FINAL REPORT

"Impact Assessment of Technology Upgradation Funds Scheme / Amended TUFS"

Prepared For:

NITI Aayog

technopak

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1. TABLE OF CONTENTS

2. EXECUTIVE SUMMARY

India's Textile and Apparel (T&A) sector contributes ~7% to the industry output in value terms and ~2% to the country's GDP. In 2019, Domestic T&A sector's revenue is estimated at USD 85 billion and Exports revenue at USD 36 billion. While domestic market has been growing @ 10% for last 5 years; exports growth has remained flat for last 5 years. With the potential India offers in international trade, the current share of only 4.3% leaves a lot of market unaddressed. The COVID pandemic also presents a unique opportunity to India's T&A sector to increase its share in the international market.

Technology Upgradation was first launched in 1996 to plug the technology gaps in the textile sector. The scheme has undergone several modifications over the years with recent revision made in 2016. The scheme today aims to promote exports, generate sizeable employment and at the same time promote zero effect and zero-defect manufacturing.

This study has been conducted by NITI Aayog to analyse the "Impact of Technology Upgradation Fund Scheme (TUFS)" under various parameters. The impact has been measured for technology upgradation, employment generation, cost savings and quality. In addition, challenges and issues related to the scheme has been understood and analysed. The study assesses the role played by TUFS in the T&A sector and makes recommendations.

The overall approach for the study is a mixed method approach including primary and secondary data collection from various stakeholders across the value chain. The steps included meta-analysis of TUFS, Key Informant Interviews (KIIs), Unit Holder Survey (UHS), compilation and analysis of findings and writing the report.

2.1 Research Methodology

A primary research study was conducted wherein 667 surveys (559 TUFS beneficiaries + 108 non beneficiaries) from 8 states were conducted. The study also conducted 62 KIIs across 11 cities in India. The information on various financial, operational aspects are collected as part of the survey etc.

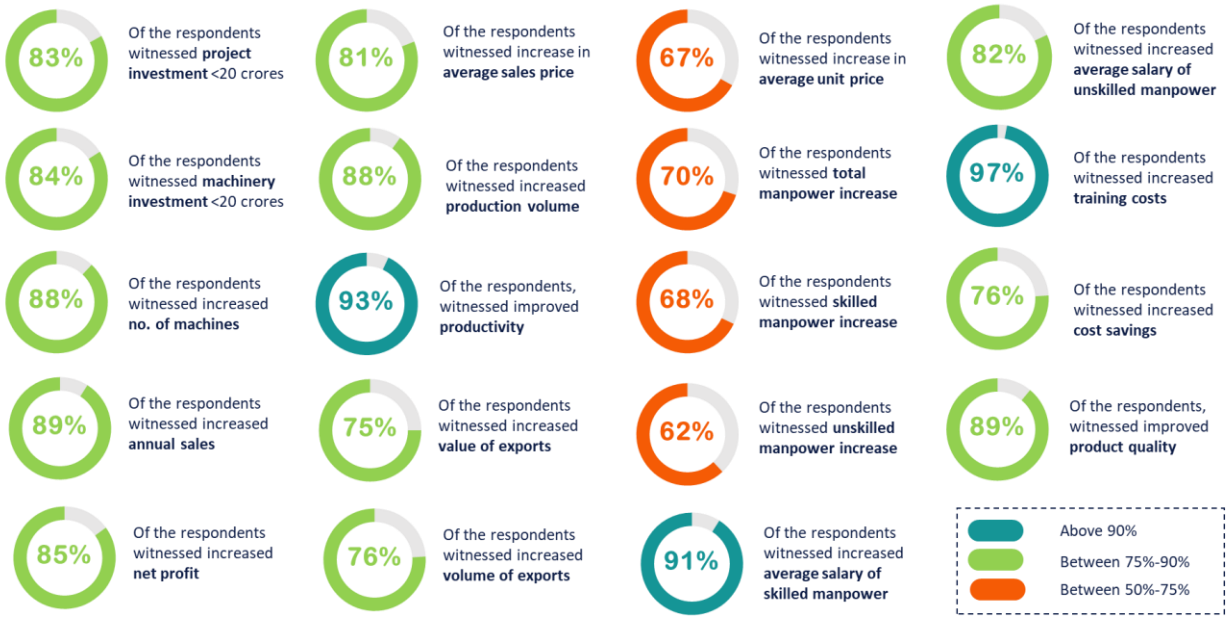
The final list of 62 KIIs were finalised jointly with NITI Aayog. Sampling method for UHS was stratified random sampling with quotas allocated by the NITI Aayog team. The population size for the survey was based on the geographical spread, segment type, scheme type and scale type.

2.2 Major Findings of the Study

Overall Summary - Key Findings

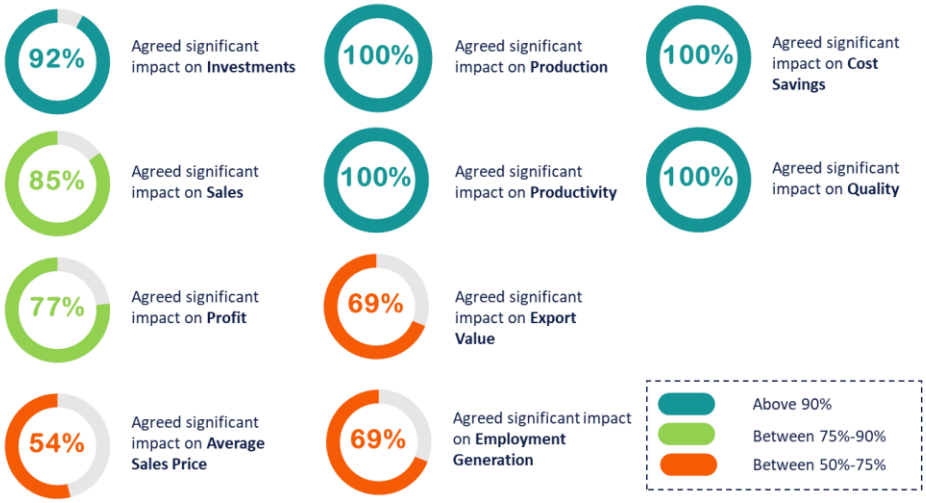
Given below is summary of impact analysis of TUFS schemes on various parameters as witnessed by the 559 TUFS beneficiaries.

Exhibit 1: Summary of UHS Analysis for impact of TUFS



Summary of impact analysis of TUFS schemes for interviews done with 13 industry experts.

Exhibit 2: Summary of KII Analysis for impact of TUFS



Overall, TUFS had a positive impact on the performance of the Indian textiles industry both for Beneficiaries as well as Non-Beneficiaries. As per findings, the scheme played a major role in improving technology levels, increasing investments, production, product quality, exports and increasing employment generation. Overall, non-beneficiaries showed lower positive impact than the beneficiaries on all 7 parameters.

1. **Impact on Investments**

- ✓ The scheme had a positive impact on investments, with approx. 80% of the investment in the textile sector emerging from the scheme from 1999 to 2016.
- ✓ The impact on project investment though positive has been moderate in terms of scale, with only 2% projects reporting investments to the tune of Rs 50 Cr and more. While 44 % beneficiaries reported investments in the scale of Rs 1-20 Cr, 39% investments were less than Rs 1 Cr.
- ✓ Non beneficiaries have also witnessed a moderate increase in investments with 76% investments in the scale of Rs 1-20 Cr.
- ✓ 80% of KIIs agreed that TUFS had positive impact on investments. After removal of spinning under TUFS, weaving is now the leading segment taking TUFS advantage to attract investments.

2. **Impact on Financial Performance (Sales, Net Profit, and Average Sales Price)**

- ✓ The primary research finds positive impact on sales, profit etc across all segments and impact is of higher magnitude in weaving. KIIs indicated that scheme subsidy is instrumental in improving financial performance of the companies, given that many of textile companies operate with low profit margins. This can be attributed to reduced cost of capital, improved margins and turnover of the textile companies.
- ✓ Overall, 89% beneficiaries have witnessed an increase in annual sales. In Weaving segment, highest number of respondents (92%) have witnessed increase in sales. Around 50% of respondents in Knitting, Weaving and Processing have witnessed an increase in sales >10%. In Rajasthan, Punjab and Haryana, more than 90% respondents have witnessed increase in annual sales due to TUFS.
- ✓ Overall, 85% beneficiaries have witnessed an increase in net profit with weaving segment having highest positive response (87%). While majority of states reported profits, 20% respondents in Tamil Nadu, 14% in Karnataka and 13% in Uttar Pradesh have witnessed decline in net profits.
- ✓ Overall, 81% beneficiaries have witnessed an increase in per unit sales price. 71% respondents in weaving segment have witnessed increase in sales price >6%.
- ✓ Overall non-beneficiaries have reported lower financial performance than beneficiaries. Broadly, respondents from Processing and Punjab have witnessed decline in Annual sales, Net Profits and Sales Price.
- ✓ As per the KII analysis, 85% found positive impact on sales, 77% on profit and 54% on sales price.

3. Impact on Production and Productivity

- ✓ TUFS Scheme had a significant impact on increasing production and improving productivity. Beneficiaries gained significantly in terms of productivity improvement, waste reduction, cost saving, resource efficiency etc. due to investment in upgraded technology.
- ✓ More than 85% beneficiaries witnessed an increase in production volume. In weaving segment, more than 75% beneficiaries witnessed an increase in production volume of greater than 5%. More than 90% beneficiaries opined that TUFS enhanced the overall productivity, whereas more than 85% opined that TUFS helped significantly in improving the product quality. Over the schemes, the highest increase in production volume was exhibited during ATUFS scheme with 46% of the respondents suggesting an increase >20%.
- ✓ Most of the non-beneficiary respondents from all sectors have witnessed growth in production volume
- ✓ All the KII experts opined that TUFS had a significant impact on production and productivity respectively, whereas as per expert panel, everybody opined that TUFS had a significant impact on production and productivity.

4. Impact on Exports

- ✓ TUFS benefitted most companies in terms of product development and innovative practices due to addition of technologically advanced machines. Exports in textile and apparel industry grew along with increase in production and overall competitiveness. However, total exports in T&A sector has witnessed a decline of CAGR 1.9% between 2014 and 2019. India's exports of textile fibers have declined by 9% from 2014 to 2019. Yarn and fabric exports have declined by 4% and 1% respectively in the same period.
- ✓ Overall, 75% beneficiaries have witnessed an increase in value of exports. Majority of the segments witnessed an increase in exports' value. Technical textile segment had the highest positive response of 82% for export increase. Across the schemes, the highest increase in value of exports was exhibited during ATUFS ~ 83% of the respondents suggesting an increase in value of exports.
- ✓ Overall, 76% beneficiaries have witnessed an increase in volume of exports. Highest change in volume of exports has been observed by Weaving and Garmenting segments.
- ✓ 69% of KII experts opined that TUFS had a significant impact on exports.
- ✓ Overall non-beneficiaries have reported lower change in exports than beneficiaries.
- ✓ Overall textile and garments export out of India have remained stagnant in last 5 years at approx. USD 37 Bn. Exports market is affected by many other external factors such as FTA, cost competitiveness, speed to market etc. Hence, we believe it is difficult to directly correlate TUFS impact on exports.

5. Impact on Employment Generation

- ✓ TUFS contributed positively to employment generation and helped in the growth of income and improving livelihood of the workers. Since its launch, the scheme provided employment to approx. 8.4 lacs people in factory sector, with approx. 1.6 lacs people employed after RTUFS. No. of people engaged in the operational factories has witnessed an increasing trend in the last 5 years, so have the wages per worker in T&A industry.
- ✓ Approx. 70% beneficiaries witnessed increase of total manpower after upgrading the technologies under the scheme. 76% respondents in Weaving segment have seen manpower addition. Among states, in Rajasthan and Uttar Pradesh ~90% respondents have witnessed an increase in total manpower due to TUFS. During ATUFS scheme, 74% respondents have witnessed an increase in labour.
- ✓ As per KIIs, more than 70% stakeholders opined that TUFS helped in promoting employment generation.

6. Impact on Cost Savings

- ✓ TUFS scheme contributed significantly to the improvement of cost efficiencies and resource efficiencies of the textile units. Majority of companies across all segments witnessed cost reduction between 1% and 10%.
- ✓ As per UHS analysis, 76% of the beneficiary respondents indicated an increase in cost savings per unit, vis-à-vis 78% of the non-beneficiary respondents. Units have also been able to increase their cost savings and resource efficiencies to significant extent. However, 21% beneficiary respondents in Processing segment have witnessed a decrease in cost savings.
- ✓ As per KII analysis, 76% respondents opined that TUFS had a significant impact on cost savings, whereas all expert panel opined that the scheme had a positive impact on cost savings.

7. Impact on Quality

- ✓ TUF Scheme has helped companies to improve their product quality and value addition by shifting to technologically upgraded machines. Factors such as product development, value addition, quality improvement and innovative practices also helped in improving Unit Value Realization (UVR) of textile sector.
- ✓ The product quality has improved significantly across various segments as reported by the companies; enabled due to the TUFS. 89% of the beneficiaries opined that the scheme led to improvement in product quality.
- ✓ KII analysis indicates that 82% respondents opined that TUFS had a positive impact on improving quality of the products, whereas 100% of expert panel believed that the scheme had a positive impact on quality.

2.3 Technology Upgradation Assessment (Machinery Report)

Study of machinery Specifications and recommendations on ATUFS machinery list

Technopak team conducted 16 interviews with leading machinery manufacturers and industry stakeholders. There are 469 machines and 590 machine manufacturers, which are approved under ATUFS.

Technopak categorized the 469 machines listed under ATUFS into 2 categories, based on their role in the manufacturing process:

- Core Process machines (285), which perform a major function, and
- Ancillary process machines (184), which have a supporting role.
- This classification is subjective and may require further deliberations along with the stakeholders.

The study analyses the Core process machines, and provides technical recommendations on their speed for each textile segment. In some cases, like weaving and knitting, Technopak has given speed recommendations separately for MSME (Unorganized sector) and Non-MSME (Organized sector).

Current Technology (Machinery) Level in India in Textile & Apparel

As per UHS analysis, only 24% of the beneficiaries felt that technology levels in India match global standards, while the balance 76% felt that there is a gap between Indian and global standards.

As per KII analysis, 70% respondents opined that India has achieved global technology levels only in spinning, while in all other segments we are lagging behind. The larger players in the organised sector match global technology standards across segments, but their share in the industry is very small. Hence, the overall standard of technology level in the industry is much lower than global standards.

Global Benchmarking of Technology Level

Technopak conducted primary research with 17 industry experts (KII) to compare the technology level in each segment in India with 5 other competing nations viz. China, Vietnam, Turkey, Bangladesh and Pakistan.

Exhibit 3: Global Benchmarking of Technology Level

Rank	Spinning	Weaving / Knitting	Processing	Garmenting	Tech. Textiles	Textile Machine Manufacturing
1	China	China	China	China	China	China
2	India	Turkey	Turkey	Bangladesh	Bangladesh	India
3	Turkey	India	Vietnam	Vietnam	Vietnam	Turkey
4	Vietnam	Vietnam	India	India	India	Vietnam
5	Pakistan	Pakistan	Bangladesh	Turkey	Turkey	Pakistan
6	Bangladesh	Bangladesh	Pakistan	Pakistan	Pakistan	Bangladesh

Bangladesh China India Pakistan Turkey Vietnam

India is losing in capitalising the advantage of technology investment in Spinning, as the downstream segments of Weaving, Knitting, Processing and Garmenting are unorganised and fragmented.

Evaluation Matrix for Technology assessment of Textile Segments

An evaluation matrix with the following six parameters was developed for technology assessment of all the textiles segments: Spinning, Weaving, Knitting, Processing, Garmenting and Technical Textiles:

1. Percentage Machine cost in total project cost
2. Absolute capex required for viable project (INR Crores)
3. Current technology level in India
4. Return on Investment
5. Trade surplus/ deficit (in USD Mn)
6. Technology Obsolescence* (Number of years)

Recommendations have been given for TUFS subsidy, based on the ranking from this evaluation matrix.

2.4 Recommendations

- **Promotion of TUFS**

TUFS over the years has been regarded as a successful scheme for promoting investment in the sector. But over the last 4-5 years, the scheme has lost its relevance and popularity. Technopak suggests that the scheme should be revised and promoted afresh within the industry. It will help re-energize the industry with fresh investments and technology upgrades.

- **Balancing the production capacity of Textile value chain**

Downstream investments into weaving, knitting and processing will help the industry in value addition, especially in exports. It is estimated that 35% of the yarn produced in India is exported due to lack of weaving and processing capacities. TUFS should be focused on building and upgrading Weaving, Knitting and Processing capacities, to capture this gap and increase value addition.

- **Higher Subsidy for Weaving, Knitting and Processing**

A higher allocation and subsidy for Weaving, Knitting and Processing sectors is proposed. The recommendations are:

  - **Allocation**: Weaving: 20%; Knitting: 20% and Processing: 30-40%
  - **Capital Subsidy**: Increased to 15% for Weaving, Knitting and Technical Textiles and 20-25% for Processing

It is recommended that spinners can be targeted in India to invest in Weaving / Knitting/ Technical Textiles and Processing. Spinners have the raw material availability and better financial strength than standalone weavers, knitters and processors.

- **Focus on Man Made Fiber (MMF) value chain**

MMF has better potential for growth in both domestic and international markets. Within MMF value chain, fabric segment can be focused. Clusters with MMF value chain production may be focused for TUFS benefit.

- **Differential Technology Specifications for MSME**

MSME sector does not have financial capabilities to upgrade to best technology levels. Differential technology specifications slab is proposed for MSME segment under ATUFS machinery listing for some of the machines.

- **Promote Technical Textile under TUFS**

Technical textiles; especially Medical Textiles, should be given special impetus under TUFS to promote more investments and latest technology use. Subsidy budget for technical textiles can be 20% of total TUFS subsidy. Capital Subsidy for technical textiles may be kept at 15%.

- **Timely Disbursement**

All the industry stakeholders talked about the delay in disbursement at various stages of TUFS, which hampers the basic impact of the scheme. For the future, the disbursement should be done without any delay, with streamlined processes for approvals at each stage. TUFS cases need to be cleared faster to regain the confidence of industry in TUFS.

- **Technical Think Tank with industry participation**

We propose that a strong Think Tank with serious industry participation from various stakeholders should be created to advise and deliberate on all technology aspects of TUFS. This Think Tank can consist of government officials, industry leaders, machinery experts, technical consultants. This will help in addressing technology related issues and making the implementation process faster.

- **Updating Machine list under ATUFS**

Current machine listing needs updating as per the current technology standards and industry requirements. Some recommendations have been given by Technopak but a more detailed study is required to finalize it. This should be done on a continual basis for the industry to benefit from the latest technology developments.

- **Promote Industry 4.0 technology**

Separate list of machines, technology, and software to be included under ATUFS. Separate budget may be allocated for this segment under ATUFS. Garment segment can be promoted in this budget.

- **Promote Domestic Machine Manufacturers**

Sourcing of machines from domestic textile machine manufacturers should be promoted under TUFS. This can be done through higher subsidy provision for domestic manufacturers. Domestic machine manufacturing ecosystem needs to be improved significantly by promoting R&D and innovation for developing state-of-the-art machines. This can be promoted through mega textile parks for machine manufacturing. Encourage JVs (Joint Ventures) and FDIs (Foreign Direct Investment) from European and Japanese machine manufacturers. Devise a special scheme with liberal policies and long-term benefits for machine manufacturing including R&D and plug and play facility.

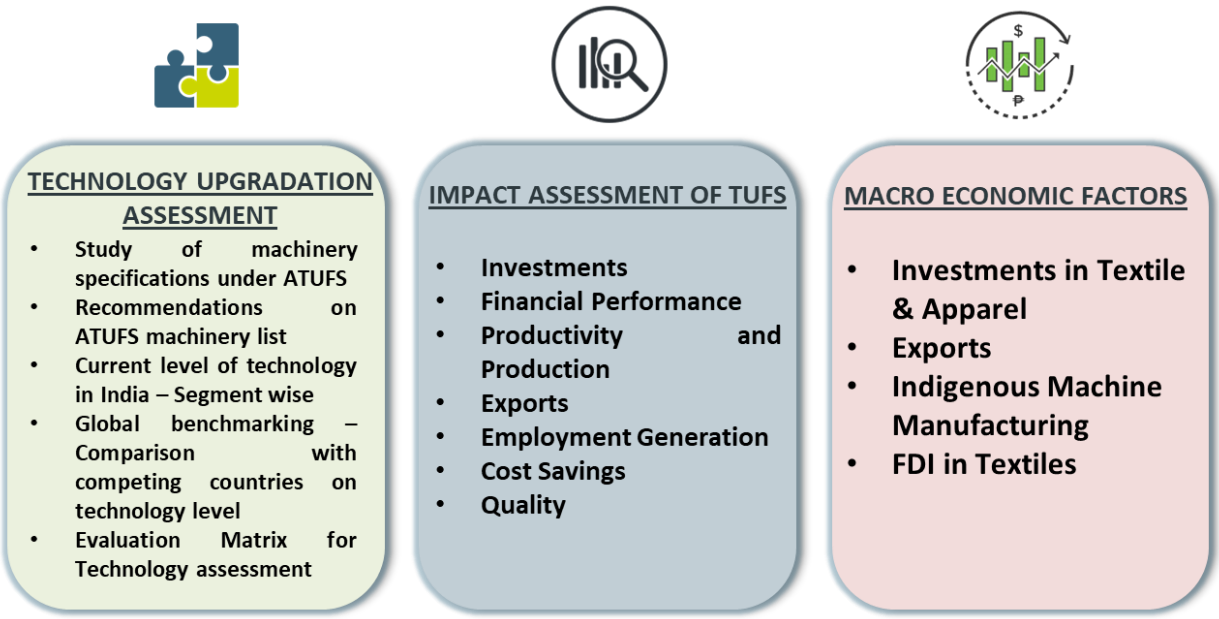
3. PROJECT OVERVIEW

3.1 Objectives

TUFS has been under implementation for almost two decades now. Despite generating positive interests in the unit holders/manufacturers, and acting as a catalyst for increasing investments in the Indian textile industry, there is trepidation about the penetration and effectiveness of the scheme, and whether the scheme is able to achieve its intended objectives or not. To understand the impact of the scheme, NITI Aayog wanted to conduct an "Impact Assessment of Technology Upgradation Fund Scheme" to assess the holistic impact of the scheme. A study had been initiated to evaluate the impact of TUFS on parameters such as technology upgradation, investments, financial performance, productivity and production, exports, employment generation, cost savings, and quality.

Below are the objectives that Technopak Advisors analysed in this project.

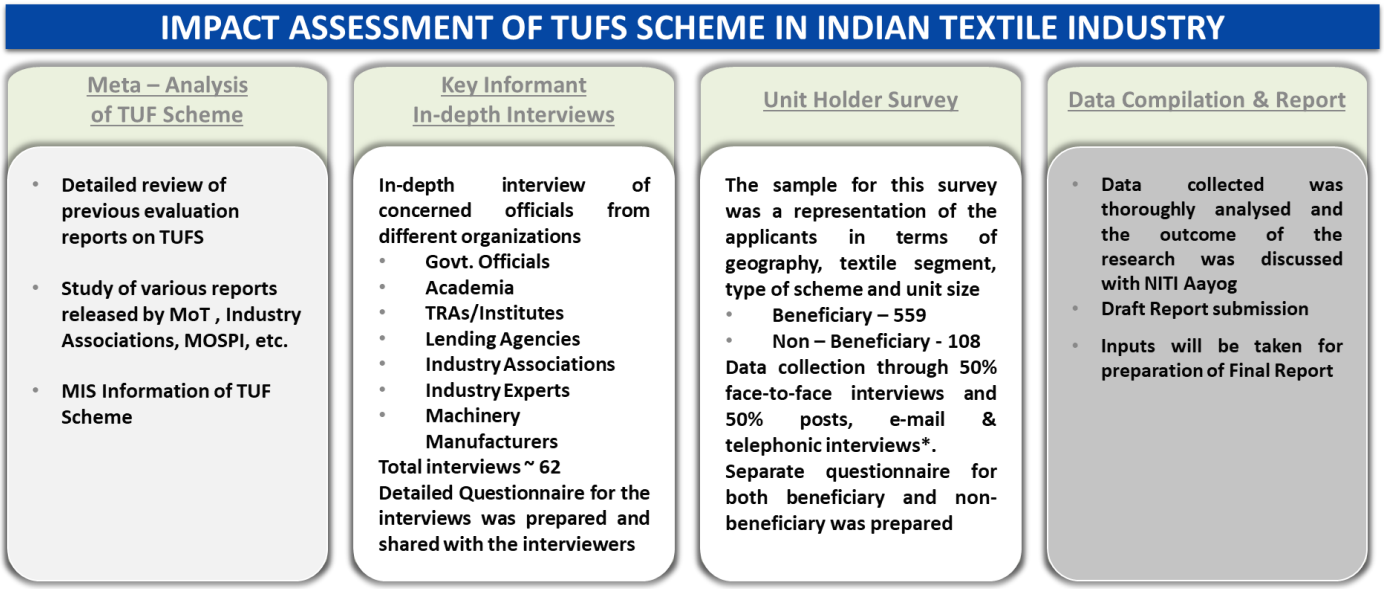
Exhibit 4: Project Objectives



3.2 Approach and Methodology

The overall approach is a combination of primary and secondary data collection from various stakeholders across the value chain and previous evaluation reports (literature review). The approach has been defined in below steps:

Exhibit 5: Study Approach & Methodology



Field study and methodology involved collecting data through primary research. For the purpose of this study, primary research is a combination of Key Informant Interviews (KIIs) and Unit Holder Surveys (UHS).

3.2.1 Data Quality Assurance

Data Quality Assurance

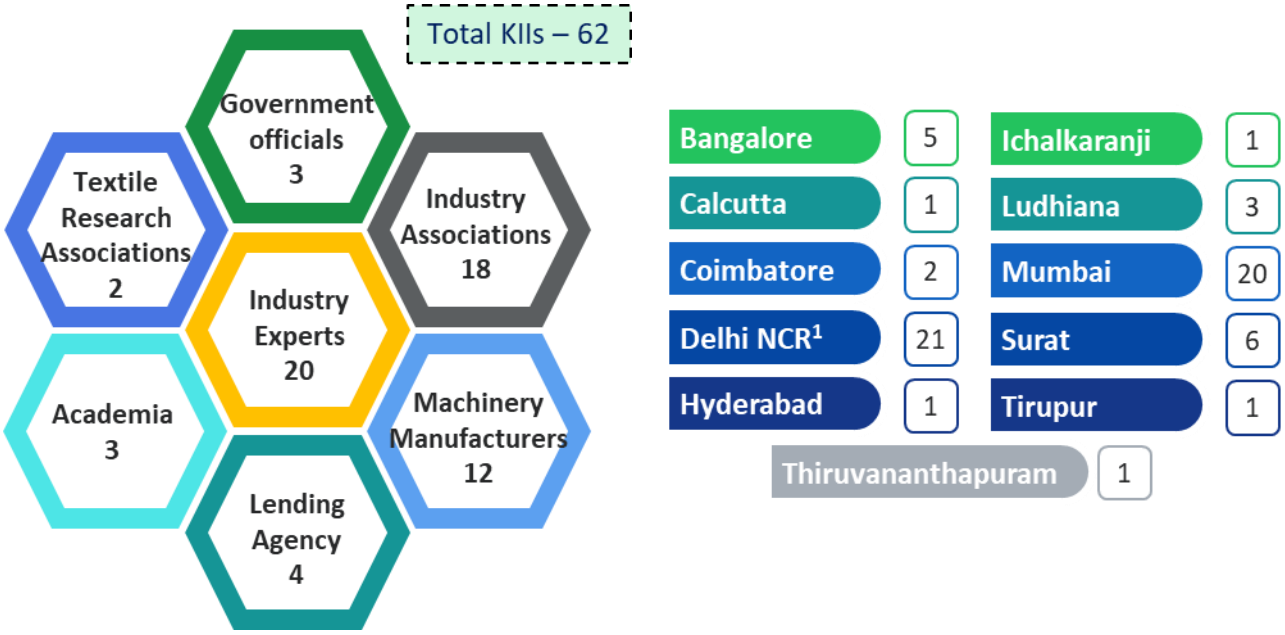
A multi - pronged robust process for quality control was followed during data collection. The following aspects were considered:

- The field investigators were engaged for conducting the Unit Holder Surveys with at least 3 years of experience in conducting similar surveys/interviews. Two-step training (classroom and on-the-field training) was conducted for all field investigators
- Pilots were conducted on 8% (50 out of 648) of the sample size for Unit Holder Surveys to fine tune the inquiry tools. A brief on the learnings from such a pilot exercise and subsequent improvements in the tools/questionnaires was shared with NITI Aayog
- 100% data collected was validated using a validation checklist - missing data points were recollected
- In case of Unit Holder Surveys, at least 50% data was verified on telephone and if not verified via phone, back checks were undertaken to ensure at least 50% data verification
- Use of mobile - based real-time data collection and validation tools were done to ensure efficiency and accuracy in data collection

3.2.2 Qualitative Analysis [Key Informant Interviews (KIIs)]

For the purpose of this study, Technopak interviewed 62 KIIs to understand the impact of TUF Scheme on Indian textile industry. Summary of the stakeholders is given below:

Exhibit 6: Stakeholder wise and City wise sampling of KIIs



Note: [1] Delhi NCR includes New Delhi, Noida, Gurgaon, Ghaziabad and Faridabad

3.2.3 Quantitative Analysis [Unit Holder Survey (UHS)]

An in-depth Unit Holder Survey (UHS) was conducted to assess the key impact of the scheme. The population size for the survey was based on the geographical spread, segment type, scheme type and scale type.

The sampling plan was based on "Stratified random sampling with quotas suggested in the ToR (Terms of Reference)."

Technopak partnered with a research agency (Azul Research Advisory and Support Services) to conduct face to face interviews and telephonic interviews. In total, 667 UHS were conducted as part of this study (TUFS beneficiaries - 559 and non-beneficiaries - 108).

Approach for Quantitative Analysis – Overall Sampling Approach – Unit Holder Survey

Primary research of unit holders includes both 559 beneficiaries & 108 non-beneficiaries. Segmentation of the sample size is based on the following four parameters:

1. State Wise
2. Segment Wise
3. Scheme Wise
4. Scale Wise

Exhibit 7: State wise sampling of UHS

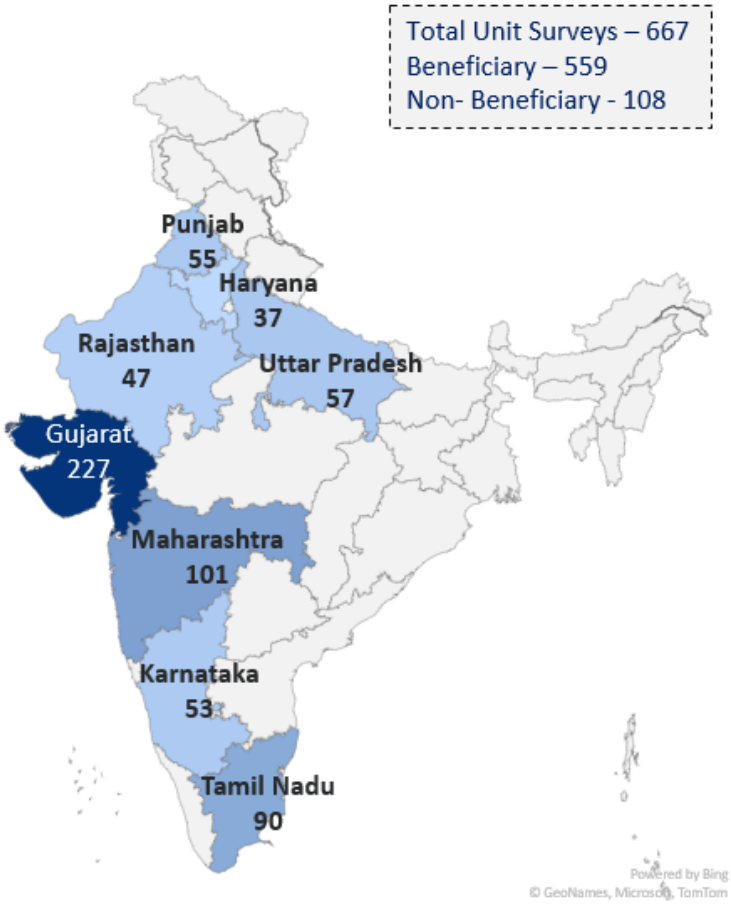


Exhibit 8: Segment wise sampling of UHS

	BENEFICIARIES	NON BENEFICIARIES
SPINNING	38	1
WEAVING	282	40
KNITTING	31	6
PROCESSING	66	21
GARMENTING	51	28
TECHNICAL TEXTILES	48	7
OTHERS	43	5

Exhibit 9: Scheme wise sampling of UHS beneficiaries

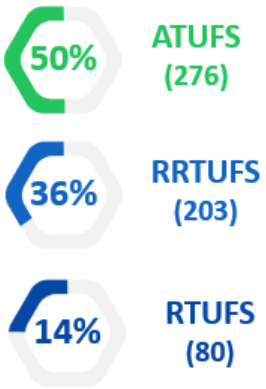
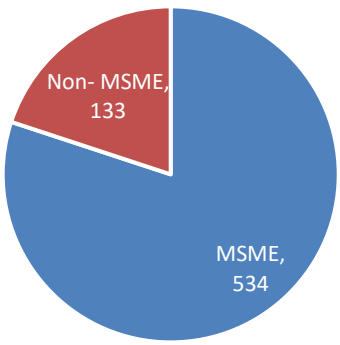


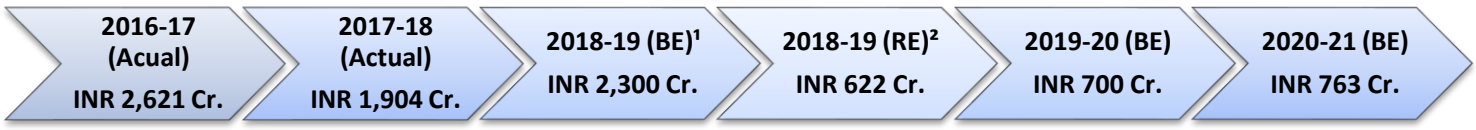
Exhibit 10 Scale wise sampling of UHS



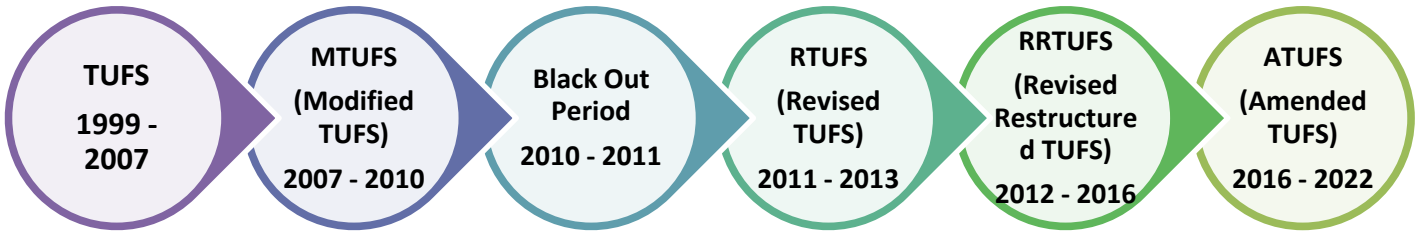
3.3 TUFS OVERVIEW

3.3.1 Overall Scheme Overview

Ministry of Textiles (MoT) launched Technology Upgradation Fund Scheme (TUFS) w.e.f. 1.4.1999 with an objective to catalyse capital investment for technology upgradation and modernization of the Indian textile industry. This scheme is effective up to March, 2022. A budget provision of INR 17,822 Cr. has been approved for a period of seven years, i.e., from 2015-16 to 2021-22 to meet the committed liabilities of INR 12,671 Cr. and INR 5,151 Cr. for new cases under the scheme. The budget outlay for past 5 years has been as follows:



Since its inception, the scheme has been revised multiple times over the years:



Note: [1] Budgeted Estimate

[2] Revised Estimate

3.3.2 Intended Contribution to Scheme's Outcomes

In order to meet the requirements of organized textile industry for making it globally competitive, a need for amendment of TUF scheme was realized. The intended objective of the amendment was to increase the investment, productivity, quality, employment and exports in textile industry through an efficient credit linked investment subsidy scheme. The scheme was also expected to focus on import substitution. The following projections were anticipated under the proposed ATUFS:

Exhibit 11: Anticipated Projections under A-TUFS

S. No.	Particulars	Garmenting/ Technical Textiles (15% CIS)	Weaving for brand new shuttle-less loom (including weaving preparatory and knitting) and/ processing (10% CIS)	Total
1	No. of Cases	6,082	11,181	17,263
2	Investment (Rs. Crores)	36,260	59,690	95,950
3	Term Loan Sanctioned Amount (Rs. Crores)	23,569	38,798	62,367
4	Term Loan eligible under TUFS (Rs. Crores)	21,756	35,814	57,570
5	Anticipated Subsidy Claim Under the Proposed Schemes (Rs. Crores)	2,690	3,581	6,271
6	Employment	3,051,292	511,124	3,562,416

Source: ToR, NITI Aayog

3.4 Demand Analysis - Beneficiaries under RTUFS

3.4.1 Number of Beneficiaries under RTUFS

Geography-Wise and Scale-Wise

Gujarat and Punjab had 68% of total beneficiaries during RTUFS. The share of MSMEs in Gujarat was 88% during RTUFS

Exhibit 12: No. of Beneficiaries (RTUFS) - Geography and Scale Wise

State	MSME	Share	Non-MSME	Share	Total	Share
	No.	%	No.	%	No.	%
Gujarat	***1,683***	***88%***	***230***	***12%***	***1,913***	***52%***
Punjab	496	83%	103	17%	599	16%
Tamil Nadu	201	62%	125	38%	326	9%
Maharashtra	193	66%	100	34%	293	8%
Haryana	97	82%	21	18%	118	3%
Rajasthan	50	48%	55	52%	105	3%
Other	145	42%	204	58%	349	9%
Total	**2,865**	**77%**	**838**	**23%**	**3,703**	**100%**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

***Note**: Demand analysis indicates the popularity of the TUFS scheme among the unit holder. The popularity of the scheme is measured by analysing the number of applications and beneficiaries under various TUFS Schemes.*

Segment-Wise and Scale-Wise

Weaving/ Knitting had 48% of total beneficiaries during RTUFS. The share of MSMEs for Weaving / Knitting segments was 93%

Exhibit 13: No. of Beneficiaries (RTUFS)- Segment and Scale Wise

Segment	MSME	Share	Non-MSME	Share	Total	Share
	No.	%	No.	%	No.	%
Weaving/ Knitting	***1,644***	***93%***	***122***	***7%***	***1,766***	***48%***
Garmenting	522	91%	54	9%	576	16%
Processing	292	62%	181	38%	473	13%
Spinning	123	32%	262	68%	385	10%
Technical Textiles	178	63%	104	37%	282	8%
Other	106	48%	115	52%	221	6%
Total	**2,865**	**77%**	**838**	**23%**	**3,703**	

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

3.5 Demand Analysis - Beneficiaries under RRTUFS

3.5.1 Number of Beneficiaries under RRTUFS

Geography-Wise and Scale-Wise

Gujarat and Punjab had 48% of total beneficiaries during RRTUFS. The share of MSMEs in Gujarat and Punjab was 70% during RRTUFS

Exhibit 14: No. of Beneficiaries (RRTUFS)- Geography and Scale Wise

State	MSME	Share	Non-MSME	Share	Total	Share
	No.	%	No.	%	No.	%
Gujarat	***669***	***60%***	***449***	***40%***	***1,118***	***28%***
Punjab	***688***	***85%***	***120***	***15%***	***808***	***20%***
Tamil Nadu	*430*	*56%*	*337*	*44%*	*767*	*19%*
Maharashtra	200	55%	164	45%	364	9%
Haryana	128	68%	60	32%	188	5%
Rajasthan	67	44%	86	56%	153	4%
Uttar Pradesh	59	67%	29	33%	88	2%
Other	182	39%	280	61%	462	12%
Total	**2,423**	**61%**	**1,525**	**39%**	**3,948**	

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

Segment-Wise and Scale-Wise

Garmenting and Processing had 44% of total beneficiaries during RRTUFS. The share of MSMEs for Garmenting and Processing segments was 81% of total beneficiaries during RRTUFS

Exhibit 15: No. of Beneficiaries (RRTUFS)- Segment and Scale Wise

Segment	MSME	Share	Non-MSME	Share	Total	Share
	No.	%	No.	%	No.	%
Garmenting	***985***	***90%***	***108***	***10%***	***1,093***	***28%***
Processing	***450***	***66%***	***230***	***34%***	***680***	***17%***
Spinning	143	23%	488	77%	631	16%
Multi-Activity	129	26%	375	74%	504	13%
Technical Textiles	250	58%	183	42%	433	11%
Weaving/ Knitting	302	71%	122	29%	424	11%
Others	164	90%	19	10%	183	5%
Total	**2,423**	**61%**	**1,525**	**39%**	**3,948**	

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

3.6 Demand Analysis - Applications under ATUFS*

3.6.1 Number of Applications under ATUFS

Geography-Wise

Gujarat, Maharashtra, Punjab, and Tamil Nadu have attracted the highest demand for ATUFS applications

Exhibit 16: No. of Applicants (ATUFS) - Geography-Wise

State	No. of Applicants	Share (%)
Gujarat	***6,294***	***52%***
Karnataka	186	2%
Maharashtra	***1,493***	***12%***
Punjab	***1,209***	***10%***
Rajasthan	349	3%
Tamil Nadu	***1,227***	***10%***
Uttar Pradesh	274	2%
Other	1,041	9%
Total	**12,073**	**100%**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

*As on 25th May 2020

Segment-Wise

Weaving, Garmenting, and Processing have witnessed higher demand for ATUFS

Exhibit 17: No. of Applicants (ATUFS) - Segment-Wise

Segment	No. of Applicants	Share (%)
Weaving	***6,304***	***52%***
Garmenting	***1,682***	***14%***
Processing	***1,304***	***11%***
Technical Textiles	1035	9%
Multi-Activity	951	8%
Other	797	7%
Total	**12,073**	**100%**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

Scale – Wise

Higher demand for ATUFS has come from MSME sector i.e 87% of total, contrary to previous TUF scheme

Exhibit 18: No. of Applicants (ATUFS) - Scale-Wise

Scale	No. of Applicants	Share (%)
MSME	10,512	87%
Non-MSME	1,561	13%
Total	**12,073**	**100%**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

Geography-Wise and Scale-Wise

Gujarat, Maharashtra, Punjab, and Tamil Nadu have higher no. of ATUFS applications, and have witnessed greater percentage of applications from MSME sector vis-à-vis Non-MSME sector

Exhibit 19: No. of Applicants (ATUFS) - Geography and Scale Wise

State	MSME	Share	Non-MSME	Share	Total
	No.	%	No.	%	No.
Gujarat	***5,776***	***92%***	***518***	***8%***	***6,294***
Karnataka	122	66%	64	34%	186
Maharashtra	***1,365***	***91%***	***128***	***9%***	***1,493***
Punjab	***1,082***	***89%***	***127***	***11%***	***1,209***
Rajasthan	254	73%	95	27%	349
Tamil Nadu	***997***	***81%***	***230***	***19%***	***1,227***
Uttar Pradesh	231	84%	43	16%	274
Other	685	66%	356	34%	1,041
Total	**10,512**	**87%**	**1,561**	**13%**	**12,073**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

Segment-Wise and Scale-Wise

The 3 segments that have witnessed the highest no. of ATUFS applications have also witnessed greater percentage of applications from the MSME sector vis-à-vis Non-MSME, with weaving segment having the highest share of 95%

Exhibit 20: No. of Applicants (ATUFS) - Segment and Scale Wise

Segment	MSME	Share	Non-MSME	Share	Total
	No.	%	No.	%	No.
Weaving	***5,992***	***95%***	***312***	***5%***	***6,304***
Garmenting	***1,523***	***91%***	***159***	***9%***	***1,682***
Processing	***952***	***74%***	***331***	***26%***	***1,283***
Technical Textiles	***731***	***67%***	***352***	***33%***	***1,083***
Multi-Activity	637	67%	314	33%	951
Other	677	88%	93	12%	770
Total	**10,512**	**87%**	**1,561**	**13%**	**12,073**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

3.6.2 Number of Beneficiaries under ATUFS

Geography-Wise

Gujarat, Maharashtra, and Tamil Nadu have the most beneficiaries for ATUFS applications

Exhibit 21: No. of Beneficiaries (ATUFS) - Geography-Wise

State	No. of Beneficiaries	Share (%)
Gujarat	***392***	***47%***
Karnataka	19	2%
Maharashtra	***131***	***16%***
Punjab	38	5%
Rajasthan	26	3%
Tamil Nadu	***176***	***21%***
Uttar Pradesh	10	1%
Other	51	6%
Total	**843**	**100%**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

*As on 25th May 2020

Segment-Wise

Weaving, Processing and Others have witnessed most beneficiaries for ATUFS

Exhibit 22: No. of Beneficiaries (ATUFS) - Segment-Wise

Segment	No. of Beneficiaries	Share (%)
Weaving	***600***	***71%***
Garmenting	15	2%
Processing	***111***	***13%***
Technical Textiles	13	2%
Other	***104***	***12%***
Total	**843**	**100%**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

Scale – Wise

More beneficiaries for ATUFS have been availed by MSME sector i.e. 87% of total, contrary to previous TUF scheme

Exhibit 23: No. of Beneficiaries (ATUFS) - Scale-Wise

Scale	No. of Beneficiaries	Share (%)
MSME	730	87%
Non-MSME	113	13%
Total	**843**	**100%**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

Geography-Wise and Scale-Wise

Gujarat, Maharashtra, and Tamil Nadu have higher no. of ATUFS beneficiaries, and have witnessed greater percentage of beneficiaries from MSME sector vis-à-vis Non-MSME sector

Exhibit 24: No. of Beneficiaries (ATUFS) - Geography and Scale Wise

State	MSME	Share	Non-MSME	Share	Total
	No.	%	No.	%	No.
Gujarat	***347***	***89%***	***40%***	***11%***	***392***
Karnataka	19	100%	0%	0%	19
Maharashtra	***127***	***97%***	***4%***	***3%***	***131***
Punjab	30	79%	7%	21%	38
Rajasthan	14	54%	11%	46%	26
Tamil Nadu	***153***	***87%***	***20%***	***13%***	***176***
Uttar Pradesh	7	70%	3%	30%	10
Other	33	65%	16%	35%	51
Total	**730**	**87%**	**113**	**13%**	**843**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

Segment-Wise and Scale-Wise

The 2 segments that have witnessed the highest no. of ATUFS beneficiaries have also witnessed greater percentage of beneficiaries from the MSME sector vis-à-vis Non-MSME, with weaving segment having the highest share of 92%

Exhibit 25: No. of Beneficiaries (ATUFS) - Segment and Scale Wise

Segment	MSME	Share	Non-MSME	Share	Total
	No.	%	No.	%	No.
Weaving	***552***	***92%***	***48***	***8%***	***600***
Garmenting	14	93%	1	7%	15
Processing	**89**	**80%**	**22**	**20%**	**111**
Technical Textiles	7	54%	6	46%	13
Other	68	65%	36	35%	104
Total	**730**	**87%**	**113**	**13%**	**843**

Source: Office of Textile Commissioner, Ministry of Textiles, Technopak Analysis

Summary

Gujarat and Punjab had 68% of total beneficiaries during RTUFS. The share of MSMEs in Gujarat was 88% during RTUFS. Weaving/ Knitting had 48% of total beneficiaries during RTUFS. The share of MSMEs for Weaving / Knitting segments was 93%.

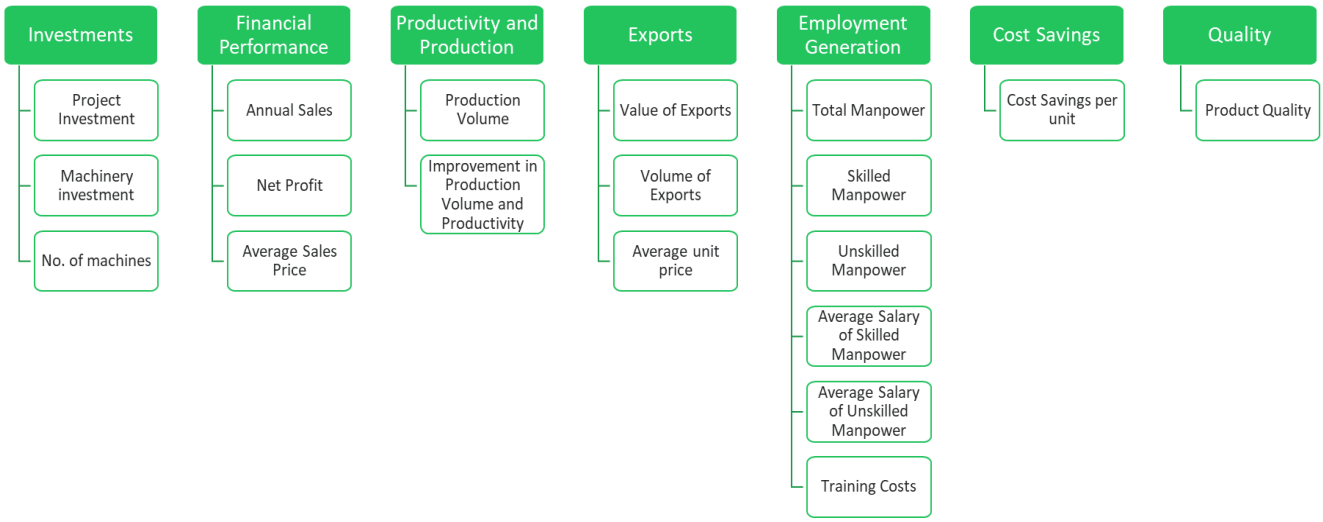
Gujarat and Punjab had 48% of total beneficiaries during RRTUFS. The share of MSMEs in Gujarat and Punjab was 70% during RRTUFS. Garmenting and Processing had 44% of total beneficiaries during RRTUFS. The share of MSMEs for Garmenting and Processing segments was 81% of total beneficiaries during RRTUFS.

Higher demand (no. of applications) for ATUFS has come from 4 states, namely, Gujarat, Maharashtra, Punjab, and Tamil Nadu majorly from MSME sector. Weaving segment witnessed highest number (52% of total) of applications under ATUFS majorly from MSME sector.

Contrary to previous TUFS, actual beneficiaries under ATUFS are also more from MSME sector. No. of beneficiaries were higher in 3 states, namely, Gujarat (highest at 47%), Maharashtra, and Tamil Nadu. These geographies witnessed greater percentage of beneficiaries from the MSME sector vis-à-vis Non-MSME sector ~ Gujarat - 89%, Maharashtra - 97%, and Tamil Nadu - 87. Gujarat, Maharashtra, and Tamil Nadu combined together had 84% of total ATUFS beneficiaries. Weaving witnessed highest number of beneficiaries under ATUFS ~ 71 % of which 92% beneficiaries were from MSME sector. Higher no. of beneficiaries for ATUFS has come from MSME sector ~ 87% of total.

4. IMPACT OF TUFS (INCLUDES LITERATURE OVERVIEW, KII ANALYSIS, UHS ANALYSIS)

Exhibit 26: Parameters covered under UHS Analysis



4.1 Investments

Past Trend Analysis - Literature Review

- **Technopak Advisors Evaluation Report of TUFS (2006)**

  As per the report, TUF Scheme had a positive impact on investments. Maximum investments were made in spinning, composite upgradation, processing and weaving sectors. Technical textiles grew at a CAGR of 50%. None of the sectors showed negative growth on availing TUF Scheme.

- **CRISIL Evaluation Report of TUFS (2010)**

  In spinning segment approx. 70% of the investments were made towards technology upgradation/machinery replacement. Whereas, in weaving, knitting and garmenting, higher investments were made towards adding capacities. As per the report, the industry needed an investment of INR 47,000 Cr. between 2009-10 and 2011-12 and extra INR 143,000 Cr. in the 12^{th} five-year plan to meet the expected growth in demand.

- **Comptroller and Auditor General of India on Technology Upgradation Fund Scheme (2015)**

  Investments of only INR 1,31,228 Cr. were attracted during the XI Five Year Plan, as against targeted investment of INR 1,50,600 Cr. The shortfall in attracting investments was in spite of increase in financial allocation from INR 10,273 Cr. to INR 15,404 Cr.

- **Wazir Advisors Evaluation Report of RTUFS and RRTUFS (2016)**

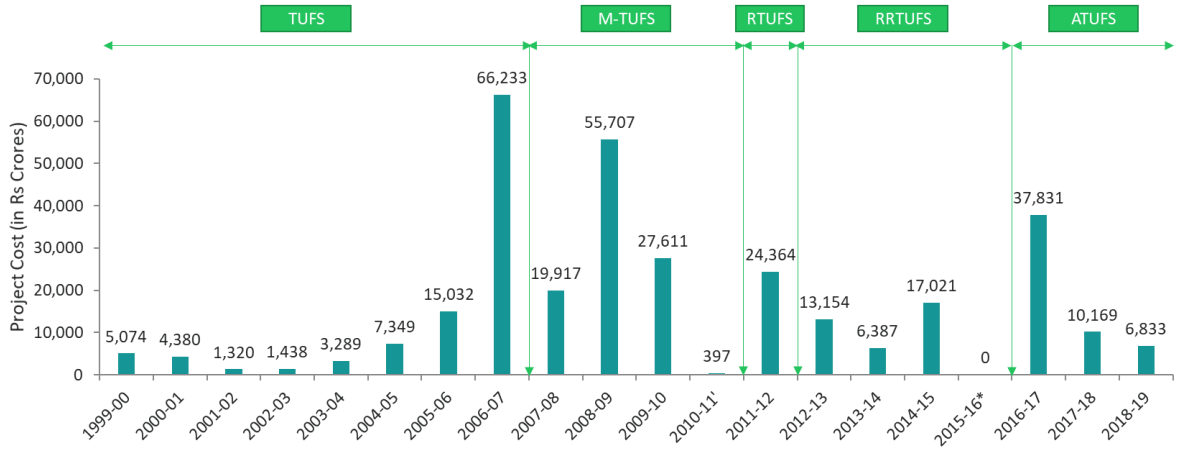
  As per the report, Indian textile industry witnessed a significant amount of investment of INR 61,231 Cr. (as on 29.07.2015) through RTUFS & RRTUFS. Spinning accounted for highest share of investments (25%), followed by processing (11%) and weaving (8%). Gujarat attracted maximum share in investments under the scheme (29%), followed by Punjab (17%). More than 60% beneficiaries used their investments in adding capacities by using upgraded technologies, while others replaced their old machineries with the new ones. Within the scheme benefits, Interest reimbursement (IR) with capital subsidy (CS) benefit together attracted 70% (INR 3,551 Cr.) of the total investment in weaving segment and more than 90% investment in processing, garmenting & technical textile segments. Weaving segment attracted approx. 70% (INR 3,551 Cr.) of the total investment and processing, garmenting & technical textile segments attracted more than 90% of the investments - availing interest subsidy and capital subsidy benefits. 82%

of the total investments within RTUFS & RRTUFS were done by Non-MSME units, which constitute only 24% of total number of RTUFS & RRTUFS beneficiaries. As mentioned in the graph below, most of the investment in textile sector has been happening under TUFS ever since TUFS scheme started in 1999. Total investment under TUFS was approx. 80% of total investment in textile sector. During RTUFS and RRTUFS period, investment under TUFS has reduced to 64% of total investment. This trend clearly indicates that TUFS scheme is widely used by the industry for making investments for capacity addition or new projects

Investment under TUFS - Current Scenario

Average investment from the industry during TUFS is INR 16,175 Crores per year (1999-2019). Average investment in RTUFS, RRTUFS and ATUFS is Rs 13.7 Cr, Rs 5.1 Cr and Rs 4.2 Cr respectively. Investments have reduced over the years in all the segments.

Exhibit 27: Investment Trend under TUF Scheme

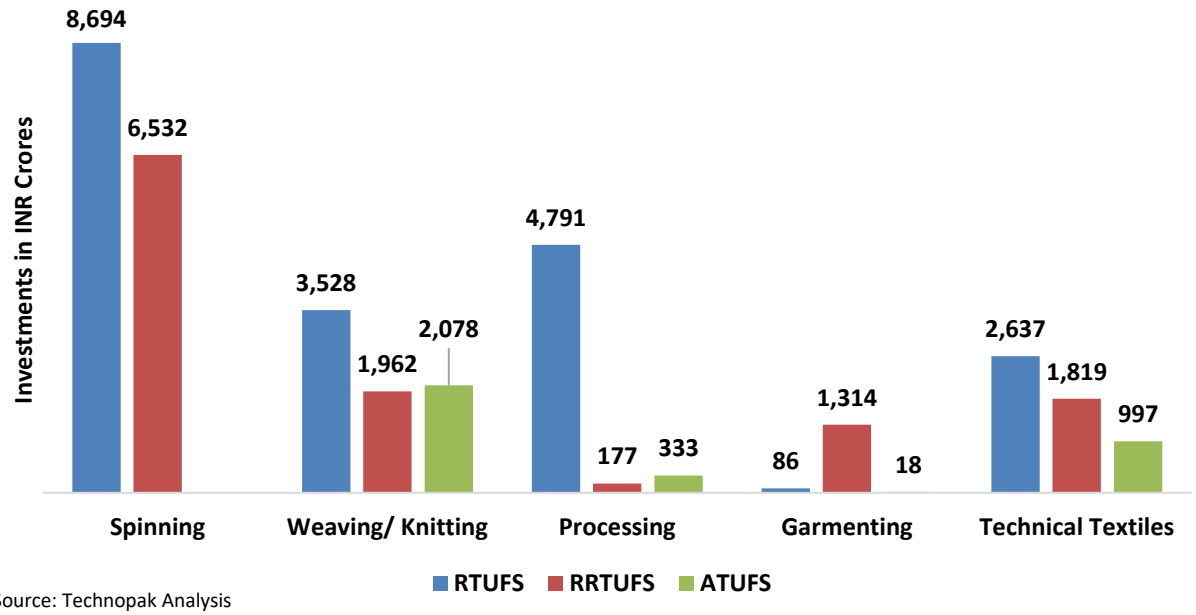


Average investment in TUFS / case in INR Crores	16.4	7.1	3.0	3.2	3.7	7.5	13.9	5.3	8.8	9.2	11.7	1.6	13.6	6.1	10.9	4.2	-	4.3	4.5	3.8
Total investment during schemes	104,115								103,632				24,364	36,562				54,833		
Average investment per year in INR Crores	13,014								25,908				24,364	9,141				18,278		

Note: ' 2010-11 Budgeted subsidy exhausted due to overwhelming response * 2015-16 Data not available

Source: Ministry of Textiles, Technopak Analysis

Exhibit 28: Investment Trend under TUF Scheme Segment-wise



Source: Technopak Analysis

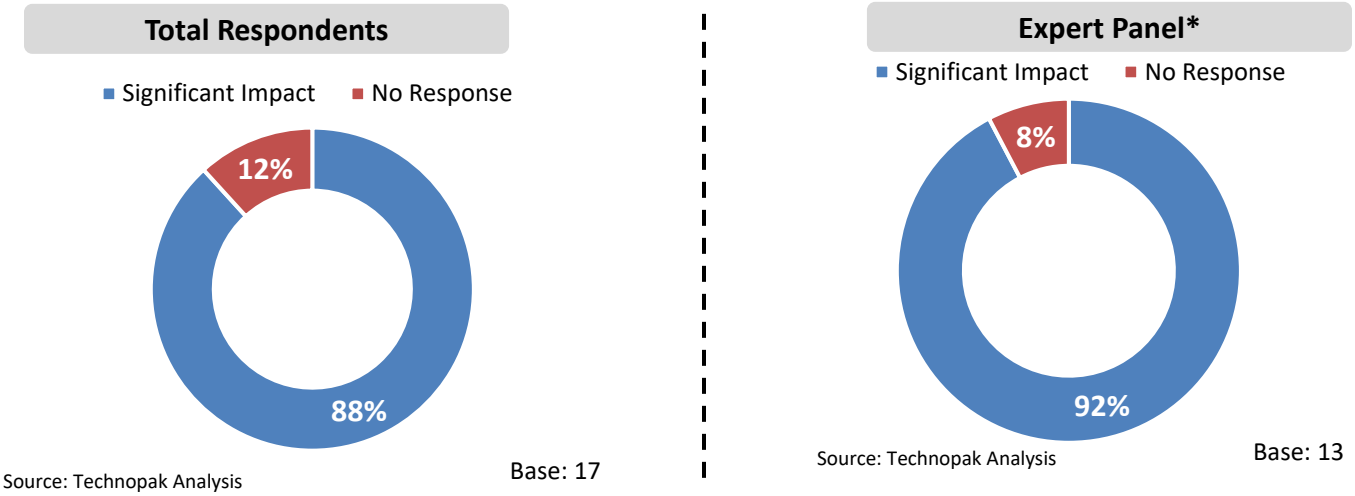
Summary of Total Investments

RTUFS	RRTUFS	ATUFS
INR 37,516 Crores	INR 23,715 Crores	INR 54,833 Crores

KII ANALYSIS

Out of 62 responses, 17 of them (27%) responded to the question asked on impact of TUFS on Indian textile & apparel industry. Out of 17 respondents, 14 (88%) answered that TUFS had a positive impact on Investments. Out of 13 expert views, 12 (92%) opined that TUFS had a significant impact on Investments.

Exhibit 29: Increase in Investments



* Out of 23 Expert Panel, 13 (57%) responded to the question asked on impact of TUFS on Indian textile & apparel industry

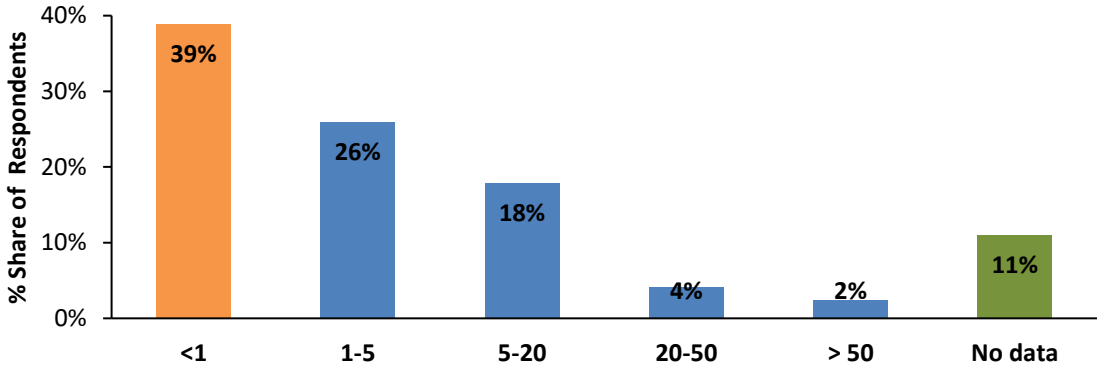
UHS ANALYSIS

Beneficiaries

Project Investment

Out of 556 respondents to the question, 44% witnessed project investment between INR 1 and 20 crores. 39% of the respondents witnessed investment increase of < INR 1 Crores.

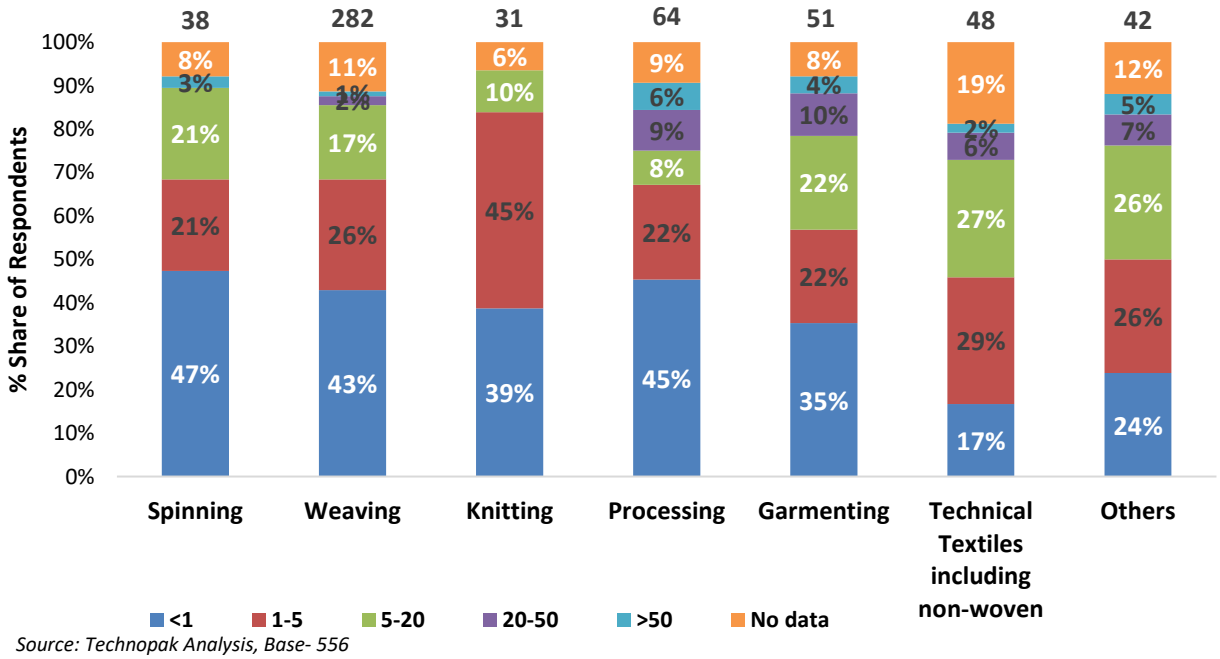
Exhibit 30: Project Investment (in Cr.)



Source: Technopak Analysis, Base-556; Orange indicates highest %

64% of technical textiles' respondents have witnessed project investment over INR 1 crore. 45% of knitting sector's respondents have witnessed investments between INR 1-5 crores. 46% of the respondents in weaving have indicated increase in project investment greater than 1 crore. Processing sector is another sector which is witnessing high investments above INR 5 crores (23% of 64 respondents).

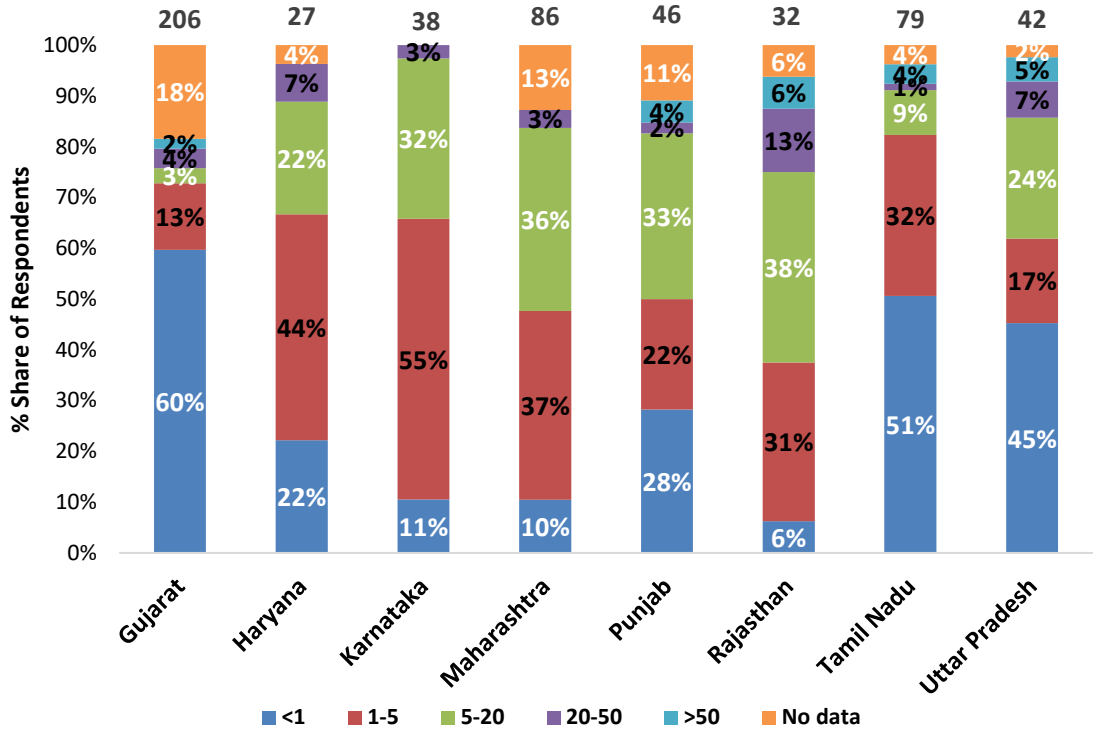
Exhibit 31: Project Investment - Segment Wise



Source: Technopak Analysis, Base- 556

Among states, Karnataka, Maharashtra and Rajasthan have witnessed major investments INR 1-20 Crores. Project Investments in Gujarat are primarily in INR 0-1 Crores (60% of the 206 respondents.

