

Impediments to Green Supply Chain Management

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Green Supply Chain Management

GSCM is modern Buzz word emerging in the 21st century. This idea covers every stage in manufacturing from the first to the last stage of product life cycle, i.e. from product design to recycle or retire. The green productivity sees a possibility of producing more environmentally friendly output from fewer inputs through clean manufacturing, yet enabling organizations to be free from legal or political restriction, mission of integrating economic development, social progress, and ecological balance. Reducing waste and pollution, and using less energy and material resources, are obviously good for the environment, and are the best for supply chain because they cut operational costs (Dandekar, 2012).

Green supply chain management is a subset of supply chain management which focuses on performing supply chain activities considering two key aspects of the triple bottom line of supply chain management being environment and economic performances. Green Supply Chain Management addresses the relationship between SCM and environment; it is one of the fastest growing areas in developing countries (Vijayvargy & Agarwal, 2013). GSCM assists in managerial decisions which focus on optimization of material flow along the value chain (S. Kumar et al., 2012). Green supply chains are lean supply chains with minimal or zero waste. Minimizing waste within the supply chain makes the supply chain green. GSCM is also defined as the integration of environmental management with supply chain management (Vijayvargy & Agarwal, 2014).

GSCM addresses the relationship between SCM and environment and is one of the fastest growing areas in developing countries (Vijayvargy & Agarwal, 2013). GSCM can be considered as a more advanced management practice considered to other environmental approaches such as cleaner production and environmental management systems, therefore, a contribution of GSCM towards environmental performance is more effective (Chang, Kenzhekhanuly, & Park, 2013).

The green supply chain is a strategy with minimum environmental impact. It encompasses the best practices in reducing carbon emission across the supply chain, from material sourcing through product design, manufacturing, distribution, delivery and finally, end-of-life recycling (V. K. Jain & Sharma, 2014).

Indian FMCG Industry

Indian FMCG industry possess most multifaceted network of distribution and is also buffeted with intense competition, which have constrained firms to frequently toil on supply chain innovation. However, the fundamental structure of Indian FMCG industry has not evolved much over a period of time and micro economics showcases a prevalent role in formulating the structure of the industry.

FMCG industry in India is a low margin business, wherein the success of business generally depends on the capacity of products sold. In order to develop and maintain an efficient supply chain, the companies focus on the availability of products in the complex distribution network. Presence of multiple layers between the company and end customer results in an increase in the number of Stock Keeping Units (SKUs) that is directed to ensure availability at the last stage of distribution. In order to increase market penetration, a growing number of companies are focusing on launching smaller packaged size products to address needs of consumers present at the lower end of the economic scale. The entry of large third-party logistics (3PL) carriers and the expansion of domestic networks of Indian firms like Gati and Shreyas Shipping is transforming the nature of services and the business practices across the sector (P. C. N. Jain, 2014).

India Logistics Sector Facts

Logistics Performance Index (2016): 3.42 (35th Rank)

Logistics cost as percent of GDP: 13 percent

Transportation cost as a percent of GDP: 8.2 percent

Warehousing cost as a percent of GDP: 3.8 percent

Other logistics costs as a percent of GDP: 1.0 percent

FMCG Logistics as a percent of revenues: 6 percent to 8 percent

The emergence of modern retail formats has an advantage over small stores as they are able to demand huge discounts from FMCG companies. Moreover, a huge emphasis is laid by modern retailer son ensuring permanent on-shelf product availability during peak periods; cost optimization and R&D (Singh, 2014).

Market Opportunities for Indian FMCG Industry

Innovative Products: Indian consumers are highly adaptable to new and innovative products. As Indian consumers become increasingly exposed to global products, their demand for innovative products has been increasing, which is resulting in higher research and development expenditure by the leading market players.

Rural Market: Rural consumption of FMCG products has outpaced urban consumption with the percentage increase in monthly per capita expenditure in rural markets surpassing its urban counterparts. Leading companies in the FMCG industry have a strong distribution networking rural India and are benefitting from the contribution of technological advances such as internet and better logistics services.

Premium Products: With growing disposable incomes, middle and upper-middle-class income consumers in urban areas have shifted their purchasing trends from essential to premium products. Premium brands are manufacturing smaller packs of premium products. In response, firms have started enhancing their premium products portfolio.

India as an Export Hub: With the emergence of India as a strong regional economy, domestic and multinational FMCG players can leverage India as a strategic sourcing hub for cost-competitive products to cater to international markets. This has been witnessed as a strategy of several FMCG companies whose revenues from the international markets has been increasing.

Inorganic Growth Strategies for a Wider Footprint: Companies are entering into partnerships that will help them to cater to the market, and improve their distribution networks and skills to deliver to the last mile. The domestic companies have been quite active in mergers and acquisition activities in order to gain significantly from an inorganic growth route.

