ANALYSIS OF INVENTORY DISTRIBUTION EFFICIENCY IN THE INDIAN TEXTILE INDUSTRY

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ABSTRACT

Introduction: *Choosing the appropriate sources that can complement industrial strategy is an essential part of supply chain management (SCM).* **Aim of the study:** *the main aim of the study is to Analysis of textile Distribution Efficiency in the Indian Textile Industry.* **Material and method:** *In the current research study, the universe of the study consists of all textile manufacturing enterprises located within the Bhilwara District.* **Conclusion:** *The findings of the SEM also suggest that the presence of environmental uncertainties compels businesses to improve their SCM processes.*

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1. Introduction

1.1 Overview

Every industry needs to put in a lot of effort to increase their product quality and production processes, decrease the cost of their products and services, and shorten the amount of time it takes for them to deliver their products and respond to the market in order to maintain a sustainable growth rate in a market that is extremely competitive. In the latter part of the 1980s, convenient technology foundations were developed, and as a direct consequence of these advancements, the supply chain management (SCM) idea was developed as a convenient management tool. It takes into account production technology and management under a single roof, with the primary emphasis being on how important it is to have effective production processes, better material procurement, and information and knowledge management flow from raw material to product delivery. Choosing the appropriate sources that can complement industrial strategy is an essential part of supply chain management (SCM). In today's textile supply chain (SC), multiple aspects have become very crucial due to the volatile nature of the market and the customer's expectation of receiving the best product and services. Some of these aspects include maintaining the proper flow of material, resources, information, and knowledge sharing. Other aspects include supplier selection and maintaining relationships with them.

1.2 Textile Industry

The activities related to textiles and apparel exhibit a numberof subcategories, each of which has its unique characteristics. Because the production of textiles takes a long time and involves a wide range of various technological processes, many sub-sectors are able to survive within the textile and garment industry in terms of the structure and integration of their respective business operations. The textile industry is characterised by its variability and fragmentation, and the majority of its participants are small and medium-sized businesses, many of which are highly specialised in certain manufacturing procedures. The vast quantities of raw materials utilised in the manufacturing of fibres (cotton, wool, synthetic materials, and so on), as well as the wide variety of production procedures that are required to get those resources, are two of the most important contributors to this industry's complicated nature. In addition, the textile industry may be categorised in a variety of ways, based on factors such as the manufacturing method, the final goods that are created, and so on. When it comes to the creation of textile textiles, the process begins with the collection of natural fibres, however, it may also begin with the production of artificial or synthetic fibres.

1.3 Management Of Inventories In The Textile Industry

The study of inventory issues may be traced back to 1915, when F. N. Harris constructed a

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model of an inventory problem that, despite its apparent simplicity, proved to be rather helpful. The entire number of items or resources that are currently housed at a shop or facility is referred to as the inventory for that location. In order to prevent losses or make orders, the proprietor of a business has to be aware of the precise amount of things currently stocked on the shelves and in the storage facilities. Inventory management is a branch of science that focuses mostly on defining the composition and distribution of stored commodities. It is necessary to have it in place at various places within a supply network's varied locations in order to preserve the regular and planned course of production against the random disruption of running out of the materials or commodities. Inventory management also involves navigating the fine lines between the lead time for replenishment, carrying costs, asset management, inventory forecasting, valuation of inventory, future inventory price forecasting, physical inventory, inventory visibility, available space for inventory, quality management, replenishment, returns, defective goods, and demand forecasting.

2. Literature Review

Tang, YM & Ho, George & Lau, Yui-Yip &Tsui, Shuk-Ying (2022) Demand forecasting, inventory management, and production planning have all been key areas for businesses to focus on for some time now, particularly in light of the recent recession in the global economy. Businesses are able to attain economies of scale and maintain a healthy supply and demand balance when they use technologies such as smart warehouses, big data analytics, and optimization algorithms. It is generally agreed that intelligent warehouse and production management represents the pinnacle of currently available technological advancements.

