

Public-Private Partnerships (PPPs) For Managing Green Supply Chain (GSCM) In India

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Abstract

The impact of business practices on the environment has significantly increased with the increased global competition. The businesses and the governments in many countries are focusing towards improving their distribution capabilities. It has become much difficult to meet the global environmental standards while performing supply chain activities globally. The businesses using traditional supply chain approach are now struggling hard with the growing competition. It is the high time for the organizations and the governments to shift their efforts from traditional to the sustainable environment-friendly supply chain management methods, i.e., Green Supply Chain Management (GSCM). However, one of the major concerns is the wide-spread acceptance of the GSCM practices to build a strong network throughout the nation, which is too difficult for the private companies on their own. After reviewing numerous research papers, the paper recognized the requirement to put combined efforts by the government and the private players involved in supply chain practices. Managing GSCM through Public-Private Partnership (PPP) can prove to be the most suitable option to resolve the increasing concern of the businesses and the governments as well. This paper also tries to describe the various challenges of GSCM that can be easily addressed through the PPPs.

Keywords:

Green Supply Chain Management (GSCM), Challenges of GSCM, Public-Private Partnerships (PPPs), Managing GSCM through PPP, etc.



Public-Private Partnerships For Managing Green Supply Chain In India

The businesses in many developing countries like India are facing continuously increasing competition. The firms are trying their best to address the external challenges imposed by the social, economic and the

political forces to achieve sustainable growth and accordingly built huge transportation and storage infrastructure (Beamon, B. M., 2008). In many countries like India, the governments and the businesses are joining their efforts and attempting hard to improve their supply chain infrastructure, and at the time, better image building has become their prime concern. The companies are putting their efforts to manage their whole supply chain through environment-friendly techniques. Such Green (environment-friendly) techniques have dramatically raised the industry standards and their expectations from the farmers as well. The agro-product producers and the processing units are also consistently trying to match the industry standards for delivering increased value to the end customers. The farmers and food processing companies have a clear perception of the fact that the organizations that follow stringent industry standards concerning to environment & society perform better. But does following these environmental standards suffice? What further changes should be considered to adopt the environment-friendly Green Supply Chain to be implemented completely? How can government associate with the private sector and contribute to better value creation for the user? It is also necessary to find the answers to these questions as; not only the environmental requirements but the businesses also have to match the regulatory and technological requirements to leverage such competitive advantages. The technological upgradation is a significant factor in agriculture sector also to improve the productivity, and the quality of the food produces. Use of upgraded technology enhances the production capacity on the one hand; while on the other hand, the over-usage of fertilizers and chemicals is one of the major environmental concerns that many countries are facing and India is also one of them. The government of India (GoI) is also running many programs for growing awareness about these environmental concerns among various stakeholders of agri-business SCM. The GoI is also promoting environment-friendly Green Supply Chain Management (GSCM), and Green farming techniques. Increased usage of organic inputs in processing, use of recyclable and environment-friendly packaging, and "fair-trade" are the examples of some of these trends (Boye, J. & Arcand, Y., 2012). The governments at the local and state level are considering many such projects with the proactive participation of the private sector to satisfy the current supply chain requirements in the Indian context. These partnerships with the private actor and the public entity for the supply of public goods are favorable in many aspects; however, quite expensive regarding the time and efforts required (Gardner, J. T., et al., 1993). This concept of Public-Private partnership (PPP) has been emerging in India since 1990 and being opted for many capital-intensive government projects for the delivery of the public services in various sectors. Indian supply chain industry has numerous complexities and challenges that affect the efficiency of the overall supply chain network. These challenges to the SCM also affect the easy adoption of the Green Supply Chain Management (GSCM). This paper tried to assess the current situation of the Green Supply Chain Management practices (GSCM) in India and identify the means for improving the same.

