

**GREEN SUPPLY CHAIN MODEL: OVERVIEW,  
ISSUES AND IMPACT OF GREEN SUPPLY  
CHAIN MANAGEMENT IN INDIA**

## **Abstract**

The research has helped me with more insight of Green supply chain management in India. In the research the Green supply chain model is discussed also includes the impact it has on the organisations, the issues and challenges associated with the implementation of Green supply chain management in different industries. The key outcome of the research can improve the entire business and improve environmental components. The research study is an evidence that Green supply chain model is a sustainable model that can be adopted by the supply chain operations of the business industries in India for achieving better economic and social benefit. Data collection has also been conducted with appropriate research approaches and based on the data collected the relevant findings have been drawn and has been linked with the objectives of the research in the last chapter.

### **Acknowledgement**

This work would not have been possible without my academic guide who helped and guided me with his knowledge and relevant updated information. Such guidance has been a source of inspiration and has helped me throughout this research. It was a great honour to work under his supervision. Finally, nobody has been more important to me in the pursuit of this project than the members of my family. I would like to thank my parents; whose love and guidance are with me in whatever I pursue they are the ultimate role models also not leaving my friends who were so supportive and helped me with the completion of my research.

## **Declaration**

I declare that this thesis entitled **Green Supply Chain Model: Overview, Issues and Impact Of Green Supply Chain Management In India** is the result of my own research except as cited in the references. The research is authentic and has used external resources for convenience and conducting the research.

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## CHAPTER 1: INTRODUCTION

### 1.1 INTRODUCTION

Environmental issues especially climate change and global warming is the biggest threat to the business area as the public is becoming more concerned regarding product choice. Sustainability issue of the product is now one of the major elements of product quality assessment from the consumer perspective. In such case, additional of a clean and unharmed product manufacturing and Supply chain is the key criteria for organisations. As an initiation to this model, organisations are transforming with a clear goal through internal changes in the product manufacturing and supply chain areas. Distribution and governance for raw material allocation and purchase is another part of the supply chain management, which needs a complete transformation (Chin, Tat and Sulaiman, 2015).

In this study, the GSC model will be discussed and its impact will be analysed on Indian organisations for supply chain improvement. Data collection for this study and further analysis will be the most crucial area as this will relate to the research objectives. The research aim is to identify issues, which can be obtained from real data collected from workers, suppliers or management areas involved with the transformational stage. Impact of this GSCM can be analysed from customer responses regarding a Greener supply chain and association of companies in this transformational process.

### 1.2 BACKGROUND OF THE STUDY

Green Supply chain is the most profitable and dependable solution to such a phenomenon, which is being included by most of the business organisations in order to remain unharmed in this awareness situation. It can be considered as a link between the cleaner manufacturing process and environmental performance of a company. Development of GSCM needs holistic, methodological and structural changes leading to the consensus and transformation of the practices in the business area (KRC, 2018). Engagement and activity of suppliers, vendors are also needed in the green supply chain management as this can direct towards sustainability initiative with organisational objectives. Significance of this study relates to the greener supply chain activation and reorganizing the business components as per Indian business areas. Data

collection from the managers through interview and survey conducted among customers can lead to a clear perspective of Indian companies to implement and measure GSCM initiative

### 1.3 SIGNIFICANCE OF THE STUDY

Dedication to the supply chain sustainability and description of the actions followed in the newly formed initiatives can lead to a change model. As per a report, 23% of supplier respondent is engaged with suppliers for reduction of carbon emission, financial savings through business opportunities and reporting changes with a goal of sustainability. Organisations are reconfirming shipping and material packaging with transportation mediums for strengthening GSM.

Material disposed and association of proper handling can lead to waste minimization and changes in the company's value based on sustainability. India is also advancing towards this change management model due to the presence of dense business areas with a conventional business approach. Improvement of workers, suppliers and management is needed in case of India as this deal with transforming business areas with sustainability, quality, trustworthiness and forward-thinking approach from the company's core area. Change management handed by the managers and product changes seen by the customers will be evaluated in this study, which can lead to sustainability.

### 1.4 RESEARCH AIM

There has been rapid growth and development in the industries of India, which are associated with various sectors of the country including manufacturing, chemical, IT services and several others. All these have brought serious challenges in the security of energy resources of various industries in the country. Regarding this, quite a few companies in the country have environmentally friendly policies that have been issued by the government of the country so that CSRs can be practiced by them (Govindan et al. 2016).

Most of the Indian industries are not concerned about the changing environmental situations due to their operational activities. For this, the GSCM is an effective initiative for balancing

the economy along with the environmental concern of the Indian companies also that they can ensure sustainable practices in their activities.

Moreover, this is required for realising various benefits associated with eco-friendly management of their supply chains. With the increased awareness regarding the adverse environmental situations witnessed by the country, it is required for various industries in recognising and applying green purchasing procedure along with eco-design in every aspect of their operations (Vanalle et al. 2017). Hence, the use of GSCM can be a systematic and beneficial approach for the Indian industries for helping them out in delivering best sustainable practices with their business activities.

It makes the current study to highlight all the potential applications of GSCM procedure in the Indian industries along with identifying the potential impacts and issues associated with such applications on the industries. Regarding this, a brief overview of the GSCM technique that will be applicable for the Indian industries can be revealed in the current study so that the concept can become clearer for releasing its use in the industries (Ali et al. 2017). This will help in further evaluating the implementations of GSCM in the operations of the Indian industries so that maximum number of benefits can be pertained from their activities. Such situations can be implied from the impacts of its use, which can also reveal the operational facilitations of the industry (Abdel-Baset, Chang and Gamal, 2019). Lastly, the objective of the current study is to focus on the associated issues, problems and challenges that the industries are facing with the use of GSCM practice.

With making considerations of the facts that have been mentioned, the key aim of the current study is to evaluate the use of GSCM in the management process of the Indian industries and the possible impacts and issues of this practices on the operational outcomes of such industries.

## 1.5 RESEARCH OBJECTIVE

The key objectives based on which the entire research work will be conducted can be:

- To identify the ways in which the GSCM approach has taken shape in the Indian industries.

- To identify the strategies associated with the implementation of GSCM in Indian industries.
- To analyse the current situation and possible impacts of the Indian industries regarding the use of GSCM.
- To critically evaluate the possible issues and challenges associated with the use of GSCM in the Indian industries.

All the research objectives will be undertaken by making SMART decisions so that the concerned objectives can be identified as specific, measurable, achievable, realistic, and time-bound. The objectives can be said specific based on their applicability as per the key aim of the research. For fulfilling the research aim, specific points have been chosen for developing the research objectives.

The objectives are measurable in terms of the research process, as all of them will be evaluated with the help of interviews and surveys, which implies that the research is based on a primary and quantitative research method. The objectives can be termed as achievable for the effectiveness with which they will be met in the research with the help of relevant theories and primary research work. The research objectives will be realistic for the study, as they will be based on the indication of real facts from the current situations of the Indian industries.

The facts will be procured from the primary research conducted for the current work. Moreover, the mentioned objectives can also be termed as time-bound based on the conduction of research work, where there will be time limits. Required data and information will be gathered within the provided time limits based on a certain period, thus making the objectives time-bound for the study.

## 1.6 RESEARCH JUSTIFICATION

The objections that have been undertaken for the current research can be directed with the key facts in the literature review of the current study. The literature review considers all the associated factors with the current study highlights the key concepts of the current Indian industries, the concept of GSCM, application of the GSCM in the operations of the Indian industries and the key benefits and limitations of the same. Regarding this, the key identified

objectives are having strong relations with the contents of the literature review, which will be conducted depending on the objectives identified for the study.

The first objective ever mentions the analysis of the ways the concerned GSCM has made the Indian industries to change, which can be linked with the terms used in the literature review for describing the current industry situations of the country. It will help in evaluating the situations while implementing GSCM in their operations. The key strategies used in the GSCM approach can be identified from the analysis of the concept of GSCM, which can be used in the literature review of the current study.

The key strategies associated with the concerned approach can also be highlighted in the theories and models used for the approach, which can also be evaluated with the help of the literature review portion. Further, the objective regarding the current position and possible impacts of using the GSCM practice by the Indian industries can be linked with the benefits of using this approach for the industries.

The last objective mentioning the issues and challenges that will be evaluated in the concerned research can be associated with the drawbacks of the GSCM approach that can be also highlighted in the literature review part of the study. Hence, justifications can be identified for the study depending on the practicability of the research objectives that can be embedded with the key highlights in its literature review.

## CHAPTER 2: LITERATURE REVIEW

### 2.1 INDIAN INDUSTRIES

The economy of India is greatly driven by the industries, which mostly comprise the private sector. At a glance, it can be seen that there are more than 500 private companies in the country, which are together generating nearly 90% of the overall market capitalisation along with being responsible for the economic contribution of the country. With this, the total contribution of these industries to the GDP growth of the country was nearly 62.6% in 2012, which has been possible with the rapid growth of this sector (economywatch.com, 2013). In the current years, the Indian industries are playing a vital role in the economic development of the country, which is having significant contribution to the country's GDP and its growth, investments, trade and employment.

Currently, the industrial sector of India is making about 18% of the country GDP, along with contributing 19% for the employment of human resources (economywatch.com, 2013). The major industries responsible for this in the country are manufacturing companies, cement, machinery, steel, transportation equipment, food processing, chemicals, IT, communication and software, petroleum, mining, and pharmaceuticals. With the rising operations of these industries, there are also requirements of sustainable practices of these industries for making generous contributions for the protection of the environment.

This is because with the increase in their development, the environment and its resources are getting depleted gradually. Hence, this created the increased requirement of applying eco-friendly practices for meeting the environmental requirements in their business process, for which GSCM has been considered as an important approach.

### 2.2 GSCM APPROACH TAKING SHAPE IN INDIAN INDUSTRY

Schöggl *et al.* (2016) have explained GSCM can become a source of competitive advantage for the Indian business organizations by improving the environmental sustainability and

performance of the business. Sustainable supply chain business objectives are becoming more vital in the Indian Industries and emphasis is given upon value for money, bottom line and risk delivery time. Ahmed *et al.* (2018) have argued that Indian industries continue to use toxic material in the packaging and transportation practices and this has largely affected the environmental damage and reduced the sustainable goals of the business.

However, with the effective approaches and implementation of the GSCM in the business practices from material acquisitions to manufacturing, logistics, packaging and distribution can be effectively done through the new technology. GSCM not only helps in reducing environmental waste and carbon emission from the Industrial activities and operations, but it also helps in improving the performance level of the business that helps in protecting the environment.

Due to the environmental regulations as well as the growing demand for the eco-friendly goods and products, environmental issues are becoming non-tariff barriers for the exporters. Schöggl *et al.* (2016) have identified that in the Indian manufacturing industries green manufacturing process has taken a recent entry that reduces the environmental impact with zero waste and pollution and helps in lowering down the raw material cost and increasing the production efficiency gains. Sharma *et al.* (2017) have further explained that the Indian IT sector is adopting GSCM approaches that enable the Indian software market to develop strongly. Ahmed *et al.* (2018) have stated that wastes generated from the electronic devices and household appliances are managed through reverse logistic and electronic products so that it can be reused and recycled for sustainable growth and development. On the other hand, the implementation of the Green Distribution process in packaging and Reverse Logistics supply chain have created a strong impact on the transportation of goods and services.

### 2.3 GSCM PRACTICE

The practices of green supply chain management are associated with the integration of the external and internal resource requirements of an organisation. This reveals the association of green approaches that are environmentally friendly so that the entire supply chain of an organisation can be made greener (Abdel-Baset, Chang and Gamal, 2019). GSCM is

responsible for cutting across the boundaries regulating the supply chain of an organisation so that the environmental issues and drawbacks can be identified in the upstream and downstream supply chain process.

However, it is not applicable successfully without the removal of the environmental issues identified in the resource procuring, manufacturing and production, storage, transportation, packaging, disposal, and other product management activities (Luthra, Garg and Haleem, 2016).

