Abstract—Textile industry plays an important role in the economy of the country like India and it accounts for around one third of total export. From the design board to the tumble dryer, textile manufacturing has a huge environmental footprint. It pollutes as much as 200 tons of water per ton of fabric, uses a suite of harmful chemicals, and consumes tremendous amounts of energy for steam and hot water needed in dyeing and finishing processes. The green supply chain management is a sort of modern management mode which could comprehensively consider the environmental influence and resource utilization efficiency in the whole supply chain. The main objective of this study is to implement green supply chain management in the textile and apparel enterprises The Trend of developing a green supply chain is gaining immense popularity now, and businesses in textile industry are focusing more on improving their supply chain visibility, efficiency and costs. A flawed supply chain creates pollution, threatening the existence of life on earth. With increasing awareness towards environmental issues, and global warming, consumers are now more focused towards the products they are buying. In the Textile industry, there have been various initiatives taken by the companies to implement Green supply chain management. It has been done in stages of procurement, processing, selling & reuses. [7]

1. INTRODUCTION

The Trend of developing a green supply chain is gaining immense popularity now, and businesses in textile industry are focusing more on improving their supply chain visibility, efficiency and costs. A flawed supply chain creates pollution, threatening the existence of life on earth. With increasing awareness towards environmental issues, and global warming, consumers are now more focused towards the products they are buying. In the Textile industry, there have been various initiatives taken by the companies to implement Green supply chain management. It has been done in stages of procurement, processing, selling & reuses. [7]

1.1 Indian Textile Industries.
The Textile Industry occupies a vital place in the Indian economy and contributes substantially to its exports earnings. Textiles exports represent nearly 30 per cent of the country's total exports. It has a high weight age of over 20 per cent in the National production. It provides direct employment to over 15 million persons in the mill, power loom and handloom sectors. India is the world’s second largest producer of textiles after China. It is the world’s third largest producer of cotton after China and the USA—and the second largest cotton consumer after China. [2]

1.3 Supply Chain
A supply chain is a network of suppliers, factories, warehouses, distribution centers and retailers, through which raw materials are acquired, transformed, produced and delivered to the customer. The supply chain consists all the activities associated with the flow and transformation of goods from the raw material stage, through to the end user, as well as the associated information flows. [8]

Green Supply Chain Management (GSCM)
Green Supply Chain Management (GSCM) has appeared as an environmental innovation which integrates environmental concerns into supply chain management. GSCM has gained popularity with both academic and practitioners [4]. The Trend of developing a green supply chain is gaining immense popularity now, and businesses in textile industry are focusing more on improving their supply chain visibility, efficiency and costs. A flawed supply chain creates pollution, threatening the existence of life on earth. With increasing awareness towards environmental issues, and global warming, consumers are now more focused towards the products they are buying. [5]
the 1990s, it has become clear that the best practices call for integration of environmental management with ongoing operations. The scope of GSCM ranges from reactive monitoring of the general environment management programmes to more proactive practices implemented through various Rs (Reduce, Re-use, Rework, Refurbish, Reclaim, Recycle, Re-manufacture, Reverse logistics, etc.). Earlier works and reviews have a limited focus and narrow perspective. They do not cover adequately all the aspects and facets of GSCM. For example, Bey (2001) presents a critical appraisal of developments in the field of industrial ecology only, while Zhang et al. (1997) focus only on green design. Much of the work is empirical and does not focus adequately on modelling and network design related issues and practices.

2.1.1 Handfield et al. (2002)
Handfield studies Prescriptive models for measures of GSCM practices implementation with a focus on GP and GSCM have been developed a decision model to measure environmental practice of suppliers using a multi attribute utility theory approach.

2.1.2 Qinghua Zhu, Joseph Sarkis (2004)
Zhu and Joseph gives Green supply chain management (GSCM) for Developing country, and examine the relationships between GSCM practice and environmental and economic performance. Using moderated hierarchical regression analysis, evaluate the general relationships between specific GSCM practices and performance. Two primary types of management operations philosophies, quality management and just-in-time (or lean) manufacturing principles, influence the relationship between GSCM practices and performance. Significant findings were determined for a number of relationships. Managerial implications are also identified.

