

Green Supply Chain Management Practices for Sustainability

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Abstract: - As a mankind, we need to shift our focus from production Profitability (traditional Supply chain management) to sustainable friendly production (GREEN SUPPLY CHAIN MANAGEMENT). As we are moving in future the more and more of the problem of the environment is coming our way so companies should embrace the concept of GSCM to bring a considerable amount of change in the environment we need to shift our whole component of the supply chain like raw material, manufacturing process, internal logistic, external logistic, marketing, up to product disposal all should be in green concept. With the help of this research paper, I will try to review all the past Development on GSCM and the future practices of GSCM to boost the speed of implementing GSCM in our society.

Key Words: —*Profitability, GSCM, Green, Raw material, internal logistic.*

I. INTRODUCTION

In This Developing period, an organization is doing its best to revamp its environmental strategies because of expansions in ecological complexities brought about by-products. Be that as it may; executing the redeveloped ecological approaches just in the extent of just in certain organizations and won't be adequate to diminish the environmental complication of the items being referred to, Therefore, Industry ought to incorporate the entire idea of the Green production network into Application. This is a multidisciplinary idea created by developing ecological administration rehearses concerning supply chains, With the consideration of natural issues to the store network the board idea, the circumstance has been changed so that each progression from the Firm's materials acquisition and transportation capacities to the end client can be organized to incorporate ecological mindfulness. Thus, it tends to be guaranteed that GSCM has a broad field of movement. The way that GSCM is a novel and sweeping field that is creating step by step and conveys a few difficulties also. In this sense, perhaps the most basic difficulty is the arrangement of a total outline of GSCM scopes. Thus, it is vital for the present the components of the green store network the executives to comprehend it better. In light of this reason, this paper decides to investigate distinctive GSCM sizes.

First of all, the investigation will talk about the idea of GSCM, trailed by a holistic evaluation of green store network in form of caption and then the prospect of GSCM by the use of Artificial intelligence, robots, and drone in the traditional supply network.

II. LITERATURE REVIEW

Today, various environmental problems, such as environmental pollution, global warming, rapid decrease of resources, and Degradation in biological diversity, today, different natural issues, like ecological contamination, a worldwide temperature alteration, fast decline of assets, and Degradation in organic variety, have emerged. Firms that are gazed at as the reason for these natural confusions have needed to assess their assembling measures and their strategy as a whole after loads from the universes. All pieces of the old-style inventory network, along with crude materials, creation, dispersal, supporters, and waste can be a wellspring of natural contamination. In this manner, to save the climate. Greening is mandatory for all happenings in the circumstance of the store network (buy, plan, creation, dispersal, and removal). In light of this proof, the idea of GSCM began to be the primary subject of discussion in the mid-'90s and it has been analyzed under various names all through the interaction, for example

- Sustainable store network
- Commercial social duty organizations.
- Environmental production network the board.

Recently, a progression of green inventory network implications has been come out. characterized the natural

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inventory network of the board as the expansion of exercises identified with reusing, decreasing, and reuse of materials to buy capacities this definition gives a decent beginning stage to comprehend the natural exercises in the inventory network. In any case, the definition handles natural issues just from the point of view of buying. Additionally, the definition doesn't address the comprehensive and synergic impact of external and internal authoritative practices on the indigenous habitat characterized the green store network as the board as the arrangement of inventory network the executives' strategies during the plan, dispersal, use, reutilizing, and removal of firm items and administrations by bringing the regular habitat into reflection. As can be seen from the definitions given above, GSCM doesn't just objective the decrease of natural effects created during the lifecycle of the item yet additionally intends to diminish the ecological effects brought about by the exercises of partners that participate in the store network.

Three particular highlights are seen when GSCM is contrasted and the customary store network these qualities are:

Being Green:

GSCM stresses the ecological piece of the inventory network. This implies the decrease of all-natural impressions set off by the store network by declining asset and energy creation notwithstanding the fundamental capacity of the production network framework

Closed-Loop Cycle:

Green inventory network changes over the material development into a closed circle cycle by injecting reprocessing to the conventional production network. This reprocessing interaction upsurges the proportion of assets used as well as reduces both the expenses and the ecological impression of merchandise that has completed its development

Amalgamation:

Green production network sees natural safeguarding as the arranged point of the whole framework. In this manner, GSCM needs a mixture more than the old-style inventory network does.

