also expect to encounter financial concerns and reluctance to move past the status quo. Businesses should also be cognizant of the various stakeholders involved in the implementation of sustainability. Pressures could originate from internal sources, or externally in the form of customers and governments. The following sections explore these considerations further.

2.1 Benefits of Sustainable Operations

Companies stand to reap many rewards for implementing sustainable activities. Three of the main benefits for addressing sustainability are enhanced company or brand image, cost savings, and product, service or market innovation. Many of these benefits can contribute to the continued success of a business by increasing profits and driving shareholder returns (Berns et al., 2009, p. 5).

One of the main benefits of implementing a sustainable strategy is a refreshed and improved corporate brand and reputation. A green reputation improves a company's ability to recruit new employees with a more desirable place to work, garner increased attention from investors who only work with socially responsible companies, and improve public support for global expansion (Ferrer, 2008, p. 5). An improved corporate image could also result in increased productivity and profitability. In a research study, Kassinis and Soteriou (2003, p. 398) have shown that implementing sustainable practices, mainly environmental, in the hotel industry has enhanced profitability by improving customer satisfaction and loyalty.

Another benefit of implementing sustainable operations is the reduction of operating costs. Businesses could reduce costs with greater operational efficiencies, more efficient use of resources,

supply chain optimization, and lower imposed government taxes (Berns et al., 2009, p. 6). Gimenez, Sierra, and Rodon (2012, p. 156) found that the implementation of environmental programmes had a positive impact on economic performance by reducing manufacturing costs. This impact was explained by the reduction of waste and the cost savings derived from resource reduction and increased efficiency.

Innovation is also important to many businesses. It is a driver for change and it allows businesses to set themselves apart from the herd. Often the associated risks and costs with undertaking an innovative initiative are prohibitive (Tidd, Bessant, & Pavitt, 2005, p. 468). However, it is pertinent that businesses become innovative players if they want to address sustainability effectively. An example of a business pursuing sustainability through innovation is Dell, an international computer technology company. The company recently collaborated with an innovative and experimental supplier to use bamboo fibers for packaging materials instead of cardboard. Bamboo is one of the fastest growing plants on the planet and is therefore considered a highly renewable resource. At disposal, end users can easily recycle it along with the rest of their paper-related materials. A combination of this innovative material and streamlined cushioning allowed Dell to reduce its total packaging volume by 12.1% (Kruschwitz, 2012).

Other benefits of promoting sustainability is reducing waste, preserving resources, and keeping ahead of a government's agenda to increasingly advocate for sustainability with new laws, regulations and standards (Weybrecht, 2010, p. 22). Government regulations may not necessarily result in negative impacts. For example, cap-and-trade systems might encourage businesses to innovate by reducing the impacts of the cost factor on their decision. Businesses that fail to address sustainability in their operations may face consumer boycotts and difficulty attracting investors and employees (OECD, 2000, p. 181).

2.2 Barriers to Sustainable Operations

There are a number of barriers that exist for businesses striving to achieve sustainability. The greatest hurdles include financial constraints, inertia and a drive for short-term profitability, and

varying stages of economic development across the globe.

Ioannou and Veshagh (2011, p. 215) studied a survey of small and medium-sized enterprises where 31% of respondents identified financial constraints as being the largest barrier to sustainability. Some of the major financial concerns include the expected increase in operating costs due to higher wages or expensive environmental mitigation strategies, and the fear that customers may move to competitors after increased product/service costs. It is also feared that shareholders might see the implementation of sustainable activities as risky business, which could distract executives from focusing on their core business functions (Eccles, Ioannou, & Serafeim, 2012, p. 4).

Businesses seeking sustainability also fall victim to inertia, or the general tendency to preserve the status quo. It is often difficult in mature industries to gain executive support for the introduction of new ideas or changes. Related to this challenge is the short-term profitability concerns of businesses. Implementing sustainability could be considered a long and arduous process. This issue is exemplified in the cement industry where market prices tend to be consistent within any region. As a result, cement companies are less likely to enter into long-term sustainability investments that could impact their short-term cash flow (Placet, Anderson, & Fowler, 2005).

Another important barrier to global pursuit of sustainability is recognizing the differences between businesses and industries in the developed and developing nations. Developing nations are more focused on fighting poverty, establishing education systems, and guaranteeing health care for their people. These nations recognize the need to address environmental and sustainability issues; however, their priority is to develop an established economy (Kaufmann, 2012, p. 151). Environmental and sustainable policies implemented globally should consider their impact on developing countries in order to avoid stunting their economic growth (Roberts, 2011).

