

A Research Onthe Impact of Implementing Green Supply Chain Management Practices in Smes Using Spss

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Abstract- “Green supply chain management (GSCM) is also called as sustainable supply chain, environmental supply chain, and ethical supply chain. It has also been described as a socially responsible supply chain”. GSCM means “integrating environmental thinking into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers and end-of-life management of the product after its useful life”.The aim of this research is to analyse firm performance by implementing GSCMpractices. This paper therefore helps to build environmental awareness amongst industry and helps industry to take decisions that are a priority with little information about supply chain management.Quantitative research method is used to analyse the firm performance by implementing GSCM practices. Primary data is collected from the distribution of questionnaires through online survey. Further, statistical techniques have been applied on survey results.GSCM research is currently in the emerging phase. The survey may be further refined to distinguish between various manufacturing industries. This analysis offers significant perspectives. Implementing GSCM activities enhances corporate success in many ways. Supplychain managers are obliged to determine the company's output and therefore choose the best GSCM practice combination, which will maximize the optimal amount. This research is useful to SME owners to consider GSCM procedures and introduce them.

Keywords- GSCM, SME ETC.

I. INTRODUCTION

“Green supply chain management (GSCM) is also called as sustainable supply chain,environmental supply chain,and ethical supply chain. Ithas also been describedas a socially responsible supply chain”. GSCM is indeed a broad topic. It covers three aspects of sustainable development in the perspective of economic, environmental and social. Still, there is no clear definition for describing it. With the concern of environmental pollution, it is now become an important concept in the company to go greener and to achieve business profit and market share.

Green supply chains (GSC) differ from traditional supply chain. GSC integrates in the operation of SMEs which includes planning, procurement, production, consumption, or reverse logistics. Thetraditional supply chain of any organization comprises raw material, industry, distribution, consumer,and waste. The pollution, waste and further pollution hazards could be attributed to each link in the supply chain. In the case of raw products, a company may be using hazardous goods such as lead from the environment. Conventional supply chains also focus on the economic goals and ideals and ecological causes are considered in revolutionary supply chains.When conventional supply chains take note of

ecological standards, their scope of optimization is also restricted.

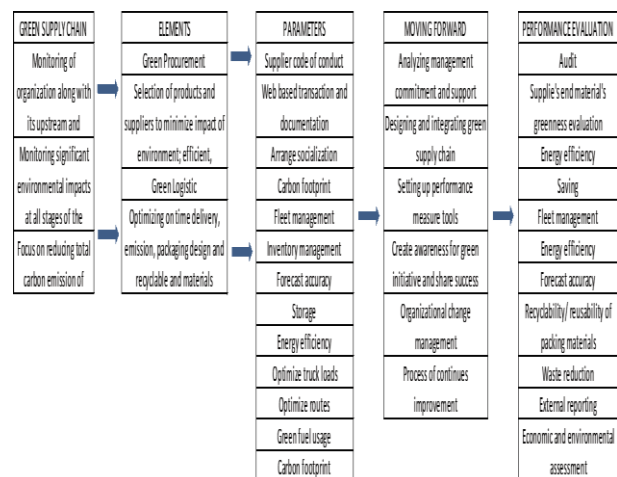


Fig.1 GSCM Process and Execution

Zhu and Sarkis have shown “a strong correlation between quality control and environmental management systems (EMS)”. A relevant study of Chinese car industry mentioned that by drawing on their expertise from quality control programmes, they can enhance their EMS practice.

Activities in Green supply Chain Management

Ninlawan et al implement GSCM on the electronics industry, where the activities associated with GSCM was proposed and implemented. The activities associated with GSCM comprises of all process started initially from raw material procurement to waste management of the product. Manufactures explore their findings in different aspects in the perspective of GSCM.

