

## **Eco-friendly or Eco-frenzy? A cost-benefit analysis of companies' environmental decisions**

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### **ABSTRACT**

The purpose of this paper is to evaluate and analyze the incremental costs of businesses becoming “green.” It answers the overarching question: are businesses becoming eco-friendly or eco-frenzy? For the purposes of this paper, eco-friendly is defined as companies that strive to be environmentally conscious. Conversely, companies that are eco-frenzy become environmentally conscious for the wrong reasons, such as gaining an environmental reputation. With the increase in popularity of corporate social responsibility (CSR) and the legal requirements related to environmental laws, more businesses have been incorporating the ideas of sustainability into their strategic positioning. At the start of the 21<sup>st</sup> century a disclosure framework for sustainability was created and guidelines of Global Reporting Initiative (GRI) were put into practice. Hence, companies are producing separate environmental and sustainable reports as part of their annual financial statements. These reports include the information of costs incurred and benefits and savings realized as a result of implementing environmental practices. A sample of four companies, Canon, IBM, Intel, and Texas Instrument’s 2008-2010, annual environmental reports were used as data for this study. The cost-benefit effects were analyzed and conclusions drawn. The results of this study reveal that IBM and Canon were eco-friendly while Intel and Texas Instruments showed an eco-frenzy correlation.

Keywords: Eco-friendly; Eco-frenzy; Environmental costs; Environmental reporting; Sustainability

## INTRODUCTION AND BACKGROUND

Historical data demonstrate that sustainable practices, which are based on environmental laws, have been used by companies for decades. For example, one of the earliest environmental laws was the Clean Air Act of 1956, passed in England. The purpose of that act was to “make provisions for abating the pollution of the air.” This regulation consisted of eliminating black chimney and smoke from various furnaces. Businesses were found guilty of an offense if they did not abide by the rules of the Act. The United States (U.S.) was quick to follow the example of this environmental initiative. In the early 1960s, the U.S. adopted a decision approach that included an environment analysis. Accordingly, the National Environmental Policy Act of 1969 and the Environmental Quality Improvement Act, (EQIA) of 1970 were passed in the U. S. These Acts were passed to help businesses enact operating practices which would help with prevention, abatement, and control of environmental pollution, water and land resources, transportation, and economic and regional development. The Oil Pollution Act of 1990 (OPA) was created to limit the damages resulting from oil pollution [and] to establish a national fund used as a loan to businesses for the payment of clean-up costs when oil spills occur. The government found that when oil spills occurred the responsible business could not afford to clean it up in a timely manner. Oil spills are very costly to clean-up and the recovery from damages are long-term. Accordingly, Sustainable practices as a “movement” have been gaining traction in the corporate setting since the early 1950s and it has grown into a “green revolution.” *Going green* means using production practices such as alternative energy, creating less waste, saving water, causing fewer emissions, and using fewer toxic chemicals. Companies are promoting sustainable practices such as recycling paper, reducing carbon footprints, and giving to charitable causes in order to maintain a social balance for the environment.

Moreover, the social pressures for environmentally conscious and sustainable business practices have increased in popularity in recent years. It is necessary for businesses to engage in such practices, because their competition is also actively participating. However, instead of businesses becoming eco-friendly, they might be creating an eco-frenzy. For the purposes of this paper, the authors coined the term “eco-frenzy” to mean companies which strive to be economically sustainable, to build their reputation, to be a part of a movement (fad), or simply for underlying benefits and saving, such as tax credits. Nevertheless, societies’ demand for businesses to become “green” and to offer products and services that are environmentally friendly have also been gaining popularity. Therefore, management needs to make strategic decisions to operate based on a sustainable notion of becoming “green.”

As a result of such initiatives, new accounting practices were created in the 21<sup>st</sup> century, which are geared towards helping companies report the costs related to environmentally conscious practices in a systematic way. Environmental impact analysis is one that “set[s] out the relevant environmental factors in the form of descriptive information expressed in nonmonetary qualifications” (Milne, 1996, p. 143). This helped management perceive the positive or negative impacts that its operations and special projects have on the environment. It also helped to quantify the cost-benefit analysis of companies operating practices on the environment. However, accounting and reporting on such costs has gained traction in recent years. Milne (1996, p. 147) states that “sustainability involves maintaining: a sustainable scale of economic activity relative to its ecological life support; a fair distribution of resources and opportunities for the present and future generations; and an efficient allocation of resources.” Sustainability is comprised of three different aspects: (a) economical, (b) social, and (c) environmental. Over

time, businesses have improved their “sustainable outcomes by rationing scarce ecosystem capacities and by the presumption that the ecosystem is a going concern, not the economic project” (Milne, p. 152). Management accounting potentially provides insufficient information to decision-makers to make informed decisions when they fail to include the cost-benefit effects of sustainable environmental practices. Accordingly, the purpose of this paper is to evaluate and analyze the incremental costs of businesses becoming “green.” The overarching question underlying this study is: Are businesses becoming eco-friendly or is the phenomenon of *going green* eco-frenzy?

## REVIEW OF LITERATURE

This review of the literature gives a synopsis of the relationship between Corporate Social Responsibility (CSR) and sustainability. It also explains the concept of social accounting and its link to sustainability as offered in the extant literature. Further, some of the literature on Environmental Accounting and Reporting (EAR) and the related cost-benefit analysis is discussed. Over the years the idea that businesses should be responsible for their ethical behavior towards the community has become a standard. With the increased awareness of companies’ boards of directors to the concept of social and environmental responsibility, the notion of CSR was established. CSR “is defined as ‘the social responsibility of [a] business, [which] encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time’” (Neelankavil, & Anoop, 2009, p. 18). Consequently, this broad definition shows how it includes and represents the firm’s strategic intent for establishing social and environmental initiatives. Hence, the primary goal of CSR is to communicate the general management strategy for sustainable and environmentally friendly operating practices as well as to establish the business risk factors arising from such practices, which may at times exceed what is required by law or regulation (Porter, 2008; Joshi, & Krishman, 2010).

