

# **Growth And Development Of Technical Textiles In India: A Comparative Analysis Of Tenth And Eleventh Five Year Plan**

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## **Abstract**

This paper examines the growth and development of the Technical Textile industry in India covering a decade from 2002 to 2012. Further, the researchers compare the eleventh five year plan period performance of the Indian Technical Textile Industry with tenth five year plan period performance in order to know the progress over the years. The growth and development of the industry is measured in terms of production, export and import. For the purpose of study, Paired sample t Test is being used in order to compare the both plan period performance i.e. tenth and eleventh plan. The results reveal the statistically reliable difference between the tenth and eleventh plan mean values of the three selected parameters in Technical Textile industry, which leads to a conclusion that growth of the industry has improved significantly during the eleventh five year plan.

**Key Words:** Technical Textiles, Production, Export, Import, Five Year Plan, India

## **Introduction**

Technical textiles are accounted to be the fastest growing sector of the textile industry and it is manufacturing towards high tech, high performance fabric designed not just to look attractive, but to present a significant added value in terms of functionality. The Textile industry is not only experiencing for clothing application but also continuing a major outlook towards non-clothing application of textiles known as Technical textiles. Technical textiles are growing at twice rate of textiles for clothing applications and now providing more than half of total textile production.

The distinctiveness and confrontation of technical textiles lies in the need to support and apply the principles of textile science and technology to give solutions, in the main to technological problems but also often to engineering problems as well. With the emphasis on measurable textile performance in a particular field of application, this requires the technologist to have not

only deep knowledge of fibres and textile science and technology but also be aware of the application and the scientists, technologists and engineers who service it. Thus the producer of geo textiles requires core knowledge of the world of civil engineering, and the home textile producer, needs deep knowledge about the field of home furnishing, home decoration and floor coverings. This chain endeavors to bridge a gap between producer and end-user. The main principles involved in the selection of raw materials and their conversion into yarns and fabrics followed by dyeing, finishing and coating of technical textiles are explored, followed by the raw materials, processing techniques, finishing, specifications, properties and special technical and commercial features of a wide range of specific areas of application (**Horrocks and Anand, 2000**).

Technical Textile is one of the emerging areas for investment in India because it has immense potential to gear up the traditional textile industry. The sector is categorized under 12 segments in India out of which Hometech, Meditech, Mobiltech and Geotech are the promising fields. There is no doubt that India's research institutions are doing a praise worthy work in promoting Technical Textiles particularly in the Hometech and Meditech fields but need lot more efforts. It would be certainly worth our while to import some of the technologies from the western countries which have progressed in all application of Technical Textiles, to reach our research findings up to the next higher plane.

## Segments

The classification on the basis of different segments has been developed by Techtexil; Messe Frankfurt Exhibition GmbH which is widely used in Europe, North America and Asia. The classifications are:

1. Agrotech (Ago-textiles)
2. Buildtech (Construction-textiles)
3. Clothtech (Clothing-textiles)
4. Geotech (Geo-textiles)
5. Hometech (Domestic textiles)
6. Indutech (Industrial textiles)
7. Meditech (Medical textiles)
8. Mobiltech (Textiles used in transport)
9. Oekotech or Eco-tech (Environmentally friendly textiles)
10. Packtech (Packaging textiles)
11. Protech (Packaging textiles)
12. Sportech (Sports textiles)

## Technical Textiles - An Indian Scenario

Technical textile industry in India comes under an initial stage as it contributes only 3% of total consumption. But, it would be mistaken to say that India's technical textile industry is still inactive. It has awakened to the vast potential of the technical textile sector and is predicted to grow faster in next two decades than the growth endures by US and Europe in last three decades. This wish can be contented by the growing middle class, young and educated population. It is expected that Technical Textile would be one of the most promising sectors in this growth. And the factors like, the global economic change, strong government support, the introduction of

appropriate legislation, the development of tests and standards, and widespread recognition of the need for more trained personnel, etc. also playing the valuable role in driving the industry to the farthest destination (**Patel, 2010**). Thus it will be right to say that Technical Textiles in India is like latent volcano which is preparing to explode.

The Indian industry produces items of all the twelve segments of the technical textile industry, though not all of them are produced domestically. Some items are produced in large quantity while some other items are produced in small quantity; therefore, demand is met through imports. The production of technical textiles in India and with substantial exports are not very R&D intensive such as tarpaulins, jute carpet backing, hessian, crop covers, fishnets, surgical dressings etc. While the products that need R&D are imported largely like adult diapers, baby diapers, polypropylene spun bond fabric for disposables, hoses, wipes and protective clothing etc.

