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ENVIRONMENTAL PROTECTION BY IMPLEMENTATION OF GREEN PURCHASING, GREEN PRODUCTIVITY, GREEN MARKETING AND GREEN QUALITY MANAGEMENT SYSTEMS

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ABSTRACT

Green revolution, going green, environmental protection, sustainable life style, sustainable development, protecting our earth and many more has become a natural phenomenon in our everyday life. Green Purchasing, Green Productivity and Green Quality Management Systems are as tools used by many companies in various industries to follow this trend. Considering the globalization of the economy and other associated trends, therefore it require a much broader conception of purching, productivity, marketing, management and a fuller appreciation of the changing dynamics of the determinants involved in the process of its improvement. The increased competitiveness, internationalization and sophistication of markets, the globalization of manufacturing and the increased concern about social and ecological issues make productivity improvement more important. Productivity improvement through better utilization of the energy, materials, water, solvents, etc. is now seen as an effective tool in preventing pollution at source. Productivity improvement must therefore take into full consideration the impact of the production, distribution, consumption and disposition processes on the environment. While meeting the customer needs, products and services supplied and the processes used to produce and distribute them must have minimum negative impact on the physical environment. Implementation of Green Purchasing, Green

Productivity, Green Marketing and Green Quality Management Systems is therefore, mainly motivated by the quest to answer the question: How does Green practices enhance overall productivity and environmental performance?" The challenge that lies before managers today is to innovative activities, products and services to be sustainable. This is the goal for any organization, in any regional economy, large or small, be it for or not for profit. Problems for greening the supply chain are the reduction of flexibility of suppliers and the culture of organizations. This paper discusses the challenge of achieving sustainability by looking at current practices, around Green Productivity, green purchasing, and how to connect these two through a systematic approach using green quality management. This paper can help companies meet global market requirements and public administrators to understand the environmental performance through industrial clusters.

KEYWORDS: Green Purchasing, Green Productivity, Green Marketing and Green Quality Management.

INTRODUCTION

The development of the industrial world is currently increasing rapidly in line with the rate of ongoing globalization. These developments require the industry to upgrade and improve performance in order to survive and win the competition with other industries; this can be done by increasing productivity. These environmental problems to be warm enough issue that is discussed, but often ignored by the company. Therefore, to create harmony with the environment needed more attention to environmental aspects in every process of purchasing, production, marketing and overall management activities of the company. Green Productivity(GP), as conceptualized by the Asia Productivity Organization (APO), encourages adopters "to improve both productivity and environmental performance, thus achieving higher business performance" (Gilbert, IGPA Newsletter). The concept of Green Productivity is intended "to help companies, communities, farmers and service providers to identify ways to strengthen business performance either through or in conjunction with better environmental management."[1-2]

GP, as defined by APO, is a dynamic process that recognizes the value and importance of other tools, considered as subsets, component parts in a modular system. Of these, two tools require discussion. The first is life cycle assessment (LCA) of particular interest to those wishing to attain higher efficiencies through GP is the knowledge of inefficiencies that LCA has revealed relative to gleaning the highest return.[3]

Environmentally Preferable Purchasing (EPP), often referred to as "green purchasing," is the affirmative selection and acquisition of products and services that most effectively minimize negative environmental impacts over their life cycle of manufacturing, transportation, use and recycling or disposal. Examples of environmentally preferable characteristics include products and services that conserve energy and water, minimize generation of waste and releases of pollutants; products made from recycled materials and that can be reused or recycled; energy from renewable resources such as biobased fuels, solar and wind power; alternate fuel vehicles; and products using alternatives to hazardous or toxic chemicals, radioactive materials and biohazardous agents.

Green sustainability is obviously challenging to all companies, to increase understanding of how to cope with green management is necessary. For greener management, the factors of organizational structure, innovation capability, human resources, cost savings and competitive advantage can influence organizational change. To stay competitive, companies facing today's levels of unprecedented global competition must design and offer better products and services and improve their manufacturing operations. Green management and lean management has been used to improve operational performance. Operations management is concerned with converting materials and labor into goods and services as efficiently as possible to maximize the profit of an organization. It is in order to create optimized versions that make the best use of resources without affecting the services delivered or product created. Green management (Eco-conscious strategies) put an emphasis on strategic corporate responsibility activities that regard the issue of environmental protection as a potential for growth and company development, and that enforce it in every field of activity. The aim of Green management (eco-conscious strategies) is to achieve a high level of prevention. This needs to be based on the principle of caution. In order to achieve this aim, the (ecological) requirements have to be built into the formation and achievement of the company's other (economic) goals in a way that should not lead to reduced competitiveness and disturbances in business activities. Thus, an eco-conscious strategy can give tangible help to companies in creating synergy between economic and ecological requirements, and in pursuing environmentally-friendly economic activities.

