



## A Study on Manufacturing Lead Time in Apparel Industry With Special Reference To Apparel Exporters in Tirupur City

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<b>ABSTRACT</b>	A lead time in apparel manufacturing has become an important factor in globalised environment for companies to gain competitive advantage. Apparel companies which have better process alignment and the support of technological advancement can have the greater advantage of fulfilling the orders on the right time. The study has focused on factors which have the greater impact on lead time in various stages of apparel manufacturing.
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<b>KEYWORDS</b>	Lead Time, Supply Chain, Line setting time, Seams
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**INTRODUCTION**

The Indian garment industry is among the top industries of the sector in the global market, its structure in the Indian conditions is full of diversities and it faces many infrastructural issues and differing structures of players involved at every level. In apparel industry, lead time is the total amount of time required for completing a product beginning from the date of receiving raw materials to the stage shippable to the customer. Total lead-time is made up of time devoted to processing orders, procuring and manufacturing items, and transporting items between the various stages of the supply chain.

**OBJECTIVE OF THE STUDY**

- To study the challenges faced by Garment manufacturers during Production Process.
- To analyze the nature of defects in Apparel Manufacturing Process.
- To analyze the factors affecting Manufacturing Lead Time in Apparel Industry.
- To suggest suitable measures to reduce Manufacturing Lead Time in Apparel Order Processing.

**METHODOLOGY OF THE STUDY**

**Area of study:**

The research study was conducted only in Tirupur city.

**Period of study:**

The survey to know about **“A study on Manufacturing Lead Time in Apparel Industry with special reference to Apparel exporters in Tirupur city”** lasted for the period of six months.

**Nature and source of data:**

This study is based on questionnaire method; primary data has been collected from various proprietors doing business in Tirupur city. The first draft of the questionnaire was prepared bearing in mind of research problem and objective of the study. Secondary data was collected from journals, magazines and websites.

**Method of data collection**

The data has been used which is collected through questionnaire and reports and internet. The researcher has used both primary as well as secondary data. The research was conduct-

ed only in Tirupur.

**Primary data**

The primary data have been collected through a structured questionnaire. The questionnaires were distributed to 100 garment exporters situated in Tirupur.

**Secondary data**

Secondary data have been collected from various sources namely outside from journals, magazines, other research works and also from other authenticated websites.

**Sample size**

Sample size is the number of items to be selected from the universe to constitute a sample. The sample size is 100 in numbers.

**Statistical tools used for the study:**

The following statistical tools have been used to analyze the primary data. Simple percentage analysis, Chi-Square, Weighted average Mean, Ranking Method

**REVIEW OF LITERATURE**

**Shahidul Kader, M.Sc., Maeen Md. Khairul Akter (Nov2014)** in their study on **“Factors affecting the lead time for export of readymade Apparels”**, states that An extended lead time is one of the major problems that the apparel sourcing world is facing when exporting readymade apparels from Bangladesh is concerned.Apparel sourcing bodies are one of the major stake holders of the readymade apparel trade and they endow their investment in improving the factors affecting the lengthened lead time issue. Improvement of the backward linkage industry to a standard to be able to support the readymade apparel industries with export quality fabrics is a continuous process and it will take some time. But the development of the production and manufacturing system can be implemented in a short while and it has a proven impact on the lead time.

**Behrooz Asgari and Anyul Hogue** in their study on **“Lead-time management in garments industry: A system dynamics exploration”** states that, the demand driven apparel industry is increasingly being marked by its players (brands, retailers and specialty stores) competing for who can move

faster their fashions to better respond to today's time sensitive customers. This competition of running against time has posed a great deal of challenges which are ultimately to be kept pace with by the apparel manufacturing firms. Therefore, time (lead time for garments delivery) has become a crucial performance parameter among apparel manufacturing economies around the world.

**DATA ANALYSIS AND INTERPRETATION**  
**SIMPLE PERCENTAGE TABLE – 1**  
**TABLE SHOWING THE YEAR OF EXPERIENCE**

PARTICULARS	NO. OF RESPONDENTS	PERCENTAGE
Less than 5	5	5%
5-10	44	44%
11-15	15	15%
Above 15 years	36	36%
Total	100	100%

Source: Primary data

**Interpretation**

The above table shows that 44% of respondents have experience with 5-10 years, 36% of respondents are with the experience of above 15 years, 15% of respondents are with 11-15 years, and 5% of respondents are with the experience of less than 5 years.

**CHI- SQUARE ANALYSIS**  
**TABLE – 3**

**Aim:** To check whether there is a significant relationship between the type of garment with the number of employees in the organisation.

**Null Hypothesis (H<sub>0</sub>):** "There is no significant difference between the observed (O) and expected (E) frequencies".

**Alternate Hypothesis (H<sub>1</sub>):** "There is significant difference between the observed (O) and expected (E) frequencies".