In a recent survey at the UN Global Compact Commission, it was concluded that “93 percent of signatory CEOs say that sustainability will be critical to the future success of their business” (Adams, & Petrella, 2010, p. 293). These managers recognize the importance of maintaining sustainable and environmentally conscious practices and that the implementation of such considerations in decision-making could help improve competitiveness and create long-term shareholder value. With the demand for “a more refined measurement, tracking, and accounting of the flow of physical materials, wastes, and energy, both within and outside” (Joshi, & Krishman, 2010, p.27) business, the nexus among CSR, sustainability, and environmentally friendly practices increases. As CSR flourishes, and with the support from the community, corporate CEOs have begun to realize the benefits of documenting and reporting their efforts, cost, and benefits related to the CSR, but more specifically to environmentally conscious operating practices.

### Social and Environmental Accounting and Reporting

As the demand for environmental factors to be included in strategic planning grew, so did the demand for accounting techniques, which are beyond the current traditional reporting to include an extensive measurement of the impact of CSR. Accordingly, the theory or conceptual frame of social accounting was developed to modify the traditional way of accounting and to incorporate the notions of CSR and sustainable business practices. Social accounting refers to

organizational information disclosures, financial or nonfinancial, which significantly extend the scope of traditional financial accounting, to environmental accounting and reporting (Ball, & Osborne, 2011, p. 1). In essence, social accounting goes beyond economic measures, it seeks ways to reduce the negative impacts of poor environmental operating practices while looking for ways to encourage and report on the positive social and environmental effects (Grey, 2010).

Anthony Hopwood stated that “accounting, in other words, is part of a wider whole and to understand [it] one needs to understand the wider whole and implications for accounting” (Hopwood, 2007, p. 1367). In essence, accounting is construed as the language of business; hence, in order to successfully run a business, accountants need to understand the nature of the business as a whole, including the environment. However, accounting is structural and precise and adapting to new reporting standards is difficult. Thus Hopwood concludes, that “accounting practice is still trying to grapple with the backlog of pressures on it to change...by the regulatory authorities” (Hopwood, p. 1369). However, companies have taken steps to overcome the pressures and have ventured out from the collective and continuing timidity of accounting and traditional practices (Grey, 2010) to new horizons of social accounting practices.

Because the pressure has been increasing for accountants to break away from traditional cost accounting reporting, various contemporary reporting methods such as Lean Manufacturing, the Balanced Scorecard, and other strategic managerial concepts are being used. In the late 1990s, a disclosure framework for sustainable reporting, Environmental Accounting and Reporting (EAR), was created. In 2000, the EAR concept was released to the public for businesses to practice and adopt. While most companies now “report significant amounts of environmental activities on their website and in advertising” there is also a growth in producing “a separate report based on the guidelines of the Global Reporting Initiative” (Creel, 2010, p. 13). Companies are reporting “through the balanced scorecard (BSC), which provides a framework for integrating nonfinancial measures into corporate operations and assessments” (Butler, Henderson, & Raiborn, 2011, p.2). Accountants began to use balanced scorecards to achieve their goals. Global Reporting Initiative (GRI) offers a comprehensive guide, the Sustainable Reporting Guidelines, which companies will follow for environmental reporting. This promotes transparency and accountability as an environment reporting policy (Creel, 2010). The GRI framework allows for a flexible roadmap for accountants and environmental reporting.

### **Cost and Benefits of Implementing EAR**

A traditional approach to managerial accounting is to focus on cost control and variances. Yet with this current environment, not only are companies faced with a need to develop reporting to include the environment, they are also faced with the decision of how to communicate the results in an effective and understandable matter. Accordingly, as businesses are “faced with rising pressures to develop more environmental and social responsibility, companies are developing new communication approaches in conjunction with attempts to incorporate sustainability measures into strategic performance measurements systems” (Gates, & Germain, 2010, p. 1). Companies report the cost as well as the benefits of implementing an EAR strategy. According to *Sustainability Accounting Systems with a Managerial Decision Focus*, managerial accounting is the “improvement of resources used, not only increases efficiency but is also consistent with sustainability objectives” (Joshi, & Krishman, 2010, p. 25). There are both advantages and disadvantages to implementing sustainable products in a business and reporting them in EAR. While “green practices may increase a company’s profitability” it may also

“reduce profitability because of the extra costs that result from implementation” (Butler, Henderson, & Raiborn, 2011, p.1). The goal of any company is to maintain shareholder satisfaction. Shareholders play an important role in decision-making. If profits increase due to sustainable practices, then shareholders will be satisfied.

Some of the benefits a business might acquire are a “balance to an organization’s analysis of its overall financial performance,” (Creel, 2010, p.17) additional sales, reputation, and a “better understanding of environmental and social costs” (Joshi, & Krishman, 2010, p.27). All of these benefits are objectives companies expect to receive by using sustainable reporting. Some of the costs that could be incurred include, “higher margins (or selling price),...increased costs of raw materials,...recycling centers,...natural resource restoration costs,...[and] training costs incurred... [for] employees” (Dutta, & Raef, 2009, p.17). Framing the “Green” alternative for environmentally conscious consumers means that companies must be willing to realize and report on the costs related with such demand. (Mais, & Okada, 2010, p.231).notes that, “if consumers are willing to pay more for green products, and/or to buy from green companies, then it would be economically sensible for companies to internalize the costs. Hence, the link between social accounting and sustainability is that businesses need to move away from traditional practices and disclosure and use the framework created by the GRI to provide the guidelines for such accounting practices.