Low Market Penetration: Most of the household and personal care products sold in India still have low market penetration in rural and semi-rural areas. This offers a wide opportunity for market players to tap these markets by offering low cost, small packaging products

Recent Trends in FMCG industry

Considering the road ahead of Indian FMCG industry; companies in today's scenario talk often about doubling their business in terms of: turnover, reach, visibility, consumption and the likes. HUL the Mammoth in FMCG industry had visualized in doubling its turnover in 2012 by 2015. The company products in India are the widest distributed products by making its presence in around 20 lakh retail outlets directly and are available in approximately 62 lakh outlets. HUL had set a vision named 50/15, i.e. making its turnover Rupees 50000 crore by 2015. As a result of this, it has been increasing its reach by undertaking various projects. To name a few are Project Shakthi, Project Bush Fire, Project Columbus, Desert Storm, and Project Telecalling. Vision 50/15 has not been successful but the initiatives helped HUL in expanding the reach of its business (Dr. Vinod. N. Sambrani, Pol, 2016a).

Andhra Pradesh based dairy company Heritage Foods has plans of doubling its turnover in next 3 years i.e. by 2021. Saugata Gupta, MD of Marico announced his plans of doubling the revenue from Rupees 4,676 Cr in 2014 to Rupees 9400 Cr by 2018, 6 months after his appointment. ITC diversified its FMCG business from cigarettes to foods in the year 2000. In the year 2017 ITC FMCG non cigarette division had Rupees 8000 crores turnover and the company has set a vision to make it 1 lakh crore by 2030. Pepsi Co India has undertaken a project "SAMANA" a GTM (Go to Market) model to increase its distribution. The concept of doubling the revenues has been

primarily initiated and proven attainable by GSKCH (Glaxo Smith Kline Consumer Health Care Ltd) which has set a new trend in the sector (Dr. Vinod. N. Sambrani, Pol, 2016a).

With a surge in Indian population resulting towards changes in standard of living, the road ahead surely raises eyebrows for FMCG industry. Resources on the planet are limited and are often transformed than been created or disappeared. Such a situation leaves behind challenges for corporate towards sustaining the business through improving triple bottom line i.e. to sustain environment (Planet), society (People) and economy (profits) (Dr. Vinod. N. Sambrani, Pol, 2016b).

As per a survey conducted by the "Brand Asia Survey 2017", Amul has been ranked 2nd most popular brand in India. Parle is ranked 4th, Dabur is ranked 9th and Coca-Cola loses its spot from 1st position to 10th (Times, n.d.).

The road ahead of Indian FMCG Industry

Rural consumption of FMCG products in India has surged and is projecting phenomenal growth. This has forced the FMCG industries to shift their focus in catching up the pace of rural growth. It is fact that unique strategies are required to be formulated for addressing the rural demand as the rural territory is geographically widespread and the same cannot be catered with distribution patterns followed at metro, tier 1 and tier 2 cities. Similarly one should very well understand that sachets and other smaller stock keeping units (SKU's) are the one which will act as growth drivers for FMCG industry.

Online FMCG sales are in its infancy stage but it is predicted that as revolutions in telecom or other allied service sector have showcased a paradigm shift in their usage patterns, growth cannot be predicted for online FMCG sales. It will be inevitable for companies to ramp up their existence if failed to formulate strategies for sale of FMCG products through means of e-commerce.

Mr. Mark Mobius, Executive Chairman, Templeton EM, opined that the Goods and Services Tax (GST) will lead to mergers and rise of world-class consumer companies in India. GST and demonetization are expected to drive demand, both in the rural and urban areas, and economic growth in a structured manner in the long term and improve the performance of companies within the sector (Market, 2016).

Suresh Narayanan, Chairman, and Managing Director, Nestle India Limited stated that "In the next decade, the ease of dissemination of awareness and the rise of generation Z will create opportunities for FMCG companies to develop several mini segments, which will require speed, ability to think and act ahead of the curve. Some of these mini segments can develop into large categories by themselves" (CII, 2017).

The way ahead for the FMCG industry in India is promising in spite the turmoil of economic slowdown. However, the environment concern is one of the most thought about aspect that the industry by large is required to consider. The supply chain management is yet to find its way in reducing the carbon footholds. Fast moving consumer goods sector is head winded with

rigorous competition making it to have faded idea on environmental distress. Hence it is imperative to understand the antecedents that act as impediments in adapting green supply chain management practices.

The in-depth review of literature assists in compiling the various barriers for green supply chain management practices.