**TABLE SHOWING THE OBSERVED VALUE**

	Women	Men	Children	Women/Men	All of these	Total
Less than 50	5	5	6	6	2	24
50-100	15	2	8	8	4	37
More than 100	6	18	5	7	3	39
Total	36	25	19	21	9	100

**Formula:**

Chi square test

Test statistics:  $(X^2) = \frac{\sum (O-E)^2}{\sum E}$

OBSERVED (O)	EXPECTED (E)	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
5	6	-1	1	0.16667

OBSERVED (O)	EXPECTED (E)	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
5	6	1-1	1	0.16667
6	5	1	1	0.2
6	5	1	1	0.2
2	2.21	0.21	0.0441	0.01995
15	9	6	36	4
2	9.25	-7.25	53	5.72973
8	7	1	1	0.14286
8	7.13	0.87	0.7569	0.10616
4	4	0	0	0
6	10	-4	16	1.6
18	10	8	64	6.4
5	7.41	-2.41	5.8081	0.78382
7	8	-1	1	0.125
3	4	-1	1	0.5
ΣO=100	ΣE=100	Σ(O-E)=0	Σ(O-E) <sup>2</sup> =182.609	Σ(O-E) <sup>2</sup> /E=19.8909

**Table value:**

The (X<sup>2</sup>) Table value at 5% level for degree of freedom = (R-1)\*(C-1) = (5-1)\*(3-1) = 4\*2 = 8  
 Level of significance α = 0.05  
 Table value = 15.51  
 Calculated value = 19.8909

**Interpretation**

The calculated value (x<sup>2</sup>) is (19.8909) is greater than the tabulated value (15.51). Hypothesis is rejected. Hence it is concluded that there is significant relationship between the type of garment and number of employees in an organisation.

**WEIGHTED AVERAGE MEAN**

**TABLE – 4**  
**TABLE SHOWING THE OPINION ON CHALLENGES FACED DURING PRODUCTION PROCESS**

PERFORMANCE	SA	A	N	DA	SDA	TOTAL	MEAN SCORE	RANK
CHALLENGES	5	4	3	2	1			
Internal & external communication	1	4	19	34	42	100	1.88	VIII
	5	16	57	68	42	188		
Delay in raw material sourcing	0	1	41	21	37	100	2.06	V
	0	4	123	42	37	206		
Sampling	1	1	28	21	49	100	1.84	IX
	5	4	84	42	49	184		
Lab dips	0	0	7	85	8	100	1.99	VII
	0	0	21	170	8	199		

Accessories & Trims	1	1	21	151	26	100	2	VI
	5	4	63	102	26	200		
Preparing internal order sheets	1	1	39	41	18	100	2.26	III
	5	4	117	82	18	226		
Preparing purchase orders	0	0	59	29	12	100	2.47	I
	0	0	117	58	12	247		
Advising and assisting production	2	1	41	24	32	100	2.17	IV
	10	4	123	48	32	217		
Advising quality department about quality level	0	0	52	31	17	100	2.35	II
	0	0	156	62	17	235		
Mediating production and quality department	0	0	14	18	68	100	1.46	X
	0	0	42	36	68	146		

**Interpretation**

The table exhibits the weighted average mean scores. The table highlights weighted score, which help to decide the most important factor, on the challenges faced during Production process. The highest score(2.47) is preparing purchase orders and the lowest score (1.46) is Mediating production and quality department.

**TABLE – 5  
TABLE SHOWING THE OPINION ON THE ADOPTING NEW TECHNOLOGY FOR PROCESSING OF EXPORT ORDERS IN SHORT SPAN OF TIME**

PERFORMANCE	SA	A	N	DA	SD	TOTAL	MEAN SCORE	RANK
FACTORS	5	4	3	2	1			
Wastage of garments	2	1	45	20	32	100	2.21	II
	10	4	135	40	32	221		
More damages	0	0	59	11	30	100	2.29	I
	0	0	177	22	30	229		
Work overload	1	1	9	41	48	100	1.66	III
	5	4	27	82	48	166		
Stress	0	0	11	25	64	100	1.47	V
	0	0	33	50	64	147		
Health issues	1	1	7	43	48	100	1.64	IV
	5	4	21	86	48	164		

**Interpretation**

The table exhibits the weighted average mean scores. The table highlights weighted score, which help to decide the most

important factor, and the opinion on the adopting new technology for processing of export orders in short span of time. The highest score (2.29) is more damages and the lowest score (1.47) is stress.

**FINDINGS**

- Majority of the respondents (56%) companies are sole proprietorship firm
- Majority of respondents (48%) of companies have less than 50 employees.
- Majority of respondents (40%) of the companies work on children garments.
- The highest score (4.65) is garment parts and the lowest score (4.25) is alteration work of defective garments.
- The highest score (4.66) is Tagging and the lowest score (3.72) is Folding and packing .
- The highest score (2.47) is preparing purchase orders and the lowest score (1.46) is Mediating production and quality department.

**SUGGESTIONS**

Garment manufacturing includes number of processes. So, Every department needs to have a common goal on reducing the lead time with the coordinated effort. Firms need to concentrate on adopting the latest technologies to eliminate more damages and reduction of wastage of garments. Adopting to new technologies will help to bring down the work load and it results in reducing the manufacturing cost. Sourcing of raw material has to be given the top most priority to get the quality garment even at the last stage of production process, raw material should be procured by the factory well in advance to accommodate the time taken in inspection and testing. The management needs to ensure that there is a proper flow of sufficient informations to achieve the common goal of reducing the manufacturing lead time.

**CONCLUSION**

Lead time in Apparel industry plays a vital role, so every department has to focus on Lead time reduction to meet the customer's demand properly. Lead time can be measured on the total manufacturing process it indicates how quickly raw material is converted into finished product. Lead time will be the one of the most important factor which will help the organization to gain competitive edge in global competitive environment of global business which is driven by customers expectations.

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