## METHODOLOGY

The purpose of this study is to understand whether or not businesses are becoming eco-friendly or eco-frenzy. It uses a descriptive design and archival data to analyze the cost and benefits of implementing environmentally “green” friendly operating practices of four major [sample] corporations. A search of the environmental practices of the 100 largest companies, which follow the Global Reporting and Environmental Organization’s Guidelines for sustainability, was used as a basis for selecting the four corporations. These reporting guidelines are the cornerstone of the Global Reporting Initiative (GRI), a network-based organization that produces a comprehensive sustainability framework. The Sustainability Reporting Framework provides guidance on how organizations can disclose their sustainability performances. It offers guidance on Sustainability Guidelines, Sector Supplements, and Technical Protocol. Any size company can follow these Guidelines and they are been used by thousands of organizations throughout the world. GRI’s core goals include the mainstreaming of disclosure on environmental, social and governance performance ([www.globalreporting.org](http://www.globalreporting.org)).

The sample companies selected for analysis are: (1) Canon, (2) IBM, (3) Intel, and (4) Texas Instruments. These companies were selected because they are on the GRI’s list of companies which are conforming to the reporting requirements of the GRI. Further, these companies are well known worldwide, are fortune 500 or 1000 companies and they pride themselves as being environmentally conscious and socially responsible. In addition, these companies publish separate environmental activities and the costs and benefits of those activities as part of their annual reports. These reports are easily retrievable from the company’s archives.

The four companies' annual reports for the years 2008, 2009, and 2010 were analyzed using content analysis (Bowman, 1984; Demunes, 2008) for annual reports. Annual report content analysis is used to explore corporate strategy and elements of risk and returns. "Analyzing the content of annual reports can be a fine source of data on individual firms and also on industries" (Bowman, 1984, p. 61). Corporate Annual Report (CAR) is viewed as a formal public document produced by public companies as a response to mandatory reporting requirements (Stanton, & Stanton, 2002). These CARs can be analyzed using various research perspectives such as content analysis. They are also reviewed or analyzed for various reasons such as risk reporting (Deumes, 2008). Penrose (2008) & and Jones (1997) analyzed annual corporate reports for their use of graphics.

This study reports on the total dollar values spent on eco-environmental initiatives as outlined by the claims made by these four sample companies. The assumptions made were that the companies would outline the total values of revenues spent on environmental operating activities. There are huge risks involved with the costs related to environmental activities. The capital expenditures can also be huge and will put the company at risk if the benefits received do not outweigh the risks involved. The authors also assumed that these analyses would highlight the issue of eco-friendly versus eco-frenzy and whether these companies are focusing on the environment for the common social good. Further, the assumption was also made that there should be a balance between cost and benefits related to such initiatives, and the company should be able to see and highlight its benefits and to maximize shareholder values. Based on these assumptions, the authors felt it justifiable to use annual report content analysis to analyze data for this study. Several ratios were calculated to help make these determinations and these are highlighted in the result and analyses section.

## RESULTS AND ANALYSES

These results first offer background about each company and its environmental and sustainability reporting initiatives. Second, the expenses and costs incurred and benefits received by each company are analyzed and illustrated using charts developed based on the authors' understanding of such data in the companies' annual reports. In addition, an analysis and discussion of such costs-benefits follow each chart outlined in Appendix 1. The results of implementing environmental and CSR policies show that each company had unique costs and savings that relates to the individual industry. The three years of data analyzed are for the 2008, 2009, and 2010, annual reports of each company.

### The Companies Reporting Initiatives

#### Canon

Canon has its heritage in Japan, when in 1933 a few young Japanese had a vision of making the world's best camera. Through hard work and with an enterprising spirit, they eventually succeeded in building a prototype, which was named Kwanon after the Buddhist goddess of mercy. Subsequently, in 1935, Japan's first-ever 35mm focal-plane-shutter camera, the *Hansa Canon*, was initiated, along with the Canon brand ([www.Canon.com/history](http://www.Canon.com/history)). "Since 1988, when Canon introduced its corporate philosophy of *Kyosei*, [that is] living and working together for the common good, we have placed high importance on and remained active in managing for the environmental protection....until today, the Canon group has reported on its

environmental protection activities through a variety of media....we decided to gather all our results, centered on statistics related to our activities, in one publication that will be used annually” (Fujio Mitarai, President and C.E.O., Canon Inc.). Canon has produced a Canon Group Environmental Charter that outlines the goal of maximizing resource efficiency.

Canon has been one of the leading companies in environmentally conscious behavior. In 1996, Canon challenged itself to be an excellent global corporation by implementing its “Excellent Global Corporate Plan.” In 2009, the company launched “Action for Green” and environmental vision set to start off this final phase. With this plan, Canon has divided its environmental costs into three groups: (1) research and development, (2) production, and sales, and (3) marketing. Since the first environmental reporting in 1999, Canon has been categorizing its savings by recycling savings, energy savings, environmental depositing savings, and utility savings. The year, 2010, marks the third stage of this transformation. Canon has earned seven awards and recognition for quality of products and nine awards for product innovation from environmental initiatives. Canon has continually improved its products. One such example is the ability of Canon energy saving technology to reduce CO<sub>2</sub> emissions by 8.4 million tons. See Canon as indicated in Appendix 1.

