CHAPTER 2
LITERATURE REVIEW
Literature Review

2.1 Introduction

This chapter discusses about the previous studies conducted in the research area mainly in manufacturing sector. It starts with evolution of GSCM concept followed by the studies in manufacturing organizations on green supplier development, GSCM practices implementation, GSCM drivers and GSCM performance. Finally, it reveals the gap in previous studies followed by conclusion.

2.2 Evolution of GSCM Concept

GSCM has emerged as a modern business model and sustainable strategic tool which can control waste of resources and save society. GSCM has gained popularity with both academics and practitioners to aim in reducing waste and preserving the quality of product-life and the natural resources. The literature in GSCM has been growing as organizations and researchers begin to realize that the management of environmental program and operations do not end at the boundaries of the organization (Zhu et al. 2005).

According to Lee et al. (1997) green supply chain mainly includes two aspects; first, the internal management and strategy to minimize resource consumption and increase productivity as well as profit, and second, cooperation among the company and supply chain partners to increase the ability to protect environment and lower the cost. The GSCM has its roots in product life cycle analysis and design of product to reduce waste and environmental risk.

The first environmentally concerned product design literature came into context in 1991. Chandra (1991) presented the first article of the literature to consider the need for a green design to reduce the impact of product waste. Roy and Whelan (1992) addressed issues related to management of end-of-life of
Ashley (1993) addressed design for environment, as a main concept of industrial ecology system. They underlined the importance of product and process design for the efficiency, recollecting, recycling of material and preventing pollution. Afterwards, design of product and process has become an influential factor in the development of environmentally concerned production systems and products. Kousuke & Charles (1994) emphasized on the design for a product retirement and material life - cycle. They stated that life-cycle design of a product can increase the value of product, whilst minimize the cost and environmental impact. In addition design of product should be intended for its easy disassembly and reprocessing of subassemblies and components.

The concept the GSCM was formally proposed by U.S. Michigan State University’s Manufacturing Research Institute (MRC) in 1996, when they did the research in “Environmentally Responsible Manufacturing (ERM)”.

2.3 Studies on Manufacturing Organizations

In the last two decades globalization has changed manufacturing organizations drastically with large number of opportunities at various locations and customers. This change has created numerous opportunities for economic growth and employment as well as challenges related to availability of resources, complex supply chain and environment management. Therefore, researchers have inclined their interest towards manufacturing supply chain and environmental management. Various studies have undertaken to reveal insights of manufacturers and suppliers GSCM practices, drivers and performance aspects in developed and developing countries across the world.
2.3.1. Green Supplier Development

After the quality and environmental revolution supplier integration and management has emerged as a tool to reduce waste at the source and improve environmental and economic performance in manufacturing organizations. Bowen et al. (2001) derived three main types of green supply chain using exploratory factor analysis namely, greening the supply process (supplier management), product-based green supply (by products management while purchase) and more proactive approach (use of clean technology, share environmental risk) while implementing in an organization.

Geffen & Rothenberg (2000) examined the role of partnership between original equipment manufacturer (OEMs) and suppliers to improve environmental performance, with the case study analysis of three U.S. automobile assembly plants. They found that closer relationship contributes to improved environmental performance through the implementation of innovative materials and related processes. Besides, Handfield et al. (2002) developed a decision support model to evaluate environmental traits and examine performance of suppliers with the help of analytical hierarchy process (AHP) method. They also presented three case studies to present the benefits and weakness of using AHP in supplier evaluation.

A supplier environmental initiatives are depends upon the customers’ requirements. Simpson et al. (2007) investigated relationship between supplier’s environmental performance and customer’s environmental performance requirements with two relationship moderators namely, investment contracting and monitoring routines. They collected data through structured survey from first and second tier component manufacturers in the Australian Automobile Industry and analyzed data through liner regression. The findings reveal that investment contracting influence the responsiveness of suppliers to perform as per customers’ environmental performance requirements.
Lee (2008) empirically investigated the supplier involvement in the course of operational life cycle stages (product design, procurement, manufacturing/assembly, distribution, logistics and packaging), environmentally friendly practice (waste reduction, recycle, reproduce, reuse and disposal) and environmental performances (quality, cost and flexibility) using structural equation modelling in automobile sector. They found significant relationships among supplier in operational stages, environmentally friendly practice and environmental performance.