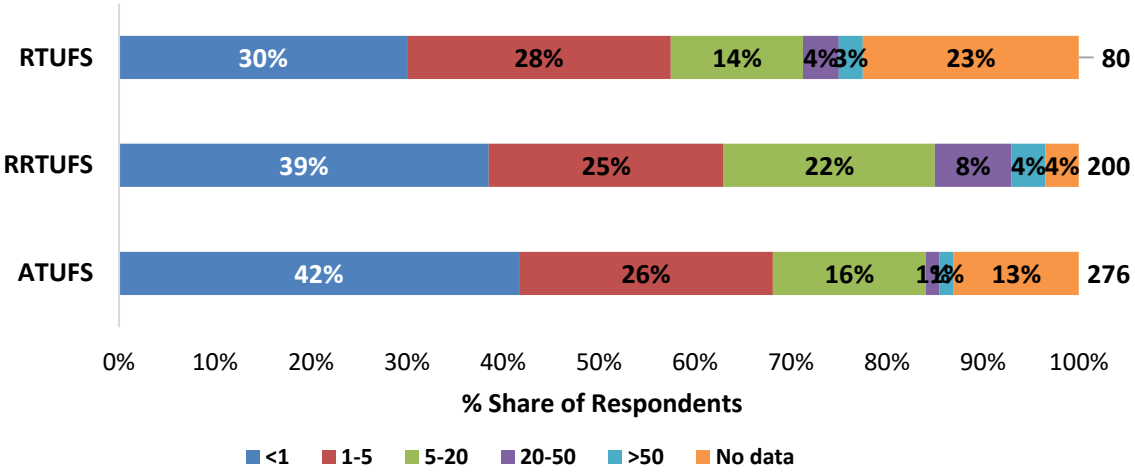
Exhibit 32: Project Investment - Geography Wise



Source: Technopak Analysis, Base- 556

Across schemes, the investments have reduced as 43% of the respondents are saying the project investments during ATUFS is INR 0-1 Crores.

Exhibit 33: Project Investment - Scheme Wise

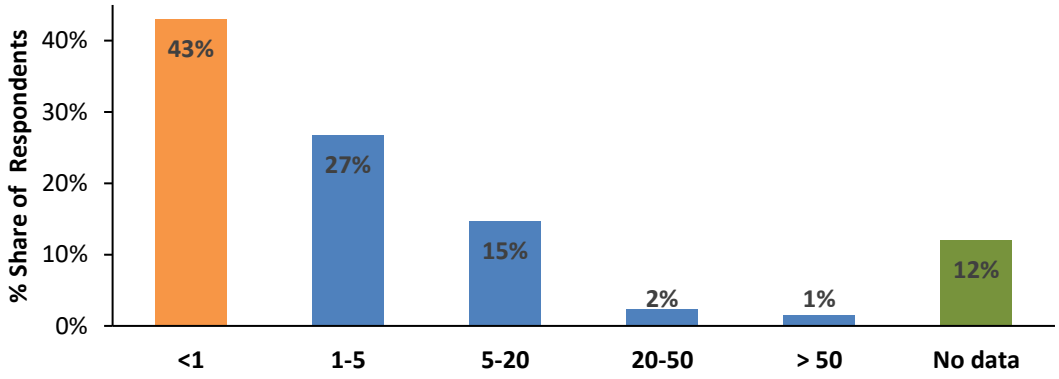


Source: Technopak Analysis, Base- 556

Machinery Investment

Out of 559 respondents to the question, 70% witnessed an increase in machinery investment <INR 5 crores.

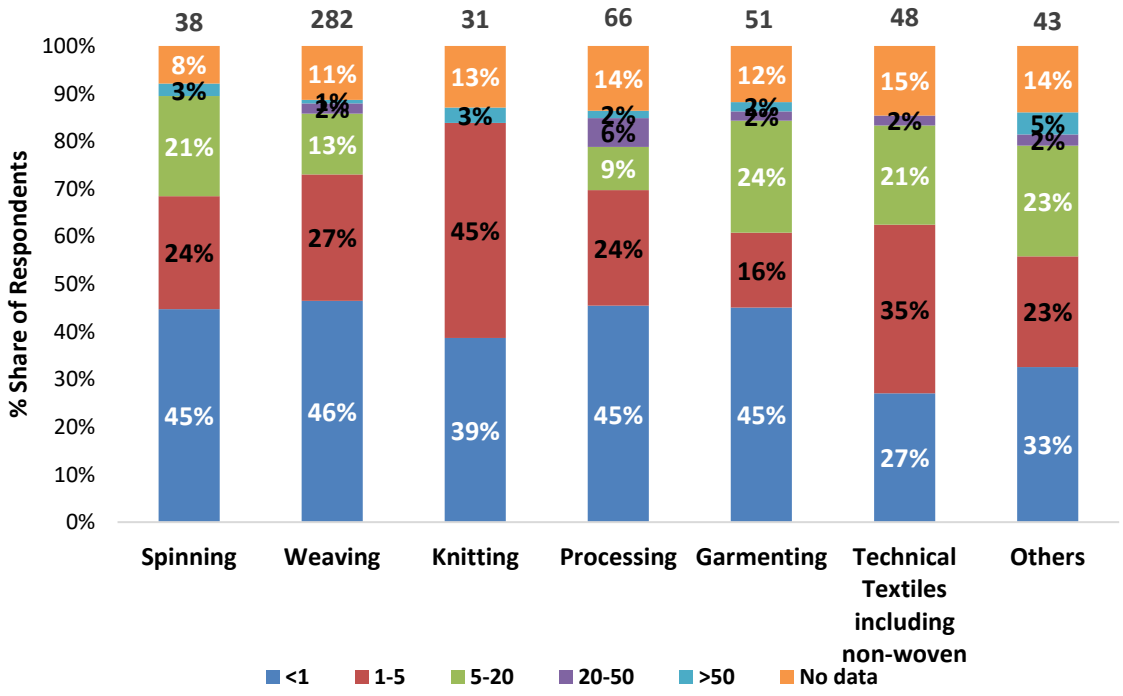
Exhibit 34: Machinery Investment (In Cr.)



Source: Technopak Analysis, Base-559; Orange indicates highest %

58% of Technical textiles' respondents have witnessed machinery investments over INR 1 crore. 45% of Knitting sector's respondents have witnessed machinery investments between INR 1-5 crores. 43% of the respondents in weaving have indicated increase in machinery investment greater than INR 1 crore. This indicates investments were of small scale. Processing sector is another sector which is witnessing high investments above INR 5 crores (17% of 66 respondents).

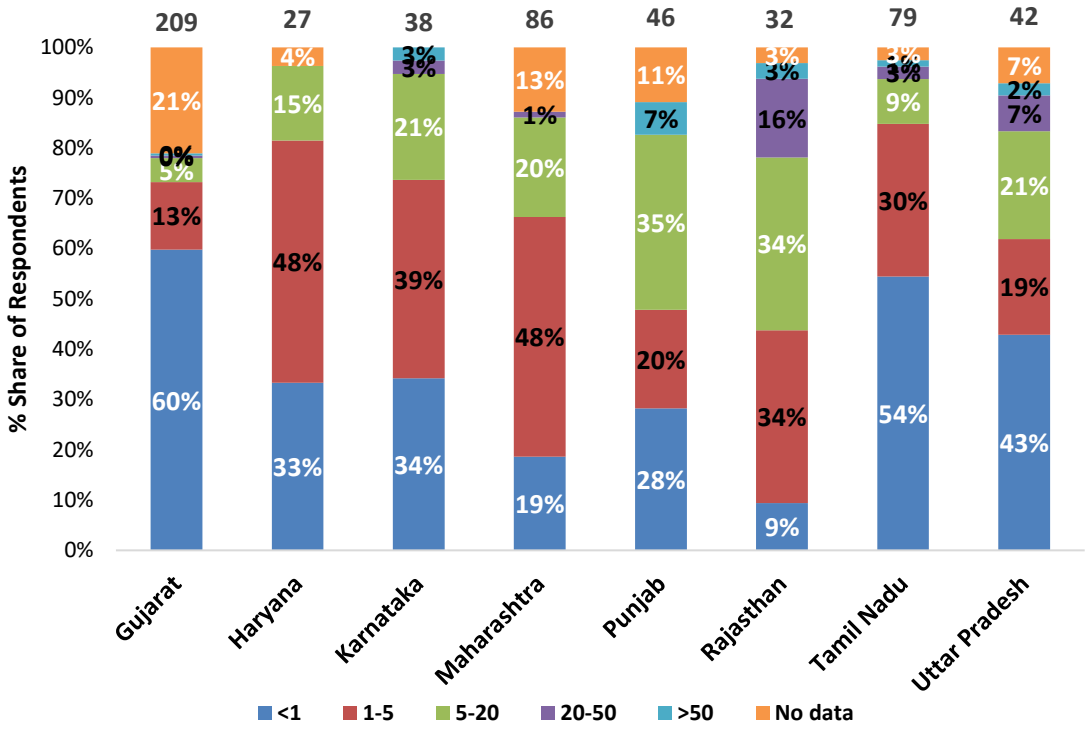
Exhibit 35: Machinery Investment - Segment Wise



Source: Technopak Analysis, Base- 559

Among states, Rajasthan has witnessed major machinery investments between INR 1-20 Crores. Punjab has witnessed significant machinery investments between INR 5-20 Crores. Investments in Gujarat are primarily in INR 0-1 Crores range (60% of the 209 respondents).

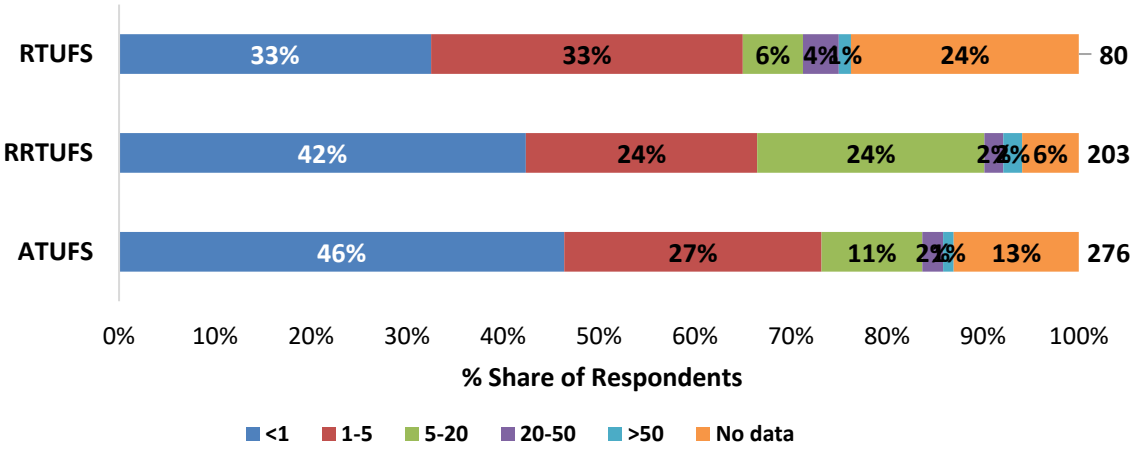
Exhibit 36: Machinery Investment - Geography Wise



Source: Technopak Analysis, Base- 559

Across schemes, the machinery investments have reduced as 46% of the respondents are saying the machinery investments during ATUFS is INR 0-1 Crores.

Exhibit 37 Machinery Investment - Scheme Wise

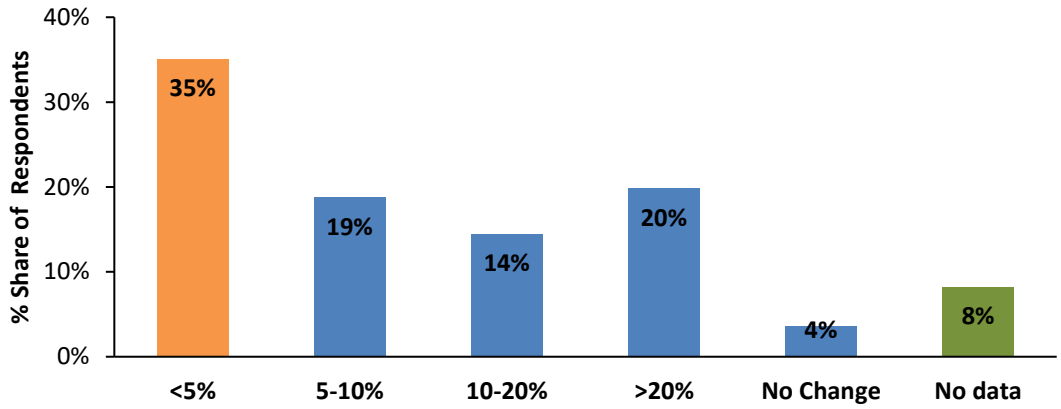


Source: Technopak Analysis, Base- 559

Change in Number of Machineries

Out of the 559 respondents to the question, 33% (19% and 14%) witnessed increase in the number of machineries between 5 and 20%.

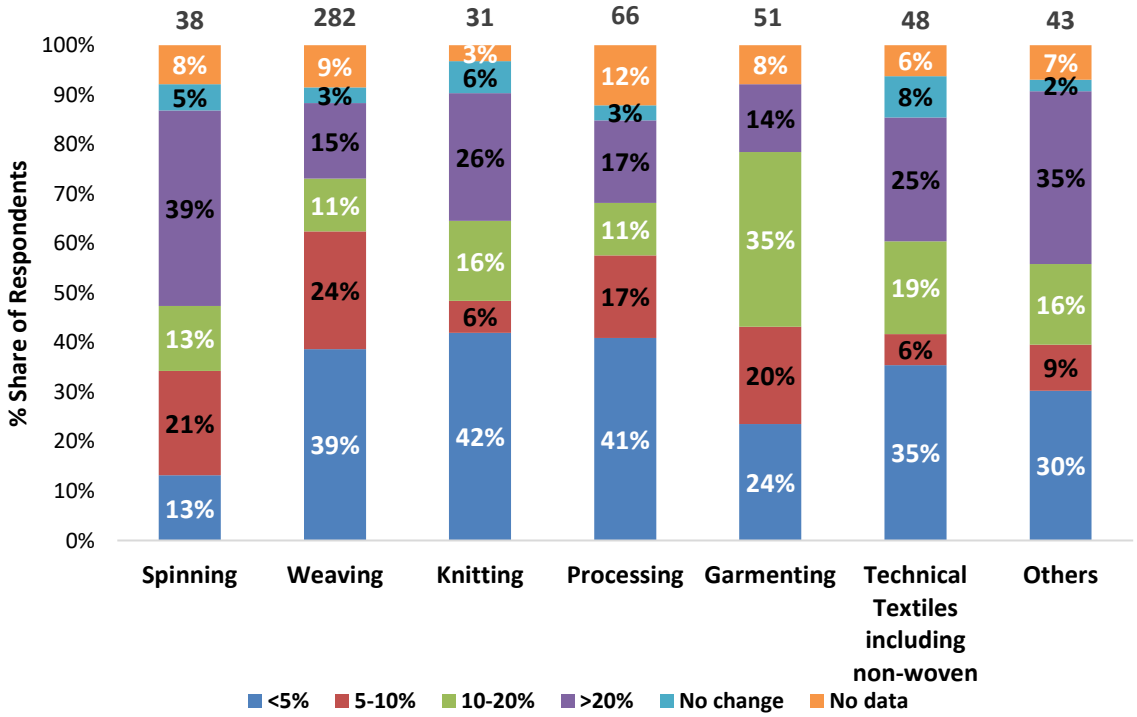
Exhibit 38: Increase in No. of Machineries



Source: Technopak Analysis, Base-559; Orange indicates highest %

Spinning's respondents have witnessed the highest increase (39%) in number of machineries >20%. Garmenting, Knitting and others have also witnessed a high increase in number of machineries >10%.

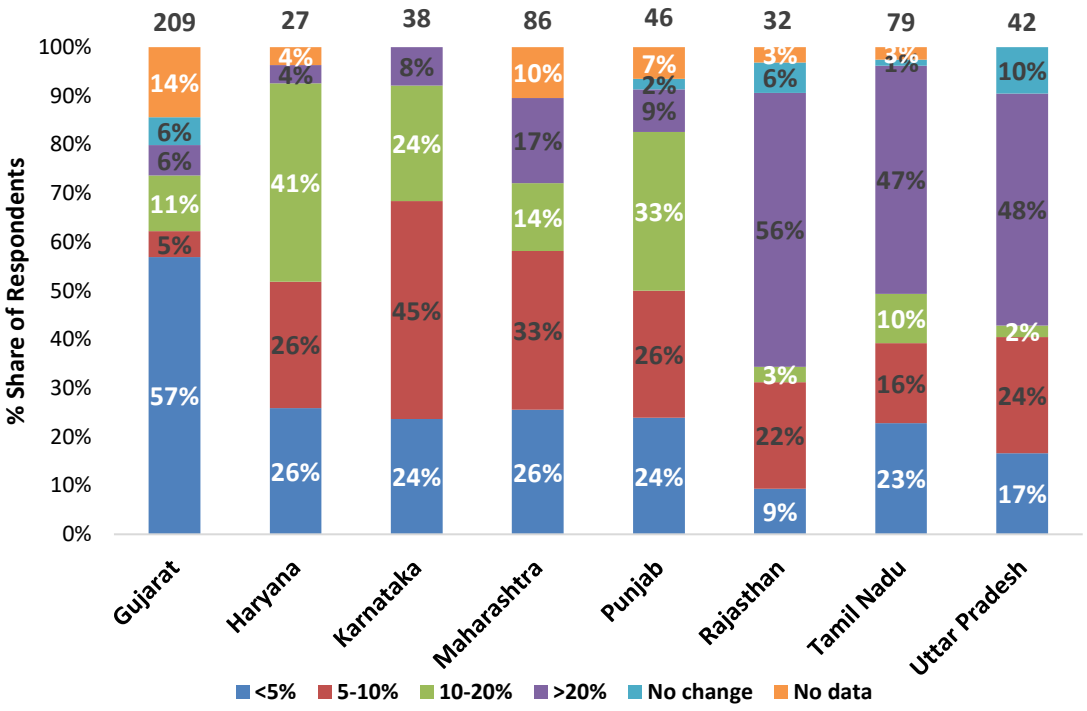
Exhibit 39: Increase in No. of Machines (%) - Segment Wise



Source: Technopak Analysis, Base- 559

Among states, Rajasthan, Tamil Nadu and Uttar Pradesh have witnessed high percentage increase in machineries of >20% due to TUFS. Gujarat has witnessed lesser increase in machineries (0-5%) responded by 57% of the 209 respondents.

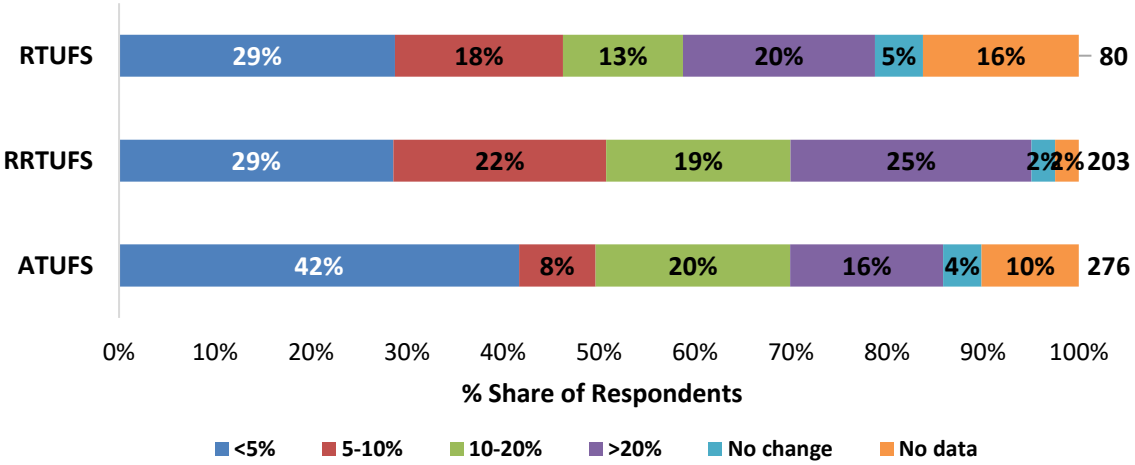
Exhibit 40: Increase in No. of Machines (%) - Geography Wise



Source: Technopak Analysis, Base- 559

Across schemes, the highest increase in machineries was exhibited during RRTUFS scheme with 44% of the respondents (19%+25%) suggesting changes greater than 10%.

Exhibit 41: Increase in No. of Machines (%) - Scheme Wise



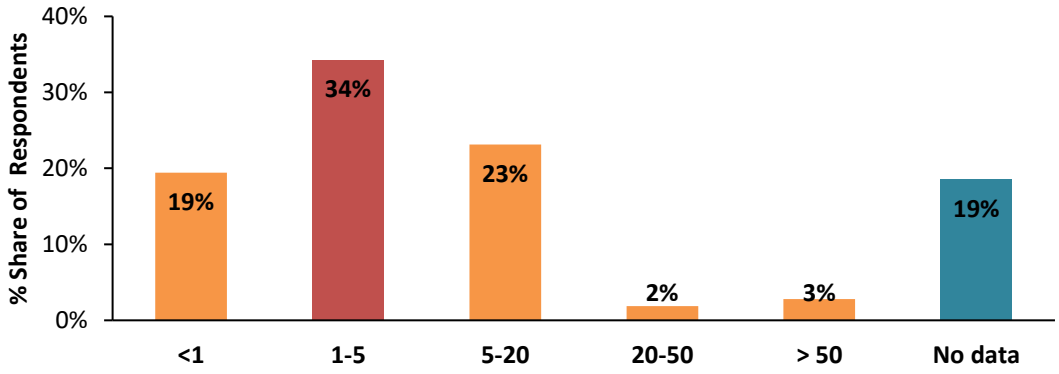
Source: Technopak Analysis, Base- 559

Non-Beneficiaries

Project Investment

Out of 108 non beneficiaries who responded to the question, 57% witnessed project investment between INR 1 and 20 crores.

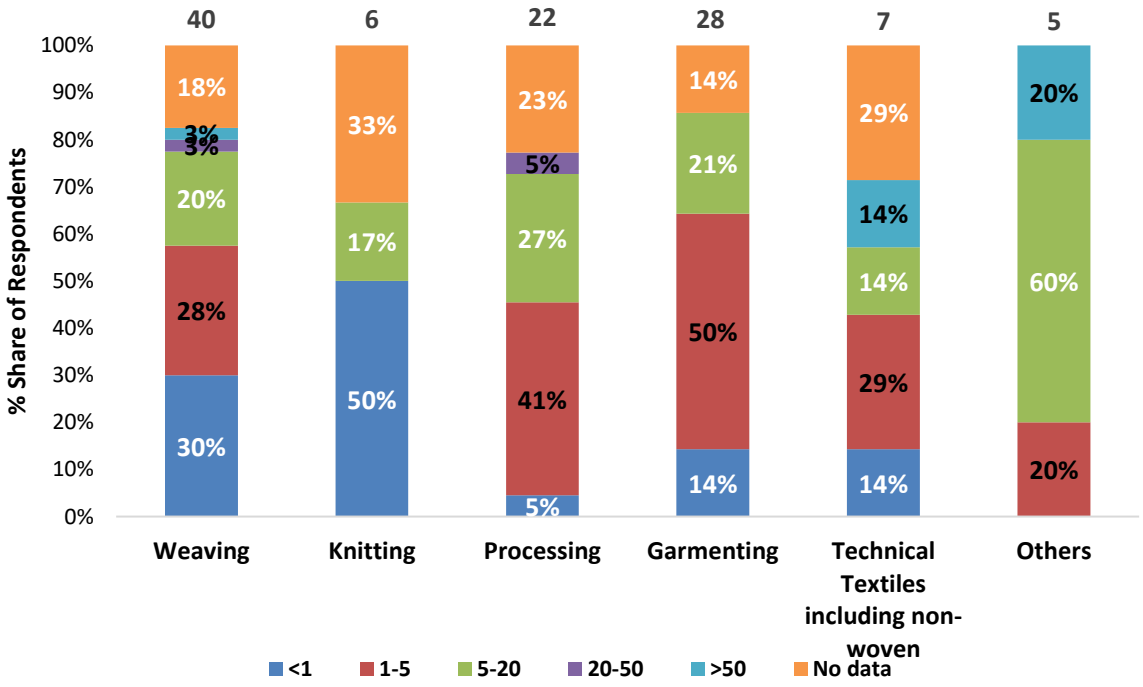
Exhibit 42: Project Investment (in Cr.)



Source: Technopak Analysis, Base- 108; Red indicates highest %

71% of Garmenting respondents have witnessed project investment between INR 1-20 crores. 32% of Processing sector's respondents have witnessed investments between INR 5-50 crores. 48% of the respondents in weaving have indicated increase in project investment between INR 1-20 crores.

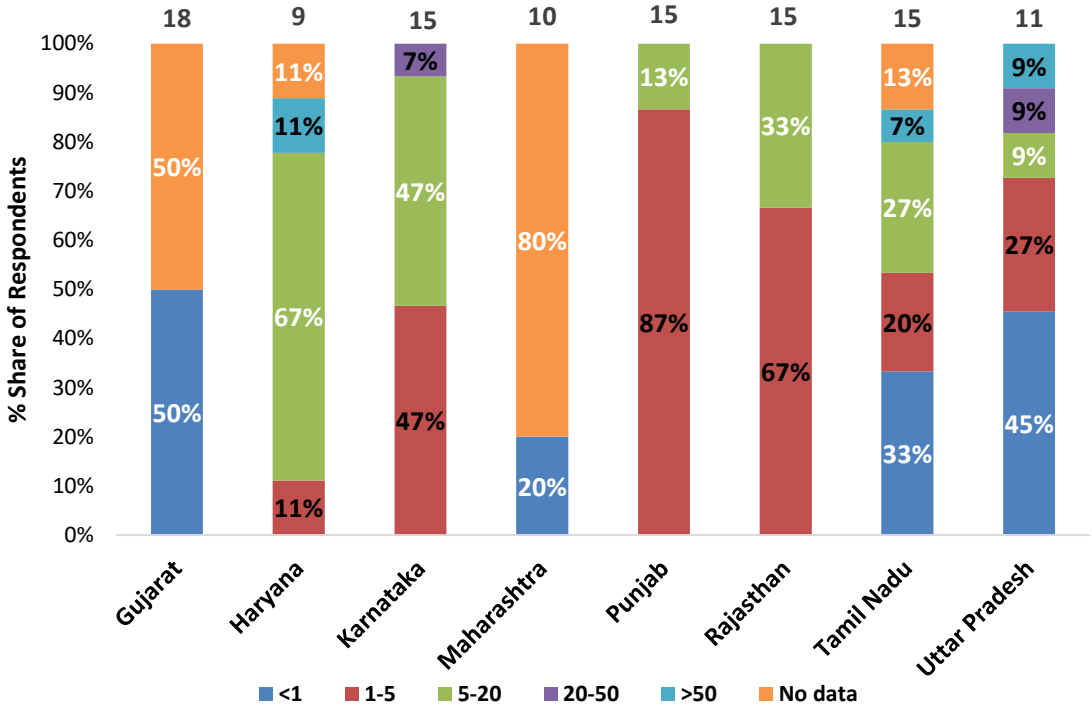
Exhibit 43: Project Investment - Segment Wise



Source: Technopak Analysis, Base- 108

Among states, 80% non-beneficiaries respondents of Maharashtra have witnessed major investments INR 5-20 Crores. Project Investments in Gujarat are <INR 1 Crore.

Exhibit 44: Project Investment - Geography Wise

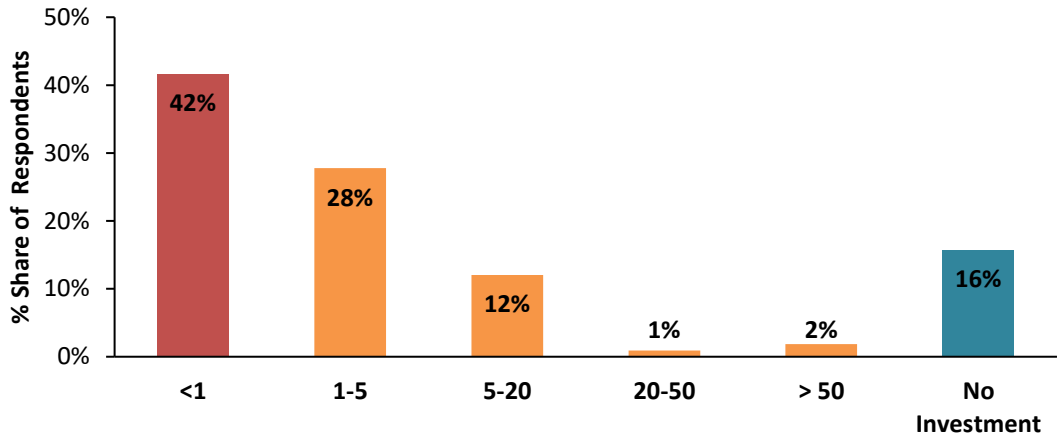


Source: Technopak Analysis, Base- 108

Machinery Investment

Out of 108 non beneficiaries who responded to the question, 70% witnessed an increase in machinery investment <INR 5 crores.

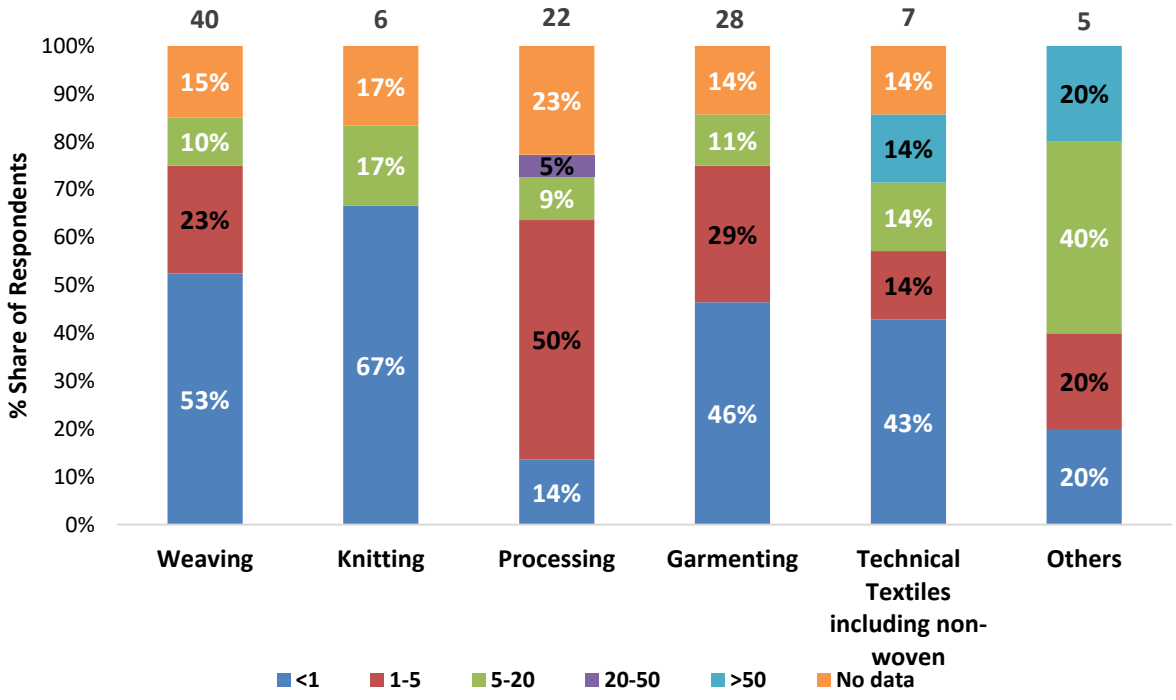
Exhibit 45: Machinery Investment (In Cr.)



Source: Technopak Analysis, Base-108; Red indicates highest %

59% of Processing segment's respondents have witnessed machinery investments between INR 1-20 crores. 17% of Knitting sector's respondents have witnessed machinery investments between INR 5-20 crores. 33% of the respondents in weaving have indicated increase in machinery investment between INR 1-20 crores.

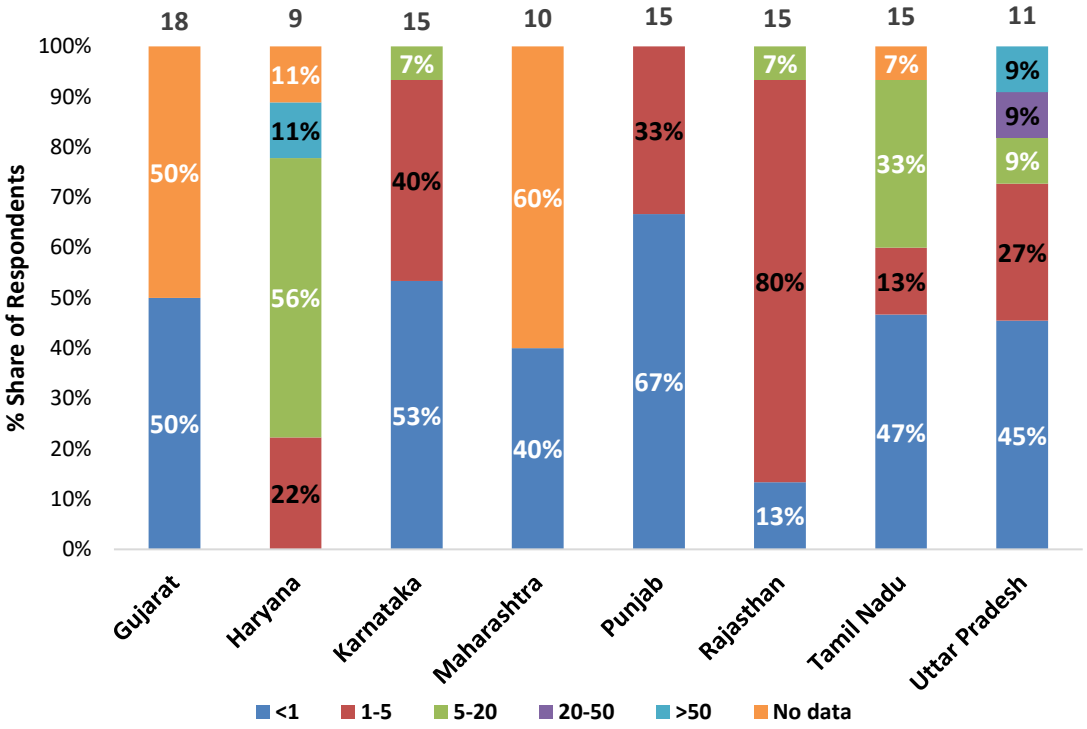
Exhibit 46: Machinery Investment - Segment Wise



Source: Technopak Analysis, Base- 108

Among states, 80% non-beneficiary respondents in Rajasthan has witnessed machinery investments between INR 1-5 Crores. Haryana has witnessed significant machinery investments between INR 5-20 Crores. Investments in Gujarat are less than INR 1 Crore.

Exhibit 47: Machinery Investment - Geography Wise

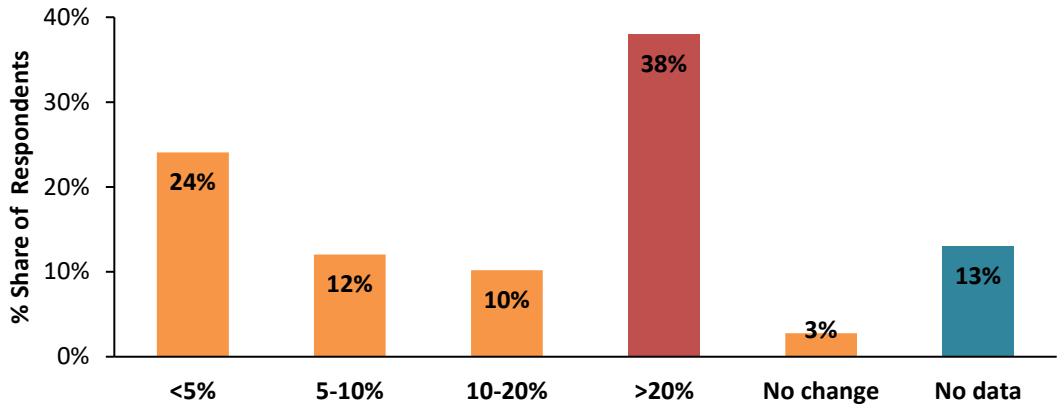


Source: Technopak Analysis, Base- 108

Change in Number of Machineries

Out of the 108 non-beneficiaries who responded to the question, 38% witnessed increase in the number of machineries greater than 20%.

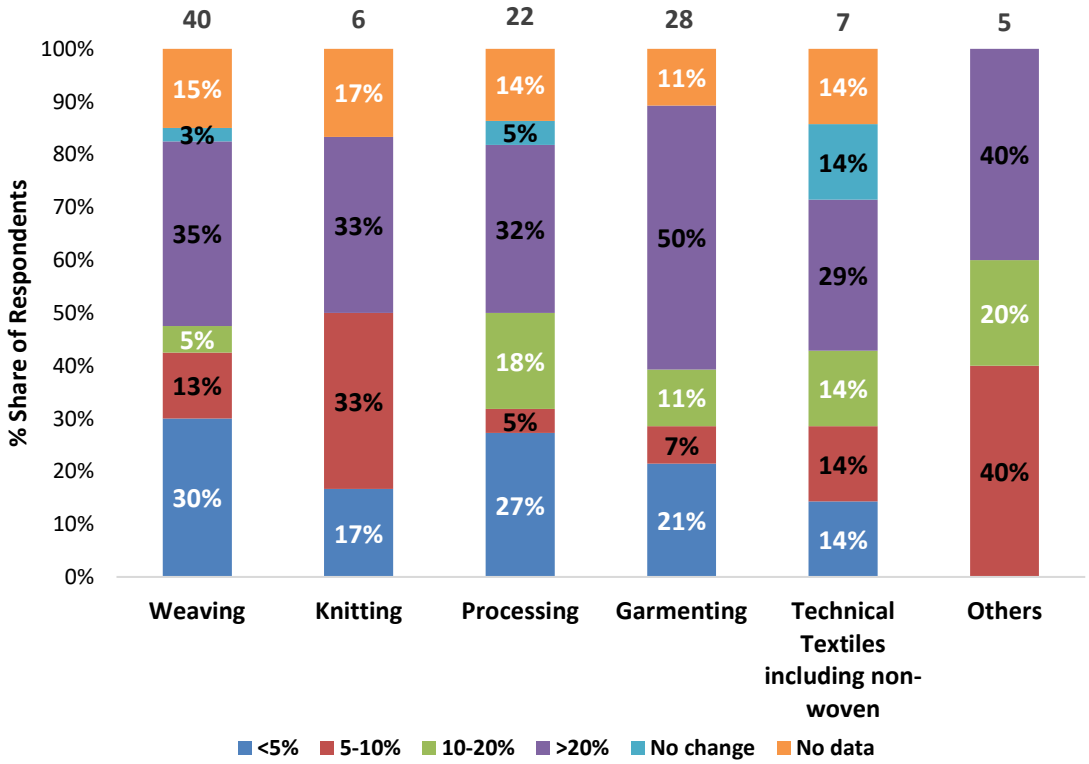
Exhibit 48 Increase in No. of Machineries



Source: Technopak Analysis, Base-108; Red indicates highest %

Garmenting's respondents have witnessed the highest increase in number of machineries >20%. Processing segment has also witnessed a high increase in number of machineries >10%.

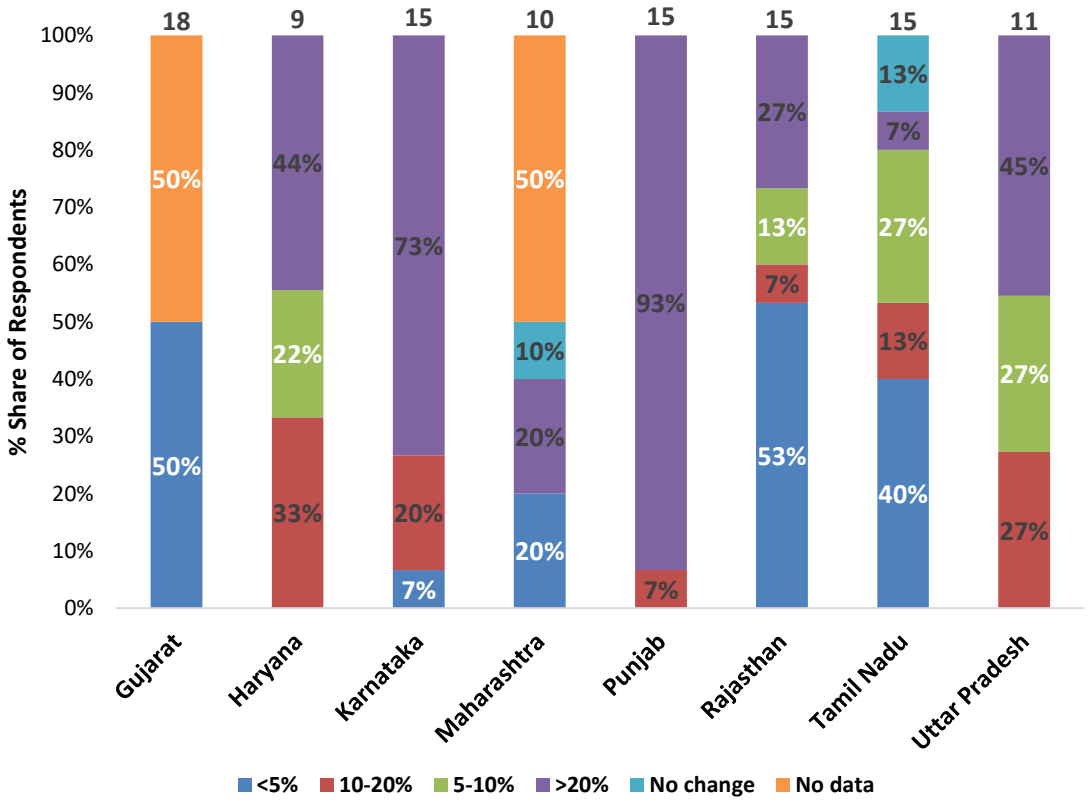
Exhibit 49 Increase in No. of Machines (%) - Segment Wise



Source: Technopak Analysis, Base- 108

Among states, majority Punjab's non beneficiary respondents have witnessed highest percentage increase in machineries of >20% due to TUFS. Gujarat has witnessed lesser increase in machineries (0-5%) responded by 50% of the 18 respondents.

Exhibit 50: Increase in No. of Machines (%) - Geography Wise



Source: Technopak Analysis, Base- 108

Summary of Impact on Investments

Literature review indicates that most of the investment in textile sector has been happening under TUFS ever since TUFS scheme started in 1999. Total investment under TUFS was approx. 80% of total investment in textile sector from 1999 to 2016.

As per the KII analysis, 82% opined that TUFS had a positive impact on investments, whereas as per the expert panel 92% believed that TUFS had a significant impact on investments.

During the UHS survey, out of 556 beneficiaries, 44% witnessed project investment between INR 1 and 20 crores, whereas out of 108 non beneficiaries, 57% witnessed project investment in the same range. The impact on project investment though positive has been moderate in terms of scale, with only 2% projects reporting investments to the tune of Rs 50 Cr and more. While, 44 % beneficiaries reported investments in the scale of Rs 1-20 Cr and 39% are less than Rs 1 Cr. 88% beneficiaries have witnessed an increase in the number of machineries due to the investments done during TUFS.

4.2 Financial Performance

Past Trend Analysis - Literature Review

- **Prof. Dr. M.D. Teli, Head of Department of Fibers & Textile Processing Technology on Technology Upgradation Fund Scheme (2003)**

  Domestic turnover across all segments varied between 0 % and 69% - at an average of 33%. The increase in total annual turnover was on an average at 36%. Average increase in operating profits was at an average of 15% across all the segments - varying between 0% and 30%, whereas average increase in net profit was approx. 8%. As a result, it was evident that TUF Scheme had a positive impact on the financial performance of the segments.

- **Technopak Advisors Evaluation Report of TUFS (2006)**

  As per the report, under 20% Credit Linked Capital Subsidy Scheme, the domestic turnover of companies increased significantly - more than 60% of organizations increased their turnover by more than 50%. After installing modern machineries under TUFS, domestic turnover of half of the companies grew by more than 100%. Segments such as garmenting, weaving, knitting, made-ups and processing witnessed small increase in net profit. Jute industry witnessed net profit increase to a very high level. In spinning, approx. one-third of the replies were for no or low increase in net profit.

- **NCEUS Evaluation Report on Impact of TUFS on the Unorganized Sector (2009)**

  An important barrier in the adoption of upgraded technology was lack of financial resources with the units. In several cases, the cost of technology made it difficult for small units to obtain modern technology. A large number of SSI units reported difficulty in obtaining sufficient funds from banks and financial institutions. There was also lack of awareness about the credit guarantee scheme. Factors such as lack of awareness and information about the availability of technology, desire to avoid risk of adoption of upgraded technology, low level of indigenous R&D, inadequate management skills and non-availability of technically qualified manpower to operate upgraded machineries were some of the other barriers. TUFS was not very effective from the point view of small units.

- **Wazir Advisors Evaluation Report of RTUFS and RRTUFS (2016)**

  Companies witnessed improved financial health because of reduced cost of capital and improved margins & turnovers of the textile companies. Since then, the propensity of on time

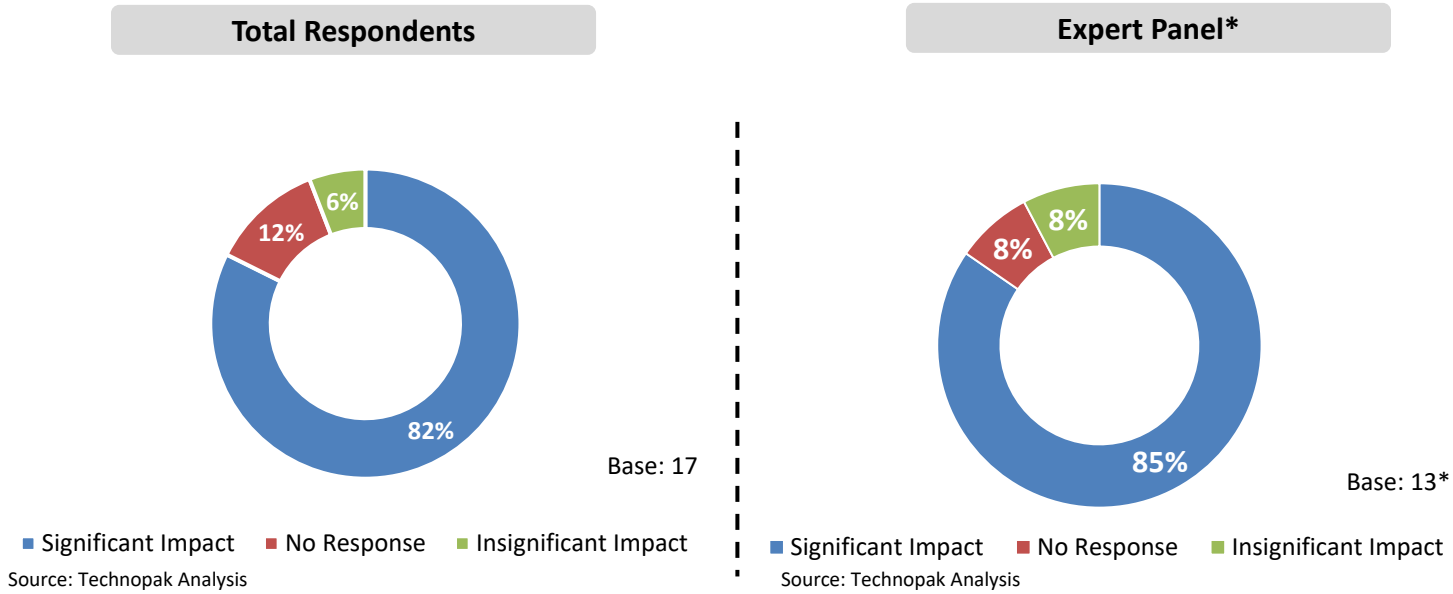
loan repayment improved, reducing the number of loan defaulters. As per RBI financial stability reports, reduction in no. of loan defaulters overall decrease in the share of stressed advances of banks for textile industry.

KII ANALYSIS

Out of 62 responses, 17 of them (27%) responded to the question asked on impact of TUFS on Indian textile & apparel industry.

- **Sales** ~ Out of 17 respondents, 14 (82%) answered that TUFS had a positive impact on Sales. Out of 13 respondents, 11 (85%) opined that TUFS had a significant impact
- **Profits** ~ Out of 17 respondents, 12 (70%) answered that TUFS had a positive impact on Profit, whereas as per the expert panel, out of 13, 10 (77%) opined that TUFS had a significant impact on Profit
- **Average Sales Price** ~ Out of 17 respondents, 8 (47%) answered that TUFS had a positive impact on Average Sales Price, whereas as per the expert panel, Out of 13 respondents, 7 (54%) opined that TUFS had a significant impact

Exhibit 51: Increase in Sales

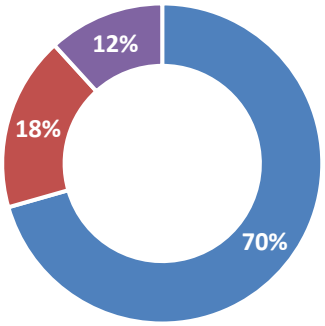


Source: Technopak Analysis

Source: Technopak Analysis

Exhibit 52: Increase in Profits

Total Respondents

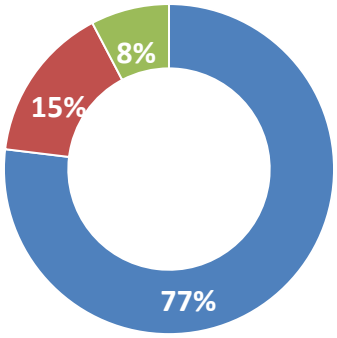


Base: 17

Significant Impact
Insignificant Impact
No Impact
No Response

Source: Technopak Analysis

Expert Panel*

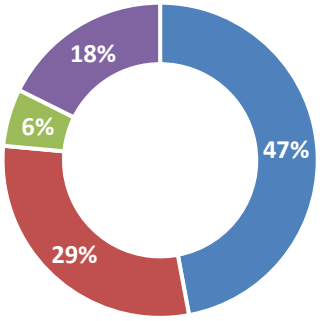


Base: 13*

Significant Impact
Insignificant Impact
No Response

Source: Technopak Analysis

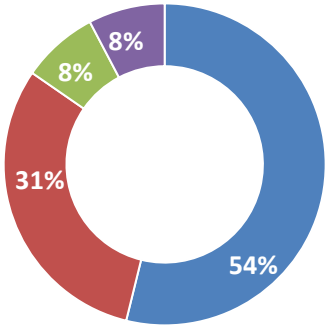
Exhibit 53: Increase in Average Sales Price



Base: 17

Significant Impact
Insignificant Impact
No Impact
No Response

Source: Technopak Analysis



Base: 13

Significant Impact
Insignificant Impact
No Impact
No Response

Source: Technopak Analysis

* Out of 23 Expert Panel, 13 (57%) responded to the question asked on impact of TUFS on Indian textile & apparel industry

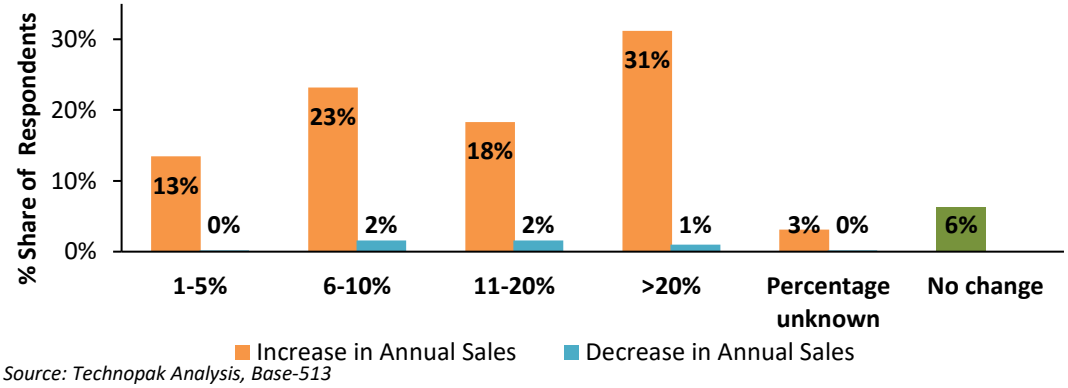
UHS ANALYSIS

Beneficiaries

Annual Sales

Of the 513 respondents to the question, the annual sales have risen with most annual sales of >20% were reported by 31% of respondents. 36% of the respondents reported sales increase less than 10%.

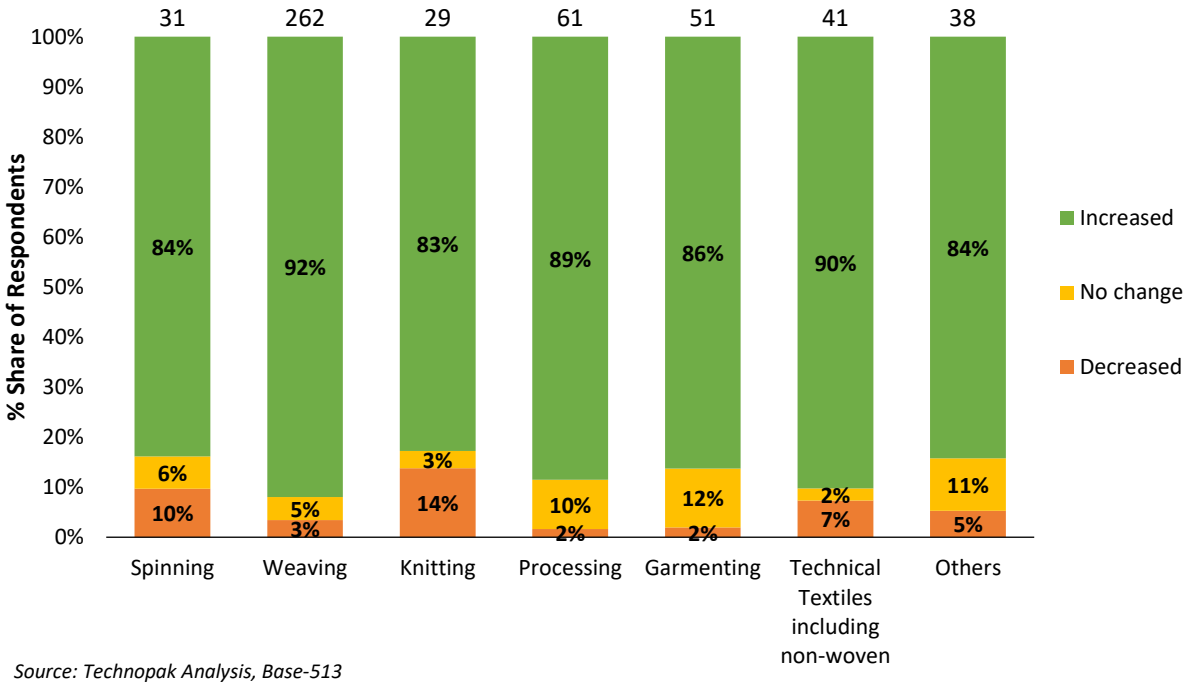
Exhibit 54: Change in Annual Sales



Source: Technopak Analysis, Base-513

Majority of the segments have similar rise in annual sales. Among segments, in Weaving segment, highest number of respondents have witnessed increase in sales. Relatively, Technical Textiles has witnessed more increase in sales because this is not a commodity product. Greater than 10% respondents in Knitting and Spinning segments have witnessed decrease in Annual sales.

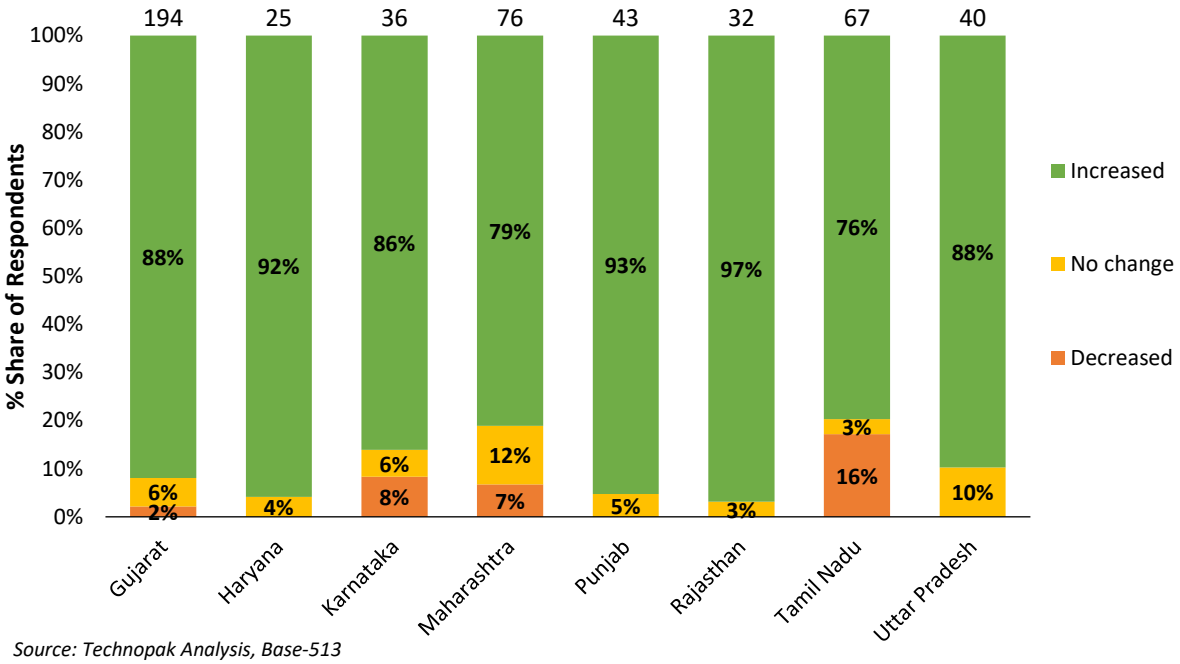
Exhibit 55: Change in Annual Sales - Segment Wise



Source: Technopak Analysis, Base-513

Among states, more than 90% respondents Rajasthan, Punjab and Haryana have witnessed increase in annual sales due to TUFS. 16% respondents in Tamil Nadu have witnessed decline in annual sales.

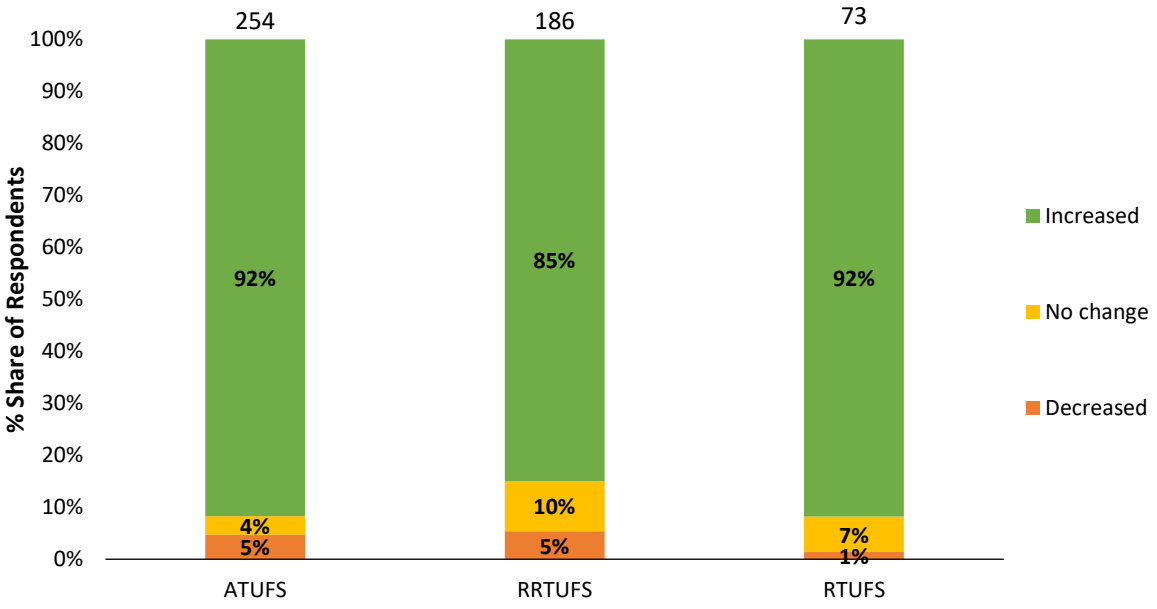
Exhibit 56: Change in Annual Sales - Geography Wise



Source: Technopak Analysis, Base-513

Across schemes, both RTUFS and ATUFS have witnessed increase in annual sales as responded by 92% respondents.

Exhibit 57: Change in Annual Sales - Scheme Wise

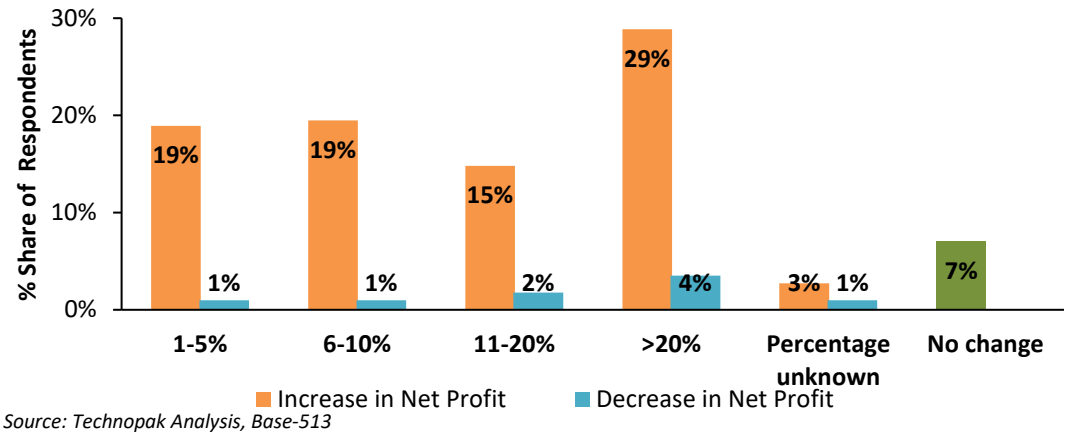


Source: Technopak Analysis, Base-513

Net Profit

Of the 257 respondents to the question, net profit increase >6% has been witnessed by 63% of the respondents.

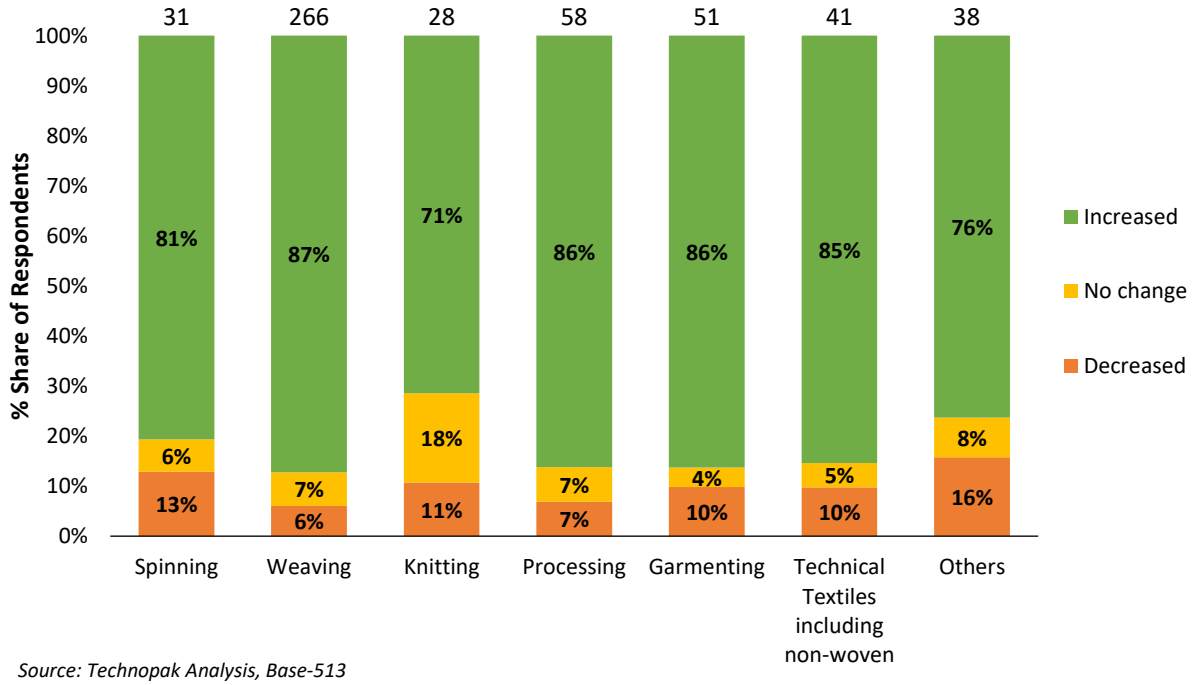
Exhibit 58: Change in Net Profit



Source: Technopak Analysis, Base-513

Majority of respondents have witnessed an increase in net profit with weaving segment having highest positive response. In Processing, Garmenting and Technical Textile segments ~85% respondents have witnessed increase in net profits. Nearly 29% respondents in Knitting segment have either witnessed no change or decline in net profit. Except weaving and processing, >10% respondents in the other segments have witnessed decline in profits. Net profits increment can be attributed to productivity improvement and wastage reduction.

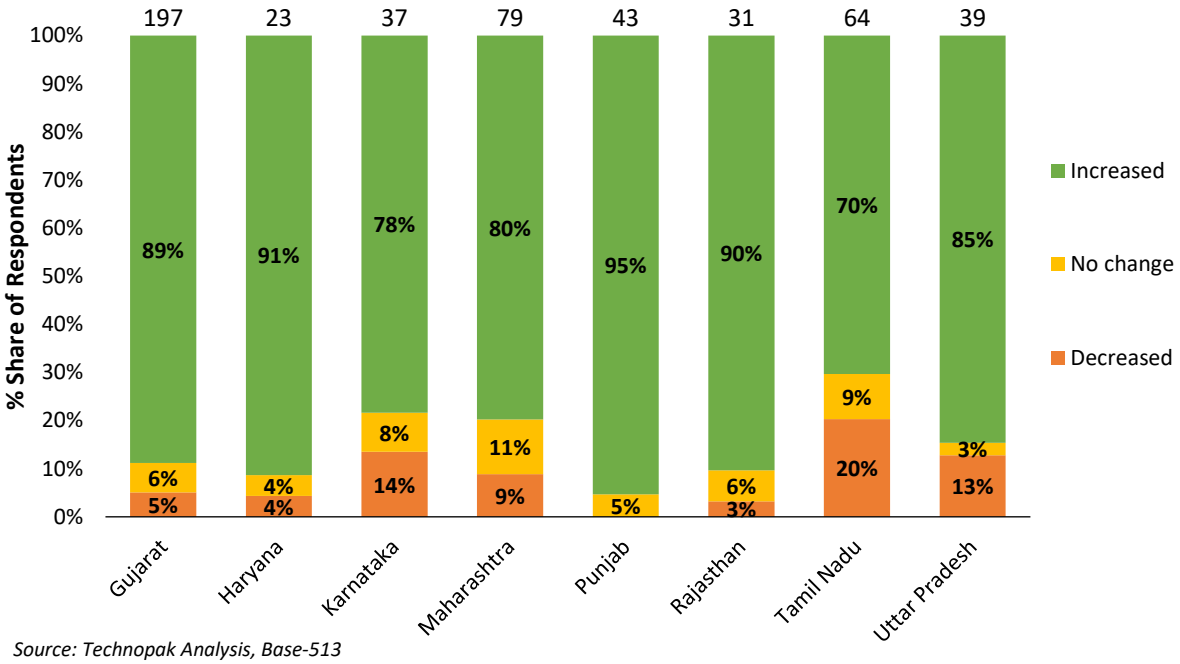
Exhibit 59: Change in Net Profit - Segment Wise



Source: Technopak Analysis, Base-513

Among states, in Rajasthan, Punjab and Haryana more than 90% respondents have witnessed increase in net profits due to TUFS. 20% respondents in Tamil Nadu, 14% in Karnataka and 13% in Uttar Pradesh have witnessed decline in net profits.

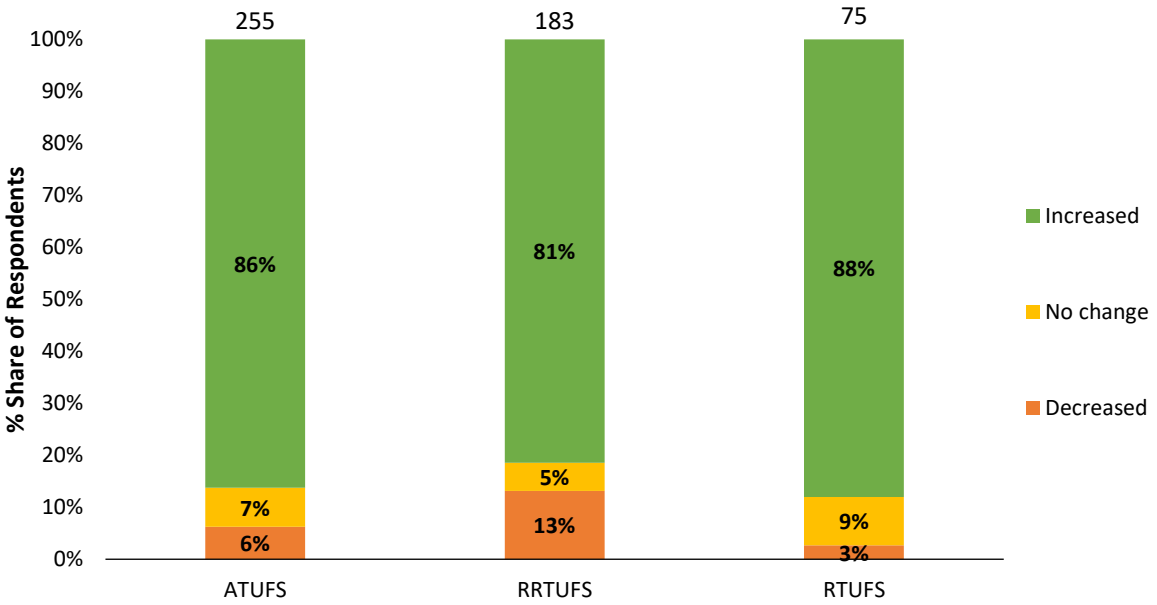
Exhibit 60: Change in Net Profit - Geography Wise



Source: Technopak Analysis, Base-513

Across schemes, both RTUFS and ATUFS have witnessed increase in net profits as responded by ~85% respondents. 13% respondents during RRTUFS have witnessed decline in net profits.