Green Design with regard to Product and Processes

Hendrickson et al Green design has shown that it helps develop environmentally sound materials and processes. Hendrickson et al claim that environmental issues have been neglected inside the manufacturing of both the new product and operation. Hazardous waste is poured towards the comfort of a fashion. The incorporation of both the green philosophy throughout the design process will eliminate these problems. In terms of available energy and ecological health, the principal social goal of green design is to secure healthy community. Hendrickson et al proposed to focus three targets for a sustainable future throughout the concept of green design.

- Minimizing or increasing utilization of non-renewable energy.
- Manage the integrated development of renewable resources.
- Significantly reduce toxic as well as other harmful environmental pollutants, including air pollutants.

Life Cycle Assessment (LCA)

Gungor and Gupta state that “the life cycle assessment is described as a process of evaluating the environmental, occupational health and the resource-related consequences of a product through all phases of its life”.

Implementation of Green Supply Chain Management Practices

Due to serve global competition, companies and researchers are now looking for a technique that can improve GSC which improve quality, productivity, cost reduction and preserving sustainability in long run. For instance, Toyota Motor Manufacturing Company established the Kentucky plant that supply recyclable plastic containers to 170 suppliers.

Toyota prefers these returnable plastic pallets and containers as they meet the requirements of a group named, Automotive Industry Action Group (AIAG). AIAG specified this requirement for maximum utilization of space in truck and minimize the environmental impact on local landfills. The container system has performed well after applying this operation and helped to attain cost-efficiency in that plant.

Go Greener in SMEs of India

India, a developing country, needs progress in each & every area including SMEs. However, the ever-increasing growth rate of SMEs has added to serious environmental contamination in our country, which has now entered into the category of the most polluted countries all around the world. Due to sudden rise in environmental pollution because of economic growth during the past decades, the concern of environmentalism has become very critical in India. The government of India has also begun concentrating towards the environmental aspects that clearly shows the requirement of taking immediate actions against this rising pollution. Many rules and policies have also been formulated recently like ‘Swachh Bharat Abhiyan’, ‘Clean India Green India’, ‘Save Environment Save Earth’ etc. etc.

One of the most famous saying in India ‘Each One Plant One’ promoted by ‘India Parenting’ urges all people of this country to plant and maintain at least a single tree in their whole lifetime. The government and many other NGOs are also taking initiative to make people aware of the fact that people and industries should minimize the usage of natural gas, petrol, diesel, coal etc. as the sources of energy. They suggest people to use more & more renewable resources of energy. For example, the use of Solar Energy has been encouraged a lot by the Government, nowadays. It would definitely go a long way to make a substantial contribution in protecting our precious environment from world’s biggest threat Global Warming. The Government is also in process of developing more exhaustive Green guidelines for Indian industries.

II. LITERATURE REVIEW

Lee et al [1] confirmed that GSCM practices makes insignificant influence on firm performance. The effect of indirect and direct factors associated with GSCM influence of firm performance is analyzed. 223 SMEs in Korea are participated in online survey. Result reveals that no direct relationship, but indirection relationship exist between GSCM and organizational performance mediated by operational efficiency.

Benito and Benito [2] also reported the same results. Those who sought to analyze empirically the connection among environmental and business performance with quantitative data collected from 186 Spanish industrial companies through with a survey questionnaire. The authors find no proof of a connection among proactive environmental and financial success across multiple regression analyses. Benito and Benito use the same dependent variable. Watson e al. [3] compared the performance of EMS adopters and non-EMS adopters in the perspective of financial performance. In addition, a framework associated with implementing the EMS is

proposed. Results contrast that is there is no significant difference in the performance of EMS adopters and non-EMS adopters in the perspective of financial performance. The second literature wave reported negative connections between both the GSCM activities as well as the various aspects of CP. The work of Richey et al. [3] is examples of negative relations. The study collected data of 118 participants using a questionnaire to analyze the impact of reverse logistics programs in the US automotive aftermarket sector of reverse logistics efficiency. The results showed that internal creativity adversely affects success, because it seems to be too costly.

