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Organisational Behaviour: Business Models for a Profitable and Sustainable Future

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Abstract

There is a growing trend for companies to integrate sustainable strategies that require a comprehensive reconfiguration of their daily operations. This is referred to as "embedded sustainability". Whilst also providing significant reductions in environmental impact, these sustainability strategies result in (a) reduced short term operational costs, (b) reduced exposure to future environmental risk and (c) an improved brand image. This is in contrast to the sustainability actions implemented by the majority of companies currently reducing their environmental impact. These actions typically include solutions that have a short implementation period and only impact on the surface of the company's operations. This is referred to as "surface sustainability". "Embedded sustainability" strategies must be deeply integrated in the company's operations as they directly impact on the behaviour of the organisation's stakeholders. One drawback is that as a consequence of this stakeholder interaction, these strategies take longer to be implemented and thus require support from all levels of the organisation. The primary purpose of these strategies is to considerably reduce environmental impact, however as a by-product they can achieve significant long term financial results while also yielding reductions in short term operational and capital expenditure. The tangible financial and environmental benefits of these actions are highlighted through a wide range of innovative international case studies. The key concepts discussed in this paper are most applicable to companies that produce tangible products, rather than services companies, and thus consume materials and manage a supply chain. It is anticipated that the majority of the lessons learned from the case studies are adaptable and scalable and thus can be transferred across organisations.

Keywords:

Embedded sustainability, sustainable business, resource efficiency, ecological economics

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Introduction

At present the majority of sustainability actions implemented by companies seeking to reduce their environmental impact fall into a category that we will refer to as "surface sustainability". For the purpose of this paper "surface sustainability" will represent solutions that involve short implementation periods, result in an increase in either capital or operational investment and impact only on the surface of the company's operations. Examples of "surface sustainability" actions are as follows: (a) reducing electricity emissions by purchasing wind power credits, (b) improving transport efficiency by renewing a logistics fleet with more efficient vehicles and (c) energy efficiency improvements that do not involve a change in behaviour of the company's employees.

However, there is a growing trend towards the integration of sustainable strategies that require a comprehensive reconfiguration of daily operations. Whilst also providing significant reductions in environmental impact, these "embedded sustainability" strategies result in (a) reduced short term operational costs, (b) reduced exposure to future environmental risk and (c) an improved brand image. They must be deeply integrated within the company's operations as they directly impact the behaviour of employees and other stakeholders, such as those in the supply chain. One drawback is that as a consequence of this stakeholder interaction the strategies take longer to be implemented and thus require support from all levels of the organisation. Furthermore, they are reconfigurations of existing operational policy and do not require large capital investments. The primary purpose of "Embedded sustainability" is to considerably reduce environmental impact, however as a by-product it can achieve significant long term financial results while also yielding reductions in short term operational and capital expenditure. Examples of "embedded sustainability" actions are as follows: (a) improving transport efficiency by implementing low or no cost policies such as using a transport management system to calculate the most fuel efficient driving route, (b) redesigning products or packaging to replace traditional materials with alternative materials that are less expensive and result in less environmental impact, (c) increasing material recycling which results in savings in materials costs or savings in waste haulage and (d) innovative low or no cost energy consumption reductions such as employee behaviour change initiatives. The tangible financial and environmental benefits of "embedded sustainability" strategies are explicitly shown in Section 3 of this paper through a wide range of innovative international case studies

Table 1: Characteristics of embedded sustainability and surface sustainability

Embedded sustainability	Surface sustainability
Slow implementation	Quick implementation
High disruption of operations	Low disruption of operations
Low investment	High investment
Long term solutions	Short term solutions

Reduced Short Term Operational Costs

Businesses can boost profits and achieve significant reductions in short term operational expenditure by integrating sustainable practices deeply into their daily operations. Lovins and Cohen have argued that lowering resource consumption is the most efficient way to maximise profits [1]. This means that financial benefit should be the primary motive when reducing resource consumption and the ensuing reduction in environmental impact can be considered as a secondary benefit. Thus when evaluating options to reduce current operational expenditure, if we consider those which produce the least environmental impact we often find low cost solutions that would not be uncovered by traditional evaluation methods which consider costs only. Sustainable viewpoints often unlock creative solutions to everyday problems by approaching them from an alternative perspective.