Exhibit 61: Change in Net Profit - Scheme Wise

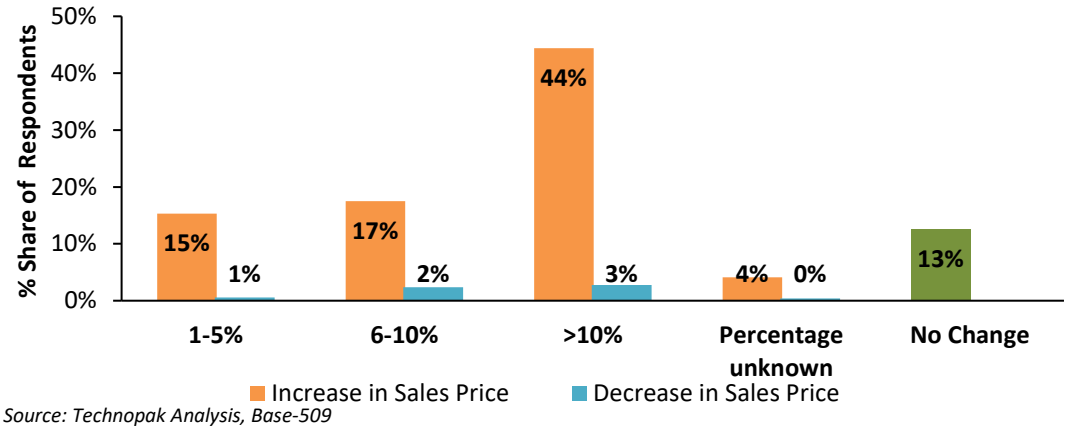


Source: Technopak Analysis, Base-513

Sales Price

Of the 509 respondents to the question, the response has been highly positive and the increase in sales price has been witnessed across all segments in per unit sales price. 44% of the respondents have witnessed per unit sales price increased greater than 10%.

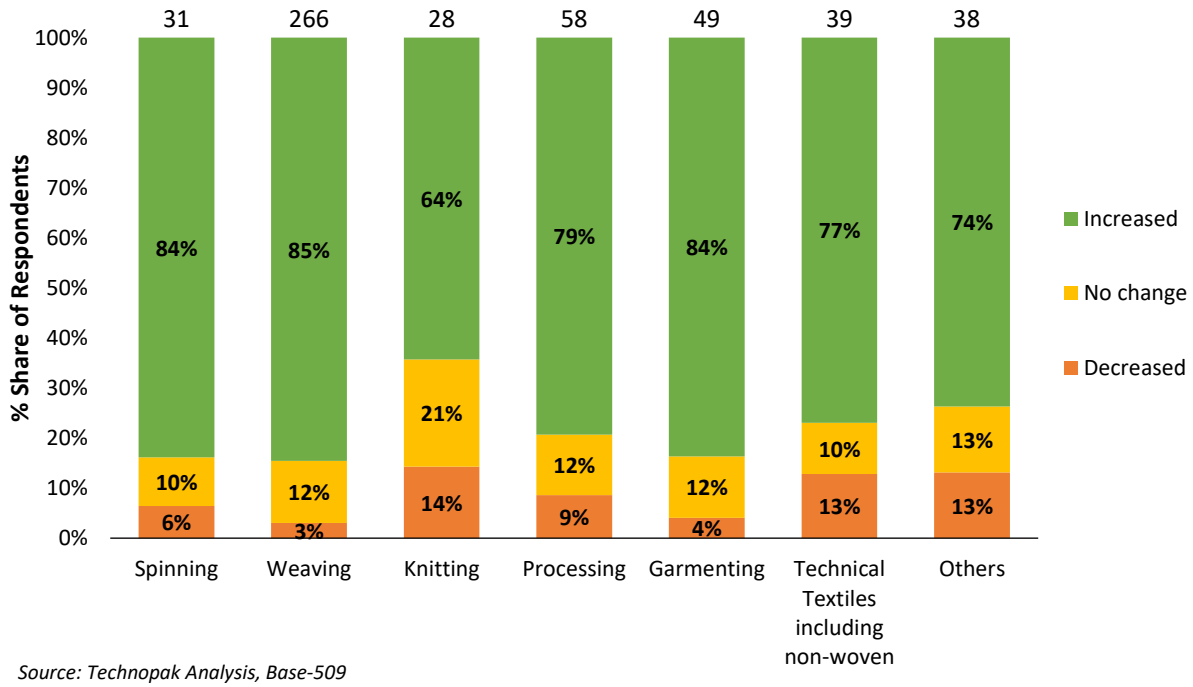
Exhibit 62: Change in Average Sales Price (%)



Source: Technopak Analysis, Base-509

Majority of respondents have witnessed an increase in average sales price with weaving segment having highest positive response. In Spinning and Garmenting segments ~84% respondents have witnessed increase in average sales price. Nearly 35% respondents in Knitting segment have either witnessed no change or decline in sales price. More than 10% respondents in Knitting, Technical Textile segments have witnessed decline in sales price.

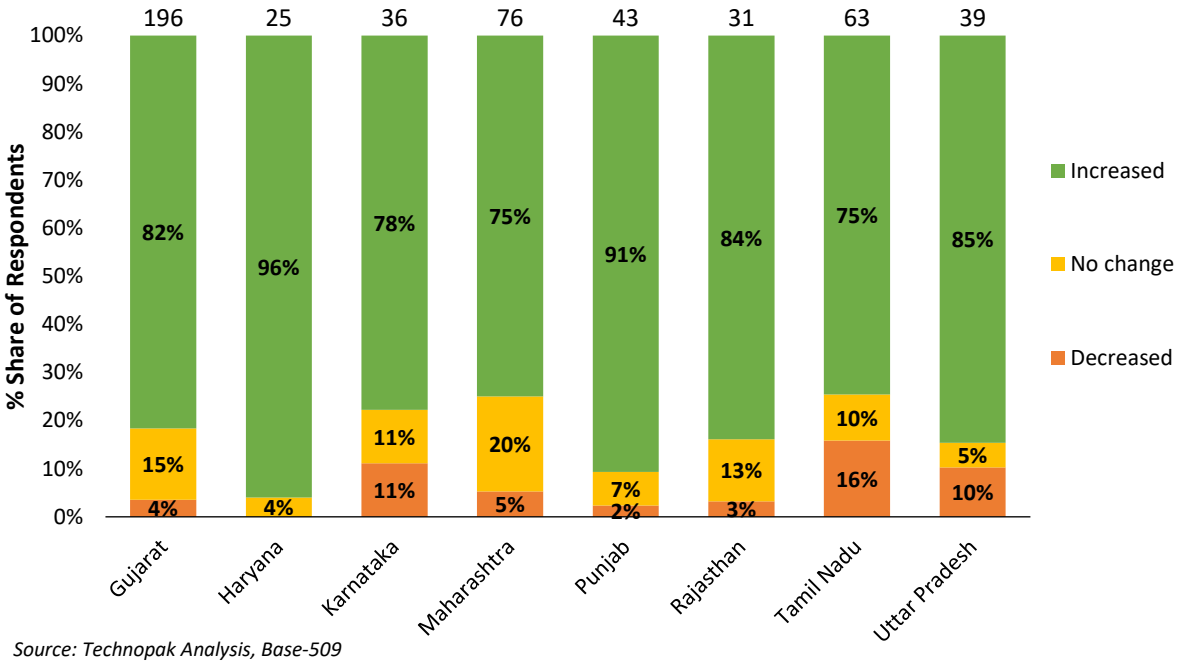
Exhibit 63: Change in Average Sales Price - Segment Wise



Source: Technopak Analysis, Base-509

Among states, Haryana and Punjab, more than 90% respondents have witnessed increase in average sales price due to TUFS. 16% respondents in Tamil Nadu and 11% in Karnataka have witnessed decline in average sales price.

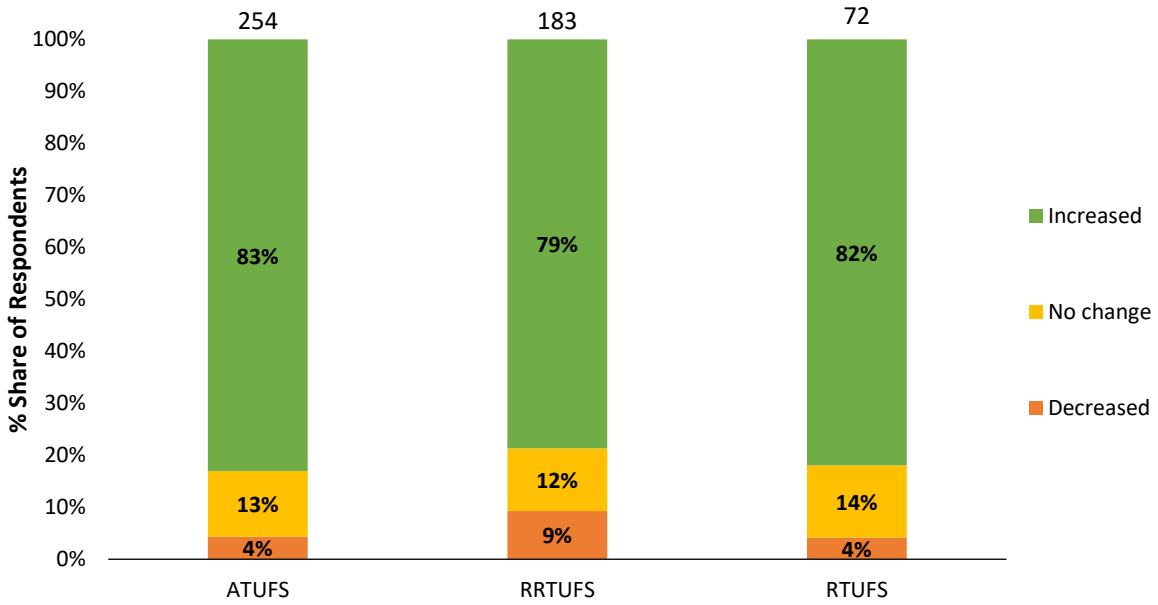
Exhibit 64: Change in Average Sales Price - Geography Wise



Source: Technopak Analysis, Base-509

Both RTUFS and ATUFS have witnessed increase in average sales price as responded by ~82% respondents. ~12% respondents across all schemes have witnessed no change.

Exhibit 65: Change in Average Sales Price - Scheme Wise



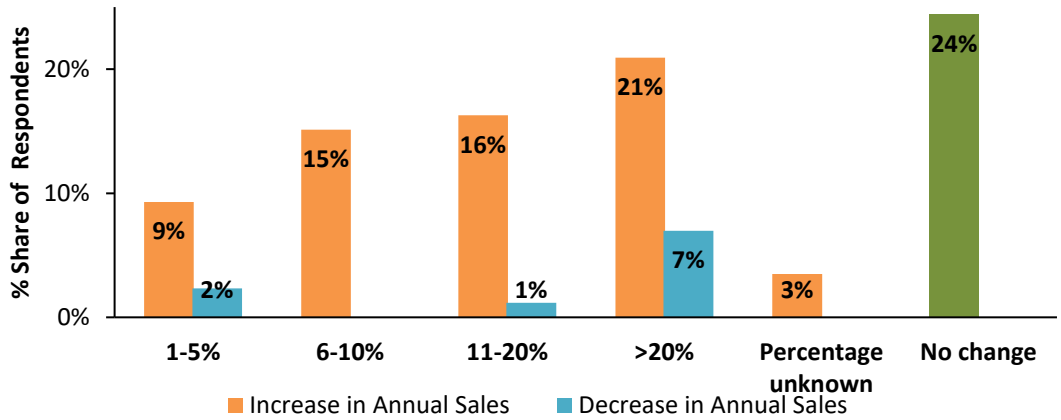
Source: Technopak Analysis, Base-513

Non-Beneficiaries

Annual Sales

Of the 86 non beneficiaries who responded to the question, the annual sales have risen with most annual sales of >20% were reported by 21% of respondents.

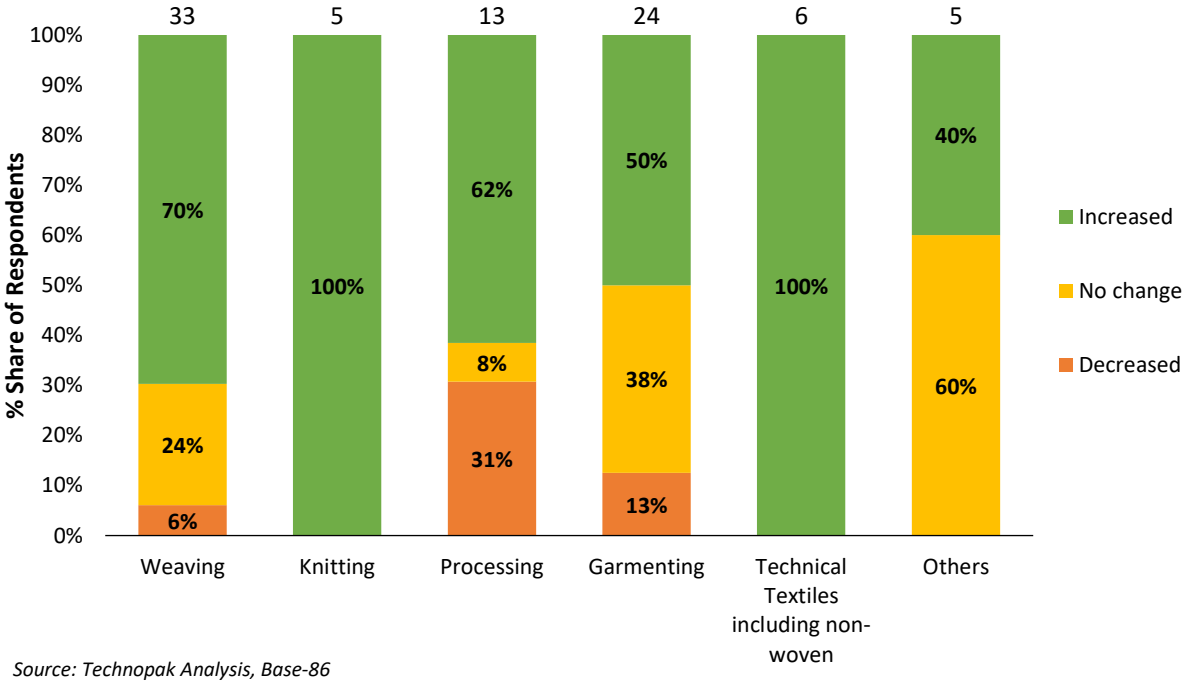
Exhibit 66: Change in Annual Sales



Source: Technopak Analysis, Base- 86

All the non-beneficiary respondents in Knitting and Technical Textile sectors have witnessed an increase in Annual sales. 31% of Processing segment non-beneficiary respondents have witnessed a decline in annual sales.

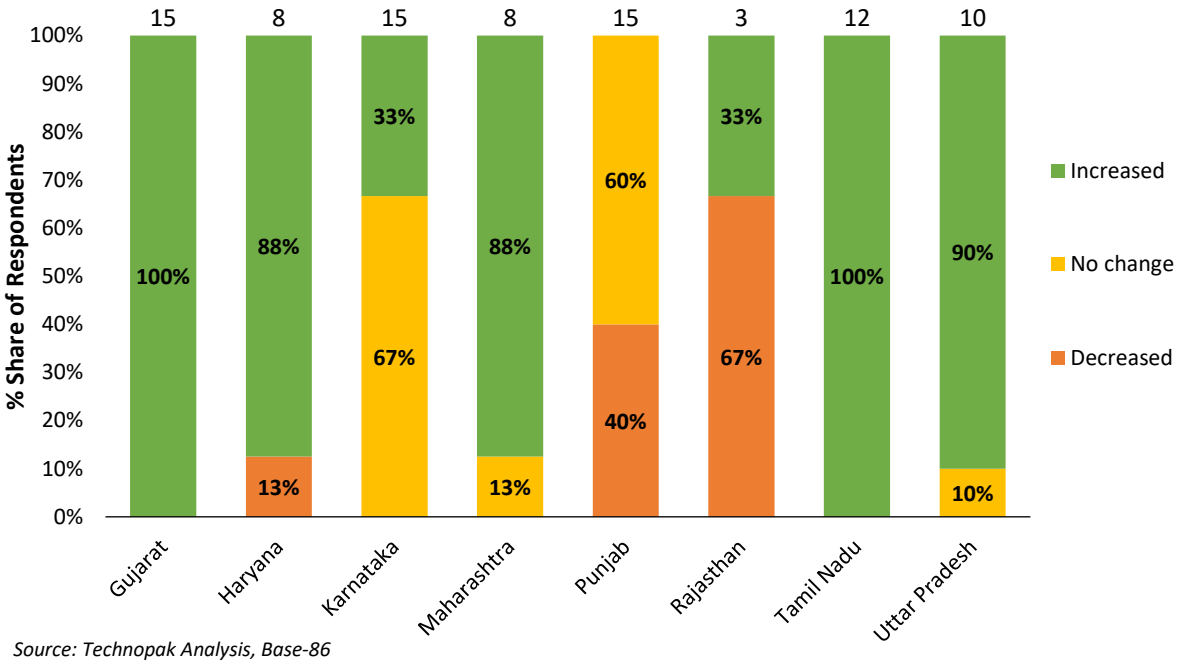
Exhibit 67: Change in Annual Sales - Segment Wise



Source: Technopak Analysis, Base-86

Among states, Gujarat and Tamil Nadu non-beneficiary respondents have witnessed increase in annual sales. 67% of Non- beneficiary respondents in Karnataka have witnessed no change In annual sales. 40% respondents in Punjab and have witnessed decline in Annual sales.

Exhibit 68: Change in Annual Sales - Geography Wise

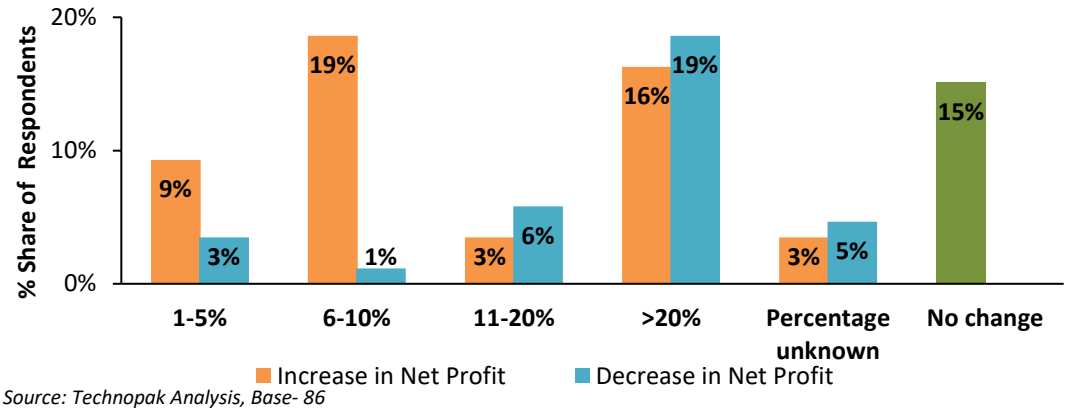


Source: Technopak Analysis, Base-86

Net Profit

Of the 86 non-beneficiaries who responded to the question, net profit increase >10% has been witnessed 19% of the respondents while decrease >10% has been reported by 25% of the respondents.

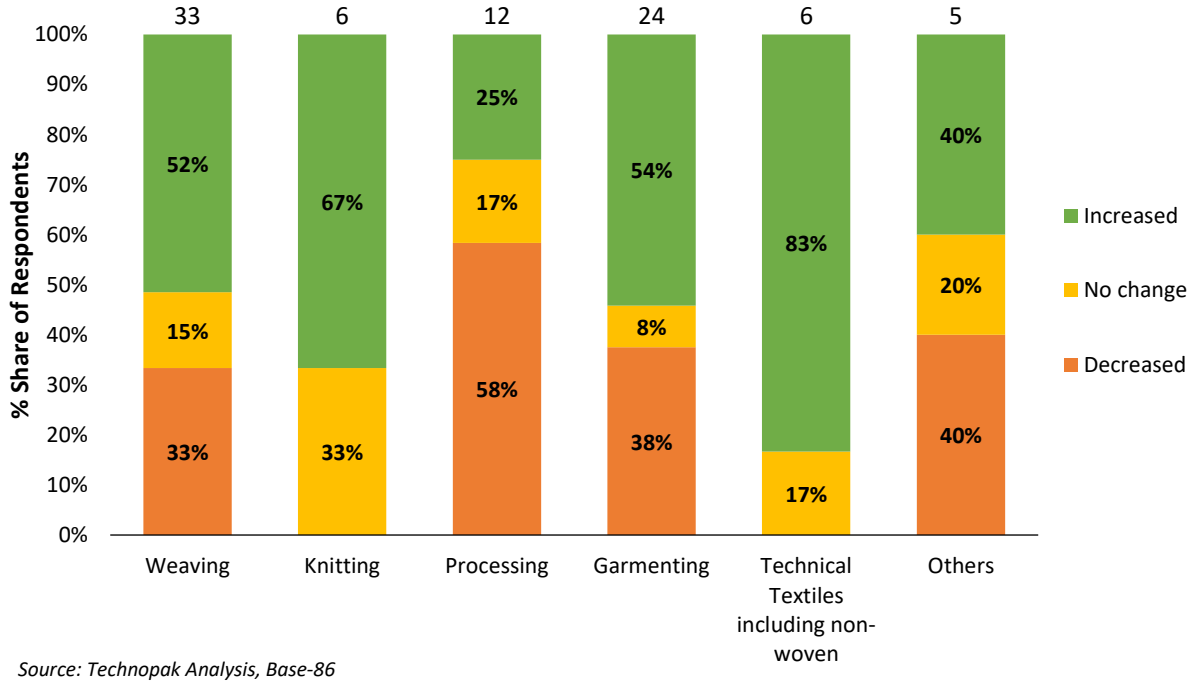
Exhibit 69: Change in Net Profit



Source: Technopak Analysis, Base- 86

83% of the non-beneficiary respondents in technical textiles have witnessed an increase in net profit. 58% in Processing, 38% in Garmenting and 33% in Weaving respondents have witnessed a decline in net profits

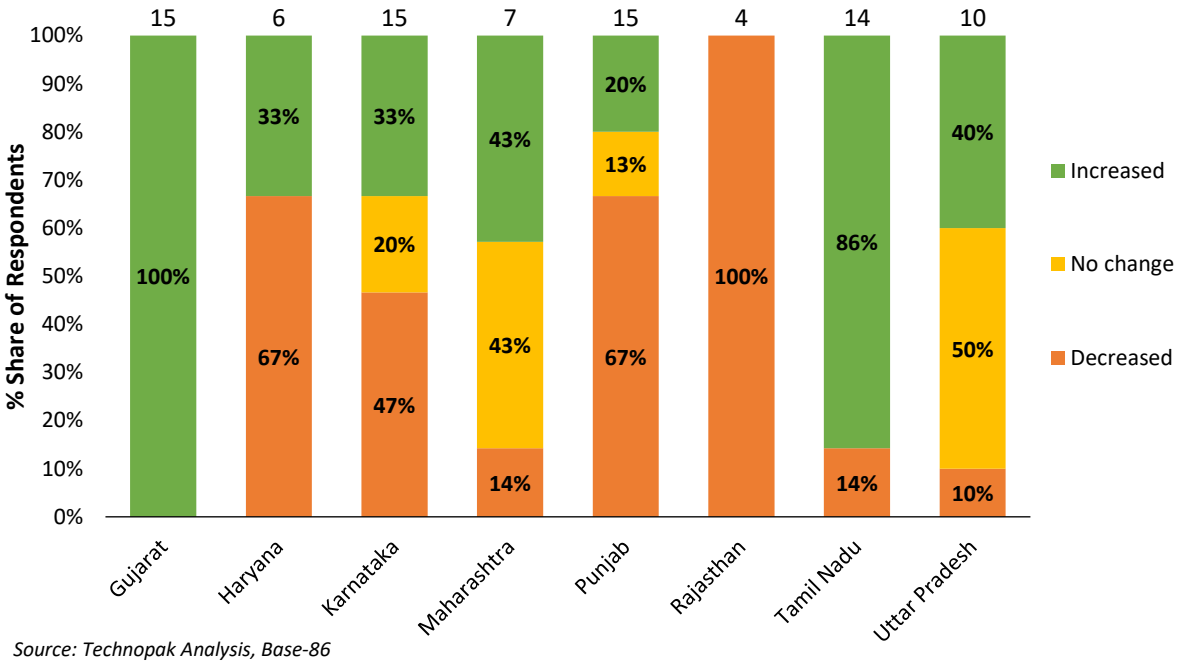
Exhibit 70: Change in Net Profit - Segment Wise



Source: Technopak Analysis, Base-86

All the non-beneficiary respondents in Gujarat have witnessed an increase in net profits. Majority of non-beneficiary respondents in Punjab, Haryana and Rajasthan have witnessed decline in net profits.

Exhibit 71: Change in Net Profit - Geography Wise

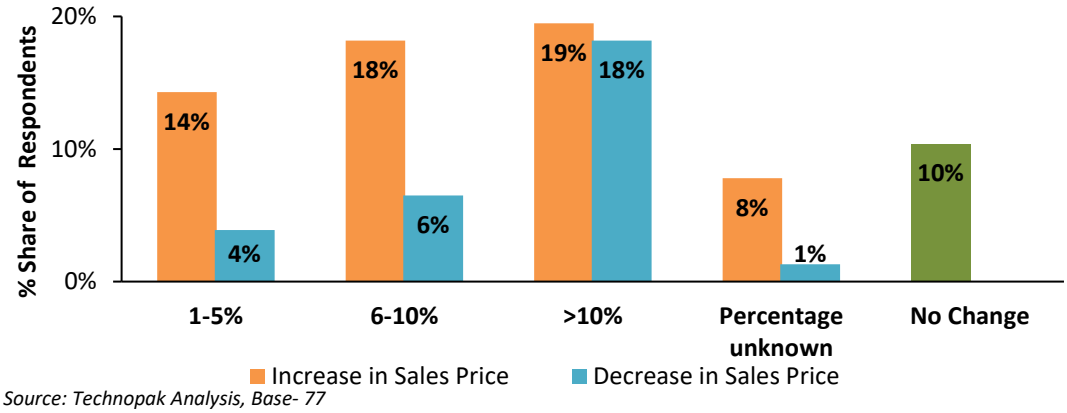


Source: Technopak Analysis, Base-86

Sales Price

Of the 77 non beneficiaries who responded to the question, the response has been mixed and both the increase and decrease in sales price have been witnessed. 19% of the respondents have witnessed per unit sales price increased greater than 10% while 18% have witnessed a decrease in the same bracket.

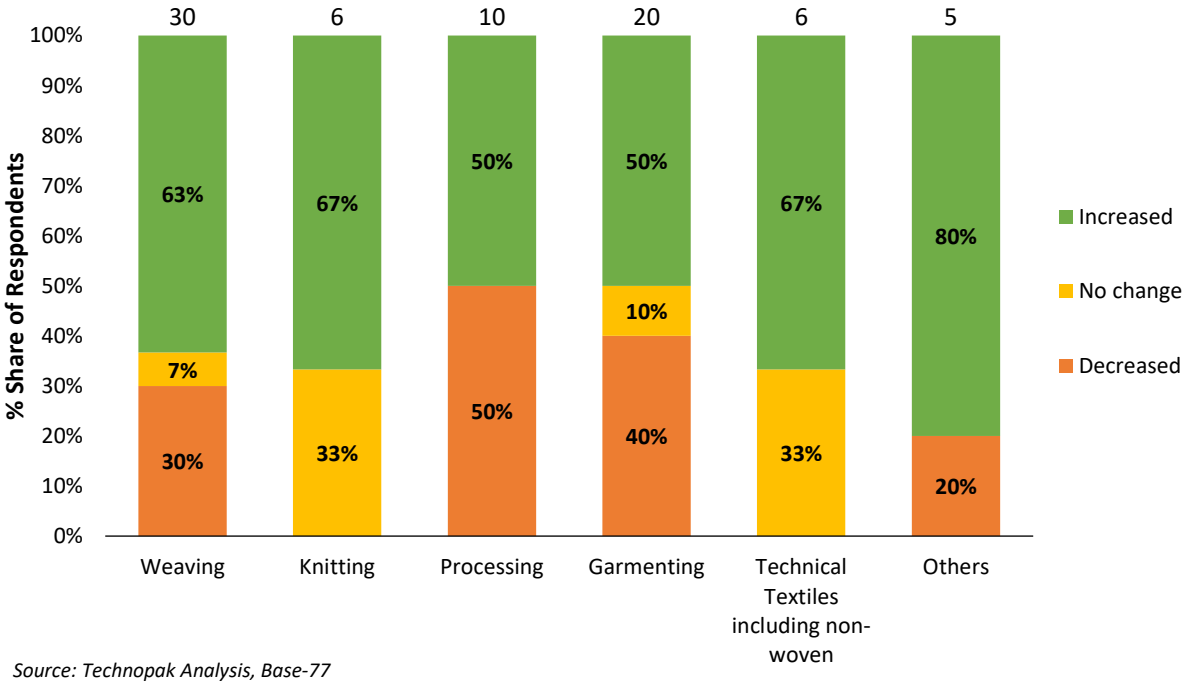
Exhibit 72: Change in Average Sales Price (%)



Source: Technopak Analysis, Base- 77

In Knitting and Technical Textiles, 67% non-beneficiary respondents have witnessed an increase in average sales price. 50% respondents in Processing and 40% respondents in Garmenting segments have witnessed a decline in average sales price

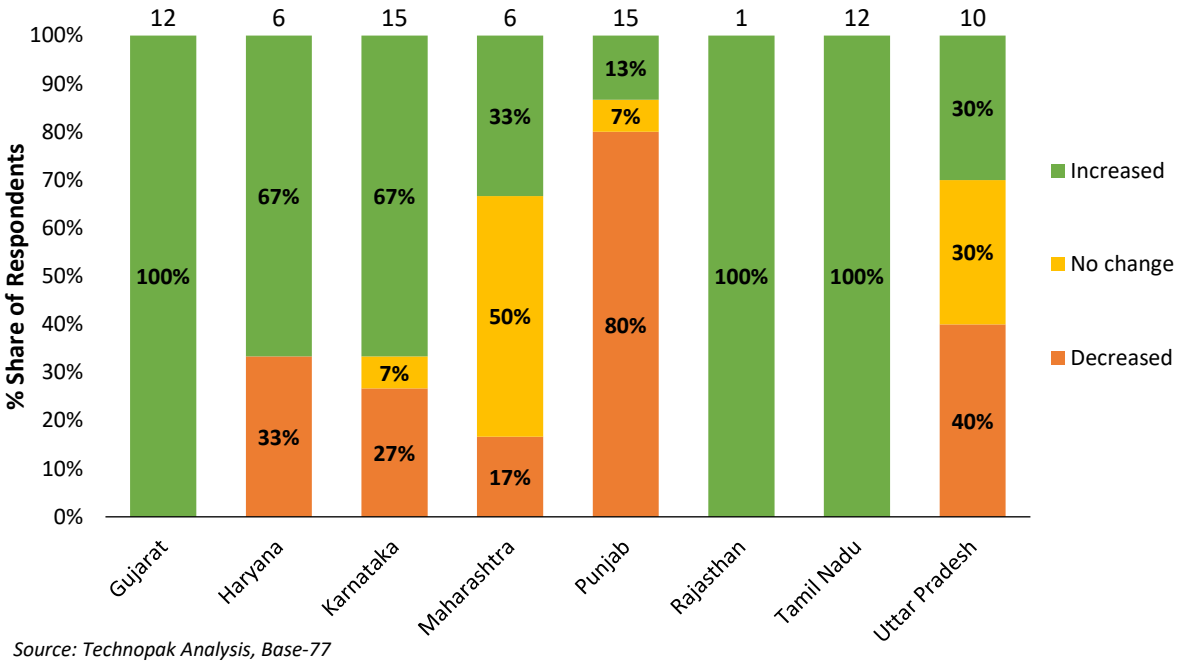
Exhibit 73: Change in Average Sales Price - Segment Wise



Source: Technopak Analysis, Base-77

All the non-beneficiary respondents in Gujarat, Tamil Nadu and Rajasthan have witnessed increase in average sales price. However, 80% of respondents in Punjab have witnessed a decline in the average sales price.

Exhibit 74: Change in Average Sales Price - Geography Wise



Source: Technopak Analysis, Base-77

Summary of Impact on Financials

The primary research finds positive impact on sales, profit etc across all segments and impact is of higher magnitude in weaving. KIIs indicated that scheme subsidy is instrumental in improving financial performance of the companies, given that many of textile companies operate with low profit margins. This can be attributed to reduced cost of capital, improved margins and turnover of the textile companies.

As per the KII analysis, 85% found positive impact on sales, 77% on profit and 54% on sales price.

89% beneficiaries have witnessed an increase in annual sales. In Weaving segment, highest number of respondents (92%) have witnessed increase in sales. Around 50% of respondents in Knitting, Weaving and Processing have witnessed an increase in sales >10%. In Rajasthan, Punjab and Haryana, more than 90% respondents have witnessed increase in annual sales due to TUFS.

85% beneficiaries have witnessed an increase in net profit with weaving segment having highest positive response (87%). While majority of states reported profits, 20% respondents in Tamil Nadu, 14% in Karnataka and 13% in Uttar Pradesh have witnessed decline in net profits.

81% beneficiaries have witnessed an increase in per unit sales price. 71% respondents in weaving segment have witnessed increase in sales price >6%.

Overall, non-beneficiaries have reported lower financial performance than beneficiaries. Broadly, respondents from Processing and Punjab have witnessed decline in Annual sales, Net Profits and Sales Price.

4.3 Production and Productivity

Past Trend Analysis - Literature Review

- **Prof. Dr. M.D. Teli, Head of Department of Fibers & Textile Processing Technology on Technology Upgradation Fund Scheme (2003)**

  As per the report by Dr. M.D Teli, cotton ginning witnessed maximum increase in productivity on TUFS specific machineries, followed by synthetic filament yarn texturizing (67%), independent weaving preparatory (62%), knitting (47%), and weaving (35%). Jute industry indicated the least increase in productivity. Increase in productivity was a reflection of modernization of units due to technology upgradation scheme.

- **Technopak Advisors Evaluation Report of TUFS (2006)**

  As part of the Technopak report, it was found that the decentralised powerloom sector grew with majority of industry fabric requirement that came from this sector. Hence, this sector needed to be looked after and encouraged in order to upgrade their technology level for better productivity. The installed capacity of handlooms is almost twice that of power looms but the output is 5 times lesser. It also employs more than twice the number of people in powerloom. This highlights the low productivity of the sector and the need for further encouragement. As per the then survey, majority of the respondents witnessed increase in productivity in cotton ginning, processing, knitting and made-ups manufacturing sector. Overall, the productivity increase has been medium to high.

- **NCEUS Evaluation Report on Impact of TUFS on the Unorganized Sector (2009)**

  As per the report, the most formidable problem faced by the SMEs in India was accessing technology and maintaining competitiveness. One of the reasons behind this was emphasis on production and not on production cost. Majority of the SME units continued to use obsolete production processes. The study indicated that in Maharashtra, Delhi, Haryana, and Rajasthan, more than. 70% of SSI units using improved technology showed quality improvement, 46% showed reduction in cost of production and more than 20% indicated the achievement of domestic and global competitiveness through adoption of improved technology. In Haryana, out of the 100 units using improved technology, 51 indicated improvement in quality, 47 indicated increase in quantity produced and 31 showed reduction in production cost. In Delhi more than 85% of the SSI units using upgraded technology indicated quality improvement and more than 75% indicated rise in quantity produced. Whereas, in Rajasthan approx. 35% of the units using upgraded technology indicated quality improvement, 17% units showed increase in the quantity produced, and 14% indicated reduction in production cost.

- **CRISIL Evaluation Report of TUFS (2010)**

  More than 65 per cent of Non-SSI units and above 55 per cent of SSI units showed a productivity increase. This can be attributed to the installation of high RPM [Revolutions per Minute] spindles, high production cards and combing machines, and state-of-the-art auto doffing machines with auto corner. Average productivity increase for the sample units that experienced increase in productivity was in the range of 9 - 10 percent. Production and sales growth showed a dip in 2008 – 09. Despite impacted by the global economic slowdown, they showed a strong recovery in 2009 - 10. The weaving segment showed a significant improvement in productivity on account of TUFS. Around 45% of Non-SSI and SSI units experienced improvement in quality on account of modern technology used under the TUFS.

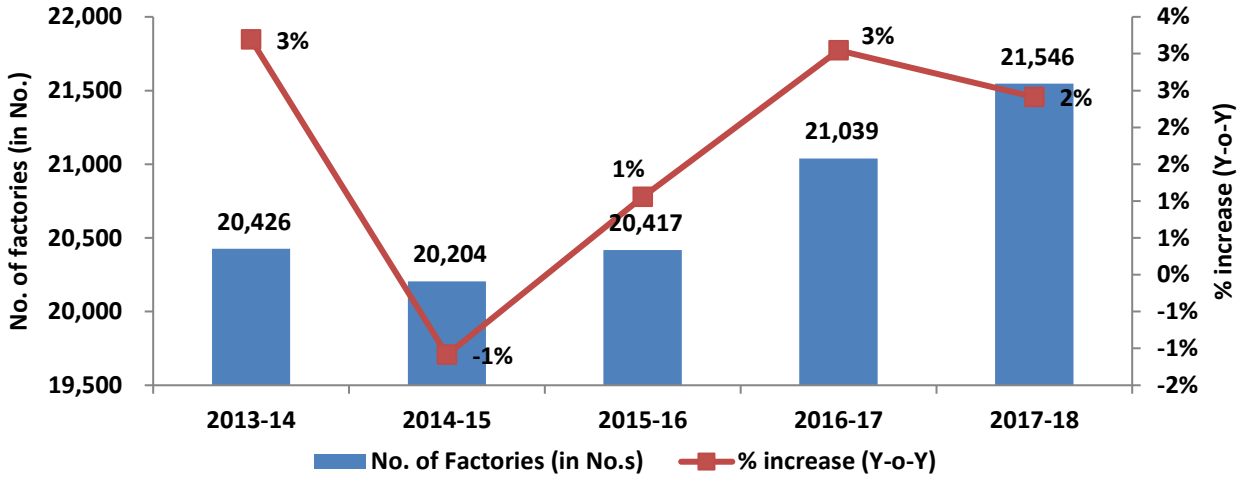
- **Wazir Advisors Evaluation Report of RTUFS and RRTUFS (2016)**

  Due to investment in modern technology, beneficiaries gained significantly in terms of various operational and production aspects such as productivity improvement, waste reduction, cost saving, resource efficiency etc. Maximum number of units witnessed productivity growth between 1-5%. Highest productivity increase was seen in spinning & composite segments followed by knitting segment. Production was also increased in all segments. The highest production rise (9%) was witnessed in spinning, knitting & composite segments followed by weaving & processing segments (8%). Growth in production of units was also supported by increase in production output per factory for overall textile industry in the factory sector, with growth of 6.3% during RTUFS period and 15.1% during RRTUFS period. The scheme also facilitated companies to improve their product quality and value addition. Improvement in product quality and value addition supported the increase of Gross Value Added (GVA) in overall textile and apparel industry during RTUFS and RRTUFS period.

Indian Textile Industry Production and Productivity - Current Scenario

- **No. of Operational Factories and Total Production in India**

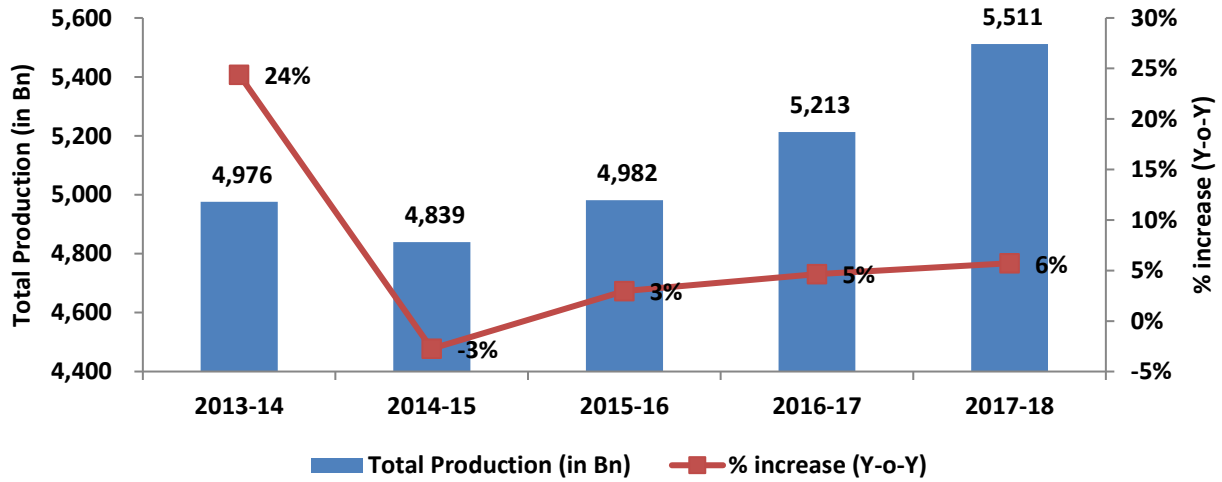
Exhibit 75: No. of Operational Factories (In Numbers)



Source: Annual Survey of Industries 2017-18, MOSPI, Technopak Analysis

Trend in total production output has been in tandem with the trend in no. of operational factories in T&A industry. There was a decrease of approx. 1% in no. of operational factories in 2014-15 that explains the decrease in the same year in total production in Indian T&A industry. However, since then, the Indian T&A industry has witnessed an increase in no. of factories, and hence the production output. The total production increased by approx. 6% in year 2017-18 (highest since 2014-15).

Exhibit 76: Total Production (In Bn)

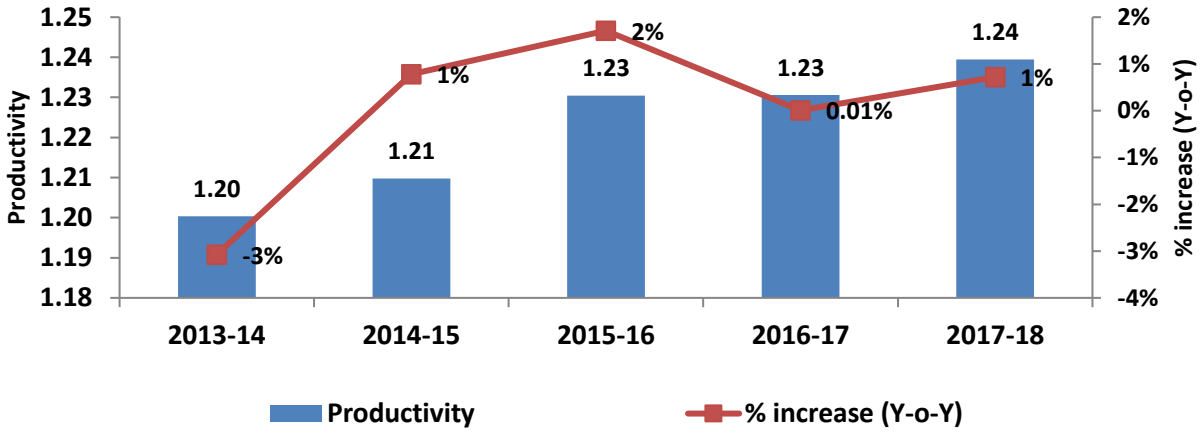


Source: Annual Survey of Industries 2017-18, MOSPI, Technopak Analysis

- **Productivity**

It was witnessed that productivity was negative in 2013-14. However, since then we have observed positive productivity across all the years.

Exhibit 77: Productivity



Source: Annual Survey of Industries 2017-18, MOSPI, Technopak Analysis

- **Production Levels Across Textile Products**

India's cloth production has increased over the past 5 years and total yarn production has remained fairly constant.

Exhibit 78: Production Levels of Textile Products

(Figures in Millions)

Period	Man-made fibre	Man-made filament yarn	Cotton yarn	Blended & 100% Non-Cotton yarn	Total Spun Yarn	Cloth		
						Mill sector	Decentralized sector	Grand Total (Exc. Khadi, Wool & Silk)
	Kg	Kg	Kg	Kg	Kg	Sq. mtr	Sq. mtr	Sq. mtr
2015-16	1,347	1,164	4,138	1,527	5,665	2,315	62,269	64,584
2016-17	1,364	1,159	4,055	1,604	5,659	2,264	61,216	63,480
2017-18	1,319	1,187	4,064	1,616	5,680	2,157	64,688	66,845
2018-19	1,442	1,160	4,208	1,682	5,890	2,078	67,992	70,070
2019-20 (E)	1,924 #	1,711 #	3,998	1,717	5,714	2,040	73,978	76,018

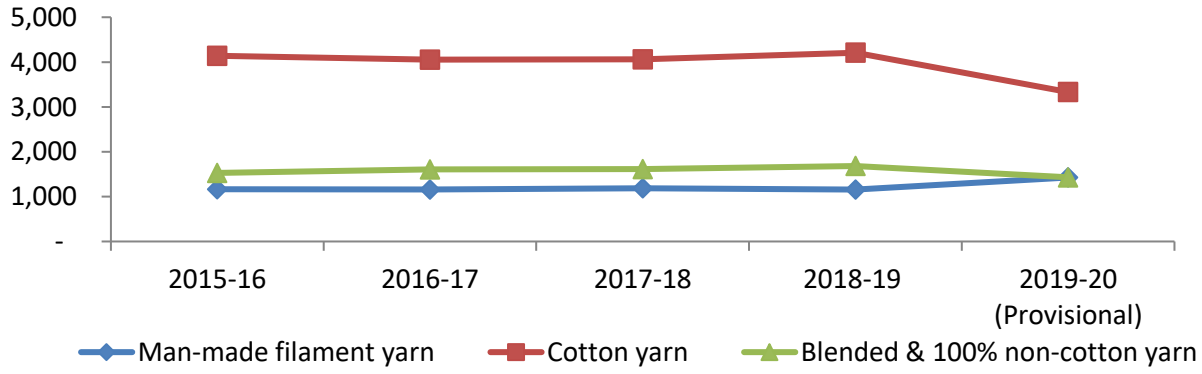
Note: # The increase production is mainly due to increase in the number of reporting units in financial year 2019-20 as compared to previous year;

Source: Ministry of Textiles, Secondary Research, Technopak Analysis

- **India Yarn Production Trend**

India's production of different types of yarns have remained constant over the past 5 years.

Exhibit 79: India Yarn Production Trend (in Kg Mn)



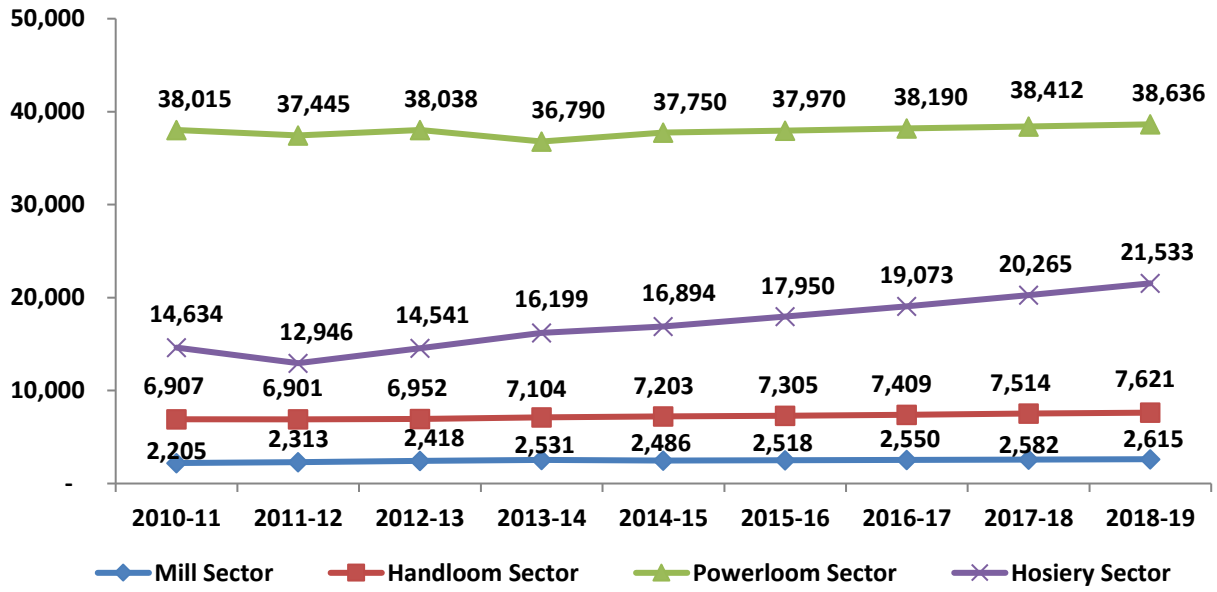
Source: Annual Survey of Industries 2017-18, MOSPI, Technopak Analysis

Year-on-year growth (%)	2016-17	2017-18	2018-19
Man-made filament yarn	-0.4%	2%	23%
Cotton yarn	-2.0%	0.2%	3.5%
Blended & 100% non-cotton yarn	5.0%	0.7%	4.1%

- **India Fabric Production Trend**

India's hosiery fabric production has witnessed a steady growth of 6% over the past 4 years.

Exhibit 80: Indian Fabric Production Trend (Mn Sq Mtrs)



Source: Annual Survey of Industries 2017-18, MOSPI, Technopak Analysis

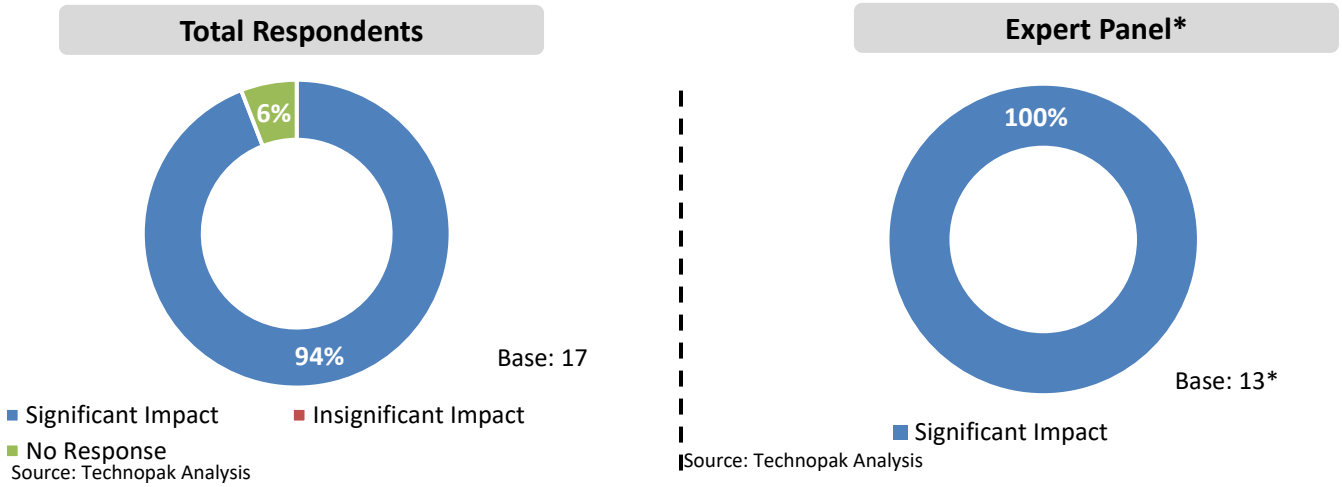
Year-on-year growth (%)	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19
Mill Sector	5%	5%	5%	-2%	1%	1%	1%	1%
Handloom Sector	0%	1%	2%	1%	1%	1%	1%	1%
Powerloom Sector	-1%	2%	-3%	3%	1%	1%	1%	1%
Hosiery Sector	-12%	12%	11%	4%	6%	6%	6%	6%

KII ANALYSIS

Out of 62 responses, 17 of them (27%) responded to the question asked on impact of TUFS on Indian textile & apparel industry

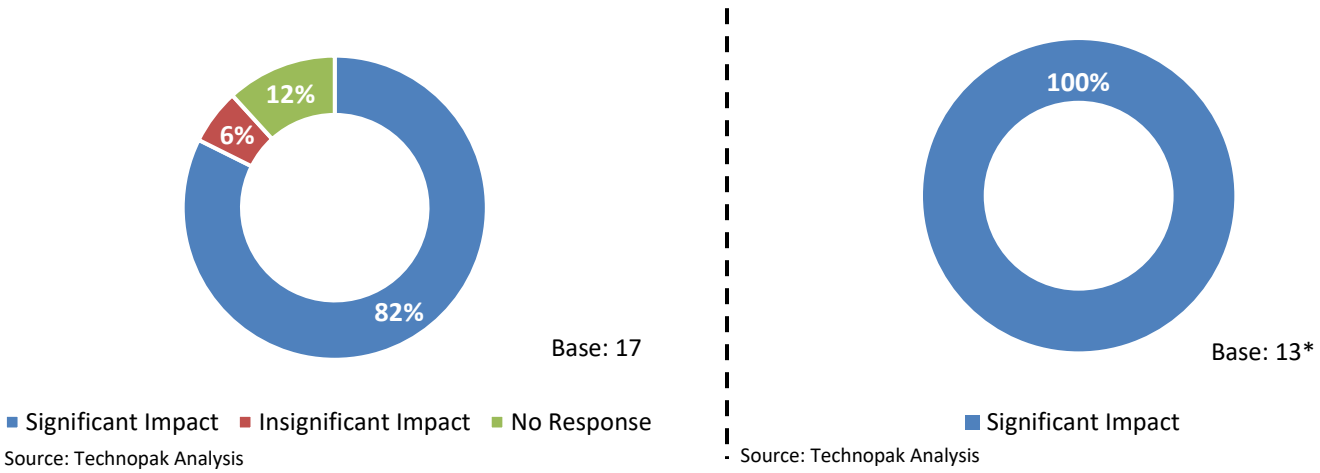
- **Production** ~ Out of 17 respondents, 16 (94%) answered that TUFS had a positive impact on Production. Whereas, all the 13 experts (100%) opined that TUFS had a positive impact on Production
- **Productivity** ~ Out of 17 respondents, 14 (82%) answered that TUFS had a positive impact on productivity. Whereas all the 13 experts (100%) opined that TUFS had a positive impact on Productivity

Exhibit 81: Increase in Production



Source: Technopak Analysis

Exhibit 82: Increase in Productivity



Source: Technopak Analysis

* Out of 23 Expert Panel, 13 (57%) responded to the question asked on impact of TUFS on Indian textile & apparel industry

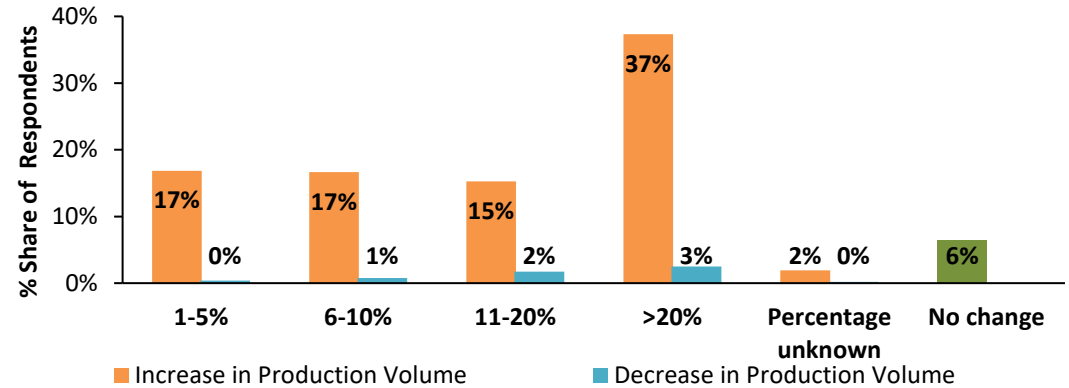
UHS ANALYSIS

Beneficiaries

Production Volume

Of the 256 respondents to the question, 88% witnessed an increase in production volume. 37% of the respondents have reported >20% increase in production volume.

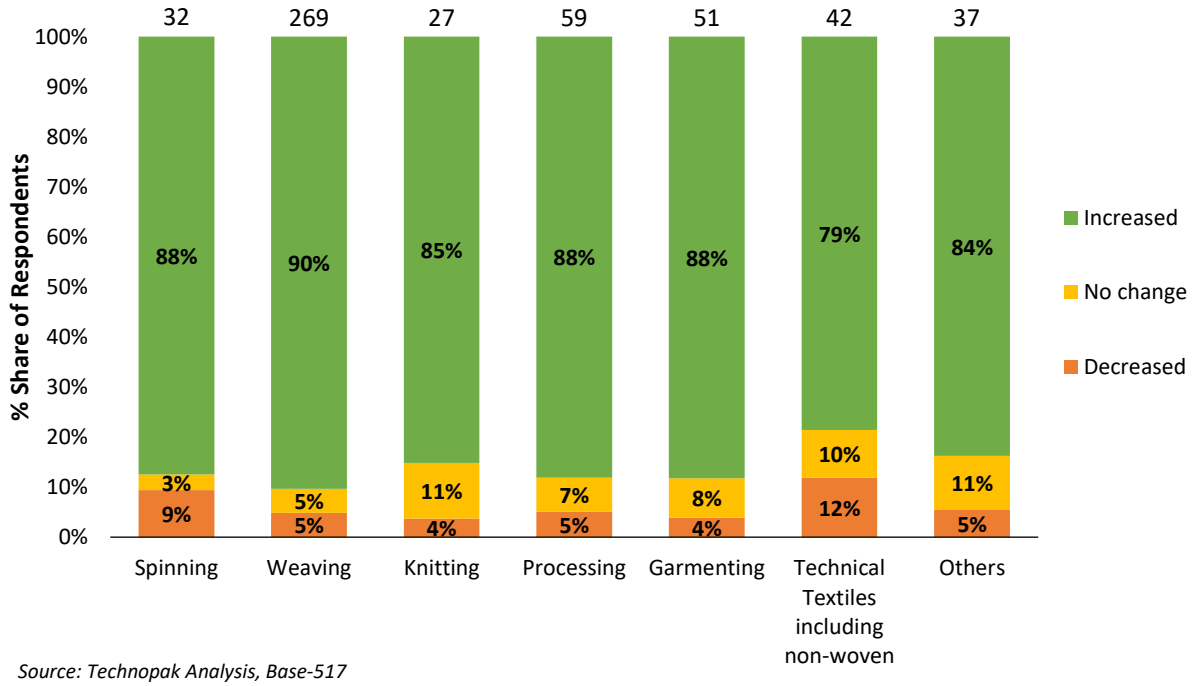
Exhibit 83: Change in Production Volume (%)



Source: Technopak Analysis, Base-517

Most of the respondents from all sectors have witnessed high growth in production volume as a result of productivity improvement. Most of the respondents from Weaving segments have witnessed increased production volume through TUFS scheme. However, 12% of technical textiles' sector respondents have reported significant production volume losses.

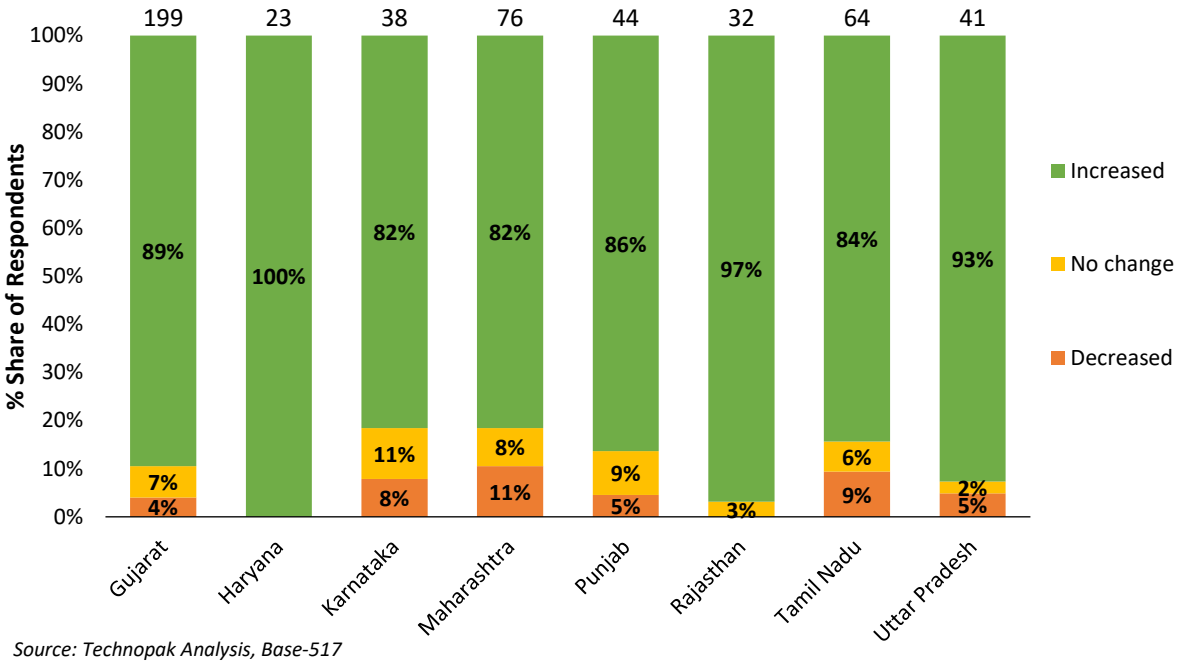
Exhibit 84: Change in Production Volume (%) - Segment Wise



Source: Technopak Analysis, Base-517

All the respondents in Haryana have witnessed increased production volume due to TUFS. More than 90% respondents from Rajasthan and Uttar Pradesh have witnessed increase in production volume. A significant 11% respondents from Maharashtra have witnessed decline in volumes.

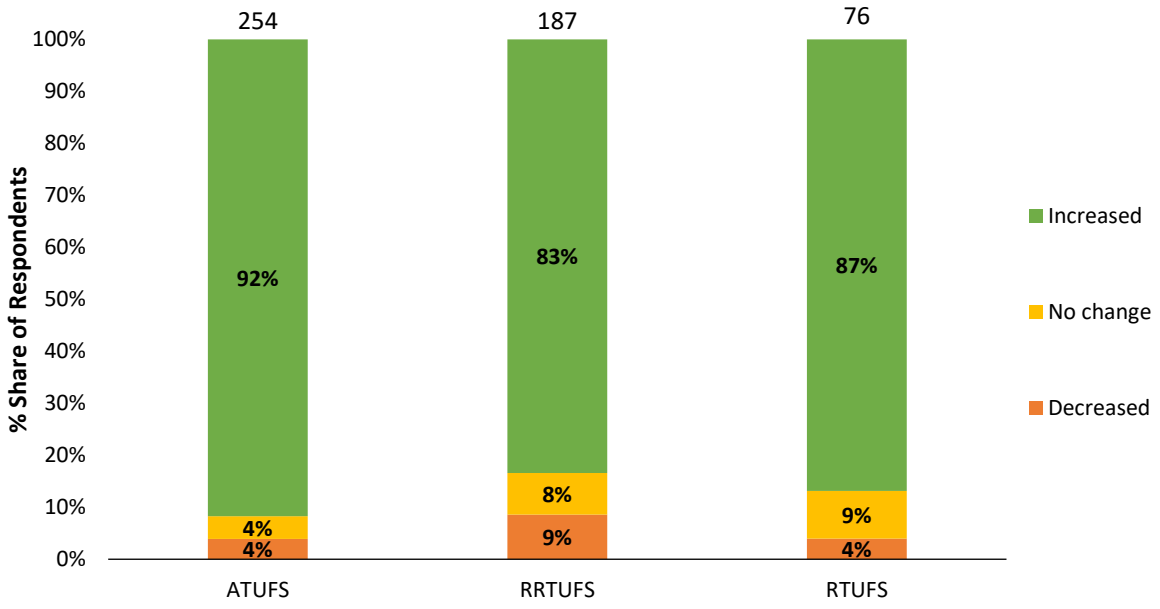
Exhibit 85: Change in Production Volume (%) - Geography Wise



Source: Technopak Analysis, Base-517

Across schemes, the highest number of respondents suggested increase in production volume during ATUFS scheme (92% of 254 respondents).

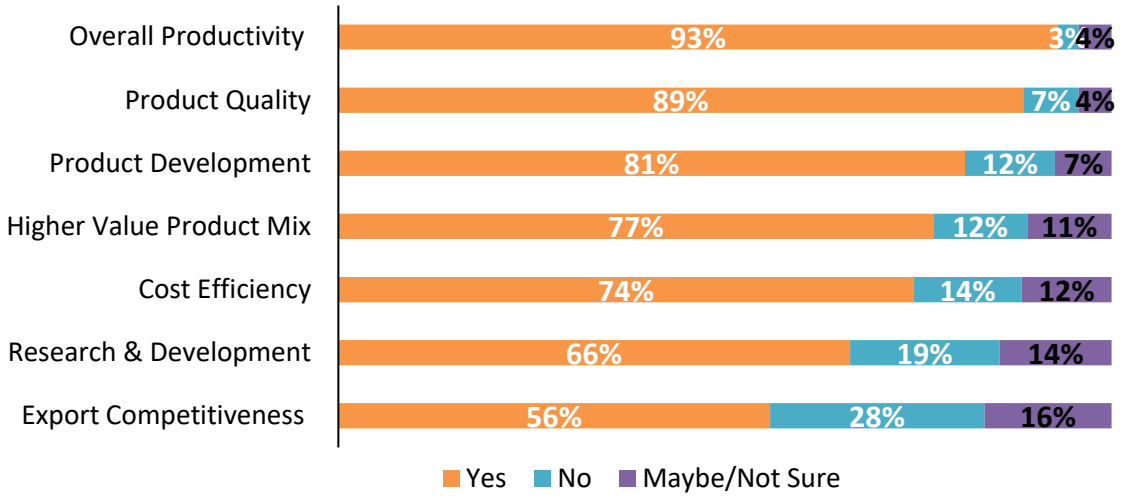
Exhibit 86: Change in Production Volume (%) - Scheme Wise



Source: Technopak Analysis, Base-517

Respondents have a highly positive response in terms of overall productivity, better quality products and generating higher value product mix. Overall cost savings have been significant, primarily due to a combination of wastage reduction and productivity improvement. Higher saving in power, water and steam have happened due to energy efficient machinery. Some of the respondents have not seen an improvement in export competitiveness as responded by 28% of the respondents.

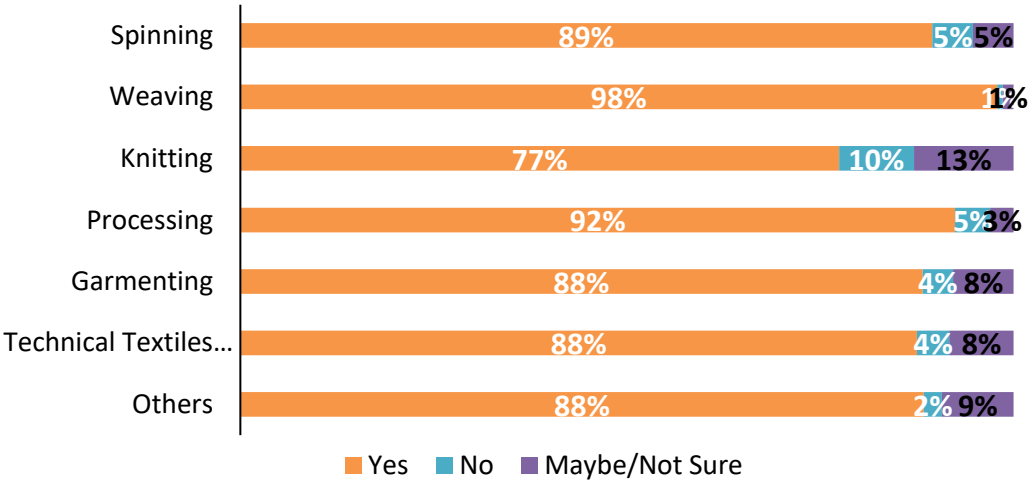
Exhibit 87: Improvement in Production and Productivity



Source: Technopak Analysis, Base-559

TUFS has led to productivity increase of the respondents. As much as 93% respondents (520 beneficiaries) believed that TUFS has enhanced overall productivity due to various reasons. Majority of the respondents are in favour that overall productivity has increased and almost everyone in Weaving segment have witnessed the improvement.

