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THE ROLE GREEN PRODUCT MANUFACTURING INDUSTRIES ON MAKE IN INDIA: EMERGING BUSINESS OPPORTUNITIES AND CHALLENGES

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ABSTRACT

Since the last few decades, most of industries have compete each other by producing number of industrial goods from various manufacturing industries in order to meet the needs and demands of consumers for maintaining of their luxurious life style .The expansion of industries, creates lots of problem for the environment by producing plenty of unhygienic gases, water and waste products from various manufacturing industries which is becomes headache for today's world and cause of global warming ,such as climate change, temperature irregularity, unexpected flood, drought, tsunami, landslide, etc. have occurred many times and it will be occur in future if we are not aware. The growing economic activity of the present world may be developing but the manufacturing industry

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(MI) does not obey the guide lines and protocol of "Environmental Pollution & Control Board" (EPACB) .They still continuing their production without determined the instructions, orders & guide lines apart from the environment & pollution department. Hence, the guest author has keenly interested to analyze the frame work of "Green Supply Chain Management on the Practices of Manufacturing Industries for Sustaining an Eco–Friendly Environment in the World" (GSCMOPOMISEFEW) .If the manufacturing industries will be paying little attention, the standing problem would be solved easily and the whole universe is safe and secure forever.

Key Words: Green Supply Chain Management (GSCM), Manufacturing Industries (MI), Eco-friendly Environment, (EFE), Eco-innovation (EI).Global Warming (GW).

1. INTRODUCTION

"A good frame work of Green Supply Chain Management on the Practices of Manufacturing Industries for Sustaining an Eco- friendly Environment" has made tremendous progress in establishing eco-hygienic atmosphere in all around the world. In early environmental management frame works, the entire production and operation management depends upon the operational level of efficient managers whose were involved various organizational levels with specialized departmental units on the basis of organizational chart. But now-a-days, the specialized organizational units are come forward for taking such initiative role and responsibility in order to ensuring environmental excellence in product development, design, promotion (Marketing), process design ,operation ,logistic, regulatory compliance & waste product management. In recent times, Green Supply chain management (GSCM) has plays an important role, in the field of controlling global warming control lance. Because manufacturing industries producing number of products from its plants in order to completed their counterpart company and its product. If they will not determine about their pollution then the world would be face lots of problem for its existence & survival of human beings. Hence, they should have play proper attention towards the followings reasons i.e.

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(i).Diminishing Raw material. (ii) Deterioration of Environment (iii) Overflowing waste lands. (iv) Increasing level of pollution. (v) Deforestation (vi) Air Pollution by Industries & Motor Vehicles etc.

In recent times, today's world is not safe and secure due to rapid pollution made by manufacturing industries and it is one of the main causes of global warming, hence the competitive world is not only conscious about the creation of a eco-friendly environment but also it emphasizing to use of more and more green products by the people in their day –to-day life for which a rich & healthy environment will be sustained in future world. The green Supply chain Management, plays a vital role on the practices of manufacturing industries by producing various green products. whereas ,operational management takes the back-bone support of green marketing .Again supply chain Management (SCM) includes purchasing in about logistics, production and distribution (out bound logistic and Marketing etc.) for enhancing a sustainable effort for promotional activities in a better way for business and control of global warming. In this context, sustainable manufacturing and eco-innovation are very much at the heart of in the century's policy and industry practices for green supply chain management and its marketing. These concepts have become popular with policy makers & business leaders in recent years, and they encourage business solutions and entrepreneurial ideas for tackling environmental challenges. However, sustainable development cannot be achieved & maintained unless consumers are not curious .So manufacturing industries have to create new market by penetrating new green product for consumer perception and if consumers pay attention about the new product apart from the manufacturing industries then they will be interact with the product and finally their behavior would be changes for consuming green products and informed to all for using it.

2. AIMS AND OBJECTIVES OF RESEARCH

The aim of this research is to constructively and prescriptively ascertain the manner in and extent to which consumers' environmental attitudes towards the green product & how it affects their purchasing behavior. Toward this aim, four objectives have been set and met:

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- To find out the best of best solution apart from the standing problem of global warming.
- To undertake an extensive literature review that will provide the theoretical foundation for the development of the rest of the research.
- To collect and analyze primary data toward the above-stated aim.
- To interpret and combine the primary research findings with the theoretical research findings toward the development of an innovative perspective on green product marketing.
- To identify the managerial implications and to prescribe explicit and practical strategic marketing steps for green supply chain management for promotion of green product.

3. LITERATURE REVIEW

Evidently, the literature regarding "green supply chain management, ''Green Marketing," ''Green'' Consumer Behavior, ''Green'' Tactics and Green Strategies, etc., is endless. This research, in its aim to provide not only new data, but also a fresh and innovative perspective on the subject, builds a different theoretical basis. Specifically, while the subject of green supply chain management on the practices of manufacturing industries regarding their green marketing is reviewed; significant effort is put into comprehensively understanding the wider causes and effects of these supply chain management trends and patterns. Moreover, the literature review aims to uncover the underlying motivators of this behavior of consumers towards green product, with a special focus on developed countries. Prof.Montek Singh Ahluwalia who is a famous economist & former Chair Person of the Planning Commissioner to Govt. of India, admitted the pioneers in green consumer behavior and consequent green marketing strategies have a positive impact in the sustaining of Green-Ecology in world. The findings are presented after screening for maximum relevance to the specific industry and are subsequently used toward the development in comprehensive marketing perspectives, the

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identification of the managerial implications, and the prescriptive development of the findings.