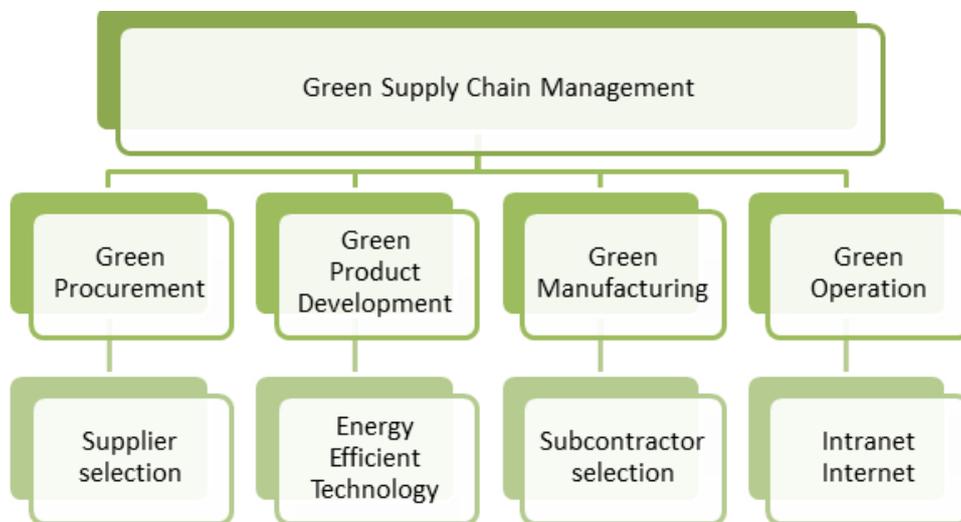


Figure 1: GSCM Model

(Source: Singh, Singh and Sinha, 2017)

The major environmental issues that can be identified associated with any organisation are quite detrimental for generating harmful effects to the surrounding environment. It is quite common for various organisations in generating harmful and toxic chemicals, generation of large quantity waste from packaging and transportation activities, and other means that are also contributing to the current global warming of the environment (de Oliveira et al. 2018). With the proper application of this approach, it can help in enhancing the process used by the supply chain partners for creating integrations with the environmental concerns so that the competitive advantage of any organisation can be increased.

## 2.4 IMPLEMENTATION OF GSCM IN INDIAN INDUSTRIES

In India, resource scarcity, increased pressure in the internal business procedures, and pressure from the government in creating green products while using green production techniques has created the industries to adopt major principles that can manage the environment effectively. However, through some past studies, it has been revealed that the concerned approach has only been adopted by manufacturing, automobiles, and chemical industries (Raman, 2014).

The non-compliance of such approach is lack of initiative from the end of the local along with the central government, lack of managerial and customers' awareness, customer unwillingness in paying appropriate pieces required for producing greener products, restricted policies of organisations, and various others (Singh, Singh and Sinha, 2017). Moreover, there are not appropriate policies from the view of the government of the country regarding strict application of GSCM by various industries of the country.

For this, the country has been one of the major countries globally contributing to the environmental degradation for generation of harmful gases and waste products. This requires the government to be alert grading the current problem along with the companies so that environmental changes can be made successfully with the help of GSCM. Hence, it is now high time for the Indian industries to focus on the GSCM approach for creating a better environment for the future.

## 2.5 CRITICAL ANALYSIS

The above sections of the literature were reviewed to ensure that recognition of a myriad of strategies has been acknowledged to support the operations at the Indian Industries. Based on the use of relevant keywords, the literature search was conducted and cultivated to encourage the application of innovative mechanisms to support the incorporation of Green Supply Chain Management prerogatives within the Indian Industries (Sachdeva et al. 2015).

Focusing on the credible nuances of the implementation process of GSCM, it has been evident that a categorized search in terms of identified subsections pointing towards the identification

of non-members of supply chain, downward stream supply chain members, organizational perspective, and upward stream supply chain members; and some subgroups like Innovative green practices implementation, Top management perspective have been taken into account to have a clear visionary comprehension about the implementation process (Sellitto et al.2015).

The exponential propositions in terms of addressing the key facets of implementing a robust and visible supply chain process are rationalized by the implications of complying with the changes in the legal and governmental regulations and prerogatives. Corresponding, the International environmental agreements, likely the Kyoto agreement, the Climate Change Treaty, and the Montreal Protocol, the Indian Industries, especially the manufacturing sector companies are deeply affected by the reformations and modifications in the implementation process of GSCM (Chiappetta Jabbour et al.2017). With the formulation of varied acts and trade international trade agreements along with locking in concepts of addressing the sustainable development goals, suggested by the United Nations, the Indian Industries need to rest assured on applying the sustainable models, evaluating the regressive aspects of the application to support the safety of the environment.

The studies by Sachdeva et al. (2015) reveal that complying with the governmental regulations in greening the supply chain processes with a bigger emphasis on the visibility of each stage of the operation is given the utmost priority. According to the latest policies by the government of India along with other nations with whom India transacts business defines the vitality of prohibiting the production of goods using environmentally destructive materials and contaminating processes to harm the ecological balance of the atmosphere (Jayant, 2016).

Multiple governing bodies have taken the principle responsibility of conducting periodic reviews and evaluations to ensure that the compliance and security process is taken into account for better visibility and conduction of greener supply chain processes. The Ministry of Environment and Forests; Ministry of Water Resources; Ministry of Earth Sciences and Ministry of Science and Technology play a direct role in dealing with the greener issues in the environment and empowers organizations to develop their ideas on finding innovative strategies of effective GSCM implementation (Scur and Barbosa, 2017).

Under each of the ministries, are the local and regional Departments/Boards/Councils, like Central Pollution Control Board that actively work on sustaining the greener supply chain processes for the diverse business entities in the nation. Apart from strategically finding on the key roles played exceptionally by the governmental organizations, needs to involve the suppliers to engage in greener processes of sourcing and procurement are also acknowledged and appreciated.

The Indian Industries who decide to migrate from a conventional approach of work to a more tacit and greener system approach focuses on locating those suppliers who hold the best record in the market in terms of supplying environmentally friendly raw materials and have a record of causing the least harm on the environment (Tyagi et al.2015). These suppliers are selected based on their abilities to analyse and evaluate the best fields, from where the best and most sustainable raw material can be sourced at the most reasonable price and without compromising on the quality. This can be accomplished through a strong relationship with the green suppliers and shall automatically strategize the entire process to lower down the inventory level, cost, and guarantee higher accuracy.

Apart from relying on the external strategies to inculcate a healthy process of GSCM across the Indian Industries, an internal analysis is also done to ensure that the personnel involved in dealing with the process possesses enough skill and mettle to address the required issues (Agyemang et al.2018). Adequate training and updating programs are taken into consideration to corroborate a robust and well-calibrated approach in allowing the people involved in the GSCM process implementation can participate and augment the quality of the entire process. These training programs act as internal strategies to empower both employees and the suppliers of the companies and Industries to develop an idea about the sustainability of the supply chain process. The training programs act as milestones, marking the growth in the knowledge of every employee through proper channelization and dissemination of the information across all sections (Bharti et al.2015).

In consideration of all these factors, the technology factor certainly does not stay behind. Rather it acts as one the biggest catalysts in the processes of GSCM in Indian Industries, as it ignites the fervour for accepting the need to deliver environmental safety of the customers

along with sustaining the quality of the products and services. The incorporation of innovative technologies, likely, Artificial Intelligence, Blockchain, Robotic Automation, and RFID are some of the most sought-after technologies when it comes to keeping vigilance on the processes of the supply chain (Gardaset al.2019). The application of RFID and Blockchain helps in maintaining better visibility in the process of evaluation of stage of the supply chain and thereby abstains from any kind of loopholes that might impact the entire process and compromise on the quality of the system.

## 2.6 BENEFITS AND DRAWBACKS

GSCM practice is having several benefits for the industries and organisations who are implementing this in their operations. Sustainability of organisational resources can be maintained with effective and appropriate usage of the available resources (Abdel-Baset, Chang and Gamal, 2019). The entire decision-making process of an organisation can be exchanged with GSCM, thus taking initiative for the procurements of green material. The use of GSCM can also be effective in lowering the production costs of the organisation along with increasing production efficiency.

This is possible through less generation of waste and utilization of resources effectively so that the costs can be reduced. Such factors initiate product differentiation for the organisations in order to achieve competitive advantages in the long-term business activities (Singh and Trivedi, 2016). Moreover, product differentiation leads to improved quality of products and services, thus benefiting the business.

It can also be noted that the GSCM approach is also having some limitations during its implementation process, which discourages various companies from using this. The most critical drawback is the increase in costs, which is required for its implementation. It also required proper technologies for tech companies, which is not also possible issue to the increased costs of such an application process. There is a lack of green attributes, consultants, architects, and developers, which can encourage and increase the initiation of the companies in

adopting the practices of GSCM (Abdel-Baset, Chang and Gamal, 2019). Moreover, as one of the important aspects of GSCM is recycling waste products, it is quite challenging for different companies in making integration with the waste due to availability of raw material.

## 2.7 SME'S PARTICIPATION FOR GSCM IMPLEMENTATION IN INDIA

According to the findings of the Indian waste management portal, it has been found that approximately 50% of the total pollution is caused in the country out of Industrial waste. The Research by the Indian Government has found as many as 20 sections of Industries that are highly polluting and engage in industrial activities that contaminate the environment badly. Out of all the Industrial classifications, 24 industries are said to have caused the biggest amount of pollution within the entire nation (Kumar et al.2018). The most precedential companies are manufacturing companies, electrical goods companies, and Chemical and engineering companies.

These companies are said to produce the maximum amount of pollution in terms of causing harm to the environment. The current statistics of the Indian Industries state that the most notable industries in regards to causing the highest damage on the ecological balance are through iron and steel plants, non-ferrous metallurgical units, pharmaceutical, and petrochemical complexes, fertilizers and pesticide plants, thermal power plants, textiles, pulp and paper, tanneries and chloralkali units (Gandhi et al.2018). According to the survey results of 2006, it has been found that the small and medium scale companies, especially the SMEs that accounted for a 40% of total gross production deployed the least pollution and contamination control strategies and accounted to estimated pollution of a total of 70% across the nation. Considering India to be the fourth largest economies in the world, the country is equally marked as the fifth largest global Green House Gasses (GHG) emitter.

The current statistics from the Indian Pollution control board show that with the increase in innovative technologies, there has been an increase in the emission of technical waste (Mafini and Loury-Okoumba, 2018). The years between 1990 and 2008 showed that India was one of the nations among others whose carbon dioxide emission had raised by 1.5 times more than it was before 1990. Competing with China in the race, Indian Industries stood at the second

position after China to have emitted Greenhouse gases causing heavy damages to the environment.

As stated earlier, the form of waste emission has now shifted from mere industrial wastes to e-wastes. With the process of rapid industrialization, the amounts of wastes have now taken the shape of electronic wastes and emit as much as 4 million tonnes every day (Vijayvargyet al.2017). Out of the staggering 4 million waste emission, only 3% of the wastes that are emitted are sent for proper recycling.

Therefore, looking at the current status of waste emission by the Indian Industries, there is a prioritized need to call for a robust GSCM implementation strategy to ensure that the procurement and supply chain process is conducted using the greener approach. Corresponding, the occupancy of the Retail sector to be an integral part of the current Indian economy, it needs to be stated that the need to have a proper framework of GSCM is appreciated. India has recently emerged as one of the most desirable retail destinations for many international brands and the trade is expected to grow by 15% to 20% per year with a penetration percentage of just 8% (Thanki and Thakkar, 2018).

The intrusion of e-commerce brands like Amazon, e-Bay has led a huge pressure on the procurement and supply chain process. Therefore, the need to accept and incorporate the GSCM framework is a necessity to corroborate the sustainability and safety of the environment. Apart from the Retail sector, the manufacturing sector also accounts for 16% of the total national GDP and is expected to rise to 25% by the end of 2022. International trade relations with southeast Asian nations and European nations like Germany, France, and Poland have led to vehement enhancement in the manufacturing sector (Epho and Mafini, 2018). Distinguishing between the SMEs and the large-scale companies, it needs to be stated that India faces issues in the implementation of the GSCM process, specifically in regards to the SMEs.

The SMEs are comparatively smaller in number with the limited scope of operation and financial investment and support. Some of the biggest challenges of these SMEs are the rising input costs, including energy costs, unavailability of resources, poor logistics management, and

lack of skilled labour force. These are challenges that have led to a less efficient system to implement the GSCM process. Hence, the need to develop better and effective strategies to ensure that the process of GSCM is implemented across the Indian Industries, suggestions to carry out with cost rationalizations by the greening of supply chains within the SMEs need to be taken into more serious accounts (Niemann et al.2018).

This process shall allow the Indian SMEs to migrate from the conventional ways of operation into a more defined and innovative process that would not only lead to value chain creation and tap proper prices for the goods and services to serve the need of the supply and procurement system. This phenomenon is equally applicable to large sector companies as well who need to develop well-calibrated approaches to corroborate the use of finances to back up the GSCM process (Jain, 2017). On the contrary, it has been noted that many companies have taken into account the need to develop mechanisms of incorporating the GSCM process, despite having a dearth of resources and provisions. India's Environmental Performance Index (EPI) rank in the year 2012 showed that the country stood at 125<sup>th</sup> position in the list of 132 nations. The poor ranking of the nation debunked the hypothetical explanations of having support but due to lack of skills and management power, the inability of the implementing GSCM is established (Balonet al.2016).

This raised multiple questions on the applicability of the Indian legal system and regulations in terms of incorporating a GSCM process for safer procurement and supply chain. Based on the findings and the lower rankings, the current policies for implementing a robust GSCM system has been recognized to ensure that the Indian Industries climbs the up the ladder of ranking and can refrain from emitting such highly toxic gases and wastes that have led to severe damage on the environment.