Their research significantly contributed in the new insights of automobile manufacturers’ environmental performance improvement through integrating suppliers and green initiatives into supply chain activities. They pointed that assessment of supplier’s impact on the state of operational stages allows an automobile manufacture to verify how it performs with respect to environmental friendly practices and environmental performance.

Additionally, this research justified the need of green procurement by integrating suppliers and core manufacturers of supply chain.

Vanalle et al. (2014) identified most valued GSCM practices and important factors while selecting supplier in the Brazilian automobile sector. They collected data through structured questionnaire and applied descriptive statistics. The most valued GSCM practice in sample organizations to eliminating or reducing the use of hazardous substance/ materials and while selection of supplier the operational performance (include the amount of products delivered on time, commitment to quality management, delivery time, and order compliance rate) found as the major criteria.
2.3.2. GSCM Practices Implementation

The choice of GSCM practices depends up on some external and internal factors of organization like type of operations, nature of product, management policies and support and stage of organization in the supply chain of industry (i.e., supplier, OEMs, distributor). There are numerous studies conducted on GSCM practices. Zhu & Sarkis (2007a) found significant positive relationship between organizational leaning and management support and the adoption of GSCM practices in Chinese manufacturing firms.

In another study Zhu et al. (2008c) performed cross-sectional analysis with four Chinese manufacturing industries: power generating, chemical/petroleum, electrical/ electronic and automobile, to evaluate their GSCM and closing the supply chain loop (reverse logistics). They found the insights capabilities of manufacturers in implementation of GSCM practices and concluded that these practices are not considered equally across the four industries. Hence, GSCM practices implementation level and choice of practice varies as per the industry operations and requirements.

Hsu et al. (2008) developed a model to prioritize practices while implementing GSCM practices in electronic industry. They collected data from nine medium and large electronic manufacturers and applied fuzzy analytical hierarchy process method to prioritize the relative importance of GSCM practices. The findings indicate that supplier management and organizational involvement are the two most important decisions for implementing GSCM practices followed by product life cycle management and product recycling. Zhu et al. (2008a) applied confirmatory factor analysis to construct both first and second order GSCM practices model. They developed standard constructs and scale to implement GSCM practices in manufacturing organizations.

Few studies addressed common practices among manufacturing organizations. Eitayeb & Zailani (2009) empirically investigated the adoption of green supply chain initiatives namely, green purchasing, eco- design, and reverse
logistics among ISO 14001 certified manufacturing firms in Malaysia. Eco-design was found to be the most adopted practice followed by green purchasing whereas reverse logistics adoption level found very low. Moreover they found that manufactures with more number of suppliers are practicing more green purchasing initiatives than lower. They also found that green adoption level is no significantly varied between firm age and type of product.

Zhu et al. (2010) compared implementation of internal environment management, eco-design, customer cooperation, green purchasing and investment recovery in Japanese and China large manufacturing firms. They found that internal environmental management practices as most adopted practice in Japanese manufacturers than Chinese manufacturers.

Shang et al. (2010) investigated GSCM capability dimensions related to electrical manufacturing firms in Taiwan with 167 samples. They identified six GSCM dimensions using factor analysis: green manufacturing and packaging, environmental participation, green marketing, green supplier, and green stock and green eco-design. Afterward, they assigned four groups to the respondents on the basis of factor score in the six dimensions, namely the weak GSCM oriented group, the green marketing stock oriented group and green supplier oriented group. ANOVA revealed that green marketing oriented manufacturing firms had the best firm performance in terms of corporate image improvement, environmental regulation, market share sales customers satisfaction and customer loyalty. They suggest that for successful competition in different markets it is necessary for electronics related manufacturing firms to assess their strengths and weakness in their GSCM capabilities.