In the three years analyzed, Canon’s environmental costs have fluctuated from \$270 million in 2008, to \$278 million in 2009, and \$254 million in 2010. Its savings have increased steadily over the three years from \$115 million in 2008, to \$136 million in 2009, and \$146 million in 2010. In comparing the company’s savings to its expenditures, it can be surmised that Canon has successfully implemented a cost-benefit approach. In 2008 the company realized a 43 percent savings in expenses, 49 percent in 2009, and 57 percent in 2010. Overall, Canon spent a total of \$802 million on environmental implementation and realized a saving of \$397 million, during the three year period. This clearly indicates that Canon’s cost-benefit analysis is yielding a ratio of savings to expenses of .50:1. This analysis shows that Canon is in fact gaining benefits from implementing sustainable products. Since the start of 1999, Canon has been reliable in promoting sustainable practices. Canon has worked hard to build its reputation as an environmentally conscious company and plans to continue to build on such CSR strategies in the future.

## **IBM**

The earliest roots of IBM can be traced back to a set of events that took place in the 1880-1890 periods. First, in 1885, Julius E. Pitrat of Gallipolis, Ohio, secured a patent on an entirely new device which he called a computing scale. That invention became the earliest component of what later became the International Business Machines Corporation. From it, in great part, grew the entire business of what for many years was known as the Dayton Scale Division of IBM. Beginning in 1889, those early innovations and the following developments led to commercial organizations which later evolved into IBM. IBM has a long history of environmental leadership. “The company established a corporate policy on environmental protection in 1971....IBM’s long-standing recognition of the importance of protecting the environment arises from two key aspects of its business. First is the intersection of the company’s operations with the environment. The second is the enabling aspects of its innovation and technology” (IBM 2006 Annual Report, p. 1, [www.03.ibm.com/ibm/history/documents/pdf/faq.pdf](http://www.03.ibm.com/ibm/history/documents/pdf/faq.pdf)). IBM’s dedication to the environment and to its CSR is evident in its approach to innovative efforts to protect the environment. IBM’s CSR

policies are outlined in its annual reports. IBM's programs and policies call for the development and use of products, which are protective of the environment. IBM tracks its environmental spending (capital and expense) related to the operation of its facilities worldwide, as well as *environmental* spending associated with its corporate operations and site remediation efforts. In addition, IBM tracks its savings and cost avoidance as a result of such implementations. These totals savings include such savings from energy, material and water conservations, recycling and packaging improvement initiatives. Savings also include costs that likely would occur in the absence of its environmental management system (IBM Annual report, 2010). Since 2006, IBM has spent \$108 million on capital and \$517.6 million in operating expenses to build maintain, and upgrade the infrastructure for environmental protection at its plants and labs and to manage its environmental programs (IBM Annual Report, 2010). See IBM as indicated in Appendix 1"

The results in this study focus on the fiscal years 2008, 2009, and 2010. The above figures outline the comparative years' capital and operational expenditures versus the savings, inclusive of costs avoidance. The capital expenditures in 2008, 2009, and 2010 were \$31.7, \$14.3, and \$12.5 million respectively, a total of \$58.5 million. The operational expenses are \$111.3, \$102.3, and \$90.5 for each of the respective years, for a grand total of \$304.1 million. The total savings from implementing such environmental policies were \$174.7, \$152.4, and \$138, million, in 2010. The grand total savings are \$465.1 Million. As evident from the analysis, the savings or benefits outweigh the costs and expenses for each year as well as for the three years grand total. Further analyses show, that the savings and cost avoidance benefits exceeded the environmental expenses worldwide by a ratio of 1.52 to 1.0. This analysis has shown that IBM's savings and benefits, as a result of implementing its policies and its focus on pollution prevention and design of its CSR for the environment, consistently exceed the costs and expenses. This demonstrates the value of proactive environmental programs and performance and is evidence of the company's dedication to its CSR and sustainability.

## **Intel**

The history of Intel Corporation dates back to 1968, when Drs. Robert Noyce and Gordon Moore executed a plan to revolutionize the information age using electronic technology. Their company began with a notion to offer integrated electronic technology. Intel produced two of the world's well known innovations in micro-technology—Large-scale Integrated memory and the microprocessor. In its humble beginnings 1968 Intel had 12 employees and \$2,678 in revenues (<http://www.intel.com/Assets/PDF/General/15yrs.pdf>). "At Intel, we don't separate corporate responsibility from our business. One of the four objectives in our global strategy is, "Care for our people and our planet, and inspire the next generation." Every person at Intel has a role in achieving this objective, whether they design our products, work in our factories, or interface directly with our customers or suppliers. Our employees' ongoing focus and achievements create value for Intel and for society" (Paul S. Otellini, President and Chief Executive Officer).

Intel has taken the initiative to become "the largest voluntary purchase[r] of 'green' power in the U.S., according to the U.S. EPA" (Intel Annual Report, 2010). As the growing green trends continue, so does the environmental development and environmental products in Intel. Intel organizes its environmental costs into two main categories and subcategories. The first category is developmental costs, which consists of research and development and capital additions. The second category is project investments, which consist of water treatment plants and other environmental projects. Intel has "invested more than \$100 million in water conservation programs" since the late 1990s (Intel Annual Report, 2010). Savings are measured



by the reduced energy costs through projects and savings on chemical waste. Since 2006, Intel has saved two million dollars in chemical costs. Intel has also saved approximately \$150 million in energy costs by using solar energy as an alternative (Intel Annual Report, 2010). See Intel as indicated in Appendix 1.