Montabon et al. [4] also mentioned another case of a negative relationship. The authors use the content analysis of 45 business publications to study empirically how various environmental management (EMPs) and corporate success are linked to one another. The analysis found a negative relationship between internal innovation and performance which is costly. Study strengths include: the fulfillment of most statistical assumptions used to analyze the canonical association including the use of content analysis to address the subjects easily justify.

Moreover, Large and Thomsen [5] obtained a negative relationship with cooperation from suppliers and purchasing performance. In a survey purchasing manager and suppliers have been precipitated. The goal was to examine the impact of various approaches on the enhancement of environmental efficiency (green assessment and green collaboration) as well as the influence on the purchasing department obtained in lieu of improved environmental performance. Many researchers reported the positive relationship between GSCM and firm performance. There are many evidence from industries which recorded growth in organizational performance. The following study have discussed such aspects.

Study conducted by Diabat et al [6] confirmed that three GSCM activities namely “eco-design, consumer cooperation and reverse logistics” are significant factors which influence organizational performance. 50 responses were collected from industry and academia which justify that GSCM practices lead to economic performance and firm performance.

Green et al. [7] conducted a survey in which 159 managers from manufacturing industry in U.S. participated, yet a low response were obtained and examined the impact of GSCM practices on environmental and organizational performance. Study used structural equation modelling (SEM) approach for path analysis. Results reported that GSCM practices significantly impacts on environmental and organizational performance.

Adopting research methodology from Green et al. [8], Zhu and Sarkis [9], examined the relationship between environmental and economic performance and GSCM

practices adopted by firms in China, 186 production companies have been precipitated in online survey. Results indicated that the companies which have high level adoption of GSCM having excellent environmental and organizational performance.

Liang and Chang [10] conducted a survey across 127 companies in China to explore GSCM's possible impacts on SMEs. Study used SEM analysis to analyze the relationship between SMEs performance and GSCM practices. Finding reported a positive relationship between SMEs performance and GSCM practices. Zailani et al. [11] conducted a survey across a Malaysian industry. Study explored the internal and external factors towards the adoption of GSCM which impacts environmental performance. The findings of Zailani et al. [11] are consistent with the results of Zhu and Sarkis [9] and Liang and Chang [10]. In addition, they find that GSCM activities had positive environmental effects.

Similar findings was reported by Kung et al. [12]. Study investigated the relationship between green management and firm performance. The authors have examined the answer to a survey questionnaire for 118 Taiwanese SMEs. Positive relationships between green production, green packaging, ISO 14001 adoption and the achievement of environmental and environmental efficiency on either side were identified by hierarchical regression analysis. In addition, similar results have been published in Cordano et al. [13] work on green practice inside the USA wine industry. The authors examined the implementation of rudimentary EMS on waste recycling and energy conservation paractices with the help of a survey questionnaire by 369 managers throughout the industry. The regression analysis has been applied and findings show a positive relationship between the variable considered in this study.

Gonzalez et al. [14] examined the performance EMS and non-EMS adopted which are licensed EMS in Spain regarding the implementation of environmental practices. Study used an online survey in which 157 managers from automobile industry have been participated The author found a significant correlation between possessing certified EMS, organization size and demand for suppliers to enforce environmental practices utilizing logistic regression to evaluate the relationship (i.e. environmental performance) the implementation of GSCM, reflected by the registration of EMS like ISO 14001, guides environmental organizational activity to the surrounding stakeholder and its suppliers.

III. RESEARCH METHODOLOGY

Descriptive research was used to characterize correctly the features or circumstances of a person or group. A descriptive research uses data without affecting the environment. In human investigation, this descriptive

study offers information on a certain group's natural health state, behaviour, attitude and other features. Accuracy seems to be the biggest benefit of this research, as most social studies in the category were carried out. Descriptive studies consequently reduce prejudices and enhance reliability. This study is therefore descriptive in nature.

