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Evaluating the Operational Supply Chain Performance in Textile Exporters with Special Reference to Tiruppur City

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ABSTRACT
The textile industry in Tirupur, known as the knitwear capital of India plays a crucial role in India's export sector. This study evaluates the operational supply chain performance of textile exporters in Tirupur. To assess the challenges faced in the supply chain operation in textile exporters. The textile export industry faces numerous challenges faced numerous challenges faced by effective and efficient operational supply chain performance. A questionnaire was administered to 80 textile exporters in Tirupur city. In this research we have used simple random sampling method to collect data. The result of the study also identifies areas for improvement including the adoption of technology enabled supply chain performance. The findings of this study provide practical insights for textile exporters in tiruppur city to improve their operational supply chain performance.

Keywords: Supply chain performance, Operational supply chain, Adoption of technology

INTRODUCTION

Tirupur city is a major textile exporting hub in India with numerous textile exporters competing in the global market. India is the 6 th largest exporter of textile contributing to the global market with a 3.9% share. The country major exports destinations like U.S, Bangladesh and U.K .It is supported by a strong domestic industry with leading manufactures such as aravind limited and Raymond limited. The industry supply chain key involves procurement, raw materials, fabric production and distribution. India provides a strong supply of producing raw materials such as jute, silk and cotton. Operational supply chain performance in textile export is measured through key metrics like inventory turnover, cash to cash cycle time, order fulfill rate. Despite there is a lack of research on the operational supply chain performance in textile exporters. This study aims to know the research gap and identifying areas for improvement.

OBJECTIVES

- To evaluate the efficiency of the operational supply chain processes.
- To assess the challenges faced in the supply chain operation in textile exporters.
- To explore the recent practices in operational supply chain performance in textile export.

SCOPE OF THE STUDY

- This research will contribute to the body of knowledge on supply chain management.
- The findings of this study will be useful for the textile exporters, policy makers.

RESEARCH METHODOLOGY

- **Area of study:** Tirupur
- **Type of Research:** Descriptive research
- **Population:** Textile exporters in Tirupur city
- **Type of sampling:** simple random sampling
- **Sample size :** 80
- **Tools used:** Simple Percentage, ANOVA, Chi Square, Ranking Method

REVIEW OF LITERATURE

Girma Abdissa Gamachu1 (2023): Performance and supply chain-related theories serve as the foundation for the philosophical framework. This study's included developing an integrated supply chain performance assessment scale for Ethiopia's textile industries, confirming the factorial design of the measurement, and ultimately identifying the test's psychometric properties. The methodology confirmatory factor analysis to establish the factorial validity of the newly developed SCIPS. The finding shows the perception among the Ethiopian industries.

Paulo Cesar da Silva (2021): The adoption of cleaner production practices (CPP) can promote environmental, economic and operational benefits for the textile industry. To evaluate the adoption of CPP by large textile industries (LTI) has a positive effect on economic, environmental and operational performance. A systematic literature review was conducted to obtain the variables to be used in the preparation of the questionnaire. For future research it is suggested to apply the research in other industry segments or consider small and medium-sized (SMS) enterprises to compare the findings, remembering SMS represents 80% of the textile companies.

AHM Yeaseen Chowdhury(2021): The Supply Chain Management (SCM) has emerged as a new field of study which received much attention by the business houses and the researchers. To identify the relationship between the Supply chain management and operational performance in readymade garment industry in Bangladesh. This research develops a conceptual framework of the impact of SCM practices on operational performance in RMG industry of Bangladesh through literature review. The results of this study will give the government, regulatory agencies, and owners and managers the information they need.

Xuan Hung Nguyena (2020): The article was conducted on 529 textile enterprises in the Vietnam Textile and Garment Business Directory 2018 with the aim of assessing the impact of global supply chain management practices on competitive advantage and operational efficiency. To know the impact of global supply chain management on competitive advantage and operational efficiency .The research sample is a very important factor to ensure the quality of the research. Based on the enterprises in the list of Vietnamese textile enterprises, (2018), we use the random sampling technique to select 680 enterprises as the target sample, then we proceed to send a survey through the Textile Association to 680 enterprises in the target sample. Future research should find ways to use multiple respondents from each participating organization to enhance the research. Future studies may also examine proposed relationships by incorporating a number of contextual variables into the model, such as organizational size and supply chain structure as moderator variables in the model.

Erna Maulinaa (2019): The significant of supply chain management (SCM) on the performance of organization's is described and evaluated in this study. To know the operational performance is examined regarding supply chain in textile and apparel sector which is crucial for the performance of whole organization to know the operational performance regarding textile industry with whole organisation. The study was employed quantitative method in testing objective theories. But some limitations were noted, such as access to data and the study's restriction to a select particular Indonesian provinces, and suggestions for further investigation were deliberated in order to increase our understanding of the model being examined in the near future.

DATA ANALYSIS AND INTERPRETATION

TABLE 1: SHOWING THE SIMPLE PERCENTAGE NO.YRS IN BUSINESS

S.No	Particulars	Number. of . respondents	Percentage
1	Less than 10 years	19	23.8
2	11-15 years	23	28.7
3	16-20 years	20	25.0
4	More than 21 years	18	22.5
Total		**80**	**100.0**

INTERPRETATION

The above table represents the majority (28.7%) have been in business for 11-15 years, followed by 25% operating for 16-20 years. whereas 23.8% respondents with less than 10 years in business and 22.5% respondents have more than 21 years in business. This indicates a relatively balanced distribution, with a slight concentration in the 11-15 and 16-20 years range, suggesting business stability and sustainability over time.

