

# Green Supply Chain Management Systems - A Catalyst for Modern Organisations Towards Sustainability

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**Abstract:** *The growing carbon footprint of various types of industries or organisations of the modern era has specifically held some sectors responsible for the adverse climate changes and this specific challenge of climate changes can only be tackled by encouraging our industries, businesses and various other types of organisations to follow those types of practices, processes or procedures that will definitely go on to reduce their carbon footprint on our planet earth.*

*As observed and studied the success of any business organisation normally depends on the proper satisfaction of it's existing customers and various other stakeholders, which has actually gone on to necessitate every modern day business organisations or units to take proper measures, in whatever form it may be possible for them, to protect our planet earth from various types of adverse climatic hazards to survive and prosper in the long term.*

*In this light we see that selection of a proper supply chain management system in modern day organisations goes on to play a very crucial role in not only taking proper care of the various business related issues but also goes on to help in taking care of various types of modern day's environment related issues to help in development of a sustainable organisation in the long run.*

*A Green Supply Chain Management System can be defined as a system which goes on to include various types of activities like green purchasing, green manufacturing, green packaging, green marketing, green logistics, etc, in the process of movement of goods from initial sourcing of materials to the final or the end customers of the finished products.*

*This study has been undertaken to find out the importance of implementing green supply chain management system among various types of organisations of the modern world countries alongwith finding out the advantages and disadvantages of having a green supply chain management system and the problems or challenges of introducing and implementing green supply chain management systems among the organisations of modern world .*

**Keywords:** Green Supply Chain, Green Design, Green Process, Green Purchasing, Green Manufacturing, Green Product, Green Distribution, Green Warehousing, Green Packaging, Green Logistics, Green Transportation, Green Marketing.

## I. INTRODUCTION

**Supply Chain :** In normal sense a supply chain will mean that entire process, functions or activities, which are engaged in sourcing of raw materials, transforming them into a product alongwith distributing or transporting them to the end consumers or final customers and will go on to include various types of organisations, individuals, resources, technologies and activities which will be involved in not only producing a final product but will also take care of distributing them to the final customers or the ultimate users of the product ( Ben Lutkevich ).

**Supply Chain Management System :** Any supply chain basically consists of two parts which can be known as production part and the distribution part where the production part deals with manufacturing of the final products and the distribution part deals with distribution or transporting of those final products to the final consumers and the



management of this entire system is known as Supply Chain Management System which gets managed by professional supply chain managers.

Normally a supply chain is a network of various types of individuals, organisations or units who can be suppliers, manufacturers, distributors, wholesalers, retailers, etc, and the management of all these units to get the right things at the right place at the right time can be termed as supply chain management system. As observed it is also seen that an effective supply chain management system can lead to help the organisation in a number of ways by reducing overall costs, waste and time to increase their profitability and gain an advantage over its competitor's in the market throughout this entire process of supply chain, which actually starts from procurement of raw materials till the final product reaches the final or end customers ( www.ibm.com ).

**Green Supply Chain Management System** : Thereafter with the growing environmental degradation throughout the world the importance of having a proper supply chain management system is needed to reduce the carbon footprint of the organisation and move towards more and more sustainable development and in this way the concept of Green Supply Chain Management System came into existence which normally goes on to describe a supply chain management system which tries and includes environment friendly policies and practices which will start from product design, materials sourcing, product manufacturing, logistics alongwith other product related management to make the entire supply chain more environment friendly and less harmful to the society ( Lobiba Noshin Asha, Arup Dey, Nita Yodo, Lucy G. Aragon, 2022 ).

**Objectives of Green Supply Chain Management System** : The main objectives of introducing green supply chain management systems among the organisations are as follows :

**Reduction in Green House Gas emissions** : The first and foremost objective will be to try and reduce the emissions of green house gases like Carbon Dioxide, Methane, Nitrous Oxide and other Industrial gases like Hydrofluorocarbons ( HFCs ), etc, into the surrounding environment by implementing those types of modern technologies which can help in reducing the emissions of these harmful gases and protect the environment from further degradations ( Tanya Gupta, 2024 ).