However, they have investigated the strong and weak part of GSCM capabilities and its effect on performance but still not focused on efficacy of GSCM practices.
Choudhary & Seth (2011) integrated Green Supply Chain (Refer Figures 2.1 & 2.2) for forward direction GSCM (FGSCM) and reverse direction GSCM (RGSCM) with special reference to Indian Automobile Sector. They stated that with the integration of four heads the automobile organizations can systematize their supply chain. They classified GSCM into following four heads:

i. Supplier (Inbound): Green purchasing and the integration of supplier into environmental processes;

ii. Organizational (Operational): Cleaner production, design for environment, remanufacturing and lean production;

iii. Distribution (Outbound): Green marketing, environment friendly packaging and distribution; and


Figure 2.1: Integration of Green Supply Chain Management (Source: Choudhary & Seth, 2011)
Irajpour et al. (2012) applied fuzzy DEMATEL method and found the most critical factors of GSCM implementation in Iran Automobile sector. Their findings show that, environmental policy of organization, agreements and legislations of domestic and international government, green and cleaner production, effective communication within the organization and with supplier and creation of green brand image are critical factors while implementing GSCM practices. Jain and Sharma (2012) investigated common GSCM practices among automobile and auto component organizations in India. They found that some practices are at the best stage and most are on the primary level of adoption.

GSCM practices implementation depends up internal strategies of organization. Some organizations are proactive on the other hand others are found to be reactive. Proactive adopters are more focused towards resource optimization and create competitive advantage for organization, whereas reactive adopters only concerned about those green initiatives which are forced by legislation. Zhu et al. (2012) divided GSCM practices adopters into three type of manufacturers namely; early adopters, followers and laggards among Chinese manufacturers. They applied cluster analysis to group under three heads. They found significant difference in the internal environment management practices among three clusters.
Luthra et al. (2013) identified and ranked strategies for the successful implementation of GSCM practices in Indian manufacturing sector with the help of experts view and Analytic Hierarchy Process (AHP). They divide strategies into four categories namely, non members of supply chain, downstream supply chain members, organizational members and upward stream supply chain members. Lo (2014) investigated the relationship in supply chain position of an organization in the industry and type of GSCM practices adoption. They divided Taiwan’s high tech industry into three stages: upstream (raw material supplier), midstream (original equipment manufacturers) and downstream (brand company). They found that the green design, green purchase and internal environment management practices are mostly adopt by downstream organizations and mid stream found to be more focused on green manufacturing and logistics practices.

Luthra et al. (2014) empirically investigated the implementation status of GSCM practices in Indian Automobile Sector and impact of practices on performance. They considered GSCM practices namely, green product development and design, green purchasing, green production and use of cleaner technologies, green management, green marketing, and green logistics. They conclude that most of Indian automobile manufacturer have adopted GSCM practices and it significantly improve the environmental, economic, social and operational performance of organizations.

2.3.3 GSCM Drivers and Practices

Earlier, the literature emphasized on the environmental purchasing and organizational characteristics to adopt environmental supply chain practices. Carter et al. (1998) empirically examined the inter-organizational factors that impact environmental purchasing in an organization. They found that organization’s coordination with suppliers as well as downstream members namely, distributors and retailers of the supply chain, is required for effective environmental purchasing.

Min et al. (2001) identified variables that either promote or discourage the successful implementation of green purchasing and its effect on the firm’s supplier
selection, waste management, packaging and regulatory compliances. They found that organizations those purchase large volume of material and sincere about environmental regulations are more concerned about their environmental liabilities and it influence the implementation level of green practices into their supply chain.

Moreover, they also found that firms those are aware about cost saving through waste reduction at source are frequently practicing recycling and reusing of waste. Investment required for establishing green purchasing program was found the main obstacle in implementation of green purchasing practices. Thus, there are some internal and external factors which influence effective implementation of GSCM practices in organization supply chain.