4. METHODOLOGY

This study's main objective is to perform an in-depth analysis on the green product Manufacturing industry's environmental policy regarding the sustainability of ecology by their proactive planning A rigorous study of industry's internal motivating factors with respect to environmental proactively requires controlling for external factors, including environmental legislation, industrial sector, and location. Environmental legislation in India is not uniform throughout the country, part of the responsibility for environmental legislation lies with the governments of autonomous communities. Therefore, this study takes place solely within the Social Community, a geographic area with uniform environmental laws.

This research is divided into two independent but interconnected phases. In the first phase of the study, three empirical case studies are performed, one on each of the three major industrial sectors of the region . In the second phase of the study, a quantitative analysis is performed in order to verify and reinforce the first two hypotheses tested in the case studies. The analysis method used in this study allows comparison and contrast between information obtained from case studies and information obtained via quantitative analysis

The invited article analyzed by the authors is purely research work of their own findings and writings about the research title **"The Role Green Product Manufacturing Industries for Sustaining an Eco- friendly Environment in the World: Emerging Business Opportunities and Challenges"** has based on the availed data through the survey method and as per the methodology of research technology. After presentation of the availed data the researcher has carefully investigate about the facts and findings and come to interpretation with followed by testing its validity and authenticity by the structural equation model(SEM).The author has collected the valid data from different reliable sources of published and unpublished resources, i.e. Marketing agencies of Asia continents and Asia aboard such as All India Marketing Association (AIMA), Singapore Marketing Chamber of

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Commerce (SMCOC), American Marketing Association (AMA) ,Asian Marketing Federation (AMF),Singapore International Marketing Association (SIMA),Thailand Marketing Association (TMA) ,China Federation of Commerce & Marketing (CFOCAM) and various summits proceedings of " prevention & Control of Global warming" conducted by various countries and world Union Organization ,journals of Environmental Research letter (ERL) USA 2013,the National Association of Attorney General (NAAG) 1990.Besides that the researcher has able to collect various research findings apart from eminent professors of reputed universities ,researchers who were done previously regarding the green marketing in various field like ,Biosciences ,Botany ,Environmental-Sciences ,"Environmental-Marketing" and "Sustainable Marketing" etc. which are gives extensive support to complete the current article.

The structural Equation Model (SEM) was based on both the availed primary data and secondary data where the existing body of literature has been thoroughly investigated and finally a conceptual frame work comes to picture in original. Finally the original result is structured in a frame work of "Green Supply Chain Management Model (GSCMM)" and SEM Model for the perusal of experts in the concerned field's .The researcher have collect 900 peoples response in various fields such as 120 number of owner from various manufacturing industries,150 Wire house owners ,130 Suppliers ,200 number of industrial experts and 200 Environmental Scientist and 100 Experts of pollution & Control Board .In anticipation they responded in totally 780 in favour of Green supply chain management (GSCM) practices in manufacturing industries like 120 (150), 180(200), 235(250), 160(200), 185(200) with strongly agree accordingly to the said problem.

5. WHAT IS GREEN PRODUCT?

Green product is one type of product Produced from the manufacturing industries, which consists, hazard less, eco-friendly, & enhancing to sustaining a beautiful environment with free from pollution, un hygienic air to breath , and harm less impact upon environment of the world for sustaining a healthy life. These products are chemical less, harmless, lack of arsenic, etc. and it is recyclable, re-production able products like use of Paper bags,

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disposable Products, recycle able products , use of Bio-fuels ,Produce Green products from green plantation ,less arsenic products etc.

6. GREEN SUPPLY CHAIN MANAGEMENT MODEL: (GSCMM)

This proposed information model of (GSCMM) which is given focuses on the minimal set of the data that need to be exchanged between the manufacturing industries to retailer through the via media of middle men of supply chain management system (SCMS). A communication data flow analysis of the supply chain was performed. As a result of data requirements used to communicate among the supply chain channels have been identified these data requirements are a set of objects; they are grouped into seven units of functionality: Industry, supplier, manufacturing plant, distributors, warehouse, transportation administration and retailers. The manufacturing plants manufactures product by using the raw materials provided by the suppliers. The distributors stores inventories and supply the products to customers through retailer. The industry (head quarter), manufacturing plant and warehouse might belong to the same company. The warehouse meets the uncertainty of demand. The can share management information at any time by a common data base system. The transportation administration gives smooth flow of materials to customer demand. The information are basically stored in the headquarter data base. By using this information the head quarter can evaluate the efficiencies and effectiveness of each chain members. Using the central data base system, an individual member exchanges data with other members to synchronize their business operations. These exchanged data are often used to control operations in an individual firm and are used for negotiation among chain members that form a virtual organization to provide product and services to customers at their door step.

7. WHAT IS SUPPLY CHAIN MANAGEMENT?

Supply chain management (SCM) is the oversight of materials, information, and finances as they move in a process from supplier to manufacturer to wholesaler to retailer to consumer.