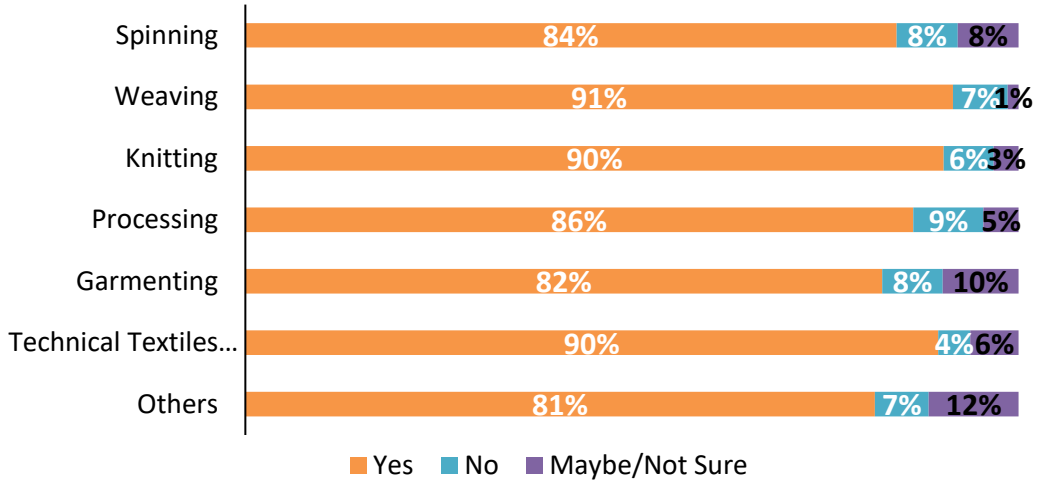
Exhibit 88: Overall Productivity - Segment Wise



Source: Technopak Analysis, Base-559

TUFS has enabled companies to improve product quality. 89% of the respondents (498 beneficiaries) opine that this scheme has led to improvement in product quality. Majority of the respondents are of opinion that product quality has increased.

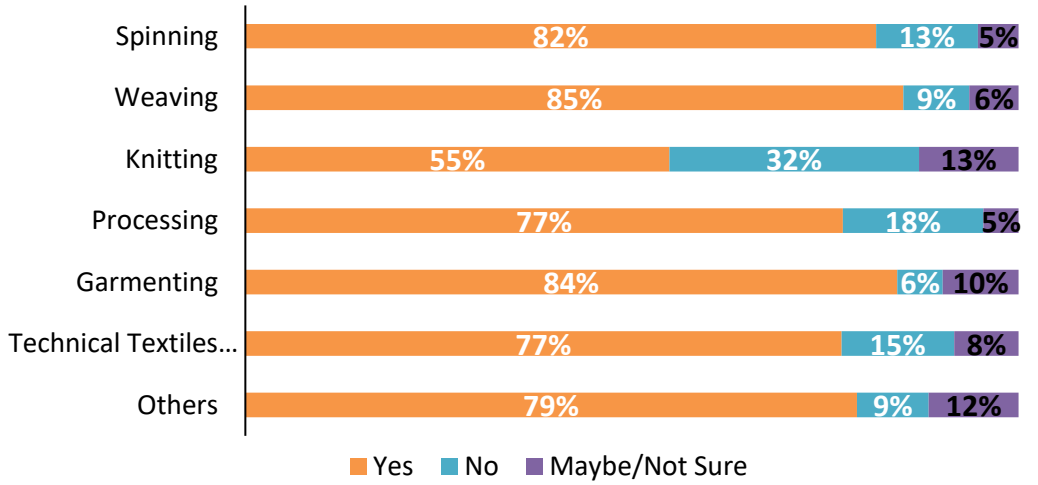
Exhibit 89: Product Quality - Segment Wise



Source: Technopak Analysis, Base-559

TUFS has also enabled companies to focus on product development. 81% of the respondents (452 beneficiaries) have the opinion that this scheme has led to product development in most of the segments. However, some respondents (32% of the respondents) in Knitting have not witnessed significant product development.

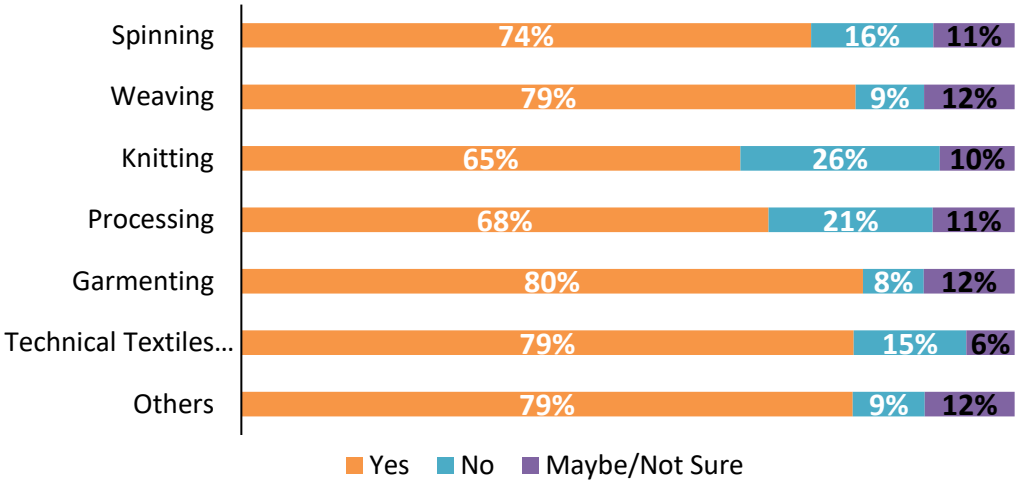
Exhibit 90: Product Development - Segment Wise



Source: Technopak Analysis, Base-559

TUFS has also enabled companies to increase per unit sales price which has led to higher value product mix production to which 77% of the respondents (430 beneficiaries) have opined.

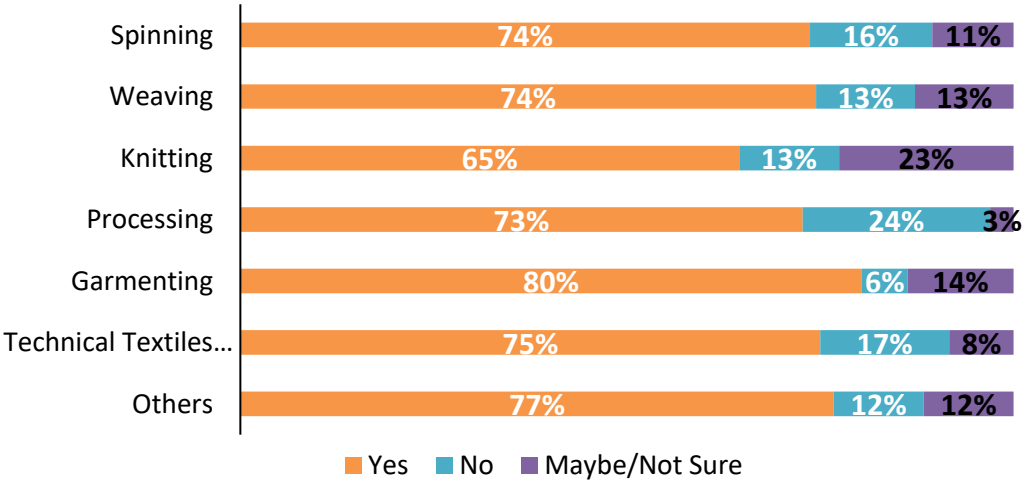
Exhibit 91: Higher Value Product Mix - Segment Wise



Source: Technopak Analysis, Base-559

TUFS has also enabled companies to efficiently use the available resources and reduce wastage to achieve higher cost efficiency as opined by 74% of the respondents (414 beneficiaries).

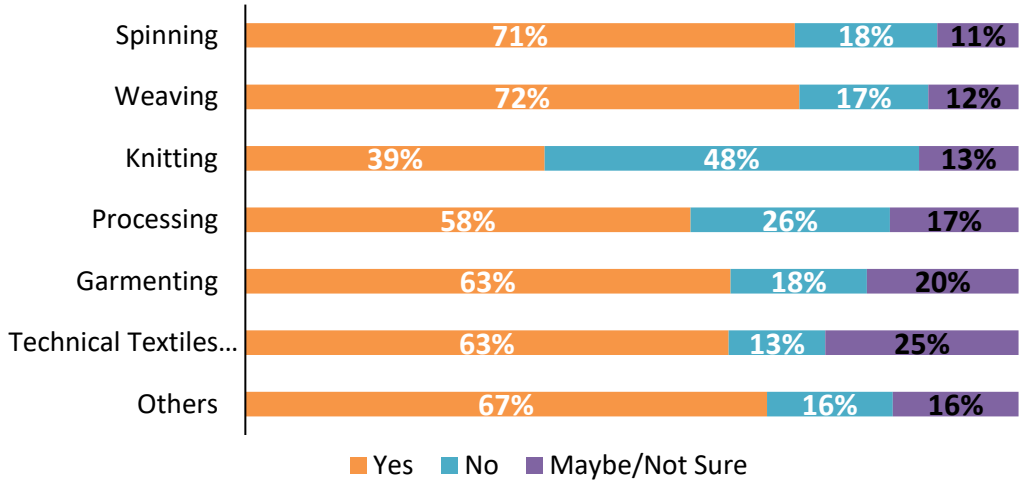
Exhibit 92: Cost Efficiency - Segment Wise



Source: Technopak Analysis, Base-559

TUFS has also enabled companies to focus on innovation using latest technologies. 66% of the respondents (369 beneficiaries) opined that this scheme has led to R&D across some segments. Almost half of the respondents in Knitting have not witnessed any Research and Development.

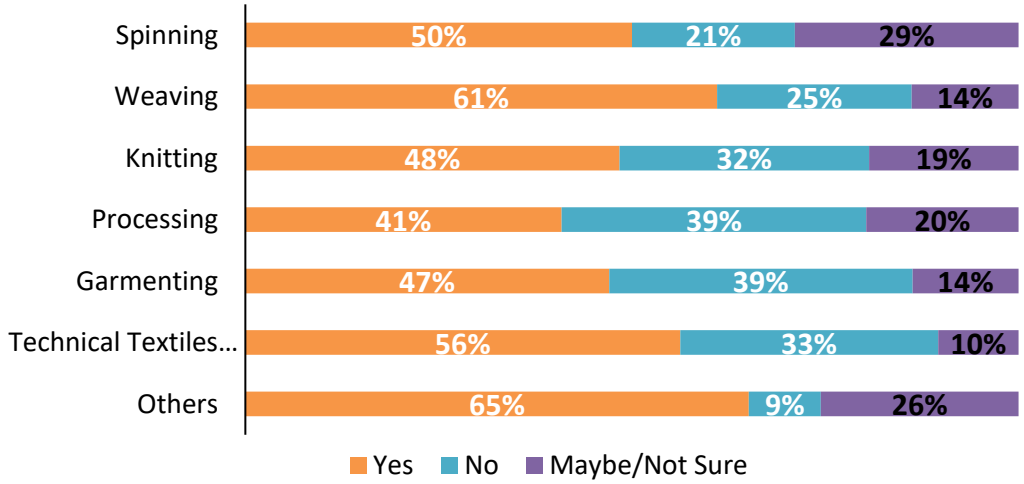
Exhibit 93: Research and Development - Segment Wise



Source: Technopak Analysis, Base-559

TUFS has also increased export competitiveness as a result of technology upgradation and combination of the factors previously mentioned. 56% of the respondents (313 beneficiaries) opined that this scheme has led to improvement in export competitiveness.

Exhibit 94: Export Competitiveness - Segment Wise



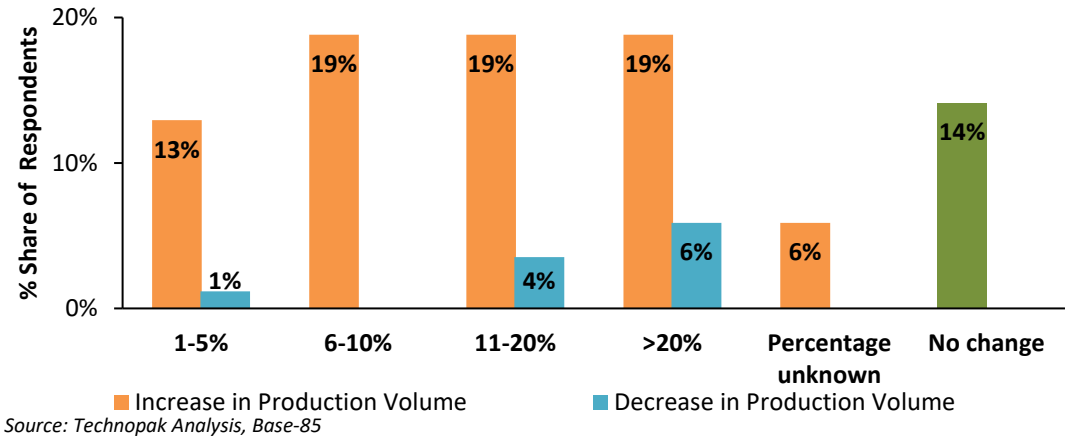
Source: Technopak Analysis, Base-559

Non-Beneficiaries

Production Volume

Of the 85 respondents to the question, 76% witnessed an increase in production volume. 19% of the respondents have reported >20% increase in production volume.

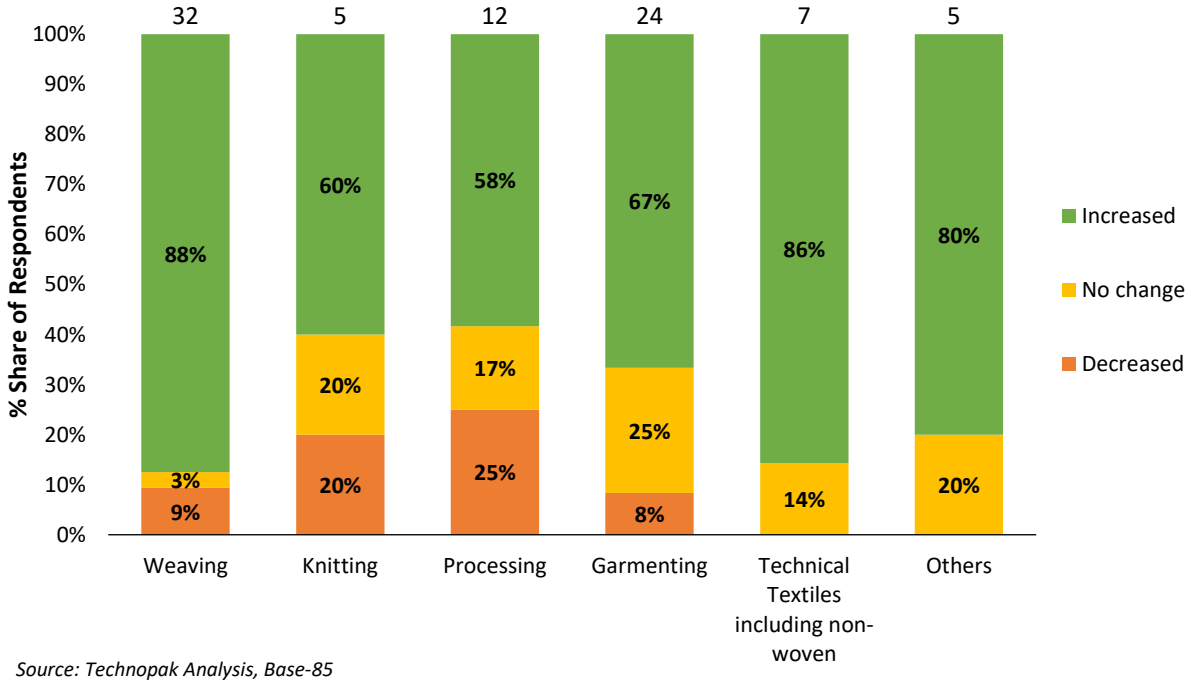
Exhibit 95: Change in Production Volume (%)



Source: Technopak Analysis, Base-85

Most of the non-beneficiary respondents from all sectors have witnessed high growth in production volume. 88% of the Weaving respondents have witnessed an increase in production volume. 25% of the respondents in Processing segment have witnessed decrease in production.

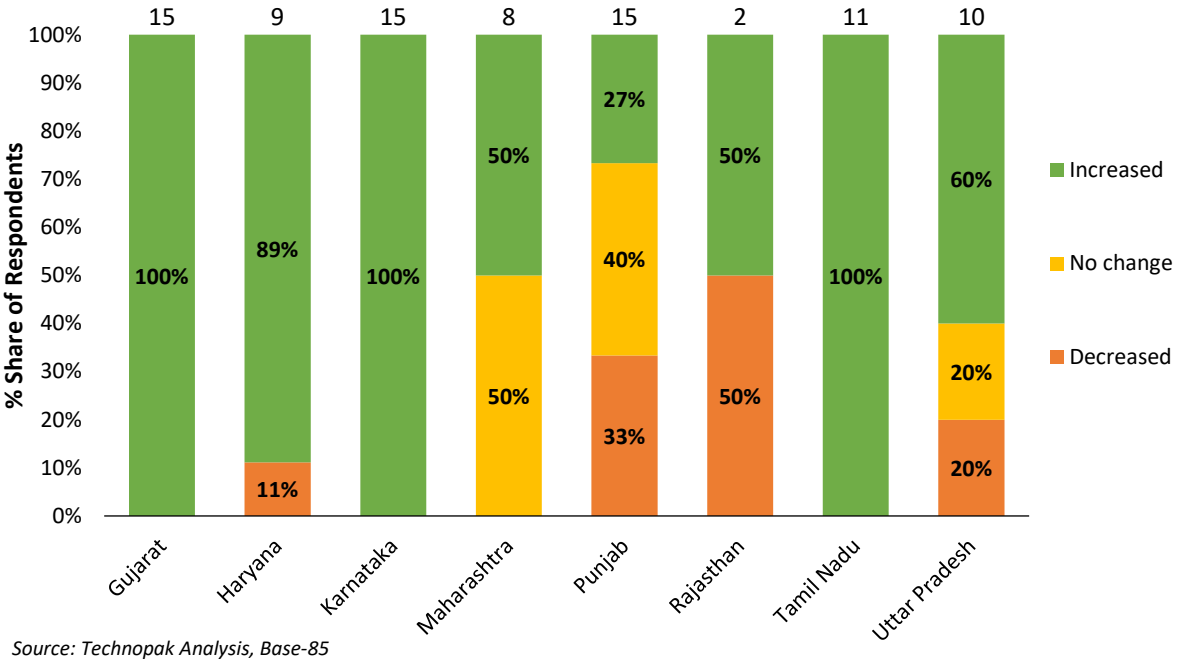
Exhibit 96: Change in Production Volume (%) - Segment Wise



Source: Technopak Analysis, Base-85

All the non-beneficiary respondents in Gujarat, Tamil Nadu and Karnataka have witnessed increase in production volume. However, 33% of respondents in Punjab have witnessed a decline in the production volume. 50% of the respondents in Rajasthan have witnessed a decline in the production volume.

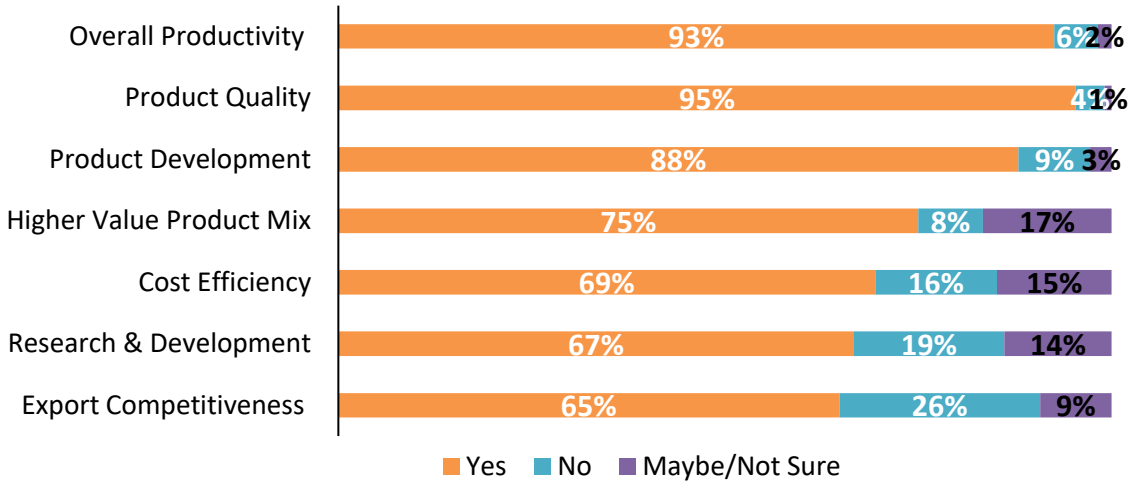
Exhibit 97: Change in Production Volume (%) - Geography Wise



Source: Technopak Analysis, Base-85

Non beneficiaries of ATUFS have also witnessed improvement in production and productivity factors. Majority of them are witnessing improvement in product quality, and increased new product development. Their export competitiveness has also improved as reported by 65% of the 108 respondents.

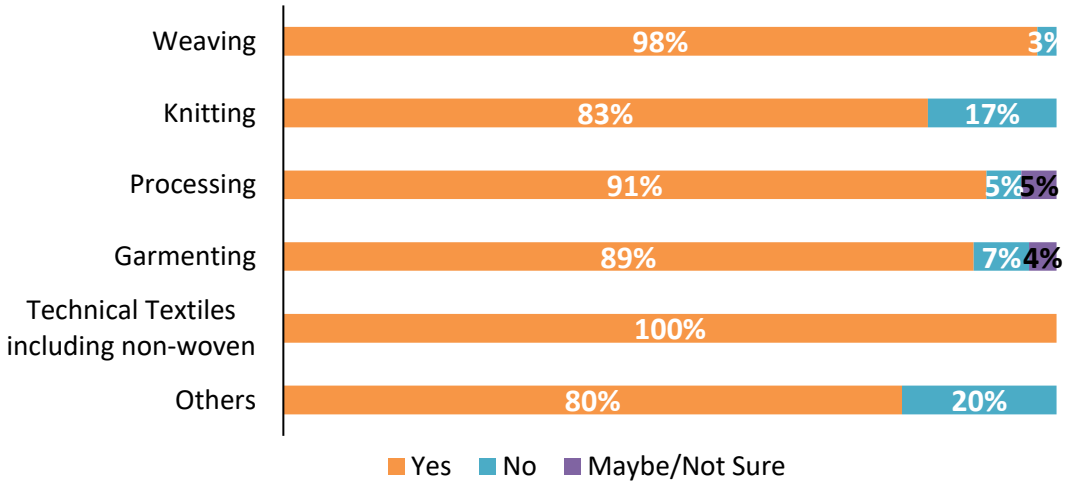
Exhibit 98: Improvement in Production and Productivity



Source: Technopak Analysis, Base-108

As much as 93% respondents (100 non beneficiaries) believed that their overall productivity has increased. Majority of the respondents are in favour that overall productivity has increased and everyone in Technical Textiles segment have witnessed the improvement.

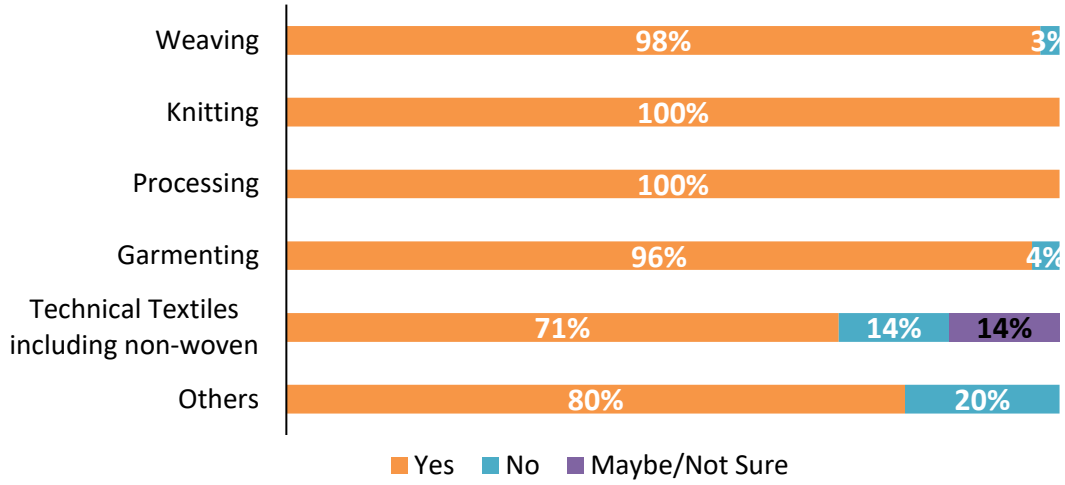
Exhibit 99: Overall Productivity - Segment Wise



Source: Technopak Analysis, Base-108

95% of the respondents (103 non-beneficiaries) opined that their companies have witnessed improvement in product quality. Majority of the respondents are in favour that product quality has increased during ATUFS period.

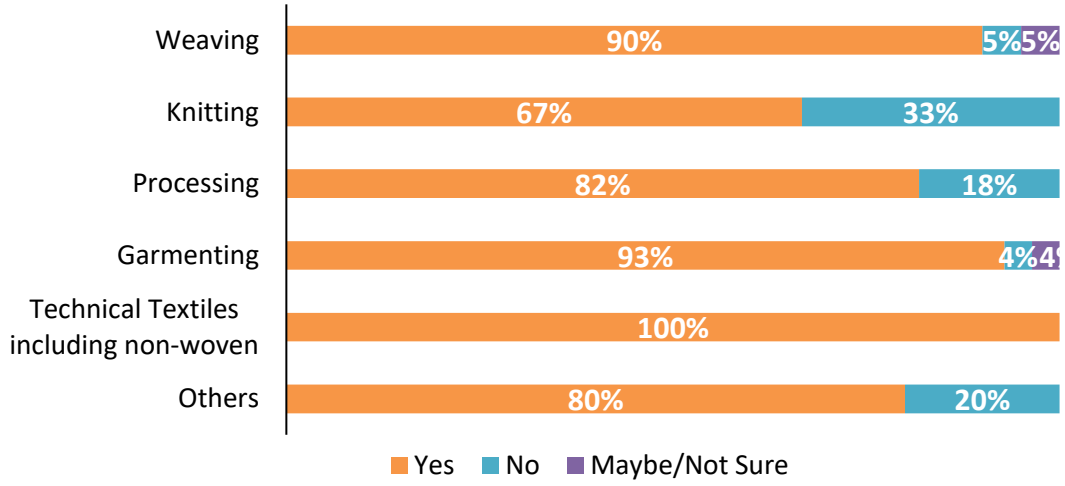
Exhibit 100: Product Quality - Segment Wise



Source: Technopak Analysis, Base-108

88% of the respondents (95 non-beneficiaries) opined that their companies have witnessed product development across most of the segments. However, some respondents (33% of the respondents) in Knitting have not witnessed significant product development.

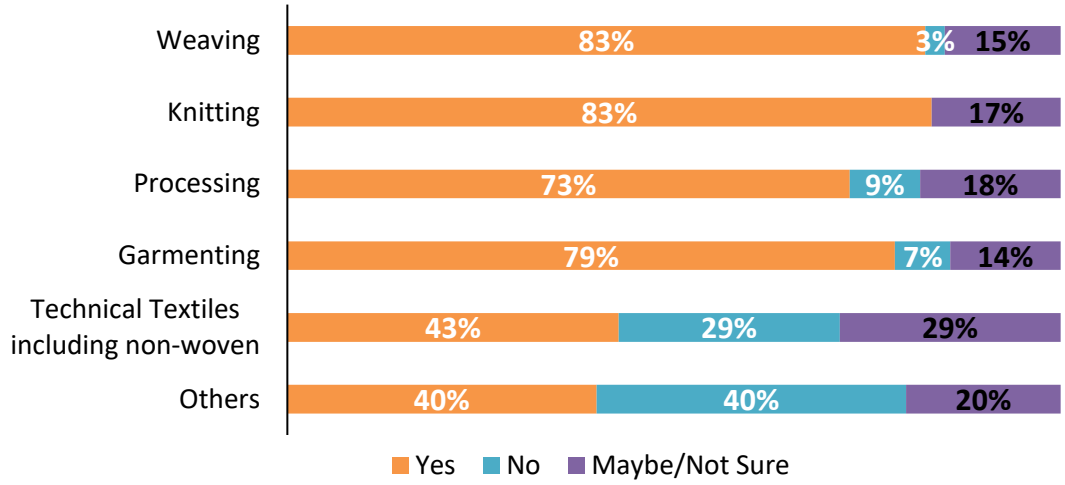
Exhibit 101: Product Development - Segment Wise



Source: Technopak Analysis, Base-108

75% of the respondents (81 non-beneficiaries) opined that their companies have witnessed higher value product mix across most of the segments. Although, Technical Textiles and others segments have not significantly witnessed higher value product mix.

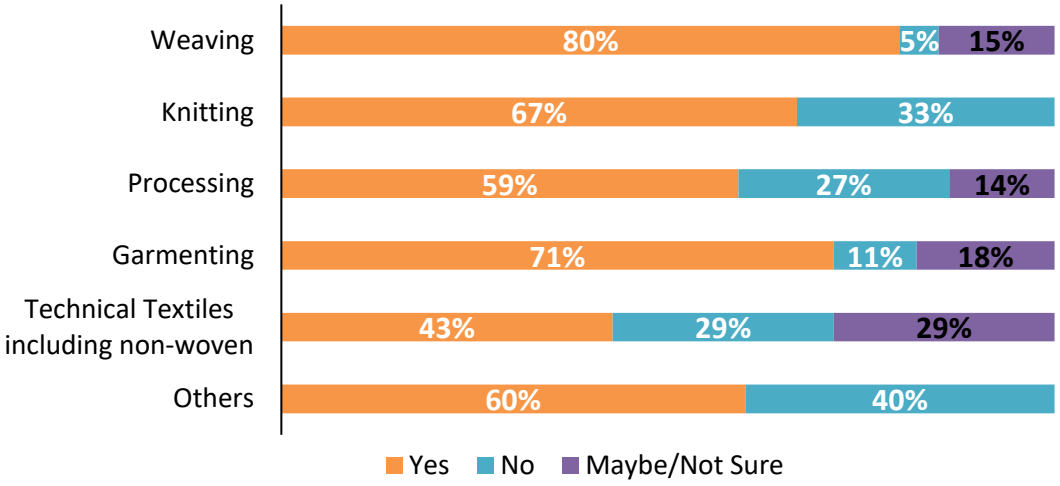
Exhibit 102: Higher Value Product Mix - Segment Wise



Source: Technopak Analysis, Base-108

69% of the respondents (74 non-beneficiaries) opined that their companies have witnessed improved cost efficiency across most of the segments. However, across technical textile segment, majority of respondents have witnessed no improvement.

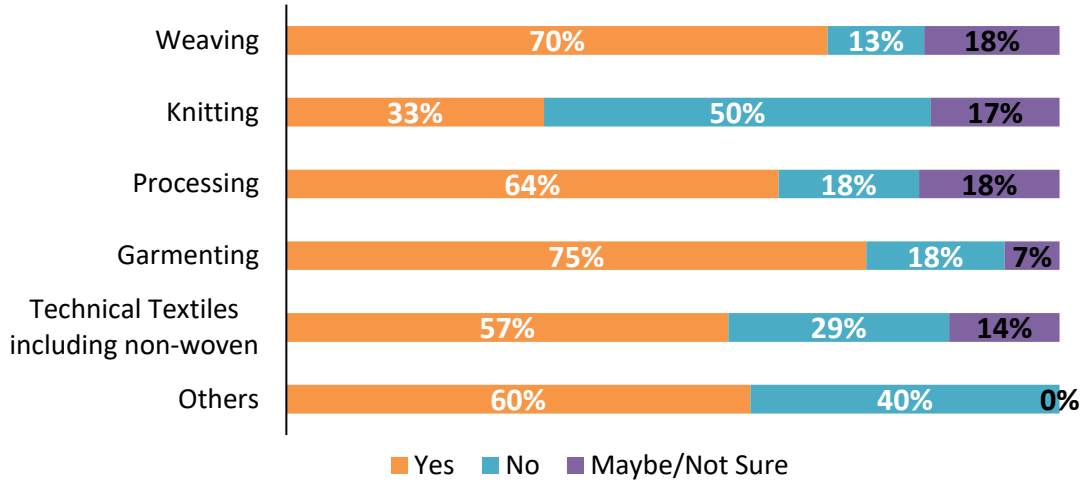
Exhibit 103: Cost Efficiency - Segment Wise



Source: Technopak Analysis, Base-108

67% of the respondents (72 non-beneficiaries) opined that their companies have witnessed better Research and Development across most of the segments. Although, knitting segment's respondents have not significantly witnessed better Research and Development.

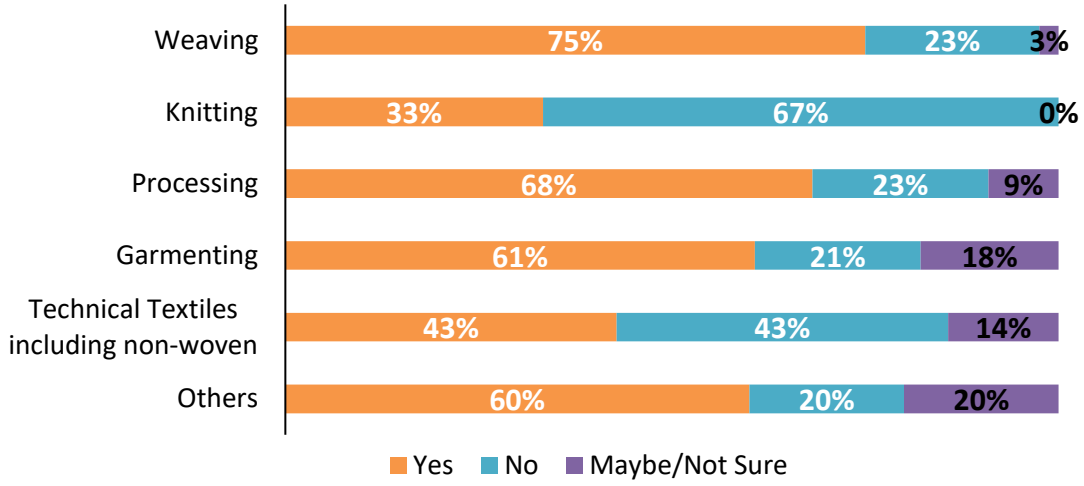
Exhibit 104: Research and Development - Segment Wise



Source: Technopak Analysis, Base-108

65% of the respondents (70 non-beneficiaries) opined that their companies have witnessed better export competitiveness across most of the segments, whereas, knitting and technical textile segments' respondents have not significantly witnessed better export competitiveness.

Exhibit 105: Export Competitiveness - Segment Wise



Source: Technopak Analysis, Base-108

Summary of Impact on Production & Productivity

Literature review indicates that beneficiaries gained significantly in terms of productivity improvement, waste reduction, cost saving, resource efficiency etc. due to investment in upgraded technology. The research indicates that elements such as invested capital and fixed capital also witnessed an increase in one year owing to the benefits provided under TUFS and other state-wise textile policies.

The KII analysis suggests that 94% and 82% respondents opined that TUFS had a significant impact on production and productivity respectively, whereas as per the expert panel, everybody opined that TUFS had a significant impact on production and productivity.

More than 85% beneficiaries witnessed an increase in production volume. In weaving segment, more than 75% beneficiaries witnessed an increase in production volume of greater than 5%. More than 90% beneficiaries opined that TUFS enhanced the overall productivity, whereas more than 85% opined that TUFS helped significantly in improving the product quality. Over the schemes, the highest increase in production volume was exhibited during ATUFS scheme with 46% of the respondents suggesting an increase >20%.

89% (559 beneficiaries) opined that the scheme contributed towards improvement in product quality, vis-à-vis 95% of 108 non-beneficiaries. 81% (559 beneficiaries) responded that the scheme led to product development in majority of the segments. 74% (559 beneficiaries) opined that TUFS enabled companies to efficiently use the available resources and reduce wastage to achieve higher cost efficiency, vis-à-vis 69% of 108 non-beneficiaries. 66% (559 beneficiaries) opined that TUFS led to R&D across some segments. 56% (559 beneficiaries) responded that the scheme increased export competitiveness as a result of technology upgradation and combination of the factors previously mentioned.

Most of the non-beneficiary respondents from all sectors have witnessed high growth in production volume. However, 33% of the non-beneficiary respondents in Punjab have witnessed a decrease in production volume <20%.

4.4 Exports

Past Trend Analysis - Literature Review

- **Prof. Dr. M.D. Teli, Head of Department of Fibers & Textile Processing Technology on Technology Upgradation Fund Scheme (2003)**

  According to the study, all the segments that availed TUFS benefits witnessed an increase in their average turnover on exports - the turnover varied between 8% and 58%, with average at 27%. Also, due to improvement in product quality in most segments, increase in UVR was observed in exports - average increase in UVR was approx. 6%, with exceptional increase in UVR in case of fabric embroidery at 113%.

- **Technopak Advisors Evaluation Report of TUFS (2006)**

  As per the study, the export market share increased in composite industry, garment manufacturing, processing, spinning, and weaving. As per the maximum responses, TUFS played an important role in increasing exports in segments such as composite upgradation, fabric embroidery, garment manufacturing, made up manufacturing, manufacture of viscose filament yarn, processing of fibers, yarn, fabrics, garments and made-ups and synthetic filament yarn texturizing, crimping and twisting sectors. The processing industry was not upgraded to the same extent as increasing fabric and garment productivity, this acted as a bottleneck for many manufacturers and exporters.

- **NCEUS Evaluation Report on Impact of TUFS on the Unorganized Sector (2009)**

  As per the report, micro and small enterprises and traditional industries accounted for about 55% of national exports, yet India's share in world export was only approx. 1.1% in 2006. This indicated the lack of competitiveness of Indian manufacturing goods in international market, majorly from unorganized organizations.

- **CRISIL Evaluation Report of TUFS (2010)**

  According to CRISIL report, since the inception of TUF scheme, India's position improved from 9th largest exporter in T&A in 1999 to 5th largest exporter in 2008. However, out of all the segments, garmenting suffered from high degree of fragmentation - despite being the largest exporter in the country it barely made up for less than 1% of the country's total garment exports.

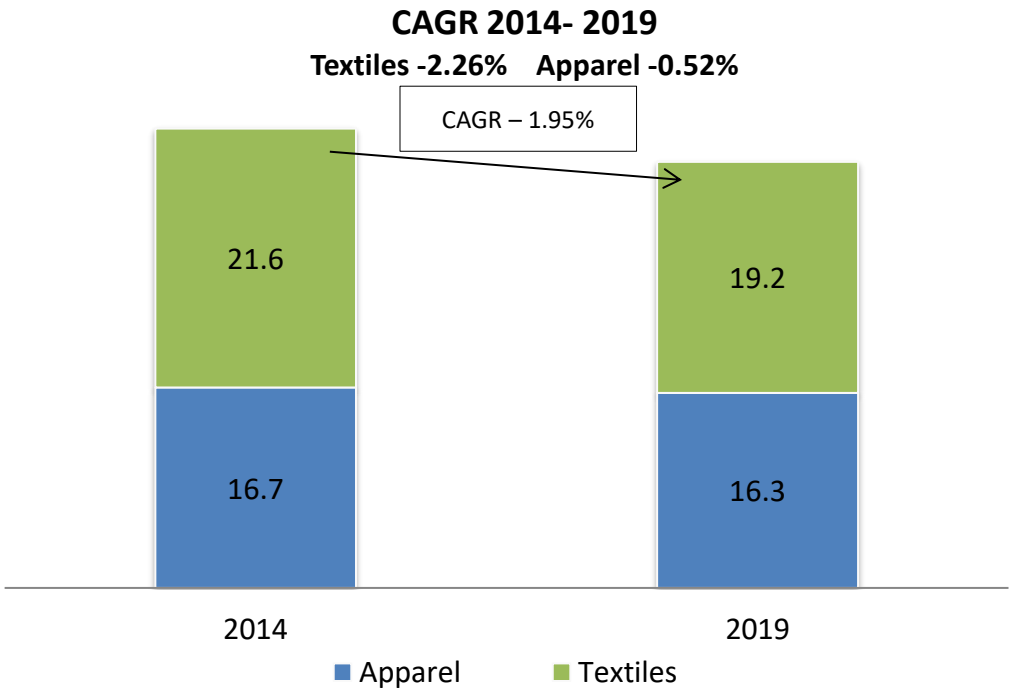
- **Wazir Advisors Evaluation Report of RTUFS and RRTUFS (2016)**

  As per the report, with the addition of new technologies, most companies benefited in terms of product development and innovative practices. Majority of units experienced domestic and export UVR growth between 1-10%. Highest domestic & export UVR increase was observed in garmenting, composite & others segments. Exports in textile and apparel industry grew along with increase in production and overall competitiveness. T&A exports grew from USD 9 Bn in 1998 - 99 to USD 37.7 Bn in 2014 – 15, growing at a CAGR of 9%. India's share in global exports increased from 3.1% in 1998 - 99 to approx. 5% in 2014 - 15. India's T&A export growth (CAGR 8.8%) was higher than world average (CAGR 5.6%) during the TUFS period. Most of the beneficiaries admitted that technology upgradation & hence export competitiveness increased due to RTUFS & RRTUFS. Exports growth was the highest during RTUFS period. During RRTUFS period growth was sustainable except for fiber exports that witnessed a decline due to unfavourable export market scenario.

Indian T&A Exports - Current Scenario

- **T&A Exports Trend (2014-19)**

Exhibit 106: T&A Exports (USD Bn)



Source: Trade data from DGFT, Department of Commerce- India, Secondary Research, Technopak Analysis

- **Textile Exports Scenario**

Exhibit 107: Fibre Export Scenario

Fibre Export (USD Mn)	2014	2019	Export Growth (5-yr. CAGR)
Cotton	2,429	1,129	-14%
Manmade fibre	563	529	-1%
Wool	55	33	-10%
Silk	18	15	-4%
Others	177	291	10%
Total	**3,242**	**1,997**	**-9%**

Source: Trade data from DGFT, Department of Commerce- India, Secondary Research, Technopak Analysis

India's exports of textile fibers have declined by 9% from 2014 to 2019 (Exhibit 107). Yarn and fabric exports have declined by 4% and 1% respectively in the same period (Exhibit 108, Exhibit 109).

Exhibit 108: Yarn Export Scenario

Yarn Export (USD Mn)	2014	2019	Export Growth (5-yr. CAGR)
Cotton	4,044	2,927	-6%
Manmade Fibre	1,975	1,811	-2%
Wool	80	117	8%
Silk	5	2	-14%
Others	63	70	2%
Total	**6,167**	**4,926**	**-4%**

Source: Trade data from DGFT, Department of Commerce- India, Secondary Research, Technopak Analysis

Exhibit 109: Fabric and Woven Export Scenario

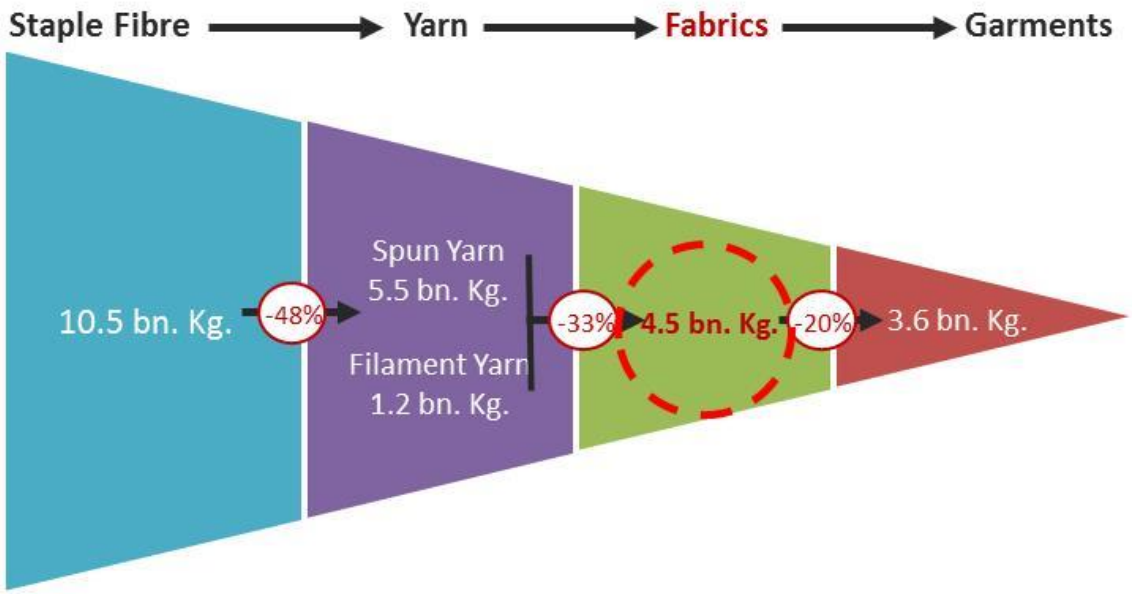
Fabric Export (USD Mn)	2014	2019	Export Growth (5-yr. CAGR)
Knit Fabric			
Cotton	171	243	7%
Others	76	183	19%
Manmade fibre	10	15	8%
Wool	1	0	-24%
Woven Fabric			
Cotton	1,884	1,975	1%
Others	485	341	-7%
Manmade fibre	2,225	1,830	-4%
Wool	46	32	-7%
Silk	118	67	-11%
Total	**5,017**	**4,687**	**-1%**

Source: Trade data from DGFT, Department of Commerce- India, Secondary Research, Technopak Analysis

Fabric as a Weak Link

Currently, the Indian textile value chain is not perfectly balanced in terms of production utilisation from fiber upto garments. This means that fiber produced in India is not completely consumed for making yarn. Similarly, yarn produced is not consumed entirely for fabric production and so on throughout the value chain. Major gap is observed from yarn to fabric stage. This clearly indicates that India's fabric production capacity is not sufficient to consume the yarn produced in India. Fabric capacity for weaving, knitting and processing is a weak link in the Indian Textile value chain.

Exhibit 110: Capacity gap in the Textile & Apparel value chain



Source: Ministry of Textiles Presentation given to PMO's office (2015), Technopak Analysis

35% of total yarn produced in India gets exported. This indicates lack of capacity at the fabric stage. Whereas, for fabrics, the exports are only 6% of total production.

Percentage of India's exports to production for Textile products

Product	India's exports / India's production (%)
Yarn	35%
Fabrics	6%

Source: Technopak Analysis

Man-Made (MMF) vs Cotton Apparel

Synthetic Apparel trade is growing at a faster rate than Cotton Apparel trade and provides a tremendous growth opportunity in the coming years

Manmade (MMF) vs Cotton Apparel

Exhibit 111: Global Synthetic Apparel Trade (USD Bn)

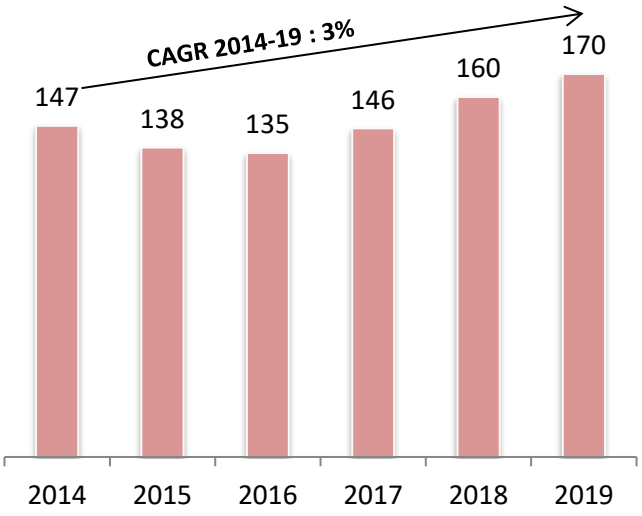
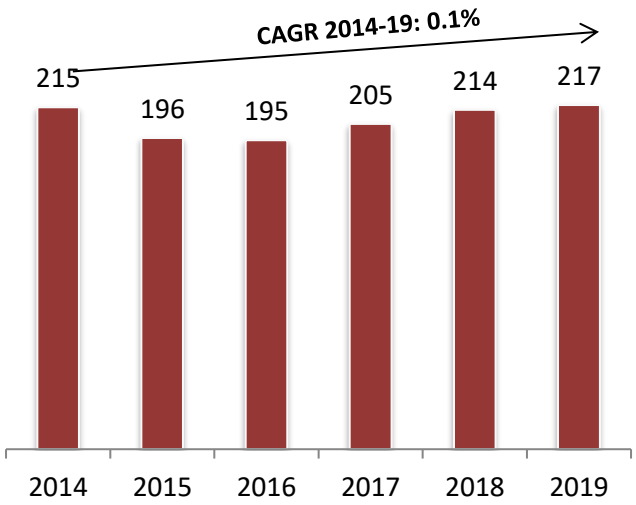


Exhibit 112: Global Cotton Apparel Trade (USD Bn)



Source: ITC Trademap, Ministry of Textiles, Technopak Analysis

- **Average export growth % of competing countries**

India's global competitiveness improved considerably due to TUF Scheme. India's textiles & clothing average export has been higher than the world average throughout the TUFS period up to RRTUFS period. During ATUFS period, export from India has been sluggish and showed negative growth trend.

Exhibit 113: Average export growth percentage of competing countries during schemes

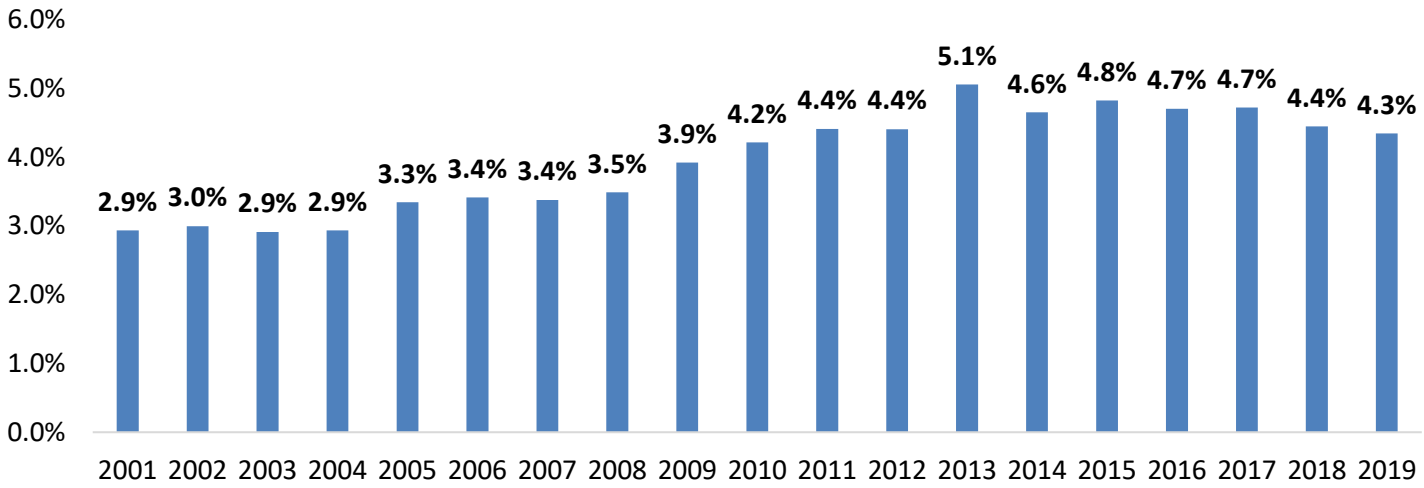
Country	TUFS	MTUFS	RTUFS	RRTUFS	ATUFS
India	10.5%	7.1%	19.4%	3.6%	-3.1%
China	11.5%	6.9%	17.7%	4.8%	1.0%
Turkey	8.3%	2.6%	14.3%	5.2%	2.1%
Bangladesh	11.0%	17.0%	15.4%	12.3%	5.7%
Pakistan	8.9%	1.7%	17.0%	0.5%	9.7%
Vietnam	19.6%	19.5%	26.0%	7.8%	0.7%
World	6.2%	3.6%	16.9%	3.0%	4.2%

Source: ITC Trademap, Technopak analysis

- **India's Share in Global Exports**

India' share in global exports has increased from 2.9% in 2001 to 4.3% in 2019 during TUFS. India's share in global exports has reached to a maximum of 5.1% in 2013. Since 2014, India's share of global exports has remained stable between 4.3% to 4.8%.

Exhibit 114: India's Share in Global Exports



Source: ITC Trademap, Technopak analysis

- **Change in share of top 15 T&A Exporting Nations**

China's share in global T&A exports has come down from 34.6% to 31.3% in last 5 years. This share has been majorly captured by Bangladesh and Vietnam. India's share in global exports has reduced from 4.6% in 2014 to 4.3% in 2019.

Exhibit 115: Change in Share of Global T&A Exports

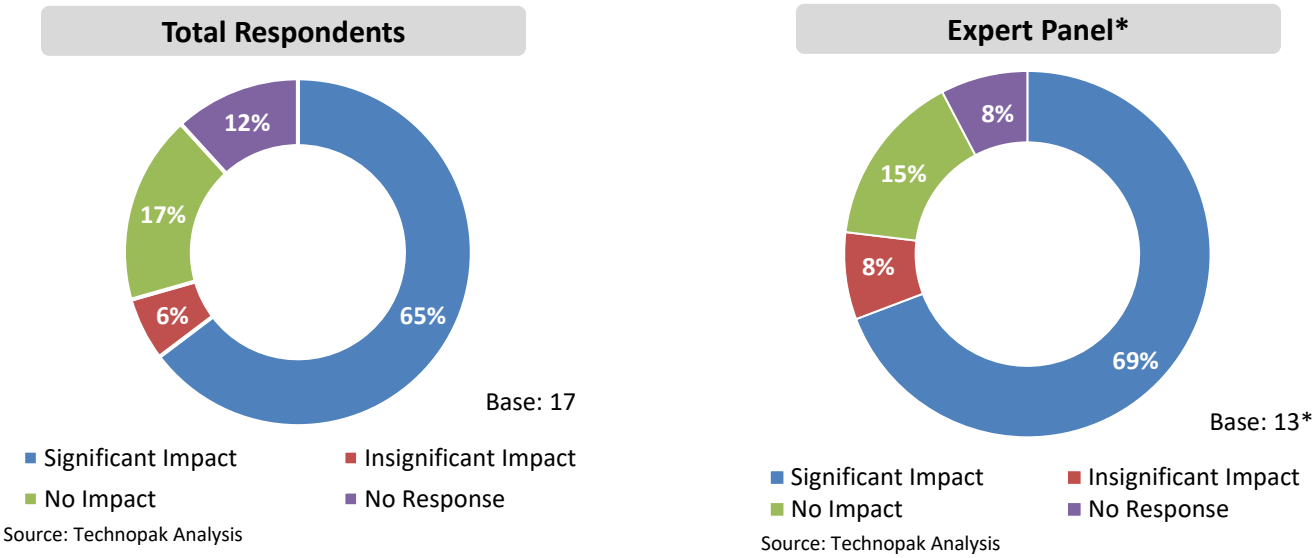
S. No.	Countries	2014	2015	2016	2017	2018	2019	Growth
1	China	34.63%	35.50%	33.84%	32.68%	31.91%	31.39%	-1.95%
2	Bangladesh	3.71%	3.68%	4.66%	4.66%	4.90%	5.00%	6.13%
3	Vietnam	3.04%	3.54%	3.81%	4.03%	4.39%	4.92%	10.09%
4	Germany	4.38%	3.92%	4.08%	4.45%	4.66%	4.61%	1.04%
5	Italy	4.51%	4.11%	4.28%	4.31%	4.40%	4.41%	-0.47%
6	India	4.65%	4.82%	4.70%	4.72%	4.44%	4.34%	-1.37%
7	Turkey	3.54%	3.42%	3.48%	3.40%	3.34%	3.36%	-1.02%
8	USA	3.15%	3.23%	3.13%	3.28%	3.25%	3.15%	-0.05%
9	Spain	2.02%	2.03%	2.25%	2.42%	2.40%	2.44%	3.90%
10	Netherlands	1.83%	1.86%	1.99%	2.12%	2.27%	2.38%	5.37%
11	Hong Kong, China	3.52%	3.44%	3.02%	2.70%	2.45%	2.17%	-9.24%
12	France	2.01%	1.93%	2.00%	2.00%	2.10%	2.09%	0.72%
13	Belgium	1.89%	1.83%	1.91%	1.91%	1.95%	1.86%	-0.34%
14	Indonesia	1.53%	1.59%	1.57%	1.59%	1.58%	1.64%	1.27%
15	Pakistan	1.66%	1.68%	1.65%	1.65%	1.64%	1.60%	-0.73%

Source: ITC Trademap, Technopak Analysis

KII ANALYSIS

Out of 62 responses, 17 of them (27%) responded to the question asked on impact of TUFS on Indian textile & apparel industry. Out of 17 respondents, 11 (65%) answered that TUFS had a positive impact on exports (value). Out of 13 expert respondents, 9 (69%) opined that TUFS had a significant impact on Export Value

Exhibit 116: Increase in Exports Value



Source: Technopak Analysis

Source: Technopak Analysis

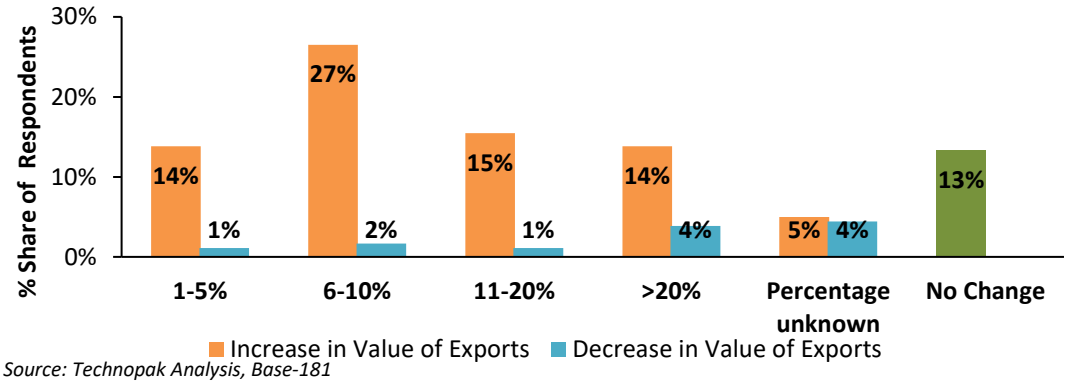
UHS ANALYSIS

Beneficiaries

Value of Exports

Of the 181 respondents to the question, an increase in values of exports >6% has been witnessed by 56% of the respondents.

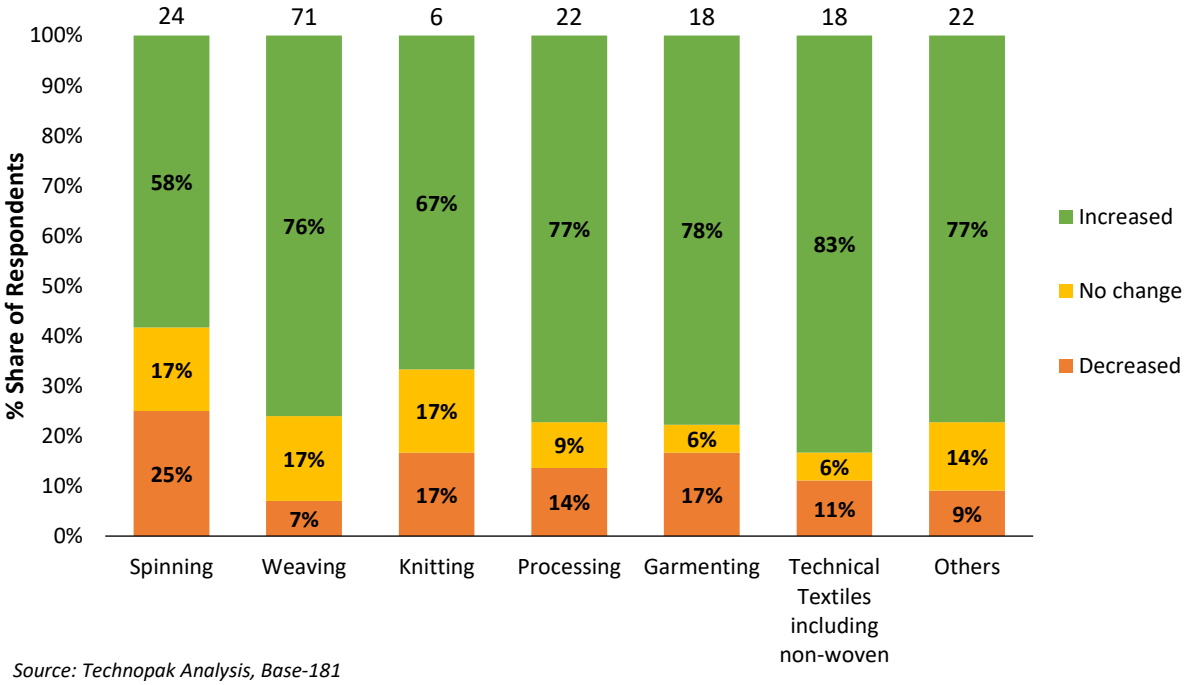
Exhibit 117: Change in Value of Exports (%)



Source: Technopak Analysis, Base-181

Majority of the segments have witnessed an increase in exports value with technical textile segment having highest positive response of 83% for export increase. Some respondents in Spinning, Knitting and Garmenting have witnessed decrease in value of exports.

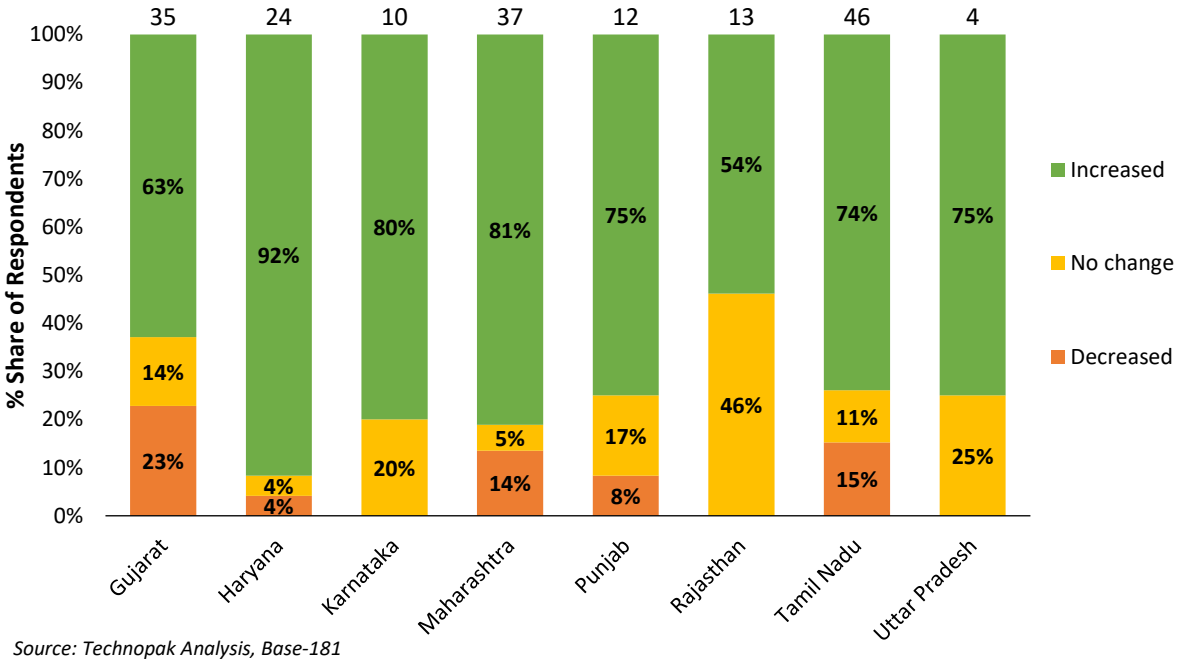
Exhibit 118: Change in Value of Exports (%) - Segment Wise



Source: Technopak Analysis, Base-181

Among states, in Haryana 92% of respondents have witnessed increase in value of exports of due to TUFS. 23% of the respondents in Gujarat have witnessed a decrease in value of exports.

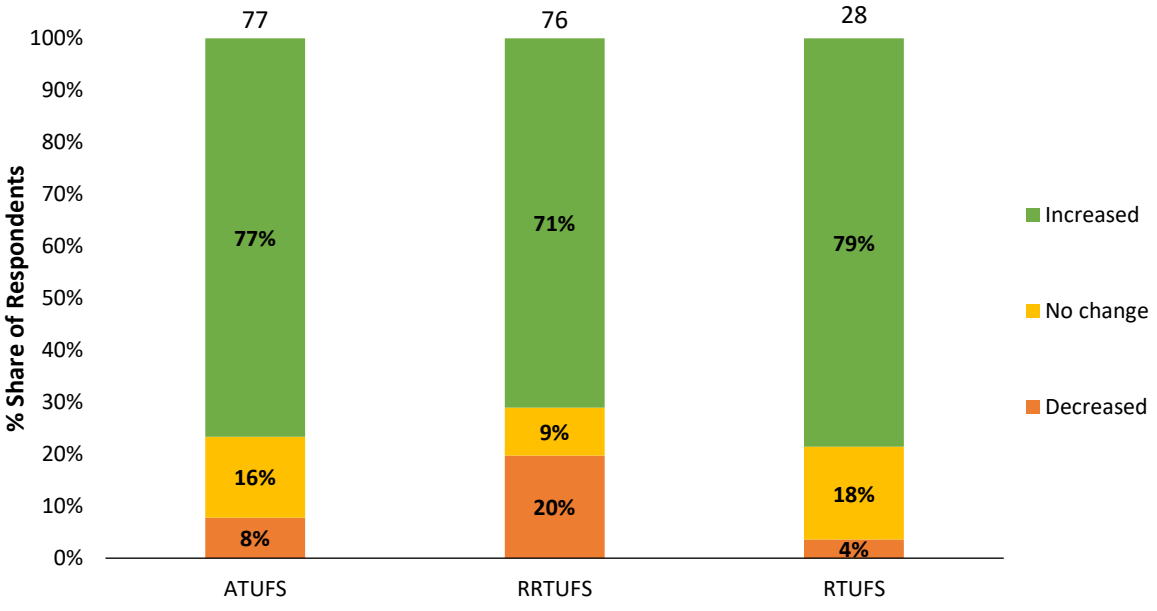
Exhibit 119: Change in Value of Exports (%) - Geography Wise



Source: Technopak Analysis, Base-181

Across schemes, 79% respondents of RTUFS have witnessed increase in value of exports. 20% respondents during RRTUFS have witnessed decline in value of exports.

Exhibit 120: Change in Value of Exports (%) - Scheme Wise

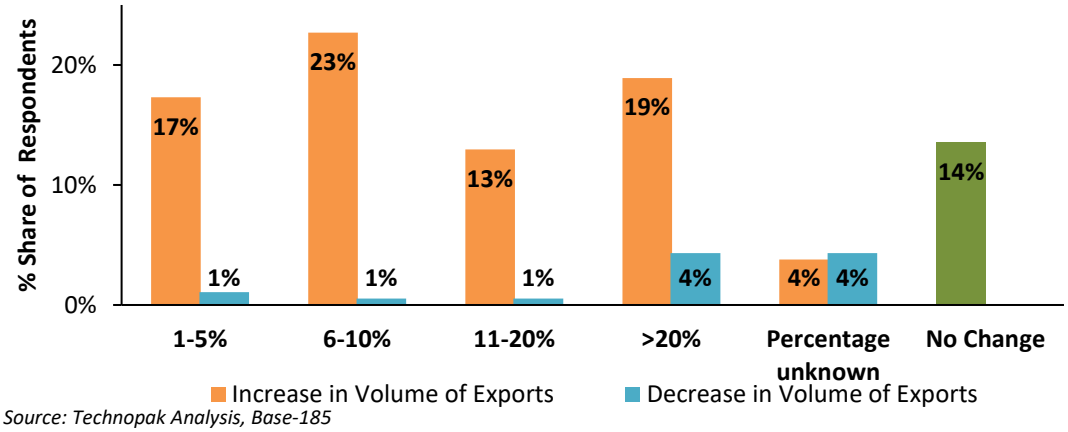


Source: Technopak Analysis, Base-181

Volume of Exports

Of the 185 respondents to the question, an increase in volume of exports >6% has been witnessed by 55% of them.

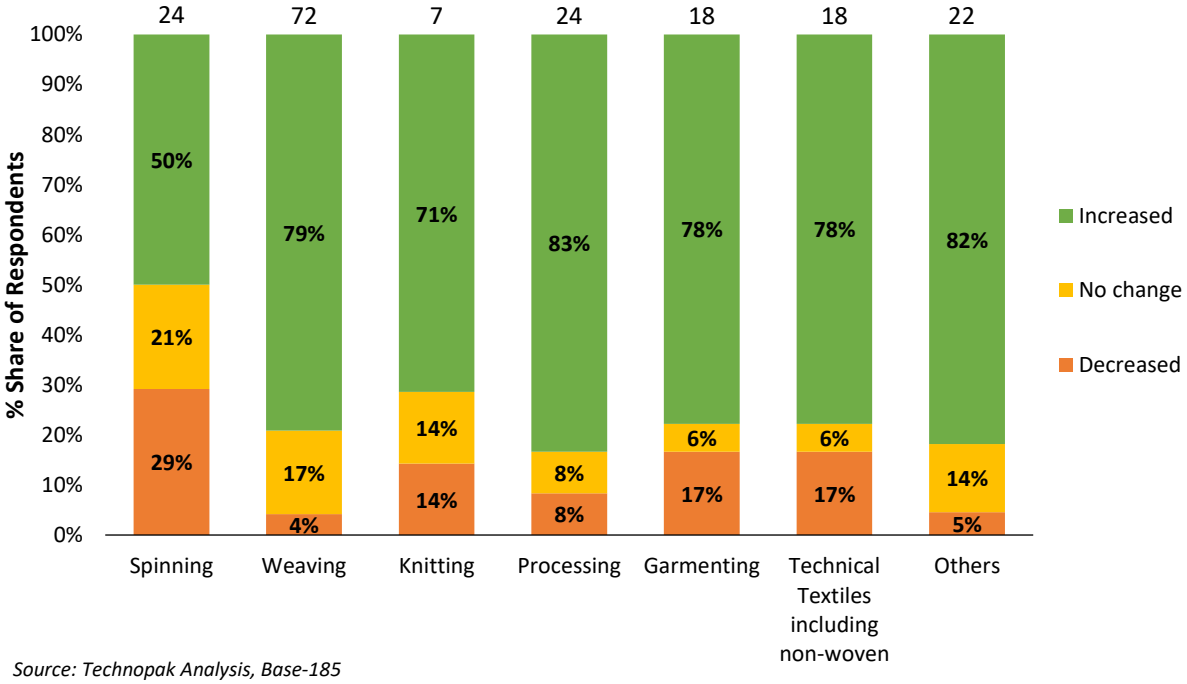
Exhibit 121: Change in Volume of Exports (%)



Source: Technopak Analysis, Base-185

An increase in volume of exports has been observed most by Processing segment respondents. Majority of segments have experienced export's volume growth. However, 29% of the respondents in Spinning segment have witnessed decline in volume of exports. Export volume has increased due to factors like product development, quality improvement and innovation.

