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A STUDY ON SUSTAINABLE PRACTICES IN SUPPLY CHAIN FOR THE TEXTILE INDUSTRY IN TIRUPUR

Master of Business Administration (MBA)

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ABSTRACT

The textile industry plays a significant role in global manufacturing and commerce, but its operations often face criticism for environmental degradation, unethical labour practices, and unsustainable supply chain management. This research paper aims to analyse and evaluate sustainable practices in the Tirupur textile industry's supply chain management. By reviewing existing literature, case studies, and industry reports, this paper examines the challenges and opportunities for implementing sustainable practices, such as eco-friendly materials, ethical labour standards, efficient production processes, and responsible sourcing strategies. Additionally, it explores the role of technology, regulations, consumer awareness, and corporate responsibility in driving sustainable initiatives within the textile supply chain in Tirupur. Through comprehensive analysis and recommendations, this paper contributes to advancing sustainable practices in the Tirupur textile industry's supply chain management.

CHAPTER – 1

INTRODUCTION

1.1 BACKGROUND OF THE TEXTILE INDUSTRY:

The textile industry boasts a rich and ancient history, dating back millennia to the very beginnings of human civilization. It's a story of innovation, cultural exchange, and the constant quest for better ways to clothe ourselves.

EARLY BEGINNINGS:

- **HUMBLE ORIGINS:**

The earliest evidence of textiles comes from simple techniques like weaving plant fibres and animal fur. Around 5000 BC, people in Mesopotamia and Egypt were already adept at spinning and weaving threads from materials like flax and wool.

- **GLOBAL SPREAD:**

Over time, these skills spread across continents. In China, silk production using silkworm cocoons became a well-guarded secret for centuries. In India, cotton cultivation and weaving flourished, producing some of the finest fabrics of the ancient world.

THE RISE OF TRADE AND TECHNOLOGY:

- **Commerce and Exchange:** Textiles became a valuable commodity, driving trade routes and cultural exchange. The Silk Road, connecting China with Europe, facilitated the flow of silk fabrics and weaving knowledge. Mediterranean trade routes saw the movement of wool and linen textiles.

- **TECHNOLOGICAL ADVANCEMENTS:**

The invention of the spinning wheel and the loom in the Middle Ages revolutionized textile production. These advancements allowed for faster and more efficient spinning and weaving, leading to increased textile output.

THE INDUSTRIAL REVOLUTION AND BEYOND:

- **A NEW ERA:**

The 18th century's Industrial Revolution transformed the textile industry. Machines like the power loom and the cotton gin vastly increased production capacity. New synthetic fibres like nylon and polyester emerged in the 20th century, further diversifying the textile landscape.

- **GLOBALIZATION AND MODERN CHALLENGES:**

In recent decades, globalization has led to a shift in textile production to countries with lower labour costs. Sustainability concerns surrounding resource use, pollution, and ethical labour practices are increasingly important considerations for the modern textile industry.

THE TEXTILE INDUSTRY TODAY:

The textile industry remains a vital global sector, employing millions of people worldwide. It continues to evolve, embracing technological advancements in areas like automation and digital printing. Sustainability is a growing focus, with initiatives aimed at reducing environmental impact and promoting ethical labor practices.

This brief overview provides a starting point for understanding the rich tapestry of the textile industry's history. From its humble beginnings to its current global reach, textiles have played a significant role in human history and continue to shape our world today.

1.2 TIRUPUR'S TEXTILE INDUSTRY:

Tirupur, a city in southern India, has carved a unique niche for itself within the global textile industry.

HUMBLE BEGINNINGS (EARLY 20TH CENTURY):

- **FROM HOSIERY TO A HUB:**

Tirupur's journey began with a focus on hosiery. Local entrepreneurs set up small knitting units to produce socks and underwear, catering primarily to the domestic market.

GROWTH AND SPECIALIZATION (MID-20TH CENTURY):

- **EXPORT POTENTIAL RECOGNIZED:**

Entrepreneurial spirit and government support led to Tirupur recognizing its export potential. Focus shifted towards knitted garments like T-shirts and innerwear for international markets.

- **BUILDING A NETWORK:**

A strong network of small and medium-sized enterprises emerged, specializing in different stages of garment production – knitting, dyeing, finishing, and stitching.

1.3 IMPORTANCE OF SUSTAINABLE PRACTICES IN TEXTILE INDUSTRY:

WEAVING A SUSTAINABLE FUTURE: THE IMPORTANCE OF ECO-FRIENDLY PRACTICES IN TEXTILES:

The textile industry, throughout its long and fascinating history, has played a vital role in human civilization. From providing basic protection to becoming a canvas for cultural expression, textiles have been intricately linked to our progress. However, the large-scale production methods employed today come at a significant cost to the environment. This is where sustainable practices step in, offering a path towards a more responsible and eco-friendly future for textiles.

- **WATER WOES:**

Textile production is a thirsty business. A massive amount of water is used for processes like growing cotton, scouring raw materials, dyeing fabrics, and finishing garments. According to reports, it can take thousands of litres of water to produce just one kilogram of cotton! This

excessive water usage can deplete freshwater resources and strain local communities, especially in areas already facing water scarcity.

- **CHEMICAL COCKTAILS:**

The dyeing and finishing stages of textile production rely heavily on chemicals. These chemicals can include dyes, bleaches, and finishing agents, many of which contain harmful substances. If not properly treated, these chemicals can pollute waterways, harming aquatic life and ecosystems. Additionally, workers in textile factories can be exposed to these chemicals, posing health risks.