Green Supply Chain Management: India

With globalization, various Indian organizations are now compelled to look beyond their comfort area and team up with the new supply chain partners. This has increased not only the opportunities in the supply chain sector but also brought many new challenges to cope up with the rapidly increasing demand for better value. The environmental changes in past few years have also envisaged as one of the key challenges to the supply chain process in India. The companies have been consistently searching for the increased opportunities to earn a better profit in such growing competition. This has also deteriorated the environmental condition; due to which, adoption of green supply chain management practices has become the need of the time. The governments at different levels in India has now considering such environment concern sincerely and started various consumer awareness programs regarding the environmental safety. In India, the GSCM is relatively an emerging concept that has come into notice in 1980 under the domain of quality revolution and then as supply chain revolution in the 1990s (Srivastava, S., 2007). Several researchers based on their observations have defined the green supply chain management. One of the

recent definitions in the context of agricultural supply stated that “A closely linked systems of various stakeholders from “farm to fork” to produce the environment-friendly products and then deliver such farmed produces to the end consumers through agricultural supply chain” (Gendron, C. & Audet, R., 2012). The adoption and usage of GSCM is need of the current time. Green Supply Chain Management (GSCM) not only plays a key role in minimizing the cost of delivery of the goods and services but also helps the organization in providing the enhanced value to the end consumers. The GSCM, consequently lead the businesses to improved performance and the higher profitability. The process of GSCM similar to that of the traditional supply chain management; however, the use of environment-friendly techniques for the executing the operations add the value to the outcome of the GSCM. There are many aspects significant to the process of GSCM, of which the smooth movement of various resources is the most important aspect. “This resource movement includes the movement of information, movement of products, financial movement, etc. The movement of information involves transmission and processing of the order and delivery-status updating activities. The product movement involves the flow of goods and raw materials from the suppliers and the end user. This also includes the process of reverse logistics, when required. The financial movement involves all financial transactions during the complete supply chain, such as invoices and payments processed and received, etc. (Rais, M. & Sheoran, A., 2015).” While performing all these operations, the main focus of the organizations is that the environment should not get affected by the whole process. Although, it is not as easy as it looks like to be in the diverse country like India. In India, the availability of the perishable goods to the end customers is quite low because about 25% to 30% of the production gets wasted or damaged during the post harvest process of distribution (Rais, M. & Sheoran, A., 2015). Further, the high marketing cost and continuous price fluctuation are the big concerns for the businesses and the governments at various levels. The state and local governments are continuously trying their best to overcome these challenges; however, these can be efficient, if the private sector proficiencies are combined with the public policies.

Challenges to Green Supply Chain Management

The governments at different levels in India are trying hard to implement a widespread network of Green Supply Chain Management (GSCM) but still phasing numerous challenges from the surroundings. Some of the key challenges to GSCM can be elaborated as;

Lack of Government Regulations and the Support Systems.

Government designs the policy and set the environmental standards that have to be followed by the industry. These government standards and regulations motivate or demotivate the private sector to adopt the green supply chain management practices (Luthra, S. et al., 2011). The government regulation would reinforce the rapid acceptance and implementation of the strong GSCM network. The organizations are relatively less concerned for adopting the GSCM practices on the priority basis. Not only the regulations, but the government will also have to design a compatible support system that can ease the implementation of the GSCM. As identified in numerous other studies, “Limited government / institutional support for the new ideas to implement GSCM is another key barrier” (Srivastav, P. & Gaur, M. K., 2015). “The lack of government rules & regulations tend to motivate the organizations to work in the traditional way of operations” (Al Khidir, T. & Zailani, S., 2009). Thus, it is difficult to achieve the early acceptance of GSCM practices in the lack of government regulations and the efficient support system.

Lack of Awareness and Experience.

Many organizations generally failed to execute the GSCM effectively because of the lack of awareness and experience of the environment-friendly techniques. Without the experience and knowledge, the firms feel that it is too complex to implement the GSCM (Balasubramanian, S., 2012). The implementation of GSCM requires the adoption of technology advancement and awareness of environmental standards to adopt

which ultimately requires much time and the investment cost.