Saleheen, Ferdoush& Habib, Md. Mamun (2022) The significance of SCM has increased throughout the course of time, and this pattern of development is expected to continue. Researchers have been looking at how SCM is being used in a variety of different fields. The SCM is receiving an increasing amount of attention. In point of fact, the efficiency of SCM has an influence on the standard of the value of the product, the logistics, and, by extension, the contentment of the customers and the profitability of the organisation. As a result, there has to be a connection that is robust and effective between manufacturers and customers in order to guarantee the manufacturers' success on both the practical and the commercial front. In an ideal world, the model used to assess performance would take into account both quantitative and qualitative methods, as well as the ability to make use of a variety of various measuring instruments.

Damodaram, A K &Sangapu (2022) Due to the Covid-19 outbreak, the Indian apparel and garment sector saw an unheard-of commercial situation. Manufacturers of clothing and fabrics in India must strengthen their resilience in order to combat the crisis and be ready for long-term business commitments during these trying times. In this respect, there are important concerns that must be adequately handled. These include managing cash flow, cost control and cost reduction, adoption of the newest IT/ITES tools, safe working conditions, initiatives to establish a responsive and productive employee base, enhancing operational efficiency, etc.

Llivisaca, Juan &Avilés (2022) The e-commerce sector has expanded quickly recently. For instance, between January 1 and July 1 of 2020, e-commerce in the US produced sales of USD 504 billion, up 11.58% over the same period in 2019. The retail sector has been pushed to implement techniques to increase efficiency as a result of this expansion. Many businesses spend around 40% of their free time on logistics. Logistics is a hot subject of discussion since these tasks take up an excessive amount of time for many businesses. This research seeks to provide an overview of optimization methods and technology developments in retail logistics in this setting. According to research, the goal of retail logistics has been to increase transit capacity while lowering prices, time utilisation, and inventory. The employment of genetic algorithms and other mathematical techniques with many variations has been the focus of optimization in logistics, and simulation has helped validate optimization hypotheses. Last but not least, e-commerce, big data, and omnichannel continue to expand, particularly

in the retail industry where they have expanded significantly.

Baloch, Neelam & Rashid, Aamir (2022) The present study has profited from using journal papers to examine a variety of important challenges, research trends, and accomplishments in the supply chain management business. For review reasons, journals from famous publishers including Emerald, Taylor & Francis, Elsevier, Wiley, and Cambridge were taken into consideration. The research for all of the publications in this review was solely done in developing nations.

3. Material And Method

3.1 Research Design

A research design may be thought of as a blueprint that directs a research study in the direction of its goal. In this particular piece of research, we have opted to use the descriptive research design. Research that is descriptive or statistical focuses on describing the qualities and facts on the population or phenomena that is being studied. The questions "who," "what," "where," "when," and "how" are addressed by descriptive research. The descriptive study approach is helpful in describing and comprehending the demographic as well as other aspects of the population, such as the degree of connection among variables, etc.

3.2 Data Collection

Data for the study was collected from both primary and secondary sources. The sources of secondary data in the study were academic journals, trade magazines, reports from the Government of India Textile Ministry, reports from the Indian Textile and clothing Exports Association, reports from the Indian Chambers of Commerce and Industry (FICCI), online resources, published/unpublished M. Phil/Ph.D theses from various universities, and other related private and public reports. Primary data for the study was collected from interviews with industry professionals. With the use of an interview schedule, primary data were gathered from a variety of textile units that were the subject of the research.

3.3 Sample Design

3.3.1 Population / Universe

In the current research study, the universe of the study consists of all textiles manufacturing enterprises located within the Bhilwara District. These firms include weaving units, embroidery units, yam production, and process houses that do dying and printing.

3.3.2 Sample Size:

Out of the total 647 questionnaires that were received, a total of 800 questionnaires were sent to participants. Despite this, we had to throw out 80 questionnaires since they were improperly filled out.

4. Results

### 4.1 Data Analysis and Interpretation of Industry Profile

This part focuses on the graphical depiction of the data about the Sample Characteristics of Textile Manufacturing Units, such as the Age of the Company and the Designation of the Respondents. The function of the job, types of ownership, classification of the industry, number of employees, annual turnover, production pattern, type of process, mode of transportation, market coverage, and location of the firm in the supply chain are some of the factors to consider. Where the plant is located and which customers the company sells to.