- **A MOUNTAIN OF FABRIC WASTE:**

The fast-fashion model, characterized by rapidly changing trends and mass production of low-cost clothing, has led to a significant amount of textile waste. Unwanted garments often end up in landfills, taking hundreds of years to decompose and releasing harmful methane gas in the process. Furthermore, the production of new clothes often outpaces the ability to recycle or reuse old ones, creating a growing waste problem.

SUSTAINABLE SOLUTIONS: WEAVING A GREENER FUTURE:

The good news is that there's a growing movement towards sustainable practices in the textile industry

- **EMBRACING NATURAL FIBERS:**

A shift towards natural fibres like organic cotton, hemp, and linen can significantly reduce the environmental impact. Organic cotton cultivation uses fewer pesticides and fertilizers, while hemp and linen require less water to grow compared to cotton.

- **WATER CONSERVATION:**

Textile companies are implementing innovative water-saving technologies. These include recycling wastewater during production processes and employing water-efficient dyes.

Additionally, using rainwater harvesting techniques can help reduce reliance on freshwater sources.

- **SAFE DYES AND CHEMICALS:**

A move towards safer dyes and chemicals is crucial. Natural dyes derived from plants and minerals offer a more eco-friendly alternative to synthetic ones. Biodegradable finishing agents can also help minimize environmental damage.

- **RECYCLING AND UPCYCLING:**

Giving new life to old clothes is a vital aspect of sustainability. Recycling programs collect used garments and transform them into new fibres or usable materials. Upcycling involves creatively repurposing old clothes into new items, reducing waste and promoting resourcefulness

- **TRANSPARENCY AND ETHICAL SOURCING:**

Consumers are increasingly demanding transparency in the textile industry. Knowing the origin of raw materials and the working conditions in factories empowers consumers to make informed choices. Ethical sourcing practices ensure that textiles are produced with minimal environmental impact and respect for workers' rights.

1.4 STATEMENT OF THE PROBLEM:

The Tirupur textile industry, despite its long history and contribution to human progress, faces a significant challenge: minimizing its environmental and social impact throughout the complex journey of a textile product, from raw materials to finished clothing. This journey, known as the supply chain, involves numerous stages, each with its potential for environmental damage and social injustice.

- **ENVIRONMENTAL FOOTPRINT:**

Conventional textile production practices are water-intensive, using vast quantities for processes like cotton cultivation and fabric dyeing. Additionally, the industry relies heavily on chemicals, which can pollute waterways and harm workers' health if not managed responsibly.

Furthermore, textile waste generated during production and discarded clothing poses a growing landfill burden.

- **SOCIAL RESPONSIBILITY CONCERNS:**

Unethical labour practices can exist within the global textile supply chain, with workers facing issues like low wages, unsafe working conditions, and a lack of fair treatment.

- **LIMITED CONSUMER AWARENESS:**

Many consumers may not be fully aware of the environmental and social costs associated with their clothing choices. This lack of awareness hinders demand for sustainable practices throughout the industry.

1.5 REVIEW OF LITERATURE:

Morali & Searcy, 2012 examine how supply chain management (SCM) in businesses might incorporate sustainability concepts, using Canada as a case study. In addition to interviewing eighteen SSCM specialists, the study examines 100 corporate sustainable development reports from Canadian businesses. The integration of sustainability into supply chain management presents several problems, including supply chain governance, standards, supplier participation, performance monitoring, and accountability. The results emphasize the need for more study on sustainability that takes into account its social, environmental, and economic aspects, especially when gauging supplier performance on sustainability projects. The paper emphasizes the necessity of additional SSCM research.

Govindan et al., 2014 examine how supply chain sustainability is affected by green, resilient, and lean supply chain management techniques. A conceptual model was created using a deductive research approach and actual data from five case studies in the Portuguese automotive supply chain. The study discovered that supply chain sustainability is greatly impacted by techniques including waste removal, supply chain risk management, and cleaner production. On the other hand, methods like reverse logistics, flexible transportation, sourcing, and ISO 14001 certification don't. To help practitioners discover viable practices for sustainability goals, the article offers a taxonomy for these practices at the upstream, downstream, and organizational

levels. Additionally, the model enables researchers to create surveys to investigate these connections. The goal of this creative strategy is to advance supply chain management and sustainability research through fresh theoretical perspectives and empirical studies.

Jing & Dai, 2018 investigate the effects of CSR and environmental measures on a company's performance in all areas. The study reveals that there are distinct effects of supply chain collaboration, external supplier monitoring and assessment, internal environmental management, and social responsibility management, as well as SSCM techniques, on economic, environmental, and social performance. By enhancing internal environmental management and social responsibility management, businesses can enhance their performance in the areas of the environment and society. Businesses ought to take the initiative to implement these strategies, understanding that improving social and environmental performance requires time and shouldn't take precedence over financial gains. Organizations can also combine internal and external SSCM procedures because the former can boost supplier performance and help the company financially. Effective supplier cooperation is essential to SSCM's success.

Azevedo et al., 2011 examine the connection between automotive supply chain performance and green supply chain management techniques. Empirical data from five case studies in the Portuguese automotive supply chain are used to test five study hypotheses. The most significant green practices are identified, together with the performance metrics that are used to assess their impact on supply chain efficiency. To evaluate the effects of green practices on supply chain performance, a conceptual model is created. It reveals both negative and good effects on performance, as well as beneficial effects on efficiency, customer satisfaction, and quality. The model offers data to assess how green initiatives affect supply chain efficiency.