**Reduce Generation of Wastes** : One of the important point in developing a modern healthy society is to reduce the generation of various types of wastes which includes both industrial as well as household wastes, introduce and implement better waste treatment facilities and also include and introduce biodegradable packing materials to avoid various types of pollutions like soil pollutions, water pollutions, etc, ( Tanya Gupta, 2024 ).

**Increase the use of renewable energy resources** : Modern organisations should specifically take proper measures to reduce the use of energies which are generated from fossil fuels and increase the use of those types of energies which are obtained from renewable sources like Solar energy, wind energy, hydropower, etc, as when fossil fuels are burned they normally goes on to emit greenhouse gases like carbon dioxide gas which goes on to cause global warming which in turn goes on to cause various other hazards like extreme weather conditions, etc, which in turn goes on to cause various types of hardships for normal living. ( Tanya Gupta, 2024 ).

**Compliance with environmental rules and regulations** : Now-a-day's governments of most of the countries are making proper rules and regulations to protect their surrounding environment from degradations and it is the duty of the organisations to obey those rules and regulations to help in protecting their surrounding environment from degradations ( Tanya Gupta 2024 ).

## **II. IMPORTANCE OF GREEN SUPPLY CHAIN MANAGEMENT SYSTEM**

Normally decisions for choosing suitable supply chain mechanisms are taken after proper consideration and evaluation of various factors like customer's needs, particular product specifications, overall cost of production , efficiency, etc, whereas the decision to implement green supply chain management will be considered after taking into consideration other additional factors of combating adverse impacts of modern day's climate change problems . The basic importance of having a green supply chain management system lies in its capacity to consider environmental aspects while performing activities throughout the supply chain which basically starts from proper selection and sourcing of raw materials till the product reaches the final customers or the end consumers and the main aim will be to reduce greenhouse gas emissions as much as possible alongwith reduction of various types of waste generation and putting



special emphasis on increasing the use of energy from renewal sources instead of using energy generated from fossil fuels.

### **Components of Green Supply Chain :**

According to various experts on this subject any Green Supply Chain will normally consist of various activities like green design, green process, green purchasing, green manufacturing, green product, green packaging, green warehousing, green distribution, green logistics, green transportation, green marketing, etc.

**Green Design :** The process of green designing can be described as those types of ideas or concepts or plans which has been developed for developing various different types of products which specifically goes on to consider the environmental factors for the betterment of the current and the future generations. The specific importance of the process of green designing lies in the fact that it goes on to help the organisations of the modern society in properly understanding the importance of protecting the surrounding environment while carrying out their business operations ( Sasha Blakeley, 2023 ).

**Green Process :** Among the various types of manufacturing processes involved in manufacturing of various different types of products of our modern world a green process refers to that type of process which mainly goes on to adopt those types of activities which helps in reducing the negative environmental impact ( Giovanni Mondello, Roberta Salomone, 2020 ).

**Green Purchasing :** This term of Green Purchasing will normally go on to refer to those types of purchasing or procurement of the required materials and services that will have lower or negligible adverse effects on the surrounding environment and other living beings including human beings living there, than various other available products in the market which goes on to satisfy the same needs or the specific requirements . In other words the basic object of green purchasing will be to overall conserve the natural resources of our planet earth alongwith reducing all types of pollutions as much as possible to make this planet Earth a safer place to live in for not only the modern generation but also for the future generations to come ( Green Purchasing Guide -UCSC Financial Affairs ).

**Green Manufacturing :** In modern world the manufacturing and production is a very important sector and is actually related with various other sectors like retail, transportation, construction, etc, and therefore it has a huge role in overall emissions of green house gases which has been the basic cause of modern day's adverse climate changes. Therefore Green Manufacturing can be referred to that type of manufacturing processes where the products are specifically produced or created in a way or by using those types of technologies which will go on to help in reducing the carbon footprint of that manufacturing organisation and increase the overall operational efficiency of that organisation( <https://www.ibm.com>).