2.1.3 Kainumaa and Tawarab (2006)
Kainumaa and Tawarab have proposed the multiple attribute utility theory method for assessing a supply chain including re-use and recycling throughout the life cycle of products and services. Using the tool of life -cycle assessment.

2.1.4 Qinghua Zhu, Joseph Sarkis, Kee-hung Lai (2007)
This study aims to empirically investigate the construct of and the scale for evaluating green supply chain management (GSCM) practices implementation among manufacturers. With data collected from 341 Chinese manufacturers, two measurement models of GSCM practices implementation were tested and compared by confirmatory factor analysis. Our empirical findings suggest that both the first-order and the second-order models for GSCM implementation are reliable and valid.

2.1.5 Joseph Sarkis, Qinghua Zhu, Kee-hung Lai (2010)
Joseph proposed Green supply chain management (GSCM) has gained increasing attention within both academia and industry. As the literature, finding new directions by critically evaluating the research and identifying future directions becomes important in advancing knowledge for the field.

2.1.6 Guo-Ciang Wu, Jyh-Hong Ding, Ping-Shun Chen (2011) Guo-Ciang, Wun have proposed empirical study of Taiwan’s textile and apparel manufacturers investigates the relationships between green supply chain management (GSCM) drivers (organizational support, social capital and government involvement) and GSCM practices (green purchasing, cooperation with customers, eco-design and investment recovery). It also studies moderating effects by institutional market, regulatory and competitive pressures, the results of this research show that (1) except for investment recovery, the other three
GSCM practices are positively affected by GSCM drivers; (2) investment recovery is positively affected only by organizational support; (3) market pressure has no moderating effects on most of the relationships between GSCM drivers and GSCM practices; (4) regulatory pressure has positive moderating effects on most of the relationships between GSCM drivers and GSCM practices; and (5) competitive pressure has negative moderating effects on most of the relationships between GSCM drivers and GSCM practices. Finally, the implications of this study and future research are discussed.

2.1.8 Chris K.Y.Lo, Andy C.L.Yeung, T.C.E.Cheng (2011)
Chris K.Y. Lo et al. proposed rising environmental concerns from consumers and stake holder groups, environmental management has become an important responsibility for today’s fashion and textiles manufacturers. The production of fashion and textiles related products often requires high levels of energy and water consumption, and emits large quantities of pollutants to the environment. Therefore, the adoption of environmental management systems (EMSs) is important and could have a significant impact on these firms’ operational performance. This study presents empirical evidence on the performance impact of EMS adoption in the fashion and textiles related industries (FTIs).

This study investigates the impact of EMS adoption on fashion and textiles firms financial performance by providing empirical evidence of the impact ISO14000 adoption in the FTIs. Based on 61 publicly-listed and 14000 certified textile sorts exit les related firms in the U.S. we find that ISO14000 adoption has a significant positive impact on ROA and ROS. Depending on the methods used to estimate abnormal performance, the median abnormal improvement in ROA in certified firms ranged from 1.2% to 2.9% over non-certified firms over a three-year period.

2.2 Availability for Clothing Industries
2.2.1 General Introduction
Food, shelter, and clothing are the basic needs of everyone. All clothing is made from textiles and shelters are made more comfortable and attractive by the use of textiles. Everyone is surrounded by textiles from birth to death. We walk on and wear textile products; we sit on fabric-covered chairs and sofas; we sleep on and under fabrics; textiles dry us or keep us dry; they keep us warm and protect us from the sun, fire and infection. Clothing and household textiles are aesthetically pleasing and vary in colour, design, and texture. They are available in a variety of price ranges.