Singh & Trivedi, 2016 provides a thorough analysis of papers on sustainable green supply chain management (GSCM) published over ten years (2005-2014). The evaluation, which focuses on 138 publications published between 2005 and 2014, finds trends and opportunities in research addressing sustainable grain straw management. The data shows a steady rise of publications over the previous ten years, which is explained by stakeholders' and companies' growing awareness. Geographical locations, study methodologies, and an emphasis on developing economies like as China, Taiwan, and India are used to categorize the literature. Greener services have received less attention than the industrial sector in the majority of

research. The assessment also emphasizes the significance of procurement, information systems and technology utilization, strategic planning, product design, and performance measurement. A few problems, nevertheless, provide plenty of room for additional research in the field.

Dynamic Capabilities (DCs) and Sustainable Supply Chain Management (SSCM) are two new research areas that center on dynamic business settings and sectors. A good example of such a dynamic environment is the food business, where there is a growing demand for sustainably produced food and high standards for food safety. Businesses need to focus on clients who understand the social, ecological, and economic aspects of food production and distribution. By implementing dynamic capabilities, supply chain management techniques (SSCM) give businesses a competitive edge and help them keep control over their supply chain. An examination of the literature highlights particular DCs, like information exchange and re-conceptualization, in the supply chain of an industry focused on sustainability. The findings demonstrate that DCs and sustainability practices improve traceability and tracking, meeting customer requests. **(Beske et al., 2014).**

With more articles and publications addressing the triple bottom line and the economic/environmental aspects, there has been a noticeable increase in interest in sustainable supply chain management in recent years. With an emphasis on supply chain organization (SOM), integrated supply chain management (ICM), and sustainable supply chain management (SSCM), this study investigates the new management systems and practices in this area. Still, only two practices and a small number of management systems address the three dimensions of sustainability. New approaches in supply chain sustainability management (SSCM) are building on the foundation of traditional management systems and practices. To encapsulate the goals of the study, the authors suggest two frameworks: the first links organizational best practices to sustainability features and their interplay, while the second arranges management systems in layers based on sustainability parameters. Future academics can use these frameworks to solidify the idea of sustainable supply chain management. **(HeinOnline, 2024).**

For businesses and their supply chain organizations, the idea of sustainable development in supply chain management can boost productivity and competitiveness. To measure and examine the connections between customary practices and their effects on performance, a framework for characterizing sustainable performance and an analytical model for assessment are put forward.

The framework describes how a business performs sustainably in the social, environmental, and economic spheres. The analytical evaluation methodology generates a sustainable performance profile by examining the connections between a practice and domains related to sustainable development. Practitioners can determine activities that have a favorable influence on sustainable performance based on their goals by applying this profile to two well-known best practices. **(Chardine-Baumann & Botta-Genoulaz, 2014).**

The goal of the work is to develop a scale for assessing the effectiveness of sustainable supply chain management (SSCM) techniques. Environmental management practices, operations practices, supply chain integration, socially inclusive employee practices, and socially inclusive community practices are the five SSCM practices that are recognized. Five SSCM performance constructs are also identified by the study: competitiveness, employee-centred social performance, operations performance, environmental performance, and community-centred social performance. A survey tool was created, and data was gathered from 255 organizations. The findings give organizations a useful tool to put SSCM practices into practice, track their development, and evaluate their effectiveness. **(Das, 2017).**

Using a meta-analysis, the study looks at more than 20 years of research on environmental supply chain practices to see if these policies have a generally favourable impact on business performance. The findings demonstrate a strong and positive correlation between environmental supply chain practices and measures of business performance that are based on the market, operations, and accounting. In addition, as modifiers of this relationship, the study looks at various operationalizations of supply chain techniques, including upstream, downstream, design, and production, as well as industry, sample region, firm size, and time. The results contribute to the field's growing understanding of how environmentally friendly supply chain management affects business success. **(Golicic & Smith, 2013).**

Jia et al., 2018 examine scholarly research from 2000 to 2016 on Sustainable Supply Chain Management (SSCM) techniques in underdeveloped nations using a systematic review methodology. The drivers, impediments, mechanisms, and consequences were found to be common themes. To explain why supply networks are adopting sustainable practices, a conceptual model grounded in institutional theory was created. To fill in these gaps, the report ends with recommendations for additional research, especially in developing nations. This is the first review of previous studies on the social and environmental aspects of SSCM in developing nations.

CHAPTER – 2

RESEARCH METHODOLOGY

2.1 SCOPE OF THE STUDY:

The study narrows its focus to the complex web of activities involved in bringing textiles from raw materials to finished products. It examines the integration of environmentally and socially responsible practices within this supply chain. By combining quantitative and qualitative methods, the study builds a comprehensive picture of the current state of sustainability in the Tirupur textile industry.

2.2 OBJECTIVES OF THE STUDY:

1. Evaluate the environmental impact of current practices:

This objective focuses on understanding the specific areas within the textile supply chain that contribute the most to environmental issues like water usage, chemical pollution, and waste generation. This could involve analysing water consumption at different stages of production, identifying the types of chemicals used and their potential environmental hazards, and quantifying the amount of textile waste generated throughout the supply chain.