**Green Product :** This type of products will basically be produced in a way that not only goes on to save the natural resources of our planet earth but also will have less harmful impacts on our surrounding environment. Normally green products will go on to be recognised on the basis of two points like on one hand it will go on to maximise resource efficiency that is more amount of production from an estimated amount of raw materials alongwith reducing waste as much as possible (Prinona Das, April 2023). Therefore it is said that normally green products are those types of products which are produced with normally toxic free materials that which does not cause any adverse health problems ( <https://www.health.ny.gov> ) alongwith with the use of environment friendly techniques, process and procedures and are usually certified by various renowned organisations( Prinona Das, April 2023 ).

**Green Distribution :** Normally while the term distribution goes on to include various types of activities like packaging, storing transportation of the products through various modes of transportation, etc, to deliver the final product from the manufacturer's place to the final or the end customers, the term Green distribution which can also be referred to as sustainable distribution normally refers to those types of distribution channels or logistical process and procedures which are less harmful to the environment and the society as a whole([www.agility.com](http://www.agility.com), April 2021 ). Green distribution can also refer to the use of those types of practices and technologies which in normal cases will go on to reduce unnecessary emissions of greenhouse gases, unnecessary production of wastes alongwith increasing the efficiency of proper resource utilisation and using of those types of vehicles which will actually go on to cause low



environmental pollutions and help in fighting against the hazards of environmental degradation of our planet earth ( www.agility.com, April 2021 ).

**Green Warehouse :** Green warehousing systems relates to those types of warehousing facilities which are normally environmentally friendly and usually utilises various types of eco-friendly processes, practices and techniques during construction of the warehouses and also while operating within the domain of supply chain management alongwith logistics. The basic objectives of green warehousing will be to reduce the organisation's carbon footprint alongwith reduction of unnecessary energy consumptions leading to wastages of scarce and costly energy resources, to reduce overall waste generations, etc, to protect our planet earth and make way for a healthy living for not only for the current generations but also for the future generations to come in this planet Earth ( Henry Kivimaa, May 2024 ).

**Green Packaging :** As the name implies this types of packagings will not be harmful to the surrounding environment like the green product which it will carry. Thereafter it is also understood that the methods or types of green packaging normally goes on to use materials and techniques which normally and specifically goes on to help in reducing harmful impacts of irresponsible packaging methods on the modern living beings of our modern world. The normal types of materials which are used in green packaging are basically biodegradable and recyclable materials ( www.bulkbagreclamation.com ).

**Green Logistics :** The term Green Logistics normally goes on to include those types of business practices or logistical procedures which will specifically work on reducing the adverse environmental impact of a organisation for the overall benefit of our entire planet, keeping in mind the basic important point of proper satisfaction of the needs or demands of the final customers of the business. Then we see that the methods of green logistics which will basically go on to emphasise on the usages of vehicles like electric vehicles, biodegradable packing materials and various other different types of alternative energy sources and fuels will actually go on to help in having more reductions in emissions of harmful green house gases alongwith getting better overall cost efficiency, quicker and better delivery of the products and reductions in unnecessary productions of wastes (www.sap.com ).

**Green Transportation :** As studied and observed it is found that in most countries of the modern world the transport sector has been one of the biggest sector which emits most of the green house gases and goes on to cause great pollution in the surrounding environment which in turn has various adverse effects on all sorts of living beings . Therefore the basic idea of green transport is to have that type of transport which normally does not go on to degrade the surrounding environment and normally goes on to depend on various types of green or renewable energy sources like solar energy, wind energy, ocean energy or hydroelectricity, etc. Thereafter we see that some of the best types of green transport can be various types of electric vehicles like electric buses, electric trains, electric trams, other various types of transport which uses solar energy or other renewable sources of energies, etc. which goes on to take care of the modern day's environment related problems.

**Green Marketing :** Procedures and methods of Green Marketing can be considered as relatively a modern concept of marketing products and services, which has actually grown over the period to avoid the harmful effects of various types of modern day's business and other types of human activities on the environment of our planet earth and basically deals with designing, developing and distribution of those types of products and services which can be considered as eco-friendly and are less or not harmful to the surrounding environment of our society ( Anoop Kumar Singh, Shreyanshu Singh, June 2015 ).

#### **Objective of the Study :**

The foremost objective of this research study has been to find out the advantages and disadvantages of introducing green supply chain management systems throughout the business organisations of the entire world to fight against the bad impacts of adverse climate change conditions of the modern world.

