

**STRATEGY FOR ACHIEVING ECOLOGICAL  
SUSTAINABILITY WHILE IMPROVING BUSINESS  
PERFORMANCE: A FIELD STUDY IN  
TEXTILE & CLOTHING INDUSTRY**

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## **ABSTRACT**

World is focusing its attention on corporate environmental responsibility than ever before. Expanding economic activities has been accompanied by growing concerns about global warming, climate change, energy security and scarcity of natural resources. While industries are showing greater interest in environmentally benign manufacturing and are undertaking a number of corporate social responsibility initiatives, a quantum leap in improving environmental performance cannot be observed, due to the incompatibilities between expected business performance & initial investments needed in achieving such a goal. These incompatibilities may serve as obstacles for corporations' response to ecologically sustainable business practices.

Ecologically sustainable manufacturing results cost efficiency and productivity; delivery of market innovation through new market opportunities and differentiation for profitability; and creating competitive advantage through compliance with regulatory bodies.

To survive, thrive, and to be distinct in a competitive business environment, industry must be restructured and existing and breakthrough technologies must be more innovatively applied to realize green growth. This should involve a paradigm shift in the business scenario and integrate ecologically sustainable business practice efforts into the corporation's overall business strategy. This is the most effective way to address these concerns while maximizing growth and returns for the corporation. In the case where integration does not take place, industry may lose its market value. This scenario was observed in the Sri Lankan textile & clothing industry, which has not completely unleashed, its immense potential to obtain the rightful place in global economic space.

*Key Words: Ecological Sustainability, Business Performance, Ecologically Sustainable Business Practice*

## **1. INTRODUCTION**

The industrial revolution marked a major turning point in earth's ecology and humans' relationship with their environment. While the industrial revolution meant that more goods could be produced for human consumption, it also meant that more pollution would be emitted into the earth and more natural resources would have to be exploited in the production process. Industrialization has resulted in pollution of water, air and soil which pose significant threats to both the environment and to human life. However in the past, the impact of various endeavours on the environment was not a significant issue for corporations in their business planning and operation. Concerns for the environmental impact of business activities became serious in the latter part of the 20<sup>th</sup> century with the evidence of atmospheric pollution, a variety of environmentally significant industrial accidents, and the discovery of human impacts on global systems such as the ozone depletion and climate change (Shrivastava, 1995). Thus changing attitude of being ecologically responsible is influencing every dynamic of the business in the present, as it talks about sustainability and wellbeing of the human and would urge almost all the corporations to develop a long-term strategy for integrating the required environmental aspects into their business planning.

### **1.1 Textile & Clothing Industry**

The textile & clothing industry is one of the sensitive industrial sectors which affect the global economies in the world, employing over 25 million people. Consumers spend around \$1.3 trillion on textiles every year, most of it on clothes. Conversely the global textile & clothing industry is inherently unsustainable and has a high impact upon the environment during the entire lifecycle, from growing the raw material or creating it from crude oil to manufacturing and selling and final disposal. Since the impact on the environment by textile & clothing industry is being recognized both in terms of water and energy consumption and also in terms of discharge of effluents, this demands textile & clothing industry to go for ecologically sustainable business practices.

## **2. RESEARCH PROBLEM**

The environment has become an important factor in the decision-making process of corporations around the world. Environmental issues are becoming more complex and interconnected. Traditional ways of addressing environmental issues in a reactive, ad-hoc, end-of-pipe manner are proving to be highly inefficient. Although few large, multinational corporations in textile & clothing industry are cognizant of impending overseas environmental regulations and growing consumer demand for a new generation of environmentally friendly products, and beginning to formulate their response, many manufacturers, who are functioning in small to medium scales, are far behind in acknowledging and addressing the environmental concerns of governments and consumers. Even though some positive trends in the greening of textile & clothing industry can be identified, a quantum leap in improving environmental performance cannot be observed, due to the widespread confusion/misconception about the cost implications of the process in achieving such a goal. *Therefore, it is necessary to identify “how ecologically sustainable business practices assists in improving business performance of the corporations in the textile & clothing industry?”.*