Ioannou and Veshagh (2011, p. 215) identify other barriers to sustainability including time constraints, lack of market awareness, weak involvement of stakeholders, and lack of government support.

3 Stakeholders

Businesses face both internal and external pressures to reduce their environmental impact and promote sustainability in their daily activities. Internally, employees are becoming more aware of their own environmental impacts, while externally, customers and governments play a large role in encouraging businesses to pursue sustainable operations (Wilkinson, Hill, & Gollan, 2001, p. 1495).

3.1 Internal

Recent research highlighted by Nidumolu, Prahalad, and Rangaswami (2009, p. 10) suggests that 75% of the US workforce considers social and environmental sustainability when selecting an employer. It is therefore not surprising that these same individuals would be inclined to seek out sustainable opportunities while employed to lessen their impact on the external environment.

There are benefits for businesses who help meet the sustainability needs of their employees. Working environments that are open, pleasing, and where employees have a voice, are often more productive and lead to more innovative ideas from employees (Blackburn, 2012, p. 53). In addition, businesses can expect to have improved success with recruitment, retention and engagement with their employees (Berns et al., 2009, p. 5).

3.2 External

Businesses face pressures beyond the influence of their employees and investors. These external pressures extend to customers and government entities, who arguably play a more important role in promoting sustainability than employees.

3.2.1 Customers

Customers are beginning to look for products and services that originate from sustainable operations. As customer expectations increase, so will the demand on businesses to disclose their environmental performance. This information could be used by customers, legislators and investors to evaluate a company's environmental activities and make comparisons to others in the same industry. When releasing these reports, companies will want to avoid damaging their reputation by 'greenwashing,' which is used to deceptively present components of their business as environmentally friendly (Blair & Hitchcock, 2001, p. 61).

Beyond increased demand for accountability and transparency by customers, businesses might also be requested to provide more recycling and waste management infrastructure; easier access to product take-back programmes where businesses accept products at the end of their useful life; and to implement additional mitigation technologies to reduce greenhouse gas emissions.

3.2.2 Governments

Governments are well-positioned to promote sustainable operations. They are equipped with a suite of policy tools including regulations and legislation, and can also provide financial incentives. These could be used to encourage sustainable activities (Croston, 2009, p. 171). In a survey of over 1,500 worldwide executives and managers by Berns et al. (2009, p. 4), it was found that sixty-seven percent of respondents believed that government legislation had the most significant impact on how their organization was approaching sustainability. As governments enact policies to deliver on their mandates, they effectively encourage the adoption of sustainability into business operations.

Examples of government policies or initiatives that have had some impact on operations include:

- Cap-and-trade policies for greenhouse gases in the EU
- Acid Rain program in the United States
- Waste Electrical and Electronic Equipment (WEEE) Directive

Governments have used cap-and-trade policies successfully over the years to encourage businesses to explore innovative approaches in increasing the sustainability of their operations. These types of policies or schemes outline a set level of emissions for businesses, but they also allow them to trade the difference between their actual emissions and the permitted amount to other organizations that are emitting more (K. Brown, Snook, Hall, & Garvin, 2010, p. 21). In 2005, the European Union launched its Emissions Trading System (ETS). The ETS is a greenhouse gas emissions trading system that aims to address climate change by reducing carbon dioxide (CO_2) emissions. Measuring the effectiveness of the ETS is complex; however, academics have estimated that the annual emissions have been reduced by 40 to 80 $MtCO_2/yr$ (Grubb, Laing, Sato, & Comberti, 2012, p. 2).

The first large-scale implementation of an emissions trading policy was the Acid Rain program in the USA (Wang, 2004, p. iii). In 1990, President George Bush signed a piece of legislation to control SO_2 emissions, the major precursor to acid rain, from electric utilities (Ellerman, Joskow, Schmalensee, Montero, & Bailey, 2000, p. 4). The Acid Rain Program operates similarly to the ETS.

Cap-and-trade programs rely on the power of a supply and demand market to promote sustainability and provide incentives for operational efficiency. They allow companies to profit from the implementation of innovative technologies that may have been cost-prohibitive without these programs (K. Brown et al., 2010, p. 21).

The WEEE Directive was developed in 2003 by the European Union (EU) as an initiative to reduce the overall environmental impact of electronic equipment after its use (Mulvaney, 2011, p. 174). The EU implemented this strategy to encourage the re-use and recycle of products. As part of the directive, manufacturers and distributors are responsible for the proper disposal of electronic equipment. The directive also encourages businesses to support eco-design, life cycle analysis, and product end-of-life management for their products and services (Norton, 2012, p. 154).