### **III. LITERATURE REVIEW**

Day by day as the current generation of human beings of the entire world is getting more and more aware of the adverse effects of the global climatic change related problems the concept of green supply chain management system is gaining huge amount of importance which is leading to an increase in interests among the various types of



academicians and individuals of the entire research fraternity to conduct research on various areas of green supply chain management like green procurement, green manufacturing, green product, green marketing, green transportation, etc, from where some of the published matters are given below :

Sonu Choudhury in her paper “ Green Marketing - A New Corporate Social Responsibility “, stated that modern consumers are much more conscious about the surrounding environment and normally go on to prefer those types of products which are much more eco-friendly and normally does not go on to pollute the surrounding environment.

Tanya Gupta in her article, “ What is Green Supply Chain Management : Objectives, Importance, Best Practices, Benefits “, stated that worldwide supply chains are not only more suitable for doing international businesses throughout the world , but are also basic sources of emissions of green house gases and other types of air, water and soil pollutions. Thereafter the growing negative impact of adverse climate changes have forced the modern organisations of almost all the sectors to go on for making investments in much more environment friendly supply chain management infrastructures.

Keshav Arora in his article, “ Green Supply Chain Management : Need Advantages and Challenges “, stated that in modern world green supply chain management actually means management of delivering of products and services from suppliers. or manufacturers to the final or end customers through management of cash flow, material flow, information flow, etc, after taking into consideration the environmental safety concerns and this importance of green supply chain management systems has actually developed due to increasing awareness among the general population, governments, organisations, etc, of our modern world about the adverse effects of growing carbon emissions leading to increase in various types of pollutions and various other adverse environmental conditions. Thereafter it is also observed that implementation and introduction of green supply chain management systems actually goes on to play a very crucial role in all sectors of all types of economies by not only helping in reducing overall cost of production or reduction in waste generations , etc, but also goes on to help in overall conservation of various types of natural resources.

Melachy Mitchell in his article “ The Benefits and Challenges of Green Supply Chain Management “, stated that in modern global economy most of the businesses are initiating greater concern in tackling adverse impacts of their supply chain management systems due to which green supply chain management systems are gaining importance throughout the world for which many organisations has already started or has implemented sustainable practices into their supply chain management systems to reduce their carbon footprint and enhance their brand reputation towards serving ecologically responsible products. Thereafter it is also to be understood that proper and careful planning is needed by the organisations while implementing green supply chain management systems so that organisations does not go on to loose on their efficiency and profitability.

Nandini Gajendrum in her article, “ Green Supply Chain Management -Benefits, Challenges and other Related Concepts “, stated that with more and more economic development while the world economies are moving towards operating through global supply chains there is a growing demand to reduce the adverse environmental impacts of these supply chain systems due to which an alternative concept of green supply chain management systems has developed which goes on to incorporate the benefits of supply chain systems alongwith the ideas of protecting the environment from getting further degraded due to the supply chain operations.

#### **IV. RESEARCH METHODOLOGY**

This study has been exploratory in nature and is based on an in-depth online literature review of various published writings and articles, where the required information needed for this study was collected from various multiple secondary sources like books, academic and institutional journals, magazines, websites of various organisations, various professional blogs, working papers, newspapers, etc,

#### **V. FINDINGS**

The information obtained from various sources was examined and analysed , thoroughly and thereafter result of the analysis are summarised and presented below.





### **History of Supply Chain :**

The basic meaning and objective of any supply chain management will be to organise and manage all those types of activities, process and procedures which are actually required for producing a product and distributing of the same to the final or end customers and normally starts from the foremost activity of purchasing raw materials and will include all those activities which are needed to be done to make the final product reach the final customers in the market ( en.wikipedia.org).

The earliest evidences of the supply chain management are from ancient world history when it was seen that ancient kingdoms of our ancient world developed roads, organised trasportations of labour, products, etc, alongwith developing armies, etc, to facilitate movements of various types of products from one place to another. These way it was seen that from ancient times till the 18th Century the supply chain systems mainly dealt with local activities alongwith local transportations as there was very little or no proper scope of bigger transportation facilities to deal in more bigger and wider scope covering larger areas of our world as the cost of moving goods across the globe was also big.