In the present day, a majority of consumers have realized that their behavior had a direct impact on environment as there is mounting amount of evidence indicating that consumers are shifting traditional products to green products to have a positive impact on the natural

environment. Many company have found that going green has helped them manage risks more effectively, enter new markets, use resources more efficiently, innovation and improve their competitive position. The review paper concludes that business firms need to change their mind set from traditional marketing strategies to green marketing strategies with a huge investment in technology, R and D and through Green marketing elements such as eco-design of a product, eco-labeling, eco-packaging, green logo in order to survive in the green competitive world and to have a positive impact on the environment.

GREEN PRODUCTS

Simon (1995) defined "Green Products" as products made with reduced amounts of material, highly recyclable material, non-toxic material, do not involve animal testing, do not adversely affect protected species, require less energy during production or use, or have minimal or no packaging. Nimse (2007) defined green products as those that use recyclable materials, minimal wastage, and reduce the use of water, save energy, have minimal packaging, and emit less toxic substances. Compared with other products, green products bring less harm to humankind and offer more long-term practical development opportunities from a social and economic perspective. Green products are environmentally friendly products.

GREEN BUSINESS

Green industry promotes sustainable patterns of production and consumption i.e. patterns that are resource and energy efficient, low-carbon and low waste, non-polluting and safe, and which produce products that are responsibly managed throughout their lifecycle. The Green Industry agenda covers the greening of industries, under which all industries continuously improve their resource productivity and environmental performance. It also aims to create green industries, that deliver environmental goods and services in an industrial manner, including, for example, waste management and recycling services, renewable energy technologies, and environmental analytical and advisory services.[4]

The greening of industries has become a core determinant of economic competitiveness and sustainable growth. Since resource inputs represent an important production cost for industries, improving efficiency gives industries a competitive advantage. The greening of industries also plays a role in poverty alleviation, through promoting energy security, health and safety, jobs, and reducing costs through increased productivity. Basically, there are five

key steps in each business life cycle i.e inputs, process, outputs, environment externalities and marketing.

GREEN PURCHASING

The Green Supply Chain

According to Sean Gilbert (2001), greening the supply chain is the process of incorporating environmental criteria or concerns into organizational purchasing decisions and long-term relationships with suppliers. Indeed, there are three approaches involved to GSC: environment, strategy and logistics. And, the concept of green productivity (GP) shows that for any development strategy to be sustainable it needs to have a focus on environment, quality, and profitability, which form the triple focus of GP.

Working with GSC means to work in the interface of those areas because the GSC is totally linked to environmental protection, which is the main objective of it; strategy because it is formulated long-term decision and logistics because it approaches procurement, material handling, distribution, storage, material recovery and disposition.

Principles of Green Purchasing

- Principle 1– Consider whether a product is needed before purchasing it or not.
- Principle 2– Purchase a product considering the various environmental impacts over its life

  cycle from extraction of raw materials to disposal.
- Principle 3– Select suppliers who make conscious efforts to care for the environment.
- Principle 4– Collect environmental information on products and suppliers.

Green Products and Its Characteristics

- The products those are manufactured through green technology and that caused no environmental hazards are called green products. Promotion of green technology and green products is necessary for conservation of natural resources and sustainable development. We can define green products by following measures.
- Products those are originally grown,
- Products those are recyclable, reusable and biodegradable,
- Products with natural ingredients,
- Products containing recycled contents, non-toxic chemical,
- Products contents under approved chemical,

- Products that do not harm or pollute the environment.
- Products that will not be tested on animals.
- Products that have eco-friendly packaging i.e. reusable, refillable containers etc.

The Benefits of Green Purchasing

The benefits of green purchasing are numerous. Those outlined as follows

- 'Reduce energy and water consumption (which can reduce costs)
- Improve resource use efficiency
- Reduce waste (which can reduce waste disposal costs)
- Reduce environmental health impacts of products and services
- Reduce pollution
- Provide markets for new environmentally preferable products
- "Close the loop" on recycling, improving the viability of recycling
- Encourage industry to adopt cleaner technologies and produce products with lower environmental impacts'

Organizational approaches to green purchasing range from strategic, organisation-wide commitments, to small-scale single purchases. The range of approaches includes.

- Strategic commitments such as green purchasing policies
- Targets and public reporting of progress
- Supplier strategies and strategic supply chain management
- Green contracts and tenders
- Strategic assessment of purchasing and priority spend areas highlighted
- Green purchasing action teams and action plans
- Communications to support and promote green purchasing
- Measurement and review mechanisms
- Specific projects and/or initiatives

Buying green helps to.

- Improve safety and health of our patients, workers and the public
- Reduce pollution Conserve natural resources and energy
- Develop new, more environmentally friendly products
- Stimulate new markets for recycled materials and create jobs Improve awareness of environmental stewardship
- Protect the research mission

- Provide potential cost savings
- Reduce liabilities
- Comply with environmental laws and regulations

Green Delivery of Products

- Optimizing capacity usage both in and out bound.
- Using a modern eco-efficient transportation fleet like energy efficient vessels and high norms for trucks.
- Using Green fuels like low sulfur content, and alternative fuels like liquid natural gas.
- Shifting volumes to rail and sea transport.
- Encouraging eco-driving to decrease fuel consumption.