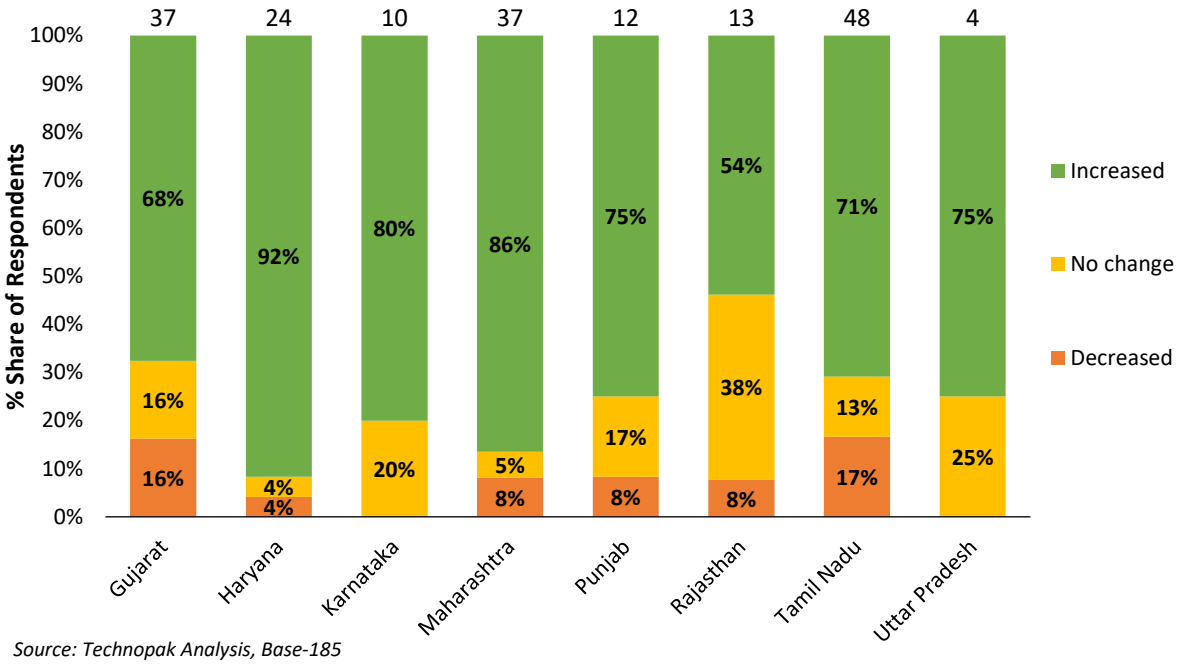
Exhibit 122: Change in Volume of Exports (%) - Segment Wise



Source: Technopak Analysis, Base-185

Among states, in Haryana 92% respondents have witnessed increase in volume of exports due to TUFS. 16% respondents in Gujarat and 17% in Tamil Nadu have witnessed decline in volume of exports.

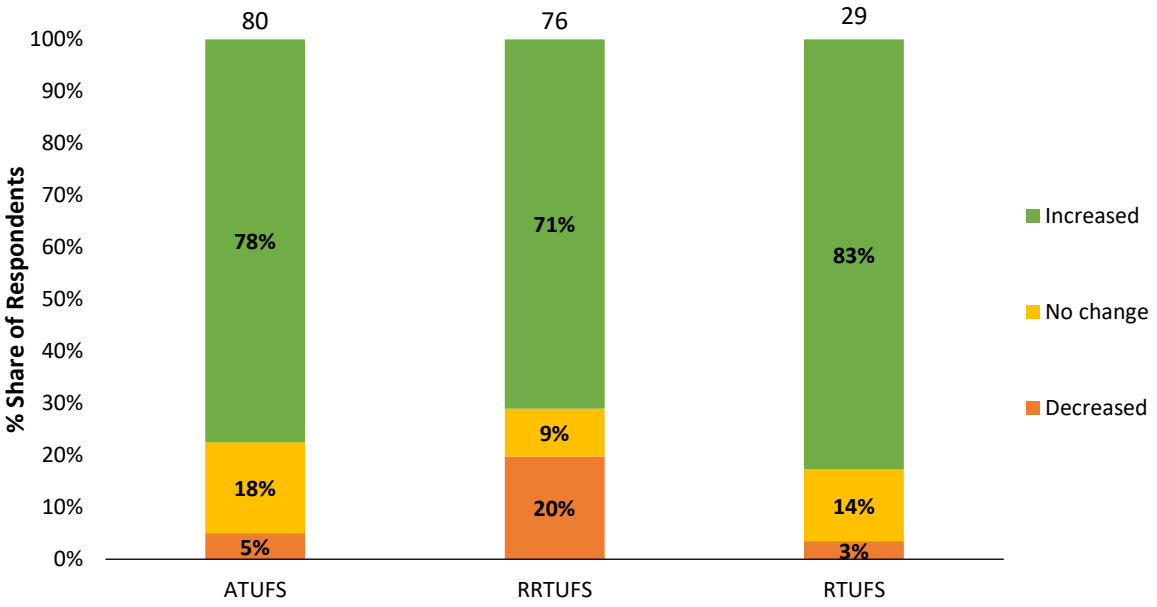
Exhibit 123: Change in Volume of Exports (%) - Geography Wise



Source: Technopak Analysis, Base-185

Across schemes, 83% respondents of RTUFS have witnessed increase in volume of exports. 20% respondents during RRTUFS have witnessed decline in volume of exports.

Exhibit 124: Change in Volume of Exports (%) - Scheme Wise

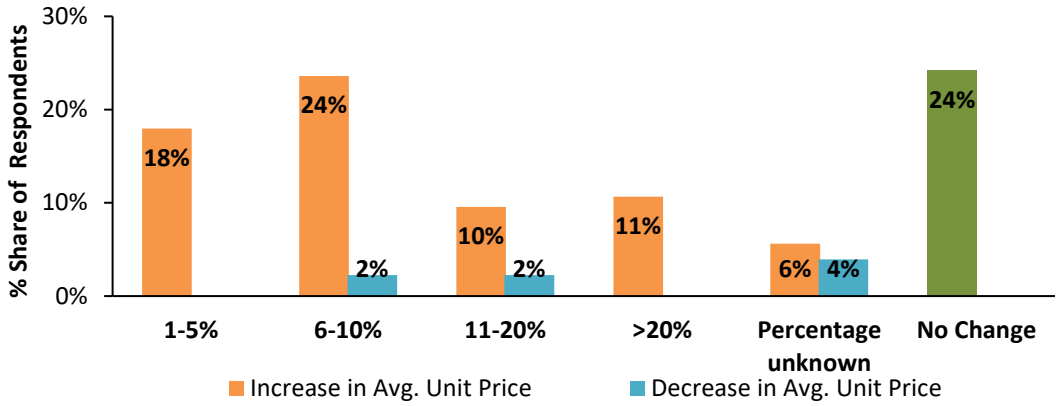


Source: Technopak Analysis, Base-185

Average Unit Price

Of the 178 respondents to the question, an increase in average unit price >6% has been witnessed by 45% of them. A significant 24% have not witnessed a change in average unit price of the exports.

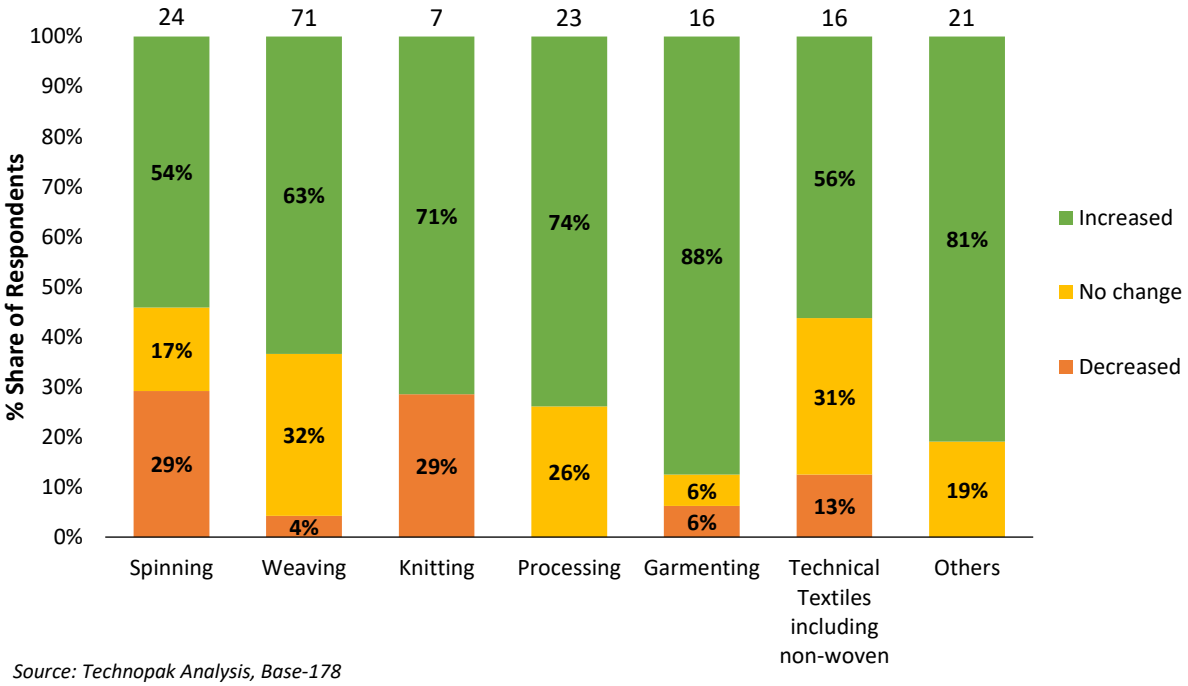
Exhibit 125: Change in Average Unit Price (%)



Source: Technopak Analysis, Base-178

Highest increase in average unit price has been observed by Garmenting segment. Weaving and technical textile respondents' have indicated that almost one-third of them witnessed no change in average unit sales price. Average unit price has increased due to above stated factors like high value product mix, quality improvement and research and development.

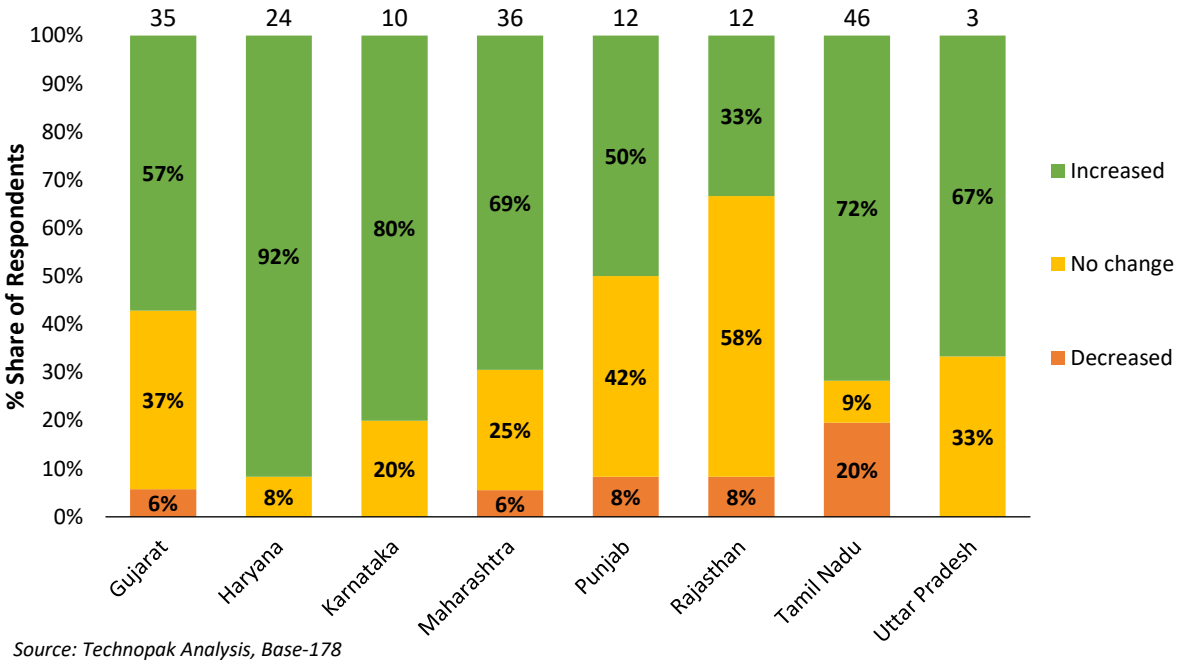
Exhibit 126: Change in Average Unit Price (%) - Segment Wise



Source: Technopak Analysis, Base-178

Among states, in Haryana 92% respondents have witnessed highest percentage increase in average unit price of due to TUFS. 20% of the respondents in Tamil Nadu have witnessed a decrease in average unit price.

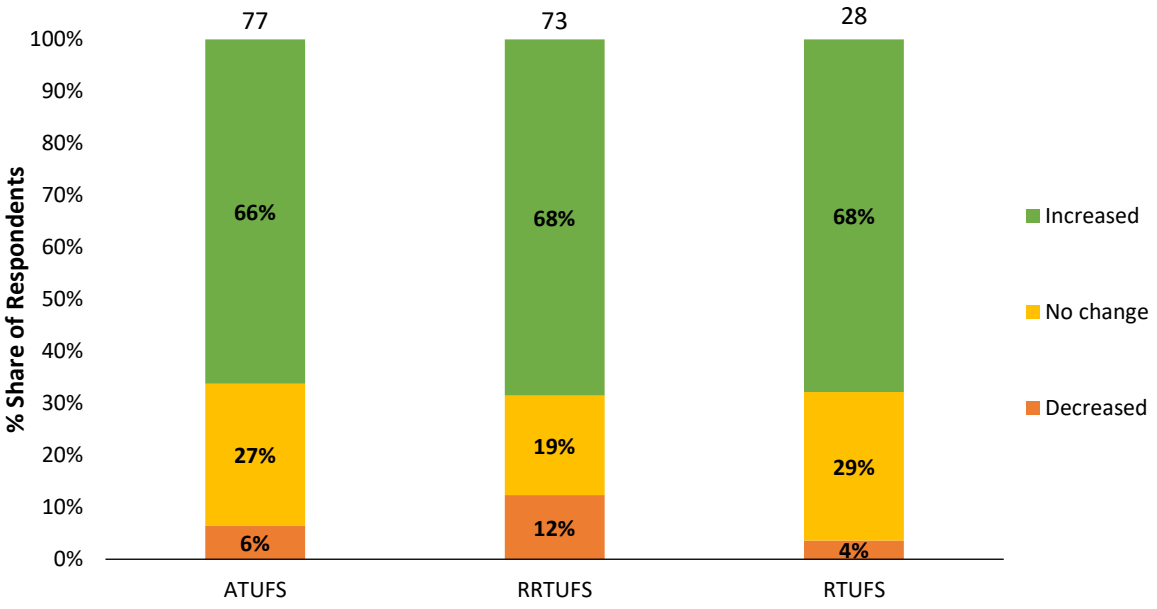
Exhibit 127: Change in Average Unit Price (%) - Geography Wise



Source: Technopak Analysis, Base-178

Across schemes, around two-third respondents have witnessed increase in average unit price. 12% respondents during RRTUFS have witnessed decline in average unit price.

Exhibit 128: Change in Average Unit Price (%) - Scheme Wise



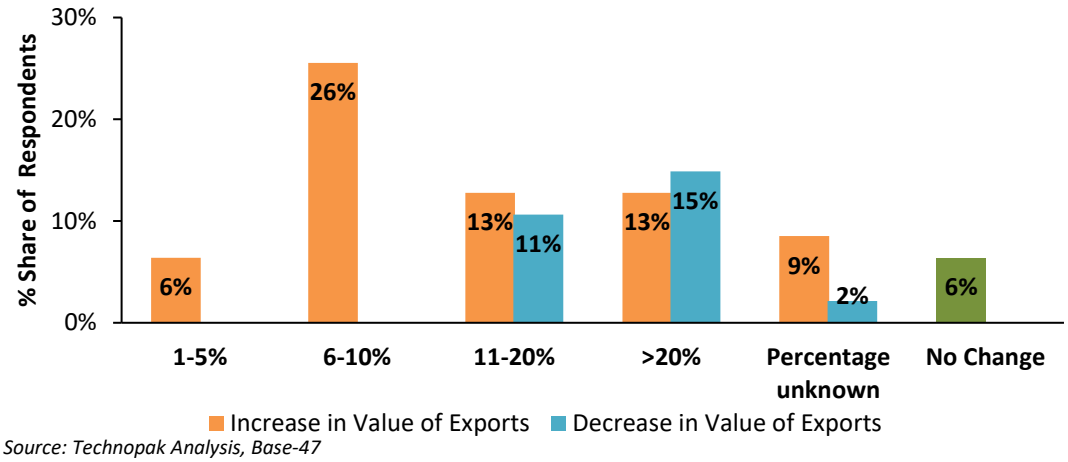
Source: Technopak Analysis, Base-178

Non-Beneficiaries

Value of Exports

Of the 47 non beneficiaries who responded to the question, an increase in values of exports >6% has been witnessed by 52% of the respondents. However, 26% respondents have witnessed a decrease in value of exports >11%.

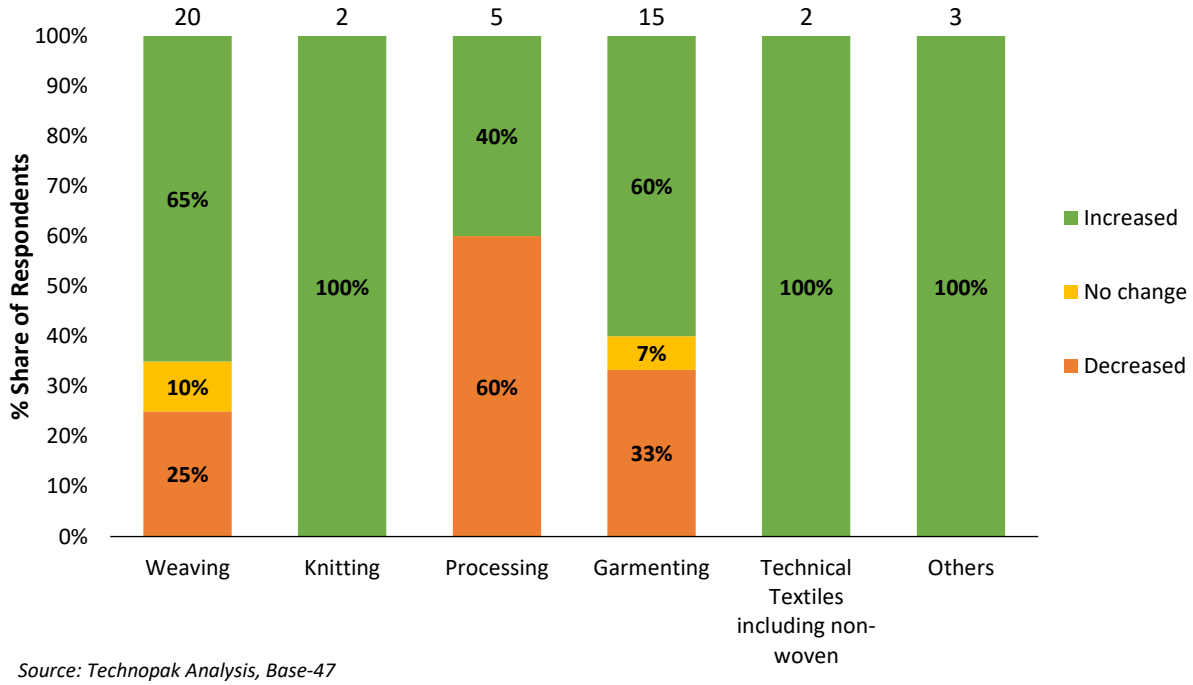
Exhibit 129: Change in Value of Exports (%)



Source: Technopak Analysis, Base-47

According to responses by non-beneficiaries, 25% in weaving segment and 33% in garmenting segments have witnessed a decrease in the value of exports.

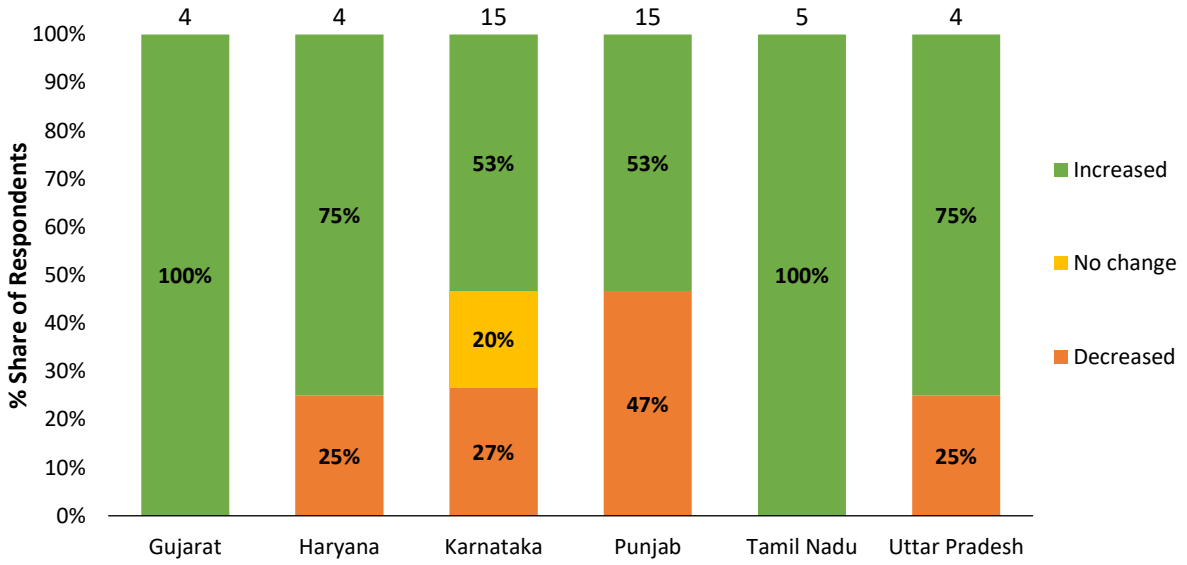
Exhibit 130: Change in Value of Exports (%) - Segment Wise



Source: Technopak Analysis, Base-47

Among states, in Punjab 47% of 15 non-beneficiaries' respondents have witnessed decrease in value of exports.

Exhibit 131: Change in Value of Exports (%) - Geography Wise

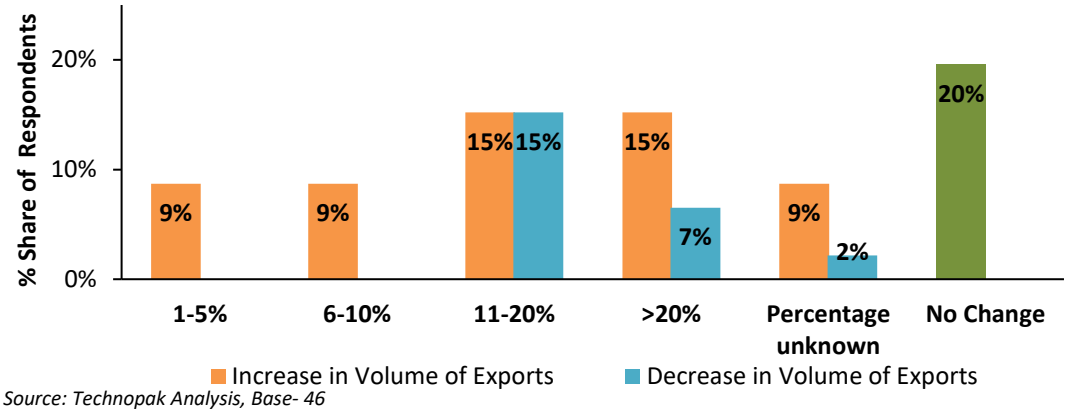


Source: Technopak Analysis, Base-47

Volume of Exports

Of the 46 respondents to the question, an increase in volume of exports >6% has been witnessed by 39% of them. Some of the non-beneficiaries have also witnessed decrease in volume of exports.

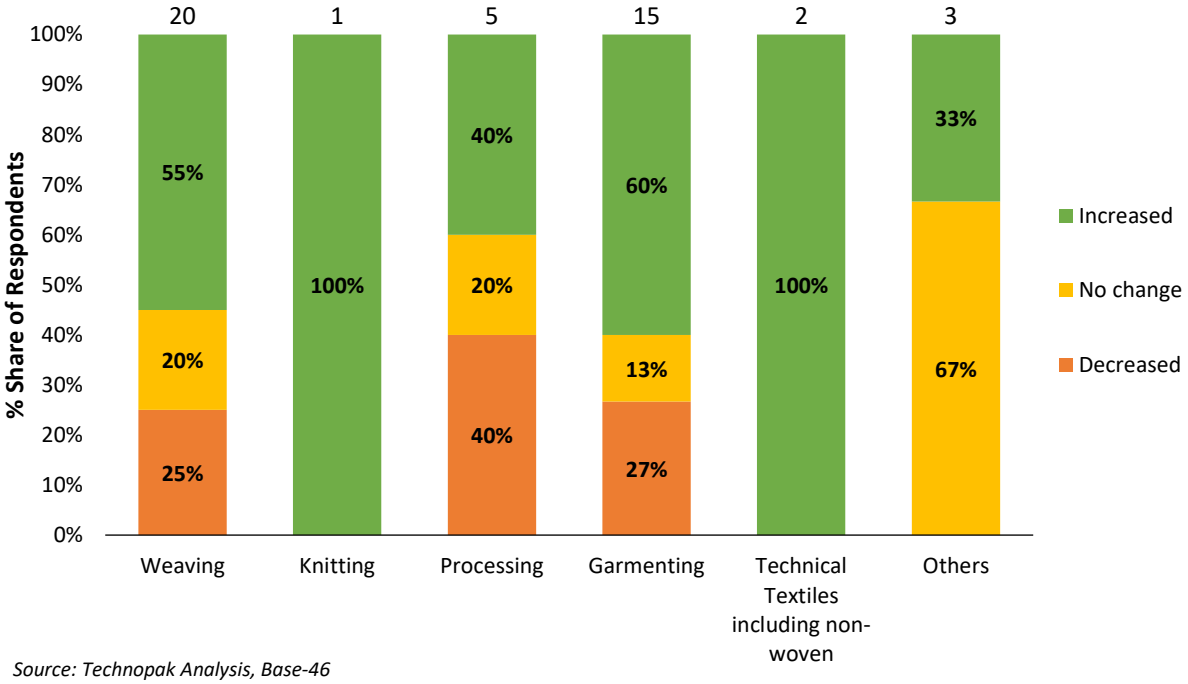
Exhibit 132: Change in Volume of Exports (%)



Source: Technopak Analysis, Base- 46

According to responses by non-beneficiaries, 55% in weaving segment and 60% in garmenting segments have witnessed an increase in the volume of exports. Also, decrease in volume of exports has been witnessed by -25% of non-beneficiary respondents both in weaving and garmenting.

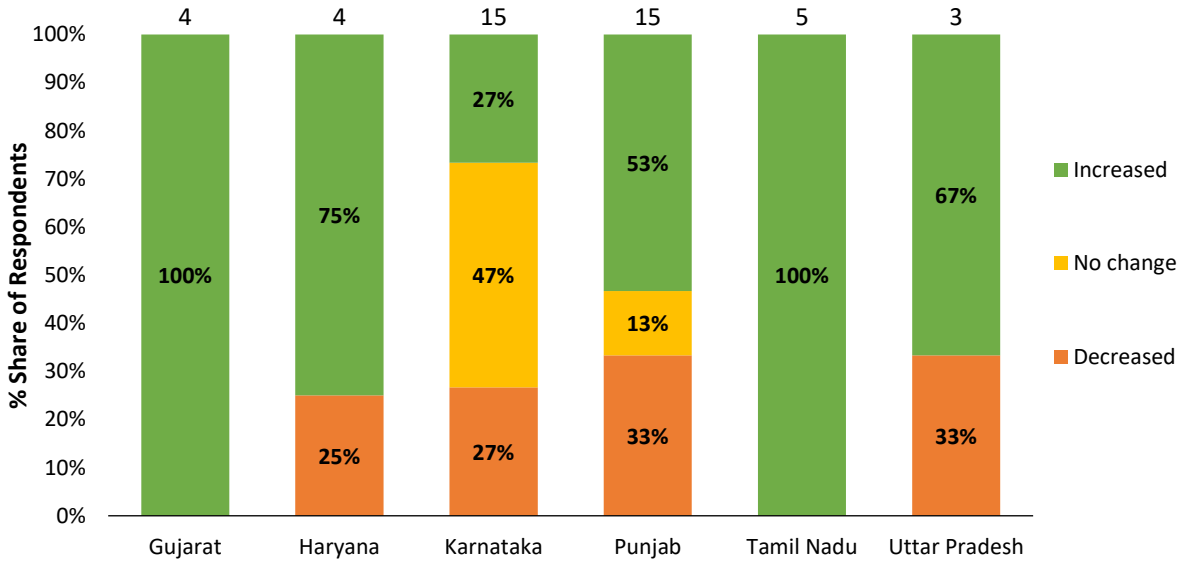
Exhibit 133: Change in Volume of Exports (%) - Segment Wise



Source: Technopak Analysis, Base-46

Among states, in Punjab, 33% of 15 non-beneficiaries' respondents have witnessed decrease in value of exports.

Exhibit 134: Change in Volume of Exports (%) - Geography Wise

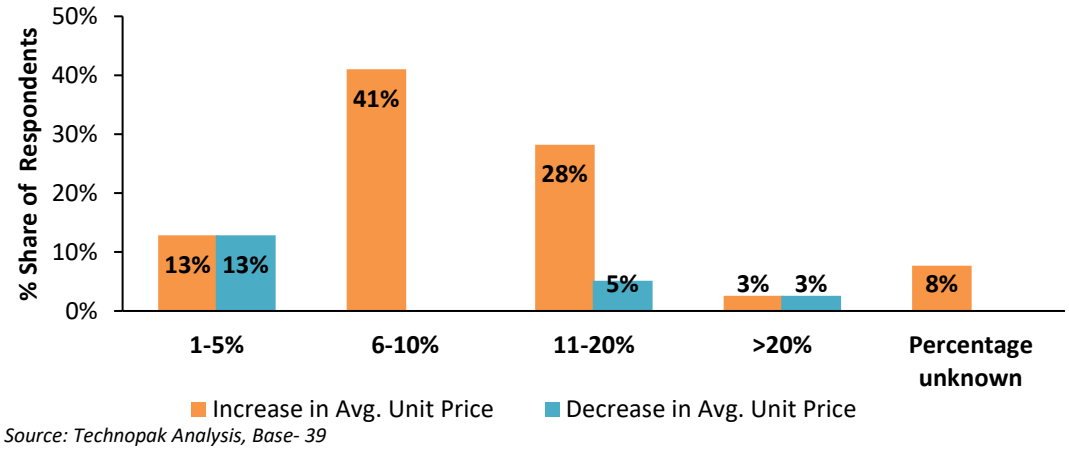


Source: Technopak Analysis, Base-46

Average Unit Price

Of the 39 non-beneficiaries who responded to the question, an increase in average unit price >6% has been witnessed by 72% of them.

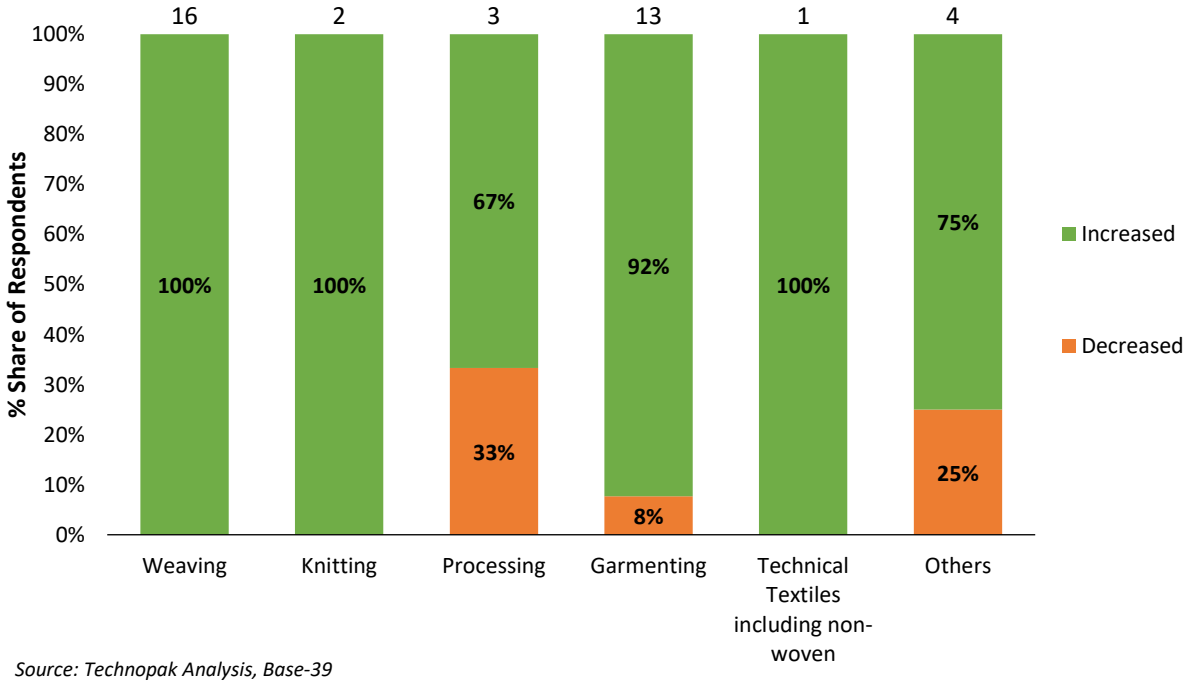
Exhibit 135: Change in Average Unit Price (%)



Source: Technopak Analysis, Base- 39

All the non-beneficiary respondents in Weaving segment have witnessed an increase in average unit price. 92% respondents in Garmenting segment have witnessed an increase in average unit price.

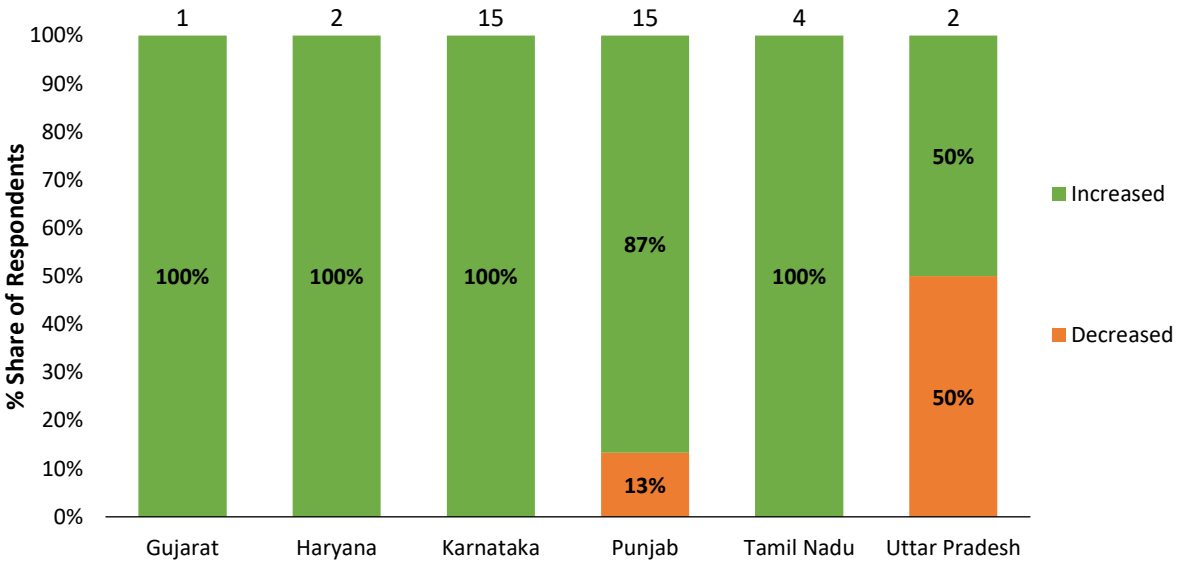
Exhibit 136: Change in Average Unit Price (%) - Segment Wise



Source: Technopak Analysis, Base-39

Among states, in Karnataka all the non-beneficiary respondents have witnessed increase in average unit price. 87% of the respondents in Punjab have witnessed an increase in average unit price.

Exhibit 137: Change in Average Unit Price (%) - Geography Wise



Source: Technopak Analysis, Base-39

Summary of Impact on Exports Value

Literature review indicates that most companies benefited in terms of product development and innovative practices due to addition of technologically advanced machineries ~ Exports in textile and apparel industry grew along with increase in production and overall competitiveness. The research indicates that exports growth was the highest during RTUFS period. In addition, as fabric is the weak link in the textile value chain, it needs to be strengthened to consume the excess spinning production and to boost apparel industry requirements by supplying right price, quality and quantity of fabric. India's share in global exports has remained in the range of 4-5% in the last 5 years.

As per the KII analysis, 65% opined that TUFS had a significant impact on exports value, which is in line with the expert panel's opinion (69%).

The UHS analysis indicates that TUFS beneficiaries as well as non-beneficiaries experienced an increased export volume and an increase in average unit price. This led to an increase in overall value of exports. 42% of beneficiary units witnessed an increase in value of exports greater than 6%, vis-à-vis 52% of non-beneficiary units. Weaving and garmenting segments have seen highest gains in export value. Export volume has increased due to factors such as product development, quality improvement and improved export competitiveness. Weaving sector showed increased exports volume as lot of high-speed shuttle less looms were installed for export products.

4.5 Employment Generation

Past Trend Analysis - Literature Review

- **Prof. Dr. M.D. Teli, Head of Department of Fibers & Textile Processing Technology on Technology Upgradation Fund Scheme (2003)**

  As per the report, on an average, garment segment (72%) indicated maximum increase in employment generation, which can be attributable to the fact that garment industry is highly labour intensive. Other segments that witnessed an increase in no. of workers were knitting (61%), processing (47%) and fabric embroidery (37%). Spinning was the only segment to witness a decline in employment generation. There was a significant increase in annual turnover per worker (1.3-28%) after implementation of TUFS, except in garment manufacturing - in more than 15% of the cases it was because of expansion in business activities.

- **CRISIL Evaluation Report of TUFS (2010)**

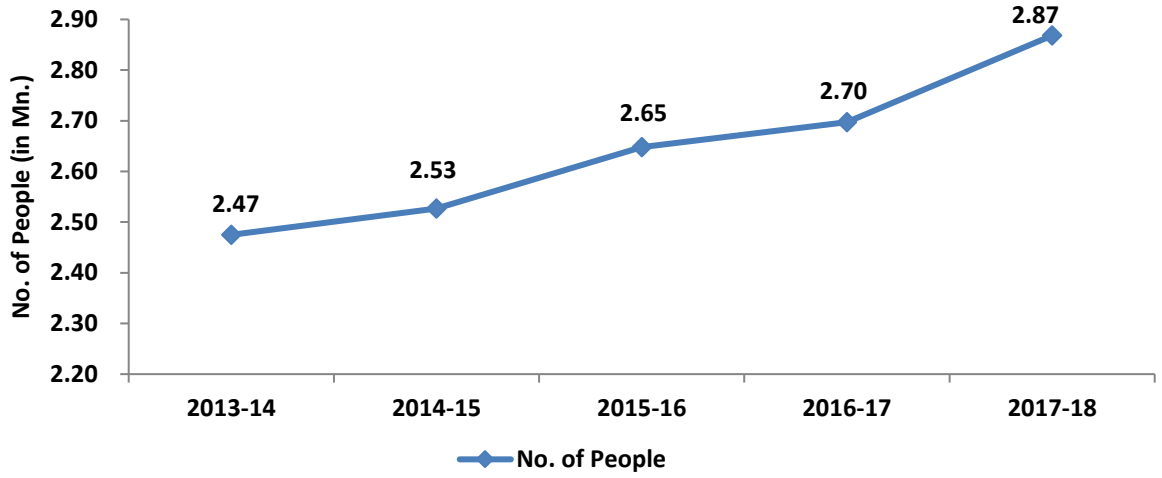
  Cumulative investments under TUF Scheme created direct employment opportunities for approx. 10-11 Lakh people - garmenting sector contributed significantly to employment generation, followed by cotton ginning and fabric embroidery sectors.

- **Wazir Advisors Evaluation Report of RTUFS and RRTUFS (2016)**

  As per the report, TUF Scheme contributed positively to employment generation and helped in growth of income and improving livelihood of the workers. Since its launch, the scheme provided employment to approx. 8.4 lakhs people in factory sector, with approx. 1.6 lakh people employed after RTUFS. With an increase in technologically upgraded machineries, machinery operators were required to learn new skills for operating the upgraded machineries - this contributed in skill development of labour across textile segments. Even though technology upgradation typically reduces manpower requirement, in this case, it contributed to employment generation due to the increase in capacity addition. Capacity additions across the textile segments created new jobs for skilled and unskilled labour - demand for skilled labour increased with the installation of technologically upgraded machines across segments. Composite segment added highest number of skilled and unskilled labour per unit, primarily because of larger scale of investments. However, overall, most of the companies witnessed approx. 50 added skilled and unskilled labour.

Current Scenario of Employment Generation in India

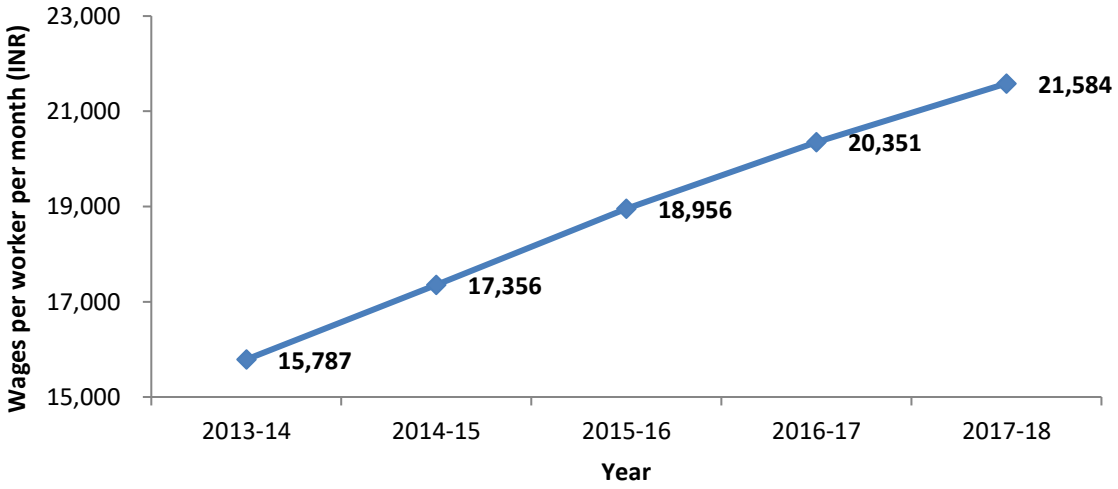
Exhibit 138: No. of people engaged in operational factories in T&A (Mn)



Source: Annual Survey of Industries 2017-18, MOSPI, Technopak Analysis

No. of people engaged in operational factories in T&A have grown at a CAGR of ~3% and have witnessed YoY growth in number of people between 2 - 6 % between 2013 and 2018.

Exhibit 139: Wages per Worker in T&A (INR)



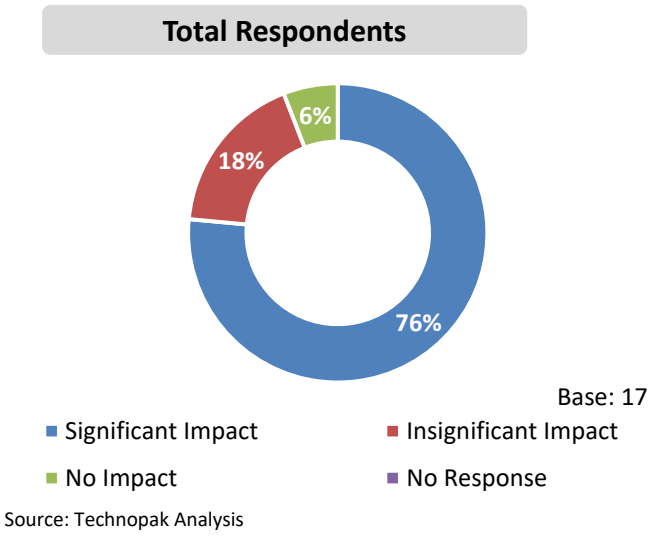
Source: Annual Survey of Industries 2017-18, MOSPI, Technopak Analysis

Year on year growth in wages per worker were in the range of 6 – 10% between 2014 and 2018. Textile sector witnessed higher growth in wages per worker vis-à-vis apparel sector.

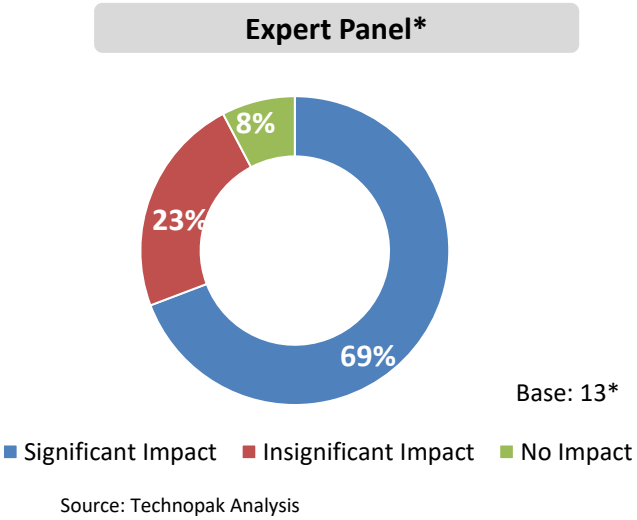
KII ANALYSIS

Out of 62 responses, 17 of them (27%) responded to the question asked on impact of TUFS on Indian textile & apparel industry. Out of 17 respondents, 13 (76%) answered that TUFS had a positive impact on employment generation. Out of 13 experts, 9 (69%) opined that TUFS had a significant impact on Employment Generation

Exhibit 140: Increase in Employment Generation



Source: Technopak Analysis



Source: Technopak Analysis

* Out of 23 Expert Panel, 13 (57%) responded to the question asked on impact of TUFS on Indian textile & apparel industry

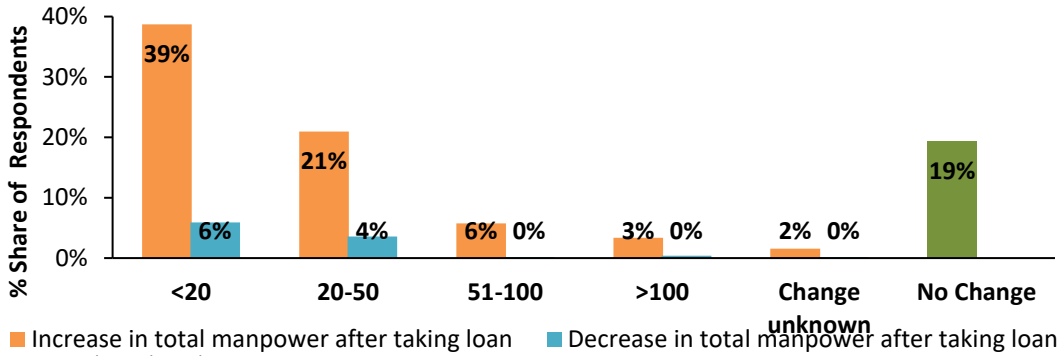
UHS ANALYSIS

Beneficiaries

Change in Total No. of Employees before and after Taking Loan

Of the 506 respondents to the question, 39% of them have indicated increase of total manpower <20 after upgrading the technologies under these schemes.

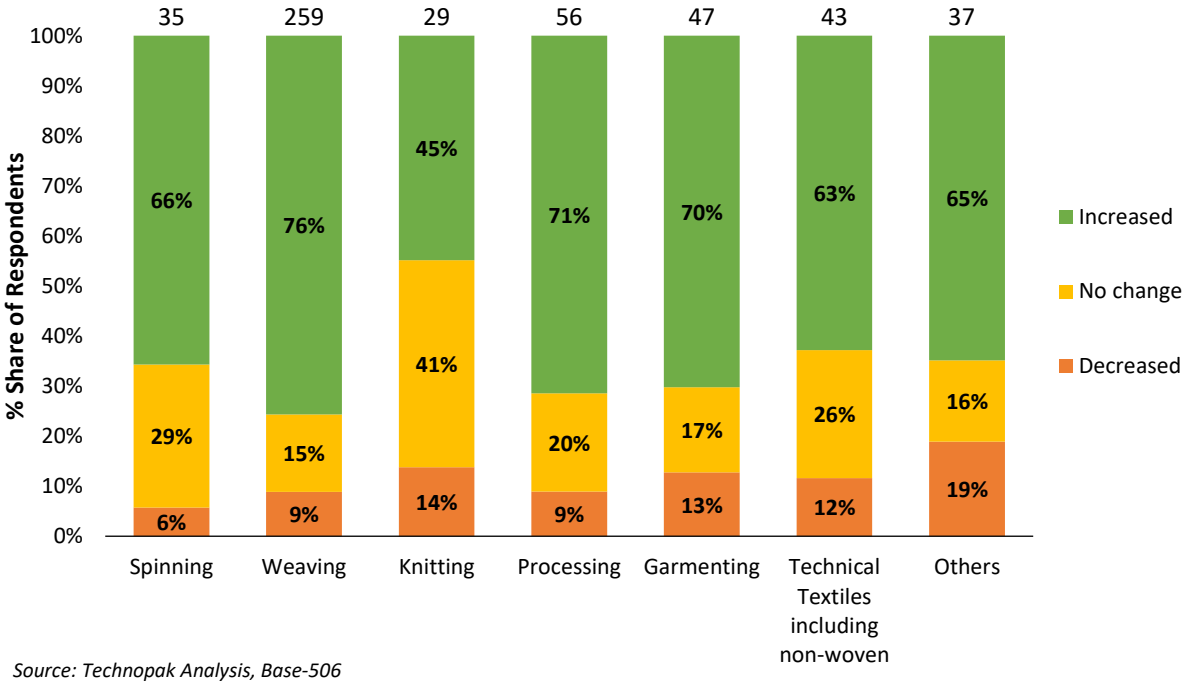
Exhibit 141: Change in Total Manpower



Source: Technopak Analysis, Base-506

Total manpower has increased across all the segments. 76% respondents in Weaving segment have seen manpower addition. Although, technology upgradation normally reduces the manpower requirement but no. of employees has been increased by capacity addition in this case. Capacity additions across the textile value chain have created new jobs for skilled as well as unskilled manpower.

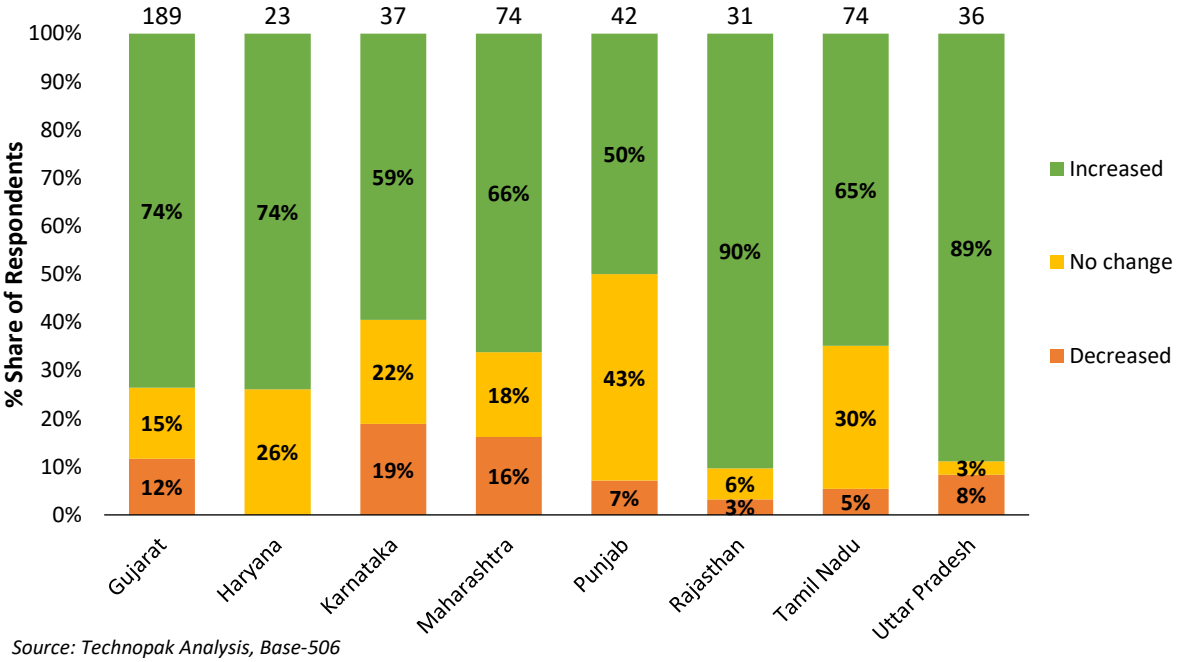
Exhibit 142: Change in Total Manpower - Segment Wise



Source: Technopak Analysis, Base-506

Among states, in Rajasthan and Uttar Pradesh -90% respondents have witnessed an increase in total manpower due to TUFS. More than 15% respondents in Karnataka and Maharashtra have witnessed a decline in total manpower. 43% respondents in Punjab have witnessed no change in total manpower.

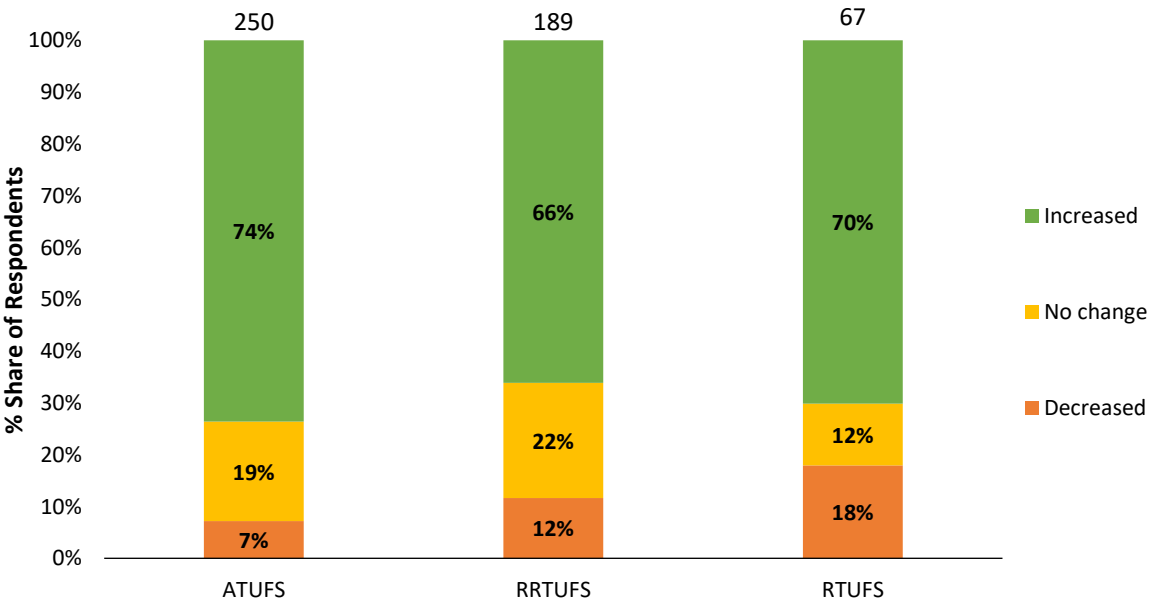
Exhibit 143: Change in Total Manpower - Geography Wise



Source: Technopak Analysis, Base-506

During ATUFS scheme, 74% respondents have witnessed an increase in labour. 18% respondents in RTUFS have witnessed decline in total manpower.

Exhibit 144: Change in Total Manpower - Scheme Wise

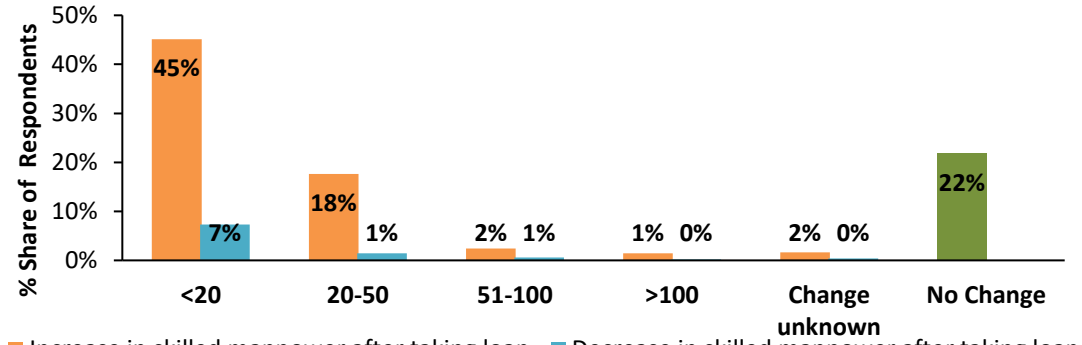


Source: Technopak Analysis, Base-506

Change in Skilled Manpower before and after Taking Loan

Of the 494 respondents to the question, 45% of them have indicated increase of skilled manpower <20 after upgrading the technologies under these schemes.

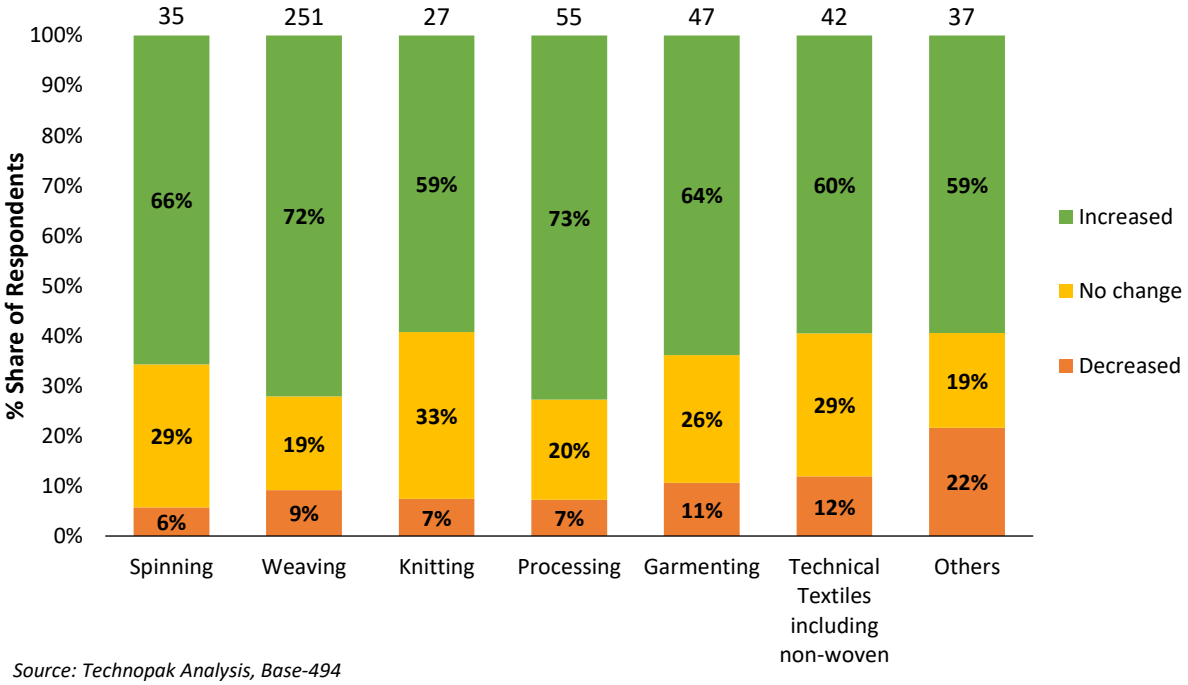
Exhibit 145: Change in Skilled Manpower



Source: Technopak Analysis, Base-494

Overall majority of the segments have witnessed less than 20 additional skilled labour. Demand for skilled labour has increased due to installation of new technology machines across the segments. Garmenting, Technical Textiles and Others segments have seen decline of skilled labour.

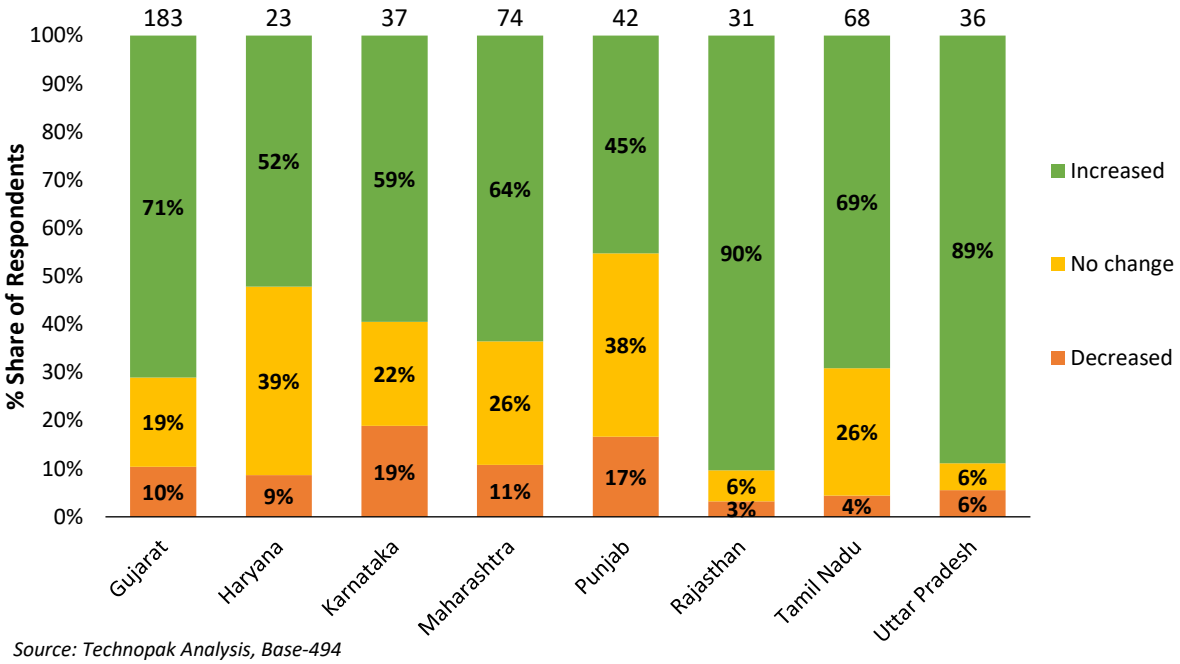
Exhibit 146: Change in Skilled Manpower - Segment Wise



Source: Technopak Analysis, Base-494

Among states, 90% respondents Rajasthan have witnessed an increase in skilled manpower due to TUFS. 19% of the respondents from Karnataka and 17% of the respondents from Punjab have indicated a decrease in skilled manpower.

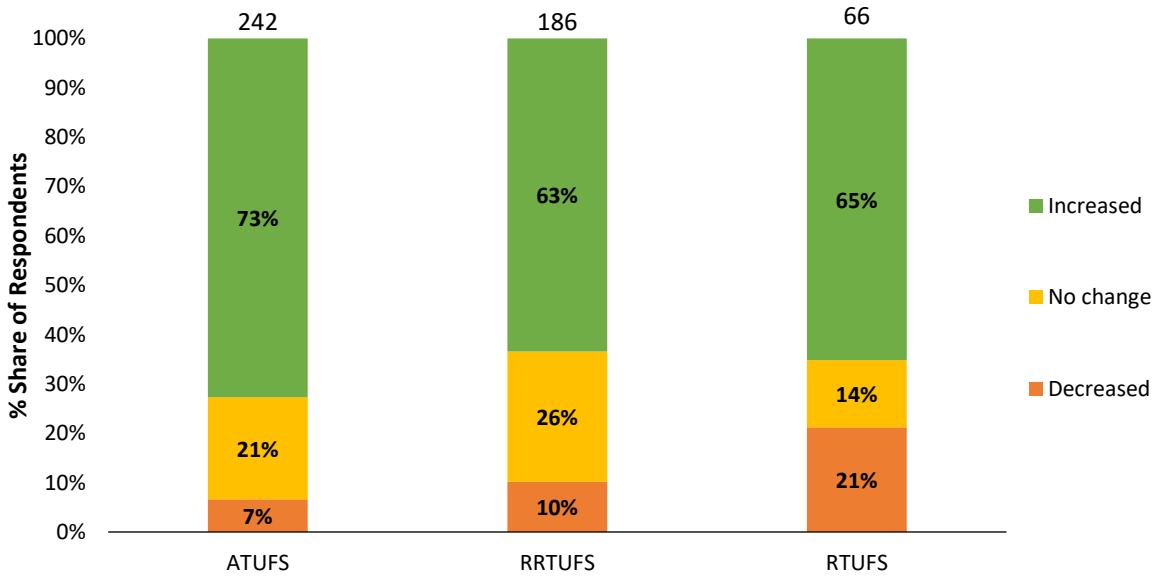
Exhibit 147: Change in Skilled Manpower - Geography Wise



Source: Technopak Analysis, Base-494

Across schemes, 73% respondents who availed benefits under ATUFS scheme have witnessed an increase in skilled manpower. 21% beneficiaries under RTUFS scheme witnessed a decrease in skilled manpower.

Exhibit 148: Change in Skilled Manpower - Scheme Wise

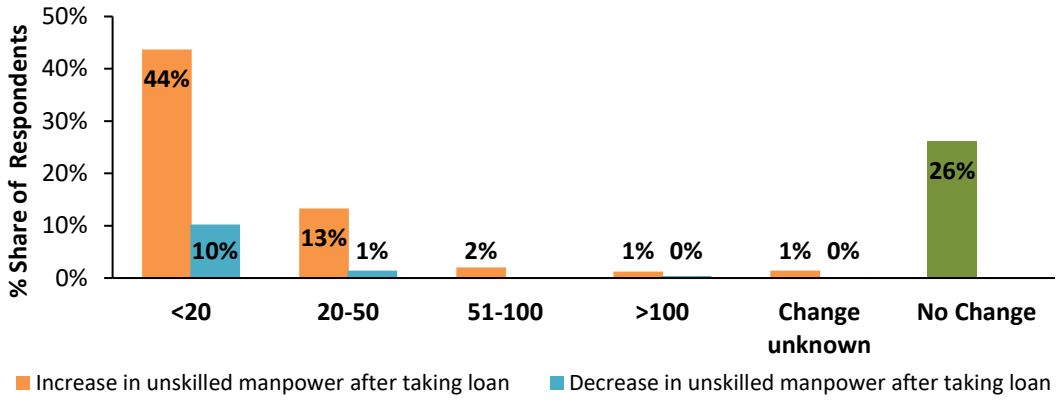


Source: Technopak Analysis, Base-494

Change in Unskilled Manpower before and after Taking Loan

Of the 490 respondents to the question, 44% of them have indicated increase of unskilled manpower <20 after upgrading the technologies under these schemes. Overall, majority of the companies have witnessed less than 50 additional unskilled labour.