## 2.8 ISSUES AND CHALLENGES WITH THE USE OF GSCM IN INDIAN INDUSTRIES

According to Shibinet *al.* (2016), a more stringent environmental legislation and the excessive demands and pressures from the stakeholder's side leads difficulties and challenges towards the adoption of the GSCM practices in the Indian industries. Along with the mining sector in India, the other industries like the food, chemical, pharmaceutical and the retail business have faced

GSCM implementation barriers. Sachdeva *et al.* (2015) have steadfastly stated that the Indian automobile industry is one of the world's largest single manufacturing sectors and the increasing trend of automobiles like cars, bikes, e-vehicles and other commercial vehicles in India have increased the adaptation of green practices and initiatives within the business. The possible challenges in the use of GSCM within Indian industries are:

*Poor quality of HRM practices:*

Mathiyazhagan *et al.* (2020) have explained if the company does not have a skilled and well trained HRM system then the business lacks the resources, skills and knowledge development of the employees, thus resulting in poor business management. Therefore, qualified and talented HR can provide new ideas and generate new business opportunities for the industries and they can help in transforming, knowledge, and learning new technologies for the employees. Shibinet *et al.* (2016) steady lack of HRM practices has been a significant barrier in the use of GSCM within Indian sector.

*Lack of direct incentives:*

Sachdeva *et al.* (2015) have stated in the manufacturing industry the ISO standard has been increasingly considered as a marketing tool because of the changing demand for the green consumables. The support, guidance and the incentives that are provided to the mining and manufacturing sector are not adequate to adopt the green practices within the supply chain operations and therefore, this has been a major issue for the implementation of the same within the business.

*Lack of technology advancement adaptation:*

Tan *et al.* (2016) have stated if knowledge is equally shared and distributed the organization can have the capability of adopting and learning new technologies and its usefulness within the business practices. Therefore, the resistance of the business organizations to technological advancement creates a barrier in implementing fundamental changes within the business, thus affecting the adoption of GSCM initiatives.

### 3. THEORIES AND MODELS

#### 3.1 COMPLEXITY THEORY

This theory is associated with the ways with which an individual can better understand the surrounding connected with the environment, and ecosystem. With this, the theory gives insights regarding the ways with which the organisations can comply with the sustainable practices by becoming more innovative and adaptive (Okwir et al. 2018). Moreover, this theory focuses on the company resemblance to the ecosystem by considering its environment along with its business activities. Hence, it creates the behavioural connections between the complex and large system and the simple system so that they can be rationalised.

GSCM in Indian Industries follows some of the specific rules that are defined by financial practices and enterprise resource planning. However, social relationships between the suppliers, producers and the customers create complexities within the supply chain in setting the business goals and objectives. Ketokivi and Mahoney (2020) have stated the implication of this theory helps in resolving the complex behavioral approaches within the GSCM practices in Indian industries and reinforce a simple system to meet the marketing needs.

By regulating the business operations within a complex GSCM system it reduces the complexity in favor of enhancing predictability and using information technology for developing sustainable business practices.

#### 3.2 STRATEGIC CHOICE THEORY

This theory is associated with the means through which the leaders in an organisation can make strategic decisions and choices for the dynamic organisational processes (Pisano, 2017). It is based on the strategic decisions undertaken from various strategies that can be best applied for meeting the organisation objectives. It also focuses on the decision undertaken for the developments of planning and decisions so that a planned management can be formed with the help of various strategies. The theory can be best applied for the organisations considering the sustainable approaches so that various strategies affected for attaining sustainability can be compiled with by the organisations.

According to Pisano (2017), this theory mainly addresses the political forces and the strategic issues that are related to the GSCM in the Indian industries and the functional approach that can be taken into consideration for maintaining the sustainability of the strategic decision-making. The theory has a different aim in management and supply chain services in the GSCM approaches in Indian industries and provides a unique perspective to the SCM phenomenon. The strategic theory is broader and complex and helps in taking effective strategic decisions for the growth and advancement of the supply chain services for attaining greater sustainability within the industries.

### 3.3 RESOURCE DEPENDENT THEORY (RDT)

This theory is concerned with the effects on organisational behaviour regarding the external resources that have been used by the organisations including its raw materials. The theory holds importance due to its revelation regarding the abilities of an organisation in gathering, altering and exploiting the external resources available to it, which measures the speed it is using to beat its competitors for achieving success (Sherer, Suddaby and Rozsa<sup>23</sup> de Coquet, 2019). RDT is associated with the facts the key success of an organisation depends on the availability of its used raw materials and the efficacy with which it is using such resources. Regarding this, it can be said that it is the entire responsibility of an organization in meeting the resources and using them efficiently without any wastage. Hence, it is required for the organisations in carefully considering the available resources, for which it is having open access.

### 3.4 GREEN SUPPLY CHAIN MODEL

The green supply chain model is effective for the organisation in addressing all the related environmental issues. This model is effective in identifying the key issues that have been generated from the side of the suppliers, manufacturers, and customers during the product life cycle. Regarding this, it can be noted that this is the parent model, which comprises several models that can be used for attaining sustainability. The resources of the organisation can be allocated with the traditional and the effective economic order quantity framework, which can initiate the sustainability in the production and orders of materials so that no wastage is created (Saxena, Singh and Sana, 2017).

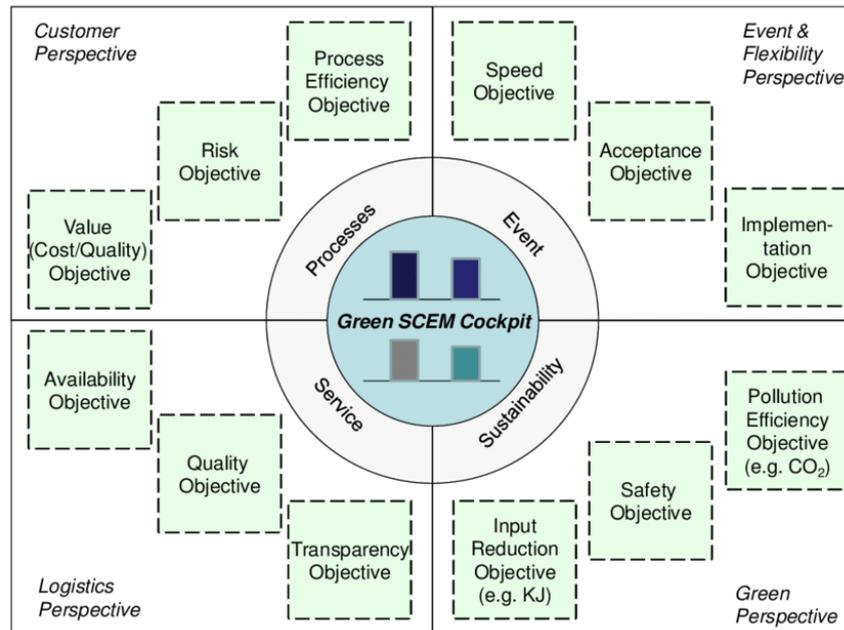


Figure 2: EOQ Model

(Source: Saxena, Singh and Sana, 2017)

This EOQ model is also required to avoid delay payments along with using up all the available resources so that raw materials can be produced economically. All of these are effective in reduction of overall material losses, thus using the resources from the environment wisely and as per the requirements of production. An economic lot size model can be used for the purposes of cost reduction from the side of suppliers and the buyers, thus reducing wastage in the demand and supply process. Hence, all these models can be effective in maintaining the sustainability in business practices through maintaining green policies and activities in the organisations.

### 3.5 BENEFITS OF THE GREEN SUPPLY CHAIN MODEL

The Green supply chain Model or the environmental model is relevant and effective for the Indian industries to ensure the reduction of environmental waste from the business organizations and attaining the sustainability of the business. According to Jian *et al.* (2019), the model is beneficial as it has gained prominence throughout the logistics and supply chain operations of the Indian industry by protecting the environmental issues. The Model is beneficial as it increases the energy cost of the business along with the cost of the reloaded raw materials for the operations of a green energy alternative.

Moreover, the low power consuming IT solutions and the reduction in the energy resources used by the business creates a positive impact on the financial growth of the industries. Cherrafiet *al.* (2018) have explained that the GSCM Model also helps in the reduction of the greenhouse gas emission from the industrial equipment and resources by reducing the carbon footprint caused by the IT infrastructure resources and the people of the organization.

Song and Gao (2018) have explained that global warming has been a major factor that is affecting the business issues and sustainability approaches globally and with the application of this model, this effect can be minimized. The green IT-based practices in various Indian companies across the supply chain process helps in successfully flourishing the green IT strategies and creates an environmental awareness among the people of the business.

Li and Huang (2017) have stated that the adaptation of the GSCM Model by the business helps in enhancing the brand value and brand reputation about the supply chain process in the customer's mind, thus creating transparency of the business process. Moreover, large investments and risks are shared among the partners in the chain and this helps in increased sales and revenue of the business.

### 3.6 BLOCKCHAIN TECHNOLOGIES RELATIONSHIPS WITH GSCM

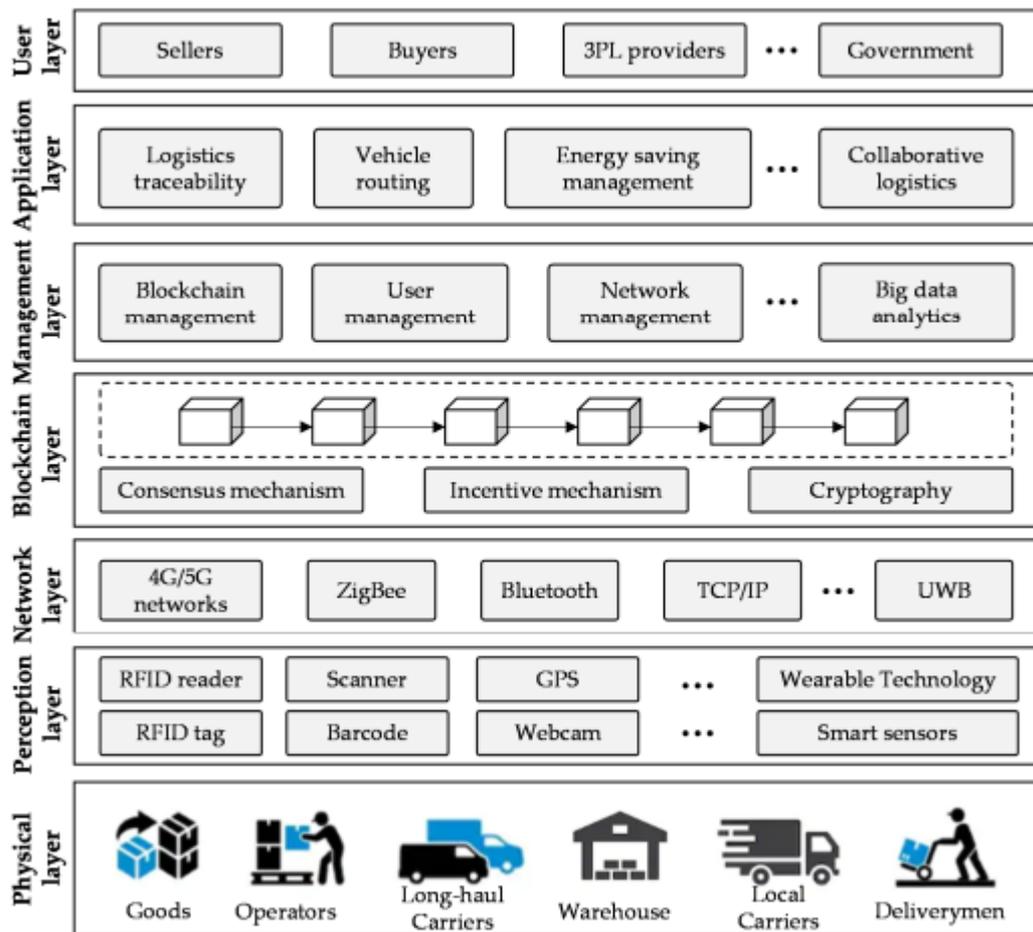


Fig 3. Blockchain-based framework for green supply chain

(Source: Tan *et al.* 2020)

According to Tan *et al.* (2020), IoT is essential for achieving multi-party data sharing and real-time decision-making approaches for the business. Blockchain technology is a method that can maintain almost any of the database in a distributed pattern and systematic manner. () have argued in the green supply chain process, blockchain is effectively used to achieve the sustainable operations of the logistics and convert traditional objects into smart resources and technologies. Sabriet *al.* (2019) have explained the above blockchain framework that is being identified above comprises all types of logistic resources that are involved in the green supply process. The first layer comprises the physical layer in the supply chain operations, whereas the second layer is the perception layer that is essential for monitoring and piercing the status of the logistics (Tan *et al.* 2020).

The network layer signifies the communication channel that helps in communicating the various operations of the business by using the communication channels. Kouhizadeh and Sarkis (2018) have argued that the blockchain-based supply assistance provides better human work practices and therefore in the GSCM practices, it can influence a development of the sustainable supply chain networks. The management layer in the framework supports the operations of the system for updating the blockchain layer and managing the logistics process in the GSCM.