7.1 Supply Chain Management in Today:

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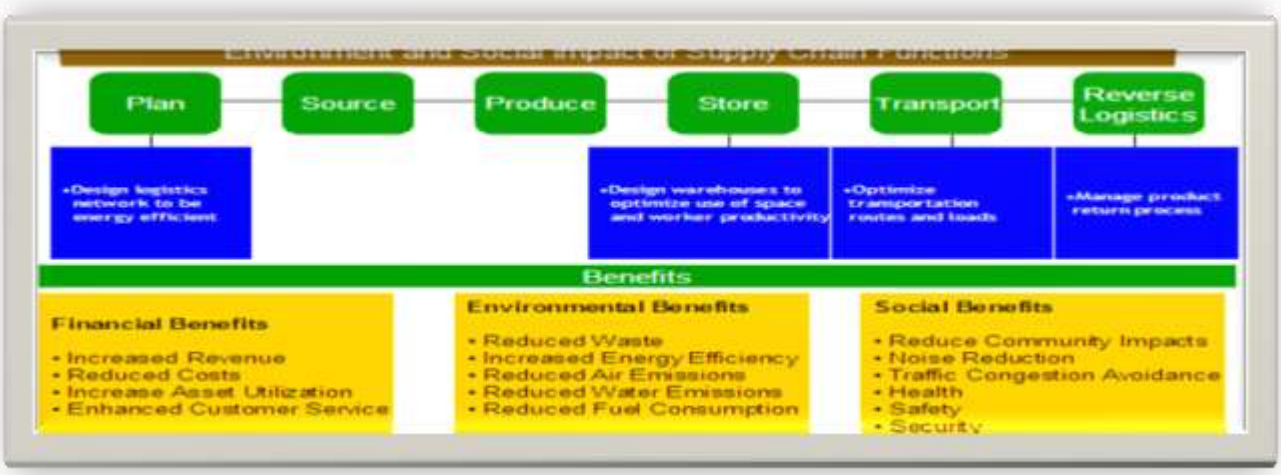
As the supply chain management has concerned, today it scope and application is very wide spread in all segmentation of industry and society for the betterment of life style of human beings if we take the view that Supply Chain Management is what Supply Chain Management People do, and then in 1997 Supply Chain Management has a firm hand on all aspects of Physical distribution and materials management .Seventy-five percent or more of respondents included the following activities as part of their company's Supply Chain Management department functions:-

(i) Inventory management (ii) Transportation service procurement (iii) Materials handling (iv) In bound transportation. (v) Transportation operations Management. (vi) Warehousing management

7.2. Components of SCM:

The Supply Chain Management is an important channel of product promotion from the place of manufacturing to the place of consumption which consist number of intermediaries channel of SCM through the followings components i.e

[Key components of Supply chain Management and Function]



The components of SCM consists number of primary and secondary materials such as :(i) Material (ii)Money (iii)Machines (iv)Manpower (v)Methodology (vi) Maintenance (vii)

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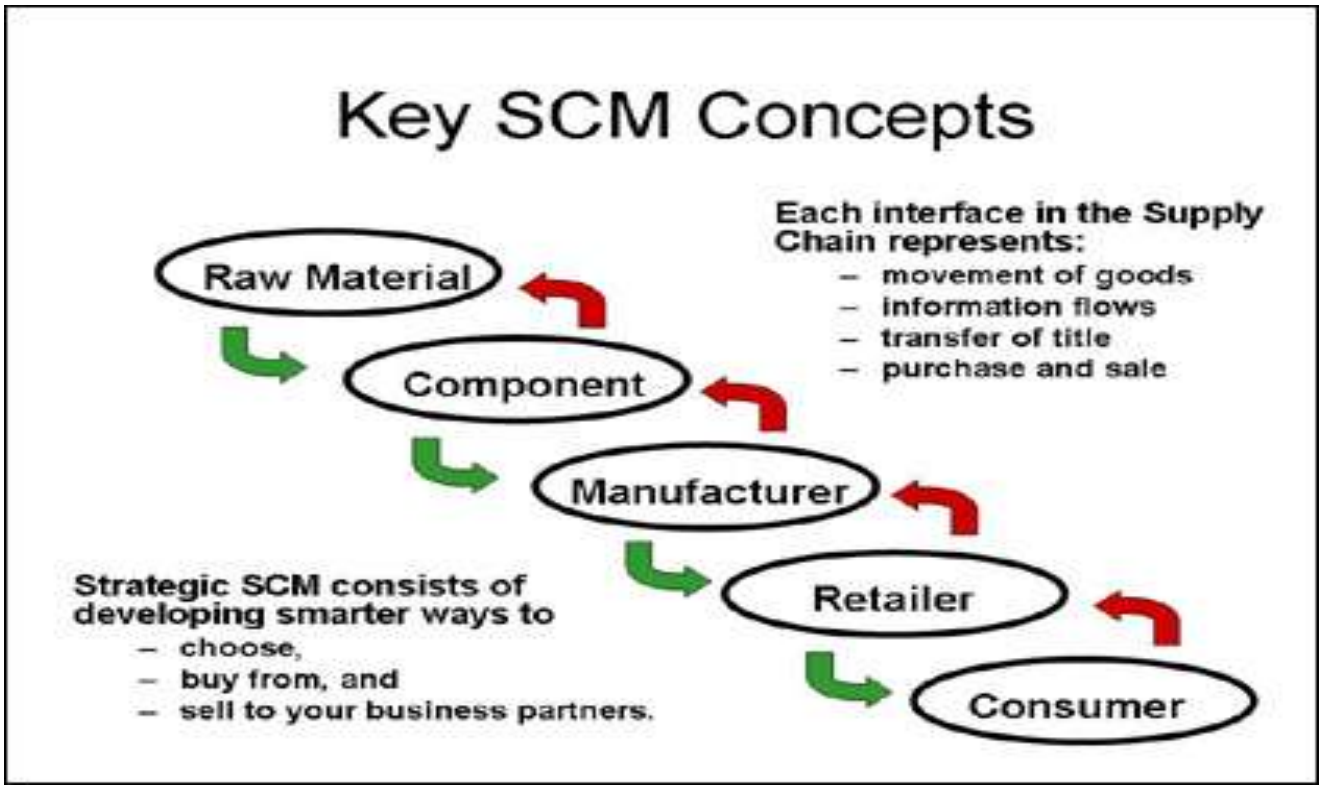
Management.etc.by Which the production system as well as supply management has gear up tremendously. Here, some of the key concepts of supply chain management are discussed in this model that