Barriers to Green Purchasing

Despite the broad spectrum of organisations engaging in green purchasing, there appear to be a range of common barriers to green purchasing. The key barriers to implementation identified were cost, product information/availability, staff awareness/engagement and supplier/contract issues. Some of the barriers to green purchasing are as follows.

Green purchasing barrier

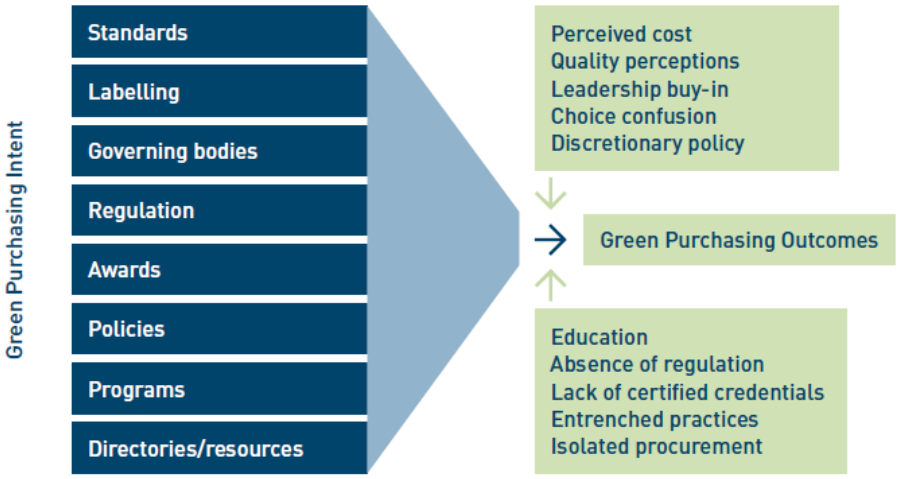

Fig. No.1: Major barriers of organisational green purchasing

Barriers to implement GSC Management in Indian automobile industry

- Lack of IT implementation
- Resistance to technology advancement adoption

- Lack of organizational encouragement
- Poor quality of human resources
- Market competition and uncertainty
- Lack of Government support systems
- Lack of implementing green practices
- Lack of top management commitment
- Cost implications
- Supplier reluctance to change towards GSCM
- Unawareness of customers

Green Productivity

Concept and Definition

The concept of Green Productivity is drawn from the integration of two important developmental strategies viz. productivity improvement and environmental protection. Productivity provides the framework for continuous improvement, while environmental protection provides the foundation for sustainable development. Therefore, Green Productivity is a strategy for enhancing productivity and environmental performance for overall socio-economic development. It is the application of appropriate techniques, technologies, and management systems to produce environmentally compatible goods and services.

Triple Focus of GP

GP aims to ensure environmental protection while making business profitable. GP is a multi-disciplinary, systematic, and holistic approach. GP emphasizes teamwork and the application of appropriate techniques and technologies. GP recognizes that environment and development are two sides of the same coin. Extending this recognition, the concept of GP shows that for any development strategy to be sustainable it needs to have a focus on environment, quality, and profitability, which form the triple focus of GP.

The Distinguishing Characteristics of GP

The practice of GP is characterized by four distinguishing characteristics.

Environmental compliance

The heart of GP is environmental protection, the first step of which is compliance with regulations. GP emphasizes the practice of pollution prevention and source reduction.

Residues must be managed using end-of-pipe treatments. It is the unique characteristic of GP that productivity will also improve while the organization achieves compliance with environmental regulations. These practices may lead to a situation beyond compliance with the ultimate aim of ensuring quality of life.

Productivity improvement

The other aspect of GP is productivity improvement. The concept of continuous improvement achieved by adopting the PDCA cycle is aimed at ensuring not only productivity improvement, but also environmental improvement. This is a dynamic and iterative process.

Integrated people-based approach

One of the strengths of GP is its worker involvement and team based approach. Its people based approach extends to improving the working environment, workers' health and safety, non-discrimination, and related social welfare issues. The approach involves multi-stakeholder participation.

Information driven improvement

Documentation and reporting are the strengths of GP drawn from systems such as QMS and EMS. The adage "what gets measured gets done" is one of the driving forces of GP.

Green Productivity (GP) is a strategy for enhancing productivity and environmental performance for overall socio-economic development. It is the application of appropriate productivity and environmental management tools, techniques and technologies to reduce the environmental impact of organization's activities, goods and services (GP Training Manual, APO). The goal of GP is to attain a higher level of productivity to serve the needs of society and to protect and enhance the quality of environment both locally and globally.