Zhang *et al.* (2019) have stated that the food and beverage industry in India faces sustainability-related challenges in the supply chain process. An integrated application of the RFID and blockchain technology in the GSCM management helps in equipping a food supply chain with the traceability system for real-time food tracing for effective quality control measurements. On the other hand, the openness, transparency and reliability of the stakeholders can be effectively handled through blockchain operations thus helping to detect unethical suppliers and the counterfeit products and services. Sabriet *al.* (2019) have stated to reduce business waste in the GSCM process blockchain technology helps in sharing instantly every data modification by minimizing the human work process and transaction times.

### 3.7 CONCEPTUAL FRAMEWORK

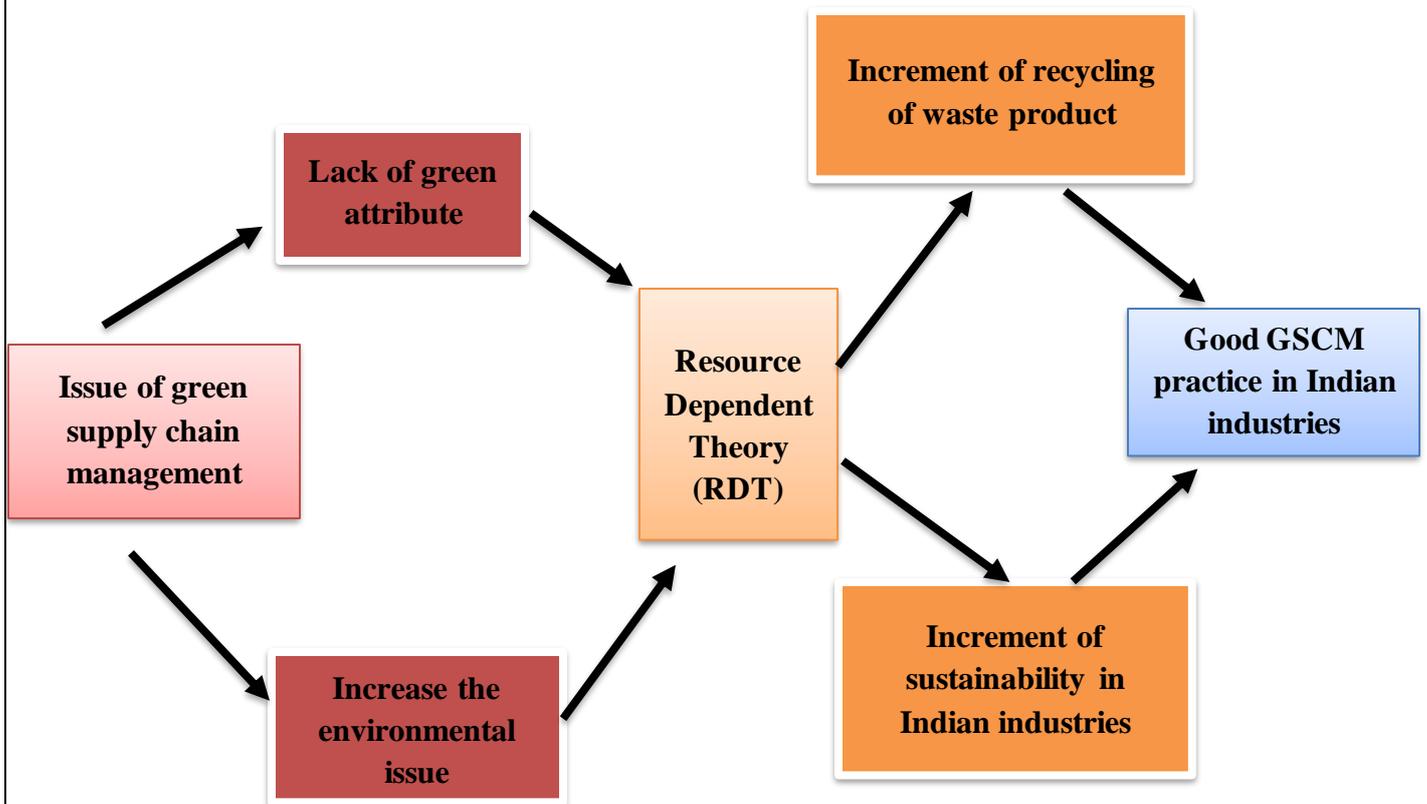


Figure 3: Conceptual framework

(Source: Created by Researcher)

For designing a conceptual framework of research, it is necessary to identify the primary variable and secondary. The primary variable of research will be Indian industries and GSCM practice, within the organization and theories and model similarly the second variable of research will be the effect on green supply china management. The collected from different sources gives information about the step that links primarily viable with a secondary variable. From the last few decades, the Indian industry is making a remarkable amount of effect on green supply chain management especially the private industry of the country.

Since the total GDP contribution of these industries is almost 60 % thus green supply chain management can get affected in an easy manner (economywatch.com, 2013). However, not all

industries are taking part in promoting or making an impact on GSCM the major industries that are making a remarkable amount of effect including IT industries manufacturing industries, communication industries, and software industries. The demand for this industry is increasing that leads to an effect on GSCM in India (Luthra, Garg and Haleem, 2016). Practice GSCM within the country can be considered unsuccessful due to the rise of environmental issues such as resource procuring, manufacturing, transportation, production and disposal of the product. Thus, in order to implement proper GSCM within the country, there is a need for a solution to all the problems arise due to GSCM implementation.

The issue of implementation of GSCM in Indian industry is also covered in this study. It shows that issue faced due to the implementation of GSCM on an international level or in any other country is similar to the problem that arises in India management. However, the study also mentions some of the additional problems that arise especially in India are restricted policies of the organization and lack of initiative from the local end of industries. Along with this study mention the benefits and disadvantages of selected primary variable and secondary variable. One major of the benefit of the selected primary variable is it creates sustainability in the industries in a similar manner it helps in maintaining and managing the available resources.

On the other side, some of the major drawbacks of selected primary and secondary variables include an increase in cost, reduce in green attribute, and reduction in the recycling of waste products. In order to understand technological concept of GSCM and its effect in industries, study cover several theories such as complexity theory that environment needs to create the behavioral connection among the various type of available system so that each system can be rationalized according to the need to of surrounding (Okwir et al. 2018). In the similar manner the study uses the strategic choice theory that provides knowledge of the decision-making process that can be used by the leader for creating a sustainable environment within the industry (Saxena, Singh and Sana, 2017).

In addition to this study cover resource development theory and green supply chain model that provide information about a key issue that can help in the identification of a product life cycle that is generated from supplier and manufacture side

## 4. RESEARCH METHODOLOGY

### 4.1 RESEARCH PARADIGM AND OVERALL APPROACH

Increased attention provided to this Green Supply Chain Management requires in-depth analysis for this study. Global awareness of the topic and changes in the advanced integration process can lead to supply chain initiative and influences the environmental impact for generating performance improvement (Brister, 2017). Philosophical influences referring to the study can be considered as the improvement areas for personal choices and external factors. Proper understanding of philosophical influences can help improve the research area, which can be understood through this section of his study.

Entire research opens discussed in this study is based on the improvement of clear context changes in personal thinking. Research philosophy can be used for assisting research objectives and this can adjust the research process for a business model-oriented research (Ross and Mitchell, 2018). In this case, the GSCM model and its issues and impact on the Indian business area is the main objective. Purpose of this study is to direct towards the effectiveness obtained from a clear context for applying business-oriented researches and philosophical context.

Philosophical influences are essential in social science research, however, in business research, this can help with a meaningful interpretation of the customer opinion regarding product changes. Business research for changes in environmental sustainability is based on decision making from the managers end to go with this trend. Key principles outlined in the research are based on the theoretical thinking process. Th established companies can be seen with a clear perspective of changing its business with cognition and perspective and self-awareness for knowledge and enhancement with design, conduction and analysis. In general, the branches of philosophical areas are divided into Ontology, Epistemology and philosophical perspective. Ecological philosophy for survivability in the business area can lead to relevance in the sustainable green supply chain area (Moon and Blackman, 2014).

Ontology of the research is based on personal thinking and knowledge enhancement for the existence of the research model in the entire process. The Legitimacy of the research model and business process can conflict real ideas (i2insights.org, 2016). Illustration and realist ontology can lead to the existence of single relating, which in this case with a relative idea for the individual experience of GSCM impact. A personal overview of the model and changes in the knowledge area can help identify the issues hidden in the GSCM application, such as branding of GSCM and real application of GSCM is an issue highlighted in the current research models. Few of the companies are applying it and most other companies are using the term to attract customer, which can be identified with the theoretical concept and analysis of internal business components.

Epistemology of the research deals with the changes in the personal areas constituting the relationship of business and customers. Advancement towards philosophical perspective can help with the research process as this is a methodological area for knowledge enhancement (Deane, 2018). The epistemology will verify research design and overview methodological choice, research approaches and philosophical approach regarding the research topic.

#### 4.2 RESEARCH DESIGN

In this section, research methods are discussed, which focuses on the proper component selection and advancement of the research project. A research design is a basic guideline for research formation, which provides detailed idea of constructing individual steps following a proper principle. Incorporation of research objectives and following these objectives based on data collection process can lead to the strategic guideline recommended for this study. Research design is considered as the most crucial and important area for a researcher as this considers the area of interest for the reader. Selection of an easy and readable research method can lead to generalised approach. However, it can oppose the researcher's objective of following a proper method. On the contrary, complex analytical references and in-depth analysis can lead to sustainable practices in the business areas, which need theoretical references and evaluation of pre-established theory areas.

#### 4.3 RESEARCH PHILOSOPHY

Research philosophy is an important component of the study, which can help form the entire study in a proper direction. Research philosophy influences selection of the proper component for the transformation of the entire focus into a converging area. The focus of the study and process of data analysis starts from the research philosophy selection and combining with the widespread components of the research process. Various research philosophies are available for selection and discussion as per the research objective. In this case, Positivism philosophy can be used, as these deals with a positive aspect of the research topic and advance towards a complete analysis with comparison of advantages and disadvantages. Positivism philosophy works on quantifiable observations and that can be processed into a statistical area for comparison with real business data for discussion.

#### 4.3.1 JUSTIFICATION

Justification for selecting such philosophy is that it leads to the factual analysis of the obtained information. In this study, GSCM is evaluated for impact and issues in the Indian organisations, which need actual outcome analysis from customers, Managers and business executives (Chin, Tat and Sulaimanfrg, 2015). Incorporation of collected data and checking with the outcome for study can help with a proper analysis of product changes and internal process change in the Supply chain changes. Primary data collected from managers can help understand such internal areas and customer opinion can help with the evaluation of the GSCM plan. Positivism research philosophy evaluates a highly structured area, which can help this study with a segment-based evaluation for different working areas. Apart from that, the consumer and managers of the company are selected as participants, which need the management of a large sample. Positivism supports sample collection and supportive structures for quantitative measurement.

#### 4.4 RESEARCH APPROACH

The research strategy for this study complies with an advanced approach for selection and categorisation of data and assembling with previous research philosophy. Research approach leads to the availability of data and changes in the internal condition of the research process. Literature review of the research direct towards an alignment with research objective, Changes

and issues in the existing GSCM and impact on the Indian companies can help with research findings and further discussion (KRC, 2018). Alignment of the collected data and leading to a new concept for implementation is the sole purpose of researchers. Idealising theoretical concept and alignment with a proper research approach can lead to the validation of research findings and changes in the existing model with optimisation of the indicative process. The deductive approach is selected for this study as this deal with aw validation of research finding with the previously mentioned evidential area.

#### 4.4.1 JUSTIFICATION:

Deductive approach is selected for this study as this provides a wide range of resources and availability of pre-established areas. In this study, total time elapsed in 14 weeks, thus it needs a precise approach for the conclusion and final study completion. Deductive approach can help with this time adjustment and readability of the study within a shorter time span. Deductive approach reduces the risks and this can help the causal relationship with variables and concepts. Assessment of the data obtained from the data interpretation and alignment with the hypothesis is necessary for such a process, which directs towards the identification of important issues.

#### 4.5 RESEARCH DESIGN

Selection of the research process can explain the affairs through complete data processing as this present the researcher with no control over the variables. Primary data collection for this study and further research development provides a wide range of data, which are based on predetermined variables. Less control over variables and distribution cannot be seen prior to the result, which is aimed at total reliability on the data collection and pre-established concept from the literature review. Selection of research design is necessary as this can help with the relevancy of the primary data collected and this can help segmentation of the primary data from a quantitative approach. Descriptive research design is selected in this study as this can help with the multidirectional aspect of obtained data.

4.5.1 Justification: Descriptive design is selected in the study as this provides a wide range of variables and conduction of an evidential basis for observed data collection method. Issues and impacts of GSCM cannot be measured as this is increasing with a dynamic business area with the opportunity to integrate quantitative data collection method. Descriptive design of the study can lead to less time consuming than other research designs, which can be beneficial to the study.