Reduced Exposure to Long term Environmental Risk

In addition to short term operational savings there are also increments in long term financial and shareholder value to be earned by reducing exposure to long term environmental risk. Non-profit organisations such as the Carbon Disclosure Project (CDP) are encouraging corporations to voluntarily report their annual consumption of resources and to reduce their emissions over time. In 2011 the CDP received reports from 271 (90%) of the largest 300 European corporations when measured by market capitalisation [2]. This disclosure rate is growing every year as investors are increasingly concerned with the hidden costs associated with environmental risk. It is expected that costs due to environmental factors will increase over time and KPMG have recently claimed that external environmental costs for 11 industry sectors rose by 50% between 2002 and 2010, from €150 billion to €680 billion. For this reason KPMG claim that decoupling human progress from resource use and environmental decline can be one of the biggest sources of future success in business. A comparison of risk versus readiness of these 11 industry sectors may be seen in figure 1 [3]. Future external environmental costs will be associated with factors such as:

?Unpredictable availability of grid energy and transportation fuel: to reduce reliance on oil or other traditional fuels which may have an unpredictable availability, companies can increase their use of locally generated fuels such as, wind, solar, wood or biofuels. The availability of local fuels is more reliable and the costs and environmental impact related to logistics are reduced.

?Increased costs relating to grid energy and transportation fuel: to protect against a future increase in energy and fuel costs, companies can aim to reduce their consumption.

?Raw material availability: by increasing material efficiency or by focusing on sustainable materials, companies can reduce their exposure to an increase in material costs due to material shortages.

?Vulnerability of a global supply chain: by simplifying supply chains and by aiming to purchase materials from local sources where possible, companies can insulate themselves from global events that adversely affect their business. In the aftermath of the Japanese earthquake of 2011, many European firms that relied on Japanese components for their products, could not continue to manufacture due to a halt in Japanese production. In addition costs and environmental impact related to logistics are reduced.

?Carbon taxation: to reduce vulnerability to a future carbon tax, companies can reduce their green house gas emissions.

?Water availability: by increasing water efficiency companies can reduce their exposure to an increase in water costs.

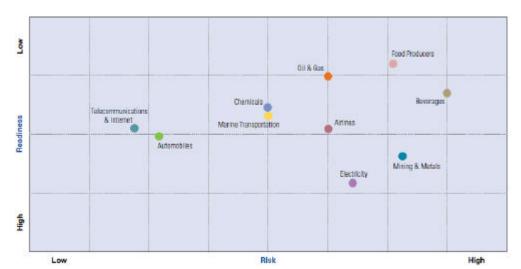


Figure 1: Risk versus readiness matrix for 11 industry sectors [3]

Improved Brand Image

Furthermore, there are also strong image and branding benefits for being recognised as a low carbon operation or as a sustainable business. A survey conducted by the UK organisation the Carbon Trust asked 2800 young people, from 18-25 years of age, of their opinions regarding climate change [4]. The survey was carried out in China, the US, the UK, Brazil, South Korea and South Africa. It was found that 78% of respondents wanted their favourite brands to reduce their carbon footprint and 83% of Chinese respondents replied that they would be more loyal to a brand if they could see that it was reducing it carbon footprint. This shows that there is a high demand for low carbon brands and especially in the emerging middle class consumers of China.