## **3. RATIONALE FOR RESEARCH**

The textile & clothing industry has been the life blood of Sri Lanka's economy for decades and has helped to transform the island into a middle-income country, utilizing enormous resources of water and energy. Since the new regime of international trade agreements under World Trade Organization (WTO) require that the textile & clothing production processes should comply with the local and international environmental standards, if these standards are not followed precisely, Sri Lankan textile & clothing products would not be accepted in the international markets. Hence today the Sri Lankan textile & clothing industry is under a tremendous pressure from the national and international stakeholders to improve the environmental performance of the industry.

There is now a widespread view that corporations in textile & clothing industry should be aiming to achieve ecological sustainability, but equally widespread confusion about the process in achieving such a goal. This may be because initial improvements were cheap, while further stages of industry greening require more resources to thoroughly integrate sustainability management in the whole business process. Therefore, this research attempts to examine how corporations in textile & clothing industry can leverage the strength of the ecological sustainability to improve their business performance.

In order to address the rationale, a comprehensive literature survey was carried out as discussed briefly in section 4. Based on the literature review and empirical investigation ecologically sustainable business practices were integrated into a conceptual framework to identify its impact on the business performance and is discussed in section 5. Section 6 discusses the research methodology. Section 7 presents the analysis of research findings and the proposed eco sustainability framework for manufacturing industry is described at section 8. Section 9 presents the conclusions of the study.

#### **4. LITERATURE REVIEW**

An extensive literature review was carried out to identify the reasons for green consumerism, the role of corporations in achieving ecological sustainability, the ecologically sustainable business practices in textile & clothing industry and the vitality of leverage strength of ecologically sustainable business practices to improve business performance of corporations in textile & clothing industry.

The birth of the modern green consumerism is usually dated at around the time the newly released Brundtland report (1987) was generating heightened awareness of the global ecological crisis. It defines sustainable development as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Shrivastava (1995) highlights the importance of organizational sustainability and emphasizes that organizational sustainability will require the creation of new organizational processes and systems. This would be geared toward creating inimitable green production systems, first-mover market strategies to capture emerging green markets, ecologically efficient cost structures for long-term profits, a better legal system regarding environmental and product liabilities, and environmental programs for better public relations and community image. Nimon & Beghin (1999) brings out introduction of an eco label as an opportunity which allows market to value process attributes and to rewards producers of environmentally friendly attributes.

Christmann (2000) emphasizes that before deciding on environmental strategies, firms need to examine their existing resource base and capabilities. Firms should select environmental practices that fit with their existing resources and capabilities. Because complementary assets are created in a firm's business strategy, the starting point for the formulation of an environmental strategy has to be a business strategy and the resources and capabilities it creates. Firms that lack capabilities for process innovation and implementation may be better off implementing environmental strategies later than other firms, so that they can learn from early implementers and imitate successful environmental practices.

Chen (2001) emphasizes that the success of green product development and its actual benefit to the environment depend heavily on the joint effort by both the private and public sectors. While the industry should recognize that the call for green products from the public is actually a marketing or economic opportunity rather than an annoying burden or an inevitable threat, the government should create a regulatory

environment that is on the one hand benign to green product innovation and on the other hand strict enough to ensure the overall environmental quality.

Zsolnai (2002) argues that it is not possible to achieve ecologically sustainable consumption by large-scale corporations, which aim to maintain their international competitiveness, and to speed economic growth. It can be achieved by small-scale corporations that, rather than trading across the globe, run their own economic affairs in a substantive way to meet or make the most of their requirements from their local resources. Erickson (2004) brings out the fact that to minimize environmental impacts by firms requires the blending of good engineering with good economics as well as changing consumer preferences

Rao & Holt (2005) highlights that green supply chain management promotes efficiency and synergy among business partners and their lead corporations, and helps to enhance environmental performance, minimize waste and achieve cost savings. This synergy is expected to enhance the corporate image, competitive advantage and marketing exposure.