They are defined as drivers or inducements that incite organizations to adopt GSCM practices. Previous studies identified numerous drivers that have potential to drive organizations. Davidson and Worrell (2001) identified association of the regulatory pressures with and organization’s decision to adopt GSCM practices which include the non-compliance penalties.

Delmas & Toffel (2004) developed an institutional theory by proposing that stakeholders include: government, regulators, customers, competitors, community and environmental interest groups and industry associations- improve coercive and normative pressures on firms and both institutional pressures and organizational characteristics influence organizations to adopt environmental management practices. Walker et al. (2008) categorized drivers as internal (organizational factors) and external (regulations, customers, competitors, society and suppliers). They found that external drivers are stronger than internal drivers.

Lee et al. (2008) empirically examined the drivers for suppliers in participating in GSCM practices in small and medium-sized organizations of South Korea. Their findings reveal that buyer environmental requirements and support are most influencing factors for suppliers’ willingness to participate in GSCM practices. The government environmental policies are also significant drivers. Besides, some internal factors such as: suppliers’ slack resources and organizational capabilities can increase willingness to participate in GSCM practices.
Holt & Ghobadian (2009) examined the extent to which drivers influence GSCM practices among UK manufacturing firms with the help of regression analysis method. They considered variables such as: drivers - legislation, internal, competitive, supply chain and societal and practices - internal environment management, logistics, supplier assessment and evaluation, green procurement and logistics and supplier education, coaching and mentoring. Legislation and internal drivers are found most essential drivers, whereas, societal drivers least essential to improve environmental performance of organization.

They found that sample organizations were not proactive in external GSCM practices rather only focused on internal and high risk oriented practices in their supply chain.

Yang & Sheu (2011) applied case study of computer industry in Taiwan and China to find out the impact of regulation on GSCM. They found that European Union regulations promote green partnership among all size of manufacturing firms in the international supply chain. Wu et al. (2012) investigated the relationship between GSCM drivers (which include organizational support, social capital and government involvement) and GSCM practices (which include green purchasing, cooperation with customers, eco-design, and investment).

Eltayeb & Zailani (2009) stated that Malaysian organizations respond to regulations and customers’ pressures that force them for the adoption of GSCM practices but the adoption decision is based on the benefits obtained by those practices. Thus, expected benefits have the greatest impact on GSCM practices adoption. Subhani et al. (2012) examined the drivers and barriers of GSCM practices implementation in small and medium size enterprises in Pakistan. The findings revealed that presence of strong rules and regulations imposed by the government and the pressures exerted by the customer promotes the use of green supply chain in SMEs. Besides, the major barriers include lack of awareness and its advantages.
In the Indian perspective, Diabat & Kannan (2011) applied interpretive structural modelling (ISM) framework to develop GSCM drivers’ model and validated through case study analysis of manufacturing firm in southern India. They found government regulation and legislation as most influential driver to reduce and eliminate product environmental impact. In addition, Mohanty & Prakash (2013) empirically tested GSCM practices and pressures in micro, small and medium enterprises (MSMEs) in India. They found significant pressures from external stakeholders to Indian MSMEs to adopt GSCM practices.

2.3.4 GSCM Practices and Performance

Researchers argued that organizations adopt only those practices which are economically beneficial to them for a long run. Besides, GSCM practices enhance various performance aspects of organization like, environmental, economic, operational, competitive, social and others. There are many authors who have developed relationship between GSCM practices adoption and its impact on performance.

Rao et al. (2002) investigated the implementation level of GSCM practices with only two stages of supply chain namely, environmental initiatives within organization and greening of suppliers and its impact on performance in manufacturing sector in South East Asia. They found that significant link in GSCM practices and environmental, economic and competitive performance, whereas, environmental performance found no significant link with economic performance. Hence, environmental performance may not generate economic benefits to organization.