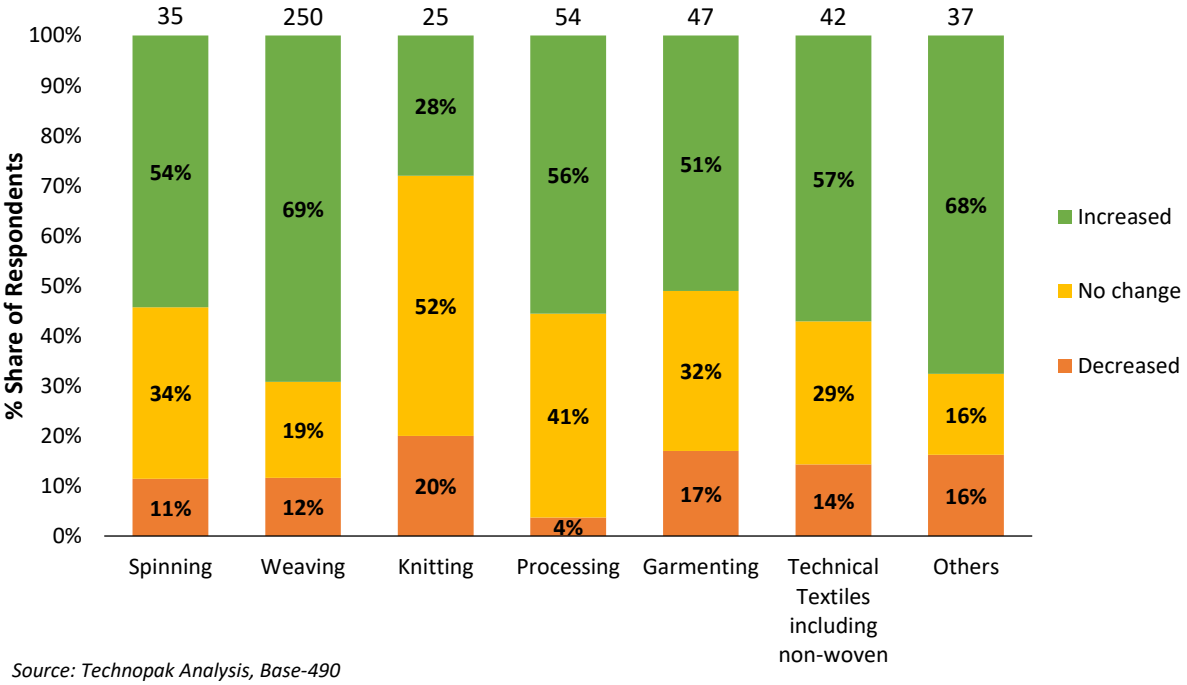
Exhibit 149: Change in Unskilled Manpower



Source: Technopak Analysis, Base-490

Majority of segments have witnessed no change or decline in the unskilled manpower. In Weaving segment, a significant 69% of the respondents have indicated an increase in unskilled manpower.

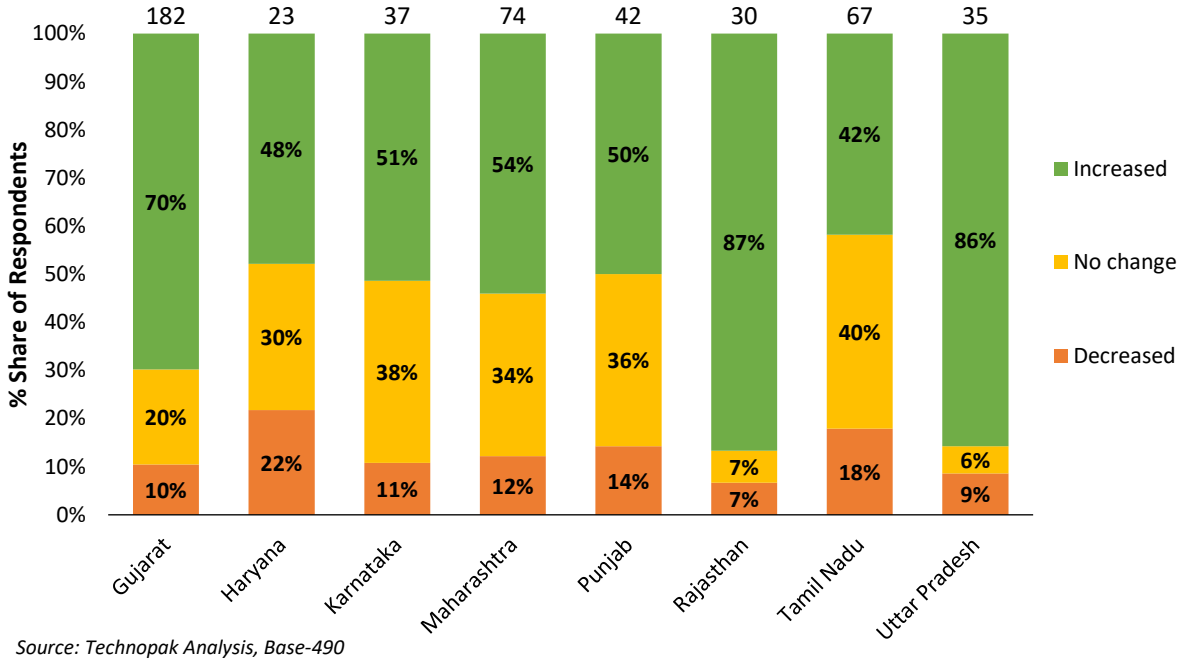
Exhibit 150: Change in Unskilled Manpower - Segment Wise



Source: Technopak Analysis, Base-490

Among states, -86% respondents in Rajasthan and Uttar Pradesh have witnessed increase in unskilled manpower due to TUFS. 22% of Haryana's respondents indicated a decrease of <20 in unskilled manpower.

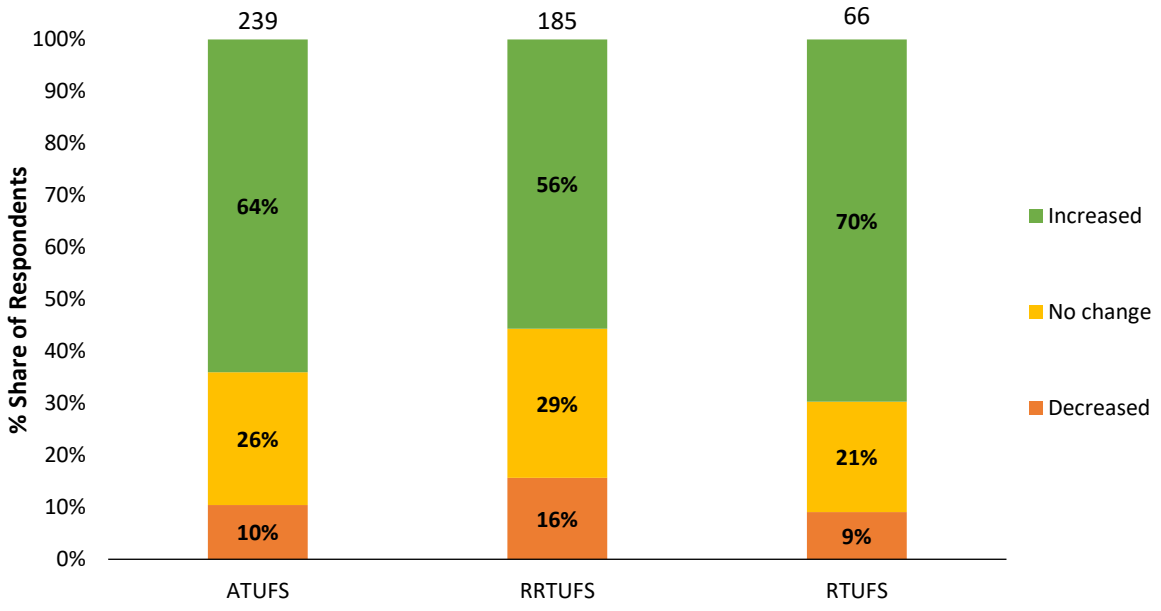
Exhibit 151: Change in Unskilled Manpower - Geography Wise



Source: Technopak Analysis, Base-490

Across schemes, 70% respondents who availed benefits under RTUFS scheme have witnessed an increase in unskilled manpower. 16% beneficiaries under RRTUFS scheme witnessed a decrease in unskilled manpower.

Exhibit 152: Change in Unskilled Manpower - Scheme Wise

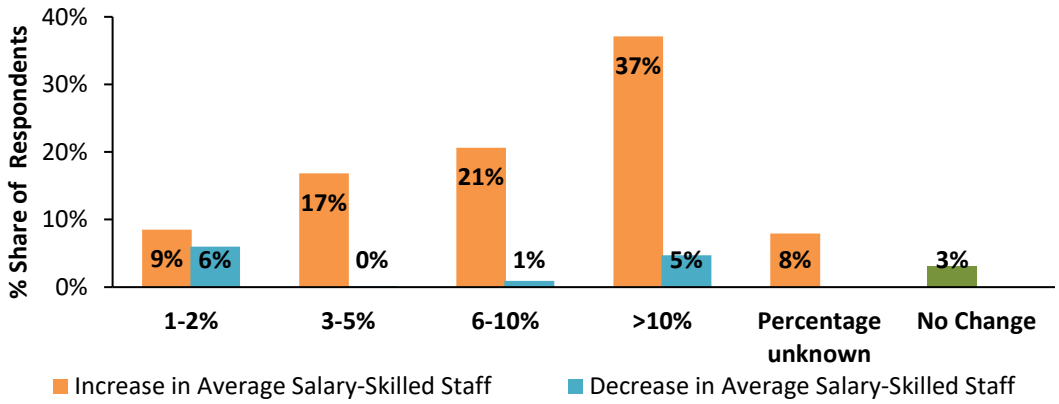


Source: Technopak Analysis, Base-490

Change in Average Salary of Skilled Manpower before and after Taking Loan

Of the 528 respondents to the question, majority witnessed an overall increase in average salary of the skilled manpower. 37% of the respondents witnessed an increase of >10% in salary of the skilled manpower.

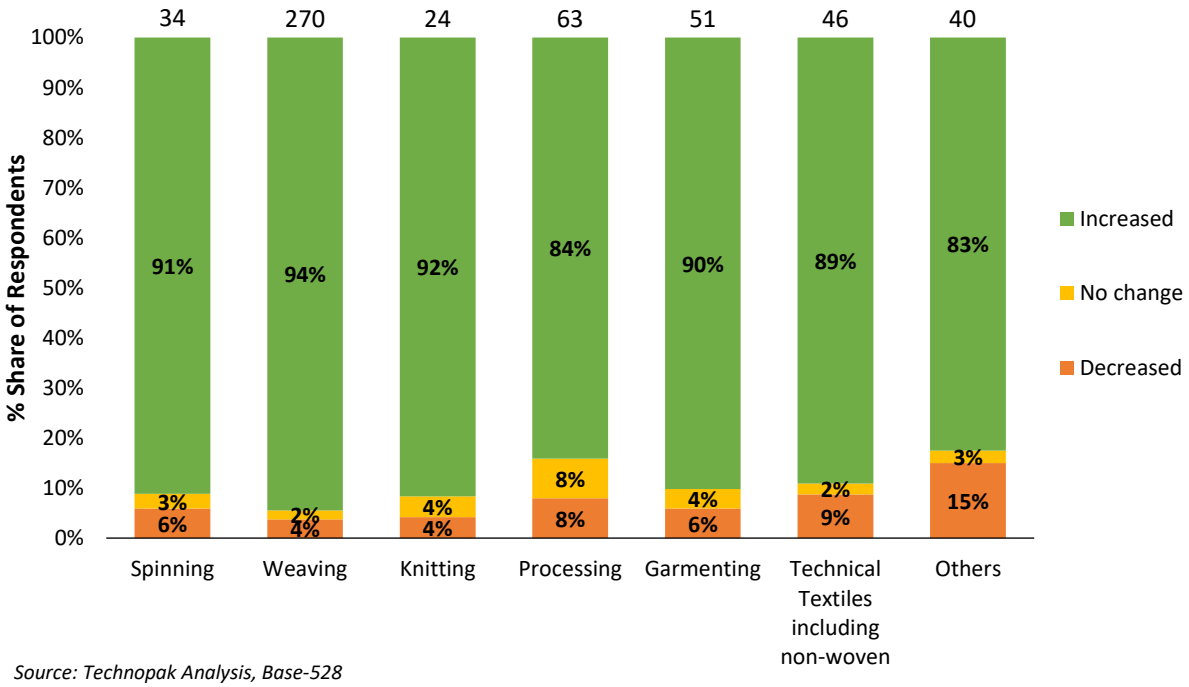
Exhibit 153: Change in Average Salary of Skilled Manpower



Source: Technopak Analysis, Base-528

Nearly 90% respondents in majority of the segments have witnessed an increase in average salary of skilled manpower. 15% respondents in Others have witnessed a decrease in average salary of skilled manpower.

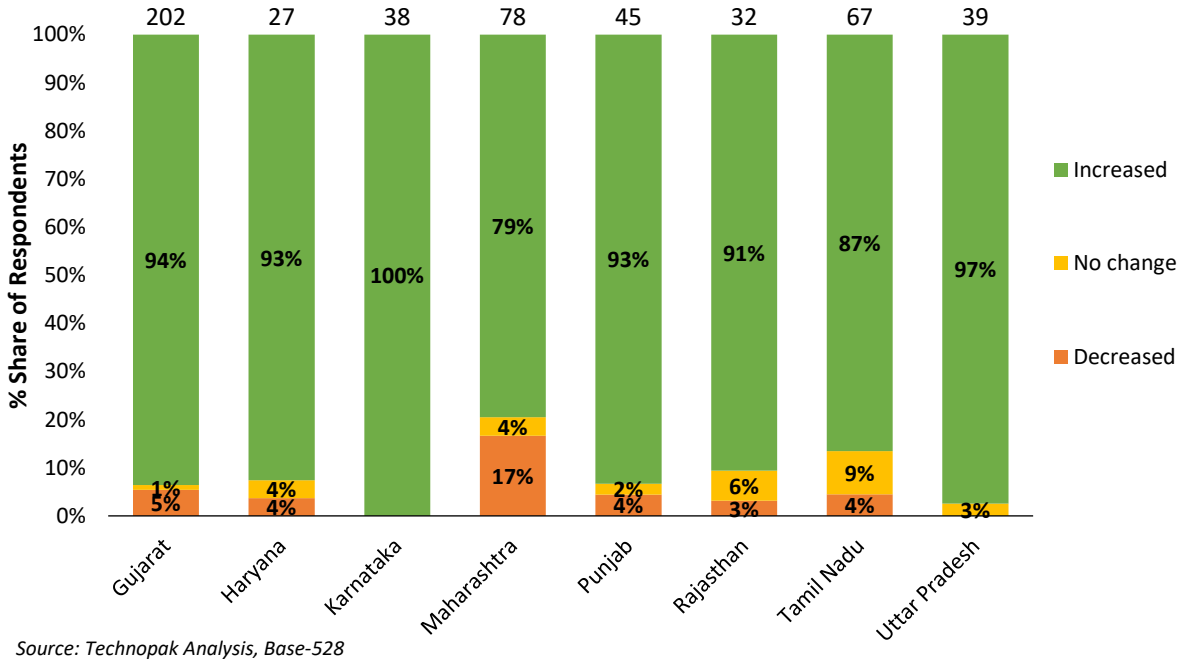
Exhibit 154: Change in Average Salary of Skilled Manpower - Segment Wise



Source: Technopak Analysis, Base-528

All the respondents in Karnataka have witnessed an increase in average salary of the skilled manpower. More than 90% respondents of majority of states have witnessed an increase in average salary of skilled manpower. 17% respondents in Maharashtra have witnessed decrease in average salary of skilled manpower,

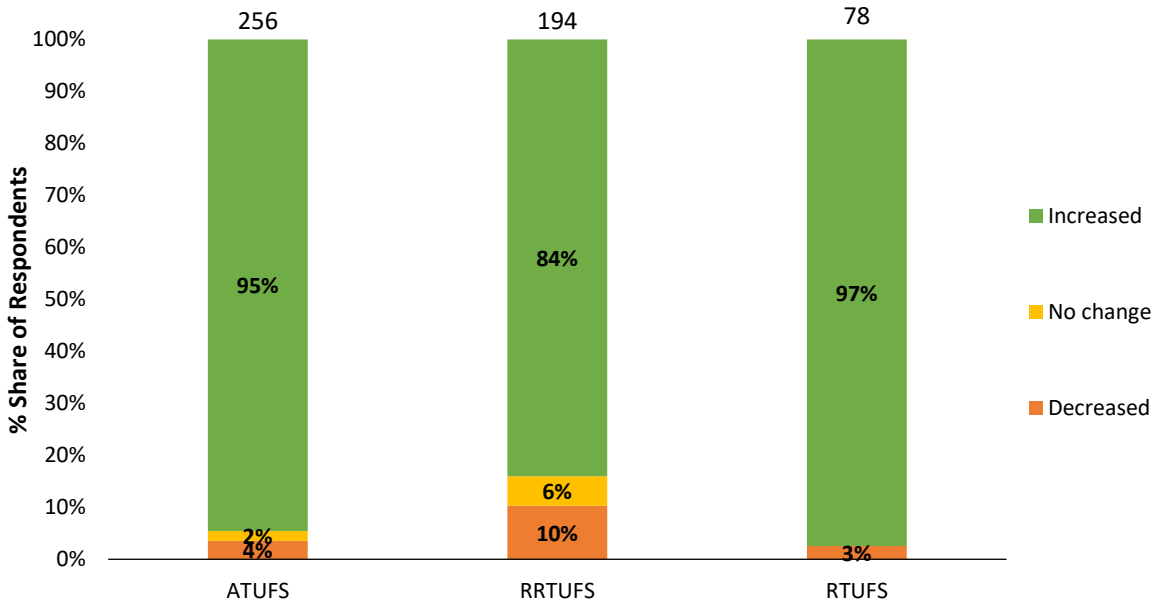
Exhibit 155: Change in Average Salary of Skilled Manpower - Geography Wise



Source: Technopak Analysis, Base-528

Across schemes, around 95% respondents in both ATUFS and RTUFS have witnessed an increase in average salary of skilled manpower whereas 10% respondents of RRTUS have seen decrease.

Exhibit 156: Change in Average Salary of Skilled Manpower - Scheme Wise

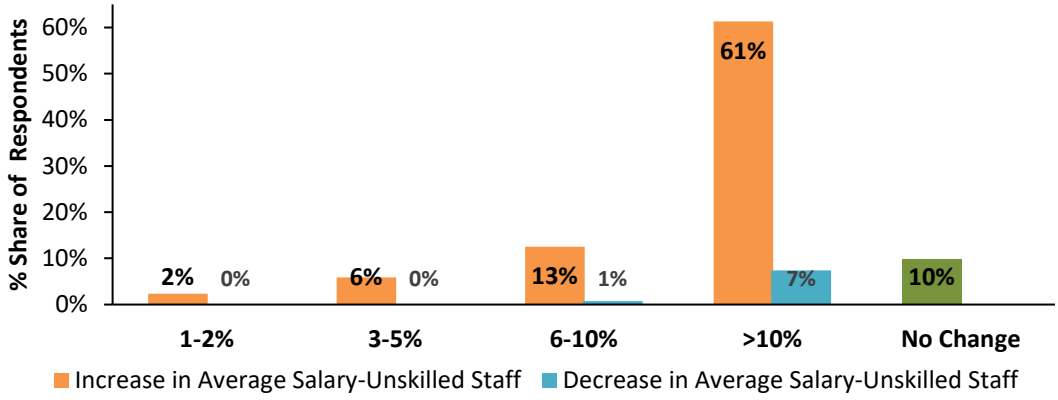


Source: Technopak Analysis, Base-528

Change in Average Salary of Unskilled Manpower before and after Taking Loan

Of the 256 respondents to the question, majority witnessed an overall increase in average salary of the unskilled manpower. 61% of the respondents witnessed an increase of >10% in salary of the unskilled manpower.

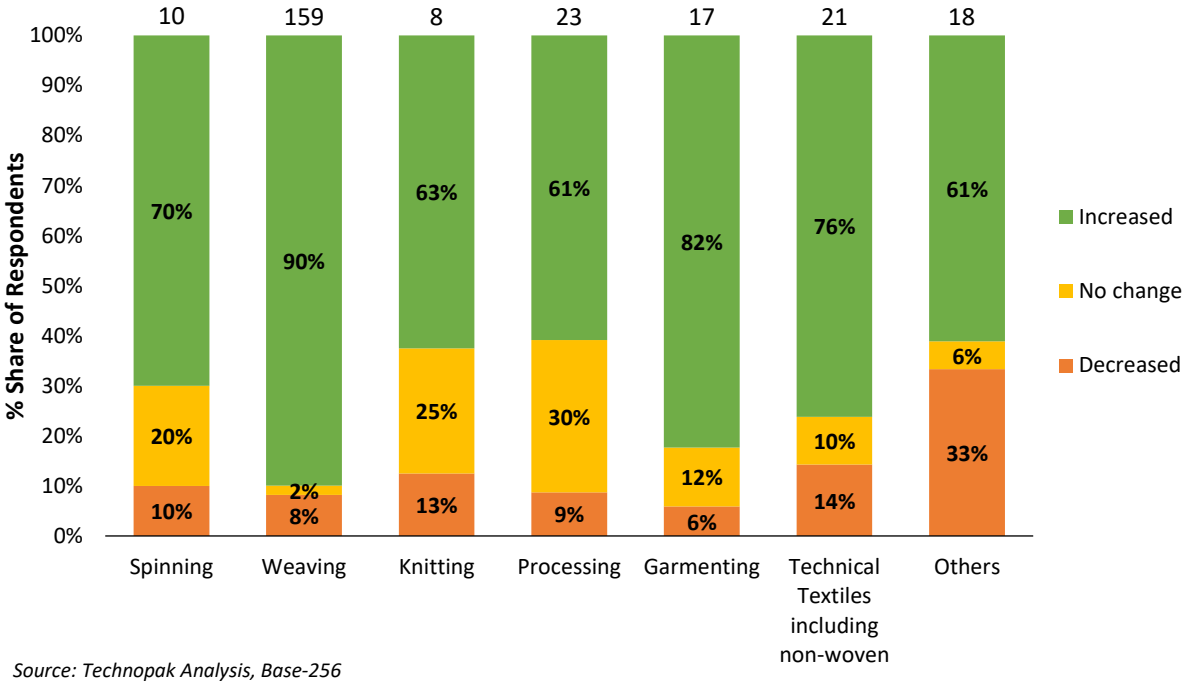
Exhibit 157: Change in Average Salary of Unskilled Manpower



Source: Technopak Analysis, Base-256

In weaving sector, 90% of the 159 respondents have witnessed increase in the salary of the unskilled manpower.

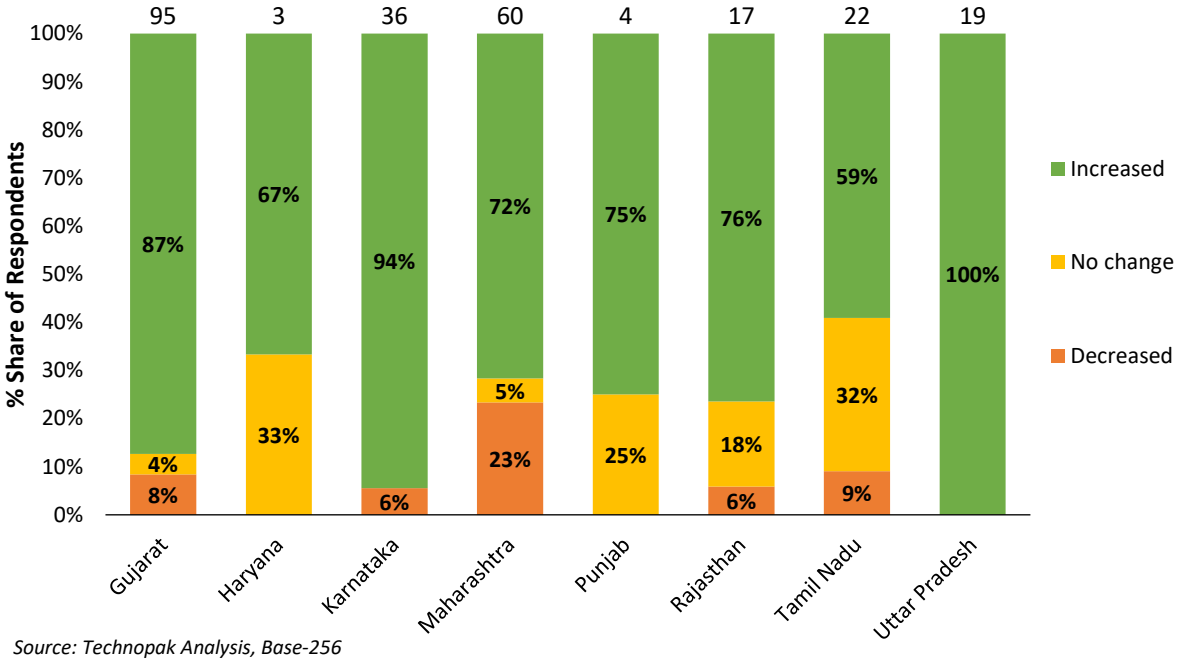
Exhibit 158: Change in Average Salary of Unskilled Manpower - Segment Wise



Source: Technopak Analysis, Base-256

Among states, 87% respondents from Gujarat and 94% respondents in Karnataka have witnessed an increase in average salary of unskilled manpower due to TUFS. 23% respondents in Maharashtra have witnessed a decrease in average salary of unskilled manpower.

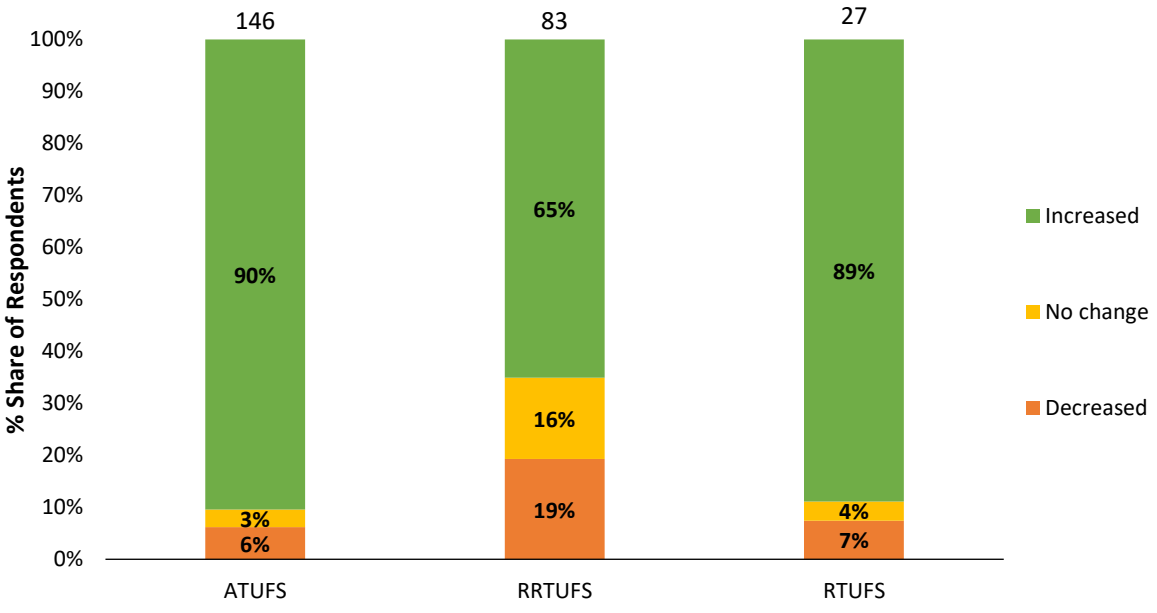
Exhibit 159: Change in Average Salary of Unskilled Manpower - Geography Wise



Source: Technopak Analysis, Base-256

Across schemes, during ATUFS and RTUFS scheme - 90% of respondents have witnessed increase in average salary increase of unskilled labour. 19% respondents who benefited from RRTUFS have witnessed a decrease in average salary of unskilled manpower.

Exhibit 160: Change in Average Salary of Unskilled Manpower - Scheme Wise

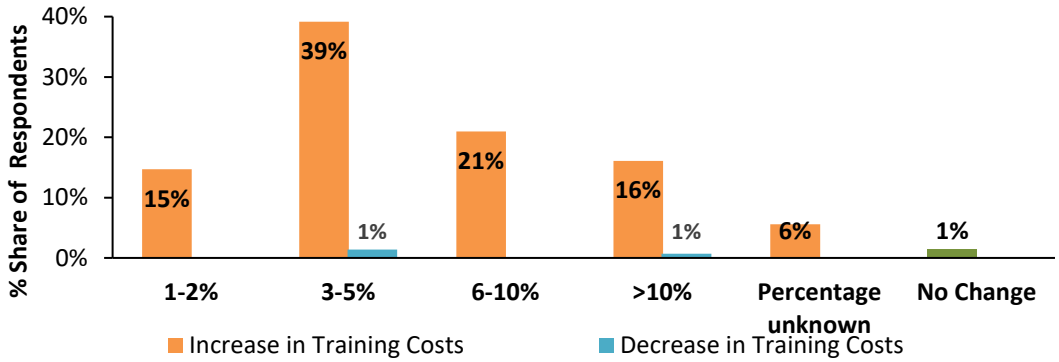


Source: Technopak Analysis, Base-256

Change in training costs before and after taking loan

Of the 143 respondents to the question, majority witnessed an increase in training costs. 39%% of the respondents witnessed an increase of 3-5% in training costs. The increase in the training costs is justified with the advanced machinery being purchased requiring enhanced training.

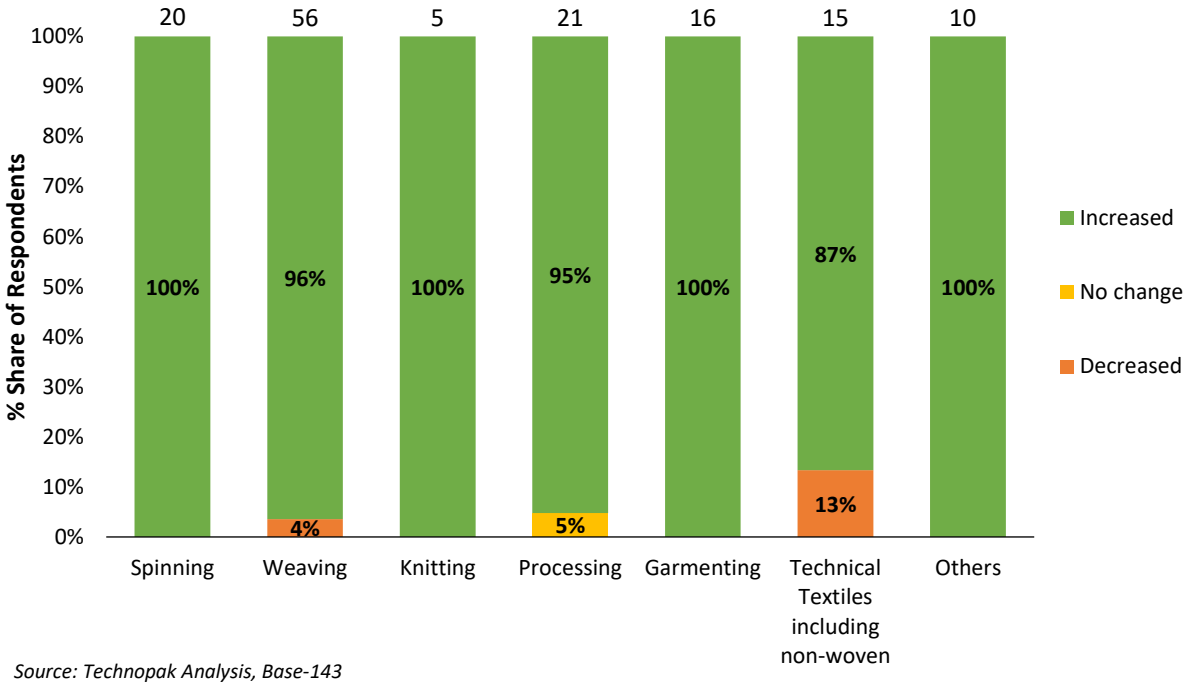
Exhibit 161: Change in Training Cost



Source: Technopak Analysis, Base-143

Almost all the segments have witnessed an increase in training costs. 13% respondents in Technical Textiles segments have witnessed a decrease in training costs.

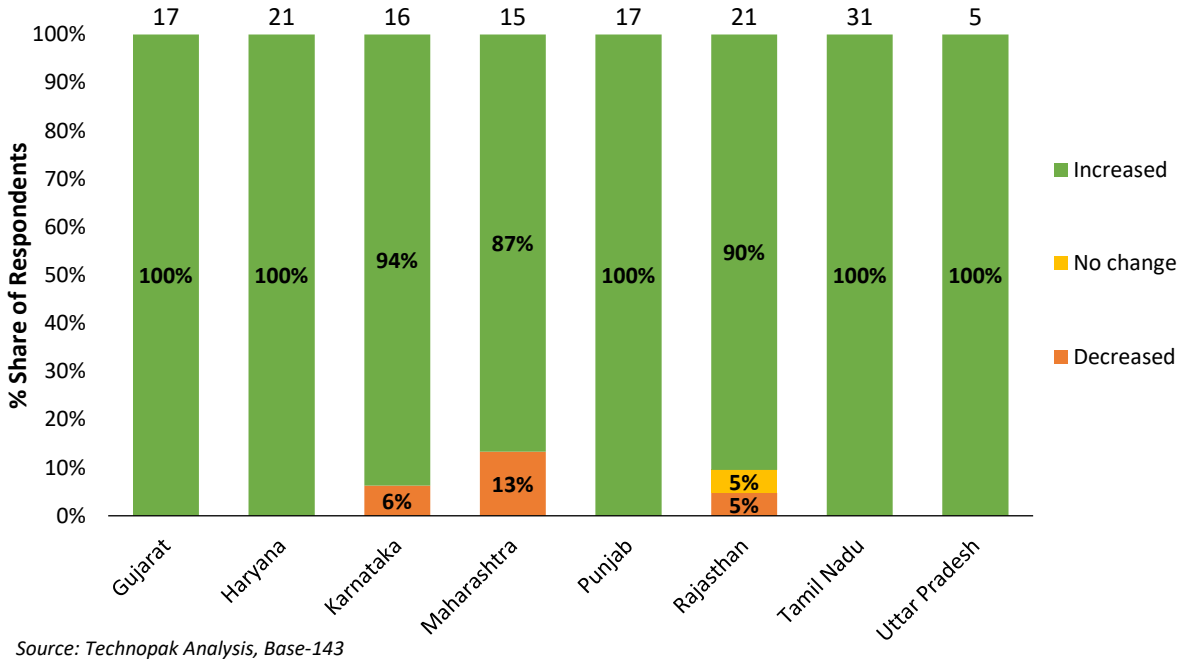
Exhibit 162: Change in Training Cost - Segment Wise



Source: Technopak Analysis, Base-143

Almost all the respondents across all the states have witnessed increase in training cost. 13% respondents from Maharashtra have witnessed decrease in training costs.

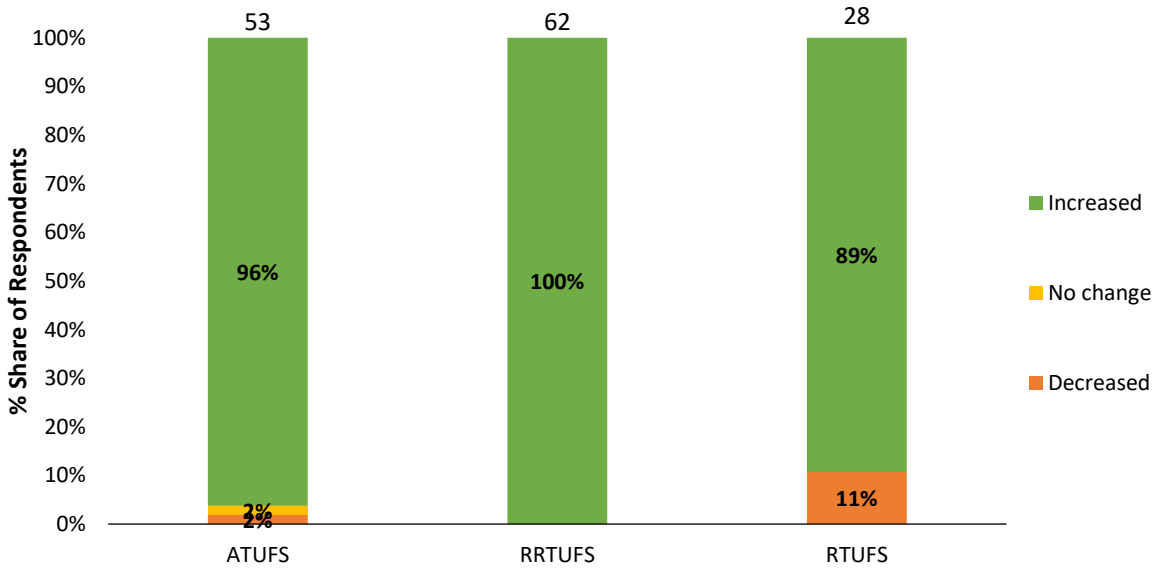
Exhibit 163: Change in Training Cost - Geography Wise



Source: Technopak Analysis, Base-143

All the respondents who benefited from RRTUFS witnessed an increase in training costs. 96% respondents in ATUFS witnessed an increase in training costs.

Exhibit 164: Change in Training Cost - Scheme Wise



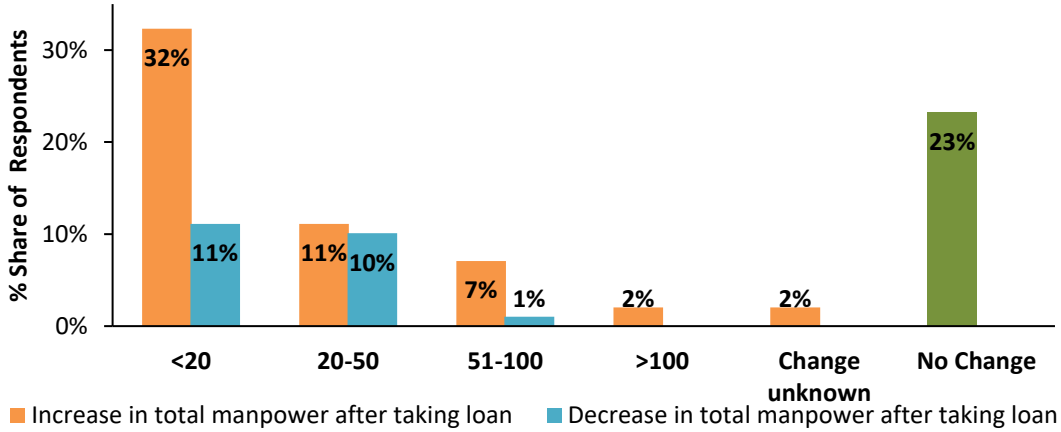
Source: Technopak Analysis, Base-143

Non-Beneficiaries

Change in total no. of employees before and after taking loan

Of the 99 non-beneficiaries who responded to the question, 32% of them have indicated increase of total manpower <20.

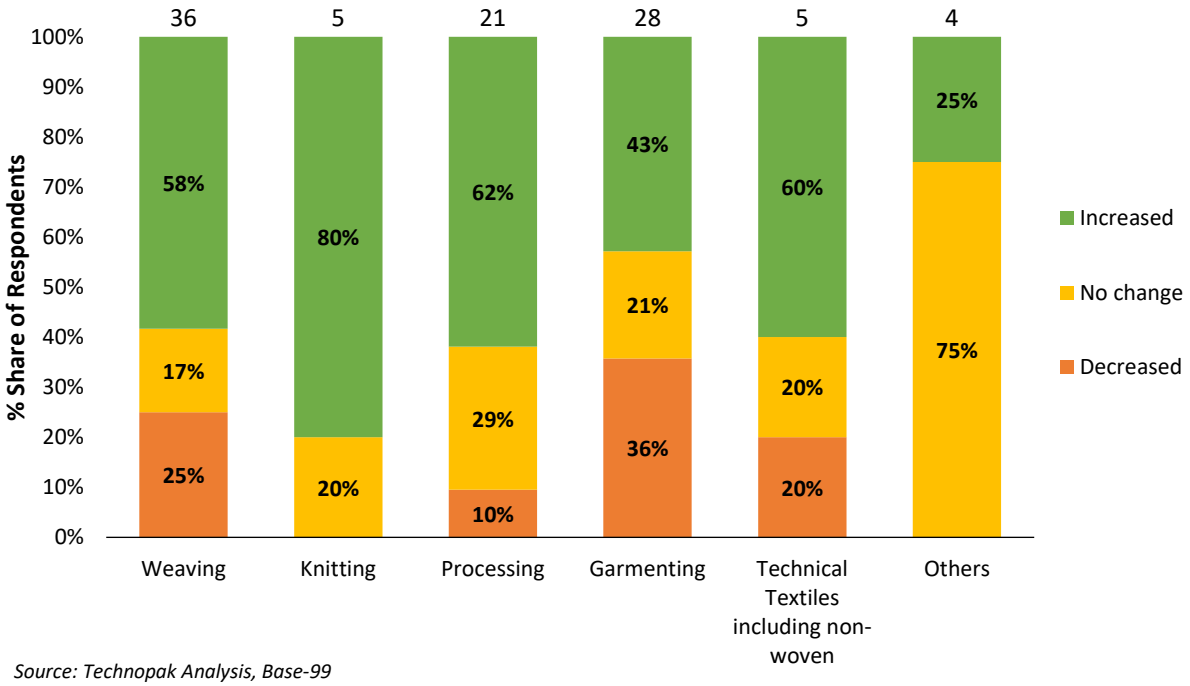
Exhibit 165: Change in Total Manpower



Source: Technopak Analysis, Base- 99

Total manpower has increased across all the segments. Nearly 60% non-beneficiary respondents in Processing and weaving segments have seen an increase in total manpower. 80% non-beneficiary respondents in Knitting have witnessed an increase in total manpower.

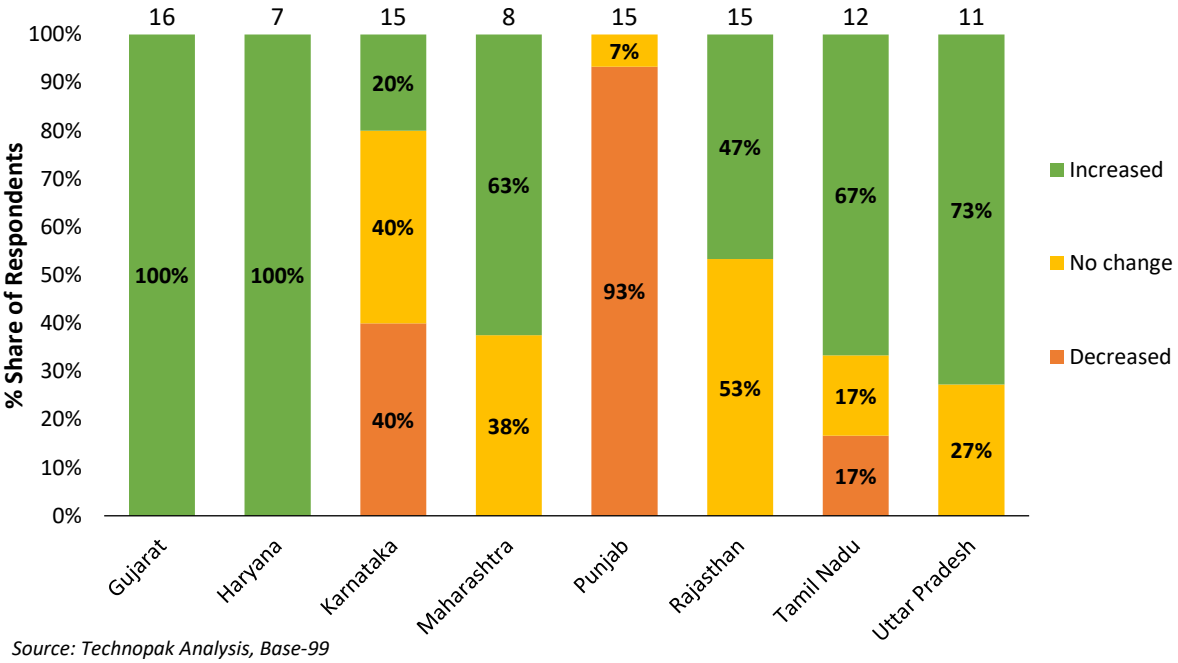
Exhibit 166: Change in Total Manpower - Segment Wise



Source: Technopak Analysis, Base-99

All the non-beneficiary respondents in Gujarat and Haryana have witnessed an increase in total manpower. 93% respondents in Punjab have witnessed a decrease in total manpower.

Exhibit 167: Change in Total Manpower - Geography Wise

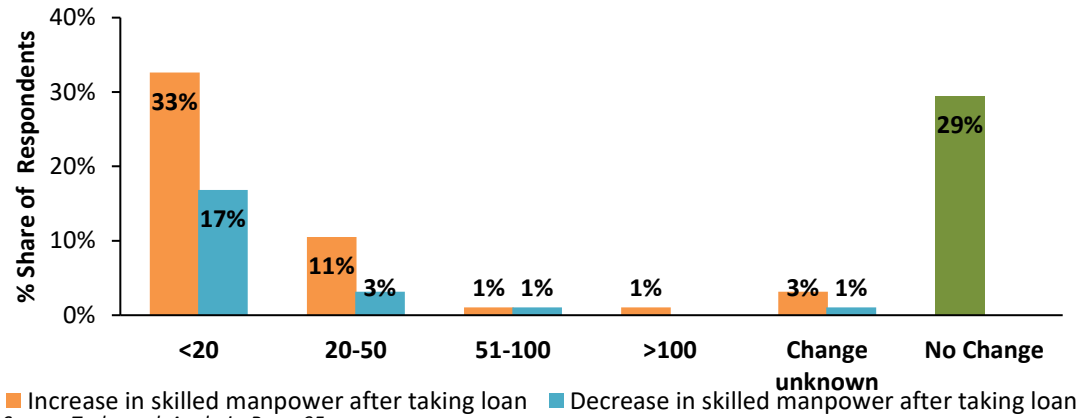


Source: Technopak Analysis, Base-99

Change in skilled manpower before and after taking loan

Of the 95 non-beneficiaries who responded to the question, 33% of them have indicated increase of skilled manpower <20.

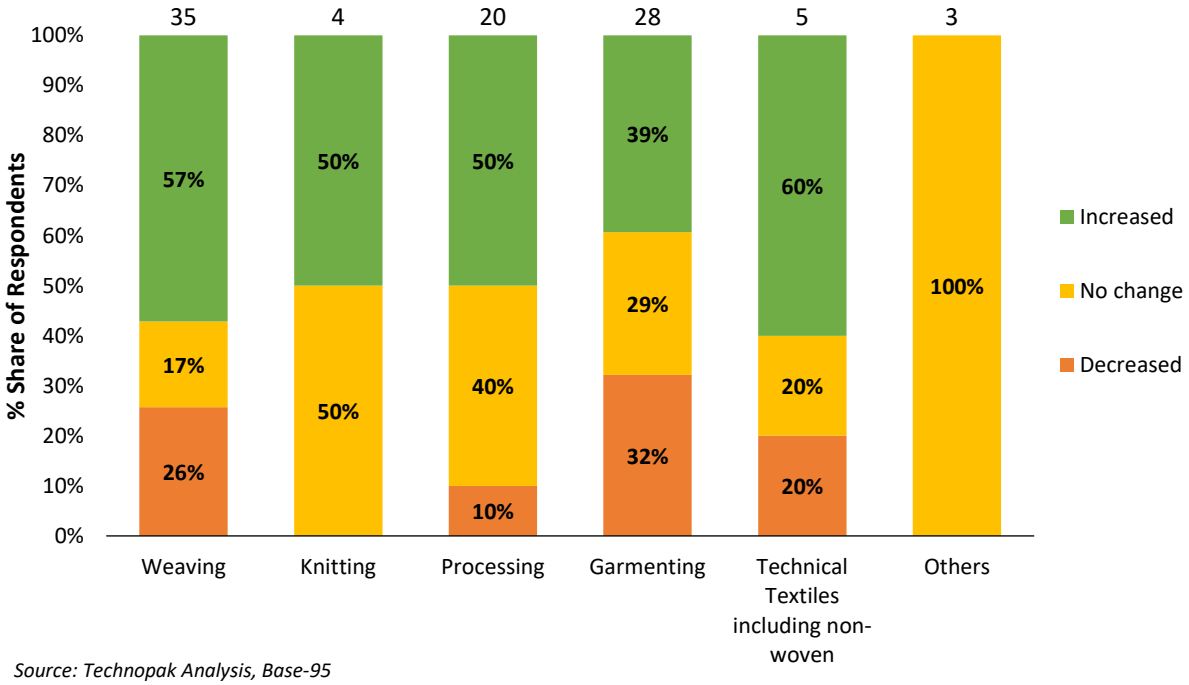
Exhibit 168: Change in Skilled Manpower



Source: Technopak Analysis, Base- 95

Overall majority of the segments have witnessed less than 20 additional skilled labour. Weaving and processing segments have seen influx of skilled labour.

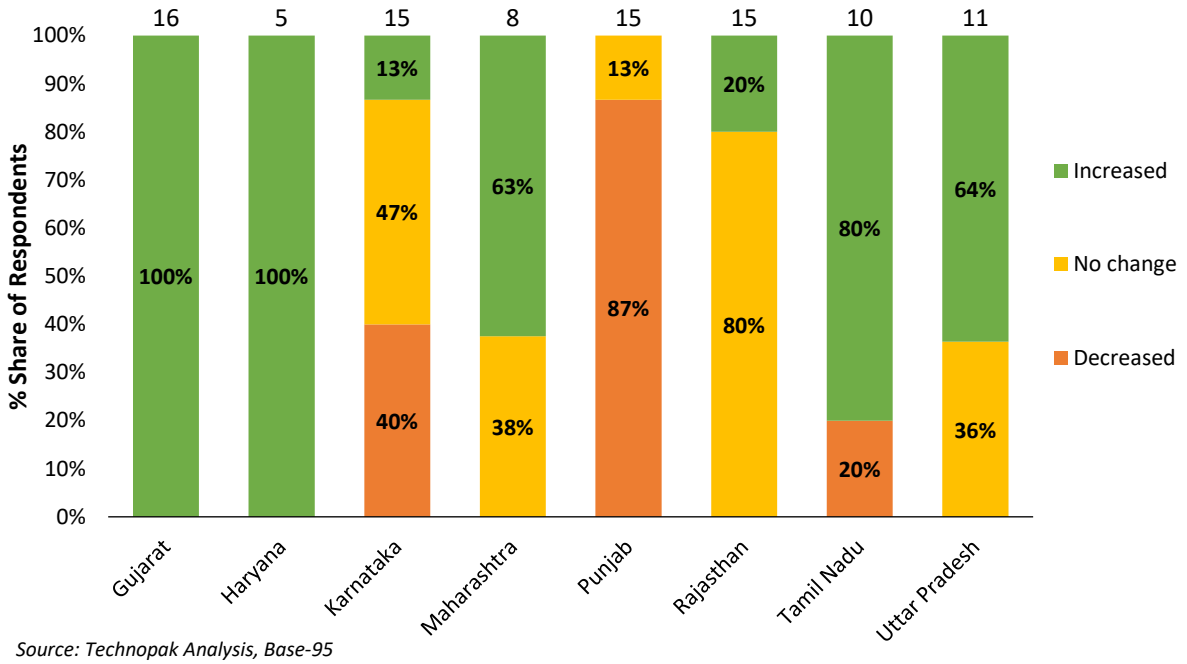
Exhibit 169: Change in Skilled Manpower - Segment Wise



Source: Technopak Analysis, Base-95

All the non-beneficiary respondents from Gujarat and Haryana have witnessed an increase in skilled manpower. 87% of the respondents from Punjab have witnessed decline in skilled manpower.

Exhibit 170: Change in Skilled Manpower - Geography Wise

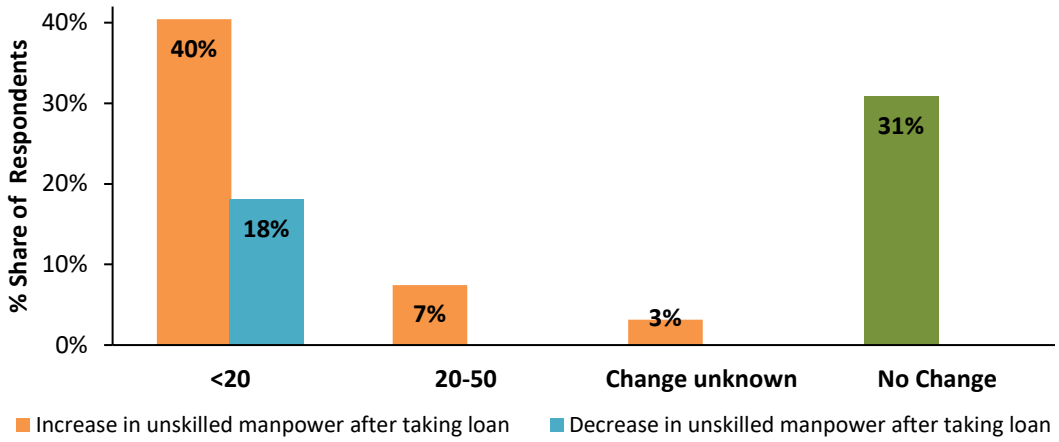


Source: Technopak Analysis, Base-95

Change in unskilled manpower before and after taking loan

Of the 94 non-beneficiaries who responded to the question, 40% of them have indicated increase of unskilled manpower less than 20. Overall, the respondents have witnessed less than 50 additional unskilled labour and 31% have witnessed no change.

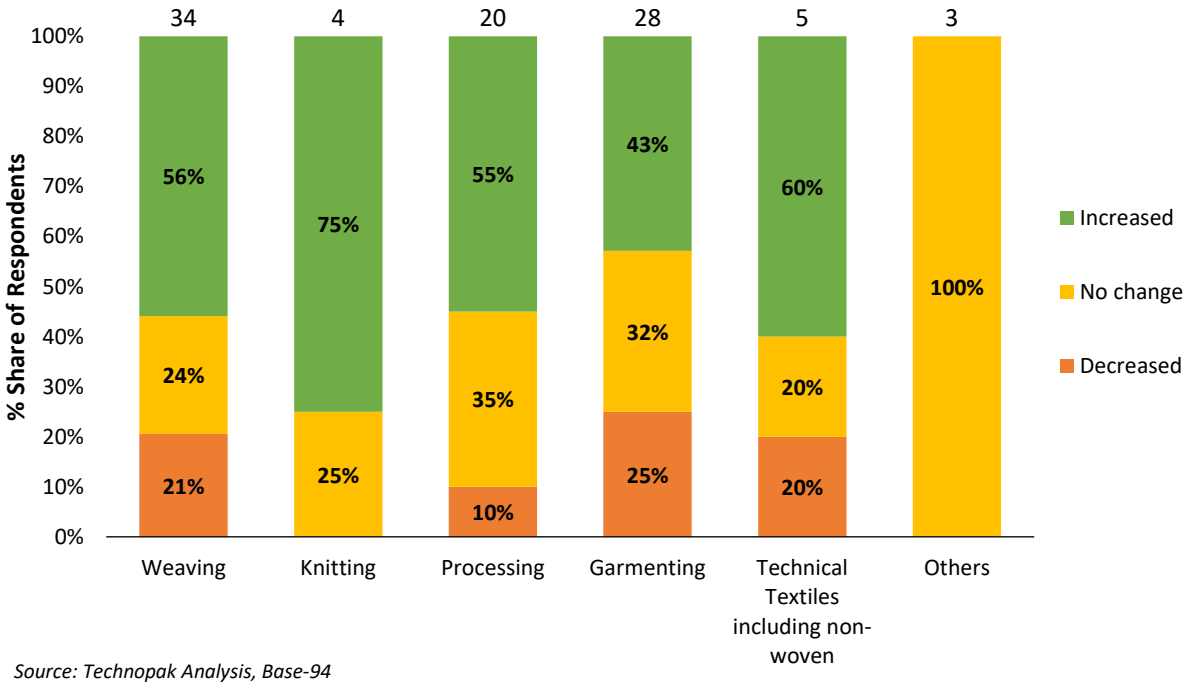
Exhibit 171: Change in Unskilled Manpower



Source: Technopak Analysis, Base- 94

Weaving and processing segments have witnessed primarily additional unskilled labour changes <20. 25% respondents from Garmenting, 21% from Weaving segments have witnessed a decrease in unskilled labour.

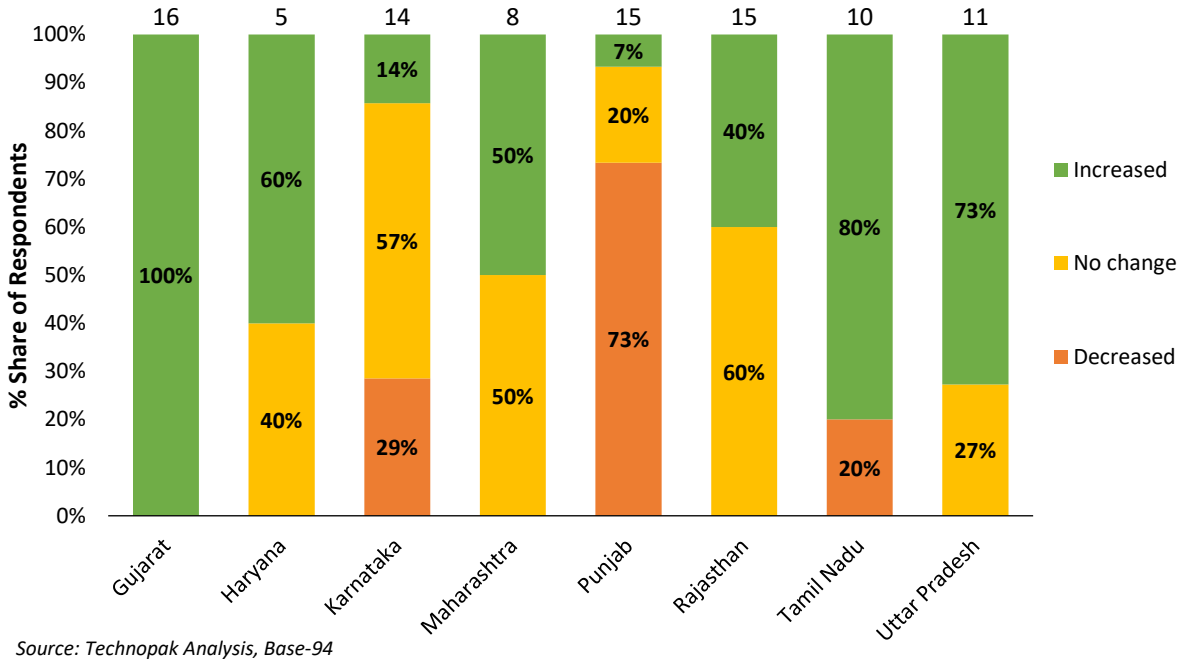
Exhibit 172: Change in Unskilled Manpower - Segment Wise



Source: Technopak Analysis, Base-94

All the non-beneficiary respondents from Gujarat witnessed an increase in unskilled manpower. 73% respondents in Punjab have witnessed a decrease in unskilled manpower.

Exhibit 173: Change in Unskilled Manpower - Geography Wise

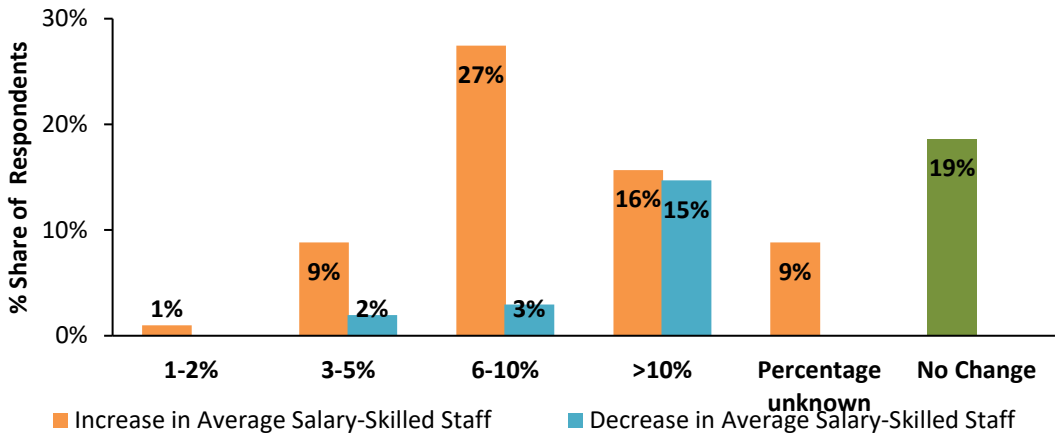


Source: Technopak Analysis, Base-94

Change in average salary of skilled manpower before and after taking loan

Of the 102 non-beneficiaries who responded to the question, 27% witnessed an increase in average salary of the skilled manpower between 6-10%. 16% of the respondents witnessed an increase of >10 in average salary of the skilled manpower.

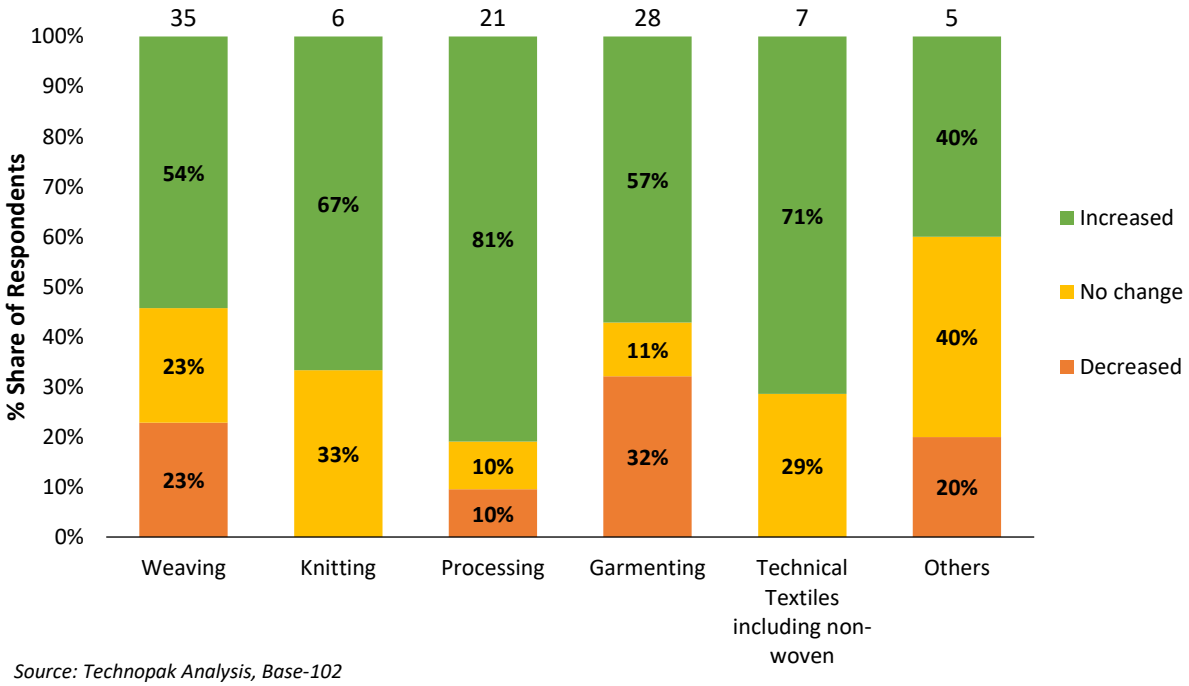
Exhibit 174: Change in Average Salary of Skilled Manpower



Source: Technopak Analysis, Base- 102

In Processing segment 81% of the respondents witnessed an increase in average salary of skilled manpower. 32% respondents in Garmenting and 23% in Weaving segments have witnessed a decline in the annual salary of skilled manpower.

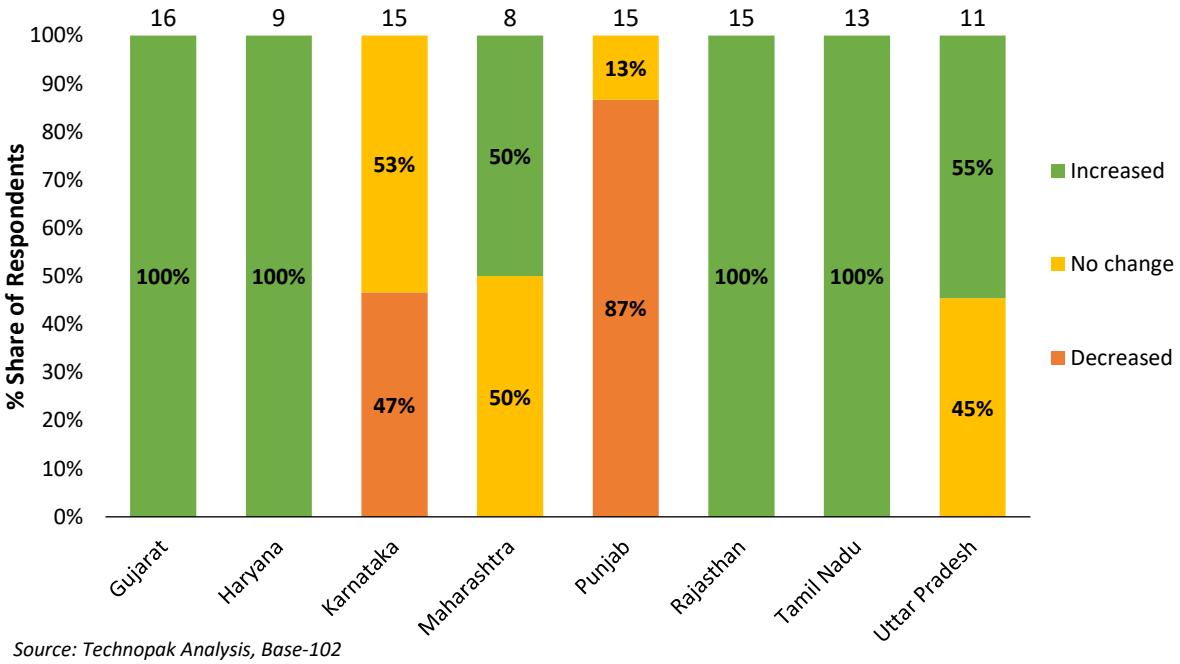
Exhibit 175: Change in Average Salary of Skilled Manpower - Segment Wise



Source: Technopak Analysis, Base-102

All the non-beneficiary respondents from the states of Gujarat, Haryana, Rajasthan and Tamil Nadu have witnessed an increase in average salary of skilled manpower. 89% respondents from Punjab have witnessed a decrease in average salary of skilled manpower.

Exhibit 176: Change in Average Salary of Skilled Manpower - Geography Wise

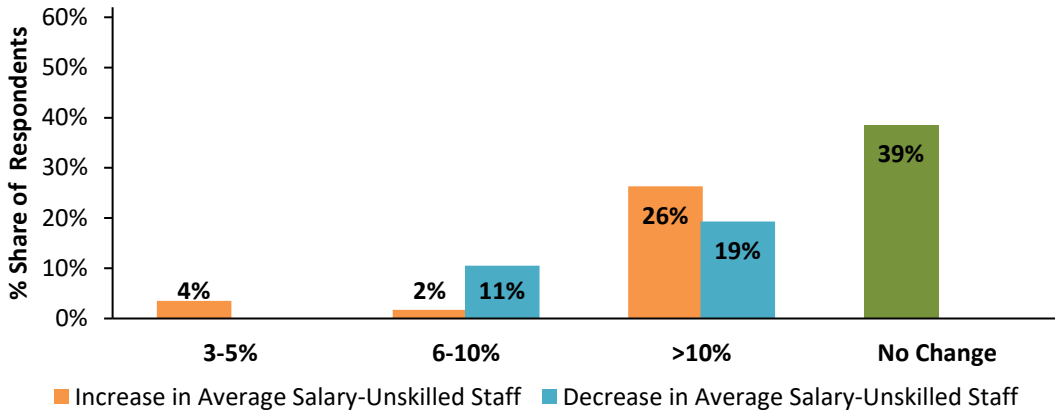


Source: Technopak Analysis, Base-102

Change in average salary of unskilled manpower before and after taking loan

Of the 57 non-beneficiaries who responded to the question, majority witnessed in an overall increase in average salary of the unskilled manpower. 26% of the respondents witnessed an increase of >10 in salary of the unskilled manpower.

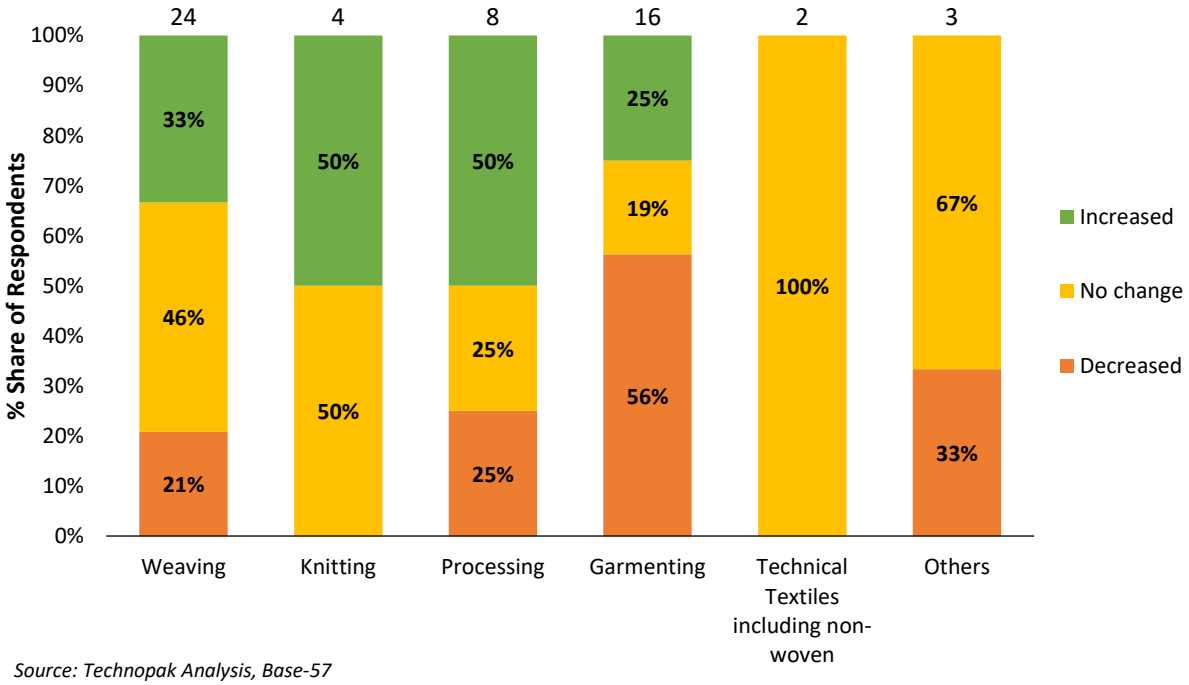
Exhibit 177: Change in Average Salary of Unskilled Manpower



Source: Technopak Analysis, Base-57

Some of the segments have witnessed primarily no change in average salary of unskilled workers. 56% respondents in Garmenting segment have witnessed a decrease in average salary of the unskilled manpower.