Improvements by Green SCM: (Table-1.2)



[Benefits of Green Supply Chain Management Model .Table:- 1.1]

8. WHAT IS GREEN SUPPLY CHAIN MANAGEMENT?

So far as the green supply chain management is concerned ,it is one type of applied management which refers about the promotion work (Marketing) of green products from the place of manufacturer to consumer through the via media of middlemen .i.e. whole seller-dealer-sub dealer-retailer and finally reach to door step of consumer for their final consumption)"Integrating environment thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers, and end-of-life management of the product after its useful

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life". If we conscious to use green products then make our environment completely clean & free from pollution. Here, this model focuses how much we will be highly benefited in various segmentations of human beings life such as in the areas of

For getting an eco-friendly environment, the manufacturing industries should have improved the techniques of green supply chain management strategies and methods like:-

8.1 Improves operations by employing an environmental solution

8.2 **Improves Agility**: Green supply chain management help mitigate risks and speed innovations

8.3 **Increases Adaptability:** Green supply chain analysis often leads to innovative processes and continuous improvements

8.4 **Promotes Alignment:** It involves negotiating policies with suppliers and customers, which results in better alignment of business processes and principles.

8.5Improves E-Commerce Business Activity: By green supply chain management the production promotion strategy (Marketing) is highly increased and the company expands its business kingdom in a high volume and finally economically benefited.

9. PRODUCTION AND POLLUTION

For getting an eco-friendly environment with clean from harmful gases, poisonous water apart from various manufacturing industries .An undesirable output of many production processes is pollution, which takes many forms, including air pollution, water pollution, and noise pollution. Activities such as strip mining have produced extensive damage in Illinois, Kentucky, West Virginia, and other ore-producing states. Major oil spills along the Pacific and Gulf coasts have killed thousands of fish and birds and damaged beaches. Discharges from chemical plants have closed recreational areas and killed fish. Atmospheric discharges by lead smelters have endangered the health of nearby residents. Acid rain has become an international problem, involving the United States, Canada, and many European countries. An estimated 165 tons of air borne pollutants are produced each year by American factories. In its most extreme form, pollution can-and does—kill people. The 1984 gas leak at Union

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Carbide's pesticide plant in Bhopal, India, killed more than 2,000 people and caused serious, permanent disabilities to many times that number.

[Pollution Prevention Hierarchy: Table-1.3]

Pollution prevention Hierarchy

10. WHY THERE IS NEED FOR GREEN SCM?

Increasing Environmental Constraints due to Global Warming.

(a)Corporate Social Responsibility (b) Beneficial for Organization (c)Eco-friendly (d) Increasing Environmental awareness in stakeholders (e) Evolving Consumer and Client Demand (f)Response to increasing fuel prices.

11. AREAS OF GREEN THE SUPPLY CHAIN MANAGEMENT

As area GSCM has concerned, now-a-days its scope is very wide spread, it includes all types of promotion work in and outside of the industry. Like-

(i)Designing of Products (ii) Production (iii) Material Purchase (iv) Packaging (v) Warehousing (vi) Logistics & Reverse Logistics.

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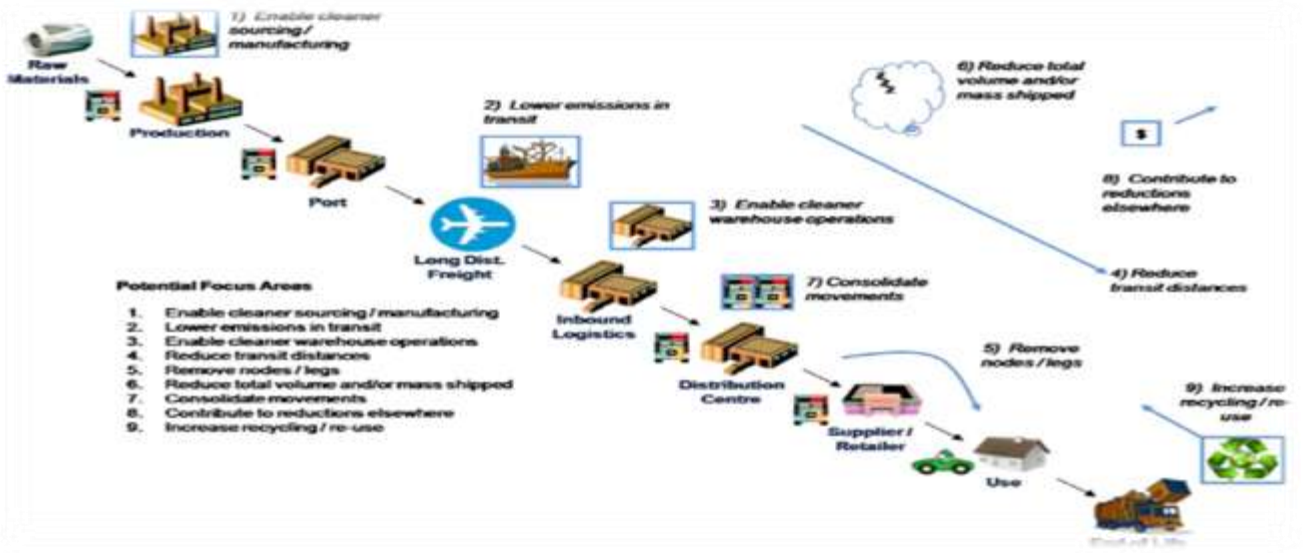