There are some large domestic players in this industry like Kusumgarh corporate, Supreme Nonwovens Pvt. Ltd., Techfab unimin, Garware wall ropes, Pacific nonwoven etc (**Office of the Textile Commissioner, 2009**). Size of the manufacturing units that are producing technical textile products in India varies to a large extent. There are number of multinational large players as well engaged in technical textiles who have set up their manufacturing facilities in India like Du pont, 3M, SKAPs, Procter & Gamble, Johnson & Johnson, Kimberly clark etc.

“There are over 3000 units manufacturing technical textiles, mostly in small scale sector. About 2/3rd of the production is of commodity products, only 1/3rd is high-end. The pre-dominant segments are Packtech, Clothtech, Hometech and Sportech. These segments primarily include commodity products and not very R&D intensive. Though India is the second largest textile economy after China, its contribution in the global technical textile industry is only 9% to the total consumption” (**Joshi, 2011**).

India can play a major role in this field because of the availability of abundant raw materials and highly skilled and technical work force. India is a largest producer of Clothtech, Packtech, and Sportech segments of technical textiles. The overall growth of technical textiles is estimated at 14% per annum and the market size for technical textiles will increase from Rs. 37100 crores in 2007-08 to Rs. 62420 crores in 2012-13 (ICRA study 2009) at a CAGR of 11%.

The consumption of Indian technical textiles is low in comparison of other developed countries (**Ministry of Textiles 2006**):

USA : 23%

Europe : 22%

China : 13%

India : 04%

The constraints in the growth of Indian technical textile industry are: lack of basic infrastructure, skilled work force, testing facilities, lack of comprehensive database on technical textiles, lack of awareness, non-availability of main raw materials etc. that are needed to be taken into account for the promotion of technical textiles in India. Some strategies should be implemented related to application areas, raw material, manufacturing facilities, R&D and quality assurance,

development of domestic and export market of technical textiles. Although, the government has taken various initiatives to emerge this sector realizing that India has great potential to make an impact on technical textile industry in near future.

## Literature Review

**Horrocks and Anand, (2000)** in their book entitled “Hand Book of Technical Textiles” endeavored to show the production technologies of various Technical textiles raw materials and end use products. The book also gives a general idea of global Technical Textile market covering its scope, milestones in its development, textile processes, applications, globalization and future of the industry. **Nemoz, (2001)** in his presentation on “Applications and markets of Technical Textiles: Actual situation and Trends” discussed the steps of designing of a technical textile products, end users of Technical Textiles and four main classes of functions for technical textile. **Rakshit A. et al, (2007)** paper on “Technical Textiles: What India needs to do now” state that Technical textile is a potential area for the development of textile industry in India. **Chakrabarty, (2008)** in his paper entitled “Indian Technical Textiles prospects” reveals that the consumption of Technical Textiles in India is insignificant but it attains the growth rate of conventional textiles. **Marimuthu, (2008)** in his presentation entitled “Business Opportunity for Nonwovens & Technical Textiles in India” focused on the growth factors for India to become next big market for Technical Textiles and Nonwovens. **Ramkumar, (2009)** in his article entitled “Why Technical textiles is the next phase of the Indian textile industry” reveals the significance of Technical textile industry in India for providing economic stability, growing domestic and export markets. **Ramkumar, (2009)** in his article entitled “Compelling case for the Technical textile sector in India” explains that Indian textile industry needs a new IT (Indian textile industry) revolution to encourage, support and growth. The author describes the reasons which force to energizing the Technical textile sector in India. **Ramkumar, (2009)** authored an article on “Technical textiles cluster development is the way for growth” which states that India needs to focus on three important sectors for accelerating the economic growth namely service, manufacturing and agriculture. **Marimuthu, (2010)** paper on “Why should Technical Textiles grow in India” analyses the reasons that will increase the growth of Technical textiles industry in India. **Singh, (2010)** in an article “India to grow faster in Technical Textiles” states that accelerated growth of the Indian economy will be favourable for the Technical Textiles. **Ramkumar, (2011)** writes an article on “Technical textiles: A growing necessity for the Indian Textile industry” that reveals the need of the Technical textiles sector for its expansion in India. **Chaudhary and Shahid, (2012)** in their paper “Technical Textiles in India: The trade perspective” examined the India’s trade for Technical Textiles in the past decade i.e. from the year 2001-2002 to 2009-2010.