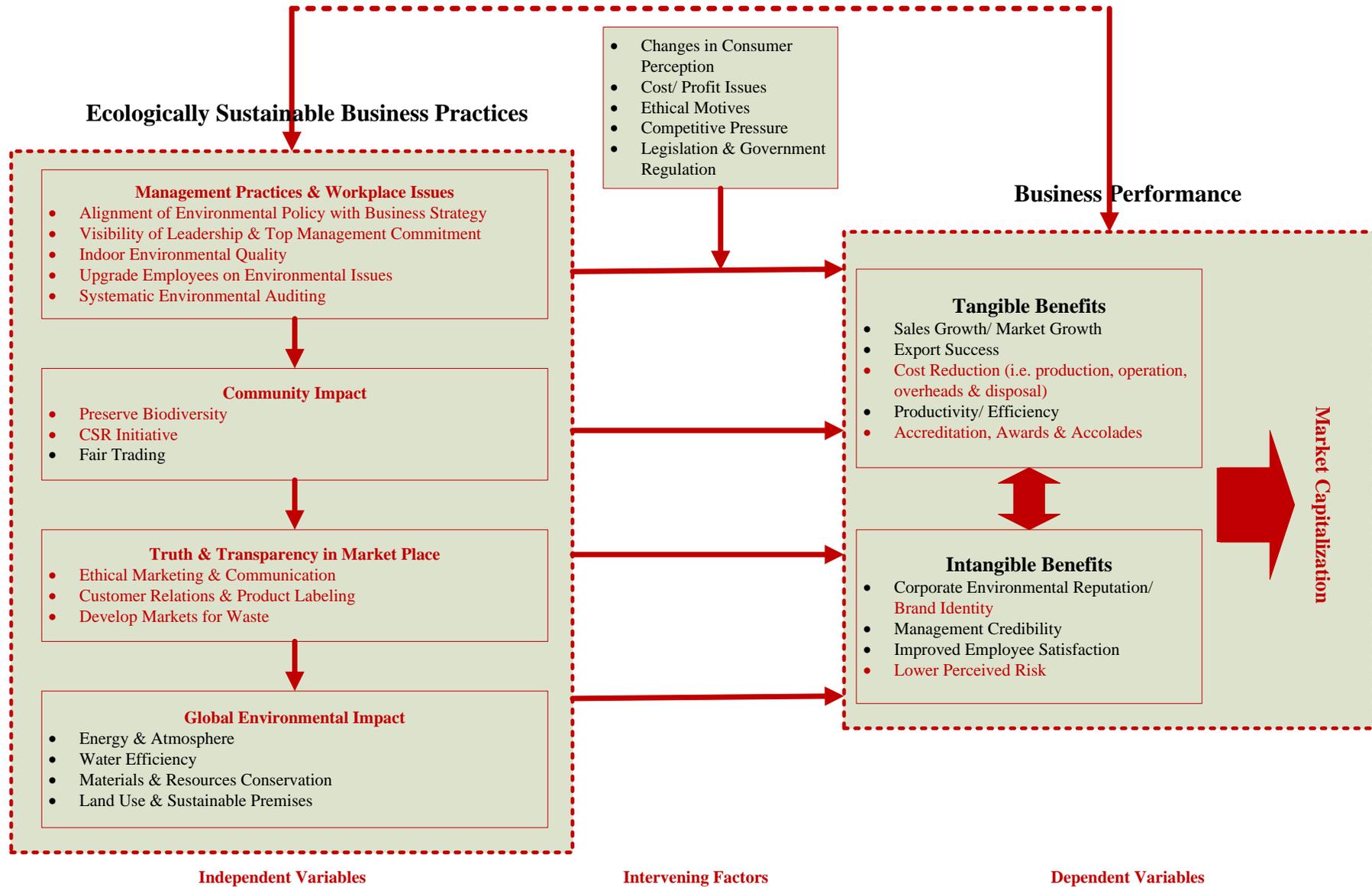
Atilgan (2007) emphasizes eco labeling has encouraged the design, production, marketing and usage of the products with minimized environmental effects during its life span, while acquainting the consumer with the environmental effects of the products that they use.