#### 4.6 DATA COLLECTION

In this section, data collection method for this study is discussed, which helps with the description of the research process and identification of new problems. Population selection and sample size of this study are based on the challenges and advantages of GSCM in India (Zhu and He, 2017). The quantitative data collection method is selected in this study, which can help describe and measure the level of numbers and calculation. Quantitative data collection from primary sources is effective as this direction towards an entailing a numeral data series and view of the related areas.

Effective areas of quantitative data collection can examine the relationships with numerical variables and application of statistical techniques. On the other hand, the research data collection method will approach with Qualitative Data collection that includes interviews and surveys. The primary data collection method will include both quantitative and qualitative information gathering and analysis. Primary data will provide practical and statistical impact of GSCM implications in the Indian market, whereas, secondary data such as relevant journals and related news articles can provide an overview of marketing application of GSCM practices.

4.6.1 Justification: Cost-effectiveness and data availability is the biggest concern for selecting quantitative data analysis. In this type of data analysis is based on personal expertise and analytical ability of the researcher. Discussion formed through this quantitative data analysis method can be related to the literature theories as this can help with time management. Various sampling methods are used in a quantitative data collection and this can lead to a natural approach to obtaining outcome on the collected data samples (Asmus and Radocy, 2017). Primary data collection for quantitative analysis will be necessary as this study incorporates both Interview and Survey.

Interview with Five company managers will be evaluated based on a proper interview pattern and questions will be based on the internal changes within the organisation. Interview questions will be based on various GSCM practices and issues while implementing such practices. Interviews with Five organisation managers will be performed with proper research ethics and confidentiality. Selected managers of GSCM implemented companies will provide statistical data or information with own accords to elaborate the research topic. The survey will be conducted within the 101 customers, which can help assess the application and effectiveness of GSCM in the recent business process. In this context, survey of customer preferences and influential aspects of GSCM will be asked in the survey. An online survey will be performed through social media interaction and popular web portals to acquire 101 survey outcomes. This method can provide time efficiency and optimal identification of data in the research.

Time constant for such data collection method can be eliminated through an online interview with managers and survey conduction in customers. The survey participants and company managers will be selected from Indian SME industries that are experiencing GSCM practices as organisation representative or customers. Overall interviews and survey data will be collected in Indian market context.

#### 4.7 DATA ANALYSIS

Primary data collection and quantitative analysis has conducted this study, which can be aligned with both the interview and survey. Purpose of the quantitative analysis can help transform raw numbers into meaningful data, which were obtained through meaningful and relevant questions. Customer experiences with new GSCM approach are encrypted within data collection and this can help with a supportive either hypothesis or research questions. Numerical data sources are quantified in various descriptive statistics can lead to Correlation Analysis, determination of Mean, Mode and Median, Regression Analysis of the collected data. Incorporation of such statistical analysis can help determine the feasibility GSCM in business from a customer perspective (Render and Stair, 2016).

Interview analysis will be done through a scripted format for understanding the advantages and disadvantages compared to the literature review and assembling with real-life data.

Quantitative data analysis is associated with a uniform response for interpretation of the communication improvement of the components.

#### 4.8 ETHICAL CONSIDERATION

Ethical consideration is a crucial area of this study as this study deals with primary data sources and quantitative data collection method. Literature review sources and authentication of authors will be acknowledged in this study as this can comply with ethics and sustainability of the research process. Consent from the participants and research confidentiality is obtained from the research with objective of the research sources. Individual anonymity and organizations participating in the research process need to be ensured with total anonymity (Garretsen, van de Goor and van de Mheen, 2018). Aims and objectives of this study need to align throughout the study for proper justification to the research process. Honesty and transparency need to be maintained in any case of communication in relation to the interview or survey. Abolition of any misleading information will be monitored throughout the survey for ethical compliances to the study.

#### 4.9 POTENTIAL OUTCOME

A potential outcome of the research can lead to a positive area based on the research objective and incorporation of various issues and its impact on the current business process. GSCM is a theoretical concept, which uses a cleaner approach for optimisation of the business process and associated elements. Implementation of such a process is based on the managerial intervention for processing business components, internal and external stakeholders and raw material allocation. Initiation of the greener approach in the business area for production and distribution can lead to a sustainable product for customers (Zhu and He, 2017). Customers approach toward environmental sustainability is based on product acceptance through ecological preferences and preservation of ethical compliances. Key outcome of this research can improve the entire business chain and improve environmental components. This research can help identify the challenges and issues for managers and customer as per the present condition for minimising Waste, overproduction and incomplete order processing. Components of the research can identify a personal approach for implementing GSCM in the current business

aspects for gaining organisational stability. Green procurement of the company and supply chain elements through collaboration and management of excellence areas can lead to optimisation of the transparency, product quality and sustainability (Song and Gao, 2018).

#### 4.10 RESEARCH BREAKDOWN

In this part of the study, the research process is measured based on the steps and this is a time-limited area for advancing towards a complete research process. An entire research plan is of 14-15 weeks based on the detailed breakdown and it is divided into various steps for easy time-based planning. Arrangement of the components and choosing a specific time for such steps can lead to a detailed area of research within a certain time-plan. Division of time-based approach for each step needs a proper understanding of the initial works and arrangement. It is an essential task for the researcher to provide research area and corresponding duration needed for each step and maintain overall deadline of the study.

Following the Gantt chart established for the study, eight total steps can be found as a part of the study introduction and following proper guideline. Refining and setting up research objective needs time for cognitive thinking and utilisation of philosophical references. 1 week for this step can be allocated, which is enough for providing satisfaction to the research topic. Inclusion of the Literature support is a broad area of this entire study, which needs 2 weeks depending on the depth of the theoretical references.

The methodology of the study is another relative area as this includes a selection of proper research style matching with both literature review and research aim. 2 weeks is suggested as the recommended time for this section as the entire project duration is short. Breaking down of the research steps and strategic formation for completion is based on the research design, which needs 1 week. Recommended time for primary data collection and analysis is 2 weeks per tasks as this can lead to timely completion. Discussion of the study is recommended to be finished within 2 weeks and finally write up for another 2 weeks, considering a total of 14 weeks.

#### 4.10.1 Timescale

Activities	1 <sup>st</sup> Week	2 <sup>nd</sup> Week	3 <sup>rd</sup> Week	4 <sup>th</sup> Week	5 <sup>th</sup> Week	6 <sup>th</sup> Week	7 <sup>th</sup> Week	8 <sup>th</sup> Week	9 <sup>th</sup> Week	10 <sup>th</sup> Week	11 <sup>th</sup> Week	12 <sup>th</sup> Week	13 <sup>th</sup> Week	14 <sup>th</sup> Week
Selecti on of the topic	✓													
Literat ure review	✓	✓												
Collec tion of data (Surve y and Intervi ew)		✓	✓	✓	✓									
Resear ch techni que selecti on					✓	✓	✓							
Collec tion of primar y data							✓	✓						

Data analys is and interpr etation								✓	✓						
Devel oping Concl usion									✓	✓					
Forma tion of draft										✓	✓				
Discus sion											✓	✓			
Submi ssion of final work												✓	✓	✓	

## 5. DATA ANALYSIS

### 5.1 INTRODUCTION

This chapter of the dissertation intends to accomplish the objectives of the study by holistically investigating in into the varied dimensions of the implementation of GSCM framework across the Indian Industries. The section is developed based on an empirical approach wherein the process of data procurement is done based on conducting an online survey keeping in mind as many as 101 samples to participate through the survey monkey tool. The data has been analyse based on the findings of the survey and develops an understanding of what is actually meant by the process of GSCM and its implementation process across the Indian Industries.

### 5.2 QUALITATIVE ANALYSIS

*Q1. What is your idea of GSCM?*

Manager 1	Manager 2	Manager 3	Manager 4	Manager 5
<i>“My understanding of GSCM stands for having a greener supply chain process.”</i>	<i>“Well, GSCM stands of a more innovative and greener process of supply chain management that ensures the safety of the environment.”</i>	<i>“GSCM is a process that includes environmentally friendly inputs and transforms these products into products that are safe for use.”</i>	<i>“The use of the greener and more sustainable raw materials is used in conducting business operations and supports ecological balance.”</i>	<i>“The use of greener raw materials helps in creating products that are highly sustainable in nature and the cam be reused and recycled and reused in further processing.”</i>

*Q2. How has GSCM been implemented across Indian Industries?*

<i>Manager 1</i>	<i>Manager 2</i>	<i>Manager 3</i>	<i>Manager 4</i>	<i>Manager 5</i>
<i>“The process of GSCM is an important aspect in the Indian Industrial system and it relates to the development of a more robust and effective strategy in dealing with delivering better visibility of the business operations.”</i>	<i>“India is a country with multiple industry types and most of the companies tend to implement the GSCM process by developing strategies likely, locating innovative technologies, along with finding the best ways to ensure the implementation of the process.”</i>	<i>“It has been evident that India is one of the nations that is listed in the group of nations that emit huge levels of pollution. Therefore, it is integral to comply with the legal regulations of the countries with which the Indian industries are conducting trading activities.”</i>	<i>“The best strategy to implement the process of GSCM is through the application of continuous improvement and allows the Indian Industries to ensure that the process of GSCM is successfully implemented.”</i>	<i>“Assessing on the strategies to identify the process of GSCM implementation within the Indian Industries, it needed that the SMEs in India must engage in the process of cost rationalization and help in delivering the products and services without compromising the cost of the same.”</i>

*Q3. What according to you are the strategies for implementing GSCM across Indian Industries?*

<i>Manager 1</i>	<i>Manager 2</i>	<i>Manager 3</i>	<i>Manager 4</i>	<i>Manager 5</i>
<i>“Training and updating have been one of the</i>	<i>“I feel that the proper use of technology is</i>	<i>“Looking at the life cycle of a GSCM</i>	<i>“The strategies related to the implementation</i>	<i>“ I feel that a successful implementation</i>

<p><i>biggest strategies to implement the GSCM process within the operations of the Indian industries. These training and updating programs help in educating the employees to understand the need for implementing the GSCM process."</i></p>	<p><i>considered to be the most important factor. This helps in locating the challenges of implementing the GSCM process and thereby recognizes the key mechanisms to ensure that the process of the GSCM process is implemented."</i></p>	<p><i>implementation process, it is important that the Indian Industries, especially, the SMEs can migrate from the conventional platform to a more innovative way of operation, and this can be done through the use of innovative technologies like RFID, blockchain and AI."</i></p>	<p><i>of GSCM process are marked by the need to deploy skilled personnel to ensure that the process of implementation is successful."</i></p>	<p><i>of the GSCM process across the Indian Industries can be done through coping up with the rapid technological development and thereby become powerful to develop an integrated platform and allow the supply chain managers to engage in finding new technologies to support the process of GSCM implementation."</i></p>
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*Q4. What could be the possible challenges in implementing GSCM according to you in Indian Industries?*

<i>Manager 1</i>	<i>Manager 2</i>	<i>Manager 3</i>	<i>Manager 4</i>	<i>Manager 5</i>
<i>“India is a nation that is still considered to be in developing status. There are multiple barriers in the implementation of the GSCM process across Indian Industries.”0020</i>	<i>“One of the biggest challenges in the inability to cope up with the rapid technological development. A lack of adequate skilled personnel to address the different activities of implementing GSCM practice.”</i>	<i>“I feel that the lack of adequate finances happens to be one of the greatest hurdles in the process of GSCM implementation across Indian Industries.”</i>	<i>“There are a lot of barriers, however, I feel that the lack of skilled personnel is one of the reasons.”</i>	<i>“Well, according to me, one of the biggest barriers is the lack of participation from the SMEs in India.”</i>

*Q5. What do you think could be your recommendations to ensure proper implementation of the GSCM process across Indian Industries?*

<i>Manager 1</i>	<i>Manager 2</i>	<i>Manager 3</i>	<i>Manager 4</i>	<i>Manager 5</i>
<i>“I believe this is an age of technological development and the primary</i>	<i>“I feel that Green sourcing and procurement focused</i>	<i>“There must be a focus on developing innovative technologies to</i>	<i>“Adequate training and development of the staff members of the</i>	<i>“I feel that one the best ways of dealing with the issues of green supply chain</i>

<i>focus shall be on incorporating Information technology to ensure that the GSCM practices are included within the Indian Industries.”</i>	<i>initiatives through the use of electronic processes shall be the best possible way to deal with the issues including the GSCM practices across India.”</i>	<i>ensure that ecologically friendly business processes, supported by sustainable process across the manufacturing sector shall be emphasized most.”</i>	<i>group shall be considered to be the biggest priority since it allows the managers of the organization to ensure that the process of GSCM implementation successful.”</i>	<i>management is by developing facilities for Green warehousing and distribution focused initiatives, which shall specifically corroborate the facts of delivering efficiency in business.”</i>
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#### Trend analysis

The current section of the research paper focuses on finding the key trends that have emerged from conducting the qualitative analysis based on using the interview tool. This interview has been specifically conducted to recognize the most prominent trend and theme that concerns the interview based on finding the possible challenges and prospects of implementing GSCM practices across Indian Industries. From the findings and the key five selected questions, the researcher has been able to find out the views of five managers belonging to the five different organizations to understand the concept, importance, and possible barriers and strategies to implement GSCM successfully across the Indian industries.