Challenges for implementation of GSCM practices

Sl.No	Challenges for implementation of GSCM practices	Sources
1	Complying on Government Regulations	(Ansari & Qureshi, 2015), (Mangla, Kumar, & Barua, 2014), (Choudhary & Seth, 2011)
2	Lack of strategy from the companies in stream ling the process of GSCM across all verticals of business	(V.a, L.-M.a, S.a, & B, 2014), (Ansari & Qureshi, 2015), (Mangla et al., 2014)
3	Top Management Commitment towards implementation of GSCM practices	(V.a et al., 2014), (Choudhary & Seth, 2011), (Ansari & Qureshi, 2015)
4	Supply Chain Collaboration, enabling overall integration of supply chain activities	(Ansari & Qureshi, 2015), (Mangla et al., 2014), (V.a et al., 2014)
5	Financial Cost likely to arise from the implementation process	(V.a et al., 2014), (Zhu, 2005), (Ansari & Qureshi, 2015)
6	Corporate Culture which will be hard to convince and change for implementation	(Ansari & Qureshi, 2015), (V.a et al., 2014),
7	Coordination Complexity/Effort levels possessed by organization as a whole	(Ansari & Qureshi, 2015), (V.a et al., 2014),
8	Training on practices of GSCM to different verticals as per their functionalities	(Mangla et al., 2014), (Ansari & Qureshi, 2015)
9	Inadequate Knowledge on the aspects of GSCM amidst policy formulators	(Mangla et al., 2014), (Ansari & Qureshi, 2015)
10	Green Investment initiations from the top management	(V.a et al., 2014), (Ansari & Qureshi, 2015)
11	Company Human Skills, ability to adapt new strategies	(V.a et al., 2014), (Ansari & Qureshi, 2015)
12	Supplier Human Skills, ability to adapt new strategies	(V.a et al., 2014), (Ansari & Qureshi, 2015)

13	Supplier commitment towards implementation of GSCM practices	(Mangla et al., 2014), (V.a et al., 2014)
14	Understanding importance of Reverse Logistics	(Ansari & Qureshi, 2015)
15	Unclear Objectives by subordinates	(Ansari & Qureshi, 2015)
16	Lack of Production Facilities in regards to Green products	(Ansari & Qureshi, 2015)
17	Focal company's facilities	(Zhu, 2005)
18	Sustainable Procurement assistance	(Ansari & Qureshi, 2015)
19	Organizational Size	(Ansari & Qureshi, 2015)
20	Insufficient/Miscommunication within and outside organization	(Ansari & Qureshi, 2015)
21	Intention of company to consider GSCM practices as integral part of their Corporate social responsibility	(Mangla et al., 2014)
22	Decision and information sharing level	(Mangla et al., 2014)
23	Allocation of resources pertaining to GSCM practices	(Mangla et al., 2014)
24	Supply Chain visibility and mutual transparency	(Mangla et al., 2014)
25	Supply chain flexibility and agility	(Mangla et al., 2014)
26	Network and global complexion understanding	(Mangla et al., 2014)
27	Security issues knowledge	(Mangla et al., 2014)
28	Approach for continuous improvement	(Mangla et al., 2014)
29	Economic Progress with Environmental Consciousness	(Gupta, Abidi, Bansal, & Jain, 2013)
30	Promotion and Reward for Green Initiatives	(Gupta et al., 2013)
31	Fair and Transparent Enforcement of Act	(Gupta et al., 2013)
32	Technology and Skills	(Gupta et al., 2013)
33	lack of buyer awareness	(Choudhary & Seth, 2011)
34	Facilities and intent of the company to perform the activity of Recycling	(Brammer, Hojmosse, & Millington, 2011)
35	Managing Wastes, planned structure towards recycling, reusing, recycling or discarding of materials	(Brammer et al., 2011)
36	Water pollution/Emissions	(Brammer et al., 2011)
37	Return on investment – formulating apt tradeoffs and constant check on ROI	(Zhu, 2005)
38	Product price – planning on green products manufactured and distributed. Attractive margins	(Zhu, 2005)
39	Green induced changes (process in place)	(Zhu, 2005)
40	Suppliers firm culture – Supplier compliance on the green requirements	(Zhu, 2005)

41	Product characteristics – formulating a systematic green product design	(Zhu, 2005)
42	Supplier’s facilities – facilities, assistance and avenues provided to the suppliers by the manufacturers to meet requirements	(Zhu, 2005)
43	Suppliers’ firm size	(Zhu, 2005)
44	Supplier’s location	(Zhu, 2005)
45	Focal firm’s previous sustainability experiences	(Zhu, 2005)
46	Management of uncertainties and tradeoffs	(V.a et al., 2014)
47	Financial stakeholders interest and intent	(V.a et al., 2014)

Source: Authors own compilation

Objective for the Study

To understand the various antecedents that confine the aspect of challenges in implementing green supply chain management practices.

To assess the difference in opinion if any by the respondents considering the differences in demographic profile on the aspect of challenges in implementing green supply chain management practices.