Eastwood (2007) highlights while environmental considerations have always been part of the design process in textile & clothing industry, during last two-three years environmental awareness continues to become a more pressing imperative; and as a result, designers may look at the source, makeup, and toxicity of raw materials; the energy and resources required in manufacturing the product; and how the product can be recycled or reused at the end of its life, balanced with other product considerations such as quality, price, and functionality.

While corporations must bear much of the responsibility for environmental deprivation, ultimately it is consumers who demand goods and thus create host of environmental problems. Therefore even though corporations can have a great impact on the natural environment, the responsibility should not be theirs alone. Hence customers themselves also have to sacrifice their lifestyles in order to achieve ecological sustainability. Ultimately ecological sustainability requires that consumers want a cleaner environment and are willing to pay for it, possibly through premium priced goods, modified individual lifestyles, or even governmental intervention. Until this occurs it will be difficult for corporations alone to lead the ecological sustainability revolution.

## 5. CONCEPTUAL FRAMEWORK

Figure 1: Conceptual Framework



The extensive review of literature and expert discussions led to the development of the above conceptual framework which will bridge the gap between ecologically sustainable business practices and business performance by addressing the impact of ecologically sustainable business practices on business performance with the intervening factors influencing the relationship. Interactions between tangible and intangible benefits and the effect of feedback loops between business performance and ecologically sustainable business practices are also considered as an integral part of this framework.

### **5.1 Independent Variables**

Ecologically sustainable business practices can be categorized into four major layers as management practices and workplace issues, community impact, truth and transparency in market place and global environmental impact.

Management practices and workplace issues is recognized as the innermost layer of ecologically sustainable business practices and the research revealed that a prerequisite to any successful ecologically sustainable business practice effort is firm commitment at the management level.

In order to be successful, corporations should develop and adopt a comprehensive environmental policy which aligns with its overall business strategy that clearly states their commitment to ecological sustainability at the early stage of their business planning. Top management commitment and visibility of leadership to ecological sustainability is essential for ensuring the success of environmental initiatives within a corporation. Different corporations will have different ways of demonstrating this commitment, but the critical issue is that top management's words and policies must be supported by effective and timely action. A more long-term approach to ecological sustainability should be taken through formalized employee education. Corporations that value employee input and act on their suggestions can count on a steady flow of creative ideas and solutions, conversely, nothing stops employee participation in an ecologically sustainable business practice faster than failure to act on comments and suggestions. Moreover, an environmental audit is an effective risk management tool useful in assessing which particular areas of a corporation's business impact on the environment, and to what extent of harm to the environment caused by the activities, wastes or noise from the corporation

Community impact is recognized as the second layer of ecologically sustainable business practices. As literature review highlights, many of our communities do not appear to be socially sustainable. Our human settlements are often inequitable, insecure and unhealthy, with no sense of place. These are very serious problems and the corporations those who wish to follow ecologically sustainable business practices should thoroughly address these issues in order to be successful in the competitive business environment.

Since the advent of the internet everything has become so transparent and it is corporations' responsibility to make sure that they are always one step ahead and, adhere to ethical labor standard and fair trade practices. Therefore corporations should work in a manner in which the interests of the stakeholders are protected or at the very least, they are not adversely affected. It holds that the corporation should work in an ethical manner and work in the best interests of the various parties associated with it.

Truth and transparency in market place is recognized as the third layer of ecologically sustainable business practices. Transparency is the key to success in today's competitive market place and corporate honesty begets customer loyalty as when a customer knows they can come to corporation to learn about where their product came from, who made it and what it is made of, then eventually everybody wins.