GP leads to gains in profitability through improvement in productivity and environmental performance. GP attempts to answer society's needs, therefore, by increasing productivity through environmentally sound manufacturing practices and businesses, thereby catering to customer requirements for more environmentally sound products while ensuring a healthy and safe environment. GP will benefit businesses by lowering its operational and environmental compliance costs by preventing the generation of waste through effective and efficient utilization of resources. Workers will benefit from GP because it justifies wage increase and improves health and safety in the workplace. Green Productivity is a new

paradigm in sustainable manufacturing where resource conservation and waste minimization constitute the strategy in simultaneously enhancing environmental performance and productivity. This productivity approach to the sustainability of industries requires the adoption of clean production technology and the development of appropriate indicators and instruments to measure environmental performance in a continuous improvement strategy that focuses on the manufacturing stage of the product life cycle. The analysis may be expanded to include the entire life cycle with increasing details on impacts, improvement strategies and indicators.[5-7]

Green Productivity is the well-rounded socio-economic development that emphasizes on sustainable improvement in the quality of human life with minimum or no damage to the environment. It is the combined application of appropriate productivity and environmental management tools, techniques and technologies that reduce the environmental impact of an organization's activities, products and services while enhancing profitability and competitive advantage. Green Productivity uses a set of tools & Techniques that focus on eco friendly options & alternatives in production units that can provide an overall healthy quality of life along with increased productivity.

A typical comprehensive green productivity programme has three levels of implementation.

Management Systems and Programmes: Application of ISO 14001 & Environmental Management System, ISO 9000 / Quality Management etc.

Green Productivity Techniques: It involves application of recycling,reuse and reduce (3Rs), Excellent Housekeeping, Resource Conservation, Product Improvement etc.

Green Productivity Tools, using Eco-Mapping, Benchmarking, Control Charts and Check lists etc.

Green Productivity has attained importance due to the following reasons.

◆ Deteorating Global Environment	◆ Resource Scarcity
◆ International Environmental Treaties	◆ Economic Competitiveness
◆ Environment & Trade	◆ Eco efficiency
◆ Consumer Demands	◆ Occupational & Health Hazards
◆ Need of Eco Labeling	

The triple focus of the Green Productivity program of APO is.

a. Productivity improvement

b. Environmental protection

c. Sustainability

Green Productivity aims at attaining quality, productivity & environmental sustainability.

Quality Improvement

Productivity Improvement

Environmental Protection

Sustainable Development

This focus of GP distinguishes it from Cleaner Production (CP), which is primarily about environmental protection, and also tend to be technologically orientated in its approach to problem solving. Hence, GP is a strategy for enhancing productivity with environmental performance for overall socio-economic development. It is the application of appropriate productivity and environmental management tools, techniques and technologies to reduce the environmental impact of the organization or enterprise's activities, goods and services. Its quiet obvious from the above aim that green productivity involves a linkage between man, his environment and occupation.

The Ecological Principles which guide Green Productivity are given below.

- **Sustainable use of Natural Resources:** As such earth caters to our daily needs through the vast expanse of natural resources. An optimal use of these resources will lead to sustainable development of mankind & its environment.
- **Maintaining Ecological Balance:** There is an urgent need to maintain the ecological balance as industrialization & urbanization is taking its toll on ecosystem and degrading it to a level beyond repair. There should be a balance between resource available & consumption.
- **Protecting Ecological Biodiversity:** Biodiversity plays an important role in achieving sustainability. There is a linkage between the different food chains and hence a loss of one will affect the other.

Hence for achieving green productivity we need tools that are self sufficient and fast in analyzing at larger scales. According to the Asian Productivity Organization (APO), Japan the Tools to obtain Green.

Productivity are[6]