2. Identify and assess promising sustainable solutions:

This objective aims to explore and evaluate various strategies that can be implemented within Tirupur's textile supply chain to minimize environmental impact. The study would examine existing solutions like using organic cotton or recycled materials, water-saving technologies, and safe dyes and finishing agents. The research would assess the effectiveness, feasibility, and potential cost implications of these solutions for different segments of the textile industry.

3. Develop recommendations for wider adoption of sustainable practices:

Building on the first two objectives, this final step involves outlining practical recommendations for encouraging wider adoption of sustainable practices across the textile supply chain. The study will propose practical recommendations for promoting and improving sustainable

practices within Tirupur's textile supply chain. This could involve suggestions for stakeholders, policymakers, or other relevant actors to create a more sustainable future for the industry.

2.3 RESEARCH DESIGN:

- An applied study was conducted using a variety of data collection methods to create a secondary database, which was then used to acquire primary data.
- This research will employ Quantitative methods to gain a comprehensive understanding of sustainable practices within Tirupur's textile supply chain.

QUANTITATIVE DATA COLLECTION (SURVEY):

- **Target Population:**

Stakeholders across different stages of Tirupur's textile supply chain (raw material suppliers, spinning mills, weaving units, processing units, garment manufacturers).

- **Sample Selection:**

The sample for this study will be focused on organisation owners and managers to have the proper data for the study.

- **Sample size:**

The sample size for this study will be 30.

Survey Instrument:

A structured questionnaire will be developed to gather data on:

1. Current sustainable practices implemented by companies.
2. Challenges faced in adopting sustainable practices.
3. Perceptions on the importance of sustainability for the industry's future.

QUALITATIVE DATA COLLECTION (INTERVIEWS):

- **Participants:**

Face-to-face interviews will be conducted with a smaller group of managing directors & administrative managers.

- **Selection Criteria:**

Participants have been chosen based on their expertise and ability to provide valuable insights into different aspects of sustainability in the industry.

- **Interview Guide:**

A semi-structured interview guide will be used to explore:

- Motivations and barriers for adopting sustainable practices.
- Specific challenges faced by them.
- Existing initiatives and best practices for promoting sustainability.
- Perspectives on future trends and opportunities.

CHAPTER – 3

DATA ANALYSIS AND INTERPRETATION

3.1 DATA ANALYSIS AND INTERPRETATION FOR QUANTITATIVE DATA:

TABLE – 1:

Table showing the respondent's role in the organization:

ROLE	NO OF RESPONDENTS	PERCENTAGE
Raw material supplier	9	30%
Spinning mill	6	20%
Weaving unit	3	10%

Processing unit	0	0%
Garment manufacturer	12	40%

Analysis:

The above table states that 30% of the respondents are raw material suppliers, 20% of respondents are spinning mill owners, 10% of respondents are weaving unit owners, 0% of respondents are processing unit owners, and 40% of the respondents are garment manufacturers.

Interpretation:

From the above table, the conclusion is made that the majority of the respondents are Garment manufacturers.

CHART – 1:

Chart showing the respondent's role in the organization:

What is your role in the Tirupur textile industry?

30 responses

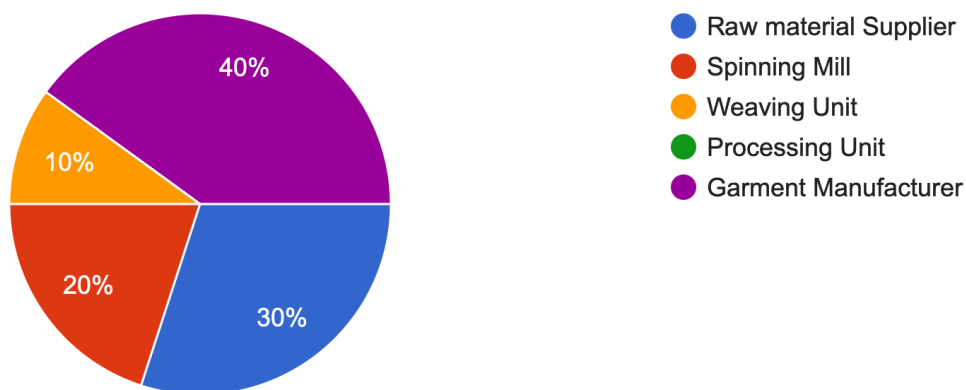


TABLE – 2:

Table showing the years of experience of the respondents:

YEARS	NO OF RESPONDENTS	PERCENTAGE
Less than 1 year	11	36.7%
1 – 5 years	9	30%
6 – 10 years	3	10%
More than 10 years	7	23.3%

Analysis:

The above table states that 36.7% of the respondents have less than 1 year of experience, 30% of respondents have 1-5 years of experience, 10% of respondents have 6-10 years of experience, and 23.3% of the respondents have more than 10 years of experience.

Interpretation:

From the above table, the conclusion is made that the majority of the respondents have less than 1 year of experience.

CHART – 2:**Chart showing the years of experience of the respondents:**

How many years have you been working in the Tirupur textile industry?