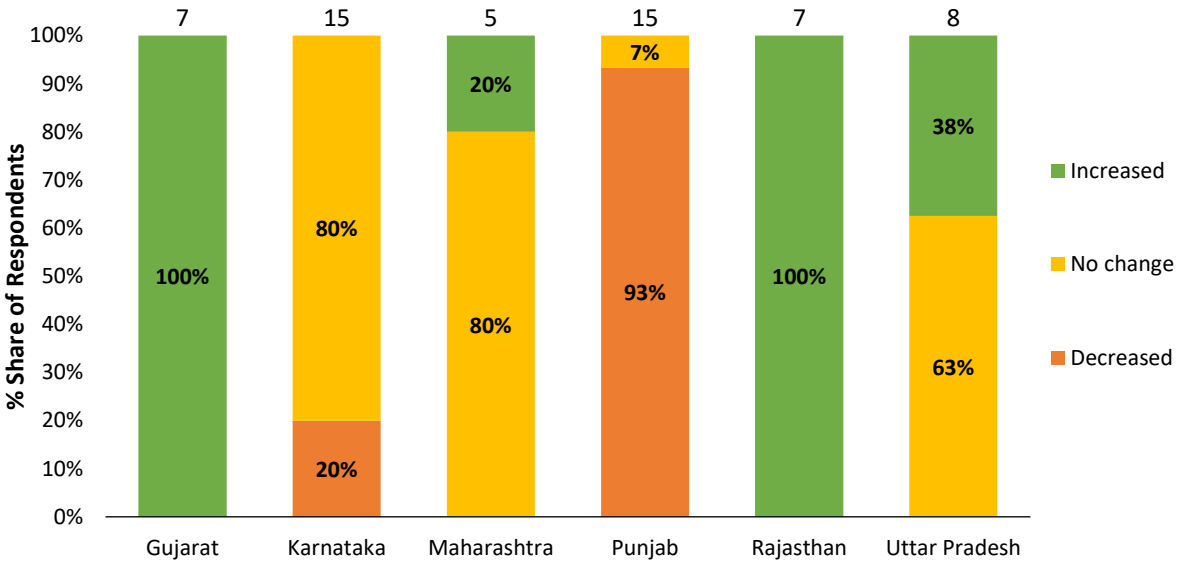
Exhibit 178: Change in Average Salary of Unskilled Manpower - Segment Wise



Source: Technopak Analysis, Base-57

Among states, all the non-beneficiary respondents from Gujarat and Rajasthan have witnessed increase in average salary of unskilled manpower. 93% respondents from Punjab have witnessed a decrease in average salary of unskilled manpower.

Exhibit 179: Change in Average Salary of Unskilled Manpower - Geography Wise

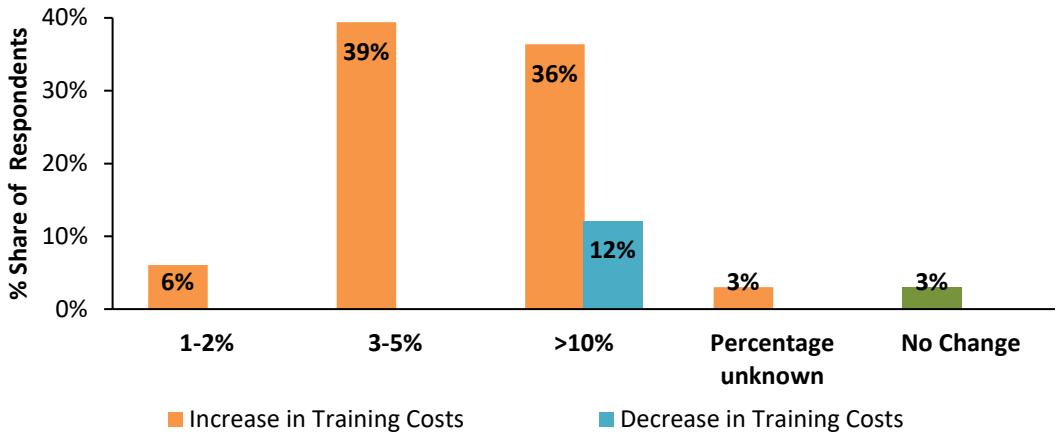


Source: Technopak Analysis, Base-57

Change in training costs before and after taking loan

Of the 33 non-beneficiaries who responded to the question, majority witnessed an increase in training costs. 39% of the respondents witnessed an increase of 3-5% in training costs.

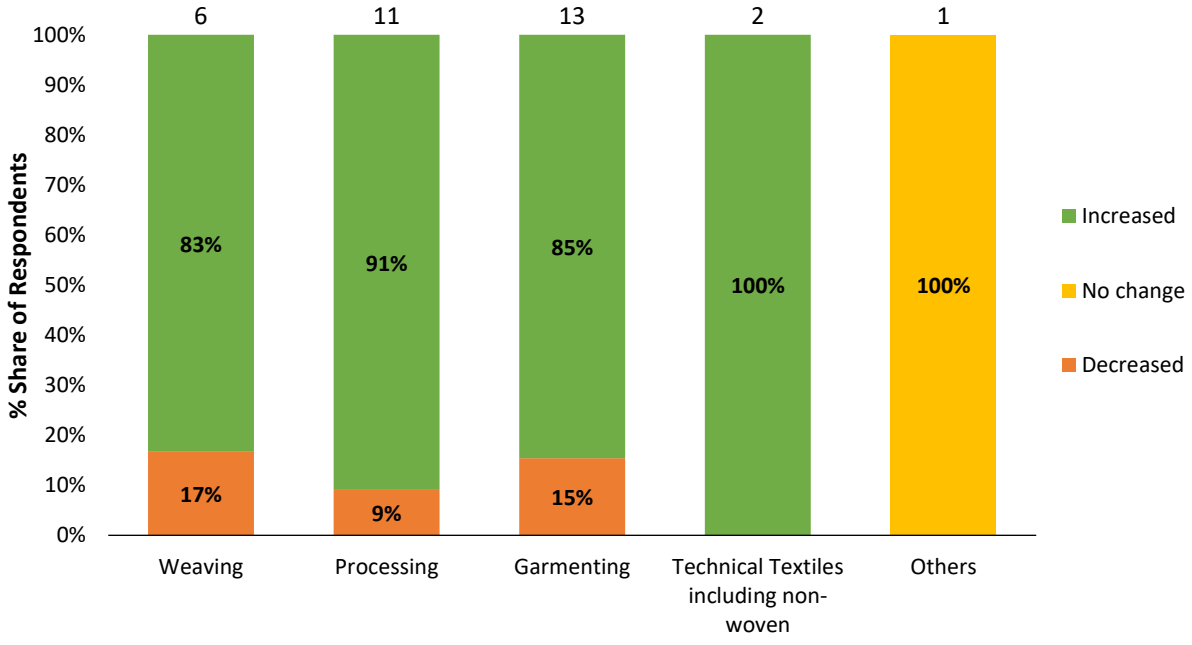
Exhibit 180: Change in Training Cost



Source: Technopak Analysis, Base- 33

91% of the non-beneficiary respondents in processing segment responded that the training costs were increased.

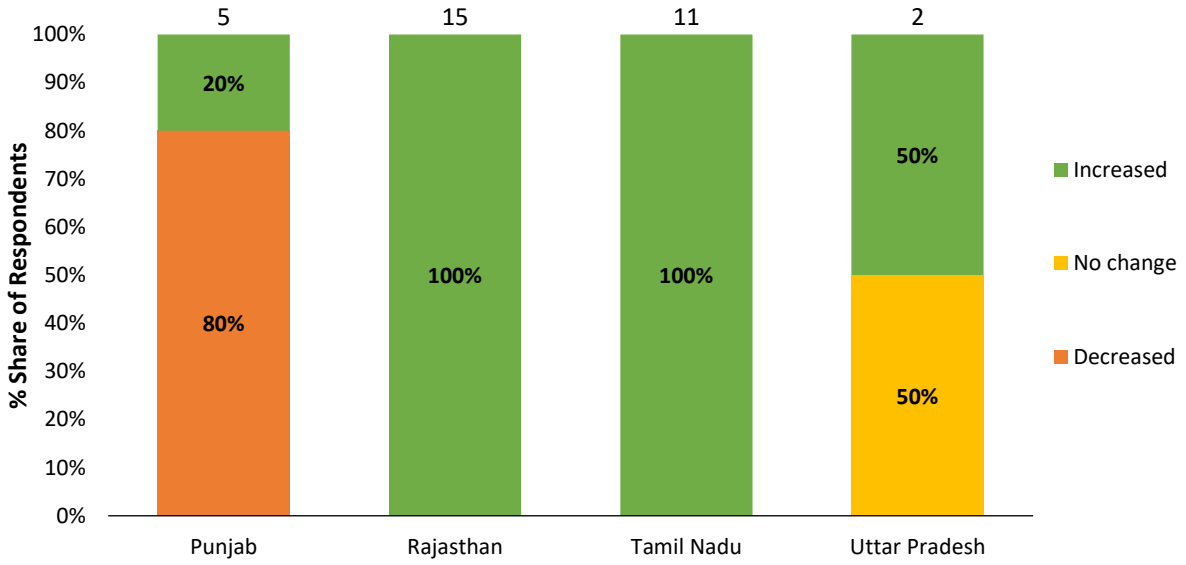
Exhibit 181: Change in Training Cost - Segment Wise



Source: Technopak Analysis, Base-33

Among states, all the non-beneficiary respondents from both Rajasthan and Tamil Nadu have witnessed an increase in training costs.

Exhibit 182: Change in Training Cost - Geography Wise



Source: Technopak Analysis, Base-33

Summary of Impact on Employment Generation

Literature review indicates that TUF Scheme contributed positively to employment generation and helped in growth of income and improving livelihood of the workers. Since its launch, the scheme provided employment to approx. 8.4 lakhs people in factory sector, with approx. 1.6 lakh people employed after RTUFS. No. of people engaged in the operational factories has witnessed an increasing trend in the last 5 years, so have the wages per worker in T&A industry.

The KII analysis indicates that 76% of respondents opined that TUFS had a significant impact on employment, vis-à-vis 69% of the expert panel.

As per the UHS analysis, total manpower has increased across all the segments. 70% of the beneficiaries have indicated increase of total manpower after upgrading the technologies under these schemes, vis-à-vis 52% of non-beneficiaries. Processing segment witnessed a significant increase in manpower of >20, primarily because it is technology intensive and demands skilled labour. Capacity additions across the textile value chain have created new jobs for skilled as well as unskilled manpower. Overall, majority of the companies have witnessed <50 additional skilled labour. However, a significant >30% of the respondents have however indicated no change in unskilled manpower primarily in Spinning, Knitting, Processing and Garmenting segment. 37% of the beneficiaries witnessed an increase of >10 in salary of the skilled manpower, whereas 61% of the beneficiaries witnessed an increase of >10 in salary of the unskilled manpower.

Among states, 75% respondents from Rajasthan have witnessed increase in average salary of skilled manpower of >10% due to TUFS. Among states, 86% respondents from Gujarat have witnessed increase in average salary of unskilled manpower of >10% due to TUFS. Majority of states have witnessed average salary of unskilled manpower increase >6%. Majority of states have witnessed average training costs increased by >6%. 87% of the non-beneficiary respondents in Punjab have witnessed decrease in average salary >10%. 13% of the non-beneficiary respondents from Karnataka have witnessed a decrease in average salary >10%

4.6 Cost Savings

- **Prof. Dr. M.D. Teli, Head of Department of Fibers & Textile Processing Technology on Technology Upgradation Fund Scheme (2003)**

  As per the report, the average reduction in unit cost across segments ranged between (3%) and 36%. In case of machineries, average cost reduction varied between 1% and 21% - average cost reduction was approx. 12% for TUFS specific machineries and 8% for overall machineries. Technologically upgraded machineries witnessed higher cost reduction than overall machinery units.

- **Technopak Advisors Evaluation Report of TUFS (2006)**

  Under 10% Credit – Linked Capital Subsidy on Processing Sector Overall cost saving was low to medium. Most of the companies using upgraded machineries under TUF Scheme indicated cost savings up to 20%. About 60% of the companies were able to save up to 10%. Most of the segments witnessed cost savings in low to medium range. 100% respondents in weaving segment witnessed cost savings in their operations due to investment in technologically upgraded machineries

- **NCEUS Evaluation Report on Impact of TUFS on the Unorganized Sector (2009)**

  With the help of improved technology, in states such as Maharashtra, Delhi, Haryana and Rajasthan, approx. 46% of the SSI units indicated reduction in cost. In Haryana, out of 100 SSI units, 31 witnessed cost reduction, whereas in Rajasthan only 14% of SSI units indicated cost reduction.

- **CRISIL Evaluation Report of TUFS (2010)**

  More than 60 per cent of the Non-SSI and SSI units showed a reduction in costs because of reduction in labor costs, lower wastage and lower maintenance cost. 66% Non-SSI units and 78% of SSI units experienced cost reduction between 1% and 5%, whereas 34% of Non-SSI units and 22% SSI units saw reduction in the range of 6-10%. The main reason behind lower labor cost was the increase in output per machine due to the large diameter, resulting in low labor requirement. Cost reduction in the garmenting sector mainly came because of productivity enhancing machineries and reduced the labor requirements.

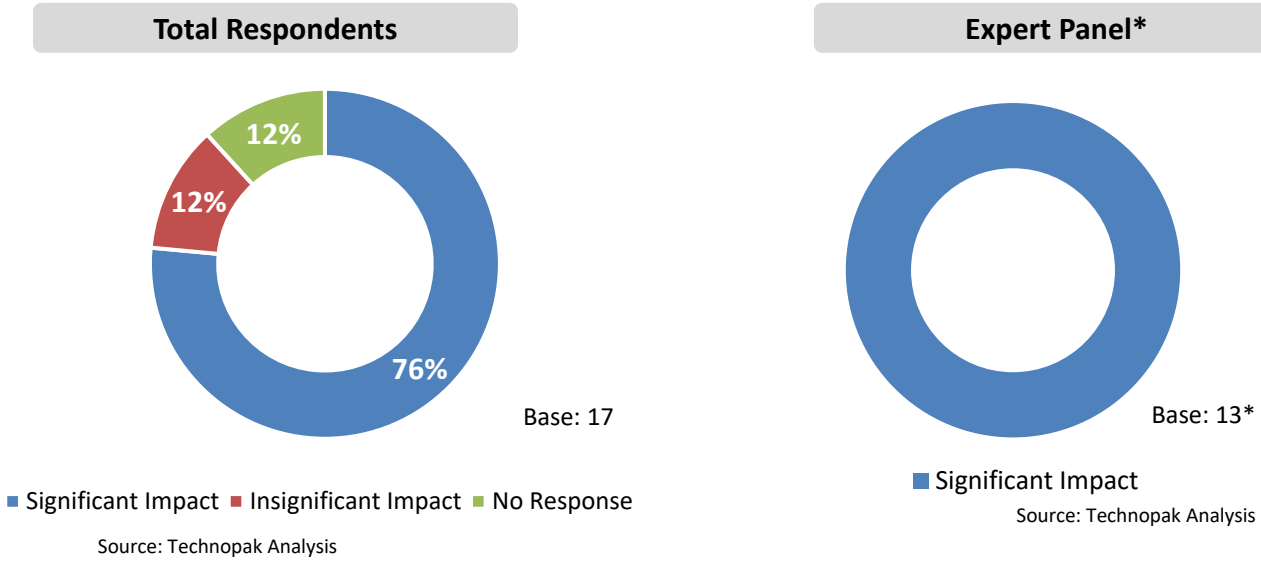
- **Wazir Advisors Evaluation Report of RTUFS and RRTUFS (2016)**

  As per the report, units were able to improve their cost efficiencies and resource efficiencies to significant extent. Majority of companies across all segments witnessed cost reduction between 1% and 10%. Highest cost saving was observed in composite segment, followed by spinning segment. Energy efficient machineries helped in higher savings in power, water and steam. In all, factors such as wastage reduction and improvement in productivity contributed to cost savings.

KII ANALYSIS

Out of 62 responses, 17 of them (27%) responded to the question asked on impact of TUFS on Indian textile & apparel industry. Out of 17 respondents, 13 (76%) answered that TUFS had a positive impact on Cost Savings. Whereas, all the 13 experts (100%) opined that TUFS had a positive impact on Cost Savings

Exhibit 183: Increase in Cost Savings



* Out of 23 Expert Panel, 13 (57%) responded to the question asked on impact of TUFS on Indian textile & apparel industry

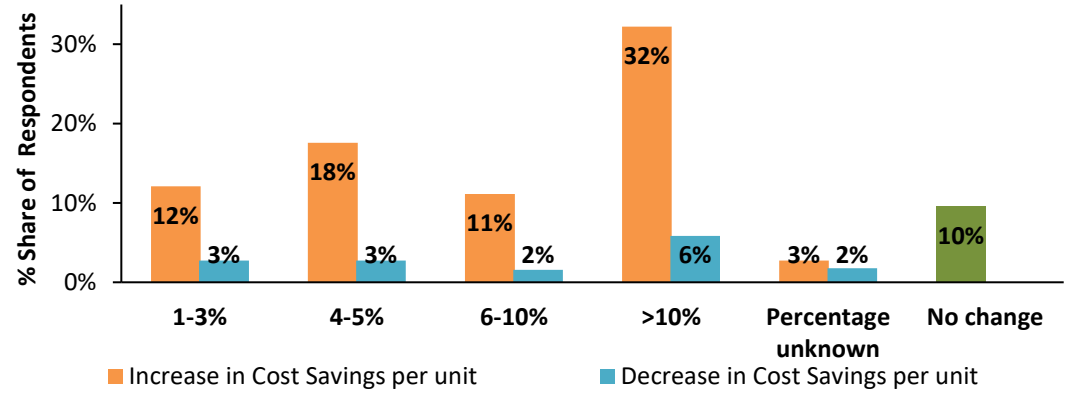
UHS ANALYSIS

Beneficiaries

Change in Cost Savings per Unit

Of the 512 respondents to the question, 76% of them have indicated increased cost savings per unit. 32% respondents have responded >10% cost savings per unit.

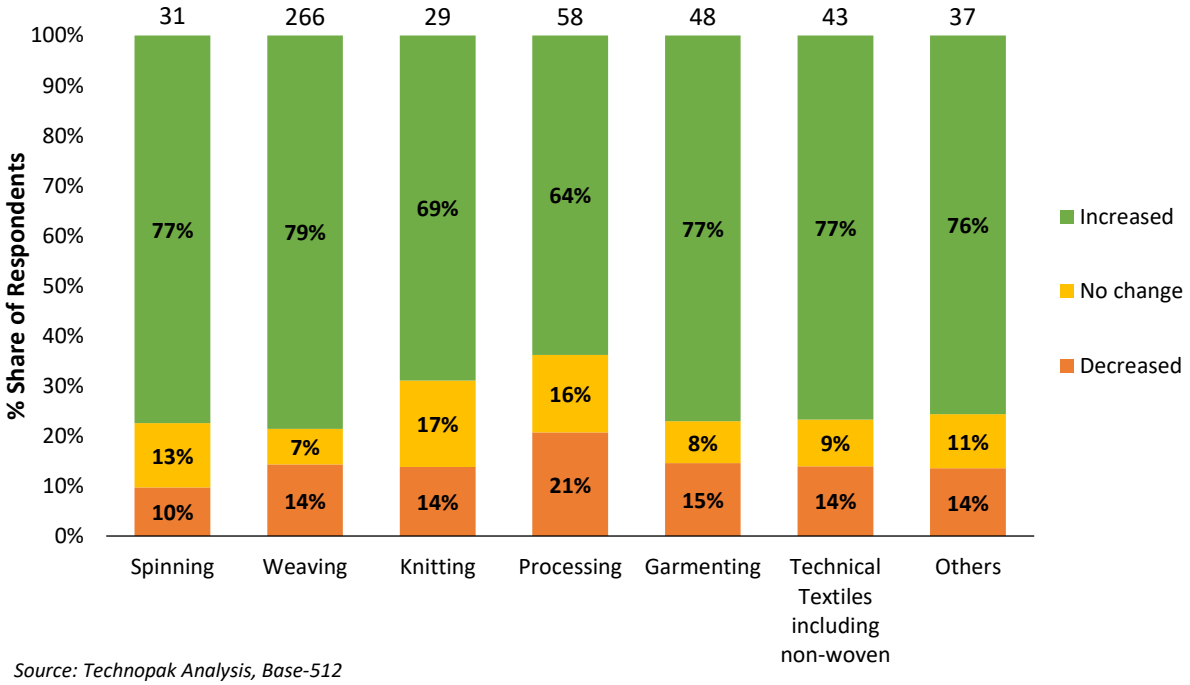
Exhibit 184: Change in Cost Savings per Unit



Source: Technopak Analysis, Base-512

Around 75% respondents in all the segments have seen an increase in cost savings per unit. However, 21% respondents in Processing segment have witnessed a decrease in cost savings.

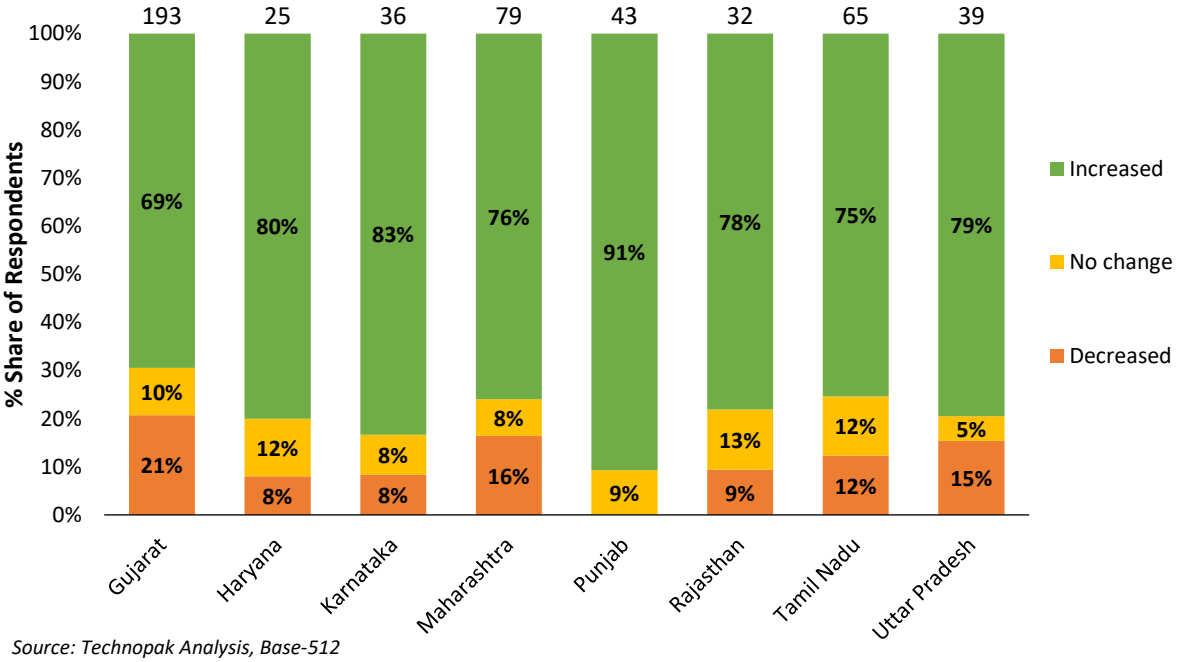
Exhibit 185: Change in Cost Savings Per Unit - Segment Wise



Source: Technopak Analysis, Base-512

Among states, 91% respondents in Punjab have witnessed an increase in cost savings per unit. Except Gujarat, more than 75% respondents in all the states have witnessed an increase in average cost savings per unit. However, 21% respondents in Gujarat have witnessed a decrease in cost savings.

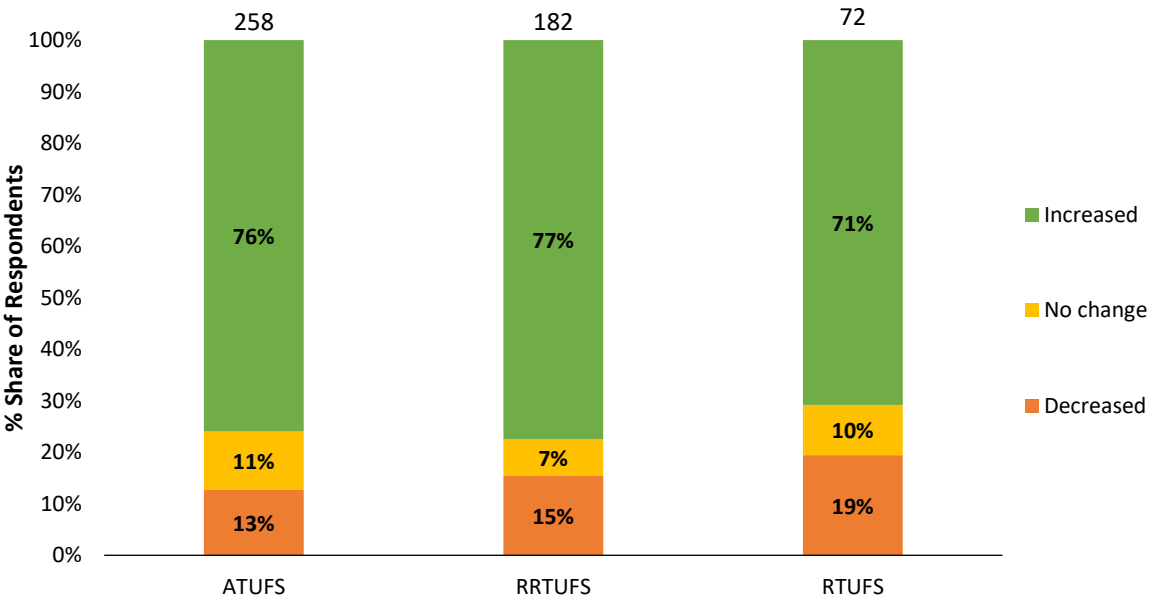
Exhibit 186: Change in Cost Savings Per Unit - Geography Wise



Source: Technopak Analysis, Base-512

Across schemes, during RRTUFS scheme, 77% respondents have witnessed increase in cost savings per unit. 19% respondents who receive RTUFS witnessed a decrease in cost savings.

Exhibit 187: Change in Cost Savings Per Unit - Scheme Wise



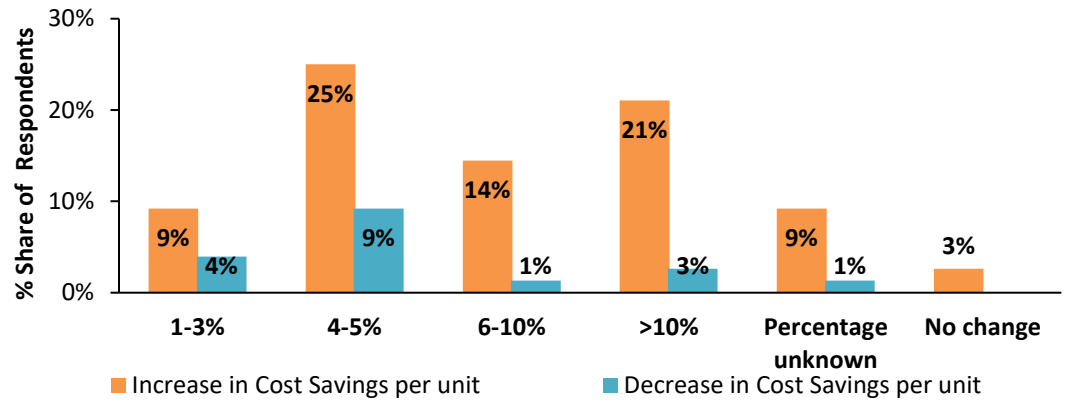
Source: Technopak Analysis, Base-512

Non-Beneficiaries

Change in Cost Savings per Unit

Of the 76 respondents to the question, 78% of them have indicated increased cost savings per unit. 25% respondents have responded that they have witnessed 4-5% cost savings per unit.

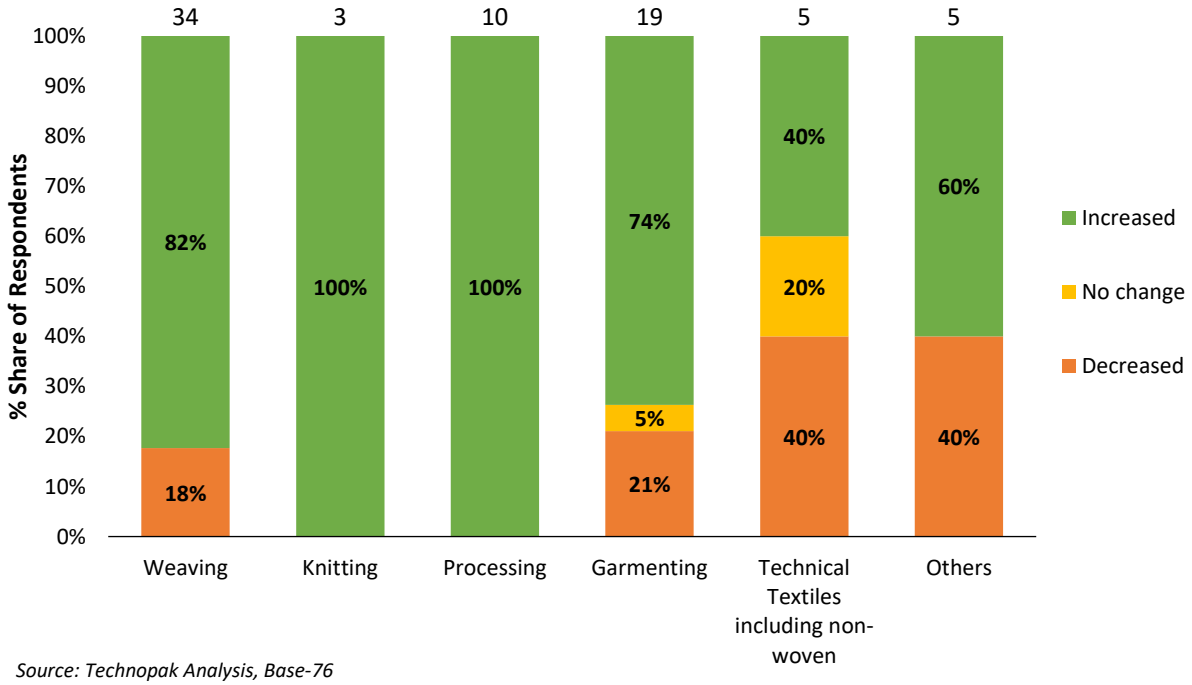
Exhibit 188: Change in Cost Savings per Unit



Source: Technopak Analysis, Base- 76

All the non-beneficiary respondents of Knitting and Processing segments witnessed an increase in cost savings per unit. 82% of the respondents in Weaving segment witnessed an increase in the cost saving per unit

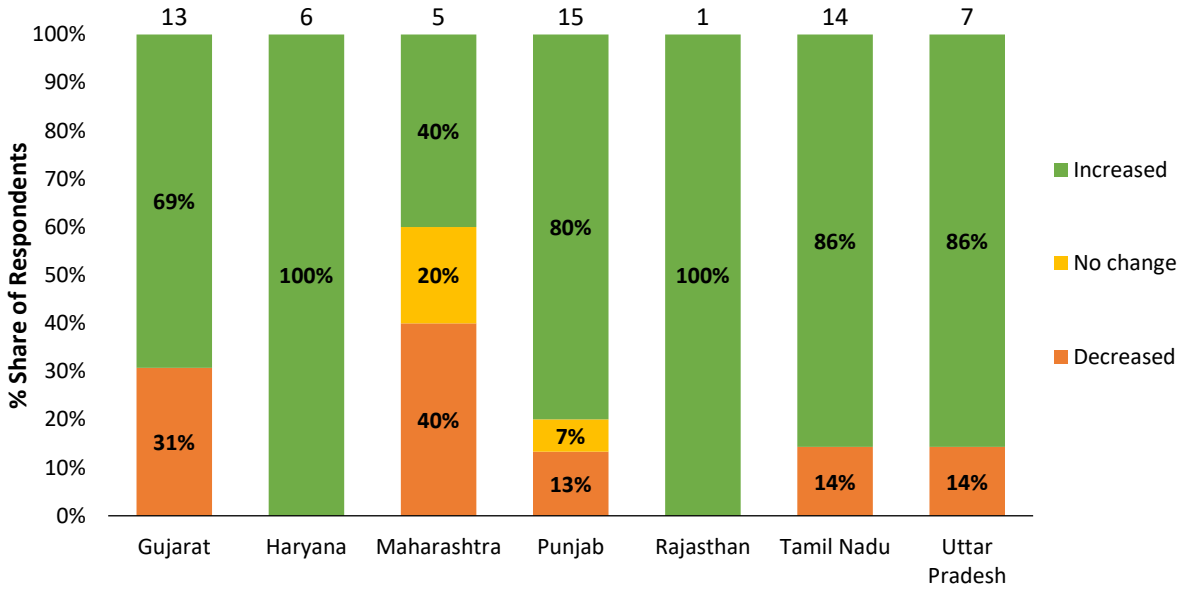
Exhibit 189: Change in Cost Savings Per Unit - Segment Wise



Source: Technopak Analysis, Base-76

All the respondents from Haryana and Rajasthan witnessed an increase in cost savings per unit. 31% of the respondents from Gujarat witnessed a decrease in cost savings per unit.

Exhibit 190: Change in Cost Savings Per Unit - Geography Wise



Source: Technopak Analysis, Base-76

Summary of Impact on Cost Savings

Literature review indicates that units were able to improve their cost efficiencies and resource efficiencies to significant extent. Majority of companies across all segments witnessed cost reduction between 1% and 10%.

As per the KII analysis, 76% respondents opined that TUFS had a significant impact on cost savings, whereas 100% of expert panel opined that the scheme had a positive impact on cost savings.

As per the UHS analysis, 76% of the 512 beneficiary respondents indicated an increase in cost savings per unit, vis-à-vis 78% of the 76 non-beneficiary respondents. Units have also been able to increase their cost savings and resource efficiencies to significant extent. 32% of beneficiary respondents experienced cost saving of >10%. Cost saving of >10% was observed to be highest in weaving segment (43%) followed by knitting segment (31%).

Among states, 72% of respondents from Karnataka have witnessed increase in cost savings per unit of >10% due to TUFS. Of the 193 respondents from Gujarat, 38% witnessed increase in cost savings per unit >10%. Over 15% respondents across the states Gujarat, Maharashtra and Uttar Pradesh have witnessed decrease in cost savings.

4.7 Quality

Past Trend Analysis - Literature Review

1. **Prof. Dr. M.D. Teli, Head of Department of Fibers & Textile Processing Technology on Technology Upgradation Fund Scheme (2003)**

   As per the report, all the segments witnessed improvement in quality due to technology upgradation suggested by more than 98% of units. 98% of SSI and 98.5 % of Non-SSI have experienced improvement in product quality.

2. **Technopak Advisors Evaluation Report of TUFS (2006)**

   In all, TUF Scheme had a positive impact on improving quality of products. Approx. 80% of the units in processing sector and weaving sector experienced quality improvement. The industry welcomed the decision to extend the scheme up to 2007. However, to sustain this development the industry felt that this scheme should be further extended

3. **NCEUS Evaluation Report on Impact of TUFS on the Unorganized Sector (2009)**

   As per the report, units in Maharashtra, Delhi, Haryana and Rajasthan, more than 70% of the SSI units indicated substantial quality improvement. Out of 100 SSI units, in Haryana 51 units witnessed quality improvement, in Delhi more than 85% of SSI units witnessed quality improvement, whereas in Rajasthan only 35% of SSI units indicated improvement in quality.

4. **CRISIL Evaluation Report of TUFS (2010)**

   The scheme had a significant impact on quality improvement in various segments and well as units. Approx. 45% of Non-SSI and SSI units experienced improvement in quality, whereas more than 65% of SSIs and Non-SSIs achieved an increase in price realizations up to 5 per cent on improving yam quality. In texturizing industry, approx. 40% of the units experienced improvement in product quality of filament yarn on parameters such as strength, evenness and better temperature control mechanism on machines installed under TUF Scheme; in garmenting, approx. 67% of units in Non-SSI and 37% of units in SSI experienced an improvement in quality by using computerized machine, high end cutting machine and laying equipment that provided better finishing to the garment products; in weaving, more than 65% of Non-SSI and SSI units showed improvement in quality, cost reduction and wastage; and in knitting approx. 50% of SSI and Non-SSI units experienced improved quality products on account of improved technology.

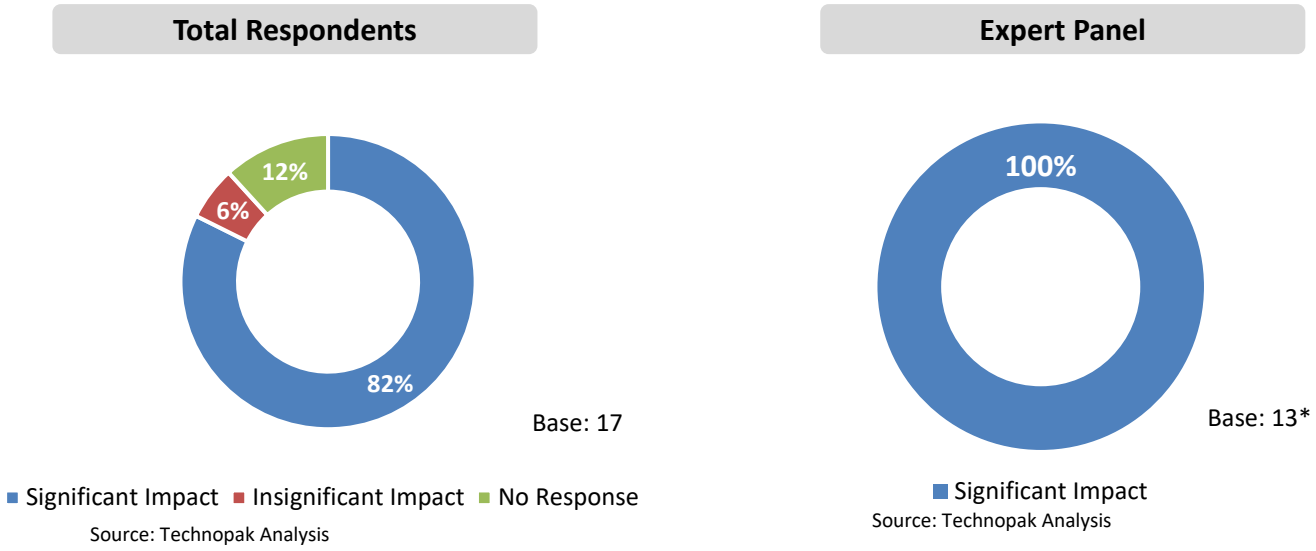
5. Wazir Advisors Evaluation Report of RTUFS and RRTUFS (2016)

As per the report, TUF Scheme encouraged companies to improve their product quality and value addition by shifting to technologically upgraded machineries. Increase in Gross Value Added (GVA) in overall T&A industry during RTUFS and RRTUFS period was supported by improvement in product quality and value addition. GVA in factory sector grew from INR 0.18 lakh crore in 1998-99 to INR 0.83 lakh crore in 2013-14, with a CAGR of approx. 11%. Particular segments in particular have experienced an improvement in product quality. In spinning, upgraded technology helped India become the most competitive yarn manufacturing country globally and helped India achieve 27-30% share in global cotton tarn trade. In weaving, companies were able to invest in hi-tech warping, sectional warping and sizing machines to produce high quality, wider width and longer length required for the high-speed shuttle less looms. In processing, investment in technology upgradation in yarn and fiber dyeing machines helped in reducing color variations and improving product quality. In garmenting, modern sewing machines and other support machines such as pocket setter, belt loop making, fusing machines, etc. improved productivity and overall quality. In technical textiles, investment in specialized finishing and heat setting machines helped in improving the product quality. Factors such as product development, value addition, quality improvement and innovative practices also helped in improving Unit value realization (UVR) of textile sector.

KII ANALYSIS

Out of 62 responses, 17 of them (27%) responded to the question asked on impact of TUFS on Indian textile & apparel industry. Out of 17 respondents, 14 (82%) answered that TUFS had a positive impact on improving Quality of the products. Whereas, all the 13 experts (100%) opined that TUFS had a positive impact on Quality

Exhibit 191: Improvement in Quality



* Out of 23 Expert Panel, 13 (57%) responded to the question asked on impact of TUFS on Indian textile & apparel industry

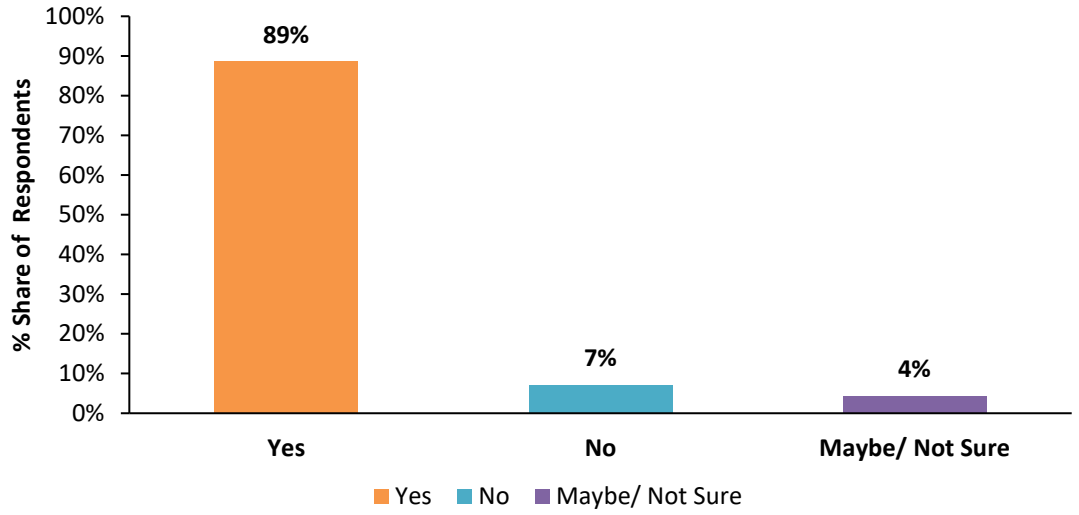
UHS ANALYSIS

Beneficiaries

Improvement in Product Quality

TUFS has enabled companies to improve product quality. 89% of the respondents (497 beneficiaries) opined that this scheme has led to improvement in product quality.

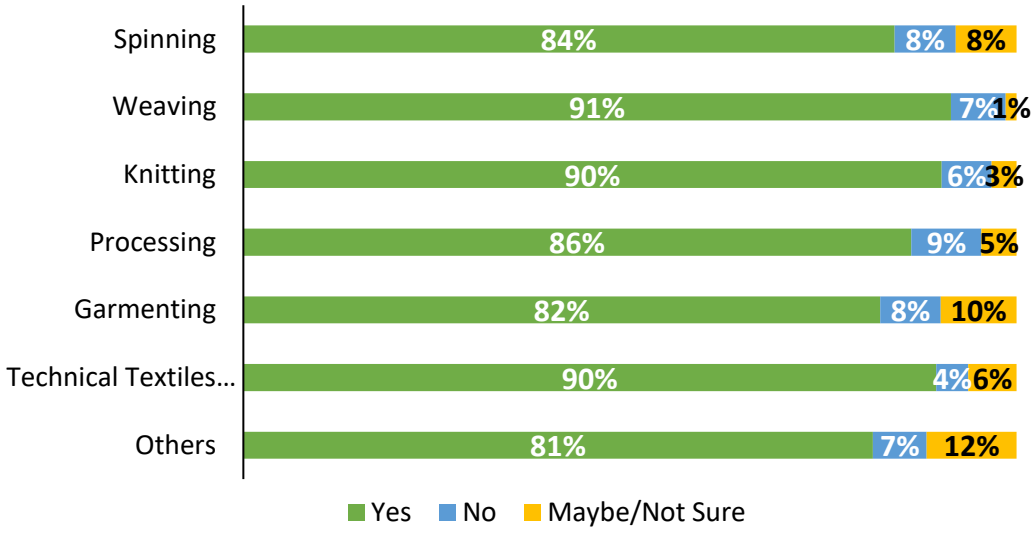
Exhibit 192: Improvement in Product Quality



Source: Technopak Analysis, Base-559

The product quality has improved significantly across the various segments as reported by the companies.

Exhibit 193: Change in Product Quality - Segment Wise



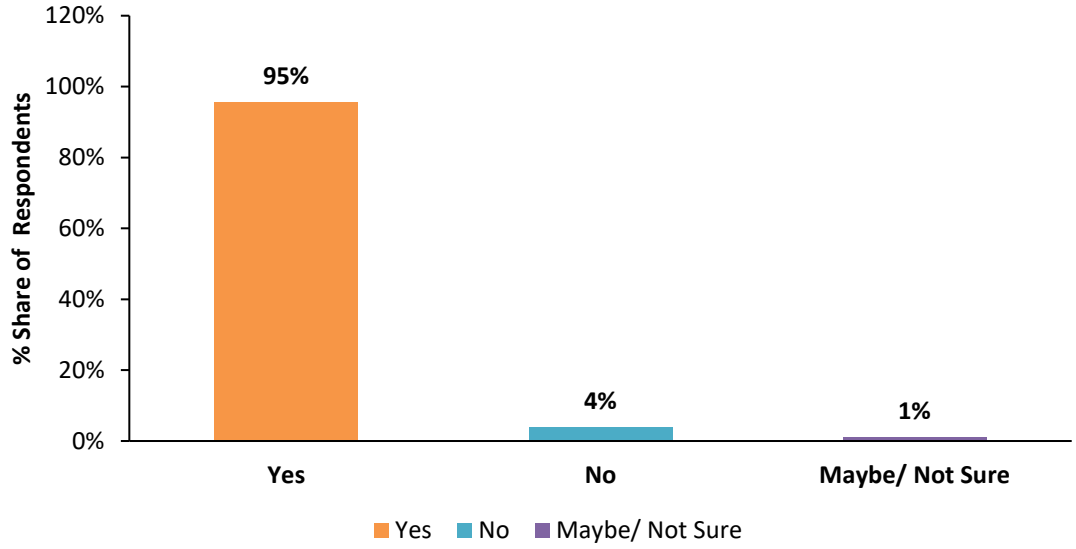
Source: Technopak Analysis, Base-559

Non-Beneficiaries

Improvement in Product Quality

Of the 108 non beneficiaries who have responded to the question, 95% believe that their product quality has increased.

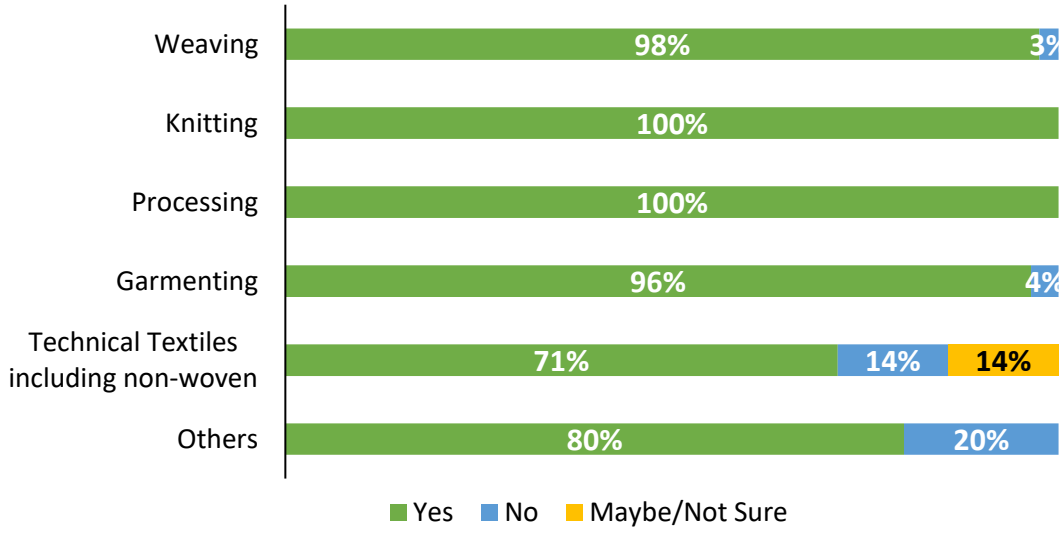
Exhibit 194: Improvement in Product Quality



Source: Technopak Analysis, Base- 108

The product quality has improved significantly across the various segments as reported by the non-beneficiary companies.

Exhibit 195: Change in Product Quality - Segment Wise



Source: Technopak Analysis, Base- 108

Summary of Impact on Quality

As per the literature review, TUF Scheme encouraged companies to improve their product quality and value addition by shifting to technologically upgraded machineries. Factors such as product development, value addition, quality improvement and innovative practices also helped in improving Unit value realization (UVR) of textile sector.

The KII analysis indicates that 82% respondents opined that TUFS had a positive impact on improving quality of the products, whereas 100% of the expert panel believed that the scheme had a positive impact.

The product quality has improved significantly across the various segments as reported by the companies enabled due to the TUFS. 89% of the respondents (497 beneficiaries) opined that the scheme led to improvement in product quality, vis-à-vis 95% of the non-beneficiary respondents.

5. ANALYSIS OF MACRO-ECONOMIC FACTORS AFFECTING TEXTILE VALUE CHAIN

Countries	Labour Wages	Power Cost	Water Cost	Lending Rate	Average Production Efficiency	EODB Ranking
	USD/month	USD/KWh	US$/m^3	Per cent (%)	Per cent (%)	Rank
China	550 - 600	0.15 - 0.16	55 - 60	6.0% - 7.0%	65% - 70%	31
India	**160 - 180**	**0.10 - 0.12**	**16 - 20**	**11% - 12%**	**50% - 55%**	**63**
Bangladesh	110 - 120	0.09 - 0.12	20 - 22	12% - 14%	45% - 55%	168
Vietnam	190 - 200	0.08 - 0.10	50 - 80	7.0% - 8.0%	65% - 70%	70
Ethiopia	80 - 90	0.03 - 0.04	30 - 40	8.5% - 9.0%	30% - 35%	159

Note: EODB- Ease of Doing Business
Source: Invest India Report on T&A Industry: The Change Agent of India, July 2020

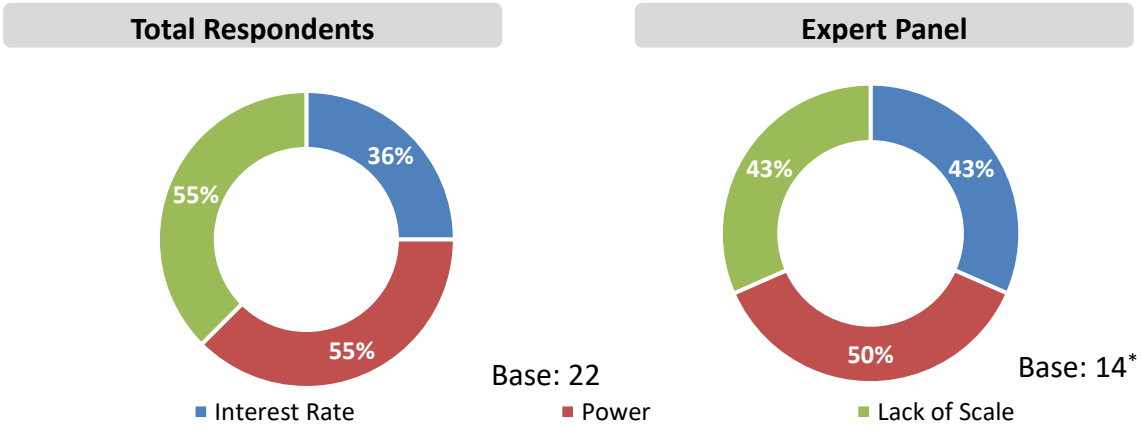
For India: Lending rate, Power cost and Labour cost are relatively higher than competing countries. Higher lending rates have been one of the biggest barriers to investments into textiles sector in India. Other competing countries like China, Vietnam, Bangladesh have better fiscal incentives than India for making investments into textiles.

5.1 Investments in Textiles and Apparels

KII Analysis

Out of 62 responses, 22 of them (35%) responded to the question asked on major factors impacting investments in the Indian textile & apparel industry. Major factors impacting investments are Power, Interest Rate, and Lack of Scale. Out of 22 respondents, 55% ranked power and interest rate as the major factors impacting investments into Indian T&A; Out of 14 respondents from expert panel, 50% ranked power as the major factor impacting investments.

Exhibit 196: Major Factors Affecting Investments

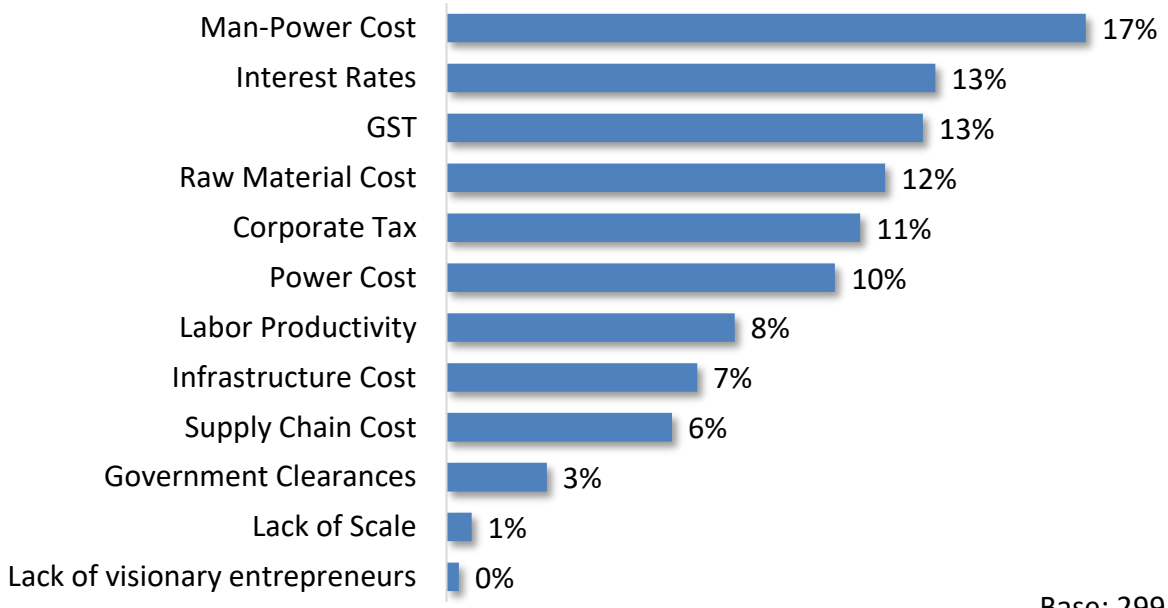


*Out of 23 Industry experts, 13 (57%) responded to the question asked on impact of TUFS on Indian textile & apparel industry;
Source: Technopak Analysis

UHS ANALYSIS

Major factors impacting investments - Man power cost, interest rates, and GST. As per the KII analysis, one of the major factors impacting investments is "lack of scales", which as per UHS analysis is ranked as the least impacting factors.

Exhibit 197: Factors Affecting Investments into Textiles



Base: 299

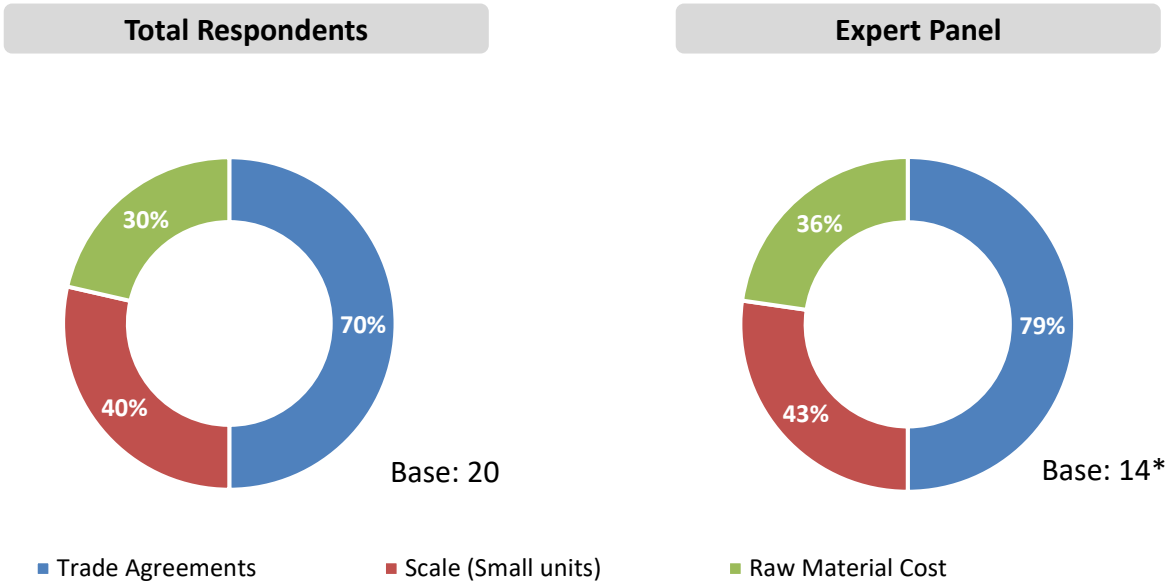
Source: Technopak Analysis

5.2 Exports

KII Analysis

Out of 62 responses, 20 of them (32%) responded to the question asked on factors affecting exports in Indian textile & apparel industry. Major factors impacting exports - Trade Agreements, Scale (Small Units), and Raw Material Cost. Out of 20 respondents, 70% ranked trade agreement as the major factor impacting exports of the Indian T&A; Out of 14 respondents from expert panel, 79% ranked trade agreement as the major factor impacting exports.

Exhibit 198: Major Factors Affecting Exports

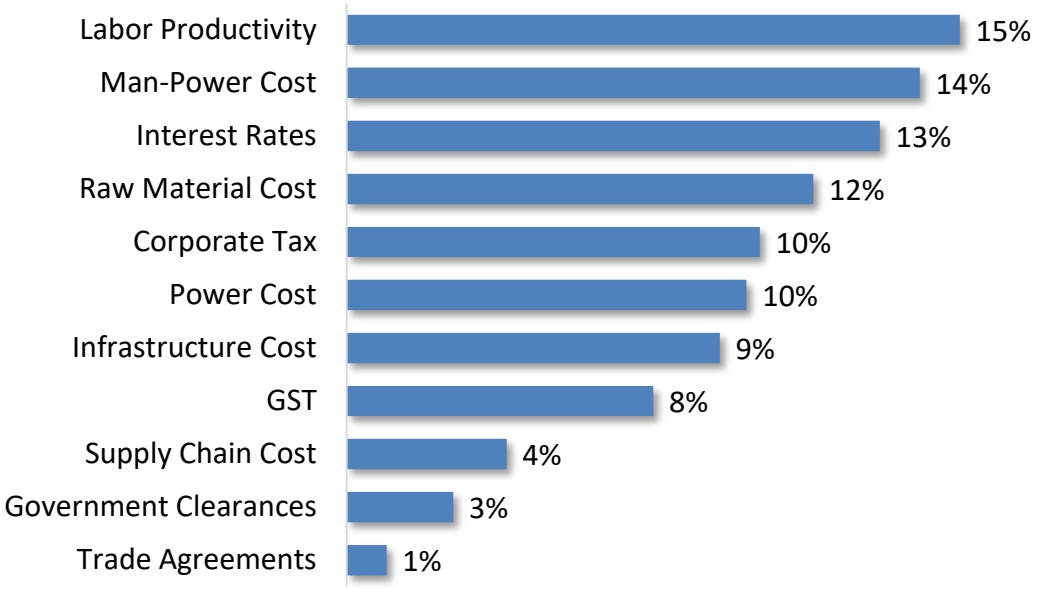


*Out of 23 Industry experts, 13 (57%) responded to the question asked on impact of TUFS on Indian textile & apparel industry;
Source: Technopak Analysis

UHS ANALYSIS

Major factors impacting exports - Labour productivity, man-power cost, and Interest rates. As per the KII analysis, the major factor impacting exports is “trade agreements”, which as per UHS analysis is ranked as the least impacting factor

Exhibit 199: Factors Affecting Exports of Garments



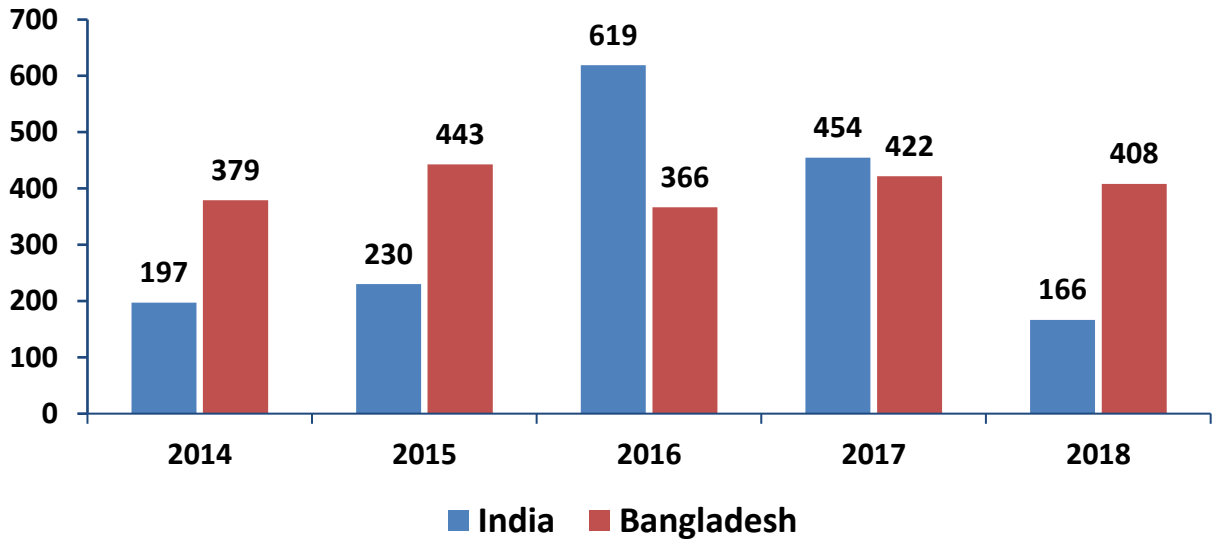
Base: 299

Source: Technopak Analysis

5.3 FDI Investment in Textile and Apparel

FDI in India witnessed a drastic decrease from 2016 to 2018 at the rate of 73%, in contrast to an increase of 214.21% from 2014 to 2018 - whereas FDI inflow in Bangladesh has remained constant over the years

Exhibit 200: FDI in Textiles in USD Millions



Source: Ministry of Textiles; FDI Survey Report; Statistical Department Bangladesh Bank

5.4 Promoting domestic machinery manufacturing

Over the years, imports of textile machinery are increasing in India. During 2014-15, 63% demand of machinery was met by imports, however, during 2018-19 the imports meet 75% of the domestic demand of machinery

Exhibit 201: Indian Textile Machinery Overview

Category	2014-15	2015-16	2016-17	2017-18	2018-19	CAGR (2014-2019)
Spinning & allied machines	3,445	3,480	3,615	3,815	3,625	1.3%
Synthetic filament yarn machines	800	440	400	385	400	-15.9%
Weaving & allied machines	890	870	900	885	890	0.0%
Processing machines	575	625	635	650	750	6.9%
Misc. (spinning, weaving, and processing) machines	25	25	30	35	25	0.0%
Textile testing & measuring instruments	90	115	100	130	165	16.4%
Hosiery machines/ hosiery needles	60	60	65	80	85	9.1%
Spares & accessories	1,075	965	905	920	925	-3.7
Total production	**6,960**	**6,580**	**6,650**	**6,900**	**6,865**	**-0.3%**
Exports	2,466	2,351	2,438	2,939	3,665	10.4%
Imports	8,858	10,305	10,098	10,687	10,834	5.2%
Total demand	**12,308**	**13,547**	**13,313**	**13,613**	**13,004**	**1.4%**
% Share of demand met by imported machinery	**63%**	**69%**	**69%**	**71%**	**75%**	

Note: All numbers in Rs Crores
Source: Textile Machinery Manufacturers' Association (India)

6. TECHNOLOGY UPGRADATION ASSESSMENT (MACHINERY REPORT)

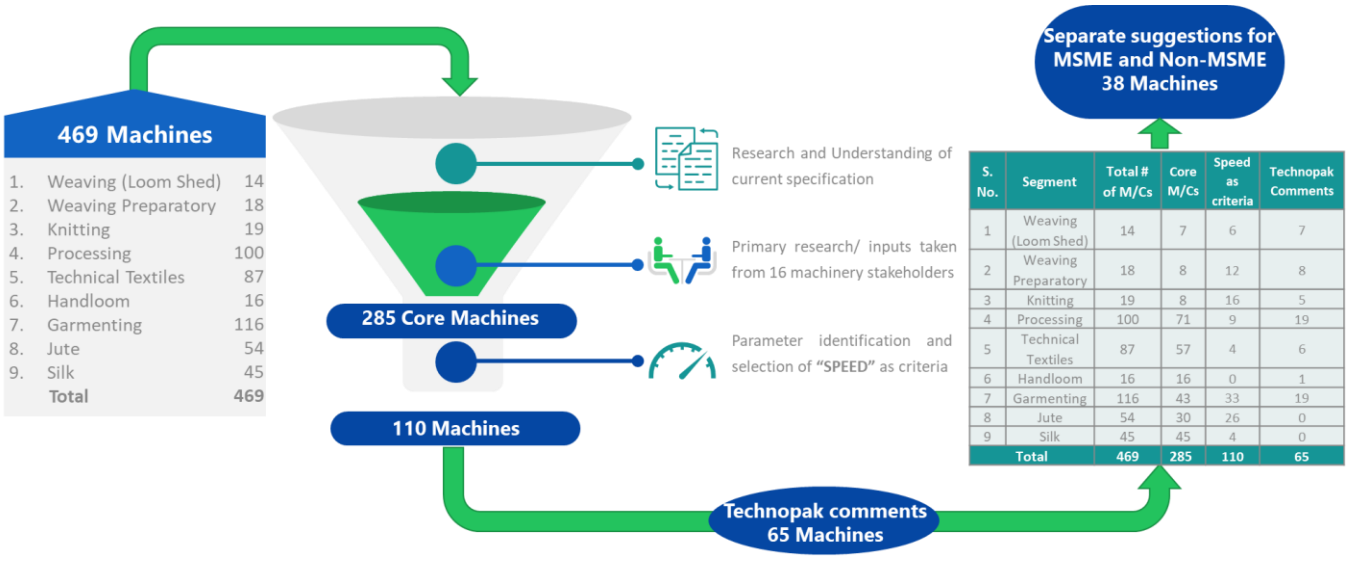
Objectives

As part of this project, 3 major objectives of this technology upgradation assessment are mentioned below. The Consultant has included evaluation matrix as part of this assessment as it helps in arriving at major recommendations for TUFS

1. Study of machinery specifications and recommendations on ATUFS machinery list
2. Current level of Technology in India and upgradation achieved by TUFS
3. Global benchmarking – Comparison with competing countries on technology level
4. Evaluation matrix for technology assessment of textile segments

6.1 Study of machinery Specifications and recommendations on ATUFS machinery list

Exhibit 202: Recommendations on ATUFS Machines Listing



6.1.1 Primary Research, Methodology and Limitations

Primary Research:

The Consultant team conducted 16 interviews with leading machinery manufacturers and industry stakeholders in textile machinery segment to take their inputs. Some of them gave inputs on the machinery specifications for ATUFS and some gave inputs on other topics of the objective. The list of stakeholders interviewed is attached as Appendix 2

Methodology and Limitations of this Study of Technical Specifications of the Machines:

Textile value chain is quite complex as it involves multiple fibers, multiple processes, multiple end products and multiple applications. All this complexity has made the list of machinery under ATUFS quite big. In the last 4 years TUFS machinery list has only increased; machines have not been removed from any segment. There are 469 types of machines listed under ATUFS for subsidy. There are approx. 590 machine manufacturers approved under ATUFS.

The Consultant observed that lots of these machines listed under ATUFS have no technical specifications provided; it is just name of a machine or a process. There is clear need to provide specifications for such machines; which is not under the scope of this study.

After deliberations with the machinery experts, the Consultant has decided to categorize the long list of machines listed under ATUFS into 2 categories – “Core Process machines” and “Ancillary process machines”. This is a subjective classification and may require further deliberations along with the industry. Core Process machines (285 out of 469) perform the major process in the manufacturing of the product. Most of the total investment into machinery, by the industry, is for these core machines. Ancillary process machines (184 out of 469) mainly support the manufacturing process and contribute lesser to the overall machinery investments. The Consultant further analysed only ‘Core process machines’ and have provided technical recommendations for them only. The Consultant has covered Spinning, Weaving, Knitting, Processing, Garmenting, Technical Textiles, Handloom, Jute, Silk segments.