Investing in Sustainability

The Cost of Carbon Emissions

A Clean Energy Act will be introduced in Australia in July 2012 that will force the country's 500 worst polluting companies to pay a tax on carbon emissions. The initial price has been set at €17 per tonne and will mostly affect the mining companies, airlines, steel makers and energy generators [5]. Although it is widely accepted that the tax will be routinely passed to the consumer, it enables less carbon intensive companies to be more competitive. The Australian government also hopes that the carbon tax will instigate a green growth revolution in Australia, especially in the area of solar power. Closer to home, the European Union has legally committed to reducing greenhouse gas emissions by 20% by the year 2020 and Finland has an ambitious goal of an 80% reduction by 2050. These figures are both with reference to the 1990 level of emissions [6]. It is therefore

quite possible that a carbon tax may be introduced in Finland if businesses do not rise to the challenge voluntarily in the interim. Climate change legislation has also recently been imposed in the UK and from April 2013 it will be mandatory for all large stock market listed companies to publish data regarding their green house gas emissions. As a result it is estimated that 1,800 companies will be required to publically report on their carbon footprint [7].

In order to integrate strategies that reduce emissions into their daily operations, companies have begun to provide incentives for low carbon solutions. The most rigorous example of such a scheme is the environmental profit and loss accounting system of Puma Sports. Puma assumes that future green house gas emissions will eventually lead to increased costs of €66 per tonne [8]. As a result, the company has committed to investing in low carbon solutions to the equivalent €66 per tonne of carbon saved. This approach will have a significant impact on the company's long term strategic planning across sales, logistics and manufacturing. For example, if an innovative new method of working was to save 5,000 tonnes of ghg's over its lifecycle compared to the current method then Puma have committed to invest €30,000 to implement this new methodology. Marks and Spencers have also confirmed that they have factored a cost of carbon into their future financial planning [9].

Microsoft has recently announced that from July 2012 they will impose a penalty charge for every tonne of carbon emitted by each of their global offices and data centres [10]. They are aiming to incentivise the behaviour of their staff by individually charging each of their global business units in relation to the emissions that are responsible for. Thus by localising the penalty charges, they penalise the people who can directly influence environmental performance. The majority of the emissions relate to electricity consumption and air travel. Microsoft plan to purchase renewable energy certificates (RECs) and carbon offsets with the proceeds and this will allow them to declare that the whole organisation is carbon neutral. The price of the penalty charge has not yet been disclosed. It has been reported that Microsoft plan to purchase the carbon credits from Sterling Planet who claim to have a fixed price of €16 per tonne of carbon dioxide, however it is expected that Microsoft will receive a discount on this price by purchasing in large volumes [11]. In 2011 Microsoft reported to the Carbon Disclosure Project that their carbon footprint was 1.2 million tonnes which means that at a price of €6 per tonne Microsoft could pay €19 million in 2012 to achieve carbon neutrality [12]. The willingness of Microsoft to spend such a substantial sum per annum to declare carbon neutrality shows the increasing trend towards local carbon accountability and the value of being a sustainable brand.

The Impact of Sustainability on Financial Performance

An extensive Harvard Business School study has tracked 180 companies over 18 years, from 1993 to 2011, both in terms of stock market and accounting performance. 90 companies, referred to as "high sustainability" firms, that consistently adopted environmentally and socially responsible policies were compared to their market peers which were referred to as "low sustainability" firms. The stock market value of each company was analysed and the "high sustainability" firms significantly outperformed their peers in the long term, as each dollar invested in the "high sustainability" firms had risen to €18.05 compared to a yield of €12.30 relating to the "low sustainability" firms. A

significant conclusion was that outperformance was viewed as stronger in sectors where: (a) the customers are individual consumers instead of companies, (b) companies compete on the basis of brands and reputations and (c) where products significantly depend upon extracting large amounts of natural resources [13].

Maximising Profits Through Sustainability

Carbon Reduction as a Tipping Point for Operational Change

Solutions that actively reduce a company's carbon footprint also often reduce running costs. Furthermore, companies are more willing to reconfigure their day to day operations through the added incentive of carbon reduction than through financial savings alone. Many simple employee behavioural practices that provide clear financial savings and could have been adopted at any time over the last decade, such as printing on both sides of office paper, are often only considered when the added incentive of decreased carbon footprint is introduced. In 2009 in order to reduce carbon emissions Finnish retailer Kesko reduced employee's air travel by 20.7% and car travel by 18.8% through increased use of video conferencing [14]. Once again, despite clear financial savings, these measures are often only implemented with the added incentive of decreased emissions.