III. GREEN SUPPLY CHAIN MANAGEMENT COMPONENTS

Srivastava (2007) quantified that green supply network comprises green design, green buying, green manufacture, green dispersal, logistics marketing, and converse logistics activities stated that GSCM applies to comprise all phases of the merchandise lifespan such as purchasing, production, delivery, use, and dumping of goods. GSCM practices host

various activities like design, stream, manufacturing, mustering, packaging, logistics, and distribution.

Zhu and Sarkis' (2004) study are one of the main studies that focused on green production network the board reviews of a different facet GSCM In light of the factor examination the researcher explored the green store network of the executives with regards to four measurements: inside natural administration, outside rehearses, eco-plan, and venture recovery.

The researcher assessed the component of collaboration with buyers in ecological issues and green buying in a solitary measurement called outside rehearses. In future examinations, the researcher analyzed GSCM with 5 measurements and in this unique situation, green buying and participation with purchasers in natural issues were inspected in discrete measurements Zhou Sarkis examined GSCM in three measurements: inbound capacity measurement including green buying exercises, green creation measurement, and outbound capacity measurement including green showcasing climate well-disposed bundling, and harmless to the ecosystem dissemination and reusing exercises. Another investigation that inspected GSCM by utilizing different measurements was led by Shang et al. (2010). The researcher isolated green practices into six classifications. The first is green creation and bundling measurement which incorporates decrease of squanders and unsafe substances, choice of clean vehicle strategies, and utilization of recyclable and reusable bundling. The subsequent measurement is the natural investment measurement which incorporates the development of an ecological administration framework and arrangement of natural preparing programs for the representatives. The third measurement, green promoting, includes sponsorship exercises identified with the climate, ecological marking, and remembering refreshes for the organization site about natural issues. The fourth measurement is a green provider which comprises practices, for example, participation with the provider about ecological issues and determination of the provider dependent on natural models. the fifth measurement consists of extra scrap and thrown-out material.

A. Green Buying

GB is defined as an environmentally conscious buying initiative that attempts to ensure that bought products or materials encounter environmental purposes set by the buying firm, such as Depleting the sources of wastage, promoting, reprocessing, recycle, resource reduction, and replacement of materials. GB certifies that acquiring or supply chain managers

echo the question of sustainability in the buying of inputs, as compare to the outdated purchasing standards of price, quality, and transport.

B. Green Design (Eco -Design)

It is the method of planning an item or help that rouses natural mindfulness. Fiksel (1996) contends that Firms can become eco-accommodating to item Re-assembling. Heavyweight businesses that have complicated stockpile chains should mull over the backings of converse coordination. Researcher, for the most part, stressed over item execution should produce into account additionally the results of configuration subtleties on energy/material necessities for assembling, use (repairability, Manufacturability, and Recyclability) For better manageability Redesigned items may be compelling on the off chance that they can offer in any event the administrations of the items they supplant. By outspreading the helpful existence of gear objects, additional crude materials are not needed to create new things. Plan and foster recoverable merchandise, which are stringently solid, over and again functional, innocuously recoverable after use, and naturally appropriate in the removal.

C. Green Manufacturing

Green manufacturing is one of the utmost significant phases in green supply chain happenings. Green manufacturing is implementing and planning the production technologies and developments that will guarantee using a lesser amount of energy and resources and result in negligible environmental pollution. Green manufacturing targets to certify the ongoing growth of industrial processes and products to avert or minimize air, soil, and water pollution. In short, green manufacturing aims to give environmentally friendly goods with the smallest volume of resources (materials, energy, and water) and waste. Green production may enable reducing the price for raw materials, increasing manufacturing productivity, and dropping environmental costs and prices associated with work-related protection. Practices that can be employed about the green manufacturing process are

Reducing Input Resource:

Green production can be expected as a natural arrangement utilized by the firm to upsurge the ecological efficiency by diminishing info assets to secure a similar yield. These doing will foster both the financial and ecological exhibitions of firms. Practices to diminish input assets can be named as allotting a supervisor that will be responsible for energy and wanting green electric force sources and creating energy efficiency

Reducing Hazardous Emissions:

Waste management and greenhouse gas secretions are basic complications these days. Greenhouse gas emissions generally contain carbon dioxide which will leave a huge amount carbon footprint If I will have to give data on carbon footprint it is very shocking in production of one mobile phone causes 76 kg of carbon if you assume a man life of 70 year and average mobile phone runs for 3 years and a boy got his first mobile phone at the age of 12 years than for 58 years we are generating 1500 kg of CO₂ and I am not accounting the carbon generation in between the life span of one mobile phone and they are millions of phone in the market so we can't imagine the consequences Researchers mostly focus on CO₂ emissions because CO₂ emissions have considerably increased as a result of human activities and global warming has become a threat.

Reducing or Preventing Waste:

Lessening the measure of waste is significant for green creation. As of late, firms have zeroed in on discarding the waste employing practices, for example, reuse and reuse. People throw a large number of huge loads of mobile phones every year. Electronic pieces represent 70% of the by and large harmful material presently discovered landfill in The U.S.A alone according to the (EPA) Environmental Protection Agency most mobile phones contain valuable metals and plastics that can be reused to save energy and assets that would somehow be needed to mine or fabricate. At the point when set in a landfill, these materials can dirty the air and sully soil and drinking water. Wireless coatings are ordinarily made of lead which is a harmful substance that can bring about unfavourable wellbeing impacts when presented to it significant level. The circuit board on PDAs can be made of copper, gold, lead, zinc, beryllium, tantalum, coltan, and other crude materials that would require critical assets to mine and fabricate. This is the reason it is critical to reuse old phones and source these inexorably scant materials at whatever point conceivable.

D. Green Transportation

The prevalent practice of Green transference has an extra scope within the distribution of merchandise, because it disturbs the standard of air, resulting in extra noise pollution. It further will increase the probabilities of severe automobile accidents followed by its important contribution to global warming. In line with Stern, in 2000, the transportation's share in the emission of world greenhouse emission was 14% that keep on filling in the succeeding years. In any case, following the progression in internet business and customer requests, huge development in product transportation has been noticed. This

has brought about the essential dispersion of exercises that gives great answers for the scaled-down carbon impression of companies that adversely affect the full costs yet as on singular lives in line with, the characteristics related to transportation are usually influenced by various factors resembling shape, size, and materials. These factors are further vital as they produce a major impact on the distribution process. However, higher and strategically developed location patterns alongside better packaging could function as a prompt resolution to beat this impact, leading to a reduction in volume and upsurge in space. The construct of Green distribution is often classified beneath 2 categories, i.e., Green packaging and green logistics to cut back the price of transportation and environmental risks, the standard of supply chain processes is increased through transportation modes resembling intermodal and multimodal transportation. Inter-model transportation involves multiple modes to move merchandise such as trucks, water, and so forth several administrations have shown strong attention in approving intermodal transportation within which goods are transported through totally different mediums of transportation. This method of transference in supply chain administration has collective to produce the advantages such as potency in rail transport and adaptability in road cargo. The purposes of intermodal transference are to cut back the emission of carbon footprint and total transportation price and to switch road congestion. Inter-model transportation has decreased a significant amount of carbon released as compared to alternative modes of transportation. Multimodal transportation is sort of almost like intermodal transport because it connects numerous transportation modes in an exceedingly single method that ensures the cost-efficiency in door-to-door merchandise movement beneath one service supplier. The sole distinction in each mode is that the range of components is encumbered for distribution. There are more varieties of internal and external transportations, which express as follow:

Airfreight:

Air transport is the costliest yet the speediest freighting administration among any remaining transportation types. It diminishes the hour of merchandise conveyed to the doorsteps and is regularly liked to move the most important products to the market. Sack sends, bundles gauging 30 kg, and any record that could be brought through an individual are sorted as the littlest method of transportation. All around the world air payload is acquiring an expanding part in the global inventory network and coordination. Because of the significant expense of air payload, most associations utilize this model as a

strengthening transportation administration for the shipment of basic and critically required merchandise.