Present study has been conducted by collecting primary data through a developed questionnaire (see appendix). The owners of SMEs in India are participated in the survey. The questionnaire, it is divided into two parts which is one is general backgrounds and second is statements related to operational performance, environmental performance, reverse logistics, environmental cooperation, green purchasing, eco-design, economic performance and social performance. In the survey, total 34 questions related to variables considered in this study. In this survey, the data, which is, collected which related to the demographics of owners of SMEs, operational performance, environmental performance, reverse logistics, environmental cooperation, green purchasing, eco-design, economic performance and social performance.

Questionnaire was created and distributed through Google forms to the owners of SMEs in Indore. To obtain responses random sampling technique was used. 25 responses were obtained. So, only 25 responses were employed further for data analysis. After collecting data, the next step is data analysis. For the interpretation of data, SPSS 23 software was used. As per the theoretical model shown in previous chapter (see fig. 2.1), independent and dependent variables have been identified. As per fig. 2.1, independent variables are identified as:

- Operational performance,
- Environmental performance,
- Reverse logistics,
- Environmental cooperation,
- Green purchasing,
- Eco-design,
- Economic performance and
- Social performance

Dependent variable is identified as firm performance.

For testing the eight hypothesis, Regression analysis is employed.

IV. RESULT AND DISCUSSION

1. Demographic Data

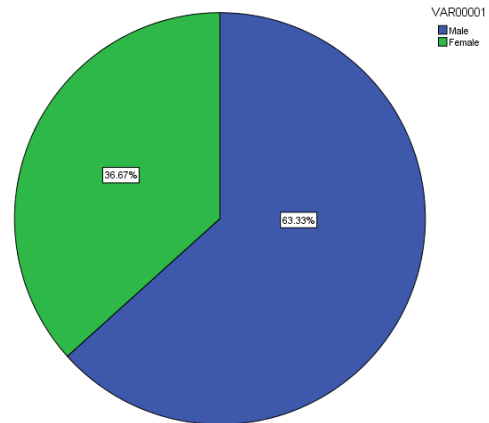


Fig. 2 Percentage distribution of gender.

From the fig. 4.1, it is observed that 36.67% of SMEs are female and 63.33% SMEs are male.

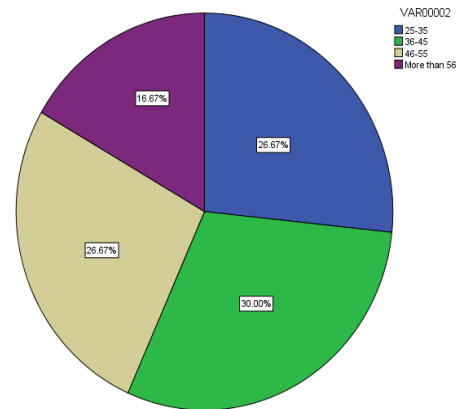


Fig. 3 Percentage distribution of age.

From the fig. 4.2, it is observed that 26.67% of SMEs are in age of 46-55 years, 30% of SMEs are in age of 36-45, 26.67% of SMEs are in age of 25-35, 16.67% of SMEs are in age of more than 56 years.

2. Eco-Design Followed by SMEs

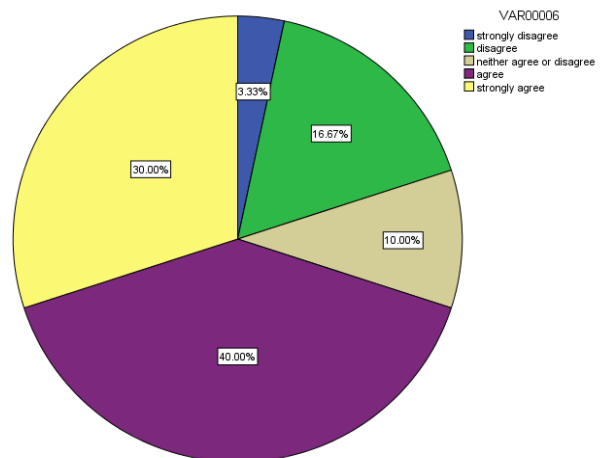


Fig. 3 Percentage distribution of “design of products for reduced consumption of material/energy”

From the fig. 4.6, it is observed that 30% SMEs are strongly agree with statement that design of products for reduced consumption of material/energy, 40% SMEs are agree with statement, 10% SMEs are neutral with statement, 16.67% SMEs are disagree with statement, 3.33% SMEs are strongly disagree with statement.