All electrical and electronic equipment that falls under this directive must clearly be labeled with the WEEE symbol as presented in Figure 3.1. Although the WEEE Directive does not pre-

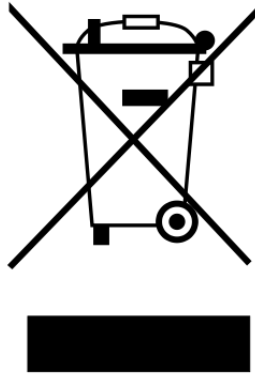


Figure 3.1: WEEE Symbol (Adapted from Business & Legal Reports (2007, p. 4))

scribe any specific penalties, it does require member states of the EU to outline penalties for non-compliance. Penalties could include product bans, recalls, fines, or even imprisonment (Business & Legal Reports, 2007, p. 5).

All three of these government initiatives encourage businesses to look at their operations and identify potential areas to improve their overall sustainability. If these political tools are implemented by governments it could encourage businesses to seek out sustainable opportunities. Enforced limits on emissions, energy use, and restrictive product disposal regulations encourage businesses to take the necessary precautionary steps in their operations to promote sustainability. The imposed penalties and increased likelihood for negative media attention help businesses understand the importance of sustainability.

4 Sustainable Activities

Sustainability could be introduced in a business environment in a number of ways, particularly in operations. Three important areas that have significant impacts on the operations of a business include supply chain optimization, life-cycle assessments of products and services, and product reuse and/or recycling.

4.1 Supply Chain

James A Tompkins and Harmelink (2004, p. 1) describe the supply chain as the “flow of goods, services, and information from the raw materials level through to processing, distribution, consumption, and disposal.” This definition demonstrates the wide breadth of the supply chain. It is within these boundaries that businesses are able to make significant strides towards improving their overall sustainability.

One way businesses can blend sustainability into their supply chain is by developing collaborative relationships with their supply partners. Mutual commitments and sharing of best practices could encourage all parties to reduce waste and emissions and reach new levels of sustainability.

A good example of a company seeking sustainability with its supply partners is IKEA. The company relies on numerous partners to supply large quantities of wood-based materials for its products. When selecting suppliers, IKEA has mandated that it will not purchase timber harvested from illegal logging operations or areas of high environmental value, but it will only purchase timber from forests that are managed sustainably (Kronenberg, 2010, p. 186).

In an effort to clearly define expectations to its suppliers, IKEA has implemented a four-step staircase model. At each step of the staircase, IKEA outlines the requirements that suppliers should meet. Lower levels of the staircase simply require suppliers to meet general laws and some limitations on where trees can be harvested. Higher levels require suppliers to meet standards such as the Forest Stewardship Council (FSC), which evaluates a suppliers ability to harvest wood sustainably (Kronenberg, 2010, p. 186). IKEA has set itself a long-term goal to have 100% of its suppliers certified by FSC (i.e., step 4 of the staircase). In audited wood volumes from 2011, IKEA found that approximately 95% of the wood met IKEA’s minimum requirements, or at least step 1 on the staircase model (IKEA, 2011, p. 28). Based on IKEA’s corporate environmental report from 2011, it is unclear what percentage of wood met the FSC standard. Regardless, it appears as though IKEA still have significant work to do before reaching its long-term goal.

Other activities that could promote supply chain sustainability include (Blackburn, 2012, p. 722):

- modern management principles such as just-in-time and lean production;
- identify suppliers that are closer to the end market, or production facilities;
- use alternative fuels to reduce environmental impact of transportation; and
- seek out suppliers that provide equal opportunities to women and minorities.

The principles listed above help increase the flexibility of a supply chain, reduce waste, and improve the overall sustainability of a business as a whole (Hansen & Mowen, 2010, p. 552).

4.2 Life-Cycle Assessment

Life-cycle assessments (LCA) are tools used by businesses to measure the environmental impact of a product or service throughout its entire life cycle (Alting, 1995, p. 570). The main activities associated with an LCA is the compilation of inventory of inputs and emissions, an evaluation of potential environmental impacts linked with inputs and emissions, and an interpretation of these results to support business decisions (Bevilacqua et al., 2012, p. 34). The overall objective of an LCA is to promote environmental sustainability.

In a typical product manufacturing process, an LCA could examine four different stages: (1) pre-manufacturing; (2) manufacturing; (3) use/reuse/maintenance; and (4) disposal. These stages are graphically depicted in Figure 4.1.