In 2008, Intel spent \$11.8 million on environmental projects and realized \$53 million in savings. In 2009, Intel spent \$13.8 million, a 14 percent increase from 2008, but only realized \$37 million in savings, a 30 percent decrease. In 2010, Intel had more promising results from environmental implementation. It invested \$12.9 million in capital projects and realized \$122 million in savings. The total expenditure for the three years was \$38.5 million and savings was \$212 million. This shows that Intel receiving a lot more in benefits/savings than it is spending in costs, a ratio of .5:1. For this company, the savings/benefits outweigh the costs. Intel has implemented the strategic initiatives to become an environmentally friendly company; the quantitative results have proved positive from a cost-benefit perspective. This is an example of a bottom-line *turning green* as a result of implementation.

### **Texas Instruments**

Texas Instruments, Inc. (TI) is an American company with headquarters in Dallas, TX. TI develops and sells semiconductors and computer technology; it is the third largest manufacturer of such semiconductors. It also sells calculators, etc. TI was founded by a group of four people in 1951. One of those individuals was Eugene McDermott, the famed original founder of Geophysical Services in 1930. Today, TI develops analog, digital signal processing, RF and DLP® semiconductor technologies that help customers deliver consumer and industrial electronics products with greater performance, increased power efficiency, higher precision, more mobility and better quality (<http://www.ti.com/corp/docs/aboutti.shtml>).

“Our approach to environmental stewardship is interdisciplinary and comprehensive. We have long aspired to the goal of zero wasted resources,” and this drive for efficiency helps reduce greenhouse gases and other air emissions as well as energy consumption, water use and waste, while increasing resource conservation and efficiency in all aspects of our operations(<http://www.ti.com/corp/docs/aboutti.shtml> ). In 2010, TI established sustainability goals, which included annual environmental goals to reduce resource consumption, waste and emissions. TI sites globally continued to receive awards for outstanding environmental performance. Among various recognitions in 2010, TI ranked 34th on Newsweek magazine’s Green Ranking of America’s 500 largest corporations. (<http://www.ti.com/corp/docs/csr/environment/index.shtml>).

Texas Instrument (TI) corporate citizenship is made up of six distinct areas; the second of these areas is ‘environmental responsibility.’ TI “works toward[s] sustainability by reducing waste and inefficiency in operations including... This includes manufacturing facilities, office buildings, and distribution activities” (Texas Instruments Annual Report, 2010). TI uses Environmental Safety and Health Policy and Principles Guide to operate sustainably. TI categorizes costs as reducing ozone forming emissions, water conservation, energy reduction, environmental disposal of waste and materials, and LEED building (Leadership in Energy and Environmental Design). TI’s savings include utility savings, energy savings, and water cost savings. In 2005, TI decided to dedicate a pool of capital funding for 100 energy projects which began in 2006. This initiative resulted in \$4-5 million in annual savings. See Texas Instrument as indicated in Appendix 1.

The cost-benefit analysis for 2008, 2009, and 2010 was exceptional for TI. TI's expenditures for the three years were \$3.8, \$3, and \$3.1 million, respectively. The results from those investments were as follows \$9.1, \$8.7 and \$9.7, respectively. Therefore, in 2008, 2009, and 2010 TI savings were 24, 29, and 31 percent of expenditures. In total TI invested \$9.9 million and received \$27.5 million in saving resulting in a 28 percent overall savings. TI's savings in its CSR strategies outweigh the cost of its investments.

### Ratio Analyses

The following discussions are based on two ratio analyses. The first is *environmental costs as a percentage of sales*, which compares the cost spent on environmental initiatives as illustrated in the results above to sales incurred by each of the companies in the study. The advantage to measuring this ratio is to get an understanding of how much of the companies' sales are being used to promote environmentally conscious activities and which are related to the issues of customers demand for "green products" The second ratio is *environmental savings as a percentage of cash*. This ratio compares the environmental savings realized and outlined above as a percentage of the total cash available for each company environmental implementation. In analyzing this ratio the authors offer an understanding of how much cash is retained by the savings realized as a result of implementing environmentally conscious operating activities. See Canon in Appendix 2.

As indicated, Canon's savings are only half of the costs consumed. When converted to percentage of sales, Canon is spending less than one percent for the past three years. This indicates that Canon is effectively using its expenditures. When the company's savings are converted to percentages of the cash, it is evident that the company is not receiving a large amount of cash from its environmental savings or benefits. During 2008 to 2010, Canon has not received an advantage. The maximum percentage starting in 2008 was 2.39 percent and it has decreased during 2009 and 2010. Based on this ratio, which is less than three percent during the three years, it can be surmised that Canon is not realizing an ultimate cost-benefit relationship from its environmental strategies. It can be construed that Canon has embraced the *eco-friendly* phenomenon for its opportunity to increase efficiency rather than as a marketing ploy, leading to extraneous costs. This parallels the *Canon Group Environmental Charter* that outlines the goal of maximizing resource efficiency. See IBM as Appendix 2"

The data discussed in the results above demonstrates that IBM's savings surpass the costs incurred. While this may seem to be healthy for the company, the ratios indicate a different result. When the costs are analyzed as a percentage of sales, the results are surprising. The percentages for 2008 to 2010 were ranged from 4-6 percent, which indicates that the company is using a good percentage of its revenue to implement environmental projects. This would not be surprising if the savings as a percentage of cash were equal or greater. This analysis illustrates that IBM's savings as a percentage of cash are less than .20 percent for the three years. IBM is investing a high percentage of sales, but realizing less than one percent of cash from savings/benefits received as a result of its environmental strategies. This is another example of a cost-benefit relationship that is not necessarily effective, from a quantitative perspective. It is inferred that IBM is embracing the *eco-friendly*, CSR strategy from an efficiency perspective in order to develop the capability to generate new technologies to improve the ways it works and lives. See Intel as Appendix 2"