## Research Gap

The review of literature thus reveals a gap in so far as no study is specific in dealing with growth and development of the Technical textiles in India. Nor does any work review above tried to compare the tenth plan performance of the Indian Technical Textile industry with eleventh plan period performance. The present study is an earnest attempt in the direction of bridging this gap. It is devoted entirely to the Technical Textile industry in India for measuring the production,

export and import performance from 2002 to 2012. Furthermore, a comparative analysis is made of the performance of Technical textile industry under both plans on the basis of three parameters.

## Statement of the Problem

Technical Textiles is an important part of the textile industry and its growth will have an important bearing on overall growth of the textile industry. In spite of the fact that the growth of the technical textile industry would necessarily meet the specific physical and functional needs of the consumers and would create additional employment opportunities in coming years, it is disheartening to note that India does not find significant place for its global consumption by way of production or consumption in this sector at present. However, the growth of small & medium enterprises in the Technical Textiles sector has been very significant. As on date there are 3000 units manufacturing technical textiles in the country, of which about 90% are in SME sector; and around 1000 units have commenced production during the last 5 years (**Ministry of Textiles, 2010**). The present study is a modest attempt to measure the growth of the Technical Textile Industry in India and find out to what extent it has progressed. The issue is whether the government policies were effective enough to accelerate the growth of the industry and in turn improve production and trade. The study strives to find out if the growth of the industry has taken place and whether it has been at least significant enough to meet the domestic consumption.

## Objectives

1. To search upon the overall growth and development of Indian Technical Textile industry during Tenth and Eleventh five year plan.
2. To make a comparative analysis of the Indian Technical Textile industry between Tenth and Eleventh Five year plan in terms of Production, Export and Import.
3. To explore whether production, export and import of Technical Textile industry have changed significantly or not between Tenth and Eleventh five year plan.

## Hypothesis

1. **H<sub>0</sub> (Null Hypothesis):** There is no significant difference in the production of Technical Textile industry in India between tenth and eleventh five year plan.
2. **H<sub>0</sub> (Null Hypothesis):** There is no significant difference in the export of Technical Textile industry in India between tenth and eleventh five year plan.
3. **H<sub>0</sub> (Null Hypothesis):** There is no significant difference in the import of Technical Textile industry in India between tenth and eleventh five year plan.

## Data Collection Method

The study is based on the secondary and tertiary sources of data taken from the reports of Textiles and Technical Textiles published by Ministry of Textiles which have been suitably rearranged, classified and tabulated according to the requirement of the study. Besides, some data has been collected from the books and magazine relating to the industry, published paper, various newspapers, bulletins and some information has been browsed from the internet of the related websites.

## Hypothesis Testing Methodology

The paper studies the growth and development of Technical Textile industry in India in the past decade in terms of production, export and import. The study covers the period of 10 years i.e. from 2002-03 to 2011-12 which has been divided into two plan periods i.e. Tenth plan (2002-07) and Eleventh plan (2007-12). To prove the hypothesis and analyze the data collected from various sources, Paired Sample t-test has been applied in this study. The data has been analyzed with the help of SPSS and MS-Excel. Tenth and Eleventh five year plan performance in terms of production, export and import have been compared to see if there is any statistically significant change in performance of the Technical Textiles industry, using “paired sample t-test” at confidence level of 0.05 or 95%, d.f.=4, tabular value = 2.776 (2-tailed).

## Limitations of the Study

The following are some main limitations of the study:

1. This study is mainly based on secondary data derived from the published reports of the Ministry of Textiles. The reliability and the findings are contingent upon the data published in the reports.
2. The biggest limitation of the study has been the non-availability of time-series data on production of Technical Textile industry in India.
3. There is an insufficient maintenance of data and information by the Ministry of Textiles.
4. The study is limited to five years of Tenth plan and five years of Eleventh plan.