Resistance to Change.

The adoption and/or rejection of any new and innovative process into the operations of the firms need top management support. It is not possible to implement the GSCM in any organization if its employee or the top management is resistive to the changes to adopt (Hsu, C.W., & Hu, A. H., 2008). The support from the top management is essential for the successful implementation and execution of the GSCM (Srivastav, P. & Gaur, M. K., 2015). The resistance to change is again one of the key challenges to the GSCM in India. Many companies, however, now started to shift from their traditional method of operations to the innovative methods but still, many companies still resist the changing means of operations. All these major challenges to the GSCM implementation need combined efforts of the government / public sector entity and the private sector which can be effectively achieved through Public-Private Partnerships. The Public-Private Partnership (PPP) can ascertain to be the most effective and viable solution to all such challenges. The agricultural and the perishable goods can be delivered diversely at the distant locations through private sector's supply chain management expertise at the industry's environmental standards.

Public-Private Partnership as an Option

Public-Private Partnerships (PPPs) is relatively a newer concept in India. The term PPP was originated from the UK by the name of Public Finance Initiative (PFI), although, it has been introduced in India in the early 1990s for the improved and timely delivery of public service and public goods. Numerous researchers in the literature have debated the PPP as a concept since its inception. Although, no exact and widely acknowledged definition of PPP is recognized yet, and the concept is still being debated among many researchers. The PPP phenomenon as explained by Hodge (2004) as “the cooperative arrangement between the public and private sector entity to deliver services to the public which was previously provided by the public sector alone. The definitions of PPPs differ in scope and formality of arrangements. The form of PPPs varies from country to country with the available information and operation even within the developed countries.” The PPP as a dynamic phenomenon is exposed to several externalities. Many micro and macroeconomic factors affect the operations of the PPPs. However, it has evolved dramatically with time and experience in different sectors. Many evidences in the PPP literature have been demonstrated, where the public private partnership (PPP) has substantiated to be a beneficial for the economies across the world.

The PPP has been promoted and being used in many countries with an intention to flourish their various priority sectors, like; road, port, and railways infrastructure, water, energy and agricultural development and supply chain management etc. In India also, the PPP projects are being executed in around all these sector; however, the road infrastructure sector has greater share among all. “India's road network (including highway) is one of the most extensive networks with about 3.34 million km length comprising National Highways (65, 569 km), State Highways (1, 30,000 km) and Other roads (Major District Roads, Rural Roads and Urban Roads (3.14 million). Traditionally, these roads were developed completely through the government funds (of both Centre and State) by the public sector departments and agencies (of both Centre and State). This means of public procurement had given too less results and had been facing numerous operational and budgetary issues. The opening up of road sector to private sector began with highway development upon the establishment of NHAI” (Nallathiga, R. & Shah, M., 2014). One of the most significant rationale behind adopting PPPs is that the private players can stimulate the equitable access to the public services (ENVIROFI Consortium, 2011).

The PPP has been widely accepted application in various infrastructure and the service sectors. Use of PPP for the implementation of Green Supply Chain Management (GSCM) is comparatively newer idea to implement; however, has much scope and opportunity to deliver better value to the society and the

businesses. The government of India is also considering the option of PPPs in managing the supply chain activities for the prioritized public service delivery. The government can integrate their consistent efforts for greening the supply chain practices with the private players and create enhanced value by leveraging the private sector expertise. The private sector also tries to explore the new avenues of opportunities to earn more and more profit by collaborating with the public sector authority or the government. Hence, The PPPs are the win-win arrangement for both the public and the private sectors involved.