When Intel's costs are converted as a percent of sales the results are surprising. In 2008, the company spent 0.14 percent of sales, 0.11 in 2009, and 0.28 in 2010. The costs are less than

one percent of sales. The ratio of cash from environmental savings and benefits to total cash seems extraordinary. In 2008, the ratios show 78 percent, 77 percent in 2009, and 47 percent in 2010. These ratios seem very high and a bit unrealistic; nevertheless they indicate a positive cost-benefit relationship, and parallels the data results discussed above. This shows a high correlation to an *eco-frenzy* strategy. A possible explanation for these ratios could be that Intel incorporates its CSR along with its new production strategies; hence, their reports will show the benefits from such production strategies. See Texas Instruments as Appendix 2”

When analyzing the costs as a percentage of sales TI shows positive correlations. In each of the three years, the company used less than .30 percent of its sales to implement sustainable projects. Environmental benefits and savings, for 2008-2010 reveal 22-30%. Though it has been decreasing slowly in the past three years, TI is retaining a positive saving trend. Can we conclude that TI has an *eco-frenzy* strategy? This can be explained by TI’s approach to CSR and environmental strategies as outlined in their annual reports, as “interdisciplinary and comprehensive”. This drive for efficiency helps reduce greenhouse gases and other air emissions as well as energy consumption, water use and waste, while increasing resource conservation and efficiency in all aspects of their operations. Thus the savings they receive from such strategies are significant.

## CONCLUSION AND IMPLICATIONS

Sustainability is a big part of today’s corporate strategy and companies are taking the initiative to be environmentally safe. As the social pressures continue there is an increase in customer demands for businesses to go “green” and to offer products and services, which are environmentally friendly. Many companies are treating the recent trends towards *going green* as required costs with a gamble of little or no tangible benefits or returns on their investments. Going green means production practices including using less energy, creating less waste, saving water, causing fewer emissions, and using fewer toxic chemicals. While environmental and sustainable initiatives are great for businesses, one wonders if businesses are also creating an *eco-frenzy* strategy. *Eco-frenzy* occurs when companies strive to be economically sustainable, not necessarily to help the environment, but rather to build their reputation, to be a part of a movement (fad), or simply for underlying benefits such as tax credits. The underlying question in this study was: Are businesses becoming eco-friendly or is this going green phenomenon an *eco-frenzy* strategy?

The extant literature in the area of sustainability reveal four components, which are valuable in evaluating the overarching question in this study. The first component is corporate social responsibility. Corporate social responsibility (CSR) is defined as individual communities’ economic, legal, and ethical expectations of businesses. The goal is to improve the communication link between the community and environmental implementations. The second component is social accounting. Social accounting goes beyond traditional accounting and includes nonfinancial elements, such as environmental results. The link between social accounting and sustainability is that businesses have moved away from traditional practices and have adopted additional reporting strategies, which captures their policies and costs-benefit effects of their CSR. In the year 2000, the Environmental Accounting and Reporting (EAR) concept was released to the public for businesses to practice and adopt. These guidelines are issued by the Global reporting Initiative (GRI) and used by companies to form a standard environmental reporting publication. This outlines an understating of the cost as well as the

benefits to the company for implementing such new environmental strategies. There are both advantages and disadvantages, which companies need to understand and weigh before implementing and planning environmentally save initiatives. While incremental costs and capital investments are needed, the result should be positive and lead to increased efficiency in production and effective environmentally safe products and services.

Like the sample companies in this study—Canon, IBM, Intel, and Texas Instruments—several companies have taken a proactive approach to their decisions to *go green*, to be socially responsible. Rather than simply spending money to “clean up their act” and appease the public, they have been able to see economic benefits from reducing production practices, which have proven to be harmful to the environment. They have developed numerous consumer and industrial products/services that the market has embraced wholeheartedly. Overall, the companies have management’s buy-in and have committed to *ecofriendly* strategies. Accordingly, they have invested billions of dollars in their efforts. They also expect their investments to be a large part of their competitive advantage in the future. From an incremental cost perspective initial capital investments ultimately have a positive impact on the companies’ bottom line. Canon, IBM, Intel, and Texas Instruments’ annual environmental reports for three years—2008, 2009, and 2010— were reviewed and analyzed for data on their costs and benefits or savings related to environmental strategies. In order to meet their goals all four companies implemented or created new technologies to expand their capability of solving the tough production or other issues faced by environmental demands and laws and by societies’ and customers’ need for goods and services, which are environmentally friendly and sustainable.

The results of the analyses show that each of the companies had variety of capital expenditure, operating costs, and savings related to its environmental policies and implementation of sustainable initiatives. It was concluded that Canon and IBM show a high correlation with an *eco-friendly* strategy while Texas Instruments and Intel show a high correlation with an *eco-frenzy* strategy. This conclusion was drawn because both TI’s and Intel’s ratios show they were saving tremendous amounts of dollars than they were investing. This indicates that these companies are receiving greater benefits/savings while helping the environment and society. Cannon and IBM are examples of businesses not receiving much quantitative or financial benefits and or savings as a result of implementing environmental strategies. Their ratios show that there is not a very high positive cost-benefit relationship, financially. However, they are receiving a reputation as environmentally friendly and sustainable businesses. Cannon and IBM have made the most of the *eco-friendly* movement by embracing it as an opportunity to increase efficiency rather than as a marketing ploy leading to extraneous costs. By focusing on the long-term benefits and efficiencies of *going green*, they are able to offset the additional costs or reduce overall costs long-term.