International Sustainability Case Studies

Progressive companies are already incorporating sustainable practices into their operations as a means to reducing operational costs and increasing long term financial and shareholder value. The following examples highlight proven management practices and cost-saving approaches in logistics, material reductions, waste and recycling and energy:

Logistics

?In 2010 the number of manufacturing jobs in the United States increased for the first time since 1998. In the time period from December 2009 to February 2012 alone, the sector added 300,000 jobs and the trend is being referred to as "insourcing". Companies such as Ford, Honda, General Electric, Caterpillar and Intel have returned jobs that were once outsourced to cheaper labour back to the United States. For U.S. companies local manufacturing is once again becoming financially viable due to rising fuel costs and increased labour fees in many developing countries [15].

?Walmart have improved their transport efficiency by calculating the most efficient route for each delivery and by reducing the number of "empty miles" that their trucks drive. They have also focused on how merchandise is stacked in their trailers. As a result of this pursuit for efficiency improvements, they delivered 57 million more cases in 2010 than the previous year, while driving 79 million fewer kilometres. Walmart calculated that this was equal to almost 40,000 tonnes of CO_2 emissions [16].

?In the four years from 2007 to 2011 Tesco have reduced their carbon footprint per case of goods delivered by over 20% from 0.177 kg/CO₂ per case to 0.141 kg/CO₂ per case. The savings in 2011 have been achieved through a number of practices such as increasing the use of double-decker truck trailers which resulted in a saving of 20 million road kilometres and almost 17,000 tonnes of CO₂, increasing the use of rail transport which resulted in a saving of 9.5 million road kilometres and over 8,000 tonnes of CO₂, limiting the speed of all UK vehicles to 80 km/h which is expected to reduce fuel consumption by

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up to 3% and by calculating the most efficient route for all journeys with a transport management system [17].

?Food retail company Supervalue implemented a policy to divert 90% or more of their waste from local landfills for 54 of their stores. In 2011 this target was achieved through practices such as composting and reusable packaging for large deliveries and resulted in a €2.7 million saving in transportation costs related to waste removal from their stores. The company recently announced that the waste diversion policy will be implemented in a further 250 stores [18].

?Package delivery company UPS have purchased 150 composite-body diesel vans from manufacturer Isuzu. A successful trial involving 5 prototypes of the vans has been completed and this yielded a 40% increase in fuel efficiency. The composite-body diesel vans are 10 % lighter with a smaller engine and are a similar price to traditional aluminium vans [19].

?Office stationary retailer Staples has increased the fuel economy of its fleet by more than 20% since 2007 through simple fuel-saving steps such as automatically limiting truck idling to no more than 3 minutes and by limiting the top speed of its vehicles to 96 kilometres an hour [20].

?Kraft foods have designed a jar for Planters peanuts that weighs 84% less than the previous version. They have replaced glass with a less expensive 100% recyclable BPA-free plastic and as a result 25% less trucks are required for delivery [21].

Material Reductions

?In addition to simple operational cost savings, carbon accountability often also drives creative solutions with regards to material selection. In the UK, construction company Balfour Beatty, aimed to reduce the carbon footprint associated with transporting sand and stone from quarries to their road building sites. In their search for local materials they investigated alternatives such as recycled car tyres and power station ash. In the end, the construction of the road used 400,000 recycled tyres and 375,000 tonnes of power station ash, resulting in dramatic reductions in both material purchasing and transport costs [22].

?When optimising the packaging of a popular toy truck that sold over a million units per year, Walmart decided to reduce the size of the cardboard packaging. This alteration yielded a saving of €1.9 million per annum through reduced material and transportation costs. In order to yield the same amount in profits Walmart would have had to sell €48 million worth of toys. Walmart also aim to shrink all of their product packaging by 5 % and to increase its recyclability which is estimated to return savings of €2.7 billion in annual packaging and transportation costs once implemented [23].