30 responses

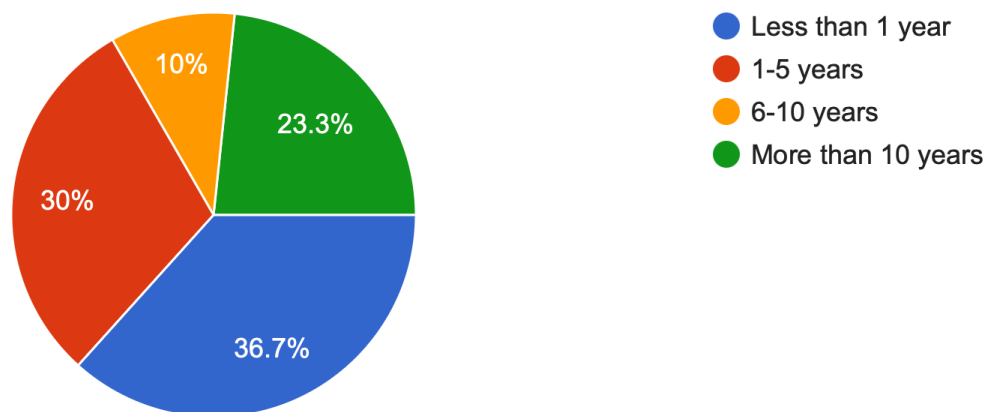
**TABLE – 3**

Table showing to what extent the company currently implementing sustainable practices in its operations:

CATEGORY	NO OF RESPONDENTS	PERCENTAGE
Not at all	6	20%
To a limited extent	5	16.7%
To a moderate extent	8	26.7%
To a significant extent	11	36.7%
We are a leader in sustainable practices	0	0%

ANALYSIS:

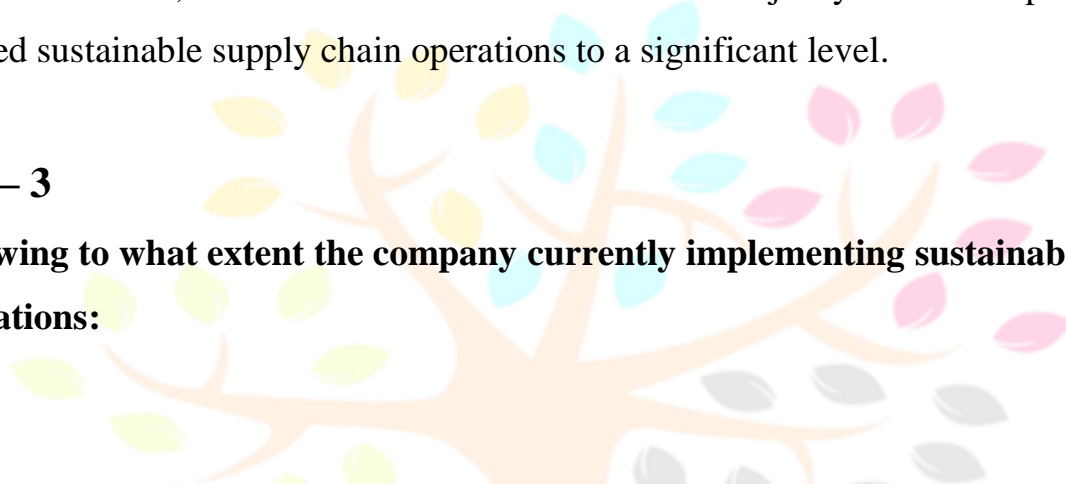
The above table states that 20% of the respondents have not implemented sustainable practices, 16.7% of the respondents have implemented to a limited extent, 26.7% of the respondents have implemented to a moderate extent, 36.7% of the respondents have implemented to a significant extent, 0% of the respondents are leader in the sustainable supply chain operations.

Interpretation:

From the above table, the conclusion is made that the majority of the respondents have implemented sustainable supply chain operations to a significant level.

CHART – 3

Chart showing to what extent the company currently implementing sustainable practices in its operations:



To what extent is your company currently implementing sustainable practices in its operations?

30 responses

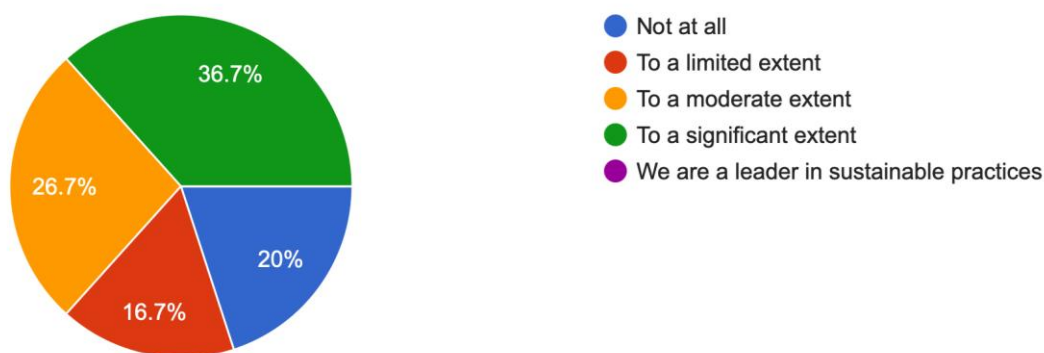


TABLE – 4:

Table showing sustainable practices that are implemented in the respondent's organization:

CATEGORY	NO OF RESPONDENTS	PERCENTAGE
Water conservation measures	15	50%
Energy efficiency measures	9	33.3%
Waste reduction	13	43.3%
Organic cotton or recycled	9	30%
Fair labour practices and worker well-being initiative	17	56.7%
Use of eco-friendly dyes and chemicals	4	13.3%

Analysis:

The above table states that 50% of the respondent's organisations have implemented water conservation measures, 33.3% of the respondent's organisations have implemented energy efficiency measures, 43.3% of the respondent's organisations have implemented waste reduction, 30% of respondent's organisations have implemented organic cotton or recycled products, and 56.7% of the respondent's organisations have implemented Fair labour practices and worker well-being initiative & 13.3 of the respondent's organisations use of eco-friendly dyes and chemicals.