Zhu at al. (2004) examined the moderating effect of quality management and Just in Time (JIT) techniques on relationship between GSCM practices and performance in Chinese manufacturing enterprises. They found quality management as a positive moderator to enhance performance along with GSCM practice, whereas, JIT found negative moderator which may cause degradation of environmental performance. Hervani et al. (2005) provided issues related to the
environmental (green) supply chain management performance management through literature review. They have provided an integrative framework to study, design and evaluate GSCM performance tools.

Rao & Holt (2005) empirically tested relationship in GSCM practices, competitiveness and economic performance with the help of Structural Equation Modelling (SEM). They found significant link in greening in-bound, production and out-bound practices with competitiveness and economic performance. Whereas, Menzel et al. (2010) analysed annual and sustainability reports of European automobile and pharmaceutical industries to investigate the trend and effect of green manufacturing on financial performance. They found decrease trend in the use of electricity and reduction in the CO2 emission. However, green manufacturing found insignificant to improve profit margin and sales.

Eltayeb et al. (2010) empirically investigated effect of GSCM practices (which include green purchasing, eco-design and reverse logistics) on environmental, economic, operational and intangible outcomes. The study was conducted ISO 14001 certified organizations in Malaysia. Their study revealed a significant positive effect of eco-design on all the performance outcomes, whereas, reverse logistics was found positive relationship with operational and green purchasing found ineffective to improve organization performance.

Thus, GSCM practices have divergent influence on organization performance. Additionally, selection about performance criteria and performance measurement is also important task for organization while implementing GSCM practices. Lin et al. (2011) explored criteria for GSCM performance evaluation of the automobile manufacturing industry by using fuzzy set theory, decision making system trail and evaluation laboratory.

They used this hybrid method to find out key criteria in improving the manufacturers green performance namely, environmental, economic positive, economic negative and operational performance. They found that increase in the cost for purchasing environmental friendly material is the most influential and
significant criteria for performance evaluation. In addition, pollution control initiatives are the most effective performance criteria for automobile manufacturing industry.

They conclude that increase in the cost for purchasing environmentally friendly material is the cause of all issues in automobile industry. Hence, increase in the investment to reduce environmental burden is an important concern for implementing GSCM practices in automobile sector. In addition, Dey & Cheffi (2012) developed an analytical framework for measuring environmental performance of focal manufacturer supply chain by combining three major concepts: supply chain management, environment management and performance measurement. They integrated supply chain processes (supplier relationship management, internal supply chain management and customer relationship management) with organizational decision levels (both strategic and operational) and developed a framework to measure environmental performance. This framework includes namely; environmental planning, environmental auditing, management commitment, environmental performance, economic performance and operational performance.

Chiou et al. (2011) constructed and validated a relationship model of greening the supply chain, green innovation, environmental performance and competitive advantage in Taiwan Industry. They found that greening the supplier through green innovation significantly contribute to improve environmental performance and competitive advantage of the firm. Lee et al. (2012) explored effect of GSCM practices on business performance in electronics SMEs industry in Korea. They developed a research model relating to GSCM practice and business performance through three organizational variables (employee job satisfaction, operational efficiency, relational efficiency) and tested using structural equation modelling method. They found insignificant direct link between GSCM practices and performance. Besides, significant indirect relationship was found between GSCM practices and business performance through mediators: operational efficiency and relational efficiency.
Thus, their study reveals that business performance will be improved when implementation of GSCM practices enhance operational and relational efficiency.

They considered operational efficiency as: the ability of supplier to reduce cost and cycle time, improve product quality, create greater customer value. Whereas, relational efficiency as: the ability of supplier to increase transparency and openness in the business process, jointly work with buyer so that trust and credibility can be developed with buyers.

However, the efficacy of GSCM practices still not explored.