4.1.1 Age of Firms

Concerning the length of time firms have been in operation, the respondents were questioned. It may be broken down into four distinct groups. The outcome may be seen down below.

Table 4.1 Age of Firms

Respondents	Frequency	%
<5years	168	29.6
5-10 years	211	37.2
11-15 years	102	18
> 15 years	86	15.2
Total	567	100
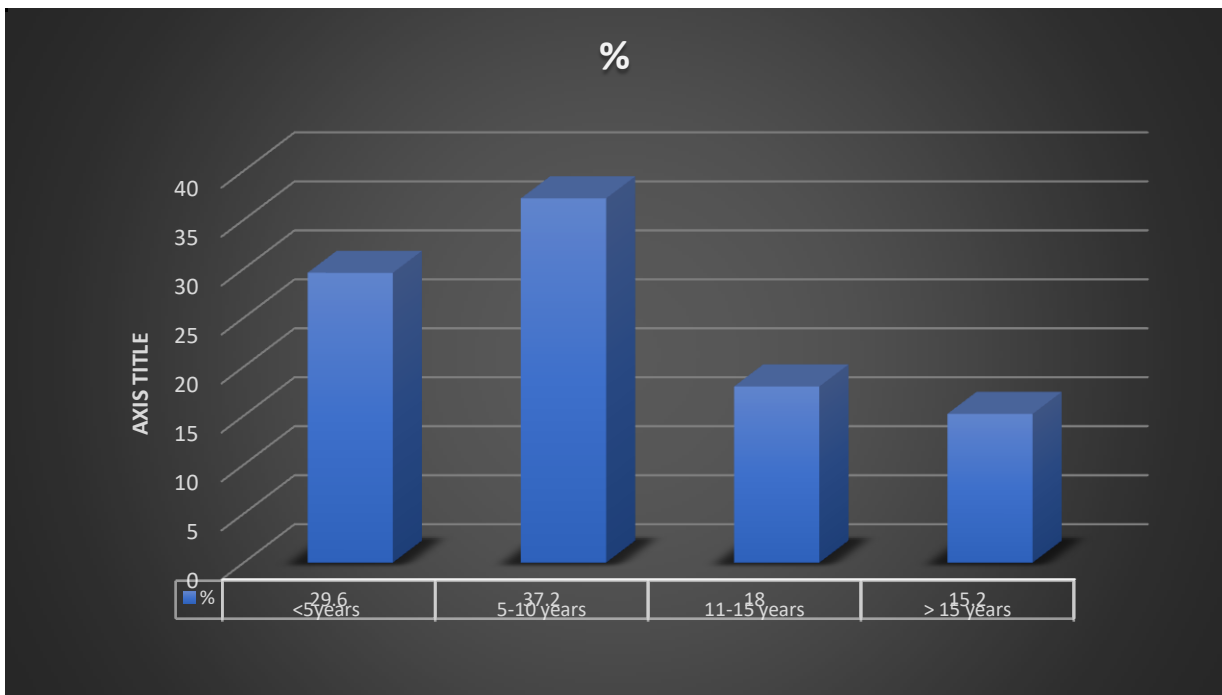
Figure 4.1 Age of Firms