Interpretation:

From the above table, the conclusion is made that the majority of the respondent organisations have implemented Fair labour practices and worker well-being initiatives.

CHART – 4:

Chart showing sustainable practices that are implemented in the respondent's organization:

Please select ALL sustainable practices your company currently implements. (Check all that apply)

30 responses

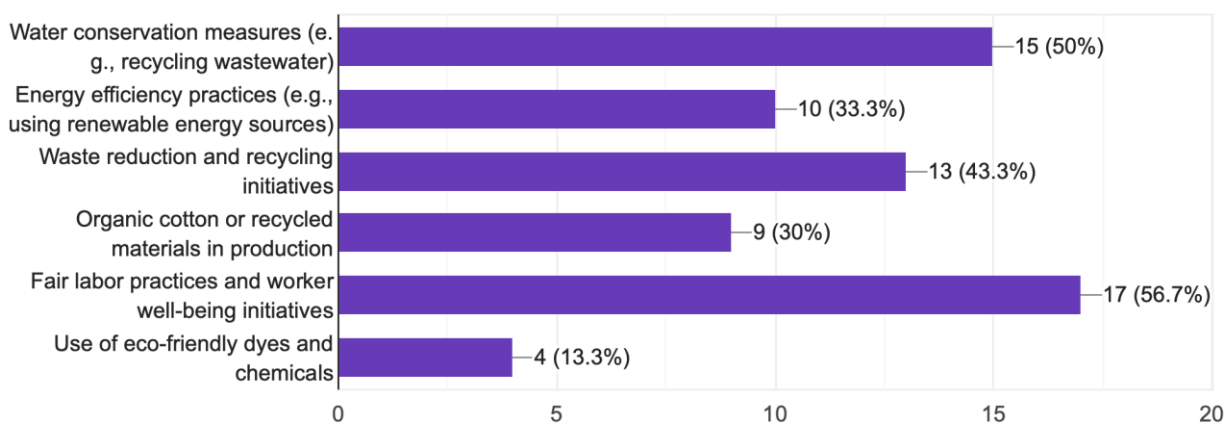


TABLE – 5

Table showing the biggest challenges that respondent's company faces in implementing sustainable practices:

CATEGORY	NO OF RESPONDENTS	PERCENTAGE
Cost concerns	18	60%
Lack of knowledge or expertise	6	20%
Difficulty accessing sustainable technologies	11	36.7%

Limited customer demand for sustainable product	5	16.7%
Government regulations and policies	8	26.7%

Analysis:

The above table states that 60% of the respondents' organisations faced cost concern as their biggest challenge, 20% of respondents' organisations faced lack of knowledge or expertise as their biggest challenge & 36.7% of respondents' organisations faced difficulty in accessing sustainable technologies, 16.7% of respondents' organisations faced difficulty in limited customer demand for sustainable product & 26.7% of the of respondents' organisations faced difficulty in government regulations and policies.

Interpretation:

From the above table, the conclusion is made that the majority of the respondents' organisations faced cost concern as their biggest challenge.

CHART – 5

Chart showing the biggest challenges that respondent's company faces in implementing sustainable practices:

What are the biggest challenges your company faces in implementing sustainable practices?

30 responses

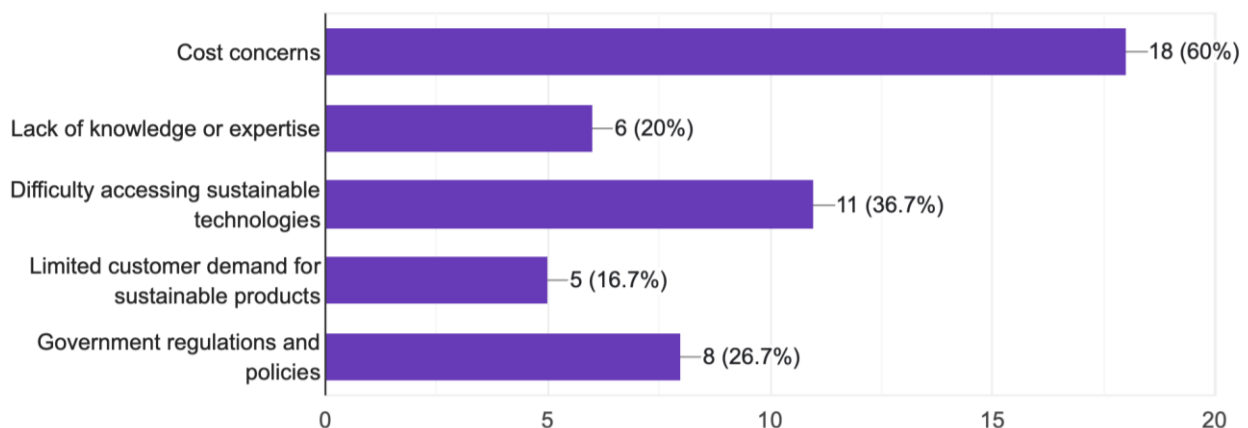


TABLE – 6:

Table showing how respondents believe sustainable practices are important for the future of the Tirupur textile industry:

CATEGORY	NO OF RESPONDENTS	PERCENTAGE
Not important at all	6	20%
Somewhat important	4	13.3%
Moderately important	2	6.7%
Very important	17	56.7%
Essential	1	3.3%

Analysis:

The above table states that 20% of respondents think it is not important to implement sustainable practices in the organization, 13.3% of the respondents think it is somewhat important to implement sustainable practices in the organization, 6.7% of the respondents think it is moderately important to implement sustainable practices in the organization, 56.7% of the respondents think it is very important to implement sustainable practices in the organization & 3.3% of the respondents think it is essential to implement sustainable practices in the organization.