Thereafter we see that with the introduction of better shipping facilities throughout the world the quantity and quality of goods which can be trasferred or transported throughout the various parts of the world increased to a great extent.

Then sometimes from the late 1920s when the idea of having mass production came into practice the concept of modern day supply chain management systems came into existence.

Thereafter came the idea, concept and practice of transportation of goods through containers which not only went on to increase the availability of needed spaces to store various types of goods but also went on to increase the speed of movement or transportation of goods which in turn went on to reduce the overall cost (www.logmore.com, April 2019).

### **Introduction of Modern Techniques and Technologies :**

**Barcoding :** Barcoding which is actually a method of identification of different types of products is normally used to track, locate or identify different types of products in various different areas like grocery, stores, libraries, etc, is actually a new idea and concept which was commercially introduced in this field of operations, more or less during the 1970s, which also went on to help in much better operations of the activities like production, distribution and various other types of activities which are either related or included in modern day's supply chain management system ( upkeep.com).

Then with the passage of time various new modern technologies were introduced into the arena and one of the most important introduction was the introduction of computers where it is observed that the introduction of various new types of softwares like MS Office and others has actually gone on to increase the working efficiency to a great extent throughout the entire world.

Then after the introduction of personal computers to perform various day to day activities, various organisations of the modern world started taking helps of Enterprise Resource Planning Systems which are also known as ERPs which are basically in-house developed softwares according to the specific needs of a particular type of business and helps the organisations to increase the basic coordination needed between various departments of the organisation for smooth performance of it's various different types of activities (www.logmore.com, April 2019).

In the modern world with various types of advanced technologies and presence of very strong social media there is a huge pressure on the organisations to maintain proper methods and standards of supply chain systems and so with the help of modern day's technologies , methods and systems like Big data, Analytics, etc, now-a-day's we have a better system of supply chain monitoring system (www.logmore.com, April 2019).

### **The importance of introduction of modern technologies in the Supply Chain System :**

Although we see that the COVID 19 pandemic has necessited the need of introducing various types of modern day's advanced technologies for conducting normal day to day business operations the importance of introduction of modern technologies in the process of supply chain management system are as follows :

The basic importance of introducing modern technologies for performing modern business operations is to avoid various types of bottlenecks and increase the speed of business operations.



The second most important thing of introducing advanced technologies for doing business operations will be to have better coordination and collaboration among the various supply chain partners to control the overall manufacturing processes in a much better manner ([www.newstreaming.com](http://www.newstreaming.com)).

The third important point for introducing modern technologies will be to have much more efficient production processes to reduce unnecessary wastages and increase the production of much more better product.

The next important thing about introduction of modern technology will also be to increase customer satisfaction of the business by making proper and in-time delivery of the product alongwith helping the customers to keep track of their product through out the delivery process ([www.newstreaming.com](http://www.newstreaming.com)).

The best and the most important point about introducing modern technologies for doing modern business operations will be to reduce the emissions of harmful green house gases into the surrounding environment to protect the current as well as the future generations of living being from suffering unnecessary environmental hazards ( [www.newstreaming.com](http://www.newstreaming.com)).

### **History of Green Supply Chain Management System :**

As studied the concept of Green Supply Chain Management System came into picture during the first stage of 1990s when the idea of how to combat the negative impacts of adverse surrounding environmental situation came into existence ( Asha.L.N, Dey.A, Yodo. N, & Aragon.L.G (2002 ) and it normally goes on to include the factors relating to the protection of surrounding environment from further degradation while setting plans regarding design, planning, procurement, logistics, marketing, distribution, etc, etc, normally using the principles of Reduce, Reuse, Recycle and Reclaim ( [www.gep.com](http://www.gep.com) )

Now-a-day's when the entire world is suffering from various types of adverse environmental problems, the supply chain management systems which goes on to actually take care of the environmental factors to protect the surrounding environment from further degradations will be known as Green Supply Chain Management ([en.m.wikipedia.org](http://en.m.wikipedia.org)).