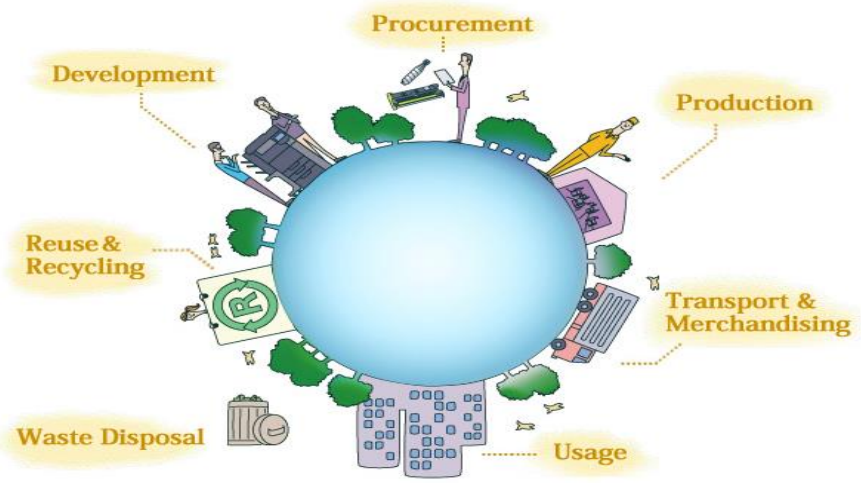

Fig. No.2: Green Product Life Cycle Management

Cost Benefit Analysis

Flow Charts & Process Diagrams

Bench Marking

Environmental impact Assessment & Audit

Eco Mapping

Risk assessment

Life Cycle assessment

Energy Conservation

Waste Reduction, Recycling, Reuse, Recovery

Good House keeping

The Green Productivity Methodology

Step I : Getting Started

Task 1: GP Team formation

Task 2: Walk-through survey and information collection

Step II : Planning

Task 3: Identification of problems and causes

Task 4: Setting objectives and targets

Step III : Generation, Evaluation and Prioritization of GP Options

Task 5: Generation of GP Options

Task 6: Screening, Evaluation and Prioritization of GP Options

Step IV : Implementation of GP Options

Task 7: Formulation of GP implementation plan

Task 8: Implementation of selected options

Task 9: Training, awareness building and developing competence

Step V : Monitoring and Review

Task 10: Monitoring and Evaluation of results

Task 11: Management review

Step VI : Sustaining GP

Task 12: Incorporate changes into the organization's system of management

Task 13: Identify new/additional problem areas for continual improvement

Green Product Development

PLANET set standards to developing products with "green" design, from technical development, design, manufacturing, transporting and recycling.

Fig No.3: Green Product Development Cycle

Green Marketing

According to the American Marketing Association, green marketing is the marketing of products that are presumed to be environmentally safe. Thus green marketing incorporates a broad range of activities, including product modification, changes to the production process, packaging changes, as well as modifying advertising. Yet defining green marketing is not a simple task where several meanings intersect and contradict each other; an example of this will be the existence of varying social, environmental and retail definitions attached to this

term. Other similar terms used are Environmental Marketing and Ecological Marketing. Thus "Green Marketing" refers to holistic marketing concept wherein the production, marketing consumption an disposal of products and services happen in a manner that is less detrimental to the environment with growing awareness about the implications of global warming, non-biodegradable solid waste, harmful impact of pollutants etc., both marketers and consumers are becoming increasingly sensitive to the need for switch in to green products and services. While the shift to "green" may appear to be expensive in the short term, it will definitely prove to be indispensable and advantageous, cost-wise too, in the long run.[8-11]

Pride and Ferrell (1993) Green marketing, also alternatively known as environmental marketing and sustainable marketing, refers to an organization's efforts at designing, promoting, pricing and distributing products that will not harm the environment. Polonsky (1994) defines green marketing as .all activities designed to generate and facilitate any exchanges intended to satisfy human needs or wants, such that the satisfaction of these needs and wants occurs, with minimal detrimental impact on the natural environment.

Elkington (1994: 93) defines green consumer as one who avoids products that are likely to endanger the health of the consumer or others; cause significant damage to the environment during manufacture, use or disposal; consume a disproportionate amount of energy; cause unnecessary waste; use materials derived from threatened species or environments; involve unnecessary use of, or cruelty to animals; adversely affect other countries.

Gains/Benefits of Green Marketing[12-14]

Green marketing has positive influences on multiple participants in the economy. The environment, developing economies, consumers, corporate strategy, the product, production processes, and supply chain benefit from green marketing.

Environmental Benefits: The obvious benefactor of green marketing is the environment. Conditions and trends in climate change, air, water, and soil conservation. Green marketing can have an influence on climate change in several substantial ways. Fossil fuel consumption is a major source of greenhouse gases associated with climate change. Two leading sources of climate change are the burning of coal for electricity and the burning of gasoline for automobile transportation. Green marketing initiatives focused on product development strategies reduce the need to rely on these forms of energy. For example, new appliances are designed with fuel efficiencies that clearly reduce energy consumption. It is important to

recognize that the consumer must incorporate concern for the environment with multiple other considerations. For example, potential consumers of the new Chevrolet Volt must reconcile the zero-fossil fuel consumption with the price differential for this car versus less expensive cars that produce more carbon dioxide. Green marketing initiatives contribute to the environment by incorporating green marketing strategies into superior value propositions for consumers.

Developing Economies: The term developing economies refers to nations that have a relatively low gross domestic product (GDP) per capita. The low income, underdeveloped assets, and economic vulnerability common to these economies results in high dependence on the agricultural sector. Inhabitants in these markets, however, face increased exposure to drought, intense storms, floods, and environmental trauma that limits the ability to enhance quality of life. Research performed by the United Nations indicates that inhabitants of these countries are much more likely to be affected by natural disasters than inhabitants in high-income countries. Climate change limits agricultural productivity, increases water stress, raises sea levels, negatively transforms ecosystems, and thwarts human health. These factors do not operate in isolation; interactively, they contribute to hunger and poverty in developing markets. Green marketing and production position to reduce climate modify and consequently limit hunger and poverty.