[Areas of Green Supply Chain Management Table: 1.4]

12. DESIGNING OF PRODUCTS

12.1. An eco -friendly Design approach leads

- Less material usage Minimum Operations
- Proper use of Computational fluid dynamics tools can used to reduce the exhaust emissions at designing level

12.2 Purchase:

- Implementing Green purchasing policies
- Technical support to vendors to reduce the emissions.
- Guidelines for usage of less hazardous materials

12.3Production:

- Achieving Economies of scale in production
- Lean manufacturing approach

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- Fuel efficient tools and machines
- Selecting less carbon intensive energy sources.

12.4Packaging:

- Mercury free
- Non toxic (minimize toxicity)
- PVC or DEHP free
- Recyclability
- Hazardous waste considerations
- Durability/Reusability
- Energy efficient

12.5Logistics:

(i) Optimized Truck loads and Direct shipment to the customer(Dell model)

(ii) Routing of distribution and Reverse

[Models of Eco-Friendly Packaging:-Table-1.5]

Category	Description	Similar indicators or examples
Individual indicators	Measure single aspects individually	Core set of indicators Minimum set of indicators
Key performance indicators (KPIs)	A limited number of indicators for measuring key aspects that are defined according to organisational goals	
Composite indices	Synthesis of groups of individual indicators that is expressed by only a few indices	
Material flow analysis (MFA)	A quantitative measure of the flows of materials and energy through a production process	Material balance Input-output analysis Material flow accounting Exergy; MIPS; Ecological rucksack
Environmental accounting	Calculate environment-related costs and benefits in a similar way to financial accounting system	Environmental management accounting; Total cost assessment Cost-benefit analysis Material flow cost accounting
Eco-efficiency indicators	Ratio of environmental impacts to economic value created	Factor
Lifecycle assessment (LCA) indicators	Measure environmental impacts from all stages of production and consumption of a product/service	Ecological footprint Carbon footprint; Water footprint
Sustainability reporting indicators	A range of indicators for corporate non-financial performance to stakeholders	GRI Guidelines Carbon Disclosure Project
Socially responsible investment (SRI) indices	Indices set and used by the financial community to benchmark corporate sustainability performance	Dow Jones Sustainability Indexes FTSE4Good

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13. LEADING COMPANIES MANUFACTURING GREEN PRODUCT IN WORLD

In order to make an eco- friendly environment in the world, manufacturing Industries plays an important role by producing green products, and supply it to the consumers for their final consumption. Here, the researchers have presented few of leading manufacturing companies of the world .i.e.

- **IKEA:**

  It is a leading Company, which emphasizes upon a sustainable forestry Techniques should have used by the manufacturing Industries, peoples, and users of the world .now IKEA invest more money in renewable energy 100% clean energy by 2020.

- **NIKE:**

  It is a Netherland based Company and leading foot wear giant or company which encouraged people to use recycled aluminium more & more.

- **Johnson & Johnson:**

  It is a most suitable, sociable & responsible Company in the world, which emphasizes to use more & more solar energy in the process of production in company by which it gives an eco-friendly environment. Now, it invests huge money in the sector of solar energy.

- **QMI Services:**

  QMI is a company, which designs automated handling equipment by using bar code, scanning system and weigh in motion devices use factories around the world & use energy in the production line.

- **Philip Electricals:**

  Motivated to consumer for using LED bulbs, tube lights etc. and save energy for making an eco-friendly environment.

- **Earth Tech:**

  Emphasising to recycle the consuming products in to production process like things , plastic, bottles, paper, land fill clothing etc.

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- **Schoott:**

  Schoott is a glass Company, which caught eco- friendly eyes when it manufacturing world's first Glass Ceramic Cook top without using heavy metals arsenic & antimony as additives waste products are recycling & not to use heavy metals with arsenic.

- **Dell**:

  Back in 2008, Dell pledged that it would reduce its total manufacturing emission by 40% by the end of 2015.

- **Topper Ware:**

  Emphasizes to reduce pollution, and conserve energy & recycle are standard in the Topper ware process very strictly by adopting environmental in its manufacturing plants around the world.

- **IBM:**

  A leading & famous computer Company providing the most popular brand of computer to the world .it emphasizes to save power in its manufacturing process.