Public-Private Partnership for GSCM

As compared to the traditional Supply Chain Management (GSCM) activities, the GSCM through PPP involves the transfer/sharing of the risks and responsibilities to the parties best suited to take it. In a PPP, the government or the public sector agency make a cooperative arrangement with the private sector consortium. This consortium executes and delivers the public services on the basis of norms decided in a contract. PPP is one of the most debated concepts in the literature of the knowledge by numerous researchers. As recognized in the various research studies, The design, construction and the operational risk associated in a PPP are significantly transferred to the private-sector party (Iossa, E., & Martimort, D., 2015, Brench, A., et al., 2005). The implementation of GSCM activities through PPPs refers to an arrangement between the public sector and private sector party where both the parties come together in a long-term contract. The PPP concession would integrate/bundle all the activities and provide a superior value to all the stakeholders of the GSCM PPP project.

While deciding on whether to implement the GSCM through PPP or not, the public sector entity evaluates the complete range of the economic costs, risks involved, and the benefits to be achieved. The PPP route is only selected when the win-win situation is assessed for both the parties. When the process of procurement for implementing the GSCM is decided in detail, the public sector entity invites the bids from the interested private party to ensure an appropriate value is realized.

Need for Research

The businesses and the industries throughout the world are consistently enhancing their inherent capabilities to achieve success and the build better & sustainable future in such dynamic market conditions. The Indian organizations also have to start thinking beyond their four walls of comfort area and partner themselves with the other firm to improve their supply chain and distribution activities. The Indian organizations can leverage the partner firms' capabilities for greening their operations. Numerous Indian business organizations are today appreciating the significance of developing and implementing the Green Supply Chain Management (GSCM) network for creating better value for their business. In some of the studies of this area, it has been argued that "Responding to the growing need of the environmental amenities, GSCM has evolved over time, reflecting an incorporation of environment-friendly thought process, responding. GSCM involves an inclusive viewpoint, including product design, material sourcing and selection, manufacturing processes, delivery of final products to the consumers, as well as end-of-life management of the products" (Strivastava, S. K., 2007). However, it is not so easy to increase the adoptability towards the GSCM in India having the numerous challenges (some listed in this paper). These challenges hinder the success path of the industry and the businesses to grow. It has become the need of the hour, that the private sector should combine their efforts and capabilities with the public sector for the delivery of the public services and implements the GSCM throughout the system to save the environment. GSCM not only promotes the environmental safety but also reduces the overall cost of the doing business in long run. Thus, the private sector gets the opportunity of increase their productivity and the profit for their organization. The private sector, in collaboration with the government at various levels is consistently trying to build a clear and environment-friendly image in the mind of the customers, so that, they can capture a greater market share.

The GoI has also begun to focus their efforts on spreading awareness about the importance of environment-friendly Green Supply Chain activities among the businesses and the society. By doing so, the government is encouraging more and more business organization for adopting the environment-friendly supply chain practices. Many researchers and the academicians have tried to explore the field of GSCM and have started to focus on, how PPP as a concept can create an improved value for both public sector and the private players. This research paper as a part of our research study is also taken up to address the various challenges and concerns to the GSCM faced by the government at the different levels and the industry practitioners. This paper focuses on understanding the current scenario of GSCM in India with special reference to the agro-food and other perishable product industry. The paper tries to integrate the various dimensions of the green supply chain through Public-Private Partnerships (PPPs) in the Indian context.

In the next section, the relevant section of the literature is gathered, that would contribute to understanding the linkage between GSCM and the PPP better.

Research Method

An empirical review of the literature of Public-Private Partnership (PPP) and Green Supply Chain Management (GSCM) has been carried out using Web of Science and Google Scholar database, both. At first, in web of science, we restricted our search to the articles categorized under the topics of PPP and the GSCM. A total of 74 search results came at first, which were further narrowed down to 73 articles when we constrained to the articles in English language only. We thoroughly refined our search result to 23 articles only by restricting the search to the domain specific search categories.

The search exercise has been conducted again on the Google Scholar. This time, we restricted our search to the most recent articles published in PPP and green supply chain management literature only in English language. Finally, we have found an ample amount of research articles to analyze for this study. Each of the identified papers as per the search keyword was required to be screened as a part of review exercise. A spread sheet was populated identifying the impactful reference to PPP in GSCM in the papers that helped us in analyzing and reaching to a conclusion for this review paper.