The findings of the study had developed a key trend showing that the biggest barrier in implementing GSCM across Indian Industries is the lack of financial back up for the SMEs along with the loathe of migrating from the conventional platform of business operation to an innovative platform (Gandhi *et al.*2018). Most of the managers have stated that they need to incorporate technological innovations is a must to ensure that the proper implementation of

GSCM is done, however, the biggest barrier lies in converting from a conventional platform to an innovative modern platform and therefore unable to cater to the needs of the new systems of GSCM.

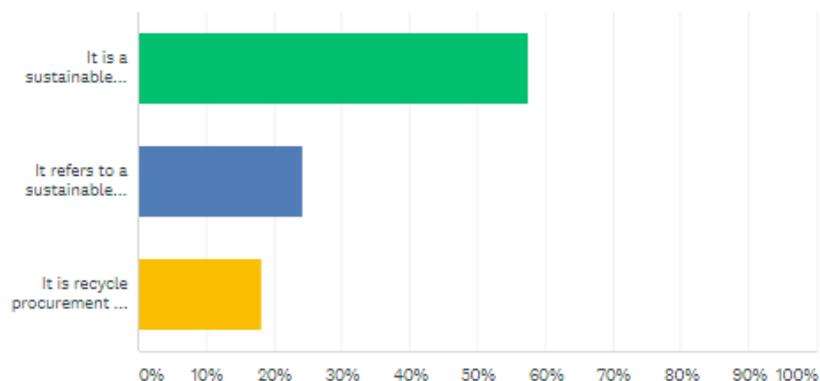
Additionally, it has been evident in the study that another big barrier in the process of GSCM implementation is the lack of adequate skilled and learned professionals who do not have the proper knowledge to carry out with the operations. Owing to the lack of participation from the SMEs in India, the nation is cumulatively unable to adjust and cope up with the rapid technological development, hence, the need to ensure that the process of implementation needs to be more organized and robust.

### 5.3 QUANTITATIVE ANALYSIS

#### Question 1.

What is your idea about GSCM

Answered: 99 Skipped: 1



ANSWER CHOICES	RESPONSES
It is a sustainable process of greener supply chain	57.58% 57
It refers to a sustainable business operation	24.24% 24
It is recycle procurement and delivery	18.18% 18
<b>TOTAL</b>	<b>99</b>

#### *Interpretation*

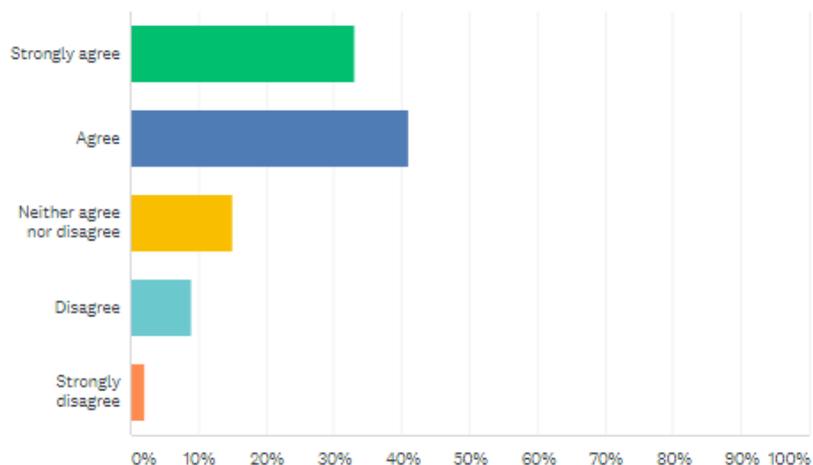
This is first question of the online survey which tries to start off with an open approach and directly asks the respondents about their perception of GSCM. Considering the question to be

open in nature, three possible responses as options have been provided in the online survey platform for the respondents to reply. The three responses include refers GSCM to be a sustainable process of business operations, with sustainable supply chain and sustainable procurement and delivery. From the responses received on the online survey, majority of the responses have stated that GSCM is a process of sustainable supply chain that is designed to ensure that the supply and delivery of products and services are done keeping in mind the safety of the environment. From the options given, it can be stated that the answers to the question cover up the key theme of sustainability to be the fundamental part of the supply chain process and ensures greener processes of procurement and delivery. Hence, looking at the responses, it is evident that as much as 57.58% of the respondents have ascertained GSCM to be a process of sustainable supply chain.

**Question 2:**

How far do you think that Indian Industries have been able to apply GSCM practices?

Answered: 100 Skipped: 0



ANSWER CHOICES	RESPONSES
Strongly agree	33.00% 33
Agree	41.00% 41
Neither agree nor disagree	15.00% 15
Disagree	9.00% 9
Strongly disagree	2.00% 2
<b>TOTAL</b>	<b>100</b>

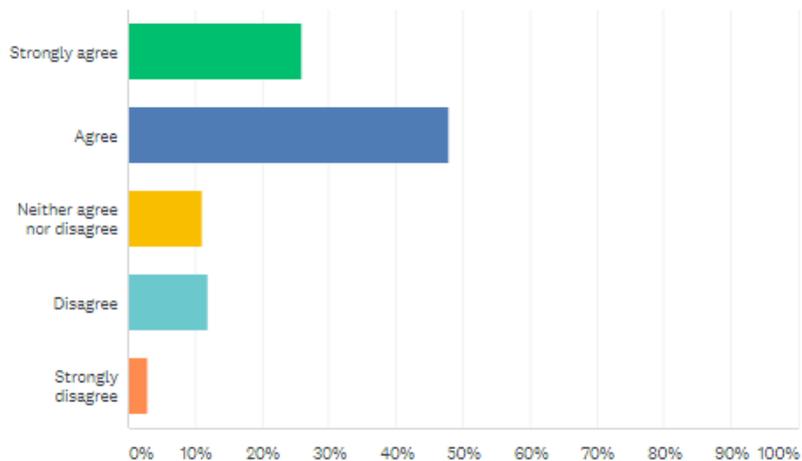
### Interpretation

This is second question of the survey and focuses on the key question of the dissertation paper. This question hints at the basic element of how the Indian Industries have been able to apply the GSCM practice within their operations. The responses have been found in the form of a Likert scale and measures the applicability possibilities based on agree and disagree options. From the responses, it has been noted that the majority of the respondents have stated that the Indian Industries have been able to implement the mechanism of GSCM across their operations. Based on the findings and responses, 41% of the people have agreed to the fact that the Indian Industries have been able to implement the technique of GSCM to ensure that the process of business operation is done on a safer and secured ground. However, 10% of the responses have stated that they disagree to the point that Indian Industries have applied the GSCM mechanism due to multiple issues, which will be studied in the next questions. Therefore, taking this question to be the elementary question of the dissertation, it needs to be stated that application of GSCM is integral to the operations of the Indian industries.

### Question 3.

How far do you think that GSCM is a highly sustainable mechanism?

Answered: 100 Skipped: 0



ANSWER CHOICES	RESPONSES
Strongly agree	26.00% 26
Agree	48.00% 48
Neither agree nor disagree	11.00% 11
Disagree	12.00% 12
Strongly disagree	3.00% 3
<b>TOTAL</b>	<b>100</b>

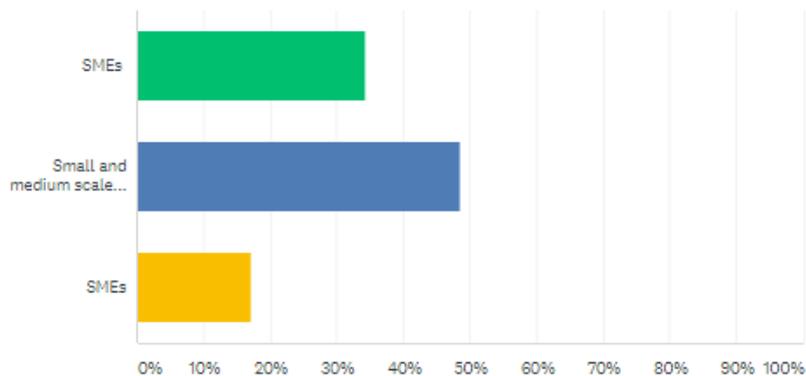
### Interpretation

This is the third question of the research paper wherein the researcher has focused on the aspects of delineating the facts on considering GSCM to be a highly sustainable approach. The responses to this question are in the form of a scale like the previous one and finds responses in terms of the level of sustainability of the process of Greener supply chain management. From the responses, it has been evident that majority of the respondents have strongly agreed to the process of GSCM to be a highly sustainable endeavour and caters to half (48%) of the total respondents in this question. A limited percentage response is seen in terms of disagreeing to the fact that GSCM is not a sustainable approach. Only a 12% of the respondents have disagreed to the fact that GSCM is a sustainable approach. Therefore, the findings of this question suggest that the GSCM needs to be considered a highly sustainable approach is powerful enough to ensure that the process of using recycled materials in business manufacturing is acknowledged along with ensuring the fact that the supply chain processes do not cause any harm on the environment.

### Question 4:

Which Indian Industries face issues of GSCM implementation?

Answered: 99 Skipped: 1



ANSWER CHOICES	RESPONSES	
▼ SMEs	34.34%	34
▼ Small and medium scale companies	48.48%	48
▼ SMEs	17.17%	17
TOTAL		99

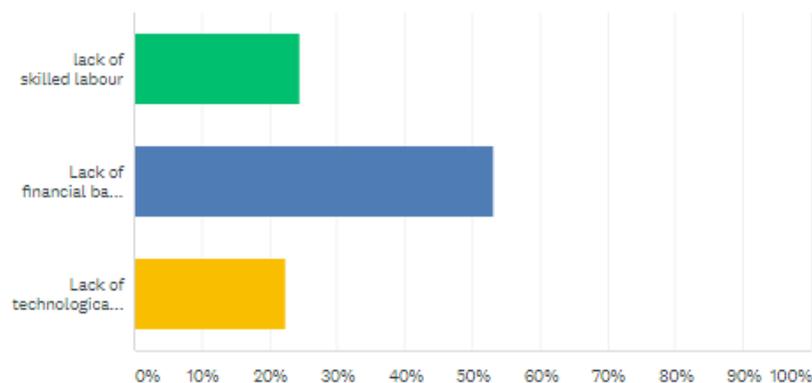
### Interpretation

This is one the most important questions in the entire research paper as it directly questions the causes behind the lack of adequate implementation of the GSCM process across the Indian Industries. Finding on the responses, three options have been given that try to pinpoint on the kind of companies and industries that are unable to implement the process of GSCM practices in their respective operations. Considering the responses, the common line of answers points towards the small and medium scale industries in India that lack the infrastructure and the proper framework to ensure that the process of GSCM implementation is conducted in an effective way. From the responses, it has been evident that majority of the responses have stated that the small and medium scale industries have the biggest challenge in implementing the process of GSCM successfully. As much 48.48% of the entire set of responses have shown a strong response in regards to the Small and medium scale industries and companies in Indian to lack the proper infrastructure and skilled expertise in implementing the process of GSCM within their operations. This question clearly set forth the need to ideate on the fact that a focused emphasis needs to be given on the SMEs to come out of the challenge.

**Question 5:**

What are the barriers to GSCM implementation in India ?

Answered: 98 Skipped: 2



ANSWER CHOICES	RESPONSES
lack of skilled labour	24.49% 24
Lack of financial back up	53.06% 52
Lack of technological advancement	22.45% 22
<b>TOTAL</b>	<b>98</b>

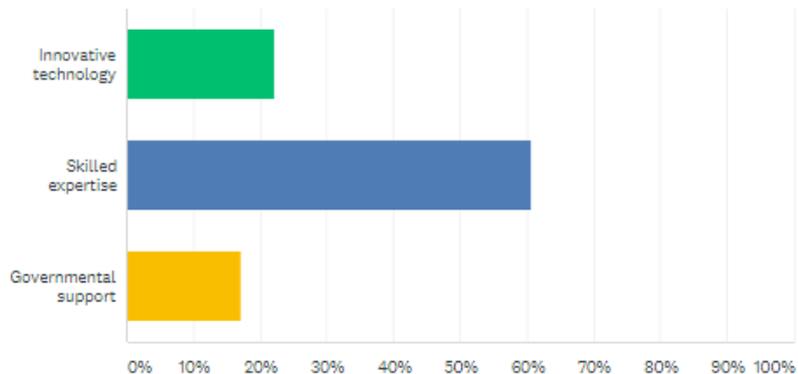
### Interpretation

This is the 5<sup>th</sup> question of the research that tries to find out the barriers to the implementation of GSCM practice across all Indian Industries. Looking at the content of the question, three options have been provided that cater to three different reasons. These reasons primarily cater to lack of financial support, technological back up and skilled labour. From the responses received, it has been noted that the biggest response has been for the lack of financial back up. The responses show that as much as 53.06% of the respondents have stated that the lack of adequate financial resources has been the root cause behind the implementation of GSCM practices across the Indian industries. This is specifically evident in case of the SMEs in the country that have a small purview of operation and are not on the scale of reaping huge monetary profits. Apart from the financial dearth, comes the lack of technological support and presence of skilled labours to support the process of GSCM implementation in India. Therefore, Indian Industries need to work on a holistic approach to ensure that the process of GSCM practice can be incorporated using all the required resources for supporting the procedure.