29.6 percent of the businesses that responded to the survey are now involved in the activity. Less than five years, 37.2 percent of enterprises have been in business between 5 and 10 years, 18 percent of firms have been in business between 11 and 15 years, and 15.2 percent of firms have been in business for more than 15 years.
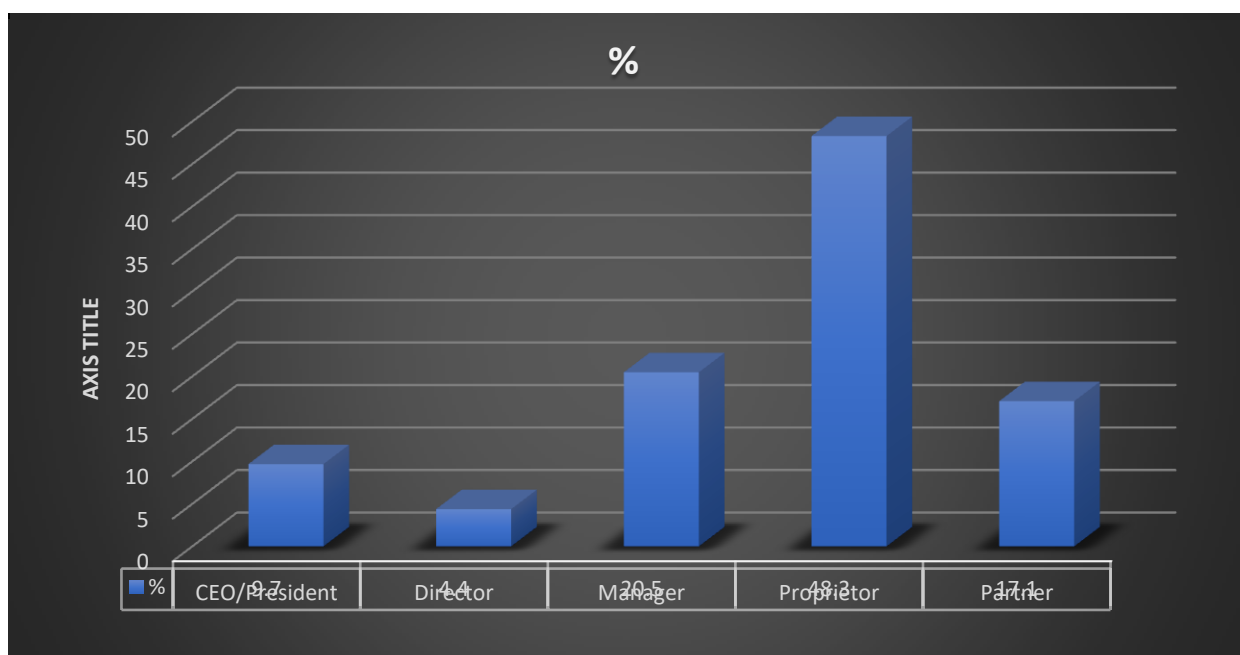
4.1.2 Designation of Respondents

Concerning the designation of respondents, the respondents were queried with questions. It is broken down into five different groups. The outcome may be seen down below.

Table 4.2 Designation of Respondents

Respondents	Frequency	%
CEO/President	55	9.7
Director	25	4.4
Manager	116	20.5
Proprietor	274	48.3
Partner	97	17.1
Total	567	100

Figure 4.2 Designation of Respondents

From the total replies, 9.7 percent came from the CEO or President of the firm, 4.4 percent came from the Director of the firm, 20.5 percent came from Managers of the Firm in various departments, 48.3 percent came from the Proprietor of the firm, and 17.1 percent came from Partners in the firm.
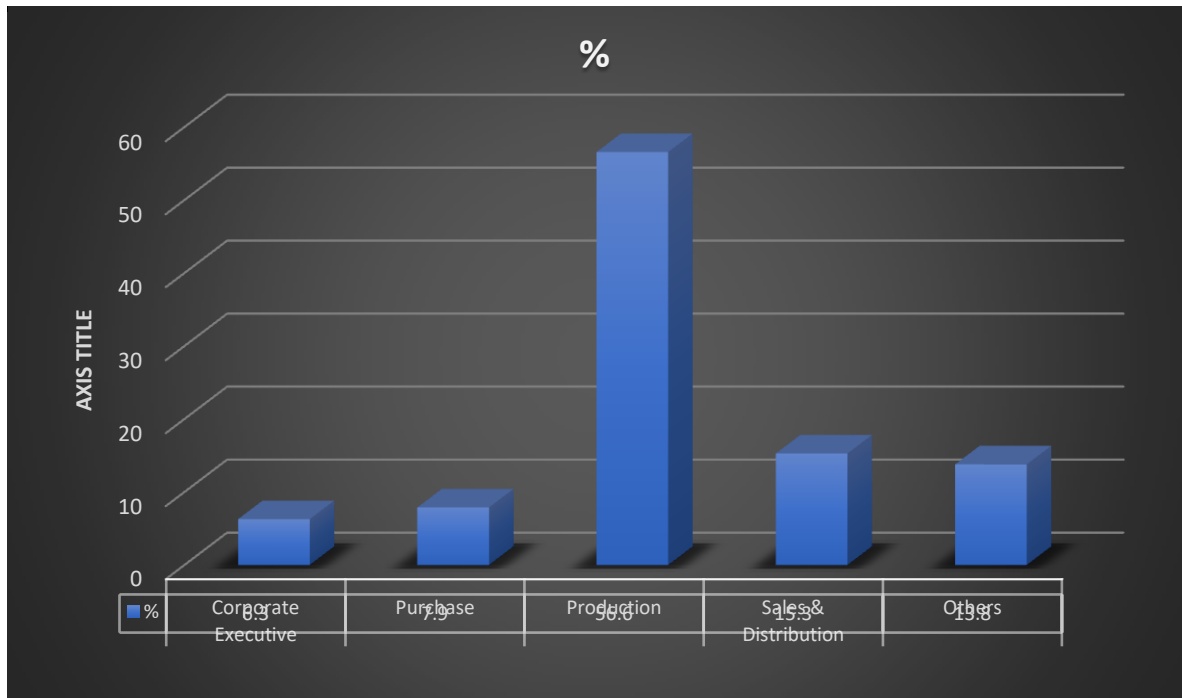
4.1.3 Job Function of Respondent