Green Product Manufacturing Companies in China: figure:1

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Green Product Manufacturing Companies in China

Manufacturing Industries of Green Product in India

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[An indicators for Sustainable Global Eco-innovation platform]

14. ENVIRONMENTAL IMPACT

An increasingly common requirement for firms desiring to locate a production facility in a particular area is an environmental impact of study. It analyzes the impact of a proposed plant on the quality of life in an area. Regulatory agencies typically require the study to cover such topics as impact on transportation facilities; energy requirements; water and sewage treatment needs; effect on natural plant life and wildlife; and pollution to water quality, air quality, and noise pollution. Following six benchmarking criteria were identified as generally desirable.

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Table 3 summarizes the benchmarking of existing sets of indicators according to these criteria: and capacity for dealing with indicators, the Comparability for external benchmarking;

14.1**Applicability for SMEs**:

The application of SMEs in various business sectors is a tuff job for the business men or any manufacturing agency &usefulness for management decision making

14.2 Effectiveness for improvement at the operational level; Possibilities of data aggregation and standardization

14.3 Effectiveness for finding innovative products or solution.

Although it is not easy to compare these sets of indicators, since they differ in terms of their Structure and application, they were reviewed from the viewpoint of their potential effectiveness in advancing sustainable manufacturing. Whereas each company has its own operating environment

15. SUSTAINABLE MANUFACTURING INDICATORS

(a)Develop a toolbox or manual to help manufacturing companies use existing indicator sets to improve their environmental performance by providing guidance and general recommendations on the use, terminology, standard processes and methodologies of indicators.

Standardize methodologies for material flow analysis at the micro level (*i.e.* at the corporate or product level), as this is considered as one of the most effective tools for improving energy and resource efficiency.

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a. Collect interesting examples of different levels of eco-innovation from around the world and conduct an in-depth study on processes that help to achieve eco-innovation in order to draw lessons for practitioners and policy makers.
b. Collect good examples of policies that promote eco-innovation & conduct an in-depth study on how they function. This can be followed by the identification of result-oriented, dynamic new generation innovation policies that encourage industry to lead eco-innovation efforts.
c. The above industry and policy best practices could be compiled as a freely accessible on line database for knowledge sharing and networking as well as shared through workshops, conferences, etc.

16. UNDER STANDING ABOUT ECO- INOVATION

To explore future opportunities for measurement, the project examined existing methodologies for measuring eco-innovation at the macro level (*i.e.* sect oral, regional and national) and analyzed their strengths and weaknesses .However, it should be kept in mind.

An eco-innovation may be environmentally motivated, but may also occur as a side effect of other goals, such as reducing production costs. It may also occur through institutional changes in values, knowledge, norms and administrative actions or the formation of collaborations with new stakeholders. Therefore, to capture the diversity and characteristics of eco-innovation activities without limiting the scope of the concept, it is important to collect data on:

a) How firms eco-innovate, or the nature of eco-innovation (target, mechanism, etc.)

b) The **drivers and barriers** that affect different types of eco-innovations

c) The **impacts** of different types of eco-innovations.

16.1. Input measures: *e.g.* R&D expenditures, R&D personnel, other innovation expenditures

(Such as investment in intangibles, including design expenditures, software and marketing Costs)

16.2. Intermediate output measures: *e.g.* number of patents; numbers and types of scientific publications

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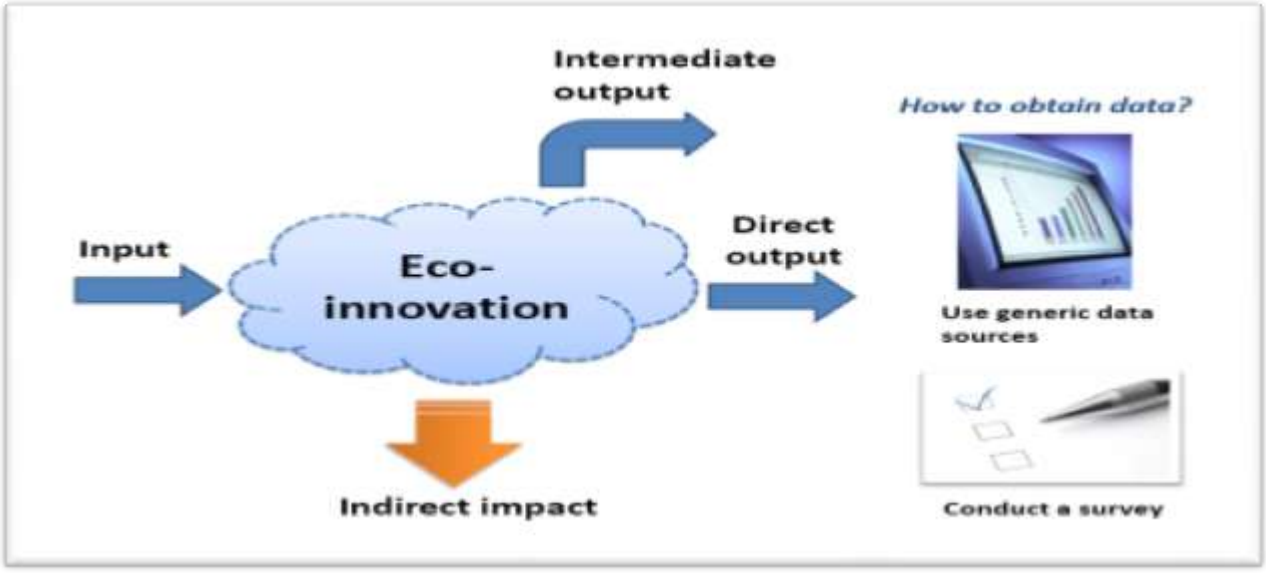
16.3. Direct output measures: *e.g.* number of innovations, descriptions of individual Innovations, sales of new products from innovations