Consumer Benefits: Consumers benefit in several important ways through green marketing. These benefits often influence consumer decision making, and consumers will vary in the extent to which they value these benefits. Initially, consumers benefit from the knowledge that they are doing their part to reduce climate change. These consumers are likely to favor corporate efforts to reduce pollution over efforts to raise corporate profitability. Consumers also value the opportunity to be associated with environmentally friendly products and organizations.

Strategic Benefits: Managers of corporate strategy realize multiple benefits from a green approach to marketing. Companies that incorporate ecological consciousness into their mission statements and strategy enhance their images among consumers, employees, investors, insurers, and the general public. Some consumers have strong attraction toward green products, and approaching the market with an ecological focus enhances image of the brand among these consumers.

Product benefits: Product benefits refer to components introduced into production outputs or services designed to benefit the consumer, whereas process benefits refer to tools, devices, and knowledge in throughput technology designed to facilitate manufacturing and logistics. For example, a hybrid engine is a product innovation, whereas a just-in-time inventory system is a process innovation. Production ***Process Benefits:*** Production processes focus on organizational efforts to produce the highest-quality products at the lowest possible cost. Process benefits accrue for handling of products, by-products, and waste. The materials costs associated with sustainable manufacturing techniques can be reduced in a number of ways.

Supply-chain Benefits: Green marketing influences relationships among the firms that make up the channel from raw material mining to consumption. Green strategies that seek to eliminate waste in the supply chain result in firms analyzing truck loading and route planning in the delivery process. Routing that seeks to eliminate fuel costs can maximize truck capacity utilization and improve customer service.

Present trends in green Marketing in india	
1. Lead Free Paints from Kansai Nerolac 2. Introduction of CNG in Delhi 3. Best Green IT Project: State Bank of India: Green IT@SBI "Green Channel Counter" 4. Indian Oil's Green Agenda 5. Thyagaraja Stadium stands tall India's 1st Green Stadium 6. Eco-friendly Rickshaws before CWG 7. Agartala to be India's first Green City 8. Wipro Green It. 9. Going Green: Tata's new mantra 10. Phillips's "Marathon" CFL lightbulb 11. Car sharing services 12. Eco Labels	Interestingly, green marketing continues to be an issue of global interest. In fact, Google Trends reports that, on a relative basis, more searches for "green marketing" originated from India than from any other country. **Rank Country** 1. India 2. UK 3. US 4. Thailand 5. Australia 6. Canada 7. China

Golden Rules of Green Marketing:

- Know you're Customer
- Educating your customers
- Being Genuine & Transparent
- Reassure the Buyer
- Consider Your Pricing
- Giving your customers an opportunity to participate
- Thus leading brands should recognize that consumer expectations have changed

- Environmentally preferable products cost

Challenges in Green Marketing

- Need for Standardization
- New Concept
- Patience and Perseverance
- Avoiding Green Myopia

Green Quality Management

Quality management systems create the synergy that allows the efforts to flow together to optimize the changes needed for a sustainable future. Connecting green procurement to Green Productivity, environmental improvements are bottom line advantages and become market drivers. As green becomes more routine within the world of project management, we'll further understand how to best apply and adapt current project management processes into a structured, proactive approach for managing environment-related aspects to projects — and contribute to your organization's environment policies and goals. It's possible that in the future it will make sense to establish "environmental management" as one of the foundational skills for project managers. However, in the meantime, we think that the quality management plan is probably the place to recognize the environmental considerations of a project.

Green management measures such as certified environmental management systems (EMS) or tools like life cycle assessment activities are considered to improve corporate environmental performance directly by mandating companies to introduce environmental goals and management structures as well as programs to achieve them. The opportunity to use quality management as a connecting link between greening and procurement, the same opportunity exists for others. The philosophy, concept, and tools of quality management can act as a bridge between the two merged systems and Green Productivity. An EMS is a tool for managing the impacts of an organization's activities on the environment. An EMS integrates environmental management into a company's daily operations, long-term planning and other quality management systems. To develop an EMS, and as a result, complete green system an organization has to assess its environmental impacts, set targets to reduce these impacts, and plan how to achieve the targets. Following are more components that should be considered when developing an EMS: Environmental policy, environmental impact identification, Objectives and targets, Consultation, environmental management plan, responsibilities and reporting structure, Review audits and monitoring compliance, Continual improvement. The

analysis are discussed in green and EMS subjects are grouped into eight broad categories: clean/green operations; effective operations; profitability; competitive product/service; market expansion; improvement in company image; improvement in management and others.

The existence of quality management can facilitate the adoption of environmental management standards and performance improvements. Similar terminology, concepts, tools and philosophies enable the mirroring of natural flows, critical to the revolutionary changes needed to move to a condition of sustainability.There are two levels of quality management programs, each of which can accommodate green project management (GreenPM) concepts. One focuses on the organization level, and one focuses on the project level.