Roadways Shipment:

Roadway transportation is moderately the most utilized kind of transportation to convey merchandise through trucks, trucks, and fishing boats. This is the most adaptable mode, however, it can't be worked outside the road. Road freighting is utilized by associations where the fast appropriation of light-weighted merchandise needs shipment in compact groups. Road transportation has gotten testing as it has high support expenses of both transporter framework and other fixing costs and further influences natural solidness.

Railway Shipment:

Rail route transportation is moderately the least expensive and the least ecologically unsafe method of delivering merchandise at separate places. Universally, China is perceived as among the best rail line specialist co-ops. The rail line arrangement of China contributes 100% of transportation productivity to web-based showcasing and item conveyance. Rail route transportation offers gifted options in contrast to street cargo since its activities are part of the way lower cost and charged which is financially and naturally useful]. As indicated by Romanow], rail route cargo, despite its expense productive help, actually needs ideal transfer conveyances. In this way, it is seen that without the sufficient and important improvement in rail line frameworks, seeking after shoppers would be testing.

Sea Shipment:

Since 1990, the worldwide exchange happens through sea cargo; this method of shipment has ascended to 65% which has driven the strategic administrators with critical difficulties in the determination of transporter to move products. As indicated by Dettmer the paces of transportations with the classification of containerized items have been diminished dramatically since the most recent decade, making sea cargo the least expensive method of moving items. Analysts, for example, Waller, Meixell, and Norbis stated that about 0% of the cargo is shipped using the sea as 25% of weighty items are conveyed to worldwide objections. The most widely recognized sea loads incorporate holder ships, payload vessels, oil tanks, mass transporters, and general freight ships. In a worldwide coordination sea, payload vessels move ports to ports and are specific for quick stacking and dumping of the merchandise.

Pipeline:

One of the significant methods of transportation that have not been given sufficient consideration is the utilization of the

pipeline, which represents around \$53 billion in expenses in the year 2018, explicitly in the United States. The expanded creation of oil and gas has expanded the utilization of pipelines in the transmission of flammable gas and oil. This has additionally expanded the requirement for interests in the given region. The investigation demonstrated that the utilization of pipelines as the method of transportation is restricted is as yet perceived as a little market in contrast with the general size of the given method of transportation.

E. Green Packing

Packaging design is important for reaching a firm's environmental purposes. Though it aids certain requirements connected largely to the circulation of the merchandise, it is not a portion of the real facility offered by the merchandise. In any case, it disturbs the environment in many facets. The following principles may apply regarding packaging. Limit packaging to the needed dimensions and Design packaging for renewal or recycling.

Types of Packaging:

Primary Packaging: It is the principle bundling that unswervingly encompasses the item. Plastics containers of the cleanser, metal containers of toothpaste, and milk jug can be given as representations of that kind of bundling.

Secondary Packaging: It is the packaging that guards the primary packaging which is not kept once the product is in use so it goes to waste Carton containers that hold toothpaste tubes are the best examples of that type of packaging

Transport Packaging (Loading and Distribution): These are bundles, boxes, containers, cases, carts, and compartments that assistance stockpiling, conveying, and recognizable proof these are mostly utilized in online businesses like Amazon and Flipkart.

F. Closed-loop logistic:

Reuse: Products should be reuse if possible, to reduce environmental complications.

Repair: It includes revamping the parts of the product that are non-functional

Refurbishing: It is the method of restoring the quality standards to reuse this good.

Remanufacturing: The item when taken to pieces in this alternative. The parts that can be utilized are dressed and changed. At that point, the new item is accumulated again from the old parts and, when essential, new parts.

Cannibalization: It includes collecting some parts of the already secondhand product for repairing, refurbishing, and remanufacturing.

Reprocessing: It incorporates assortment, dismantling (when fundamental), order into exact gatherings (like paper and glass), and consideration of already utilized items in the manufacturing cycle again after different actions It is reusing without saving the construction of the item. Glass, paper, and plastic can be given as instances of materials that are reused.