Therefore we can say that the basic aim of any green supply chain management system will be to find and establish a proper balance between various economic activities of a organisation and the surrounding environmental factors to protect the current as well as the future generations from various environment related problems.

### **Advantages of Green Supply Chain Management Systems :**

Previously many organisations of the entire world use to think that implementing green supply chain management practices will go on to cause some extra burden resulting in lowering of profit margin of the organisation but with the passage of time and with modern day's environmental degradations, organisations are gradually understanding the importance of adopting and implementing green supply chain management systems and the basic advantages of implementing green supply chain management systems are as follows :

**Environmental Conservation :** The main idea behind implementing green supply chain management system will be to protect the surrounding environment and prevent it from further degradations.

**Reduction of Emissions of Green House Gases :** The most basic advantage of introducing Green Supply Chain Management Systems will be to reduce the emissions of various harmful greenhouses gases to reduce the overall carbon footprints of the organisations by reducing the usages of fossil fuels and increasing the usages of renewal energy sources alongwith introducing and utilising green transportation methods to tackle the modern day's environmental problems ( [3scsolutions.com](http://3scsolutions.com))

**Cost Savings :** The introduction of green supply chain management systems will go on to reduce overall waste generations which in turn will go on to increase the operational efficiency of the organisation's activity which in turn will definitely go on to financially benefit the organisations in the long run ([3scsolutions.com](http://3scsolutions.com) ).

**Employee Welfare :** Implementation of green supply chain management system will go on to consider employee welfare factors like maintainence of proper workplace conditions,etc, which will always have a beneficial effects on the proper and smooth functioning of the various supply chain activities ( [3scsolutions.com](http://3scsolutions.com) ).

**Increases Brand Image :** In modern world with so much of environmental problems throughout the entire world when we see that a particular organisation has taken some specific steps towards combating adverse impacts of various types of environmental hazards, it actually goes on to increase the brand image of that organisation in the society and also



inspire and helps other organisations to take steps and measures towards stopping or reducing further environmental degradations (3scsolutions.com).

**Some of the Disadvantages of introducing Green Supply Chain Management Systems in the Modern Industries are :**

The foremost disadvantage of implementing green supply chain management systems is it's high initial cost which is required to introduce and implement better and suitable modern day's green technologies (www.logisber.com)

The second most important disadvantage will be to educate the existing staffs or employees of the organisations in how to operate with the new process, procedures and techniques of the modern day's green technologies and systems which is required to introduce green supply chain management systems in modern organisations ( www.logisber.com )

Transition to green supply chain management systems can lead to various types of logistical complexities which will lead to urgencies in changing of various logistical processes to ensure smooth performance of the entire supply chain activities (www.logisber.com ).

Switching over or transition to green supply chain management system will definitely go on to increase the overall cost of production which in turn will go on to increase the final cost of the product in the market (www.singaporeassignmenthelp.com).

**Challenges to Overcome to implement Green Supply Chain Management Systems in the modern organisations**

As studied and observed it is seen that in order to have proper and desired results before implementing any business process proper methodical study should be made otherwise any improper implementation can cause various types of problems :

The first and foremost challenge in implementing green supply chain management systems will be increase in overall cost due to the development of IT infrastructures alongwith installation of various pollution control devices within the organisation, which in turn will also go on to increase the operational expenditures of an unit. Now in modern day's competitive world it may be very difficult for many organisations specifically in the small and medium sector to bear this cost or to pass on this increase in the costs to the end customers in modern competitive markets, leading to some sort of discouragement for many business owners specifically in the small and medium sector to accept and implement green supply chain management systems.

Modern day's green supply chain management systems normally needs highly developed Information technology infrastructures to collect real time data and analyse it to arrive at some proper business decisions. Therefore on one hand it is seen that while implementation of developed IT infrastructures alongwith all its security measures can lead to high initial capital outlay which can be somewhat difficult to bear for many ordinary business owners or organisations, on the other hand it is seen that if there is lack of proper security measures it can lead to theft or loss of important business information.

The next big challenge can be adoption and implementation of electrical and electronic devices for performing various different types of activities including transportation of material, inventory and products, as it may initially go on to cause longer lead times and extended delays in supplying the final products to the end of final customers of the organisation.