Literature Review

The significance of Green Supply Chain Management (GSCM) in the industry and the society has been identified widely by many researchers and when it comes to the agricultural food safety, the importance of GSCM increases. Many researchers have contributed to the literature for widespread acceptance of the GSCM in the Indian industry and explored many means of implementing it for achieving better compatibility. This paper also highlighted the plausible interaction of GSCM with the Public-Private Partnerships (PPPs). Some of the relevant studies are listed below as the review of the literature. These are;

Boye, J., & Archand, Y. (2013), explaining the importance of Green Supply Chain Management (GSCM) practices with reference to the Agri-business stated that “The relationship between food, physical and environmental health, and the economy has become increasingly evident. Finding a balance between food supply and demand in a manner that is sustainable and which ensures the long-term survival of humankind will be one of the most important challenges facing the agriculture and agro-food sectors over the next 40 years.”

OECD (2011) identified the research gap in this domain to the expansion of awareness in the agro-food sector. He stated that “Increasing productivity in a sustainable manner will require high priority research, development, innovation, education, and information in the agriculture and agri-food sectors accordingly.”

Flint, A. (2004) has described the significance and the benefits of the green distribution system to all the stakeholders of agri-business industry. He also highlighted the infrastructure gap in this sector and the requirement to fill this gap. He stated that “The transportation and distribution systems are stacked in favor

of large agribusiness suppliers and long-haul trucking. Thanks to the global distribution system and its resulting economies of scale, it can be easier and cheaper to buy the perishable item any location on the globe. We have a global food system that is accustomed to handling truck-sized quantities and not much else.”

Seman, N. et al. (2012), tried to link the relationship between the GSCM and the green innovation concept by stating as, “One study from Malaysia conducted by Zailani et al. (2011) investigated the options for integration of green innovation into the logistic services as the GSCM practice. This study identified that 76.9% of the companies believed new technology is an important tool in lessening the environmental issues in logistics services. This study implied that new technology as green innovation could help logistic services to reduce the negative environmental impact.”

The study from **Lee and Kim (2011)**, in Korean, also examined the role of suppliers in increasing the manufacturer's ability to perform green innovation in product development successfully. “This study showed that green innovation could be inspired by the environmental collaboration of manufacturer and key suppliers in managing the green new product. This finding also supported by other studies indicated that greening the suppliers lead positively to green innovation (Rao, P., 2002, Porter, M. E., & Linde, C., 1995, Chen, J., He, J., Wang, J., & Chen, K., 2008, Shrivastava, P., 1995).”

Kalambi, (2000) tried to identify the need for supply chain management as a separate operational function that has to be performed through the separate unit with the focused view of distribution. He described that “The supply chain strategy cannot truly be aligned to the overall business strategy (unless all the functions of the enterprise are integrated by establishing a strategic relationship with the supply chain partners) based on trust and transparency so that the customer demand can be met just in time (JIT). The primary benefit of integration is that all business units and supply chain partners share the same data, synchronize actions and minimize distortions in demand management.”

Grimsey, D., & Lewis, M. K. (2005) tried to ease the decision for the selection of the PPP while implementing the GSCM through their research study. They stated that, “In a situation where a different procurement method, such as a PPP, is under consideration, there is a need to establish that these alternative commercial arrangements deliver good value for money. While a competitive market between bidders will ensure that, for any given commercial deal, the best value options are selected, the choice of the particular commercial arrangement must be tested in some way to ensure that it is capable of delivering value for money.”

Bovaird (2004) stated that “Through PPPs, the public sector establishes long-term partnerships which are essentially 'working in an arrangement based on a mutual understanding and commitment between a public sector and the private sector entities.' Relationships between public enterprises and private service providers should be based on trust to make the system sustainable and effective in delivering quality services to recipients.”