If one improves the quality at the point of design (including environmental quality) of an activity, product, or service, it will lead to a reduction in both financial and environmental costs. This in turn will lead to improved productivity with greater efficiencies in resource use. In environmental terms, this means a reduction or elimination of pollution at the source, which has direct and indirect social benefits. A decrease in prices benefits the customer (purchaser), the consumer (a downstream purchaser), and enhances the competitive advantage for that supplier.

Green Marketing Management as the process of planning and executing the marketing mix to facilitate consumption, production, distribution, promotion, packaging, and product reclamation in a manner that is sensitive or responsive to ecological concerns. The management of green marketing activity continues to evolve as companies incorporate new thinking about climate change throughout their organizations. Initial green marketing efforts focused on the recycling of products such as aluminum cans and photocopier toner cartridges. Over time, firms have begun to consider ways to modify inputs to production that limit the influence of the products on the environment. The study of green marketing reflects an interest in becoming more aware of ecological and sustainability issues and consistently working to achieve higher levels of sustainability. Increasingly, firms are recognizing that outputs from the production process should be viewed under scrutiny of climate change as well. Savvy management recognizes that everything coming out of a production facility is a product, by-product, or waste. Green products are recognized nationally or internationally through certification and eco-labeling. For example, the United States Environmental Protection Agency provides Energy Star labels for electronics and appliances that are environmentally friendly. In the United States, personal computers account for 2% of annual

electricity consumption. The EPA s new Energy Star labels require computers possessing the label to be 65% more efficient than conventional products. Adoption of these new personal computers will enable industry to save $1.2 billion over the life of the products. Firms also are viewing by-products of production in novel ways. Shell Oil is pumping carbon dioxide, a refinery by-product, into 500 Dutch greenhouses. This action reduces emissions by 325,000 tons per year and saves greenhouses from having to burn millions of cubic meters of gas needed to produce carbon dioxide. Each of these aforementioned activities represents a form of green marketing employed at various points in the supply chain. Increasingly, however, organizations recognize the interdependencies operating throughout an economy. Efforts to control costs and enhance productivity at one stage cannot occur at the expense of other stages. The United Nations is an organization that has led the way in this recognition of the multiple interdependencies among nature, economy, and society. In December 1983, the United Nations commissioned research on development and the environment. The 1987 report of the United Nations Commissioned Research defined sustainability as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Importantly, this edict recognizes that there are at any time limits on the ability of the biosphere to absorb human activity. The sustainable organization must generate acceptable levels of economic performance, or it will not survive. It must also nurture social performance in its interaction with customers, suppliers, consumers, and other interest groups. Survival is also contingent on the firm s ability to achieve acceptable levels of environmental performance throughout the supply cycle from raw material procurement to post consumption disposal. In the retail sector, Wal-mart has publicly committed to reducing packaging in its global supply chain by 5% by 2013.As part of its effort to gain logistical sustainability; the firm developed a packaging scorecard to monitor supplier performance.

FINDING AND THE CONCEPTUAL MODEL

Green management approach is a new managerial strategy to develop the organization enablers for sustainable business success in terms of financial, social and environmental results. This approach plays an important role to have better environmental friendly industries and is one of the prominent methods for reducing future issues surrounding our planet. The Green management Model was designed and developed by a team of experts from the Iranian Green Management Society in order to develop and expand social and environmental responsibilities among organizations. The team gathered the best practices and experiences of successful organization at local and international levels and also used excellence models to

create criteria for this model. This model will help organizations to measure their integrated capabilities in accepting social, environmental and economic responsibilities. It also serves as an ideal guide for determining improvement projects.

To perform self-assessment based on this model, organizations can use the ADLI(Approach, Deployment, Learning, and Integration) + LeTCI (Levels, Trends, Comparisons, and Integration) logic model shown in Fig. No.4. The model, which has 8 criteria and 25 sub-criteria, shows to organizations the way of determining new approaches towards achieving sustainable success. Based on this model of organizational structure, senior managers of organizations can determine the key processes and the people in charge of them.

This society hopes that organizations will be able to make use of this model in order to maintain their organizational existence while having respect and consideration for the environment and the society.