### Question 6:

What are the possible strategies in implementing GSCM in India?

Answered: 99 Skipped: 1



ANSWER CHOICES	RESPONSES
Innovative technology	22.22% 22
Skilled expertise	60.61% 60
Governmental support	17.17% 17
TOTAL	99

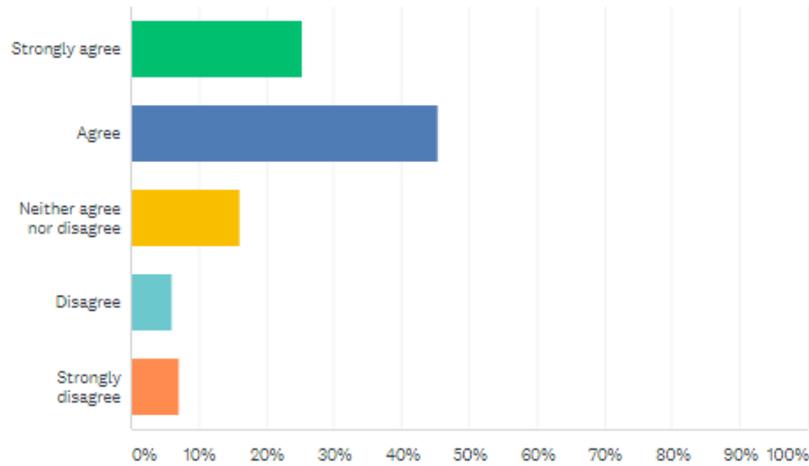
### Interpretation

This is the 6<sup>th</sup> question of the survey that comes as a solution to the previous question. The previous question dealt in finding the key reasons behind the failure of proper implementation of the GSCM process across the Indian Industries. This question comes as a relief to the previous one, trying to find out the remedies to deal with challenge and coming up with measures to deal with the challenge. Three options were shared on this question, which stated that the most possible strategies to implement GSCM across Indian industries is through innovative technology, skilled expertise and governmental support. From the responses, it has been noted that majority of the responses have spoken about the need for skilled expertise to ensure that the process of GSCM implementation is successfully done across the Indian industries. Approximately, 60.61% of the respondents have opted for the need for skilled expertise and right human resources to develop a well-calibrated approach in ensuring proper implementation of GSCM practice in India, while 22.22% opt for innovative technology and 17.17% opt for exclusive governmental support to ensure the process.

### Question 7:

How far do you think that Governmental support is integral in supporting the process of GSCM in India?

Answered: 99 Skipped: 1



ANSWER CHOICES	RESPONSES
Strongly agree	25.25% 25
Agree	45.45% 45
Neither agree nor disagree	16.16% 16
Disagree	6.06% 6
Strongly disagree	7.07% 7
<b>TOTAL</b>	<b>99</b>

### Interpretation

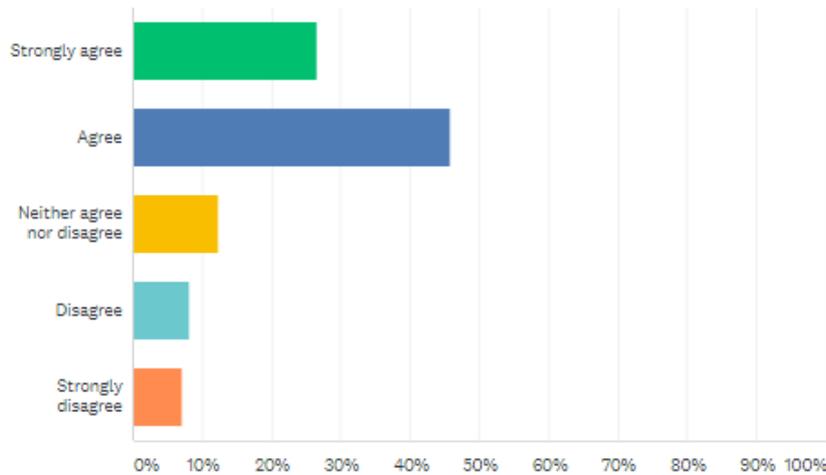
This is the 7<sup>th</sup> question of the research and the responses are represented in the form of the Likert scale. This question focuses on finding responses pertaining to the possibilities and need for governmental support to support the process of GSCM implementation across the Indian Industries. According to the responses, it has been noted that majority of the responses have shown an agreeing response in the process of GSCM implementation across Indian industries. Approximately, 16.16% of the respondents have stayed neutral and does not share a response for this question while, 6.06% of the responses have disagreed to the fact that implementation of GSCM practices across Indian industries needs governmental support. This question shows that the need for governmental support for ensuring the implementation of GSCM processes within the operations of the Indian industries. Sufficient governmental support certainly acts as a proper mechanism to ensure that the process of GSCM is implemented across the operations of the Indian industries, which can be done by drafting legislative policies and applying the same within the business operations by making it a severe compliance issue.

Therefore, the need to ensure that GSCM practices can be successfully applied by the Indian government by drafting and enforcing legislative policies.

**Question 8:**

How far do you agree that having sufficient finances will help in implementing proper GSCM practices?

Answered: 98 Skipped: 2



ANSWER CHOICES	RESPONSES	
Strongly agree	26.53%	26
Agree	45.92%	45
Neither agree nor disagree	12.24%	12
Disagree	8.16%	8
Strongly disagree	7.14%	7
<b>TOTAL</b>		<b>98</b>

*Interpretation*

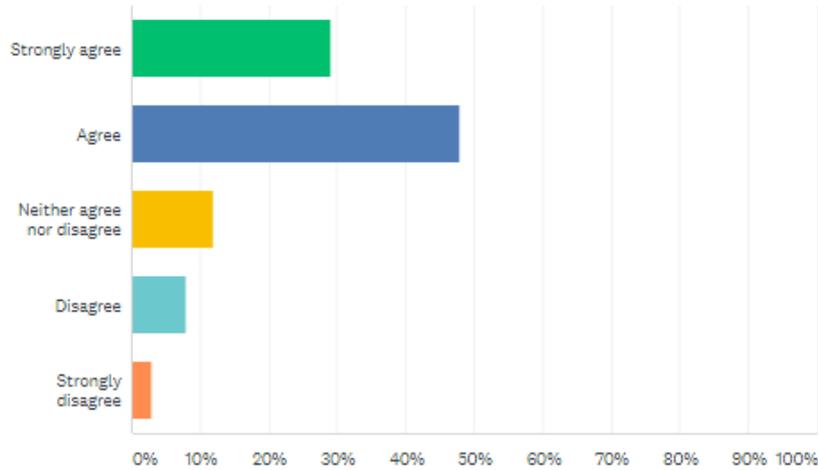
This is the 8<sup>th</sup> question of the research wherein the researcher tries to find out the percentage of consent in terms of implementing successful GSCM practices through provisions of the sufficient finances across the Indian industries. Considering the lack of adequate finances, within the Indian economy, it needs to be stated that the prospects of implementing the practice of GSCM within the Indian companies across all levels, the Indian government plays a vital role in helping provision of financial back up to ensure that the process of enforcement is successful. Financial support is needed to substantiate the process of GSCM practice by developing plans focusing on locating the new technologies to ensure that the process of GSCM

implementation is successful. According to the responses, it has been noted that as much as 45.92% of the respondents have agreed on the fact that financial support is needed for effective business operation and GSCM implementation. On the contrary, 12.24% of the respondents stay neutral and do not share any response. Limited disagreement is visible in this question with only 7.14% of the respondents to strongly disagreed with the fact that sufficient the financial help is needed to ensure proper GSCM implementation.

### Question 9:

How far do you agree that SMEs lack the support to migrate from conventional business operation to an innovative platform?

Answered: 100 Skipped: 0



ANSWER CHOICES	RESPONSES
Strongly agree	29.00% 29
Agree	48.00% 48
Neither agree nor disagree	12.00% 12
Disagree	8.00% 8
Strongly disagree	3.00% 3
<b>TOTAL</b>	<b>100</b>

### Interpretation

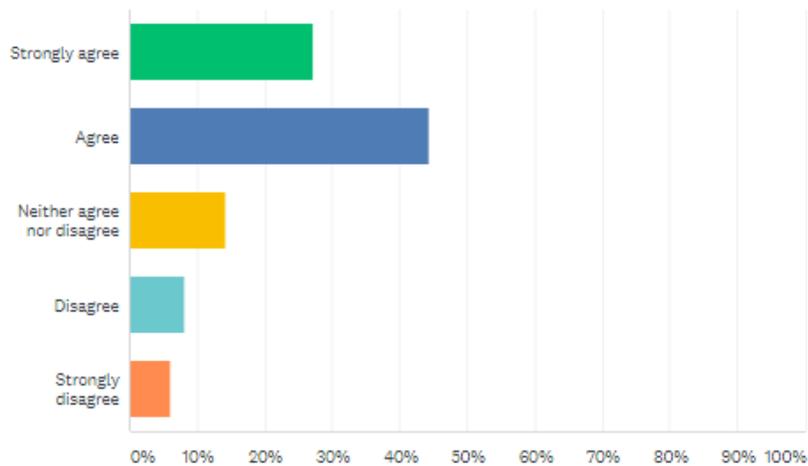
This is the 9<sup>th</sup> question of the research and shifts the focus from Indian Industries, specifically towards the SMEs. Considering the SMEs to face issues of implementing GSCM practices across their business operations, one the major reasons behind such a challenge is the lack of interest of the SMEs from operating in a conventional way to a more innovative and cloud-based platform. The responses have been in the form of a Likert scale and thus, it needs to be stated that the majority of the respondents have stated that SMEs do show a lack of willingness from acting in a conventional way to a more innovative platform. Owing to limited resources and financial back up, it has been evident that the processes of GSCM implementation within the SMEs in India are due to the lack of conversion from conventional processes of operation to a more innovative platform. This could be due to several reasons and may also be the lack of effective leadership and limited financial support. According to the responses, 48% of the

respondents have agreed to the fact that the SMEs in India have shown reluctance from a conventional platform to a more innovative platform.

**Question 10:**

How far is Block Chain and RFID useful in implementing GSCM in India?

Answered: 99 Skipped: 1



ANSWER CHOICES	RESPONSES	
Strongly agree	27.27%	27
Agree	44.44%	44
Neither agree nor disagree	14.14%	14
Disagree	8.08%	8
Strongly disagree	6.06%	6
<b>TOTAL</b>		<b>99</b>

*Interpretation*

This is the last question of the research and the focused on the use of Block Chain and RFID on the process of GSCM implementation across the Indian Industries. The question specifically refers to the use of technology and its contribution in the process of GSCM practice with a narrowed down focus on the use of Block Chain and RFID technology. From the responses, it has been noted that approximately, 44.44% of the respondents have agreed to the contribution of Block Chain and RFID on implementing the GSCM practice, while 8.08% have disagreed to the question and 6.06% have strongly disagreed to the use of RFID and Block chain within the operations of the Indian Industries.

## 5.4 FINDINGS AND DISCUSSION

This chapter vividly provides the results of the data analysis procedure conducted in two distinguished sections. Procured from the implications of the last chapters, the current chapter provides a mixed analysis of the data and information obtained from Interviews, conducted on Five managers from five different organizations and an online survey, by sampling 101 responses. Considering the findings of the data analysis, chapter, the current chapter shall engage in providing a critical and elementary approach to ensure that the process of GSCM implementation is evocatively explained in a way to assure a comprehensive understanding of the subject. The chapter shall coincide with the academic findings of the Literature Review section and thus, provide a compact understanding of the subject.

### *Comparative Assessment (Data analysis findings and Literature review)*

The findings of the Literature review tally with the information procured from the data analysis section. Both findings have emerged specific and common themes that tend to define the key aspects of the study. Comparing the findings of the two sections, it needs to be stated that both the processes have shown a common interpretation and thematic as well as empirical notes regarding the aspects of implementing GSCM practice across the Indian Industries. Concerning such an active approach, the explanation has been developed to show that the implementation of GSCM practice in India has been a challenge and requires a lot of strategic alignments to ensure that the practice of GSCM is conducted safely.