Sustainable and eco-friendly business practices add significant cost to a company’s bottom line but can also result in future savings. Hence, more companies need to implement an environmental policy because it benefits the company, as well as society. Although this study focuses on a small sample of companies, its results are significant because companies continue to incorporate environmental accounting and reporting as a part of their annual management reporting and decision-making strategies. It offers insights into the various incremental costs and benefits realized as a result of implementing environmental policies. It also serves as an example of the various studies, which can be done to enhance the literature on sustainability and environmental accounting and reporting by analyzing more companies and providing benchmarks of such ratio analyses, by analyzing such costs/benefits as a part of the value-Chain.

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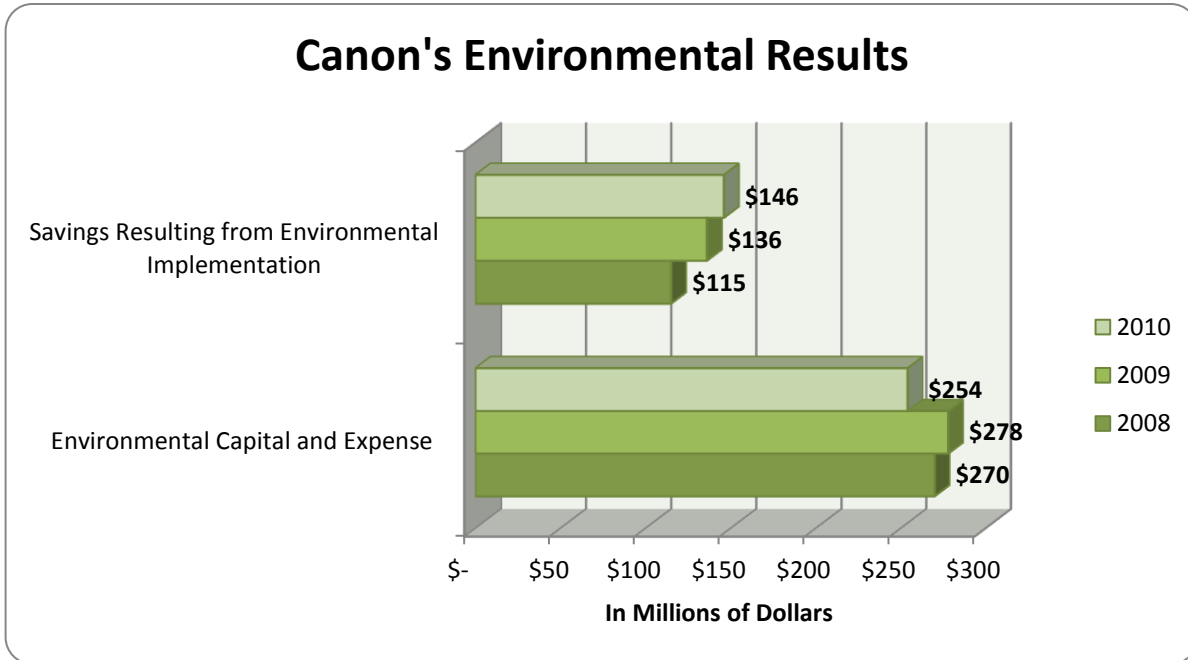
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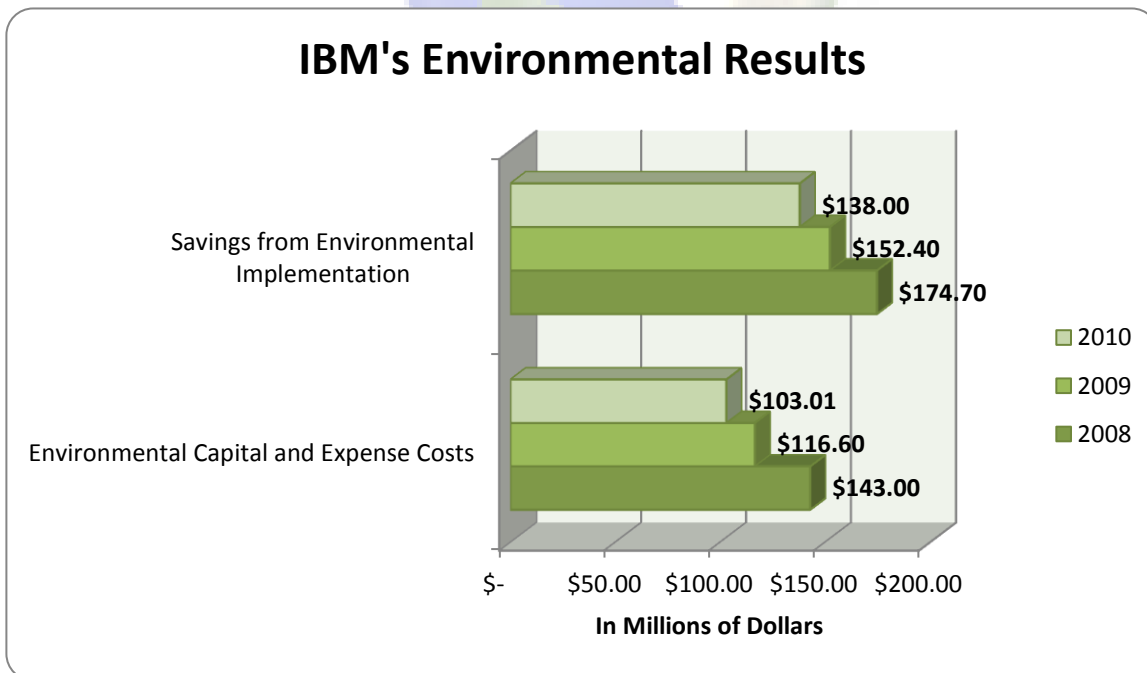