16.4. Indirect impact measures: *e.g.* changes in eco-efficiency and resource productivity.

[Measuring Eco-Innovation System figure 1.7]



17. HYPOTHESIS TESTING

In this Section, The researchers have focused on the mode of data collection in order to obtain the valid and reliable data from the manufacturing Industries of India which were produced Green products, as per their response the related data also collected from the respondents of different age group and different categories, through number of field surveys & interviews with number of Manufacturers, Suppliers of Green Product, Wire houses, Environmental scientists , experts from pollution & Control Board etc. the obtained data are scanned properly with a filtering process, after that ,it comparison with the taken hypothesis as per the related variables (V_1) & Variable (V_2) through the method of Correlation Co-efficient .Finally ,the researcher as taken in to consideration of the testing of ratio value as per the hypothesis taken in anticipation of the original Problem.. Here, the data's has presented for calculate it's co-efficient as per the followings i.e.

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18. CALCULATION OF CORRELATION COEFFICIENT

Class Group (In Age 19 -28 years 29 -38 years 39 - 48 Years 49- 58 Years 59 -68 69-78 years

Respondents (Frequency) 120 150 130 200 200 100

Class	Category	Frequencies(t)	Mid Point	d	fd	fd^2	**C.f**
19-28	Suppliers	120	23.5	-2	-240	57600	120
29-38	Industrialist	150	33.5	-1	-300	90000	270
39-48	Warehouses	130	43.5	0	0.00	0	400
49-58	Environmental Scientist	200	53.5	+1	+200	40000	600
59-68	Industrial Experts	200	63.5	+2	+400	160000	800
69-78	Experts of pollution & Control	100	73.5	+3	+300	90000	900
		N=900			**$\sum fd=360$**	**$\sum fd^2=437600$**	N=900

Skp = $\frac{\text{Mean} - \text{Mode}}{\sigma}$

$X = A + \frac{\sum fd}{N} \times i$

$= 130 - \frac{360}{900} \times 10 = 130 - 4 = 126$

Calculation of Mode: by inspection of Mode lies in the class 49-58

Mode= $L + \frac{\Delta_1}{\Delta_1 + \Delta_2} \times 10$

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L= 49 $\Delta_{1=}$ 200-130=70, $\Delta_{2=}$ 200 -200= 0 I =10

=Mode = 49 + $\frac{70}{70+0} \times 10$ = 49+10 =59

Calculation of SD:

$\sigma = \frac{\sqrt{\sum fd^2}}{N} - \frac{\sqrt{\sum fd^2}}{N} \times i$ $= \sqrt{\frac{437600}{900} - \left(\frac{360}{900}\right)} \times 10$

$= \frac{\sqrt{437600-129600}}{900 \quad 900} \times 10 =$ $\sqrt{486.22 - 144} \times 10 = 184.99$

Coefficient of SK = $\frac{126 - 59}{184.99}$

=0.358.

19. Interpretation

The obtained value is 0.358 and the table value for co-efficient at alpha 0.01 and 0.05 level in degree of freedom (df-1) (900-1) 899 df is larger than the obtained value. Thus, we accept the H_o h and reject the Null hypothesis ($H_{e)}$ that the producing more & more green manufacturing Product (V_1) as well as consuming More & More green Product (V_2) has highly impact on Sustaining Green- Ecology for reducing Global Warming in the earth.

20. SEMIOTIC MODEL OF RESPONDENTS: (IN PIE CHART: 01)

In the semiotic Model of the above respondents shows that, the consciousness of use of Green Manufacturing Product as well its product has a tremendous impact in the field of sustain green eco-logy in the earth