Ethical marketing imparts an ecologically proactive role on corporations who are practicing ecologically sustainable guidelines by not only fostering sensitivity to the impact that marketing activities may have on the natural environment, but also encouraging practices that reduce or minimize any detrimental impact. Labels can be used as the key source of information available to consumers about various products, and to ensure appropriate and adequate information is provided for consumers to help them make fully informed purchases regarding cleaning and caring costs and procedures associated with the purchase of products.

Global environmental impact is identified as the outermost layer of ecologically sustainable business practices and it tends to relate to the environmental sphere closest to human activity and measure the quality of the living and working environment, usually for the three spheres of air, land and water.

In energy intensive industries, savings of around 20% could generally be achieved through basic housekeeping improvements, with further savings from more detailed measures such as auditing and energy management programs. The amount of water used varies widely in the industry, depending on the specific processes operated at the corporation, the equipment used, and the prevailing management philosophy concerning water use. Reducing water consumption is important for furthering ecologically sustainable business practice efforts, in part because excess water use dilutes pollutants and adds to effluent load. Solid and liquid wastes generated should be effectively recycled or reused within the process and management and disposal of hazardous and non-hazardous wastes should be undertaken in accordance with the corporation's environmental policy. Most importantly, simple improvements can be made by ensuring optimal settings of equipment and the optimal environment for the corporation. Savvy sustainable manufacturers will definitely need to take advantage of sustainable landscape practices that will create a prosperous landscape while, at the same time, reducing the need for excessive amounts of fertilizer, pesticides and water, which are the sort of things and practices that contribute to polluted runoff, which enable them to begin to bring the cycles of nature down to their own site level and have them work for their own benefit.

## **5.2 Dependent Variables**

The dependent variables were designed to assess the impact of ecologically sustainable business practices on business performances which were measured in three distinctively identified dimensions as tangible benefits, intangible benefits and market capitalization.

The business performance measures in relation to profitability or tangible benefits are sales growth/ market growth, operating cost reduction and improved productivity/ efficiency etc.

Intangible benefits, are the gains attributable to corporations' improvement that are not reportable for formal accounting purposes. These benefits are not included in the financial calculations because they are non-monetary or are difficult to measure. In terms of intangible benefits, a series of attributes were identified during the course of the research which include brand identity, management credibility and lower perceived risk and improved employee satisfaction.

Since market capitalization represents the aggregate value of a corporation, this may be a more sensitive measure than the perceived intangible measures as normally shareholders monitor a corporation more closely than the general population.

### **5.3 Intervening Factors**

Changes in consumer perception, cost/profit issues, ethical motives, competitive pressure and legislation and government regulation mediate the link between ecologically sustainable business practices and business performance. These factors are external to the corporation and can have a profound impact on its internal structure and on its business success.

## **6. RESEARCH METHODOLOGY**

A comprehensive literature review was carried to identify the factors that have given prominence for ecologically sustainable business practices in the corporations in textile & clothing industry that could potentially affect the success of business performance of the corporations. Detailed discussions and interviews were carried out with the experts in the industry covering a cross-sectional sample, to gather their views and opinions to identify and verify the factors identified.

The universe of the research lies within a wide area consisting of all the corporations in textile & clothing industry which adopts greener operations. Brandix Eco Center which reflects commercial use of the concepts and methods presented in section 1 and 4, while setting a new global standard for greener operations and business performance, was selected for the research. The key personnel who took part in the establishment of the green project were contacted to assess the effect of the ecologically sustainable business practices on the overall operational performance and growth of the corporation and interviews were conducted confidentially, asking open-ended questions about the respondents' involvement with and reflections on the project. This approach was helpful in understanding the respondents' real experience and perceptions, while giving them the opportunity to express their views on issues that arose during the commencement of the project. Where quantifying certain factors were difficult weighting and scoring was used to capture the impact and distance of the identified factors, in conformity with the objectives of the study.

The secondary data was sourced from published research articles, internet search, and industry publications.

## **7. ANALYSIS OF RESEARCH FINDINGS**

The analysis of Brandix Eco Center data highlight that ecologically sustainable business practices have a robust effect on business performance of the corporation and can be maximized as follows.