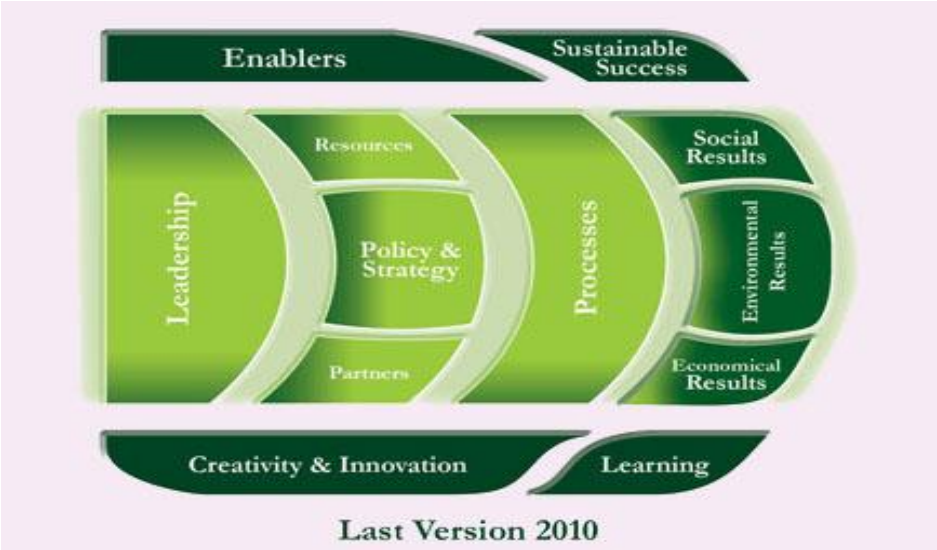

Fig. No.4: ADLI + LeTCI logic self assessment Model.

Samsung Electronics runs Environment and Safety committee in order to implement Green Management. Plus, company hardened the ground for sustainable development by building an international level of environment and safety system such as Green Management Information system and introduction of Environmental Accounting (Fig No.5).

Fig No.5: Green Management System in Samsung Electronics.

Samsung Display is steadily proceeding with green management that specifically considers the harmony between human society and the Earth's environment. Samsung releasing Eco-products and reducing greenhouse gases based on their "basic ideology of green management" to preserve both mankind's prosperity and the environment. Green engineering is the design, commercialization and use of processes and products that are feasible and economical while minimizing the generation of pollution and risk to human health and the environment.

"One of the major rewards for a company adopting the 'go green' mantra could be enhancing the company's image." Insurance companies offer better rates to manufacturing companies that are taking steps to go green. In addition, such efforts result in cost saving. "The reality is that if a company can save money on energy, its product costs can go down and its customers will not need to pay as much. In addition, the company can always maintain the same costs and reap great profit on its products thereby helping the stakeholders,"

Consultancy services for the pharmaceutical industry to help plan, manage and achieve sustainability goals. Intertek provides support for the pharmaceutical and medical device sector to achieve regulatory compliance and to plan and manage sustainability goals. This includes supporting manufacturers to be more efficient in their processes by using resources more efficiently, assisting them with required regulatory compliance, or helping them to develop tailored programs to manage their supply chain, disposal of waste, energy and water footprint or having greener and more efficient buildings and facilities. Heating, ventilation, air conditioning, and cooling HVAC technology are sourcing of high energy consumption for pharamceutical and lifesciences laboratories, data centres and production clean rooms.

Intertek's intelligent sustainable solutions can help companies to maintain the controlled ambient conditions that are crucial to product quality and, at the same time, reduce the energy consumption of HVAC technology systems. Intertek supports customers in realizing energy-efficient building blueprints and with designing processes to save energy as well as reduce waste and emissions. Monitoring solutions, for example, can be used to identify sources of energy loss and inefficient assets in order to increase asset utilization.

CONCLUSION

Globalization increases the opportunities for buyers to source from in an increasing number of countries. In order to produce environment friendly products, manufacturers need to work with their suppliers of raw materials and components. Using their purchasing power, the industries can set up environmental criteria for their suppliers upstream in supply chain. In addition to setting up the requirements, the big buyers can also provide assistance to the suppliers for meeting these requirements. The supplies and eventually the end product thus become environment-friendly. Multinational and large companies and governments have a number of opportunities to promote green purchasing and to take advantage of the trends in globalization to improve the environmental performance.

Green purchasing, GP (green productivity), GM (green marketing) and GM (green management) are tools for protecting the environment for the future generation. It has a positive impact on environmental safety. Because of the growing concern of environmental protection, there is an emergence of a new market which is the green market. For companies to survive in this market, they need to go green in all aspect of their business. Consumers want to identify themselves with companies that are green compliant and are willing to pay a premium for a greener life style. As such, green marketing is not just an environmental protection tool but also, a marketing strategy. The tools of change are at hand; the will and motivation for people to innovate, adopt new ideas, and re-engineer practices to be sustainable is nearing critical mass.

It is anticipated that organizations/industries should have a successful implementation program/model/scheme on Green purchasing, GP (green productivity), GM (green marketing) and GM (green management). All these approaches are holistic, proven approach for strengthening competitiveness, protecting the environment, achieving sustainable low-carbon growth to combat the adverse impacts of climate change, and alleviating poverty. It

should be adopted by all stakeholders including governments and the public and private sectors.

From the angle of corporate sector, green management definitely related to the environmental policy establishment, which will enhance the corporate environment performance through application of green technology activities. Green management measures such as certified environmental management systems (EMS) or tools like life cycle assessment activities are considered to improve corporate environmental performance directly by mandating companies to introduce environmental goals and management structures as well as programs to achieve them.

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