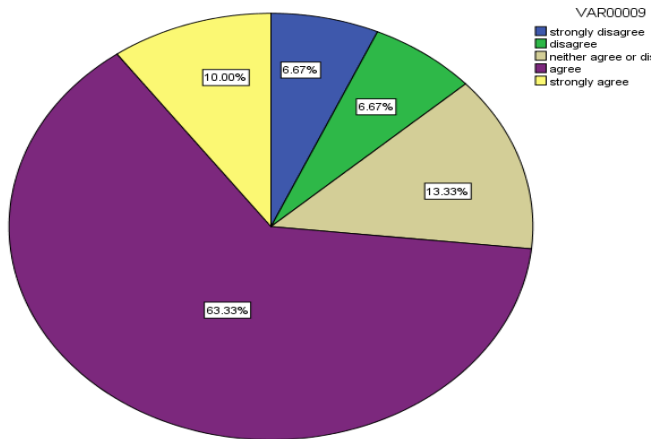


Fig. 4 Percentage distribution of “design of processes for minimization of waste”

From the fig. 4.8, it is observed that 10% SMEs are strongly agree with statement that design of processes for minimization of waste, 63.33% SMEs are agree with statement, 13.33% SMEs are neutral with statement, 6.67% SMEs are disagree with statement, 6.67% SMEs are strongly disagree with statement.

V. CONCLUSIONS AND PROPOSALS

1. Conclusions

From statistical results GSCM practices significantly influence on SMEs performance. Many SMEs in India are aware about the GSCM practices but they not implement it due to lack of support from top management, employees and suppliers. Thus, assistance to the industries with lack of knowledge concerned with GSCM is required. There are several benefits of GSCM implementation in SMEs in terms of environmental, economic and organizational performance. The main obstacles are facing by the companies for implementing the GSCM practices is lack of knowledge i.e. how to implement it in entire supply chain.

The impact of implementing the GSCM on organizational performance of SMEs in India is not realised in India and therefore tackling this area is necessary. From the statistical results, dimensions of GSCM significantly influence on firm performance. GSCM practices is a good tool of economic viabilities as it improve organizational performance and improve environmental performance by adopting GSCM in entire supply chain. This study motivates SMEs to adopt GSCM practices, so that they can realised its advantages in terms of environmental, economic and organizational performance. In conclusion it

is claimed that GSCM practices leads to improvement in organizational performance and environmental performance. Firms that involved in social image, environmental image and corporate image should adopt GSCM practices.

2. Proposals

There was little interest throughout the Indian environment in applying GSCM methods on company performance, and so it's been thought vital. Previous study as have produced various outcomes just on influence on company performance and various measurements & dimensions of firm performance of the deployment of GSCM techniques. Green purchasing has proven to be an effective strategy of economic vitality, because it enhances the economic performance of the company due to reductions and in consumption of material and energy, enhances market share, average sales and average profit.

If another firm is engaged in particular aspects of CP, including such operational performance, green procurement and cooperation mostly on environment are the most essential green practices influencing these dimensions. Only green purchases may assist increase business economic performance if the company is more interested in the financial results. Finally, social enterprises that aim at developing social sensitivity in order to retain their image must concentrate on reverse logistics techniques. Supply chain managers the proper mix of green supply chain techniques should be carefully selected to push CP towards the appropriate levels. It really is important, therefore, to identify which aspects of performance are most useful to the company and thus to collaborate with other members of the chain to apply the practices that enhance it.

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