Concerning the designation of respondents, the respondents were queried with questions. It is broken down into five different groups. The outcome may be seen down below.

Table 4.3 Job Function of Respondent

Respondents	Frequency	%
Corporate Executive	36	6.3
Purchase	45	7.9
Production	321	56.6
Sales & Distribution	87	15.3
Others	78	13.8
Total	567	100

Figure 4.3 Job Function of Respondent

From the total responses obtained, 6.3% of respondents had the job function of Corporate Executive, 7.3% of respondents had the job function of Purchase related works, 56.6% of respondents had the job function of Production related works, 15.3% of respondents had the job function of Sales & Distribution, and 13.8% of respondents had other job functions such as Accountant, General Manager, etc.

4.2 Descriptive Analysis Of Environmental Uncertainty

4.2.1 Descriptive analysis of Environmental Uncertainty:

The Environmental Uncertainty is investigated, and the findings are detailed in Table 4.4 below. On a scale from one to five, the responses of the executives of the different business units surveyed regarding the various environmental uncertainties were obtained, and the importance of each of the environmental uncertainties was ranked according to the mean values assigned to them. Table 4.15 has been updated to reflect this information.

Table 4.4 Descriptive Statistics of Environmental Uncertainty

Environmental Uncertainty	N	Mean	Rank
Customer Related Uncertainty	567	3.95	1
Technological Uncertainty	567	3.58	2
Competitors related Uncertainty	567	3.54	3
Supplier Related Uncertainty	567	3.53	4
Government Uncertainty	567	3.50	5

This is seen in the preceding table 4.4. It has been determined that Customer-Related Uncertainty is the most important Environmental Uncertainty. This indicates that the executives of textile manufacturing units place a greater emphasis on customer-related risk (3.95).

4.2.1.1 Descriptive analysis of Customer-Related Uncertainty

The analysis of the Customer-Related Uncertainty is carried out, and the findings are provided in Table 4.5. On a scale from one to five, the opinions of the executives of the Textile Units that were polled about the different Customer Uncertainty were gathered, and the importance of each statement of customer-related uncertainty was ordered according to the mean values that were given to them. Table 4.16 has been updated to reflect this information.

Table 4.5 Descriptive Analysis of Customer-Related Uncertainty

Customer's		1	2	3	4	5	Total	Mean	Rank
Need are unpredictable	Frequency	1	10	103	294	158	567	4.05	1
	Percent	0.4	1.8	18.2	51.9	27.9	100		
Product preferences change	Frequency	5	11	129	247	175	567	4.02	2
	Percent	0.9	1.9	22.8	43.6	30.9	100		
Product features is unpredictable	Frequency	1	28	135	293	110	567	3.85	4
	Percent	0.2	4.9	23.8	51.7	19.4	100		
Order different product combination is	Frequency	4	21	139	270	133	567	3.89	3
	Percent	0.7	3.7	24.5	47.6	23.5	100		