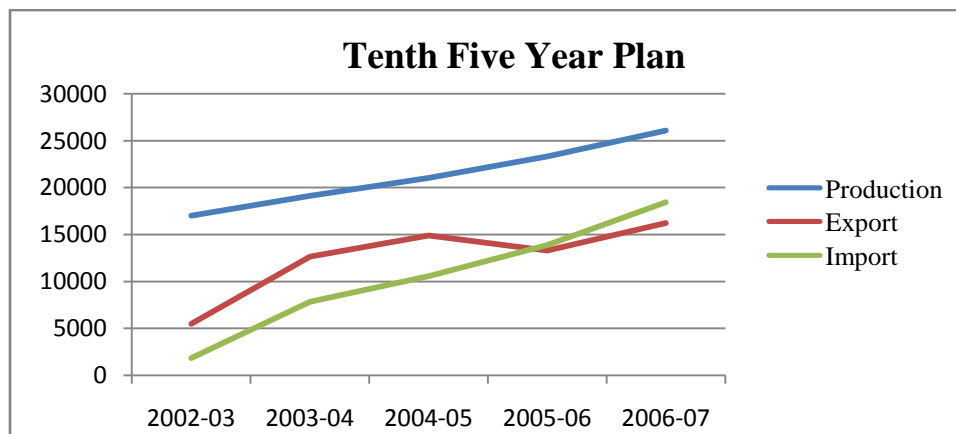
5. Only three parameters are considered in this study to measure the growth of the industry because of non-availability of data.

## Graphic Analysis and Interpretation

The Charts and Graphical analysis are based on Appendices 1 and 2. Graphs are the best medium through which we can show the trends of the Industry's growth and development. Here with the help of the graphs the Researchers have analyzed the trend of Production, Export and Import in Indian Technical Textile industry during Tenth and Eleventh five year plan period. These graphs also show the growth trend all the three parameters i.e. production, export and import. Through this we can analyze the growth and development of the Industry in the past decade. The figures in Appendix - 1 have been depicted in the Chart 1(a) and Chart 1(b). From the Charts 1(a) and 1(b), we can analyze the production, export and import trend of Technical Textiles in India during Tenth five year plan (2002-07).

From the Chart1 (a) we can see the Technical textile industry's performance during the tenth plan. The technical textile production, export and import were at Rs. 17015.06 cr., 5486.87 cr. and 1843 cr. respectively in the year 2002-03. After that production kept on rising and reached to 26076.1cr. at the end of the plan i.e. during 2006-07. As far as exports are concerned, it continuously increased during tenth plan period except in the year 2005-06. As regards imports, it came up to Rs. 10582.84 cr. in the year 2003-04 and increased tremendously during the study period and reached to Rs. 18453.98 cr. in 2006-07.

**Chart1 (a): Production, Export and Import of Technical Textile industry during Tenth Five Year Plan**



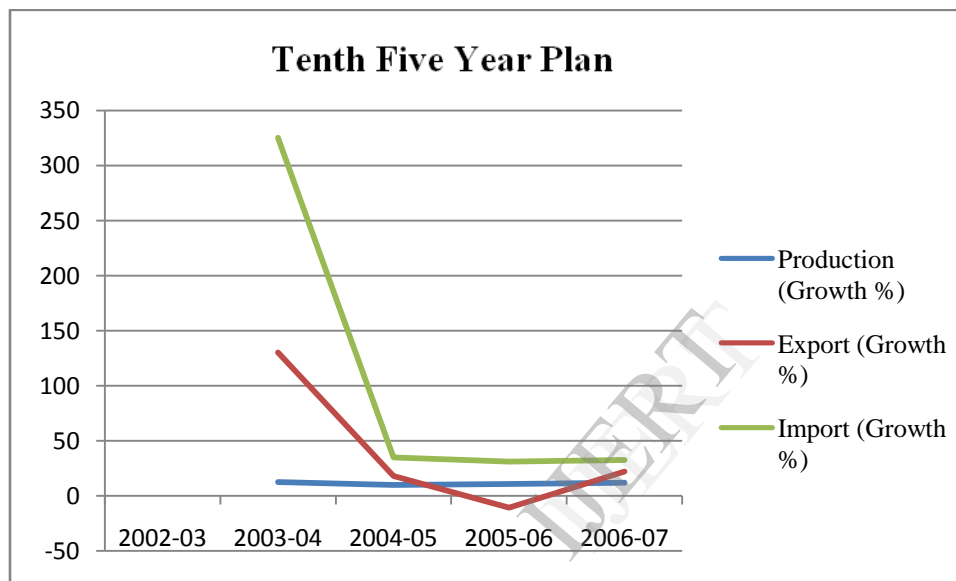
Source: Appendix 1

From the Chart1 (b) we can observed the fluctuating trend of production growth of the industry during tenth plan. It increased by 12.42 per cent in the year 2003-04 and came down in 2004-05 by 9.98 per cent. Thereafter it started rising and were 10.78 per cent and 11.88 per cent during



2005-06 and 2006-07 respectively. During 2003-04 the technical textile exports and imports witnessed exceptional improvement by 130.37 per cent and 325.30 per cent respectively. In the following year 2005-06 export declined by 10.78 per cent but improved by 21.99 per cent at the end of the plan i.e. 2006-07. The import continuously increased during the period but at the decreasing growth rates over the previous years.