Transition to green supply chain management system will not be an easy task and it will require a lot of training for the ordinary employees of the organisation to operate properly with the modern techniques and technologies of green supply chain management systems and so in most cases organisations going for implementation of green supply chain management systems will have to incur a huge amount of money to train the existing staffs of the organisation so that they can operate properly with the green supply chain management processes and procedures.

Therefore from the above discussion we see that the main problem or challenge in implementing green supply chain management systems will be in increase of initial capital outlay which can be a bit difficult to afford for many small and medium sized organisations.





**Problem of Green Washing :**

According to the different studies it has been observed that still today many organisations get themselves engaged in various types of misleading activities to spread misleading ideas about their products, services, etc, in the society to influence the general conceptions of the common people of the society to increase the brand image of their products, services as well as of the organisations itself in the society. This types of activities has been termed as Greenwashing where a particular organisation tries to spread a false image in the society that their products or services are environmentally friendly and the organisation itself is aware of it's environmental duties.

In this regard it has been observed that in many instances organisations were actually doing nothing and were just trying to show that they have turned towards green practices ( Adam Hayes, 2024 ).

**Some general suggestions for proper operations of modern organisations :**

In order to prevent the unnecessary wastages of the natural resources of our planet Earth alongwith protecting the surrounding environment from further degradation the modern day's organisations can think of introducing the below mentioned strategies :

The first and foremost measures will be to have some efficient equipment maintenance system to keep the operating equipments in proper operating conditions to avoid delays, stoppages, and unnecessary wastages of time, money, labour, energy, etc ( www.agility.com )

Try and implement energy efficient lighting systems to avoid unnecessary wastages of energy resources and also to keep a check in unnecessary increase in electricity expenses ( www.agility.com )

Find out some proper, suitable and environment friendly packaging systems which will be suitable for a particular type of product so that the packing materials does not go on to create any adverse impact on the surrounding environment ( www.agility.com ).

Heating, Ventilation and Air Conditioning or HVAC Systems normally goes on to use a lot of energy and also in many cases they does not function efficiently. Therefore in order to keep HVAC systems in right condition to get the needed efficiency and save on unnecessary wastages of energy, proper audits of the HVAC systems at reasonable and regular intervals should be conducted, as absence of regular and routine maintenance of HVACs can go on not only to reduce efficiency but can also increase the energy expenses alongwith unwanted system failures and increasing presence of air pollutants which in turn will go on to reduce the air quality which can affect the health conditions of the peoples working or staying there ( www.cryotos.com ).

The temperatures of the warehouses of many modern day's products needs proper control on having proper levels of temperature range within the warehouses to not only keep the products in proper condition but also to avoid unnecessary wastages of energy and other resources. Therefore by installing proper insulation methods we can not only heat or cool our warehouses properly which will not only go on to increase the normal comfort level but will also go on to reduce the heating and cooling costs ( www.energy.gov )

All organisations whether big or small in modern world should try to reduce their carbon footprint to make our planet a healthy living place for all by planting trees in whatever way it may be possible for that particular type of organisation ( www.agility.com )

**Some suggestions to develop a better Supply Chain Process :**

**Reduction of Emissions from Transportation :** As observed transportation is one sector which in most cases throughout the world is still dependent on various types of fossil fuels like coal, oil, etc, which normally goes on to emit a lot of green house gases which has some harmful effects on the surrounding environment. Therefore in order to reduce these types of harmful emissions, modern day's business organisations should not only have to properly plan their material requirements but also they will have to properly plan their distribution systems like delivering some more loads in the scheduled delivery vehicles as much as possible alongwith finding out and implementing some shorter delivery routes or start using electric vehicles alongwith introduction of alternative fuels, to reduce the overall harmful emissions from the transport sector (Amber Biela Wayenberg, 2023 ).



**Implementation of using of Renewable Energy Sources :** In modern world most of the energy requirement are still today met from fossil fuels which actually goes on to emit a lot of harmful greenhouse gases and also are not usually renewable. Therefore in order to develop some type of sustainable business organisations and reduce the overall degradation of the surrounding environment of our planet earth the organisations should not only plan but also should immediately start implementing the usage of green and renewable energies like solar energy or hydropower energy or wind energy which are not only renewable but also normally does not emit harmful greenhouse gases which in turn will definitely go on to reduce the overall pollution to a huge extent ( Amber Biela -Wayenberg, 2023 ).