To ascertain the relationship between the variables of challenges and intent in implementing green supply chain management practices.

Data Analysis

The analysis is computed to ascertain the difference in the opinion of the respondents considering the varied demographic profile on the dimension of challenges in implementing green supply chain management practices. In order to assess the same one way analysis of variance is considered to examine the hypothesis. Tuckey’s analysis of variance is computed and considering the results interpretations are made through Welch and ANOVA test.

Summary of ANOVA Test

Demographic Variables on GSCM practices	Test for Homogeneity of Variances	Significance Value	Robust Tests of Equality of Means	Results of Hypothesis bases 0.05 level of Significance
	Levene Statistic	ANOVA	Welch	
Category Of Product Distribution	0.005	-	0.052	Fail to Reject
Education Qualification	0.621	0.759	-	Fail to Reject
Age of Respondents	0.888	0.677	-	Fail to Reject
Turnover From Distribution	0.857	0.393	-	Fail to Reject
Years into Distribution	0.380	0.117	-	Fail to Reject
Investment in Business	0.298	0.831	-	Fail to Reject
Monthly product damages	0.083	0.117	-	Fail to Reject
Total number of outlets covered	0.127	0.174	-	Fail to Reject
Number of sales representatives	0.006	-	0.938	Fail to Reject
Number of Delivery Units	0.065	0.174	-	Fail to Reject
Zone of operation	0.314	0.142	-	Fail to Reject

Interpretation:

Test for assessing the difference between mean scores of different factors of distributor profile on challenges in implementing green supply chain management practices has been computed using one way analysis of variance. The different factors of distributor profile assessed are: Zone of operation, category of products distributed, education qualification, age, monthly average turnover, number of years into distribution, investment in the business, monthly average value of damages, number of outlets covered, number of sales representatives employed and number of delivery units employed. As a result it has been found that there is no difference in mean scores of different factors of distributor profile on challenges in implementing green supply chain management practices.

Correlation analysis represents statistically significant and strong relationship between challenges in implementing GSCM practices and the intent to implement GSCM practices.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.632 ^a	.399	.397	4.36923

a. Predictors: (Constant), Challenges of Green Supply Chain Management

Practices

Interpretation:

The regression analysis specifies strong influence of challenges in implementing GSCM practices and the intent to implement GSCM practices with coefficient value of 0.632.

Suggestion from the Study

It is suggested that the organizations need to adhere the Government regulations with commitment of top management. Further the activities of supply chain management are required to be integrated with other verticals as mere SCM activities alone cannot percolate the intent of green supply chain management integration.

The initial cost to implement the GSCM practices are likely to be on the higher side; however it is observed that in long run the implementation will yield results. It is imperative to implement GSCM practices with rigor as it requires transforming the overall process of operating business. The efforts to implement are immense as are buffeted with multiple complexities at various phase of the process. Collaborative approaches with innovative ideas are need of the hour.

Knowledge on green practices is in its introductory stage and as a result the organizations are required to train all the verticals. Experts from organizations who have successfully implemented the process are to be taken under consideration.

Reverse logistics is one of the most predominant aspect in GSCM implementation however it requires organization commitment to place systems in place to collect, recycle, refurbish or reuse the products collected. It is observed that reverse logistics acts as vital aspect in cost reduction in long run.

The system and process of GSCM implementation are substantiated with setting firm objectives that are inclined in connection to the nature of business. The green practices by large are not uniform as they vary in accordance to the nuances of business. Further the production facilities in connection to GSCM practices are to be structured accordingly considering the aspect of lean manufacturing and using eco friendly materials.

Transparency in all the activities is vital and the decision of senior level management acts as anchor to impart GSCM practices. The resources are to be enabled through environment friendly measures and the suppliers are to be selected who adhere to the guidelines of GSCM practices. Awareness amidst the forward and original equipment manufacturers is to be created by the organization and the best parties are to be incentivized with tradeoffs.

The aspect of carbon emission, eco wastes, and water pollution are the top evaluating factors. However, the intense process framing within the organization and amidst the subsets of supply chain needs to be of top priority. Structured returns on investment are to be framed to all the activities of supply chain and constant tracking mechanism is to be imparted.

Conclusion

Green supply chain management is in its infancy stage in developing countries. India is considered as one of the most significant country that contributes its might in global economy. However in recent past it is also creating its footholds as one amidst the major polluting country. The activities of supply chain are observed to be a vital activity that is contributing to the environmental distress. The current study makes an attempt in formulating the key challenges in implementing environmental friendly practices. However it also provides evidence that overcoming these impediments will pave way in formulation of green practices within the organizations. The study can further consider the aspects of factor analysis wherein various dimensions in the challenges can be identified as constructs and their influence on organization performance can be evaluated.

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