TABLE 2: SHOWING THE SIMPLE PERCENTAGE ANNUAL TURNOVER

S. No	Particulars	Frequency	Per cent
1	25,00,000-35,00,000	12	15.0
2	36,00,000-45,00,000	11	13.8
3	46,00,000-55,00,000	33	41.3
4	56,00,000-65,00,000	24	30.0
Total		**80**	**100.0**

INTERPRETATION

The above table shows the factors considering by annual turnover of the company shows the majority of companies 41.3% between 46,00,000-55,00,000,30% of the companies 56,00,000-65,00,000,15% of the companies 25,00,000-35,00,000,14% of the companies 36,00,000-45,00,000.it concludes the most of the companies are of the annual turnover 41.3% between 46,00,000-55,00,000.

TABLE 3: SHOWING THE SIMPLE PERCENTAGE OF TYPES OF OWNERSHIP

S. No	Types of ownership	Frequency	Per cent
1	Proprietorship	36	45.0
2	Partnership	32	40.0
3	Private ltd company	12	13.8
Total		**80**	**100.0**

INTERPRETATION

The data shows a fairly even distribution among different categories of organizations. Medium-scale businesses form the largest group (37.5%), followed by large-scale (32.5%) and small-scale (30%). This indicates a balanced mix of business sizes, with a slight dominance of medium-scale enterprises, suggesting a well-developed industrial base with growth potential.

TABLE 4: SHOWING THE ANOVA CORE SUPPLY CHAIN AND EFFICIENCY

H0- There is no significant relationship between core supply chain and efficiency of supply chain processes

H1-There is significance relationship between core supply chain and efficiency of supply chain processes

	Sum of Squares	Df	Mean Square	F	Sig.	
Between Groups	49.737	5	9.947	8.696	.000	**S**
Within Groups	84.650	74	1.144			
Total	134.388	79				

INTERPRETATION

The ANOVA results indicate a statistically significant relationship between the core supply chain and the efficiency of supply chain processes. The F-value of 8.696 with a significance level (p-value) of 0.000 (less than 0.05) suggests that differences between groups are not due to random chance. Since the p-value is below the standard significance threshold, we reject the null hypothesis (H0) and accept the alternative hypothesis (H1), confirming that the core supply chain significantly impacts the efficiency of supply chain processes.

TABLE 5: CHI SQUARE ANALYSIS THE SUPPLY CHAIN PARTNER AND PRIMARY CHALLENGES

Particulars	Value	D f	Asymptotic Significance (2-sided)
Pearson Chi-Square	17.117[a]	12	.145
Likelihood Ratio	17.448	12	.134
Linear-by-Linear Association	7.003	1	.008
N of Valid Cases	**80**		

INTERPRETATION

The Chi-Square test results suggest no significant association between supply chain partners and their primary

challenges. The Pearson Chi-Square ($\chi^2 = 17.117$, $p = 0.145$) and Likelihood Ratio ($\chi^2 = 17.448$, $p = 0.134$) have p-values greater than 0.05, indicating that the challenges faced by different supply chain partners are not significantly different. However, the Linear-by-Linear Association ($\chi^2 = 7.003$, $p = 0.008$) suggests a potential linear trend in the data. Additionally, 12 cells (60%) have expected counts less than 5, which may affect the reliability of the results. With 80 valid cases and 12 degrees of freedom, these findings imply that while no strong categorical relationship exists, there may be some directional influence in the challenges faced by supply chain partners.Therefore we accept null hypothesis (H0) and we reject alternative hypothesis (H1)

RANK ANALYSIS THE CHALLENGES IN ORDER OF THEIR IMPACT ON YOUR SUPPLY CHAIN OPERATION

	Mean Rank
Supplier reliability and quality	3.39
Regulatory and compliance issues	3.05
Lack of advanced technology	2.99
Inefficiencies in inventory management	2.85
High transportation cost and delays	2.73

INTERPRETATION

In the above table the most challenges in order is majorly in supplier reliability and quality 3.39 and the least value which is followed by high transportation cost and delays is 2.73.

FINDINGS

- Majority of the respondents are lies between the business for 11-15 years.
- Majority of the respondents are lies between the manufacturing exporters.
- Majority of the respondents are lies between the medium scale business.
- Majority of the respondents are lies between the proprietorship.
- Majority of the respondents are lies between the moderate number of supply chain partners with 5-10.
- Majority of the respondents are lies between the annual turnover of ₹46,00,000-₹55,00,000.
- Majority of the respondents falls on the order to delivery cycle of 1-4 weeks.
- Majority of the respondents lies between the warehousing
- Majority of the respondents lies between the businesses have automated 26-50%.

SUGGESTIONS

- **Adopt Advanced Technology** – Increase automation in supply chain processes beyond the current 26-50% level to improve efficiency and reduce manual errors.
- **Reduce Transportation Costs & Delays** – Strengthen logistics partnerships, explore multimodal transportation, and invest in route optimization technology.

- **Strengthen Warehousing & Distribution** – Enhance warehouse automation and integrate smart distribution networks for faster order fulfillment.

CONCLUSION

In conclusion we examined the range of supply chain challenges, with supplier reliability followed by regulatory and compliance issues.to optimize the adaptation of technology of robotics, artificial intelligence and reducing lead time reduction. Additionally, improving demand forecasting and transportation efficiency can help mitigate delays. The findings of this study will be useful for textile exporters, policymakers, and researchers seeking to improve supply chain performance and competitiveness in the industry. Based on business size and supply chain partner networks will further enhance operational efficiency.

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