- a. Opportunity to drive down operating costs by exploiting ecologically sustainable business practices (i.e. by reducing waste, conserving energy, reusing materials,

adopting proper waste management systems and encouraging use of renewable energy sources corporations can significantly save costs).

- b. Ecologically sustainable business practice effort provides a basis for creating competitive advantage. There is a large and growing segment of customers who want ecologically friendly products, packaging, and management practices. These "green" customers are drawn to corporations that genuinely use ecologically sustainable business practices.
- c. Ecologically sustainable business practice efforts also facilitate for a corporation's public relations and corporate image. It can help corporations both to establish a social presence in markets and to gain social legitimacy.
- d. Ecologically sustainable business practice efforts offer the potential for reducing long-term risks associated with environmental pollution, resource depletion, fluctuations in energy prices, and waste management. By systematically addressing these long-term issues as early as possible, corporations can become aware of and manage these risks.
- e. Finally, improved ecological performance of corporations' benefits the eco-system and the environment of communities in which corporations operate. It can help to reduce health expenses in a community that are the result of industrial pollution while ensuring the long-term survival of the earth.

The following section solves the confusion about cost implications of the ecologically sustainable business practices by depicting the major achievements and evaluation of financial viability of the Brandix Eco Centre.

## 7.1 Major Achievements & the Evaluation of Financial Viability

**Table 1: Summary of the Eco Centre Environmental Results**

	Physical Consumption		Reduction (%)	Projected Annual Savings (Rs.)
	Before the Project	After the Project		
Electricity Consumption, KWh/ Year	3,749,671	1,935,255	48.39	19,958,576.00
Furnace Oil Consumption, Liters/ Year	183,523	139,896	23.77	1,352,426.67
Water Consumption, m <sup>3</sup> /Year	21,573	8,996	58.30	628,850.00
Emission to Air CO <sub>2</sub> , Metric Tons/Year	2,076	422	79.67	
Emission to Air SO <sub>2</sub> , Metric Tons/Year	32	8.4	73.75	
Emission to Air NO <sub>2</sub> , Metric Tons/Year	25	0.5	98.00	
Recycled Solid Waste, Tons/Year	27	134	(-396.30)	
Projected Annual Savings from Energy Conservation at Eco Centre (after the first year)				21,311,002.67
<b>Projected Annual Savings from Environmental Initiatives at Eco Centre (after the first year)</b>				<b>21,939,852.67</b>

**Table 2: Cost – Benefit Analysis for the Green Project**

Estimated Investment Breakdown Structure		Projected Annual Savings (Rs.)	ROI
Component	Investment (Rs.)		
Energy Conservation	52,500,000.00	21,311,002.67	40%
Water Conservation	5,240,416.70	628,850.00	12%
Other (i.e. for effluent management, infrastructure etc.)	203,723,000.00		
Total Investment	268,800,000.00		
<b>Overall Weighted Average Cost of Capital (WACC) for SMEs</b>			<b>20%</b>

**Table 3: Payback Period Calculation**

Estimated Total Investment	Rs. 268,800,000.00
Projected Annual Savings from Environmental Initiatives at Eco Centre	Rs. 22,000,000.00
<b>Estimated Payback Period (assuming projected annual savings will be continuing constantly)</b>	<b>12.21 years</b>

Cost accounting practices for corporations in textile & clothing industry often fail to reward ecologically sustainable business practices. Waste treatment and disposal costs are usually considered as a part of overhead and are almost never allocated to the unit processes actually responsible for them.

It is seen that the ecologically sustainable business practices at the Brandix Eco Center make commercial sense with a payback period estimated at around 12 years (table 3). This calculation does not assign a figure to the financial savings resulting from a reduction of emissions which requires a large financial investment. Benefits of reduced emissions can be realized through carbon and emission trading, but a financial figure cannot be assigned to it. Hence for even large scale corporations financial viability of the project cannot be justified purely on financial grounds. However, from the study it was found that for being financially viable, the ecologically sustainable business practices need not essentially incur large financial investment on new technologies or processes in all areas of ecological concern, but can often be brought about by energy and water conservation programs simply through better housekeeping (table 2). Most importantly these types of projects which are addressing environmental issues are considered as risk-free projects.