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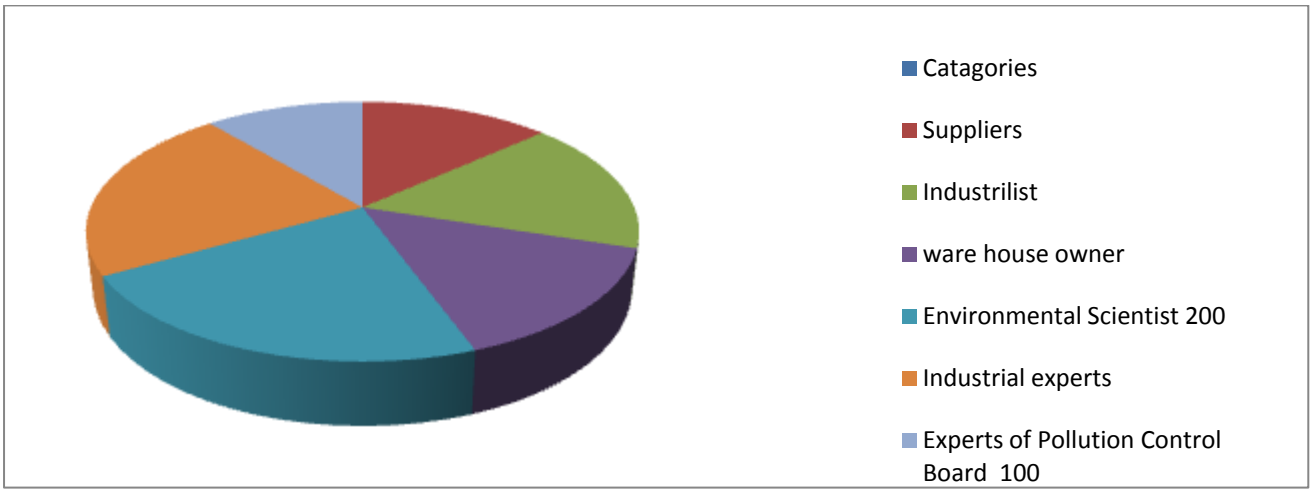
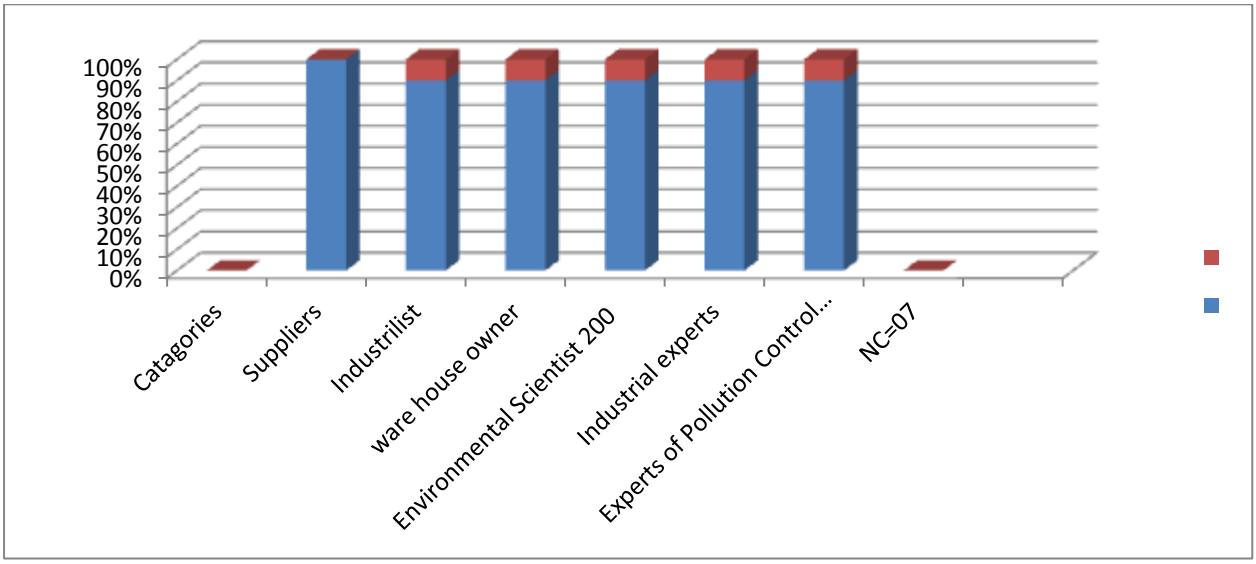


21. RESPONDENTS IN GRAPHICAL MODEL: [GRAPH: 01]



In this above graph, The researcher has interviewed 7 categories of respondents and as per their respondents the data's are represents in the graphical model for readers visual perception.

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22. RECOMMENDATIONS & SUGGESTION

In this invited research article, the researcher have focused on the innovation of green products from various manufacturing industries how influences to sustain an eco-friendly environment in the world. From the above research, the researcher have found the followings in order to recommend it for the people's consciousness in their daily life , by which we get a healthy , enriched ,hygienic and eco-friendly as well as pollution free environment for living a healthy & enriched life forever. i.e

- Produce Green Products more & More
- Use more & more Green Product
- Plantation of trees & More & More
- Plantation of Bio- fuel plants more & more
- Saving energy & Electricity.
- Use carbon less Fuel
- Emphasize on more use of cycles
- Given importance of recycling of used Products
- Not to pollute water of rivers, ponds & other sources
- Produce & use more & more solar Energy
- Conservation of land
- Testing of soils for arsenic, fluoride etc.
- Limit of Industries/Companies
- Increase of literacy & individual Consciousness.etc.

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23. CONCLUSION

In concluding paragraph of the above invited article, it is right time to select "implementation of a "frame work of green supply chain management on the practices of manufacturing industries for sustaining an eco-friendly environment in the world "in order to meet environmental challenges such as climate change, much attention has been paid to innovation as a way to develop sustainable solutions. The concepts of sustainable manufacturing and eco-innovation are increasingly adopted by industry and policy makers as a way to facilitate more radical and system-wide improvement in production processes and products and in corporate environmental Performance. Eco-innovation can be understood in terms of its target, mechanism and impact, while sustainable manufacturing practices focus on lifecycle approaches. To date, the primary focus of sustainable manufacturing and eco-innovation tends to be on technological advances for the modification and re-design of products or processes, as in conventional innovation. However, some advanced industry players have adopted complementary organizational or institutional changes such as new business models or alternative modes of Provision, for example, offering product-service solutions rather than sale of physical products. A green strategy provides prudent business processes. Successful green supply chain will feature cross functional collaboration emphasize innovation, and stay tune to the strategic focus of supply chain and enterprise as a whole .Such a framework emphasizes network redesign, packaging changes, and business collaboration that promote a smaller carbon footprint and generates cost saving. The most strategic way is also the most fundamental improves supply chain visibility and tactical knowledge, to help close the gap between the time you learn about something with significant impact and when you can actually do something about the environment clean and free from pollution.

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