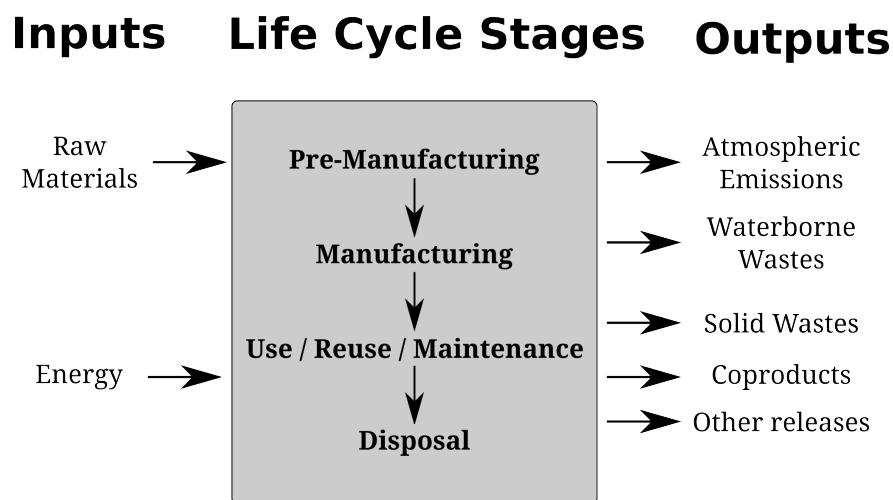


Figure 4.1: Inputs, Outputs, and Life Cycle Stages (Adapted from Bevilacqua et al. (2012, p. 34))

As part of an LCA, businesses could identify several areas where sustainable practices could be implemented. As an example, in the manufacturing stage of the assessment, businesses might examine the use of various chemicals used in their processes. The LCA would look at the toxicity of the chemicals, material consumption, environmental degradation of the materials, and waste products that form (Rainey, 2006, p. 555-557). Based on this information, a business decision might be made to find an alternative chemical that is both safer and less of a pollutant.

An LCA by itself does not directly promote sustainability. However, decisions resulting from information gained in an LCA is where the true impact of an LCA can be assessed.

4.3 Reuse/Recycle

Consumers and governments are beginning to expect or legally require businesses to start taking products back after their use. The WEEE directive, as described in Section 3.2.2, is a good example of this. Businesses can no longer remove themselves from the disposal stage of their products or services. Increasingly, they are required to think about their products/services from a cradle-to-grave perspective. Life-cycle assessments, as explored in Section 4.2, are one method used by businesses to identify the impacts of their products and services over their entire life. At the disposal stage businesses might decide to reuse or recycle in order to use waste materials for new purposes.

Electronic devices, including personal computers, mobile phones, and televisions, have a relatively short useful life. For example, the average mobile phone users replace their phones every 18 months (Verklin & Kanner, 2007, p. 155). Due to this short useful life and considering the rate at which technology changes, it is not surprising that the electronic waste resulting from obsolescence is ever increasing (Kang & Schoenung, 2005, p. 369). It is estimated by Environment Canada that over 140,000 tons of electronic waste end up in Canadian landfills each year (Phyper & MacLean, 2009).

One strategy that businesses could use is to export their recycled products to secondary market channels, such as poorer countries with underdeveloped infrastructure (Burton, 2009, p. 199).

This strategy is particularly common in the mobile phone industry. Vodafone, a popular UK mobile phone company, has been recycling mobiles since 2002 (Chauhan, 2011, p. 9). In 2011, Vodafone and the World Wildlife Fund launched a mobile recycling programme and in one year they were able to recycle 100,000 phones (ITProPortal, 2011). Recycled phones that are exported to secondary markets could provide an additional stream of revenues for a business. These additional revenues could offset the recycling and/or remanufacturing costs (Kleindorfer, Singhal, & Van Wassenhove, 2005, p. 489).

5 Conclusion

Sustainability is a modern concept and is likely to continue being an issue for quite sometime. The global economy is rapidly expanding, population is growing, and developing nations continue to put increased strain on natural resources and global energy supplies. Employees, consumers, and government entities are faced with these realities and they will need to continue to pressure and encourage businesses to pursue sustainable practices. Although barriers do exist for businesses wanting to implement sustainable strategies, they should also be aware of the many benefits that could come to fruition. For instance, increased productivity, improved reputation, and increased profitability are but a few of the many benefits at their fingertips.

Businesses will need to continue being innovative in order to position themselves to be able to meet the increased demand for sustainability by employees, customers and government entities, and prepare themselves for a world with dwindling access to natural resources and energy.

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