The executives of textile manufacturing units in the Bhilwara District placed a greater emphasis on the fact that their customers' needs are unpredictable, as shown by the data presented in the table that can be seen above 4.5. (4.05). The product characteristics get the least amount of weight, which is contrasted with the product preferences change weight, which receives the second highest weight (4.02), followed by the order of different product combinations, which receives the third rank as per uncertainty (3.89). (3.85)

4.2.1.2 Descriptive analysis of Supplier-Related Uncertainty:

On a scale from one to five, the opinions of the executives of the Textile Units that were questioned about the different Supplier Associated Uncertainty were acquired, and the priority of each statement of Supplier related uncertainty was ordered according to the mean values that were given to them. Table 4.17 has been updated to reflect this information.

Table 4.6 Descriptive analysis of Supplier-Related Uncertainty

Suppliers		1	2	3	4	5	Total	Mean	Rank
Quality of material is Unpredictable	Frequency	18	66	156	236	91	567	3.56	2
	Percent	3.2	12	27.5	41.6	16	100		
Delivery Time of material is Uncertain	Frequency	24	69	137	279	58	567	3.49	3
	Percent	4.2	12	24.2	49.2	10.2	100		
Delivery Quantity of material is Uncertain	Frequency	33	86	130	253	65	567	3.41	4
	Percent	5.8	15	22.9	44.6	11.5	100		
Price of raw material is uncertain	Frequency	21	59	119	248	120	567	3.68	1
	Percent	3.7	10	21	43.7	21.2	100		

According to the results shown in Table 4.6, which can be seen above, the executives of textile manufacturing units in the Bhilwara District have placed a greater emphasis on the fact that the price of raw materials is uncertain (3.68). because it regularly adjusts itself in response to changes in the demand for and availability of raw materials. Second highest weight provided to the quality of raw material from the supplier (3.56), third rank according to provider uncertainty given to the delivery time of raw material (3.49), and the least amount of weight given to the quantity of material that is being demanded (3.41)

4.2.1.3 descriptive analysis of competitors related uncertainty

On a scale from one to five, the opinions of the executives of the Textile Units that were surveyed about the various Competitor's Related Uncertainty were obtained, and the priority of each statement of Competitor's Related Uncertainty was ranked according to the mean values assigned to them. Table 4.7 has been updated to reflect this information.

Table 4.7descriptive analysis of competitors' related uncertainty

Competitor's		1	2	3	4	5	Total	Mean	Rank
price of Product is uncertain	Frequency	24	99	120	190	134	567	3.55	2
	Percent	4.2	17.5	21.2	33.5	23.6	100		
Introduction of new product is uncertain	Frequency	27	69	142	213	116	567	3.57	1
	Percent	4.8	12.2	25	37.6	20.5	100		
Marketing Strategy promotion is uncertain	Frequency	19	66	172	217	93	567	3.53	3
	Percent	3.4	11.6	30.3	38.3	16.4	100		
Products features are uncertain	Frequency	28	66	184	189	100	567	3.47	4
	Percent	4.9	11.6	32.5	33.3	17.6	100		

In the section entitled "Competitor's Related Uncertainty," it can be seen from the above table 4.7 that executives of textile manufacturing units in the Bhilwara District gave a greater amount of importance to the question of when competitors will introduce new products about which they are unsure (3.57). The second topmost weight is given the to Quality of raw material from the supplier (3.56), Third Rank as per the Competitor's Uncertainty is regarding the Marketing Strategy of rivalry (3.53), and the least weight is given to Product features (3.47). This is because of common things going on in the market and it is easy to predict new features of the Product.

5. Conclusion

SCM is a multifaceted process that involves several parties and stakeholders, from suppliers to customers to customers of suppliers in manufacturing companies. These things differ from company to company. The firm's limited resources must be wisely used in the competitive environment of today to improve the firm's performance and efficiency and provide customers greater value. This calls on CEOs of manufacturing businesses to have full knowledge of SCM ideas. The textile industry in Bhilwara City partially uses supply chain management. The findings of the SEM also suggest that the presence of environmental uncertainties compels businesses to improve their SCM processes. When there is more unpredictability in the business environment, companies begin to improve their relationships with their customers and suppliers, as well as their other business processes, and they begin to streamline their operations.

Acknowledgements

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