2.2.2 Changes in Textiles
This text was written for consumers—average consumers but educated consumers who, when they purchase textiles items, want to know what to expect in fabric performance and why fabrics perform as they do. Textiles are always changing. They change as fashion changes and to meet the need of changing life styles of people. New development in production processes also cause changes in textiles, as do government standards for safety, environmental quality and energy conservation. These changes are discussed but the bulk of the text is devoted to basic information about apparel and household textiles with an emphasis on fibers, yarns, fabric construction, and finishes. All of these elements are interdependent and contribute to the beauty and texture, the durability and serviceability, and the comfort of fabrics and garments should be reconditioned

2.2.2.1 Chandra (1998) in his research wrote on challenges ahead of Indian textile and clothing industry in post quota regime. It put special emphasis on production capabilities and efficiencies as most
essential elements to fight global competition. It suggests various strategic decisions Indian textile manufacturers have to make to survive the competitiveness in post quota regime.

2.2.2.2 Simpson and Shetty (2001) did a vast study on India’s textile industry. The purpose of study is to analyze India’s textile and apparel industry, its structural problems, market access barriers, and measurements taken by government of India to enhance the industry’s competitiveness in the post – Multifibre Agreement (MFA) era. The study also assesses India’s textile and apparel market potential and trade and investment opportunities for U.S. firms as India steps into a more free and transparent trade regime. For the purpose of study exploratory study is done in which in-depth interviews are done with various government officials in Textile Export Promotion Council, Ministry of textile, Cotton Council of India, Apparel Export Promotion Council (AEPCC), Federation of Karnataka Chamber of Commerce and Industry, Handloom Export Promotion Council, Madras Chamber of Commerce and Industry, The South India Textile and Research Association, and almost all top executives of India’s large textile mills.

2.2.2.3 Verma (2001) in his article emphasized on the impact on the Indian textile and clothing industry after quota elimination. It says that Indian textile and clothing exporters have to bring in necessary changes in their methods of production, management style, capacities, marketing skills and productivity level in order to remain competitive in international market. Also it put special emphasis on the size of Indian textile units when compared to its counterpart in China.

2.2.2.4 Verma (2002) did a comprehensive study with objective to evaluate the export competitiveness of Indian textile and clothing sector. Because Indian textile and clothing sector is predominantly cotton based, the study is focused on cotton textile and clothing and look at the entire value chain from fiber to garment and retail distribution. The scope of study covers the products in Indian export basket which have shown a promising growth in value. The Study concludes that Indian exports to US and EU are export competitive as a whole. Sector wise analysis of export performance of Indian textile and clothing sectors to US and EU reveal that so far apparel or clothing and made-up is concerned; quota is the major constraint in the growth, while it is not true in case of yarn exports. Indian textile and clothing sector has tremendous potential and only a portion of which is explored till now and this shortcoming is due to policy constraints.

2.2.2.5 Meenakshi (2003) did a comprehensive study on the opportunities that would be provided by WTO to Indian Textile industry. This paper gives a lot emphasis on new capacity installation to take the benefits to the fullest extent in India has to be a true gainer in competition to other nations. Since India’s own consumption per capita is also on the rise with the rise of income and consumption habits, the profit margins available to Indian textile and clothing producers will be more. But in export market, the prices will be driven by international factors and profits will be under pressure. So the exporters might have to go for strategy of partial exports and partial domestic sale.

2.2.2.6 Pandey (2003) in his article expected that Indian textile exporter would be benefited with quota elimination. It discusses on various sectors of textile and clothing. Also he expects that hosiery industry will be one of the gainer and small scale exporters will be more competitive due to small size and controlled cost and lower overheads.
2.2.2.7 Uraiwan (2004) had worked extensively on the knitwear/hosiery products development process to understand the complexities underlying in it; because a well defined development process assist the organization to determine its future direction, plan for rapid changes, create new product line with profits and plan for technology adaptation and implementation. The goal of this research was to propose an optimal product development process for a knitwear/hosiery company by examining the process used by major US Sweater Company and comparing its process to established processes.