**Emphasise in increasing the use of Recycled and Renewable Materials :** The basic importance of using recycling materials lies in reduction of emissions of greenhouse gases leading to reduction in carbon footprints of the organisations which in turn goes on to reduce the overall environmental pollutions alongwith saving a lot of energy and other natural resources which in turn goes on to save the surrounding eco-system from deteriorating alongwith protecting the entire living systems living there ( Amber Biela Wayenberg, 2023 )

**Introduction of Green Technologies:** In order to reduce an organisation's negative impact on the surrounding environment, organisations should think about introducing more and more of green technologies like solar panels, LED lightings, wind turbines, various types of electric vehicles, using of biofuels, etc, for performing their various organisational activities( Amber Biela-Wayenberg, 2023 )

**Reduce Generation of Waste :** All organisations of our modern world should try and reduce their waste generations as much as possible to avoid unnecessary pollution of our surrounding. In this regard it is advisable for the modern manufacturers to use various types of modern technologies like software systems, robots, sensors, etc, to avoid generations of unnecessary wastes by first of all reducing man made errors which normally leads to generations of wastages and also by using modern softwares to adjust production according to the demands in the market ( Amber Biela- Wayenberg, 2023 )

#### **Future of Green Supply Chain Management Systems :**

In modern world it is specifically observed that not only business organisations but various other different types of organisations are also under various types of pressures to become a responsible unit to become a much more sustainable organisation in the long run.

Thereafter we also see that business organisations while working within a society normally had certain responsibilities towards the society to observe which can be in the form of respecting labour rights, setting up proper working conditions, etc.

As observed and studied, ESG which stands for Environmental, Social and Governance is no longer a fashion but has become a necessity for all types of modern organisations to not only become a sustainable organisation but also to go on and contribute towards the overall sustainable development of our planet earth. Therefore in modern world most organisations are required to consider their investments after taking into consideration the ESG factors, to become a responsible organisation (www.en.m.wikipedia.org ).

In this way we see that for a modern organisation to become a sustainable organisation it is absolutely necessary to have a sustainable supply chain management process which can only be possible by introducing or implementing Green Supply Chain Management Practices which will definitely go on to not only have some positive impacts on the surrounding environment, existing economy and the modern society but will also help in overall sustainable development of the entire world. The modern technologies which will be introduced will go on to help in reducing normal waste generation, increase overall operational efficiency which in turn will go on to increase smooth and proper operations of the supply chain activities throughout the supply chain (Kartik Nagarajan, 2024 ).

Therefore in the modern world with various types of environmental challenges we see that the importance of implementation of green supply chain management system is increasing day by day ( Kartik Nagarajan, 2024 ) and so it is actually recommended for all types of organisations to implement green supply chain management practices for not only observing their corporate social responsibilities but also to obtain sustainability in the long term for not only the business unit ( Kartik Nagarajan, 2024 ) but also for the overall sustainable development of the entire world.



## VI. CONCLUSION

According to the overall studies it is observed that the continuous increase in human population throughout the entire world has not only increased the need and demand for increasing various types of industries and products but it has also gone on to cause increase in various types of pollutions which includes pollutions like soil pollution, water pollution, air pollution, etc, which in turn has actually gone on to create huge amount of pressure on the modern day's industries to become a much more responsible and a better organisation without losing their profitability which has actually gone on to increase the the needs for implementing green supply chain management practices and procedures to not only become a much more sustainable organisation but also to increase their brand image in the market and have some competitive advantages in the market which in turn will not only create a positive and better impact on the surrounding environment alongwith the existing lifes living therein but also it will have some positive and better impacts on the economy of the country and the region as well as help the organisations to contribute in a proper and better manner in the overall sustainable development of the entire world . This way we conclude by saying that introduction and implementation of Green Supply Chain Management Systems is needed for not only attaining sustainability of the organisations but also for the sustainable development of the entire world.

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