

Sustainability Integration into business through Product and Process Innovations: A Review

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Abstract : As a consequence of the rapidly increasing consumerism and industrialization, the finite sources of non-renewable precious natural resources on earth are depleting at an alarming rate. Sustainability of resources thus will determine the fate of companies which aspires to have long term competitive advantage and thus many firms are eventually engaged in integration of such practices into their business which will ensure sustainability of resources. Firms achieve this through product/process innovations and alterations into their existing practices with the objective of gaining advantage by reducing the resource consumption and enhancing process efficiencies. This study aims to discover various such practices by FMCG, IT and banking sector players which lead the bandwagon of sustainability integration into their business, and thereby recommending the best industry practices in this direction.

Key words: Sustainability, product/process innovations, sustainability integration

Introduction

The concepts of sustainability and corporate social responsibility (CSR) have been among the most important themes to emerge at the global level in the last decade. Sustainability and CSR are seen as comparable concepts, since both take into consideration environmental, social and economic dimensions and both refer to a long-term perspective based on meeting the needs of the present with responsibility and without compromising the ability of future generations to meet their needs. In light of this, managers have to take into consideration not only increased sales and profits and/or decreased costs, but also the sustainable development of the business itself and the surrounding context. A growing number of companies worldwide have engaged in serious efforts to integrate sustainability into their business practices. This paper aims to explore the current scenario of sustainability integration across FMCG, IT and banking service sector firms, identifying the various practices and emergent product and process innovation. Current trends are identified which can act as guiding light to the firms which aspires for sustainability integration into its business.

Theoretical Background

Sheth and Parvatiyar (1995) were one of the first to propose the idea of a sustainable marketing concept, which leads to sustainable development in combination with government action. Peattie (1995) and Ottman (2011) use the terms 'environmental marketing' and 'green marketing' but understand environmental and social issues to be intertwined. Sustainable marketing is a holistic approach (Charter, Peattie, Ottman & Polonsky 2002; Bridges & Wilhelm 2008; Emery 2012). Consumers increasingly expect not only the company to be sustainable but the whole supply chain (Bridges & Wilhelm 2008; Belz & Peattie 2009). The aim of sustainable marketing is still to add value to the consumer and satisfy the customer's wants and needs

but in a sustainable way (Charter et al. 2002; Belz & Peattie 2009; Martin & Schouten 2012). N.M.P. Bocken, S.W. Short, P. Rana, S. Evans, Journal of Cleaner Production (2014) developed sustainable business model archetypes. The archetypes are classified in higher order groupings, which describe the main type of business model innovation: Technological, Social, and Organisational oriented innovations.

Methodology Adopted:

In this exploratory study, qualitative data analysis was used for content analysis on secondary data from the corporate sustainability reports (2014-15 or 2015-16) of 13 select organizations considered for study from FMCG, IT and banking service sector. Grounded Theory approach was used to analyze qualitative data. This approach adopts methodology to analyze qualitative data by initially defining themes, looking for theoretical replication across cases and finally reaching closure reaching literature comparison phase by comparing emergent theory with extant literature. Reflecting over the conceptual framework, and questioning the data, the ideas emerge on categories through the engagement with the texts. Categories of inclusive patterns and meaning, yet exclusives, are generated according to the existing framework.

Examples of model practice, ideas or programs:

Name of the organization and corresponding Product/ Process Innovation are discussed below as discovered through the course of this study.

Coca Cola

Plant-bottle technology

In June 2014, Coca Cola's PlantBottle technology was recognized as one of the innovations helping to fuel the bio-based manufacturing boom. Currently, Plant-bottle technology replaces one of the key petroleum-based

ingredients used to manufacture PET bottles. To accomplish its long term objective of manufacturing PET bottle made entirely from plant based material, the Coca Cola company had tie up with technology companies Virent and Gevo on PET in the US and on PEF in Netherlands and met an important milestone in this journey by manufacturing world's first plastic bottle made entirely from plant based materials which was showcased in the world expo 2015 in Milan.

Light-weighting

Sustainable packaging requires us to “reduce, reuse and recycle.” One way to reduce is by improving the design of packages, a process known as light-weighting. Over time, the company has reduced the weight of its 8-ounce glass bottle by more than 50 percent and its 12-ounce aluminum can and 20-ounce PET plastic bottle by more than 30 percent. In 2008 the company set the goal of improving the packaging material efficiency per liter of product sold by 7 percent by 2015 and achieved that goal in 2013, two years ahead of schedule. Company continues its work on light-weighting and on packaging designs that help reduce its climate impacts. Light-weighting is part of their ongoing system-wide productivity program, which in the past two years has helped to avoid the use of an estimated 125,000 metric tons of primary packaging and reduced system costs by approximately \$200million.