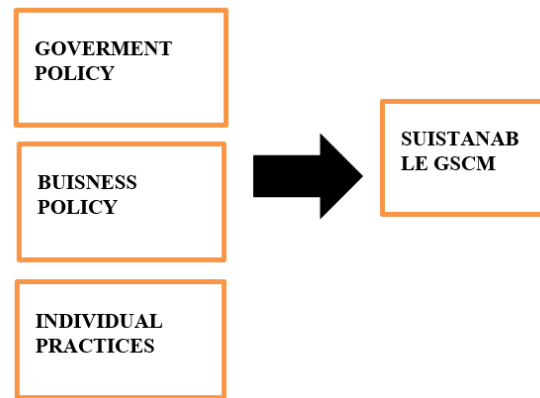


Fig.1. My inputs to Resuscitating and implementing green logistic

It should be done at three-level to achieve sustainability.

Government Policy:

Government involvement for the right assessing, incentivizing it, placing down the new regulation, and imposing them is compulsory to get the desired result government can exempt some road taxes and tolls for electrically driven vehicles it will create a competitive market for industries to get into the green concept and this will surely create an impact on CO₂ emission in the long run If the vehicles under heavy-duty are used in logistics so if some percent is converted into electric vehicles, we can get depletion of CO₂ in the large amount.

Business Policy:

Industries should promote renewable energy for their internal usage this can be done in different ways:

Smartly Situated Inventory: effectively placed stock is a demonstrated method to support effectiveness and usefulness since it expects laborers to invest less energy. Accordingly, the workforce will have more opportunities to focus on different things and increment usefulness, which additionally implies

tasks will be done quicker. Subsequently, the benefit will likewise soar because of this philosophy.

Power Management with Automation: The most ideal approach to bring down utilization is to oversee it. Energy the board frameworks independently administer every one of the utilities one office utilizes absent a lot of human intercessions. With the mix of clocks, indoor regulators, and checks for all types of power, gas, warmth, and water, energy management frameworks infer the prescribed procedures to utilize what is required without unreasonable waste. This is a key part of eco-accommodating frameworks since it assists organizations with bringing down the use of sustainable assets while additionally putting more cashback in their pockets.

Electric Lift Truck: The battery lift truck wipes out the requirement for gas and oil. In addition to the fact that this is useful for the climate, it is more secure for workers. Staff presently don't have to open themselves to risky synthetic compounds, for example, sulfuric acid, radiator fluid. This can slice the degree of injury identified with risky materials taking care of, which, thus, drives up the primary concern. Electric forklifts are as their name involves: essentially plug them in when the activity.

Drones: The big e-commerce firms can use drones for delivering their goods to consumers this can save a huge amount of energy and carbon emission as we are entering into an era of artificial intelligence this can be near possible for firms for achieving high productivity and less error in their functioning.

Individual Practices:

One of the most important factors for GSCM to come under our society is practice at an individual level we need to change our viewpoint toward any goods we should look for e-certificates, e-stamps while taking any product this will create the atmosphere for every company to come under green practices We should look for smart disposal rather than dumping it into landfills.

We can participate in reverse logistics for the firms by taking care of the unused product and giving it back to the firms which remanufacture, recycle this product.

IV. CONCLUSION

GSCM is right on the way to take over the old logistics but the problem is the pace at which it is taking over is not comparable to the rate of environmental degradation so we need to move as fast as conceivable to new coordination before it is past the

point of no return. Likewise, with the help of green inventory network the board, organizations ensure that the merchandise they fabricate cause the base mischief to the climate during the entire item life expectancy cycle through green purchasing, green plan, internal ecological administration, green assembling, harmless to the ecosystem bundling, and green transportation. Switch coordination exercises, for example, reuse, remanufacture, and reuse that are utilized toward the finish of an item's life cycle add to the manageability of items.

The purpose of this paper is to provide you with a comprehensive overview of green logistics. This paper has two basic sections first one is previously researched by different authors and the second one is a way forward by which we can cooperate with GSCM in our daily lifestyle.

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