**APPENDIX 1 Environmental Results**

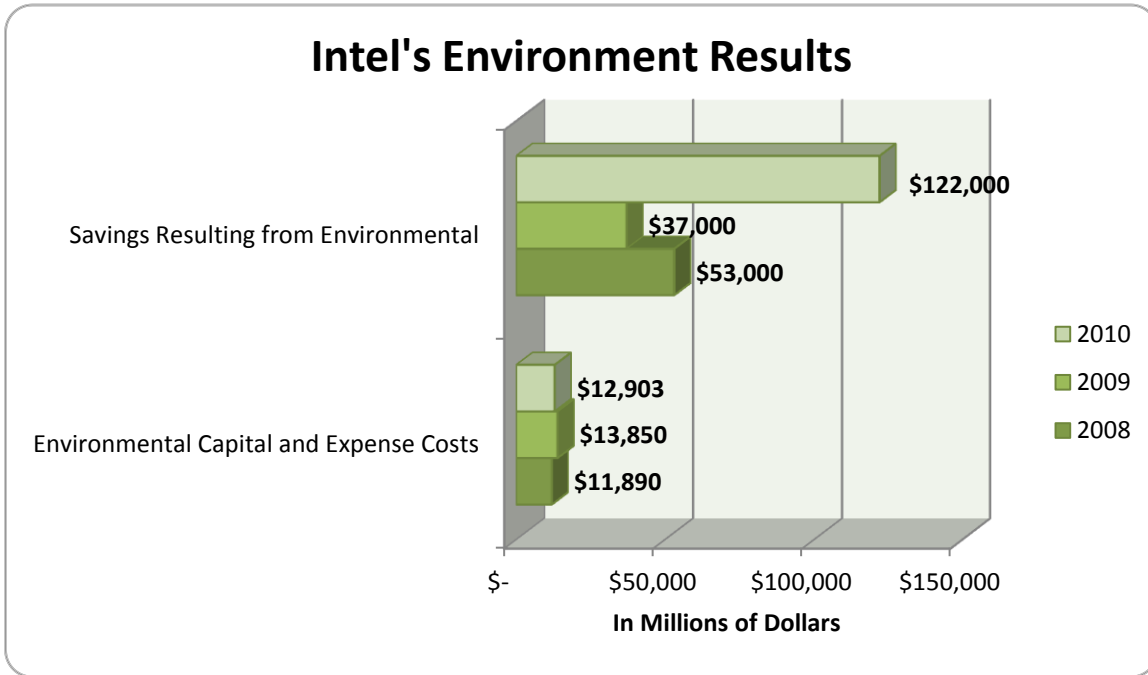
Cannon



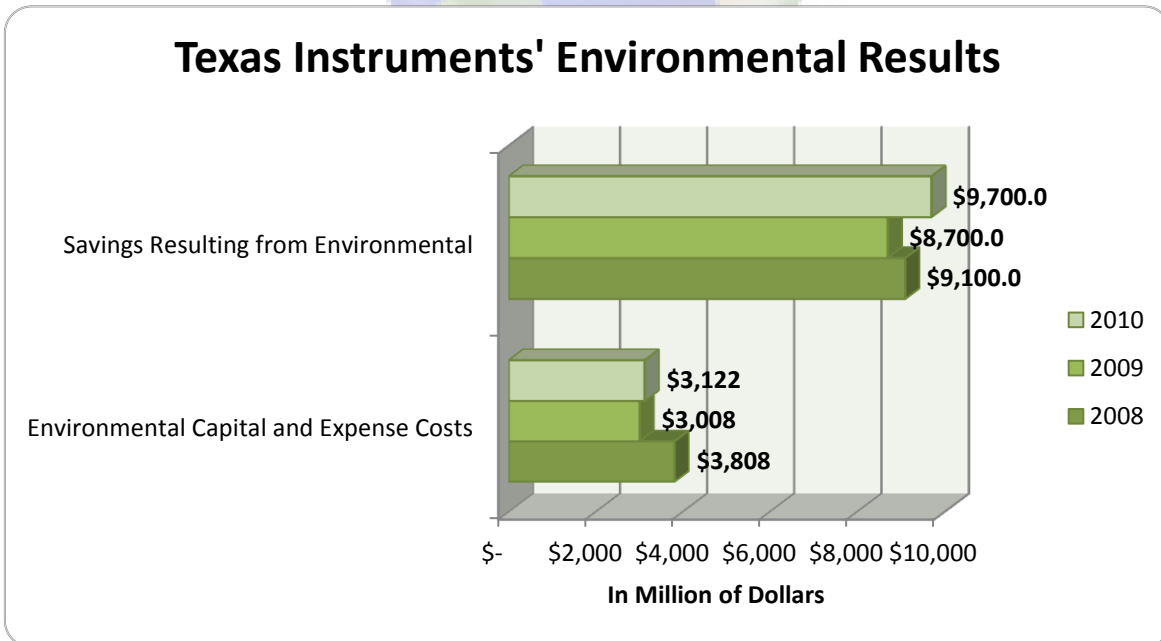
IBM



Intel



Texas Instruments





APPENDIX 2: Ratio Analyses