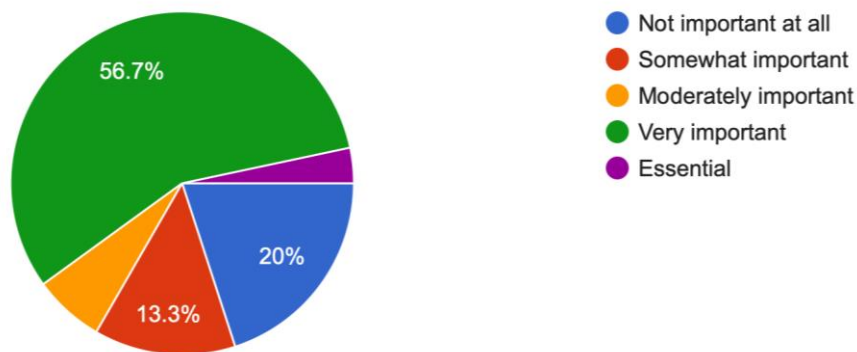
Interpretation:

From the above table, the conclusion is made that the majority of the respondents think it is very important to implement sustainable practices in the organization.

CHART – 6:

Chart showing how respondents believe sustainable practices are important for the future of the Tirupur textile industry:

How important do you believe sustainable practices are for the future of the Tirupur textile industry
30 responses



3.2 DATA ANALYSIS AND INTERPRETATION FOR QUALITATIVE DATA:

For the qualitative data, direct interviews have been conducted with Managing directors and administrative managers to gain deeper insights into the sustainable practices in the organizations in Tirupur. By analyzing the data given by them, the following interpretations have been given:

Motivations and Barriers:

- Cost concerns were the major barriers to implementing sustainable practices but the organisations see that it is a growing consumer demand for sustainable products as a motivator.
- Lack of awareness and access to affordable sustainable technologies are significant hurdles.

Challenges Faced by Organizations:

- Raw material suppliers might struggle with sourcing sustainable fibers, while garment manufacturers might face challenges in integrating sustainable practices into existing production processes.

Existing Initiatives and Best Practices:

- Collaboration between companies to share knowledge and resources has been successful. Investing in water-saving technologies has also shown positive results.

Future Trends and Opportunities:

- Increased government support for sustainable practices, coupled with consumer awareness, could be a game-changer for the organizations.



CHAPTER – 4

FINDINGS &

RECOMMENDATIONS

.1 FINDINGS OF QUANTITATIVE DATA:

- The majority of the respondents have implemented sustainable supply chain operations to a significant level.
- The majority of the respondent organisations have implemented fair labour practices and worker well-being initiatives.
- The majority of the respondents' organisations faced cost concerns as their biggest challenge.
- The majority of the respondents think it is very important to implement sustainable practices in the organization.

4.2 FINDINGS OF QUALITATIVE DATA:

1. Most of the organisations faced the following challenges in their organisation:
 - a) Cost concerns
 - b) Lack of awareness and access to affordable sustainable technologies
 - c) Sourcing sustainable fibers.
2. Most organisations find collaboration between companies to share knowledge and resources has been successful.
3. Most organisations find investing in water-saving technologies has shown positive results
4. Most organisations find increased government support for sustainable practices, coupled with consumer awareness, could be a game-changer for the organizations.

4.3 RECOMMENDATIONS GIVEN BY THE RESPONDENTS:

- By spreading more awareness through professionals and making consumers understand the concept of sustainability is need of the hour so that it's easier to work by adapting the sustainable practices even more efficiently.
- Creating awareness among the people about the importance about sustainable clothing.

- More research and implementation of sustainable practices should come into effect in the Tirupur Textile manufacturing industry.
- Training and education on sustainable practices and also ethical labour practices in the organisation should be implemented.
- Government policies and regulations should be at ease to have a smooth workflow
- Government incentives should be increased for the Tirupur textile industry.

4.4 RECOMMENDATIONS FROM QUANTITATIVE DATA ANALYSIS:

For Textile Companies:

- **Cost Reduction Strategies:**

Investigate and implement cost-effective solutions for sustainable practices. This could involve exploring bulk purchasing of sustainable materials, collaborating with other companies for resource sharing, or seeking government incentives.

- **Knowledge Building and Training:**

Invest in training programs for employees on sustainable practices and technologies. This will empower them to identify and implement sustainable solutions within their roles.

- **Technology Adoption:**

Actively research and explore new, affordable sustainable technologies relevant to your specific production processes. Consider collaborating with technology providers for pilot projects or joint ventures.

- **Customer Education and Engagement:**

Raise awareness among customers about the importance of sustainable practices and the benefits of your sustainable products. This could involve informative labelling, marketing campaigns, or customer engagement programs.

or Industry Associations and Government:

- **Financial Incentives:**

Establish financial incentives or subsidies to encourage companies to adopt sustainable practices. This could involve tax breaks, grants for technology adoption, or low-interest loans for investments in sustainability.