**Chart1 (b): Growth in Production, Export and Import of Technical Textile industry during Tenth Five Year Plan**



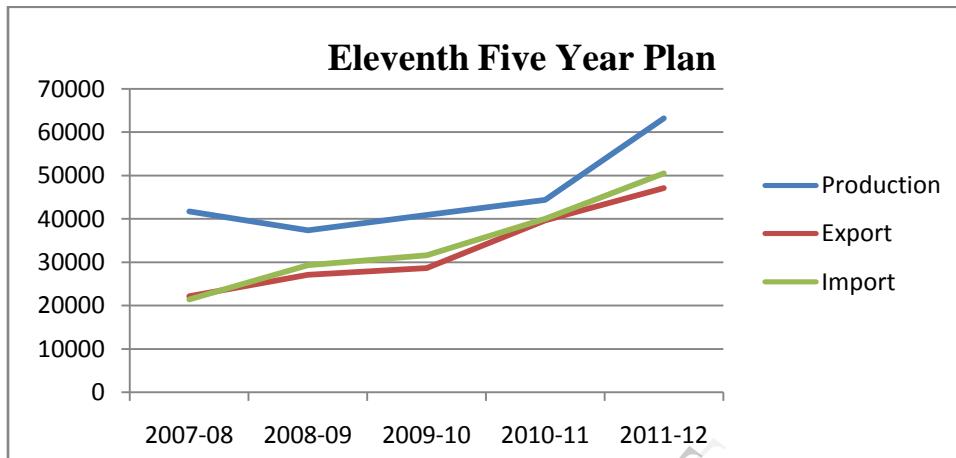
Source: Appendix 1

The figures in Appendix 2 have been depicted in the Chart 2 (a) and Chart 2 (b). From the Charts 2 (a) and 2 (b), we can analyze the production, export and import trend of Technical Textiles in India during Eleventh five year plan (2007-12).

Chart 2 (a) shows an interesting trend in production of the industry during Eleventh plan period. It was 41756 cr. in the year 2007-08 and continuously rose during the study period except 2008-09 and reached to Rs. 63202 cr. at the end of the plan i.e. 2011-12. The export shows a marvelous progress during the study period. It was 22163.27 cr. in the year 2007-08 and reached to Rs. 47085.37 cr. during 2011-12. As regard import, it also depicts an increasing trend. It was 21401 cr. in the year 2007-08 and reached to Rs. 50533.82 cr. at the end of the plan i.e. 2011-12.



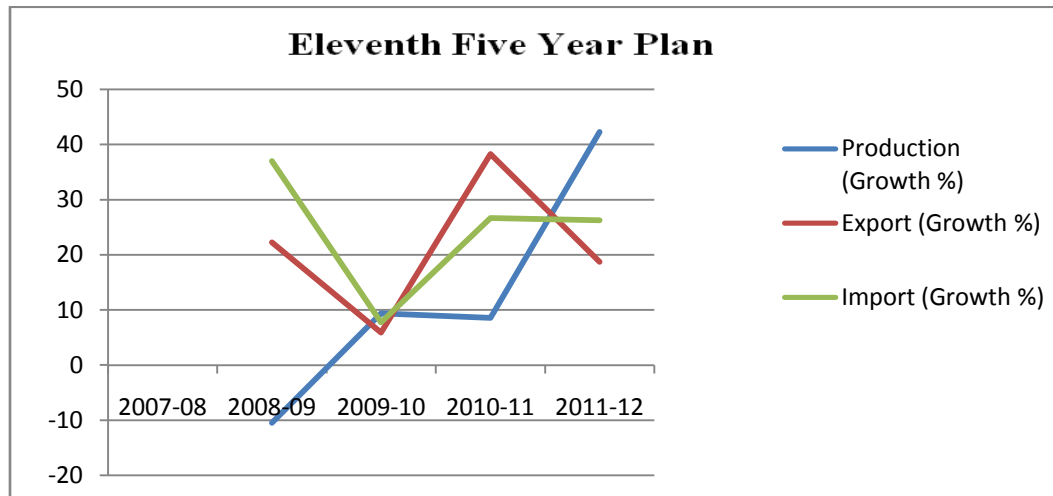
**Chart 2 (a): Production, Export and Import of Technical Textile industry during Eleventh Five Year Plan**