Giovanni (2012) compared impact of internal and external environment management practices on performance in 138 Italian firms. They found internal environment management practices more effective to improve environmental and economic performance than external management. Their study provides insights into effectiveness of GSCM. Though, GSCM ability was not acknowledged. Kung et al. (2012) applied multiple regression analysis to investigate relationship in value (supply) chain management and environmental performance, in Taiwanese manufacturing industries. Their findings revealed a positive relationship between green value chain and environmental performance.

Green et al. (2012) collected data from US manufacturing managers and applied structural equation modelling method to test impact of comprehensive GSCM practices on performance. Their finding reveals adoption of GSCM practices leads to improve environmental performance and economic performance which in turn positively impact operational and organizational performance.

Sezen & Cankaya (2013) investigated the influence of green manufacturing and eco innovation on corporate sustainability performance (economic, environmental and social) in automobile, chemistry and electronic organizations in Turkey. They found significant positive impact of green manufacturing and eco -process on environmental and social performance, whereas, eco – product innovation was found insignificant. In addition, Digalwar et al. (2013) explored the
They found 12 parameters to measure green manufacturing performance namely, top management commitment, knowledge management, employee training, green product and process design, employee empowerment, environmental health and safety, suppliers and materials management, production planning and control, quality, cost, customer environment performance requirement, customer responsiveness and company growth.

As discussed earlier that GSCM practices can be divided into proactive or reactive practices. Similarly, Laosirihongthong et al. (2013) grouped GSCM practices as: pro-active practices (green purchasing, eco-design, reverse logistics) and re-active practices (legislation and regulation). They examined the relationship between GSCM practices implementation Impact on performance. Their study revealed a significant relationship in reactive practices and environmental, economic and intangible performance, whereas, reverse logistics found low levels of adoption and insignificant impact on GSCM performance.

Yu et al. (2014) empirically tested a conceptual framework of integrated GSCM practices and operational performance (flexibility, delivery, quality and cost) with the help of structural equation modelling method. They found significant positive relationship in integrated GSCM practices i.e., internal GSCM, GSCM with customers, GSCM with suppliers and operational performance of automobile manufacturers in China.

Donghyun et al. (2015) investigated the impact of GSCM practices on performance with mediating role of collaborative capabilities. They applied hierarchical regression on data collected through manufacturing organizations in South Korean. They found that implementation of GSCM practices improves environmental and financial performance. In addition, collaboration among all the partners of supply chain in the implementation of GSCM practices improves financial performance of the organization.
2.3.5 GSCM Drivers, Practices and Performance

Few studies developed linkages in driver, practices and performance. Zhu et al. (2005) performed descriptive statistics results analysis of 314 Chinese firms about GSCM drivers, practices and performance. Their study shows that regulatory, market and competitive drivers have created awareness among Chinese firms but adopt level of GSCM practices found still low and those who have adopted GSCM practices have better environmental performance.

Zhu & Sarkis (2007a) used drivers (market, regulatory and competitive) as moderators and examined the relationship between GSCM practices, environmental and economic performance. They found increasing pressures on Chinese manufacturers to implement GSCM practices. Market and regulatory pressures found to be more effective to adopt green purchasing and eco-design. In addition, competitive pressures also found significant moderator to improve economic performance from adoption of GSCM practices.

Chin et al. (2007) investigated GSCM drivers, practices and their impact of practices on performances of original equipment and original design manufacturers in electrical and electronic industry in Taiwan with the help of path analysis. The findings revealed that green procurement and green manufacturing practices are intensively adopted by manufacturers which generate favourable environmental and financial performance. They have also found that environmental regulations and external stakeholders have significant and positive influence on GSCM practices adoption.

In Indian context Shukla et al. (2009) identified implementation level of GSCM practices, main drivers and performance of automobile cluster at central India with personal interview and questionnaire survey from 30 manufactures. They found regulatory and internal drivers significant to implement GSCM practices in Indian automobile sector. GSCM practices implementation level of customer cooperation was found high, whereas, investment recovery and eco design found
very poor level of implementation. Green purchasing and internal environmental management was not at all implemented by manufacturers. In addition, implementation of GSCM practices resulted in increase in investment of manufacturers.