Tiwari, A. & Kendurkar, P. (2017) raised the concern regarding the food safety and the export detention in their study, and have identified a step-ahead thinking for handling both these concerns. They stated that, “Both of these concerns can be effectively resolved through interaction of cold chain supply and PPP approach. Bringing in the Private sector participation through PPP has been very fruitful in many cold chain projects. Hence, India has a large number of PPP opportunities in this sector and also there is a huge scope for literature development in this sector that can help government to effectively design and manage the cold chain PPP projects.” They suggested a collaborative approach held between the public sector and the private sector partners to implement and improve the supply chain system and provide a superior value for the end customers.

Tiwari, A. & Kendurkar, P. (2017), again in one of their study identified the requirement of upgraded

technology and an integrative approach to improve the complete supply chain. They explained that, “The use of an integrative approach by application of green technology, e-coupal practices, and cold chain supply, can be proven to be advantageous for sharpening the edges of agriculture business. This subsequently would impact the greater contribution of agriculture sector towards the development of Indian economy.” In this study, they tried to identify the requirement of bundling the sequential activities in the complete food supply chain, which is one of the most lucrative attribute of the PPPs.

The adoption and implementation of GSCM and the extent of amenability between the both have been examined suitably by the evidence available in the literature above. These literature papers have been selected after the scrutinizing numerous articles and papers by reading them thoroughly. The paper tried to highlight the interactive linkage between the GSCM and the PPP.

Discussion & Conclusion

The businesses are functioning in the global society and have been affecting the environment and society itself in the past few years badly. The governments at different levels in India are now started focusing on the cost-effective option for implementing the environment-friendly supply chain network (Grimsey, D., & Lewis, M. K., 2005) and create an improved value to the various stakeholders at different levels. Public-Private Partnership (PPP) is one of the most lucrative options in front of the government in which private organization partners with the public sector entity for the delivery of the public good or services. In this mode of service delivery, the risks and responsibilities are transferred to the private consortium whereas some of the risks are being shared by both the parties of PPP project (Iossa, E., & Martimort, D., 2015, Brench, A., et al., 2005). The paper tried to find the beneficial interaction between the PPP and the GSCM in the context of agri-business sector in India (A high priority sector for the GoI to develop). This paper highlights the key challenges to the adoption of GSCM in India and also demonstrate how the GSCM can be successfully be implemented through PPPs.

The some of the key concerns that have listed in the upper section are; Government support, Awareness and experience and the resistance to change (Niemann, W., Kotze, T., & Adamo, F., 2016). All these three challenges can be effectively managed by selecting the PPP route for implementing GSCM in India. As the PPPs are the cooperative arrangement between public and the private entity, hence, all the three concern are readily mitigated. The government party is interested in opting for the PPP route because it gives them an opportunity to deliver the capital-intensive developments without taking any financial burden on its shoulders (Iossa, E. et al. 2015). The government can achieve a better value while delivering the social benefit and improved development goals for the common people. On the other hand, the private sector is interested in going for and investing heavily in a PPP project to achieve newer opportunities for achieving profit and managing good relationship with the government at different levels in the country. While deciding to opt for a PPP route for executing the GSCM for the benefit of the common people, The risk of integrating the various operations of the supply chain is being transferred (Also, some risks are shared among both the parties) to the private sector. GSCM is incorporating numerous tasks, on the whole, requires much focus and proficiency in its operations. The theoretical analysis of the PPPs for the delegation process of various tasks is relatively specific and complex (Sappington, D., & Stiglitz, J., 1987). Such complexity requires the government and the private sector to work in a collaborative organizational form to synergize their efforts. PPP framework for Green Supply Chain Management (GSCM) can be implemented and managed efficiently, and many innovative outcomes can be achieved by involving the number of stakeholders bounded by the predefined contract terms, thus, creating enhanced value to all the stakeholders of the GSCM.

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