2.2.2.8 Vivek (2004) in his article had said that JC Penny a leading retail chain of US looks India for sourcing its garments in woven and hosiery. He is of opinion that India will be fulfilling its major need of Hosiery and woven garments in cotton while China will be good for synthetic fabrics and its garments.

2.2.2.9 Chugan (2005) emphasized that Indian textile Industry has to change to be more competitive in the long run. This paper emphasis that merely cost competence is not enough to maintain the lead while Indian companyed has to have a global competitive view.

2.2.2.10 Trivedi (2005) in his article concluded that the textile is one sector where India has high ambitions and can achieve robust growth through moderate human skills. India has skilled labour and does better in this sector as compared to others. This will also increase the employment and the social structure will be better off.

2.2.2.11 Thomas (2005) in his article wrote on why in the competitive scenario wholesalers like Nike are shy from keeping long inventories and stocks. So pressure is on garment companies to deliver the goods in time. India has bottleneck in infrastructure, which hinders the time receipt of raw material and delivery of finished goods. This would cause rapid freight and would squeeze the margins. Government has to invest heavily in Infrastructure to keep the pace of growth of garment industry intact and take the benefits to fullest extent.

2.2.2.12 Chaudhry (2006) did a very comprehensive study on the productivity of Indian Textile sector and various related sectors. Very technical formulas are used to analyze the competitiveness of Indian Textile Industry.

2.2.2.13 Chugan (2006) in his article discussed in detail the opportunities available to various sectors of Indian Textiles in the post quota era. Also, it emphasizes the weaker link, competition from China and the schemes run by government to support Indian textile Industry.

2.2.2.14 Kumar (2006) did study of various sectors of Indian and Chinese textiles. This paper concludes and highlights the various areas where India has efficiency over China and how India should more capitalize on it. Also it gives equally weightage to Chinese advantages and how India can win over its weaker areas to be more competitive in long run.

2.2.2.15 Texprocil (2007) in his article concluded that if India has to keep maintaining its edge in hosiery and garment sector, it has to keep in control thru various measures. The various measures indicated are raw material, Methodology, Labor wages, Power cost and utilities that need to be kept in check to keep the cost lower. This paper presents a comparative study of Indian textile industry with other nations like China, Bangladesh, Vietnam, Egypt and Pakistan and elaborates the competitiveness of
Indian textile and various sectors in Textiles. It also puts lots of emphasis on the areas where India in losing its edge and has to keep a close monitoring on it to remain competitive. It concludes that Vietnam and Egypt are coming up fast and can prove to be tough competitor in near future due to high productivity and low steam cost.

2.2.2.16 Bedi (2009) in his article had prepared detailed report on Indian textile industry covering various sector of textile industry. This is one of the most comprehensive reports coveting all aspects of textile industry, performance and hindrances in the growth of it.

2.2.3 Law/Act for Textile Industries- To make textile selection a bit easier consumers, textile producers and their associations have set standards and established quality control programs for many textile products. The federal government has passed laws to protect consumers from unfair trade practices, namely, The Wool Products Labeling Act, The Fur Product Labeling Act, The Textile Fiber Products Identification Act, and The Flammable Fabrics Act. The first three laws are “truth in fabrics” legislation and to be beneficial knowledge on the part of the consumer about fibers and furs is required. The fibers most commonly used were wool, flax, cotton, and silk.

2.2.4 Manmade Textile Products- Silk has always been a highly prized fiber because of the smooth, lustrous, soft fabrics made from it; it has always been expensive and comparatively scarce. It was, therefore, logical for man to try to duplicate silk. Rayon was the first man-made fiber. Rayon was produced in filament until the early 1930s when an enterprising textile worker discovered that the broken and wasted rayon filaments could be used as staple fiber. Acetate and nylon were also introduced as filaments to be used as silk like fibers.

REFERENCES :
[1] Dr. P. Chellasamy, K. Karuppaiah "An analysis of growth and development of textile industry in India "