The findings suggest that GSCM in Indian Industries has been an issue considering the lack of financial back up followed by a lack of skilled professionals to support the operations smoothly. With the expansion of the Indian economy across new frontiers and business horizons, the industrial activities and practices in the country brace itself for a manifold level of growth. The Indian Industries have tried to fuel its growth by countering the fears of abrasion and having possible impacts on the environment (Vanalle *et al.*2017). This prospect of Industrial growth in the Indian Economy cannot be compromised at any cost and has become a genuine cause of concern for the Indian Government and the business authorities.

With the possible growth in the Indian Industries operation, the companies need to focus on the aspects of developing facets of concern for ensuring a safer environment along with a

qualified approach in dealing with the prospects of incorporating technologically sustainable and innovative processes (Zhang *et al.*2019). According to the findings of the literature section, it has been noted that there is certainly a direct connection between the development of the Indian nation with the industrial prospects with that of the environmental degradation, hence, the process of GSCM framework offers a range of hope among the Indian industries to engage in conducting business practices and activities on a safer and more competent platform. Compared to the developed nations, likely, the USA, China, and Australia, it has been evident that the process of GSCM implementation has followed a sparked approach to ensure that each business organization goes paper-free and operates on the digital platform (Song and Gao, 2018).

The sustainable strategy of the UAE, to go paperless by 2020 had been one of the primary initiatives to ensure that the operations of the business organizations are done in a strategic and digitalized platform. Locating the impact of the GSCM implementation on the business practices and operations, it needs to be stated that the implementation of GSCM has been one the best ways to substantiate the process of development for the developed countries and helped in contributing towards the creation of an ecologically friendly atmosphere. The implementation of the GSCM process has not only helped on saving on the resources but also streamline their supply chains for better (Sherer *et al.*2019). However, finding the key aspects of the study, procured from the two studies, on thematic and empirical facets, it needs to be stated that the Indian companies have not shown much enthusiasm and interest in adopting the GSCM framework, which has been evident in their lacked approach in the implementation process and the continued process of pollution and emission of the toxic gases.

Moreover, the recent changes and reformations in the Indian infrastructure have shown that considering the nation to be the R&D destination for multiple organizations owing to the presence of skilled and talented individuals, which is available at cheaper costs, there is an optimism of emergence of innovative green technologies fuelled by research works and technology transfer, which can be a prospective approach towards the implementation of the GSCM framework (Podsakoff and Podsakoff, 2019). Such ways of developing innovative technologies shall act as a proper mechanism for enabling will percolation within the industrial undertakings of the country making them more environment friendly. There are possible

processes of promoting GPP in the country with bigger opportunities for ensuring that the adequate numbers of legislative prerogatives are taken into account to corroborate the issuance of greener practices in the country across the different industries and companies.

The findings have shown a lack of interest for the Indian industries, specifically, the SMEs in India to migrate from the conventional business practices into a more innovative and technology-enabled platform. This could be the possible implications of showing a lack of interest in learning through the skills or else making the process of using financial backups properly. Therefore, ideating from the prospective implications of engaging in the application of greener practices and sustainable supply chain processes, there is a need to ensure that the Indian government and legislative bodies play an integral part in the same (Ross and Mitchell, 2018). The Indian government and legislative bodies shall act upon findings ways to guarantee the imposition of GSCM practices in the country across the different organizations and thereby issue legal practices of green procurement, and their strict enforcement on the ground. This legislation shall be able to master the securing eco-friendly industrial operations are in place but are not adequately enforced resulting in gross damage to the environment by erring industries.

There is an ardent need to revise the policies and shall be instructed to be applied based on concurrent and possible consequences. Apart from raising cognizance of the companies, adequate support needs to be procured from the customers as well. Applicable ways need to be found to ensure that the customers can abide by the facets of engaging in greener business practices and act as active parts in the process of the greener supply chain (Mafini and Loury-Okoumba, 2018). However, locating on the barriers of implementing the GSCM process across the Indian Industries, it needs to be stated that there is a lack of knowledge and respective roles in the process of the GSCM implementation in the nation, and the majority of the Indian Industries have been trying to combat the issue. Further, it needs to be stated that the major stakeholders in the Indian Industry has failed to appreciate the role of greener supply chain processes and failed to adopt the implementation of GSCM.

Considering the Indian Industries to have faced the challenges and barriers in implementing the GSCM process, it needs to be stated that the nation has been trying to witness an appreciable

endeavor by the various corporate houses within the nation and focus on the prospects of developing successive governments in making serious attempts and embrace environment to ensure that applicability of friendly industrial practices. It needs to be stated that in the process of GSCM implementation in the near and far future of India will show up, there has been an immense escalation in awareness and adoption level of GSCM amongst various stakeholders of the supply chain of the multiple companies in the nation (Jayant, 2016). Moreover, it needs to be ensured that the Indian manufacturers and industrialists and corporate houses, will possibly exhibit greater responsibility towards safeguarding the environment, for a healthy future for the ensuing generations for the nation.

This will be a catalyst in the process of implementing the process of GSCM, by shoving off the barriers in executing the process to ensure that the prospects of incorporating GSCM techniques marking the process of the sustainable supply chain to be included across the Indian Industries. This process helps in saving the resources to and engages in recycling the raw materials and allowing the industries to corroborate a well-calibrated approach, catering to the prospects of leveling the process of Greener supply chain practices across all sectors of the business.

## 6. CONCLUSION AND RECOMMENDATIONS

### 6.1 CONCLUSION

The green supply chain has been identified as one of the most suitable and profitable business solutions by the Indian business industries with the future prospects of the cleaner manufacturing process and the environmental performance of the company. The research report has identified and discussed the various implications of the GSCM in the Indian industries and the various issues and impact of its application in the Indian business sector. Through setting the research specific aims and objectives, the further analysis of the study has been developed and the literature review of the paper has been analysed. The Indian industries have seen a major change and rapid increase in the supply chain process in various sectors and the implications of the green supply practices have reformed the entire supply chain process of the organizations. It has been evident from the various literature sources and the primary results of the data analysis findings that GSCM has been an effective source of profitable income for the growth of the Indian industries and maintaining its sustainability in the world supply chain management. However, alongside the benefits of the GSCM strategies, the drawbacks of GSCM in the Indian industries has been also identified in the research study and the survey results have focused on this part of the study as well.

### 6.2 LINKING WITH OBJECTIVES

#### *6.2.1 Linking with Objective 1:*

##### *Identifying the ways in which GSCM approaches have taken shape in Indian industries*

The literature research has been evident that the industrial sector of India has recently seen major growth due to the adoption of sustainable practices and the economic and technological development at the business forefront. This has been a reason for the rising number of the GDP and the employment opportunities in the Indian agricultural, mechanical, IT and food processing sector. The increasing demand for the environmental resources and the technological advancement in large industries like construction, pharmaceutical, food processing and retail sector, India has adopted the sustainable practices of the GSCM and this has taken a prominent position in the India supply chain market. Along with eco-friendly practices for meeting the environmental requirement, the green manufacturing and packaging

process by the Indian industries have taken a remarkable shape recently. This discussion shows that the objective is highly achieved through the research study.

#### *6.2.2 Linking with Objective 2:*

##### *Strategies associated with the implementation of GSCM in Indian industries*

In order to implement GSCM practices in the Indian industries automobile, manufacturing and the chemical industries have adopted several green initiatives and measurements in its manufacturing and designing part to ensure the implementation of the green supply chain process in the business practices. The manufacturing companies in India have faced major environmental pressure to balance the economic and environmental sustainability of the firms. In order to ensure the green techniques in packaging and designing of various services and products, the Indian Government has also focused on green methods and cleaner strategies that help in promoting sustainable delivery of the goods and services from the factories (Singh, Singh and Sinha, 2017). The Central government of India has responded appropriately to create awareness among the customers and the business owners to adopt the practices of GSCM for the creation of a better environment in the future. ‘Zero waste disposal’ strategies adopted by various agro-food industries in India have generously supported the approaches of the GSCM within their business set-up.

#### *6.2.3 Linking with Objective 3:*

##### *Impacts of the Indian industries regarding the use of GSCM*

Green designs, green operations and green procurement strategies have a long-lasting and potential impact on the growth and sustainable development in the Indian industries. Unlike the traditional supply chain process, it has been evaluated from the findings of the primary and secondary research evidence that the green supply chain considers all the processes and techniques of the supply chain and motivates the other business organizations to adopt the same practices. The green design of the product helps in reducing the adverse climatic change and environmental impact and this has been potential growth for the Indian industries and its contribution to the global supply chain operations (Tan *et al.* 2016). Moreover, the GSCM approaches have helped to reduce the pressure from the Governmental as well as customers

and supplier's end by cost reduction through environmental innovation. Therefore, it can be stated that GSCM has integrated the Indian industrial system to become more energy-efficient and avoid harming the environment directly.

#### *6.2.4 Linking with Objective 4:*

##### *Issues and challenges associated with the use of GSCM in the Indian industries*

The major issue in the implementation of the GSCM approaches in the Indian industries can be seen in the mining sector. Due to the lack of Human resources management and the awareness campaign on the employees with the effective use of GSCM practices, the employees face challenges while adopting the GSCM practices in the mining sector (Sachdeva *et al.* 2015). Moreover, the research study has also presented relevant facts and information regarding the poor legislative principle and the changing regulatory guideline from the Government in adaptation of GSCM practices. Limited number of resources for creating a proactive corporate environmental position creates a challenge for the Indian business to adopt GSCM practices. On the other hand, the lack of direct incentives and the financial constraints are significant issues that need to be dealt with while implementing GSCM practices in the Indian sector.

### 6.3 LIMITATIONS

The researcher has faced several limitations and drawbacks while completing this study due to the occurrence of the global pandemic situation. In order to carry out the research, the main problem that has been overcome by the researcher is the collection of the data through social media and online web portals and maintaining the privacy of the data with its validity and reliability (Hughes *et al.* 2019). Often while exchanging information through a social media platform, the data was misused and misplaced and this created a difficulty while evaluating the result of the data. Moreover, time management has been a major issue that created difficulty in meeting the deadlines for the research requirement and submission. Obtaining consents from the research participants and managing surveys for such a huge amount of the population has been a challenging job for the researcher.

Moreover, there are financial restrictions as well the researcher due to travelling to places for collecting data faced that and printing documents for research related work (Podsakoff and

Podsakoff, 2019). As it is academic research, the monetary restrictions have been a real limitation for the researcher in accumulating all the facts and relevant information in a proper and systematic manner. The collection of raw materials and data for completing the research work has been a limitation for the researcher in this pandemic situation.

#### 6.4 RECOMMENDATIONS

The research has provided numerous data in discussing and identifying the potentiality and implementation of the GSCM approaches in Indian industries. However, it cannot be denied that implementation of the GSCM model by the modern-day Indian business organizations has to face several issues and challenges from a wider perspective (Tseng *et al.* 2019). The Indian industries need to use eco-friendly and safe products to reduce the growing impact of environmental degradation and climate change within business organizations. In order to ensure sustainable business practices adaptation of green and clean technologies by hiring youth talents India can balance in creating a global hub of clean technological products.

Moreover, by focusing on green sourcing and procurement-based initiatives by the business organizations in India can help in the adaptation of GSCM practices across the Indian industries. The use of technological implications and focus of the industries on developing innovative technologies can ensure an eco-friendly business process (Luthra *et al.* 2016).

The waste that are generated by the industries during vicarious industrial operations needs to be used as an input material in some other operations that helps in attaining the sustainable growth for the business (Tseng *et al.* 2019). The development of a waste mechanism for addressing hazardous waste management practices can help in avoiding the toxic contamination of the industrial goods and products with the non-toxic ones.

Another strong recommendation to the Indian industries in addressing the issues and challenges of the GSCM approach is providing appropriate and adequate training and development of the staff and other members in the supply chain and logistic operations regarding the use of the new GSCM model and technology (Majumdar and Sinha, 2019). This entire learning and

development process can help in making the implementation of GSCM within the industry successful.

## 6.5 FUTURE SCOPE

The particular research study has focused more on the quantitative survey procedure for obtaining the specific results related to the research topic. However, there are the future scope and research areas to present a more open-ended response and viewpoints of the Managers from the logistics industry in India regarding discussing the issues and advantages of the implementation of the GSCM practices within these industries. By the adaptation of more qualitative techniques to measure the performance and focusing on thematic based research application, calculating the carbon emissions of any particular process can be done through a simple descriptive scenario (Bulsara *et al.* 2016).

The research study has been evidence that GSCM is a sustainable model that can be adopted by the supply chain operations of the business industries in India for achieving better economic and social benefit. However, there are future areas and scope of the study in determining the role of the management and decision-making of the operations in implementing GSCM and effective application of it within the business area. The restrictions that were available to the researcher due to the current pandemic situation have made the researcher unable to obtain and collect data from varied sources and presenting the raw material relevant to the research (Mathiyazhagan *et al.* 2016). Moreover, there is also the further scope of the researcher to identify more concrete and specific research objectives that narrow down the research area and focus on the specific role of the GSCM approaches within the business management and operations.

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