Source: Appendix 2

From chart 2 (b) we see negative growth in production of the industry by 10.44 per cent in 2008-09 due to the global recession during this period but thereafter it started improving and registered 42.31 per cent growth rate during 2011-12. As trend shows, growth in exports and import tremendously increased but at the fluctuating rates during the eleventh plan period. During 2008-09, export came up by 22.24 per cent but in the next year i.e. 2009-10 it slightly improved by 5.88 per cent. During 2010-11, it jumped by 38.25 per cent and thereafter it increased by 18.73 per cent at the end of the plan. As far as import is concerned, it improved by 36.99 per cent in the year 2008-09. But, during 2009-10 it came up at the lower rate i.e. 7.77 per cent. In the next years i.e. 2010-11 and 2011-12, it went up at the constant rate by 26 per cent.

**Chart 2 (b): Growth in Production, Export and Import of Technical Textile industry during Eleventh Five Year Plan**



Source: Appendix 2

### Analysis and Findings on the Basis of Hypothesis Formulated

The study is carried out by analyzing the growth and development of Technical Textiles industry in terms of production, export and import during tenth and eleventh plan period and later Paired sample t- tests has been employed for the comparative analysis between Tenth and Eleventh five year plan period. This study endeavors to measure growth of the industry as well as test whether it is significantly improved or not during the Eleventh plan in compare to Tenth plan. The following table 1 provides the results of Paired sample t- tests followed by observations about the differences in production, export and import performance between tenth and eleventh five year plan periods.

**Table 1: Results of T value and p value in each hypothesis (Production, Export and Import)**

Hypothesis	Mean		Mean Difference	t value	P -value (2-tailed)	Remarks
	Tenth plan	Eleventh plan				
$H_{01} = X^{\text{th}}$ plan production- $XI^{\text{th}}$ plan production	21314	45533	-24210	7.126	0.002	Significant
$H_{02} = X^{\text{th}}$ plan export- $XI^{\text{th}}$ plan export	12505	32937	-20430	5.922	0.004	Significant
$H_{03} = X^{\text{th}}$ plan import- $XI^{\text{th}}$ plan import	10522	34575	-24050	10.508	0.000	Significant

At 95% confidence level

Source: Computed through SPSS

## 1. Production Analysis

- The mean value of production during tenth and eleventh plan is worked out as 21314 and 45533 respectively which show that the production of the industry has increased during the eleventh plan period.
- Based on the above results of the **paired sample t-test analysis at 95%** confidence level, the Null Hypothesis **H0: “On average, there is no difference between Tenth and Eleventh five year plan in production of the Technical Textile Industry in India”** was rejected, since paired sample t-test reveal a statistically reliable difference between the Xth and XIth plan mean values of production in Technical Textile industry, p value (sig. 2-tailed) is worked out as 0.002 which is lesser than (alpha) 0.05 [**p value <  $\alpha$  = 0.05**]. Thus, **Null hypothesis is rejected while alternate hypothesis is accepted**. Hence it is proved that the production of Technical Textile industry has improved significantly during eleventh five year plan in compare to tenth five year plan.

## 2. Export Analysis

- The mean value of export during tenth and eleventh plan is worked out as 12505 and 32937 respectively which show that the export of the industry has increased during the eleventh plan period.
- Based on the above results of the **paired sample t-test analysis at 95%** confidence level, the Null Hypothesis **H0: “On average, there is no difference between Tenth and Eleventh five year plan in export of the Technical Textile Industry in India”** was rejected, since paired sample t-test reveal a statistically reliable difference between the Xth and XIth plan mean values of export in Technical Textile industry, p value (sig. 2-tailed) is worked out as 0.004 which is lesser than (alpha) 0.05 [**p value <  $\alpha$  = 0.05**]. Thus, **Null hypothesis is rejected while alternate hypothesis is accepted**. Hence it is proved that the export of Technical Textile industry has improved significantly during eleventh five year plan in compare to tenth five year plan.