Dabur

Life Cycle Analysis

Dabur's strong in-house research wing follows a ‘bush-to-brand’ approach. This research wing undertakes detailed tests on individual ingredients and products to ensure that the final product meets customer needs and aspirations. This in-depth knowledge about nature and natural ingredients is one of our biggest strengths, not just while developing efficacious products for consumers but also for devising ways to recycle and re-use the herbal waste and to effectively conduct life cycle analysis of products. The company is already conducting regular and in-depth shelf life studies and devising effective means of disposal without endangering the environment. Dabur has also undertaken Life Cycle Analysis of its key products to identify risks and opportunities along the entire value chain.

Dabur has conducted detailed Life Cycle Analysis study for three key products – Dabur Chyawanprash, Dabur Honey and Réal to identify risks and opportunities along the entire value chain and, identify steps to be taken to reduce the environment impact of these products.

Process innovations for energy efficiency

Company has taken several initiatives for reducing the environmental impact of its operations. The year saw it achieve a 10% reduction in steam consumption by process improvement. Some other energy conservation measures

include use of wind turbo ventilators in our plants, replacement of conventional tube-lights with LED tubes, use of briquette & in-house dry herb waste for generating steam and replacement of Hi-Speed Diesel Fuel Boiler with the Briquette Fuel Boiler.

3M

Dry Wash

This is a car care product introduced by 3M to reduce water usage and yet give complete cleaning of car. It is a revolutionary innovation in significant reduction of water usage in automobile washing process and thus is widely accepted by environment conscious customer groups and water scarce regions.

Colgate

Improving the recyclability of packaging

Colgate has committed to improve the recyclability of their packaging materials, committing resources to enable breakthrough innovation in oral care packaging, company also committed to deliver 100 percent recyclable packaging in its personal care and home care.

Eco-innovator Terracycle

Colgate partners with eco-innovator Terracycle in the U.S., Mexico, Brazil, Australia, Argentina and New Zealand. Terracycle “upcycles” Colgate packaging materials collected at schools, stores and other locations into new and affordable eco-friendly products, while generating revenue for schools and charities. Colgate partnered with Terracycle and retail partner Shoprite in the U.S. on the Recycled Playground Challenge. In-store displays drove awareness for recycling through Terracycle and publicized a contest for schools to win a playground made from recycled toothbrushes and toothpaste tubes, a breakthrough in consumer awareness and engagement!

LEED certified facilities

Colgate has nine LEED (Leadership in Energy and Environmental Design) certified facilities around the world with over ten additional LEED construction projects underway in the U.S., Latin America, Asia and Europe. Company committed to LEED certification for all of its new construction. LEED is an internationally recognized green building certification system, developed by the U.S. Green Building Council (USGBC). The buildings reduce Colgate's environmental impact, reduce the Company's overall exposure to water and climate change related issues and offer a healthier, more comfortable work environment.

Unilever

Phosphate reduction from products

Unilever has been removing phosphates from its products since 2008, while continuing to meet consumer expectations on product performance. By the end of 2015,

company had reduced global use of phosphates across its laundry powders by 90%. This has lowered greenhouse gas emissions by up to 50% per laundry load.

Packaging Innovation

Unilever continually innovates to reduce the amount of resources used in its packaging. In 2015, company launched redesigned plastic Sunsilk shampoo and conditioner bottles. To save plastic, caps were made lighter, reduced the number of cap designs from ten to four and also halved the variety of bottle sizes manufactured from 44 to 22. These new designs mean savings of around 2,300 tonnes of plastic per year. The redesigned bottles also mean that more bottles can fit onto a pallet, taking around 300 trucks off the road each year. Company reduced the plastic used for Domestos bottles by up to 15%, making them lighter yet maintaining their strength. Once rolled out across the range worldwide, this will save around 1,000 tonnes of plastic a year. Thus reduction in packaging creates efficiencies, lowers costs and reduces company's environmental impact.

Pepsico

Packaging Innovation

The company innovated packaging to make it increasingly sustainable, minimizing impact on the environment. In 2014, company met its goal to reduce packaging weight and size and to increase post-consumer recycled content in its packaging.

P&G

Compaction and integrating recycled content into packaging

P&G pioneered industry breakthroughs such as compaction, integrating recycled content into packaging and supply chain innovation. P&G compacted, i.e. reduced porosity of its entire portfolio of powder laundry detergents by 33%. A number of P&G's powder laundry detergents will be compacted into smaller cartons for 'meaningful environmental benefits.' P&G estimates that the compacted detergents could help save up to 22 million pounds of total packaging in the U.S. and Canada each year.

ITC

ITC e-choupal

The ITC e-Choupal initiative is a unique and innovative model that delivers significant societal value by co-creating rural markets with local communities. A network of village internet kiosks – e-Choupals – enable even small and marginal farmers in rural India, who are de-linked from the formal market, to access real-time weather and price information, and relevant knowledge and services to enhance farm productivity, quality and command better prices – improving their competitiveness and capacity to manage risk. ITC e-Choupal is today the largest initiative among all Internet-based interventions in rural India. Its services reach out to more than 4 million farmers in over

35,000 villages, thus increasing efficiency of farming and promoting sustainability.