## **8. ECO SUSTAINABILITY GUIDELINES FOR MANUFACTURING INDUSTRY**

In order to achieve potential benefits, corporations will require the creation of new organizational procedures and the research presents a set of eco sustainability guidelines which could be used by corporations in manufacturing industry when achieving ecologically sustainable business practices to mitigate risks and improve business performance while maximizing the growth and returns for the corporations

- a. A successful ecologically sustainable business practice program requires not only support from top management but also input and participation from all levels of the corporation. To organize the effort, every ecologically sustainable business practice program needs an effective ecologically sustainable business practice coordinator with good organizational skills and leadership qualities who can motivate people and communicate needs and results.
- b. A prerequisite to a successful ecologically sustainable business practice program is firm commitment at the management level. Corporations should develop and adopt a comprehensive policy that definitively states their commitment to ecologically sustainable business practice principles (i.e. It should include a general management statement emphasizing the importance of ecologically sustainable business practices and the corporation's commitment to ecologically sustainable business practice principles, defined goals and targets, allocation of organizational and technical resources, and a method for tracking ecologically sustainable business practice performance).
- c. An ecologically sustainable business practice team should be organized to lead the ecologically sustainable business practice effort. Ideally it should consist of people with different backgrounds and expertise to bring to the ecologically sustainable business practice effort a great success.
- d. The ecologically sustainable business plan should be attempted at the first stage. It should be a formal guide to how the team will conduct its business, which covers the structure, philosophy, guidelines, and purpose of the ecologically sustainable business practice effort. Developing a viable ecologically sustainable business practice effort requires that the corporation adopts the ecologically sustainable business practice plan as part of its overall operating procedures and that everyone understands and accepts the principles and ideas the plan contains.
- e. Development of a process flow diagram which breaks down the operations of the corporation into functional unit operations is the most important task of a successful ecologically sustainable business practice team. It provides the ecologically sustainable business practice team a focal point for identifying and prioritizing ecologically sustainable business practice opportunities.
- f. From the team leader to the team members the goals and priorities to focus should be clearly identified and set, making it clear what constitutes a successful outcome.
- g. Once goals and priorities have been set and endorsed, the ecologically sustainable business practice team should develop an action plan, based on ideas generated by team members and, more importantly, by those most familiar with the processes.
- h. The next step is actual implementation of the action plan. Implementation must be viewed as an ongoing process, not simply a one-time activity. Once the ecologically sustainable business program is in progress, the team should continue assessing, quantifying, and documenting the progress of the program, giving feedback to those involved in ecologically sustainable business effort.
- i. Once implemented at the process level, the ecologically sustainable business plan should be expanded to broader levels and should be combined with the corporation's future goals.
- j. Ecologically sustainable business practice effort should incorporate a feedback loop, priorities should be reassessed and new, higher, and more global goals should be set.

## 9. CONCLUSION

The research revealed that the concept, “Ecological Sustainability” is viable to any corporation, whether it is large, medium or small as it requires the initiative to articulate ecologically sustainable business practice efforts into the corporation’s overall business strategy and this can be done in a cost effective way to address green production concerns while maximizing growth and returns for the corporation. Energy and water conservation seems to be economically viable projects and a competitive weapon especially for textile & clothing manufacturers belonging to the SME sector those who can’t afford high investment on highly technological areas such as effluent management, infrastructure etc. as they are struggling to reduce operating costs in today’s competitive business world.

Eco sustainability guidelines will encourage the corporations to pave the way for ecologically sustainable business practices to reach its optimum business performance by decreasing manufacturing cost, widening market offering, improving employee satisfaction, enhancing corporations’ image, attracting new customers and promoting innovative ideas.

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