- **Knowledge Sharing Platforms:**

Create industry-wide platforms for knowledge sharing and collaboration on sustainable practices. This could involve workshops, online resources, or facilitating peer-to-peer learning opportunities between companies.

- **Infrastructure Development:**

Invest in infrastructure development to support sustainable practices within the industry. This might include establishing recycling facilities for textile waste or building renewable energy sources to power production units.

- **Consumer Awareness Campaigns:**

Launch public awareness campaigns to educate consumers about the value of sustainable textiles and encourage them to make informed purchasing decisions.

Overall Strategy:

- **Collaboration is Key:**

Encourage collaboration between all stakeholders, including textile companies, industry associations, government agencies, and research institutions. By working together, they can develop a comprehensive strategy for promoting sustainable practices throughout the entire textile supply chain in Tirupur.

- **Continuous Improvement:**

Sustainability is an ongoing journey. Implement a system for monitoring progress, identifying areas for improvement, and adapting strategies to address emerging challenges and opportunities.

By implementing these recommendations, stakeholders in Tirupur's textile industry can work towards a more sustainable future that benefits both the environment and the long-term success of the industry.

4.5 LIMITATIONS OF THE STUDY:

- **Sample Size:**

The representativeness of the findings depends on the 30 participants in the survey. A larger sample size might provide a more generalizable picture of the industry.

- **Focus on Tirupur:**

The study is specific to Tirupur. The findings might not be directly applicable to other textile hubs or regions with different contexts.

- **Survey Bias:**

Survey responses can be influenced by social desirability bias, where participants might answer in a way they perceive to be favorable.

- **Limited Qualitative Data:**

While interviews provide depth, a small number of participants might not capture the full range of perspectives within the industry.

- **Time Frame:**

The study reflects the situation at a specific point in time. Sustainability practices and challenges might evolve over time.

4.6 SCOPE FOR FUTURE RESEARCH:

- Conduct a larger-scale survey to increase the generalizability of the findings.
- Consider including additional textile hubs or regions in a comparative study.
- Explore ways to minimize social desirability bias in future surveys.
- Expand qualitative data collection by interviewing a wider range of stakeholders.
- Conduct follow-up studies to track changes in sustainable practices over time.

CHAPTER – 5

5.1 CONCLUSION:

The textile industry in Tirupur faces a pressing need to embrace sustainable practices. This research explored the complexities of the supply chain, highlighting areas for environmental and social improvement.

Based on these findings, the research proposes recommendations for a more sustainable future. These include developing industry-wide standards, increasing funding for research in sustainable materials, promoting the use of eco-friendly materials, and implementing government incentives for sustainable practices.

While limitations exist, this research offers valuable insights and paves the way for a more responsible and environmentally conscious textile industry in Tirupur.

In conclusion, this study underscores the potential for Tirupur's textile industry to embrace a more sustainable future. By implementing the recommendations and conducting further research, stakeholders can work together to ensure the industry thrives in a responsible and environmentally conscious manner.

REFERENCES:

Journals:

- A Sustainability Overview of the Supply Chain Management in Textile Industry International Journal of Trade, Economics and Finance: <https://www.ijtef.com/vol11/673-AB1001.pdf> by explores the benefits of implementing standardized management systems like ISO 9001 and ISO 14001 for sustainable supply chain practices in textiles.
- Sustainability Issues in the Textile and Apparel Supply Chains MDPI: https://www.mdpi.com/journal/sustainability/special_issues/Apparel_Supply

Chains by Bin Shen et al. discusses various sustainability challenges faced in the textile and apparel supply chains, including green logistics, ethical fashion, and knowledge management.

- Study on the Green Supply Chain Practices of Textile Industries in India Research Publish Journals: <https://www.researchpublish.com/upload/book/Study%20on%20the%20Green%20Supply%20Chain-8386.pdf> explores green supply chain practices adopted by textile industries in India, highlighting aspects like waste reduction and energy efficiency.
- Sustainable Supply Chain in the Textile Industry Research Gate: https://www.researchgate.net/publication/369586237_Sustainable_Supply_Chain_in_the_Textile_Industry provides a general overview of sustainable supply chain practices in the textile industry, including barriers and potential solutions.

APPENDIX:

1. Name:

2. What is your role in the Tirupur textile industry?

- Raw material supplier
- Spinning mill
- Weaving unit
- Processing unit
- Garment manufacturer

3. How many years have you been working in the Tirupur textile industry?

- Less than 1 year
- 1 – 5 years
- 6 – 10 years
- More than 10 years

4. To what extent is your company currently implementing sustainable practices in its operations?

- Not at all
- To a limited extent
- To a moderate extent

- To a significant extent

- We are a leader in sustainable practices

5. Please select ALL sustainable practices your company currently implements. (Check all that apply)

- Water conservation measures
- Energy efficiency measures
- Waste reduction
- Organic cotton or recycled
- Fair labour practices and worker well-being initiative
- Use of eco-friendly dyes and chemicals

6. What are the biggest challenges your company faces in implementing sustainable practices?

- Cost concerns
- Lack of knowledge or expertise
- Difficulty accessing sustainable technologies
- Limited customer demand for sustainable product
- Government regulations and policies

7. How important do you believe sustainable practices are for the future of the Tirupur textile industry

- Not important at all
- Somewhat important
- Moderately important
- Very important
- Essential

8. In your opinion, what specific actions would be most effective in promoting sustainable practices within the Tirupur textile industry?

9. Do you have any additional comments or suggestions regarding sustainable practices in Tirupur's textile industry?

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