WOW programme

ITC's Well-being Out of Waste (WOW) programme is a flagship initiative that seeks to address the crucial issue of post-consumer waste management in line with the Government's 'Swachh Bharat' programme, ensuring the proper segregation and recycling of waste in a manner that protects and restores the environment.

Axis Bank

'Sustainable Lending Policy and Procedures' (SLPP)

Axis Bank has initiated the process of framing 'Sustainable Lending Policy and Procedures' (SLPP) to further strengthen its Environmental & Social Credit Risk Assessment. SLPP shall be developed by taking into cognisance the international environmental and social risk management frameworks.

Smart Energy Management system

Axis bank implemented a Smart Energy Management system at its 100 branches. This enables organisation to centrally monitor and regulate energy use at its offices and branches. The architecture of this service comprises of GPRS-based controlling mechanism enabled by software. Through this system, they can centrally monitor the office energy consumption on a real-time basis, benchmark energy performance and send reports to different unit managers for proactively improving energy efficiency.

ICICIbank

Digitization

Digital village initiative in Akodara, access to telemedicine, digitizing school records have been among prominent initiatives to reduce paper usage.

TCS

- 1) Green IT/Data centers
- 2) LCAs for Eco Labeling & EPD

Infosys

Central Energy management system

It is an enterprise level energy management monitoring and information tool. Company added over 600 new energy meters, and integrated energy meters in third party applications like the building management systems, chiller-plants managers, taking the total number of integrated energy meters across campus to around 2500. Infosys has now installed HT energy metering systems at campus sub-station level for all campuses for detailed energy analysis and optimization. GPRS technology was used for communication for sub-stations that were located remotely

where wired connectivity was not available.

Green Technology Innovation: Radiant cooling technology

Infosys pioneered the use of radiant cooling technology in India through the deployment of radiant slab and radiant panel-based cooling systems. The company has developed Radiflux panels in-house, which use chilled water for cooling. These panels are two times more efficient than other products available in market.

Yes Bank

Document Digitization (NEWGEN)

The initiative aims to reduce paper used in account opening and verification forms through digitization of documentation. The project, done with the Bank's partner NEWGEN, has saved over 60,56,095 sheets of A4 size paper in the Bank's retail operations, resulting in a cost saving of over 51 Lakh for the Bank.

Low-cost microATMs

YES SAHAJ, the Bank's award winning and globally recognized technology solution platform offers doorstep banking services using low cost technology. YES BANK developed YES SAHAJ as an innovative, low cost Micro-ATM that marries technological innovation, India's strong mobile penetration with existing principles for mobile banking and the BC (Business Correspondence) model.

Coldry technology

Yes Bank's Sustainable Investment Banking is commercializing Australian Clean Coal Technology in India since India has a large demand-supply mismatch in thermal coal production, and power plants suffer from a general unavailability of superior quality coal. In this context, Coldry technology is a clean coal innovation. To scale up Impact at the Bottom of the Pyramid, Sustainable Investment Banking developed and patented by the Australian company Environmental Clean Technologies (ECT) offers an efficient and cost-effective solution.

Green Bonds

YES BANK has led path breaking efforts in mobilizing new instruments such as green bonds, to finance renewable infrastructure.

Emergent innovative trends:

- Dry wash
- Packaging innovation by reduction of packaging material usage

- Packaging solutions from biomass waste like Plant bottle technology
- FMCG products consuming less water while consuming
- Phosphate reduction from laundry products
- Sustainable sourcing and innovative sustainable agricultural solutions
- Supply-chain innovations
- Light-weighting
- Digitized banking solutions for rural India
- Document digitization initiatives
- Green financing services and green bonds
- Innovative low cost micro ATM
- Green Technology Innovation: Radiant cooling technology
- Central energy management systems
- 'Sustainable Lending Policy and Procedures' (SLPP)
- Smart energy management systems
- Green IT/Data Centers
- LCAs for Eco Labeling
- Village internet kiosks e-choupal

Conclusions and Recommendations:

A diverse portfolio of innovative product/ process implementation was unveiled during the study which encompasses myriad industry initiatives in the light of sustainability integration. This study concludes on an enriching note by recommending few select leading product / process innovations for sustainability integration into the business practices of organizations and following these recommendations will certainly help organizations on their pathway of inclusive business practices through judicious utilization of precious natural resources, thereby gaining a long term competitive advantage as well as ensuring a better tomorrow by supporting the sustenance of resources for future generations. Qualitative analysis of the different innovations reveals the following emerging themes, which are recommended as below.

Recommended Product / Process innovation for sustainability:

FMCG (manufacturing sector)	IT and Banking (Service sector)
Light-weighting of packaging	Smart and central energy management systems
Packaging from biomass waste	Document digitization and digitized banking
Supply chain efficiency innovations	Green financing services and green bonds
Life cycle assessments for eco labeling	Green IT/Data Centers
Sustainable sourcing	Low cost micro ATMs

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