## 3. Import Analysis

- The mean value of import during tenth and eleventh plan is worked out as 10522 and 34575 respectively which show that the import of the industry has increased during the eleventh plan period.
- Based on the above results of the **paired sample t-test analysis at 95%** confidence level, the Null Hypothesis **H0: “On average, there is no difference between Tenth and Eleventh five year plan in import of the Technical Textile Industry in India”** was rejected, since paired sample t-test reveal a statistically reliable difference between the Xth and XIth plan mean values of import in Technical Textile industry, p value (sig. 2-tailed) is worked out as 0.00 which is lesser than (alpha) 0.05 [**p value <  $\alpha$  = 0.05**]. Thus, **Null hypothesis is rejected while alternate hypothesis is accepted**. Hence it is proved that the import of Technical Textile industry has improved significantly during eleventh five year plan in compare to tenth five year plan.

## Summary of t Test Results

From the following Table 2 it is observed that for the Technical Textile industry, the production, export and import have gone up in the eleventh plan period. Moreover, all three variables have increased significantly during the later plan thus; all null hypotheses are rejected while alternate hypotheses are accepted.

**Table 2: Summary of results of hypothesis testing (Production, Export and Import)**

No.	Hypothesis	Results
H <sub>01</sub>	<b>H<sub>0</sub> (Null hypothesis):</b> On average, there is no difference between tenth and eleventh plan in the production of Technical Textile industry in India	<b>Rejected</b>
H <sub>02</sub>	<b>H<sub>0</sub> (Null hypothesis):</b> On average, there is no difference between tenth and eleventh plan in the export of Technical Textile industry in India	<b>Rejected</b>
H <sub>03</sub>	<b>H<sub>0</sub> (Null hypothesis):</b> On average, there is no difference between tenth and eleventh plan in the import of Technical Textile industry in India	<b>Rejected</b>

**Source: Evaluated from test undertaken**

## Conclusion

The present study evaluates the growth and development of the Technical Textile industry in order to find out whether growth of the industry has improved significantly or not during eleventh five year plan in compare to tenth plan. Paired sample t Test has been employed under this study to analyze the result and derive conclusion. The study concludes that production, export and import of the Technical Textile industry have augmented which indicate the significant improvement during the eleventh plan period. The results from paired sample t-test at significant level of 95% illustrated that there is significant difference in the selected parameters between tenth and eleventh plan period due to the significance values which are lesser than 0.05. Hence, this study has rejected the null hypotheses which consider that there are significant improvements in growth and development of Technical Textiles in India during eleventh plan and accepted the alternative hypothesis.

## References

Chakrabarty, S. (2008, January - March). Indian Technical Textiles prospects. Asian Technical Textile. Pg. 36-40.

Chaudhary, A. and Shahid, N. (2012, Nov.). Technical Textiles in India: The trade perspective. JM International Journal of Management Research. Volume–2. Issue-6.

Horrock, A.R. and Anand, S.C. (2004). Handbook of Technical Textiles. UK: Wood head publishing ltd. & CRC press LCC.

Joshi A.B. (2011). India's approach to Technical Textiles. Textile commissioner. Retrieved from <https://docs.google.com/viewer?a=v&q=cache:zObfpPodqK0J:technotex.gov.in/Technical%2520Textile%2520technotex%25202011%2520conference/ficci%252025.8.2011/Textiles%2520commissioner%2520india's%2520approach%2520to%2520technical%2520textiles.ppt+india's+approach+for+technical+textiles&hl=en&gl=in&pid=bl&srcid=ADGEESjkC-XbLMih9RMWY2XcyHaE9KTy55UWU-v9BQzJfr841XUCNWrlLqkM18dn-o7LohQHK-HV0knbwchCpHFcoapxJuYFFtOnR8kE-Gcr2wF4EjJS-klOPr3RybUJyZqQrE49fP30&sig=AHIEtbTUxKpkO80N-YtqKIKuwIXAMVocmQ>

Marimuthu, M. (2008). Business Opportunity for Nonwovens & Technical Textiles in India. Retrived from <http://www.fibre2fashion.com/industry-article/pdf/files/8/785.pdf>

Marimuthu, M. (2010). Why should Technical Textiles grow in India. Retrieved from <http://www.fibre2fashion.com/industry-article/24/2381/why-should-technical-textiles-grow-in-india1.asp>

Ministry of Textiles. (2006, 12 Dec.). Presentation on Technical Textiles with focus on the use of 'Geo Textiles'

Ministry of Textiles. (2010, June 7). National Fibre Policy 2010-11. Government of India. Retrieved from. [http://texmin.nic.in/policy/Fibre\\_Policy\\_dir\\_mg\\_d\\_20100608.pdf](http://texmin.nic.in/policy/Fibre_Policy_dir_mg_d_20100608.pdf).