?Retailer ASDA has reduced the weight of its product packaging by 27 % since 2005. The outcome of removing the carton around a tube of ASDA-brand toothpaste was a 50 % reduction in packaging [24].

?Nike announced in 2000 that a safety initiative to replace hazardous chemicals in their manufacturing process resulted in a €3.6 million saving in raw materials [25].

?Marks and Spencers reported that they saved €13.9 million in 2011 by implementing reductions in packaging [26].

Waste and Recycling

?Supervalue earned €28.8 million in recycling income in the first year of their policy to divert 90% or more of their waste from local landfills for 54 of their stores. This revenue was generated by selling recycled materials that had previously been sent to landfill [18]. ?In order to reduce waste Starbucks introduced a policy requiring all employees of partner companies who received a discount in their stores to have their drinks served in reusable cups. This initiative saved approximately €800,000 in the first year and saved 16 million paper cups. Starbucks now offer a €0.08 discount for each serve in a reusable cup and in 2010 customers availed of this discount more than 32 million times [27].

Energy

?Remarkable operational cost savings were realised in a retail distribution centre in the United States by employing an innovative solution that was directly driven by reducing the building emissions. The building consisted of 650,000 m² of internal storage warehouses in which 500W light bulbs illuminated the space from the ceiling and mostly shone on the top of storage boxes. The typical solution to reduce energy consumption would be to install more efficient light bulbs such as LED lighting. However, the final solution to reduce carbon emissions was to remove all of the light bulbs and to provide the workers with task lighting. As a result the company's carbon footprint was significantly reduced and running costs decreased by €20,000 per annum [28].

Sustainability Frameworks of Multinational Organisations

There are also instances of multinational organisations applying sustainability strategies comprehensively throughout their whole organisation as may be seen by the following examples:

?In the last quarter of 2010 Unilever unveiled their Sustainable Living Plan which included the pledge that the environmental footprint of their products would be halved by 2020. This has not adversely affected the company's financial performance as revenues have grown 5% in 2011 to €46.5 billion despite this ambitious target to decouple growth from environmental impact. Unilever claim that by investing in sustainability they are creating shared value and thus protecting the future of their business. The Unilever CEO Paul Polman has estimated that in 2011 the company experienced additional costs of €200m due to the impacts of climate change such as drought or flooding [29,30,31].

?Intel saved €109 million from 11 employee environmental projects in 2010 through practices such as linking individual compensation to environmental performance, promoting employee sustainability groups, funding innovative environmental projects and by rewarding employees who deliver significant sustainable impact. This saving equated to 0.31% of the company's 2010 revenue [32,33].

?Through investments in video conferencing facilities and virtual meeting technology the Royal Bank of Scotland (RBS) reduced their air travel by 16% in 2011. This resulted in a significant financial savings and a saving equivalent to 72 tonnes of CO₂. In 2012 RBS revealed plans to save approximately €250 million between 2012 and 2020 by halving business travel emissions, halving paper consumption, reducing energy related emissions by 15%, reducing water consumption by 12%, increasing recycling and reducing waste sent to landfill [34].

Conclusion

It has been shown that international investors are increasingly concerned with the hidden costs associated with future environmental risk. This may be seen by the rise in voluntary reporting of greenhouse gas emissions and the inclusion of the future cost of carbon in long term planning reports. It must also be noted that companies such as Microsoft are also willing to make considerable investments per annum to improve the image of their brand.

The growing trend towards "embedded sustainability" and its tangible financial and environmental benefits have also been highlighted through a wide range of case studies.

This paper argues that companies that produce tangible products and thus consume materials and manage a supply chain should consider "embedded sustainability". These strategies can result in (a) significant reductions in environmental impact, (b) reduced short term operational costs, (c) reduced exposure to future environmental risk and (d) an improved brand image. It is anticipated that the majority of the lessons learned from the case studies are adaptable and scalable and thus can be transferred across organisations.

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