Lin et al (2012) collected data about green initiatives, pressures and performance from US and Taiwan manufacturing plants in electric and electronics industry. They found that institutional (regulatory) pressures significantly influence adoption of GSCM practices and improve organizational performance. Zailani et al. (2012) developed a conceptual model of external drivers, eco – design practices and environmental performance and verified relationship with the help of Structural Equation Modelling (SEM). They found that external drivers significantly influence adoption of eco - design and direct and indirectly both influence environmental performance of the firm.

Lee et al. (2013) empirically investigated the relationship between the direction of internal and external pressures of GSCM practices and supply chain performance (which include flexibility, resource requirement, and output). They applied Confirmatory factor analysis and confirmed the importance of implementing environmental supply chain practices for sustainable competitive advantage and performance. Zhu et al. (2013a) empirically tested Chinese manufacturers’ pressures, GSCM practices and performance outcomes using path analysis. They found significant link in pressures and adoption of GSCM practices (both internal and external). They also found that implementation of GSCM practices and economic performance but can improve it indirectly.

Hsu et al. (2013) proposed that the drivers of GSCM practices implementation can be measured through second order construct as well. They applied structural equation modelling approach and validated the drivers’ impact on implementation of green purchasing, design for environment and reverse logistics. They found that regulatory, competitors, customers and social-cultural responsibilities collectively construct a higher order of GSCM drivers and significantly influence the implementation of GSCM practices in ISO 14001
certified organizations of Malaysia. They conclude that organizations those perceive more pressure to initiate GSCM practices are able to develop more GSCM capabilities.

Adebambo et al. (2014) investigated effect of environmental regulation as a moderator on the relationship between sustainable environmental manufacturing practices and firm performance (include environmental, financial and operational) in manufacturing organizations of Malaysia with the help of structural equation modelling. They found that regulations only moderate to environmental performance not financial and operational performance. Hence, there is need to reframe environmental regulations to enhance financial and operational performance as well for manufacturing organizations.

Following two researchers has given new insights of GSCM in Indian manufacturing sector.

Meera & Chitraman (2014) empirically investigated manufacturing industries in Tamilnadu, India and developed a model of external pressures, GSCM practices and environmental performance with path analysis using Smart PLS software. They found the significant and positive relationship in constructs. GSCM pressures (include customers, export market, industry groups, competitors, stakeholders and government) that influence the GSCM practices (include inbound, outbound, manufacturing, reverse logistics and management practices) can improve environmental performance. They found that government regulations and export market are major drivers in Indian manufacturing sector and environmental management system is widely implemented in Indian manufacturing organizations.

In addition, Mitra & Datta (2014) examined the status of GSCM initiatives in India. They found that adoption level of GSCM practices is at the initial stage, customers’ awareness on environmental issues is low, and regulatory framework is lacking to promote environmental awareness. In addition, supplier environmental collaboration had a positive impact on product design and logistics which enhance the competitiveness and economic performance of the organization.
2.4 Conclusion

The chapter has reviewed literature on GSCM practices, green suppliers, drivers, and performance. The literature has come out with various gaps. First, maximum studies are on GSCM practices implementation. This reveals the scope to measure efficacy of GSCM practices. Second, in the most of the studies only large or medium or small scales manufacturing organizations are focused. Therefore, there is scope for combining all the scale of organizations. Third, there are few studies in Indian context and sample is limited up to a cluster or state. However, there is scope to empirically study broad perspective of Indian Automobile Sector from various states and manufacturing clusters. Forth, integrated green supply chain empirical studies are rare. Thus, there is scope to investigate integrated green supply chain includes; design, procurement, manufacturing, packaging, warehousing & building, transportation & distribution and reverse logistics practices.

These identified gaps of literature have provided directions and motivation for the study. Subsequently, in the next, chapter- 4 of the study will provide detail about the research methodology applied for the attainment of objectives of the study.