Nemoz, G. (2001). Applications and markets of Technical Textiles: Actual situation and Trends. Retrieved from

[http://www.inexmoda.org.co/Portals/35/documentacion/sesion\\_grupo\\_asociativoen\\_funcionalidad/aplicaciones\\_y\\_mercados\\_de\\_los\\_textiles\\_tecnicos.pdf](http://www.inexmoda.org.co/Portals/35/documentacion/sesion_grupo_asociativoen_funcionalidad/aplicaciones_y_mercados_de_los_textiles_tecnicos.pdf)

Office of the Textile commissioner. (2009, March). Baseline survey of the Technical textile industry in India - Final Report. ICRA Management consulting services (IMaCS). Retrieved from

[http://technotex.gov.in/Revised\\_Final\\_ReportBaseline\\_Survey\\_of\\_Technical\\_Textile%20industry\\_in\\_India.pdf](http://technotex.gov.in/Revised_Final_ReportBaseline_Survey_of_Technical_Textile%20industry_in_India.pdf)

Patel, M. (2010). Technical Textile in India- A dormant volcano prepares to erupt. Retrieved from [http://www.academia.edu/640599/Technical\\_Textiles\\_in\\_India](http://www.academia.edu/640599/Technical_Textiles_in_India)

Rakshit, Arup. et al. (2007). Technical Textiles: What India needs to do now. Textile Review. Vol.2. Issue 10.

Ramkumar, S. (2009, May). Why Technical textiles is the next phase of the Indian textile industry. Textile Review. Volume - 4. Issue - 05.

Ramkumar, S. (2009, June). Compelling case for the Technical textile sector in India. Textile Review. Volume-4. Issue-06.

Ramkumar, S. (2009, Feb). Technical textiles cluster development is the way for growth. Textile Review. Volume-4. Issue-02.

Ramkumar, S. (2011, Jan). Technical textiles: A growing necessity for the Indian Textile industry. Textile Review. Volume-6. Issue-1.

Singh, K.V. (2010). India to grow faster in Technical Textiles. Textile Review. Retrieved from <http://www.fibre2fashion.com/industry-article/32/3136/india-to-grow-faster-in-technical-textiles1.asp>

## Appendices

### Appendix 1

#### Production, Export and Import of the Technical Textile Industry in India during Tenth Five Year Plan

Years	Production	Growth (%)	Export	Growth (%)	Import	Growth (%)
2002-03	17015.7		5486.87		1843	
2003-04	19129.59	12.42	12632.81	130.24	7838.35	325.30
2004-05	21039.64	9.98	14897.82	17.93	10582.84	35.01
2005-06	23306.8	10.78	13292.11	-10.78	13893.64	31.28
2006-07	26076.1	11.88	16214.74	21.99	18453.98	32.82

Source: 1) **Production data:** Report of the working group on Textiles & Jute industry for the Tenth Five year plan (2007-12). In Expert Committee on Technical Textiles Report from 2002-03 to 2006-07

2) **Export and Import data:** Government of India, Ministry of Commerce and Industry, Department of Commerce, Country - wise Export Import Data Bank.

### Appendix 2

#### Production, Export and Import of the Technical Textile Industry in India during Eleventh Five Year Plan

Years	Production	Growth (%)	Export	Growth (%)	Import	Growth (%)
2007-08	41756		22163.27		21401	
2008-09	37392.6	-10.45	27092.84	22.24	29318.23	36.99
2009-10	40901.9	9.39	28685.61	5.88	31597.64	7.77
2010-11	44411.2	8.58	39658.83	38.25	40021.84	26.66
2011-12	63202	42.31	47085.37	18.73	50533.82	26.27



Notes: i) Data for years 2008-09, 2009-10 and 2010-11 have been calculated by using extrapolation.

Source: 1) **Production data:** Report of the working group on Textiles & Jute industry for the Eleventh Five year plan (2012-17). In ICRA baseline survey report for the years 2007-8 and 2011-12.

2) **Export and Import data:** Government of India, Ministry of Commerce and Industry, Department of Commerce, Country - wise Export Import Data Bank.

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