After a lot of deliberation with experts, concluded that “speed” is the best individual parameter of the level of technology for the textile machine. There are many other important parameters considered while choosing a machine, but speed is the most acceptable parameter to keep the process of specification simple. Hence, the Consultant has made recommendations on speed for the selected machinery for each textile segment. In some cases, like weaving and knitting, the Consultant has given speed recommendations separately for MSME (Unorganized sector) and Non-MSME (Organized sector)

6.1.2 Recommendations on ATUFS Machines Listing

Summary of Machines

There are 469 machines available in ATUFS machines' list, out of which the Consultant shortlisted 285 core machines and commented on most of them.

Exhibit 203: Summary of ATUFS machinery

S.no.	Segment	Number of Machines	Number of Core Machines	Number of Ancillary Machines	Number of MSME and Non-MSME suggestions
1	Weaving (Loom Shed)	14	7	7	7
2	Weaving Preparatory	18	8	10	8
3	Knitting	19	8	11	5
4	Processing	100	71	29	0
5	Technical Textiles	87	57	30	0
6	Handloom	16	16	0	0
7	Garmenting	116	43	73	18
8	Jute	54	30	24	0
9	Silk	45	45	0	0
Total		**469**	**285**	**184**	**38**

6.2 Current Technology (Machinery) Level in India in Textile & Apparel

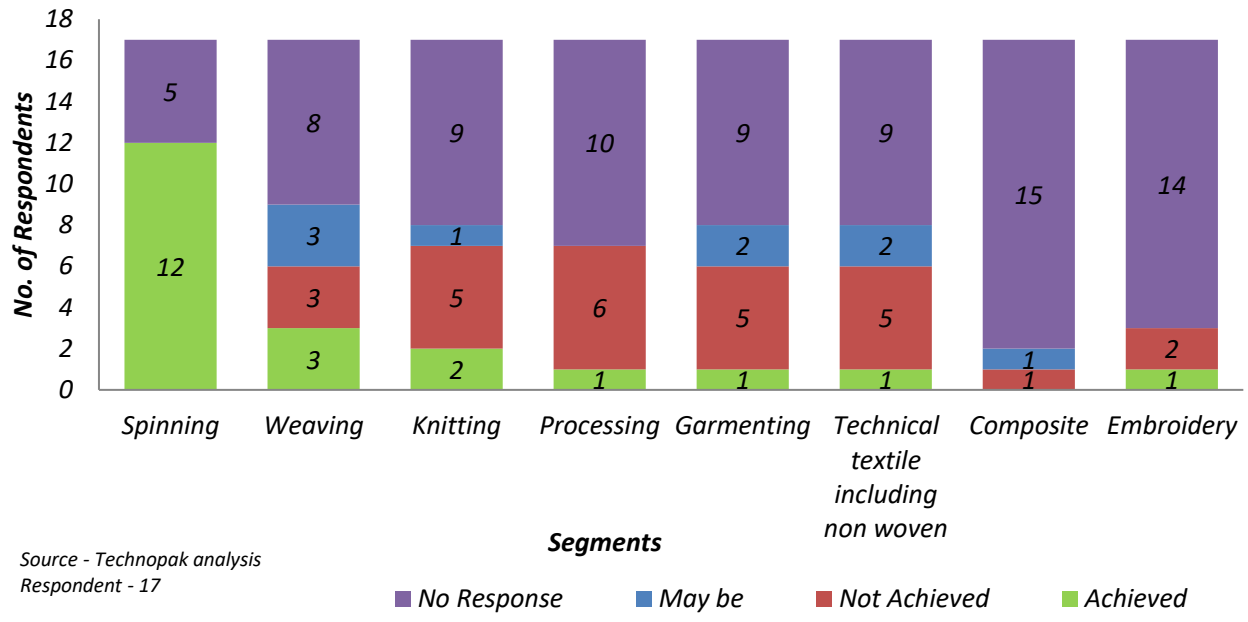
Primary Research

The Consultant conducted primary research with 17 industry experts (KII) to get inputs on level of technology across all textile and apparel segments and for global benchmarking. The list of Industry experts interviewed for primary research is mentioned in Appendix 2 for reference.

Current Level of Technology in India - Segment Wise

17 informants responded to the question asked on "Level of technology achieved globally for each segment". The scheme has witnessed non-uniform benefits across the different textile value chain segments. Most respondents (70%) opined that in spinning segment India has achieved global technology standards vis-à-vis other segments had not gained modernization. One of the reasons for this is that among all textile segments, spinning is mostly in organized sector. In all other segments, India lags behind in terms of technology. One of the major reasons for that weaving, knitting, processing and garmenting has a big number of unorganized players; who are not using high level of technology. Most of the respondents also shared that big players (organized sector) uses global level of technology across segments. But the number and share of such organized players in Indian textile value chain is quite low. Hence, overall standard of technology level in textile segments is much lower than global standards. A summary of the responses is given below:

Exhibit 204: Current Technology level in India - Segment Wise

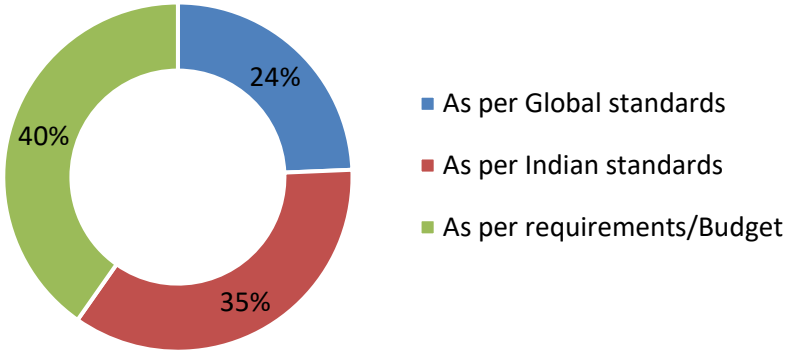


Source - Technopak analysis
Respondent - 17

UHS Analysis - Beneficiaries

The Consultant conducted primary research with 559 Unit holders (UHS) to get inputs on level of technology across all textile and apparel segments and for global benchmarking. Out of 559 respondents, 24% respondents felt that technology levels across segments have reached global standards. 76% respondents felt that across segments India is yet to match global technology standards. Spinning is one segment where the technology levels in India match the global technology levels.

Exhibit 205: Technology upgradation level achieved by TUFS



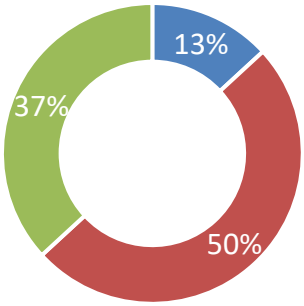
Source - Technopak analysis
Respondents: 559

Segment-wise Technology Upgradation level achieved by TUFS – Beneficiary Analysis

In UHS, the Consultant covered 559 respondents in total. The respondent base for each segment is mentioned below under the individual segment graphs. Segment wise response on technology levels by all the 559 respondents is given below:

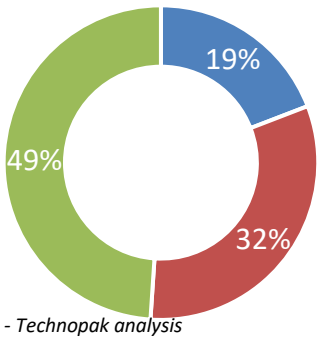
Exhibit 206: Segment-wise Technology Upgradation level achieved by TUFS- Beneficiaries

Spinning



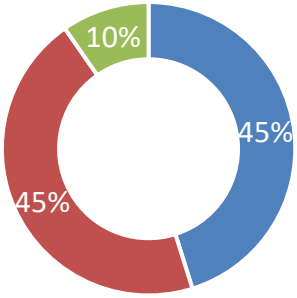
Source - Technopak analysis
Respondents: 38

Weaving



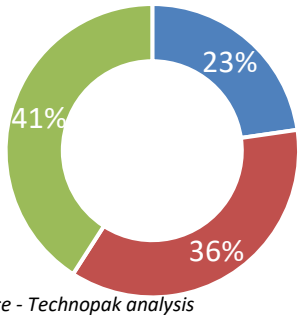
Source - Technopak analysis
Respondents: 282

Knitting



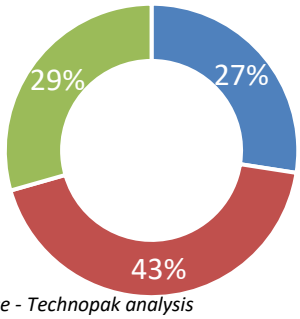
Source - Technopak analysis
Respondents: 31

Processing



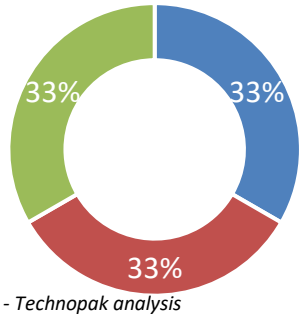
Source - Technopak analysis
Respondents: 66

Garmenting



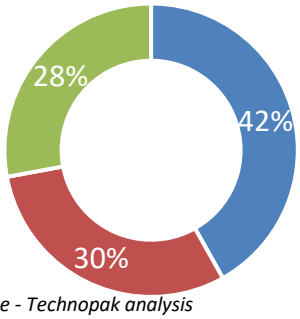
Source - Technopak analysis
Respondents: 51

Technical Textiles including non-woven



Source - Technopak analysis
Respondents: 48

Others



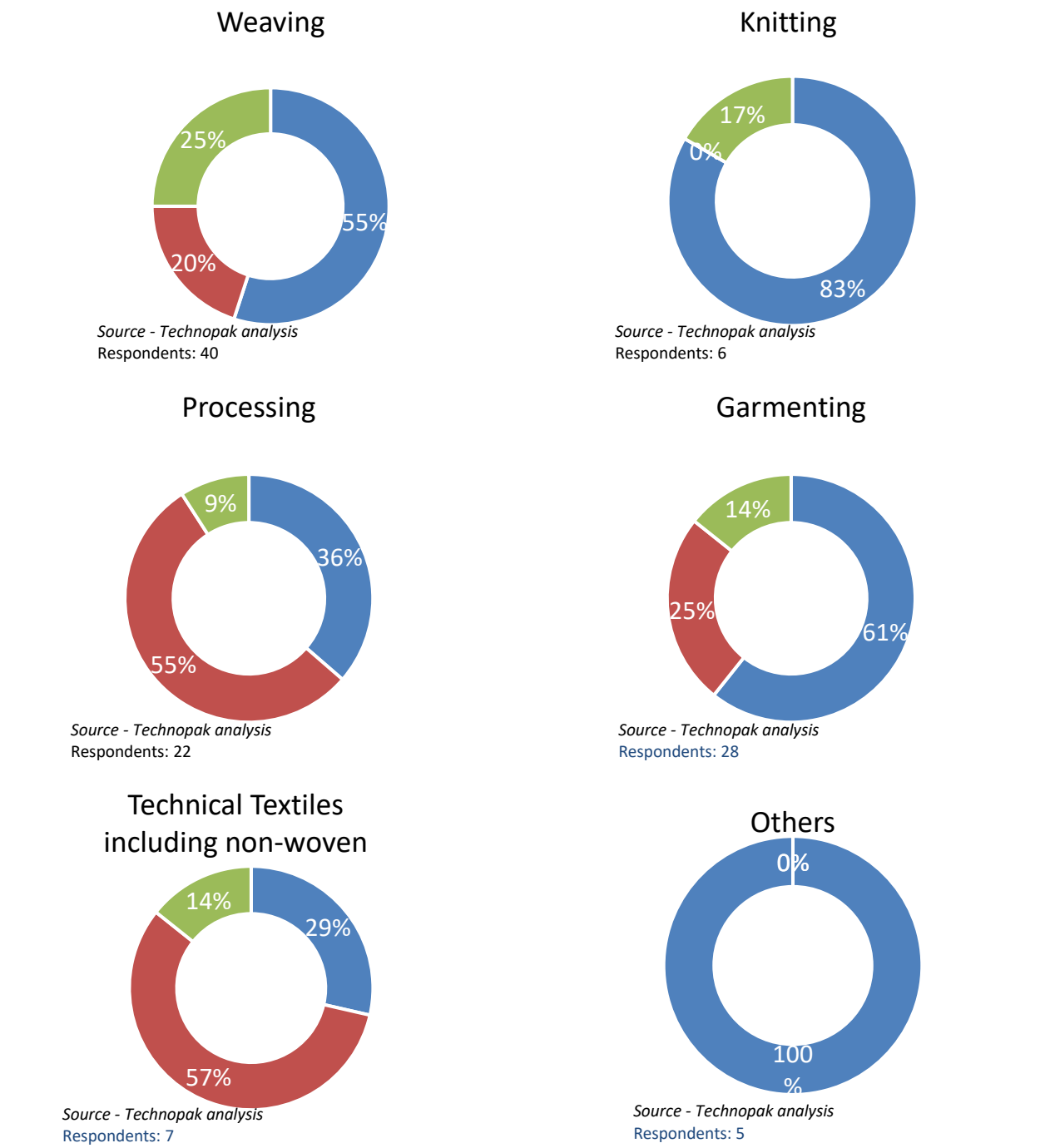
Source - Technopak analysis
Respondents: 43

As per global standards | As per Indian standards | As per requirements/ budget

Segment-wise Technology Upgradation level achieved by TUFS – Non- Beneficiary Analysis

In UHS, the Consultant covered 108 non-beneficiaries. The respondent base for each segment is mentioned below under the individual segment graphs. Segment wise response on technology levels by all the 108 respondents is given below:

Exhibit 207: Segment-wise Technology Upgradation level achieved by TUFS- Non-Beneficiaries



Secondary Research

To understand India's position in different segments, The Consultant has analysed past shipments. India has been above the global average for modernization rate in Spinning (Exhibit 208). India is way ahead of all other competing nations except China in shipments of Spinning machinery (Exhibit 209). India has maintained its share of shipments and installed capacity over last 4 years.

Exhibit 208: Global Machinery Shipments - Spinning

Countries	Spindles (Spinning)								
	Installed Capacity 2013	Cumulative Shipments 2005 – 13	Rate of Modernization	Installed Capacity 2016	Cumulative Shipments 2008 – 16	Rate of Modernization	Installed Capacity 2017	Cumulative Shipments 2009 – 17	Rate of Modernization
India	**50,451**	**20,893**	**41%**	**53,529**	**19,292**	**36%**	**53,491**	**21,190**	**40%**
China	113,623	57,178	50%	103,623	49,645	48%	103,620	53,581	52%
Bangladesh	9,815	3,784	39%	11,665	4,006	34%	12,515	4,516	36%
Vietnam	5,102	2,831	55%	6,952	4,127	59%	6,952	4,373	63%
Pakistan	11,981	3,394	28%	13,469	2,135	16%	13,435	2,626	20%
Turkey	7,875	3,297	42%	8,675	3,506	40%	8,675	3,704	43%
Indonesia	11,901	3,349	28%	12,207	3,843	31%	12,303	4,245	35%
Brazil	5,270	494	9%	4,671	551	12%	4,500	565	13%
Italy	2,930	128	4%	2,925	99	3%	2,925	118	4%
Mexico	3,767	257	7%	2,576	319	12%	2,577	366	14%
World	**259,060**	**100,294**	**39%**	**249,702**	**92,318**	**37%**	**251,038**	**101,035**	**40%**

Exhibit 209: Share of shipments (Spinning)

Countries	Shipments 2014	Global Share 2014	Shipments 2017	Global Share 2017	Shipments 2018	Global Share 2018
China	4,446	45%	3,936	45%	3,865	44%
India	**2,188**	**22%**	**1,899**	**22%**	**1,455**	**17%**
Vietnam	750	8%	246	3%	868	10%
Bangladesh	349	4%	510	6%	708	8%
Turkey	661	7%	198	2%	537	6%
Pakistan	347	3%	491	6%	274	3%
Indonesia	502	5%	401	5%	143	2%
World	**9,942**		**8,717**		**8,798**	

Exhibit 210: Share of installed capacity (Spinning)

Countries	Installed Capacity 2013	Global Share 2014	Installed Capacity 2016	Global Share 2017	Installed Capacity 2017	Global Share 2018
China	113,623	44%	103,623	41%	103,620	41%
India	**50,451**	**19%**	**53,529**	**21%**	**53,491**	**21%**
Pakistan	11,981	5%	13,469	5%	13,435	5%
Bangladesh	9,815	4%	11,665	5%	12,515	5%
Indonesia	11,901	5%	12,207	5%	12,303	5%
Turkey	7,875	3%	8,675	3%	8,675	3%
Vietnam	5,102	2%	6,952	3%	6,952	3%
World	**259,060**		**249,702**		**251,038**	

Note: Figures in thousands, Rate of modernization is given by cumulative shipments divided by installed capacity

Source: ITMF, Secondary Research, Technopak Analysis

India has low rate of modernization due to presence of high number of shuttle looms in MSME sector (Exhibit 211). In 2018, India imported more shuttle less looms than next 5 competing countries put together (Exhibit 212). Type of looms (level of technology) being imported in India is similar to all other competing nations.

Exhibit 211: Global Machinery Shipments - Weaving

Countries	Installed Capacity (Shuttle + Shuttleless) 2013	Shuttleless Looms Cumulative Shipments 2005 - 13	Rate of Modernization	Shuttleless Looms Shipments 2014	Installed Capacity (Shuttle + Shuttleless) 2016	Shuttleless Looms Cumulative Shipments 2008 - 16	Rate of Modernization	Shuttleless Looms Shipments 2017	Installed Capacity (Shuttle + Shuttleless) 2017	Shuttleless Looms Cumulative Shipments 2009 – 17	Rate of Modernization	Shuttleless Looms Shipments 2018
India*	**2,414**	**56**	**2%**	**16**	**2,591**	**88**	**3%**	**21**	**2,791**	**110**	**4%**	**17**
China	1,290	506	39%	33	1,180	504	43%	50	1,160	554	48%	91
Bangladesh	44	32	72%	5	51	41	80%	6	58	47	81%	4
Vietnam	22	7	32%	2	22	12	55%	2	22	14	64%	2
Pakistan	397	11	3%	2	412	11	3%	2	413	13	3%	2
Turkey	65	16	25%	2	70	16	23%	3	70	20	28%	4
Indonesia	253	18	7%	2	266	22	8%	4	272	26	10%	5
Thailand	130	3	2%	0	133	3	3%	0	133	4	3%	0
Brazil	72	6	8%	0	60	4	7%	0	60	4	7%	0
Italy	8	7	78%	1	8	5	60%	1	8	6	70%	1
World	**2,831**	**707**	**25%**	**72**	**2,791**	**757**	**27%**	**96**	**2,881**	**853**	**30%**	**134**

Exhibit 212: Share of shipments (Weaving)

Countries	Shipments 2014	Global Share 2014	Shipments 2017	Global Share 2017	Shipments 2018	Global Share 2018
China	33	46%	50	52%	91	68%
India	**16**	**23%**	**21**	**22%**	**17**	**13%**
Indonesia	2	3%	4	4%	5	3%
Bangladesh	5	8%	6	6%	4	3%
Turkey	2	3%	3	3%	4	3%
Vietnam	2	3%	2	2%	2	1%
Pakistan	2	2%	2	2%	2	1%
World	**72**		**96**		**134**	

Exhibit 213: Share of installed capacity (Weaving)

Countries	Capacity Installed 2013	Global Share 2013	Capacity Installed 2017	Global Share 2017
China	740	56%	860	53%
India	**21+**	**2%**	**116+**	**7%**
Indonesia	56	4%	75	5%
Turkey	45	3%	50	3%
Bangladesh	27	2%	40	2%
Pakistan	28	2%	38	2%
Vietnam	7	1%	7	0%
World	**1,333**		**1,627**	

Note: Figures in thousand, Rate of modernization is given by cumulative shipments divided by installed capacity

*Data quoted for the shuttleless looms is for mill sector only and it also includes shuttle looms in both organized and unorganized sectors; +Data quoted for the shuttleless looms is for mill sector only

India is ranked 2nd with 8% share of imports (2009-18) of Circular Knitting Machinery. India is ranked 5th with 2% share of imports (2009-18) of Flat Knitting machinery.

Exhibit 214: Global Machinery Shipments - Knitting

Countries	Cumulative Shipments of Circular Knitting Machinery						Cumulative Shipments of Flat Knitting Machinery					
	2005-14		2008-17		2009-18		2005-14		2008-17		2009-18	
	Total	Share %	Total	Share %	Total	Share %	Total	Share %	Total	Share %	Total	Share %
India	**13,594**	**4%**	**22,856**	**8%**	**25,546**	**8%**	**10,179**	**1%**	**12,999**	**2%**	**18,208**	**2%**
China	213,031	70%	189,464	64%	202,040	62%	509,355	47%	477,360	68%	599,903	70%
Vietnam	3,124	1%	7,217	2%	8,760	3%	11,115	1%	14,774	2%	18,916	2%
Turkey	11,541	4%	11,246	4%	12,709	4%	14,270	1%	18,074	3%	20,461	2%
Bangladesh	10,613	4%	12,025	4%	13,344	4%	409,328	37%	80,633	12%	94,415	11%
Pakistan	1,148	0%	1,816	1%	2,342	1%	891	0%	1,151	0%	1,318	0%
Italy	1,440	0%	1,380	0%	1,501	0%	9,049	1%	9,910	1%	10,909	1%
Indonesia	6,859	2%	8,356	3%	9,504	3%	11,727	1%	4,026	1%	4,745	0%
Thailand	2,634	1%	2,691	1%	2,930	1%	5,858	1%	8,127	1%	8,432	1%
Brazil	5,554	2%	4,298	1%	4,473	1%	1,819	0%	2,623	0%	3,166	0%
World	302,718		298,061		**324,876**		**1,094,790**		698,147		**858,555**	

Source: ITMF, Secondary Research, Technopak Analysis

India is ranked 2nd with 7% share of imports (2009-18) of Draw-Texturing Machinery shipments

Exhibit 215: Global Machinery Shipments - Draw-Texturing

Countries	Cumulative Shipments of Draw-Texturing Machinery					
	2005-14		2008-17		2009-18	
	Total	Share %	Total	Share %	Total	Share %
India	**413,236**	**10%**	**345,322**	**8%**	**354,202**	**7%**
China	2,925,300	68%	2,930,216	66%	3,281,208	66%
Vietnam	62,464	1%	61,872	1%	79,152	2%
Turkey	75,084	2%	105,264	2%	111,744	2%
Bangladesh	4,800	0%	1,512	0%	1,752	0%
Pakistan	14,160	0%	13,200	0%	14,880	0%
USA	27,512	1%	44,590	1%	46,986	1%
Egypt	39,774	1%	41,766	1%	41,766	1%
Indonesia	28,212	1%	36,828	1%	41,388	1%
Brazil	36,936	1%	41,166	1%	40,978	1%
Chile	9,600	0%	15,840	0%	17,520	0%
Germany	7,644	0%	11,040	0%	11,280	0%
World	**4,301,268**		**4,435,271**		**4,944,503**	

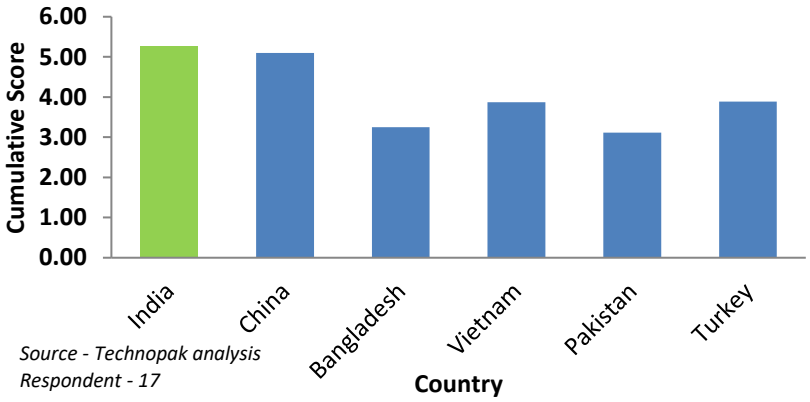
Source: ITMF, Secondary Research, Technopak Analysis

6.3 Global Benchmarking – Comparison with competing countries on technology level

The Consultant tried to compare the technology level in each segment with 5 other competing nations. The Consultant got response from 17 Key Informants on the question "rank the following countries in terms of the level of technology (machines) being used for each sector. Their responses were collated and Segment wise analysis is given below:

In spinning segment, India ranks at top in terms of technology along with China among the 6 countries followed by Vietnam, Turkey, Bangladesh and Pakistan.

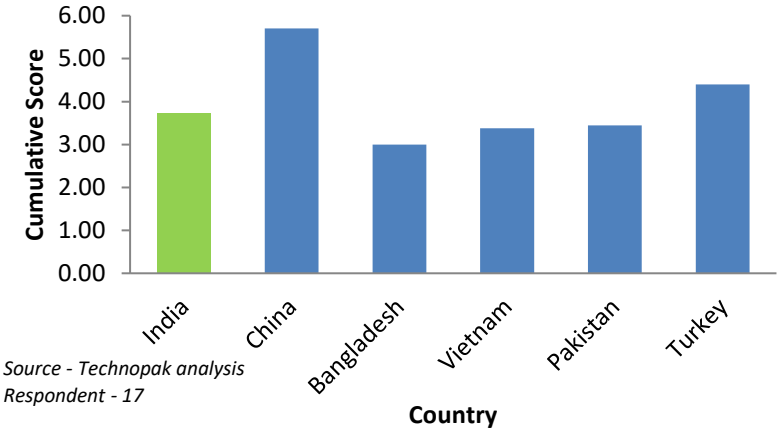
Exhibit 216: Spinning



Source - Technopak analysis
Respondent - 17

In the weaving segment, India has been ranked low, in terms of technology level, majorly because of high number of power looms in India. Power looms and handlooms have the lowest technology level in weaving. More than 70% of weaving production in India comes from decentralised power loom sector. India has more than 2 lac power loom units and significantly large number of handlooms. China ranks at the top in terms of technology followed by Turkey.

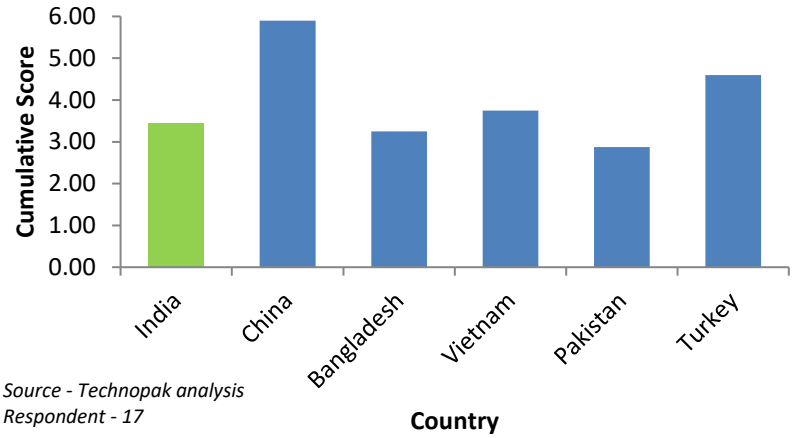
Exhibit 217: Weaving/Knitting



Source - Technopak analysis
Respondent - 17

In processing segment, India has been ranked among the lowest in terms of technology among these 6 countries. India has a lot of unorganized players in processing segment, who use outdated technology. Processing consists of removing dirt, natural and synthetic oils bring out lustre to fibers, but most of the processing in India is still carried out by batch technology that reduces uniformity in fabric properties. The continuous processing range provides best uniformity in fabric properties. Independent Process houses and composite units with processing facility contribute only a little to the total processed fabric produced in India.

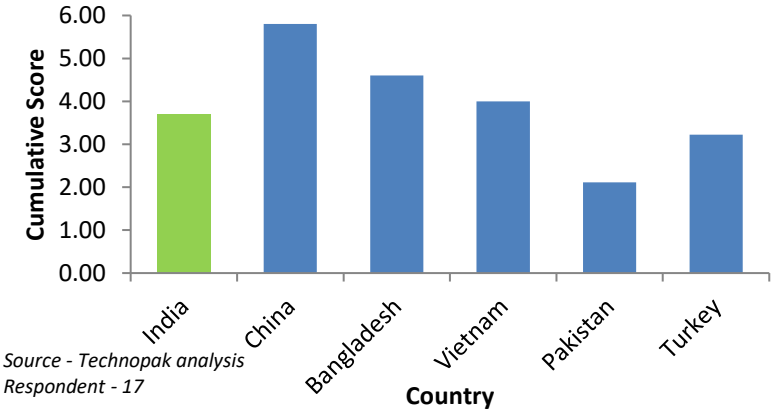
Exhibit 218: Processing



Source - Technopak analysis
Respondent - 17

In garmenting segment, India's has been ranked number 4 in terms of technology amongst these 6 countries. India has more than 2.5 lac garmenting units. Average size of a garmenting unit in India is much lower than that of China, Bangladesh and Vietnam. Lot of these units in unorganized sector does not use high level of technology.

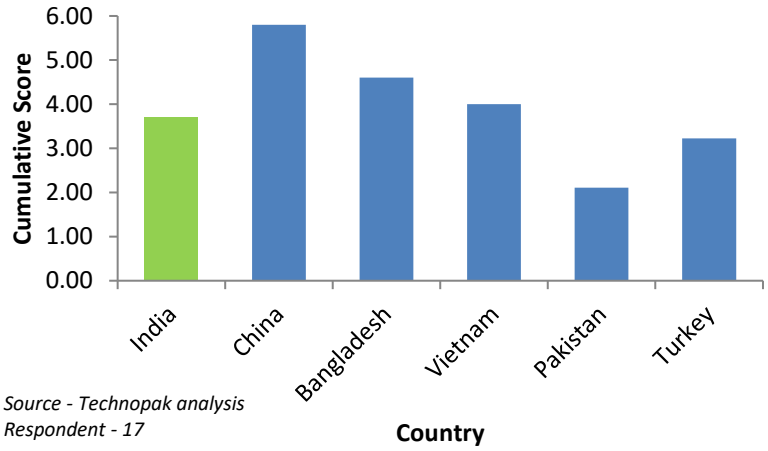
Exhibit 219: Garmenting



Source - Technopak analysis
Respondent - 17

In the Technical Textiles segment, India has been ranked 4 by the respondents in terms of technology among these 6 countries. China is the leader in technical textiles technology levels like in most other segments.

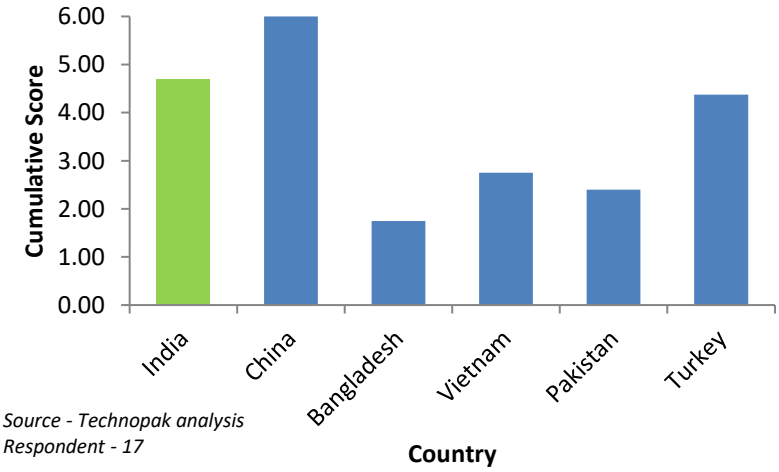
Exhibit 220: Technical Textiles



Source - Technopak analysis
Respondent - 17

In Textile Machine Manufacturing segment, India has been ranked 3 in terms of technology among these 6 countries. European countries such as Germany, Switzerland, Italy and Japan are considered the leaders for textile machinery manufacturing. Companies from these countries have set up units in China in last 10-15 years making China also a major player in textile machine manufacturing. India is strong in spinning machinery manufacturing. Most of the infrastructure of domestic machinery manufacturers is outdated and produce obsolete machinery. This is one of major reason; India imports most of the textile machinery. In other segments like processing, weaving India's technology levels is way behind the global leaders.

Exhibit 221: Textile Machine Manufacturing



Source - Technopak analysis
Respondent - 17

6.4 Evaluation Matrix for Technology assessment of Textile Segments

The Consultant conducted primary and secondary research to find out which textile segment should be given preference for subsidy under TUFS. The Consultant created an evaluation matrix with six parameters important for technology assessment of all major 6 textile segments viz Spinning, weaving, knitting, processing, garmenting, technical textiles. After multiple discussions with industry experts, six parameters considered for the evaluation matrix are –

1. % of machine cost in total project cost
2. Absolute capex required for viable project
3. Current technology level in India
4. Return on investment
5. Trade surplus/deficit (Export-Import)
6. Technology obsolescence period.

Information was gathered for each segment for all the 6 selected parameters and **Exhibit 222** was filled. These figures are based on the Consultant's industry knowledge, primary research with machinery experts and textile consultants. There is some subjectivity to these numbers for each segment as there are multiple variables involved. The Consultant used thumb rules and industry benchmarks to arrive at the figures for each textile segments.

Separate grades were allotted to each segment on basis of values assigned to each parameter. An average grade has been evaluated and all the segments are ranked on the basis of grades. Based on the machinery ranking analysis segment-wise recommendations have also been provided for every segment.

Exhibit 222: Machinery Matrix

Segment	% Machine cost in total project cost	Absolute capex required for viable project (INR Crores)	Current technology level in India (Grade 1-5)	Return on Investments (Number of years)	Trade surplus/ deficit (in USD Mn)	Technology Obsolescence* (Number of years)
Spinning	55-60%	85-95	5	6	3,671	9-10
Weaving	60-65%	30-40	3	7	2,604	7-8
Knitting	65-70%	25-30	3	6	-59.2	5-6
Processing	55-60%	140-150	2	6.5	2,604	4-5
Garmenting	30-35%	15-25	4	5.5	14,164	5-6
Technical Textiles	55-60%	35-40	3	5	-100.3	6-7

Note: Grade 1 indicates lowest level of technology, Grade 5 indicates highest level of technology ; Source: Technopak Analysis

Exhibit 223 represents the scores and grades given for each parameter across textile segments. Each segment was ranked against each other for all the six parameters. Final score was arrived for all the 6 textile segments. The lowest score segment got the highest rank in terms of priority to be given for TUFS subsidy. Processing emerged as the highest ranked segment and garmenting as the lowest ranked segment.

Exhibit 223: Evaluation Matrix (Ranking of segments) for Technology Assessment

Segment	% Machine cost in total project cost	Absolute capex required for viable project (INR Crores)	Current technology level in India (Grade 1-5)	Return on Investments (Number of years)	Trade surplus/ deficit (Score 1-6)	Technology Obsolescence (Number of years)	Overall score	Rank of sector
Spinning	3	2	6	3	5	6	4.2	5
Weaving	2	4	2	1	3	5	2.8	3
Knitting	1	5	2	3	2	2	2.5	2
Processing	3	1	1	2	3	1	1.8	1
Garmenting	6	6	5	5	6	2	5	6
Technical Textiles	3	3	2	6	1	4	3.2	4

Source: Technopak Analysis

Exhibit 224 represents the recommendations for TUFS subsidy based on the ranking arrived from the evaluation matrix. Highest subsidy % and highest budget allocation should be given to the highest ranked segment Processing. Technopak propose that Subsidy % for processing may be increased to 20-25% and budget allocation for processing should be 30-40%. Similar recommendations have been made for all the textile segments. Technopak propose that spinning and garmenting may be kept out of ATUFS going forward and more focus to be given to processing, weaving, knitting and technical textiles.

Exhibit 224: Segment–wise Recommendations for ATUFS subsidy

Segment	Overall rank of sector	Proposed subsidy (%)	Share in total subsidy budget (%)	Expected investment per year under TUFS (2022 onwards)
Spinning	5	0%	0%	0
Weaving	3	15%	20%	Rs. 5,300 Cr.
Knitting	2	15%	20%	Rs. 2,300 Cr.
Processing	1	20-25%	30-40%	p
Garmenting	6	0%*	0%	0
Technical Textiles	4	15%	20%	Rs. 5,100 Cr.
Total Expected Investments				**Rs 20,300 Cr. (USD 2.7 Bn)**

Note: * Latest machinery (Industry 4.0) should be given subsidy under TUFS

Expected investments are based on broad level assumptions and investment thumb rules for each textile segment.

Source: Technopak Analysis

7. ADDITIONAL QUESTIONS FOR THIS PROJECT

1. Whether the intended technological upgradation has taken place?

Refer the Sections **6.2** (Current Technology (Machinery) Level in India in Textile & Apparel - Page 164-170) and **6.3** (Global Benchmarking – Comparison with competing countries on technology level – Page 171-173)

- India has been above the global average for modernization rate in Spinning
- India has low rate of modernization in weaving due to presence of high number of shuttle looms in MSME sector. Type of looms (level of technology) being imported in India is similar to all other competing nations.
- India is ranked 2nd and 5th for import of Circular Knitting and Flat Knitting shipments M/c respectively
- India is ranked 2nd in imports of Draw-Texturing Machinery shipments

Exhibit 225: ATUFS Beneficiaries' - Weaving, Knitting Machinery analysis

Weaving Machines	Number of units			Number of machines				Average Machines/units		
	2016-17	2017-18	2018-19	2016-17	2017-18	2018-19	Total	2016-17	2017-18	2018-19
Rapier WIR>= 380 mpm	46	88	47	389	894	459	1,742	8	10	10
Air Jet WIR>=1200 mpm	57	76	20	471	1,946	375	2,792	8	26	19
Air Jet WIR>=900 mpm	3	8	5	96	169	90	355	32	21	18
Water Jet WIR>= 1000 mpm	12	25	21	316	445	191	952	26	18	9
Water Jet WIR>= 800 mpm	3	32	5	73	515	42	630	24	16	8
	121	**229**	**98**	**1,345**	**3,969**	**1,157**	**6,471**	**11**	**17**	**12**

Knitting Machines	Number of units			Number of machines				Average Machines/units		
	2016-17	2017-18	2018-19	2016-17	2017-18	2018-19	Total	2016-17	2017-18	2018-19
High speed circular knitting (20 RPM)	14	8	4	87	58	42	187	6	7	11
High speed circular knitting(15 RPM)	26	17	9	119	55	43	217	5	3	5
	40	**25**	**13**	**206**	**113**	**85**	**404**	**5**	**5**	**7**

Source: Office of the Textile Commissioner, Technopak Analysis

- 43% of the looms installed during ATUFS are high speed air jet looms (WIR>=1200 mpm)
- Average number of shuttle-less looms per unit are 12 indicating that most of the units are from MSME sector

2. **Whether the benefits have been cornered by only a few large companies or has the benefit flowed to MSME as well?**

Exhibit 226: Subsidy released under schemes

RTUFS (28.04.11 - 31.03.12)

	MSME	Share	Non-MSME	Share	Total
Subsidy released (INR Crores)	478	10%	4,253	90%	4,731
No. of Beneficiaries	2,865	77%	838	23%	3,703

RRTUFS (01.04.12 - 02.01.16)

Segment	MSME	Share	Non-MSME	Share	Total
Subsidy released (INR Crores)	835	15%	4,853	85%	5,688
No. of Beneficiaries	2,423	61%	1,525	39%	3,948

ATUFS (13.01.16 - 31.01.20)

Segment	MSME	Share	Non-MSME	Share	Total
Subsidy released (INR Crores)	110	36%	197	64%	307
No. of Beneficiaries	730	87%	113	13%	843

Source: Office of the Textile Commissioner, Technopak Analysis

- Benefits to MSMEs has been increasing under TUFS schemes. 87% of total beneficiaries under ATUFS are MSMEs.
- Amount of subsidy received by MSMEs has increased from 10% to 36% from RTUFS to ATUFS period.
- Number of MSME beneficiaries have risen from 77% to 87% from RTUFS to ATUFS period with a fall to 61% during RRTUFS period.

3. **Whether benefits have flowed to the complete value chain of the Textile Industry or just a particular sector & its impact?**

Exhibit 227: Subsidy released under schemes segment-wise

	RTUFS (28.04.11 - 31.03.12)		RRTUFS (01.04.12 - 02.01.16)		ATUFS (13.01.16 - 31.01.20)	
Segments	**Total (in INR Crores)**	**Share**	**Total (in INR Crores)**	**Share**	**Total (in INR Crores)**	**Share**
Spinning	1,176	**25%**	722	13%	-	-
Weaving/ Knitting	643	14%	436	8%	155	**51%**
Processing	602	13%	615	11%	60	19%
Garmenting	164	3%	393	7%	43	14%
Technical Textiles	417	9%	626	11%	48	16%
Multi-Activity	1,490	32%	2,806	49%	-	-
Others	239	5%	90	2%	1	0%
Total	**4,731**		**5,688**		**307**	

Source: Office of the Textile Commissioner, Technopak Analysis

- TUFS benefits has been taken by all segments of textile value chain.
- During RTUFS, **Spinning** segment received ~25% of the released subsidy.
- During RRTUFS, **Spinning, Processing and Technical Textiles** received ~13%, ~11%, ~11% of the released subsidy respectively.
- During ATUFS, **Weaving** segment has received ~51% of the released subsidy.

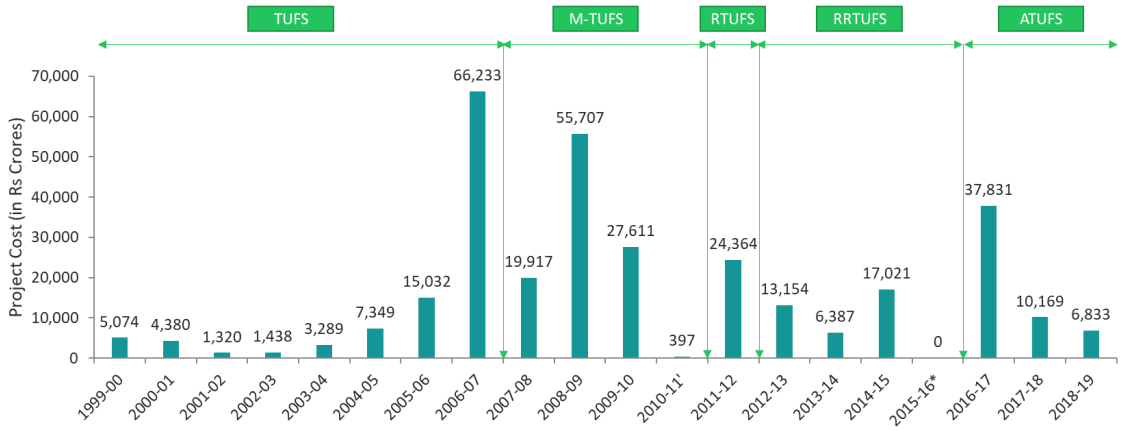
4. Whether productivity of the textile sector has improved?

Refer the **Exhibit 81**, **Exhibit 82** and **Exhibit 83**

- Productivity of Textile sector has improved as indicated by the UHS and KII Analysis.
- During TUFS period, all the segments witnessed an increase in production, owing to upgraded technology and improvement in capacity addition
- 37% of the respondents witnessed production increase of greater than 20%
- 94% of the interview respondents and 10% of the expert panels felt that there was significant impact of TUFS on increase of Production

5. Whether commensurate investments from the industry side have taken place?

From **Exhibit 27**,



Average investment in TUFS / case in INR Crores	16.4	7.1	3.0	3.2	3.7	7.5	13.9	5.3	8.8	9.2	11.7	1.6	13.6	6.1	10.9	4.2	-	4.3	4.5	3.8
Total investment during schemes	104,115								103,632				24,364	36,562				54,833		
Average investment per year in INR Crores	13,014								25,908				24,364	9,141				18,278		

Note: ' 2010-11 Budgeted subsidy exhausted due to overwhelming response * 2015-16 Data not available

Source: Ministry of Textiles, Technopak Analysis

Average investment from the industry during TUFS is INR 16,175 Crores per year (1999-2019). Average investment in RTUFS, RRTUFS and ATUFS is Rs 13.7 Cr, Rs 5.1 Cr and Rs 4.2 Cr respectively.

- Share of investments by MSMEs have increased from 11% to 32% from RTUFS to ATUFS period.
- Non-MSMEs in spinning segment have invested heavily during RTUFS and RRTUFS

Exhibit 228: Project Investments under schemes

RTUFS
(28.04.11 - 31.03.12)

Segment	MSME	Share	Non-MSME	Share	Total
Spinning	114	2%	6,194	98%	6,308
Multi-Activity	34	1%	6,070	99%	6,104
Weaving/ Knitting	838	33%	1,670	67%	2,508
Processing	398	18%	1,754	82%	2,151
Technical Textiles	338	20%	1,358	80%	1,696
Others	119	11%	978	89%	1,096
Garmenting	327	49%	342	51%	669
Total	2,167	11%	18,365	89%	20,532

RRTUFS
(01.04.12 - 02.01.16)

Segment	MSME	Share	Non-MSME	Share	Total
Multi-Activity	307	3%	10,571	97%	10,878
Spinning	312	4%	7,261	96%	7,573
Technical Textiles	669	28%	1,722	72%	2,391
Processing	648	28%	1,676	72%	2,325
Garmenting	757	50%	768	50%	1,524
Weaving/ Knitting	538	41%	762	59%	1,300
Others	316	57%	238	43%	554
Total	3,547	13%	22,998	87%	26,545

ATUFS
(13.01.16 - 31.01.20)

Segment	MSME	Share	Non-MSME	Share	Total
Weaving/ Knitting	971	47%	1,108	53%	2,078
Processing	208	22%	742	78%	950
Garmenting	75	11%	595	89%	669
Technical Textiles	115	21%	427	79%	542
Other	14	85%	2	15%	17
Total	1,382	32%	2,875	68%	4,257

6. **Whether there is a causal relationship between the subsidy provided, technology upgradation and the increase in exports?**

Refer **Exhibit 113, Exhibit 114**

India's global competitiveness improved considerably in Spinning due to TUF Scheme and the global textiles & clothing trade share increased from 3% to 5.1% until RTUFS and decreasing post-RTUFS.

Exports in T&A industry grew along with increase in production and overall competitiveness due to addition of technologically advanced machineries. Although, since exports are highly dependent on macro-economic factors hence causal relationship between subsidy provided cannot be established with increase in exports.

7. **Whether intended jobs have been generated?**

Refer **Exhibit 140, Exhibit 141**

- TUF Scheme contributed positively to employment generation and helped in growth of income and improving livelihood of the workers as indicated by the UHS and KII analysis.
- 39% of the respondents witnessed total manpower increase of < 20, while 21% respondents witnessed total manpower increase between 20 and 50.
- Weaving, Processing, Garmenting have witnessed an increase in total manpower by 65-75% of the respondents

8. ISSUES AND CHALLENGES

From qualitative analysis (KII), Technopak have summarized the major issues and challenges faced by the industry for ATUFS scheme and related issues of textile value chain:

DISBURSEMENT OF SUBSIDY

The delays in disbursement of subsidy is a very serious issue highlighted by KIIs. All industry experts and industry association persons were of the opinion that disbursal has been painfully slow in last 2-3 years. The delays were much lesser in earlier schemes. Key reasons for delays were attributed to the lack of funds, delays in submission of JIT (Joint Inspection Team) report, delays due to processing of documents, rejection of applications for additional requirements because of the complex guidelines, and lack of staff for inspections. Out of total TUFS subsidy outlay of Rs 6,271 Crores under ATUFS for 2016-2022; less than Rs 800 Crores has been disbursed till May 2020. Out of anticipated investment of Rs 95,000+ Crores under ATUFS for 2016-2022; only Rs 54,833 investments have happened from 2016 till 2020. Average investment per year has reduced from Rs 18,000+ Crores under RTUFS (2011-2013) to Rs 1,100+ Crores under ATUFS (2016-2020).

IMPLEMENTATION MECHANISIM

Majority of the respondents find the implementation mechanism followed under TUFS application process as complex and cumbersome. Out of 12,073 applications filed under ATUFS till May 2020; only 873 applications have got the subsidy till May 2020. Checklist of JIT inspection is cumbersome to comply with including machine serial numbers on the shipping documents and Invoices. Applications and claims are processed and scrutinized at multiple levels and stages; leading to inordinate delays.

JIT inspections are being done for 8-10 years old cases under RTUFS and some of the required documents are not available with the beneficiaries as guidelines were different then. This is further delaying the ATUFS cases. Some respondents shared that current e-filing mechanism in i-TUF software is less convenient and takes sufficient amount of time in uploading documents, which in turn delays UID (Unique Identification) generation.

Several imported machines do not have serial number and year of make. Such machines are not considered. Cumbersome process of Certificate authentication from machinery manufacturers. Several leading textile machinery manufacturers (having the best technology in the world) are yet to be enlisted as they are not able to provide certain documents and the approval process takes very long time.

SCHEME GUIDELINES / SCHEME STRATEGY

TUFS is no more looked as an industry friendly scheme and is losing importance. Most of industry experts felt that TUFS must be revived to promote investments in textile value chain and upgrade technology. Need of TUFS is felt more to support MSME and unorganized sectors in weaving, processing, knitting and garmenting.

Fabric manufacturing (Weaving, Knitting and Processing) was regularly mentioned as weak link in India's textile value chain. As per industry estimates, more than 70% of production in these 3 segments comes from MSME segment. This segment does not have the financial strength to make big investments into technology. Hence, the overall technology levels in these 3 segments have remained much lower than global competitors. Out of total of ~24 lac looms in India; only around 1.2 lacs are shuttle less looms. Investment into fabric segment has to be encouraged the most to balance India's textile production capability and enhance value added exports of garments, made ups, technical textile products. Over the years, TUFS has failed to attract major investments into weaving, knitting and processing.

Man-made value chain has got higher potential for growth in exports and domestic markets, but MMF production machines like Texturizing have not been covered under TUFS. Processing of MMF fabric is more complex for the unorganized sector; hence lot of good quality MMF based fabric is being imported.

Industry is of the opinion that earlier schemes of TUFS were more industry friendly as they covered working capital and interest subsidy and also their mechanism of disbursement was better.

Demand for TUFS is higher in certain states and clusters and hence some clusters are not getting benefit of the scheme. Demand for TUFS is skewed towards 4 states viz Gujarat, Tamil Nadu, Maharashtra, Punjab. More textile clusters in other states need to be encouraged to avail TUFS benefits.

LIST OF MACHINES AND MACHINE MANUFACTURERS

Industry feedback is that machinery list under ATUFS needs relook. Lots of new machinery needs to be added. New machines, technology, software and other best in class technology advancements under Industry 4.0 should be included under ATUFS. Adoption of Industry 4.0 by few players will have a cascading effect on the technology levels in the country. Lots of machinery listed are outdated technology and can be excluded from the list.

Enlistment of textile machinery manufacturers also needs to be revised. Several leading manufacturers (best in class) are yet to be enlisted due to cumbersome requirements of enlisting.

Some industry experts from spinning segment believe that spinning should be included again in ATUFS otherwise India may lose its competitive edge in spinning. Technopak believes that spinning should be kept out of ATUFS. Industry experts also highlighted that domestic machinery manufacturing is not progressing and TUFS is promoting import of textile machinery. It was suggested to support the domestic machine manufactures through TUFS scheme.

9. OVERALL SUMMARY OF FINDINGS

9.1 Impact of TUFS

Investments

As per the industry experts and other key stakeholders, TUF Scheme has helped a lot in increasing the investments into textile sector over the years through capacity addition. As per them, the investments into textile value chain would have been much lesser in absence of TUFS. Factors such as ROI (Return on Investment), industry demand, profitability and other macroeconomic factors affect the investments into Indian textiles industry. Over the years, textile has become less attractive sector to invest vis-à-vis other sectors.

Investment trend under TUFS has dropped over the years, from INR 24,364 Crores per year (during RTUFS) to INR 18,278 Crores per year (during ATUFS). Spinning and technical textiles in particular, witnessed a significant decrease in investments from RTUFS to ATUFS period. This drop may be attributed to lack of funds for the subsidy.

Spinning segment witnessed highest investments before it was removed under ATUFS. After removal of spinning, weaving has become the segment with most investments. Over 70% of the investments in the spinning sector were made towards upgradation or replacement of machinery.

UHS analysis indicates that mostly small-scale project investments have happened in textile sector. 65% projects had investment of less than 5 crores and only 2% projects had investments of more than 50 crores (beneficiaries). 54% of the beneficiary respondents witnessed an increase in number of machines by less than 10%. Overall, this indicates that industry has not been adding much machinery during the latest TUF schemes.

KII analysis indicates that 82% opined that TUFS had a positive impact on investments, whereas 92% of the expert panel believed that TUFS had a significant impact on investments. The industry experts commented that significant investments happened in spinning segment after introduction of TUFS over the years. India is now, globally, among the leading nations in spinning and a lot of this success is attributed to the TUF Scheme. After removal of spinning under TUFS, weaving is now the leading segment taking TUFS advantage to attract investments.

Financial Performance

TUFS subsidy had a positive impact on the financial performance of the companies over the years, owing to reduced cost of capital, improved margins and turnovers of the textile companies. This is one of the reasons that Indian textile industry has witnessed a lot of demand for TUFS subsidy (10,972 applications under ATUFS till Jan 2020). Most of the textile segments operate in the low profitability ranges of less than 10%. The factor costs for the industry have been rising with negative impact on their profits. The research indicates that TUFS had overall positive impact on sales, net profit and average sales price

on textile companies. Weaving segment witnessed more significant impact on financial performance parameters than the other segments.

UHS analysis indicates that 31% respondents witnessed more than 20% rise in annual sales. It is mainly due to an increase in production volume, a result of higher speed machines. Weaving segment showed the highest increase in sales with 37% respondents reporting more than 20% increase in sales. This can be attributed to the fact that lots of power looms have been replaced by shuttle less looms in recent years. Shuttle less looms have much higher production and lead to increase in sales. 44% of the respondents witnessed an increase of more than 10% in net profit. Weaving and knitting segments showed positive response of 55% and 39% respectively for profit increase of more than 10%. 44% of the respondents witnessed an increase in per unit sales price of more than 10%, which is in line with the increase in sales value and net profits.

The Consultant finds that UHS analysis is a better indicator of the present financial performance of the textile units as individual companies are in a better position to comment on the financial performance of their respective companies' vis-à-vis industry experts or industry associations.

The KII analysis shows that 82% respondents opined that TUFS had a significant impact on increasing sales, 71% responded with significant impact on increasing profit, and 47% responded with a significant impact on increasing average sales price. Whereas, as per the expert panel, 85%, 77%, and 54% opined that TUFS had a significant impact on increasing sales, profit, and average sales price respectively.

Production and Productivity

During TUFS period, all the segments in the textile value chain witnessed a significant increase in production, owing to investment in upgraded technology and improvement in capacity addition. TUFS had a positive impact on productivity and operational parameters such as product quality, new product development, cost efficiency, better product mix etc. This was corroborated in the UHS and KII findings.

As per the UHS analysis, 88% of the 256 respondents (beneficiary) witnessed an increase in production volume, whereas 76% of the 85 respondents (non-beneficiaries) witnessed an increase in production volume. 77% of the weaving segment respondents (beneficiaries) witnessed increase in production volume >5%, while 65% of weaving respondents (non-beneficiaries) recorded increase in production volume >5%. 93% of 559 beneficiaries respondents believe that TUFS enhanced the overall productivity of their respective units that is in line with responses from 108 non beneficiaries. 89% of 559 respondents (beneficiaries) opine that the scheme contributed towards improvement in product quality, vis-à-vis 95% of 108 respondents (non-beneficiaries). 81% (559 beneficiaries) responded that the scheme led to product development in majority of the segments. 74% of 559 respondents (beneficiaries) opined that TUFS enabled companies to efficiently use the available resources and reduce wastage to achieve higher cost efficiency, vis-à-vis 69% of 108 respondents (non-beneficiaries). 66% of 559 beneficiaries respondents opined that

TUFS led to R&D across some segments. 56% of 559 beneficiaries responded that the scheme increased export competitiveness as a result of technology upgradation and combination of the factors previously mentioned.

The KII analysis suggests that 94% and 82% respondents opined that TUFS had a significant impact on production and productivity respectively, whereas as per the expert panel, everybody opined that TUFS had a significant impact on production and productivity.

Exports

Most companies in Indian textile industry benefited in terms of product development and innovative practices due to addition of technologically advanced machineries. Exports in textile and apparel industry grew along with increase in production and overall competitiveness. The research indicates that fabric is the weak a link in the textile value chain, and hence it needs to be strengthened to consume the excess spinning production and to boost apparel industry requirements by supplying right price, quality and quantity of fabric. India's share in global exports for T&A has remained in the range of 4-5% in the last 5 years.

The UHS analysis indicates that TUFS beneficiaries as well as non-beneficiaries experienced an increased export volume and an increase in average unit price. This led to an increase in overall value of exports. 42% of beneficiary units witnessed an increase in value of exports greater than 6%, vis-à-vis 52% of non-beneficiary units. Weaving and garmenting segments have seen highest gains in export value. Export volume has increased due to factors such as product development, quality improvement and improved export competitiveness. Weaving sector showed increased exports volume as lot of high-speed shuttle less looms were installed for export products. KII analysis indicates that 64% of respondents felt that exports increased due to TUFS.

As per KII analysis, 65% opined that TUFS had a significant impact on exports value, which is in line with expert panel's opinion (69%).

Overall textile and garments export out of India have remained stagnant in last 5 years at approx. USD 37 Bn. Exports market is affected by many other external factors such as FTA, cost competitiveness, speed to market etc. Hence, it is difficult to directly correlate TUFS impact on exports.

Employment Generation

TUF Scheme contributed positively to employment generation and helped in growth of income and improving livelihood of the workers. No. of people engaged in the operational factories has witnessed an increasing trend in the last 5 years, so have the wages per worker in T&A industry.

UHS analysis indicates that capacity additions across the textile value chain have created new jobs for skilled as well as unskilled manpower. Overall, majority of the companies have

witnessed <50 additional skilled labour. In Spinning, Knitting, Processing and Garmenting segment, a significant >30% of the respondents have indicated no change in unskilled manpower. 37% of the beneficiary's respondents witnessed an increase of >10% in salary of the skilled manpower, whereas 61% of the beneficiary's respondents witnessed an increase of >10% in salary of the unskilled manpower.

KII analysis indicates that 76% of respondents opine that TUFS had a significant impact on employment, vis-à-vis 69% of expert panel.

Cost Savings

TUFS scheme contributed significantly to the improvement of cost efficiencies and resource efficiencies of the textile units. Majority of companies across all segments witnessed cost reduction between 1% and 10%.

As per UHS analysis, 76% of the 512 beneficiary respondents indicated an increase in cost savings per unit, vis-à-vis 78% of the 76 non-beneficiary respondents. Units have also been able to increase their cost savings and resource efficiencies to significant extent. 32% of beneficiary respondents experienced cost saving of >10%. Cost saving of >10% was observed to be highest in weaving segment (43%) followed by knitting segment (31%).

As per KII analysis, 76% respondents opined that TUFS had a significant impact on cost savings, whereas 100% of expert panel opined that the scheme had a positive impact on cost savings.

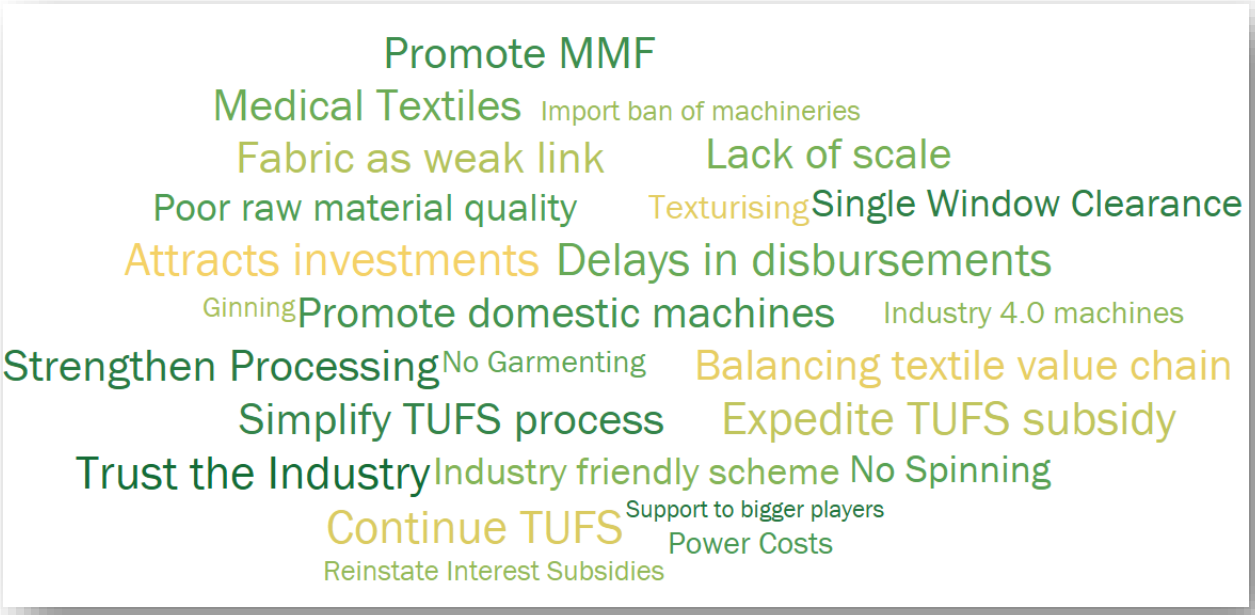
Product Quality

TUF Scheme has helped companies to improve their product quality and value addition by shifting to technologically upgraded machines. Factors such as product development, value addition, quality improvement and innovative practices also helped in improving Unit Value Realization (UVR) of textile sector.

The product quality has improved significantly across the various segments as reported by the companies; enabled due to the TUFS. 89% of the respondents (497 beneficiaries) opined that the scheme led to improvement in product quality, vis-à-vis 95% of the non-beneficiaries' respondents.

KII analysis indicates that 82% respondents opined that TUFS had a positive impact on improving quality of the products, whereas 100% of expert panel believed that the scheme had a positive impact on quality.

Exhibit 229 Issues, Challenges and Recommendations from KIIs



In the discussions with key informants, the above phrases were frequently mentioned. In the above **"Word Cloud",** the larger fonts indicate that a greater number of informants shared the same opinion.

As per the analysis of the above 'Word Cloud'; TUFS has played a major role in the growth of Indian textile industry - in attracting investments, increasing employment generation, and improving capacity addition. However, majority of the Indian textile industry is still unorganized and requires sufficient financial support from the Government to be able to invest in large capacities and are able to use technologically advanced machines. This analysis suggests that TUFS Scheme should be continued to help the industry become technologically advanced and achieve its maximum potential. Indian textile industry lacks balancing of textile value chain and that significant amount of investment is required to develop downstream capacities. It was suggested that we do segment wise gap analysis and add value to each segment accordingly. The Indian textile industry needs to promote MMF in order to become globally competitive. The normal grievance of industry is also highlighted as delays in disbursements and request to expedite TUFS subsidy and simplify TUFS process implementation.

9.2 Macroeconomic factors

Investments in Textile and Apparels

As per KII analysis, major factors impacting investments are power, interest rate, and lack of scale. 55% respondents ranked power and interest rates as major factors, which is in line with expert panel's opinion (50%).

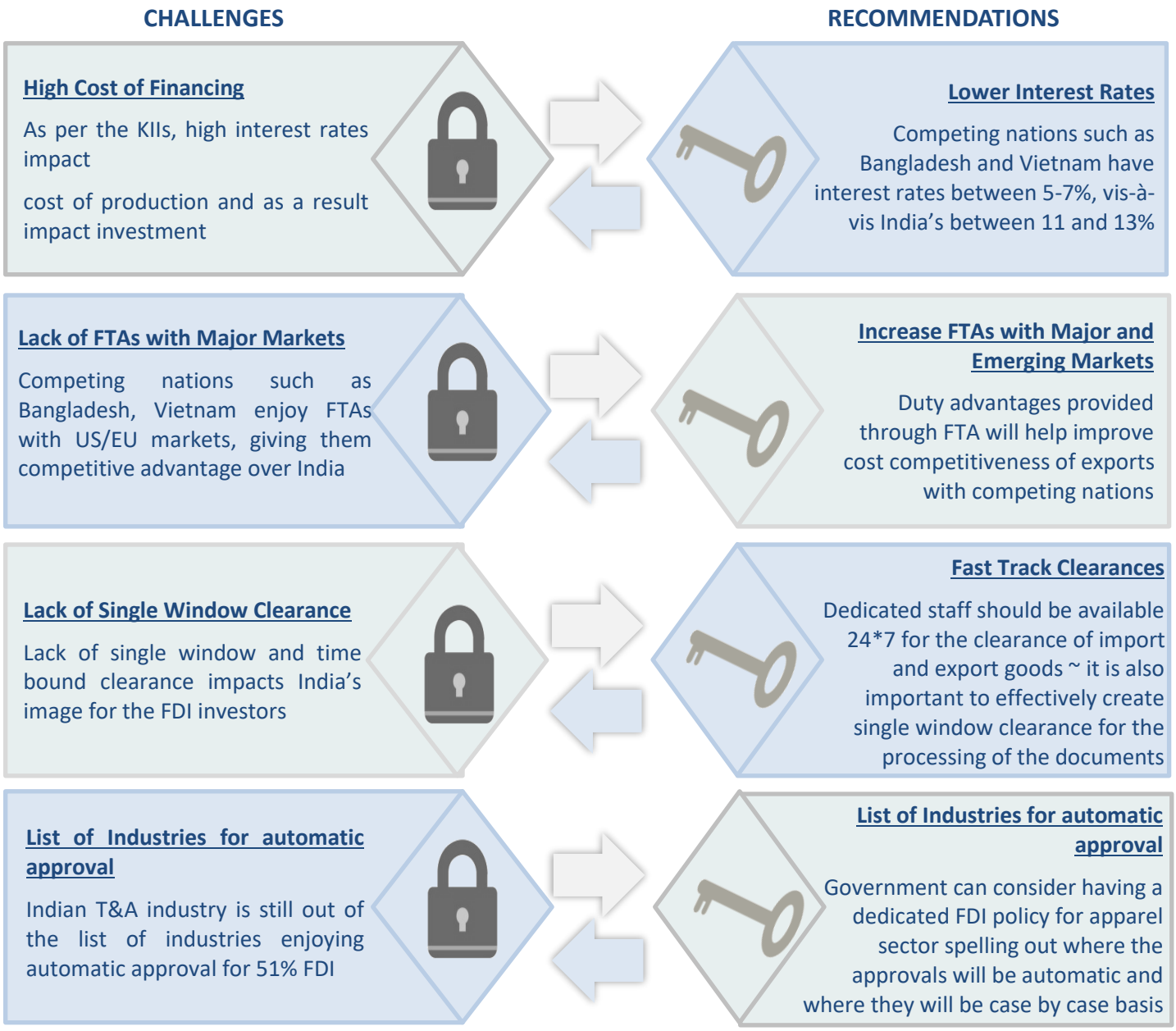
Whereas, as per the UHS analysis, major factors impacting investments are manpower cost, interest rate, and GST. As per the KII analysis, one of the major factors impacting investments is "lack of scales", which as per UHS analysis is ranked as the least impacting factors.

Exports

As per KII analysis, major factor impacting exports are trade agreements, scale (small units), and raw material cost. 70% ranked trade agreement as a major factor impacting exports, which is in line with expert panel's opinion (79%).

Whereas, as per the UHS analysis, major factors impacting exports are labor productivity, man-power cost, and interest rates. As per the KII analysis, the major factor impacting exports is "trade agreements", which as per UHS analysis is ranked as the least impacting factor.

FDI Investment in Textile and Apparel



Promoting domestic machinery manufacturing

- Around 75% of the textile machines are imported
- Lack of investment into R&D and latest technology by domestic machine manufacturers
- No attractive scheme for the textile machinery manufacturing

- Encourage JVs (Joint Ventures) and FDIs (Foreign Direct Investment) and leverage Anti-China sentiment
- Establish mega parks for textile machine manufacturing at TN and Gujarat
- Devise a special scheme with liberal policies and long-term benefits for machine manufacturing including R&D, plug and play facility

- Domestically manufactured machines with JVs will be of same international quality at a much lower price
- Ensure sustained growth of the textiles and clothing manufacturing industry
- Lower cost of machinery and also consumables will lead to better margins for textile manufacturers

9.3 Technology Upgradation Assessment

Study of machinery Specifications and recommendations on ATUFS machinery list

Technopak team conducted 16 interviews with leading machinery manufacturers and industry stakeholders in textile machinery segment to take their inputs. There are 469 types of machines listed under ATUFS for subsidy. There are approx. 590 machine manufacturers, who are approved under ATUFS.

Technopak categorized the long list of machines listed under ATUFS into 2 categories – "Core process machines" and "Ancillary process machines". This is a subjective classification and may require further deliberations along with the industry. Core Process machines (285 out of 469) perform the major process in the manufacturing of the product. Ancillary process machines (184 out of 469) mainly support the manufacturing process. Technopak further analysed only 'Core process machines' and have provided technical recommendations for them only. Technopak has made recommendations on speed for the selected machinery for each textile segment. In some cases, like weaving and knitting, Technopak has given speed recommendations separately for MSME (Unorganized sector) and Non-MSME (Organized sector).

Current Technology (Machinery) Level in India in Textile & Apparel

Technopak conducted primary research with 559 beneficiary and 108 non-beneficiary unit holders to get inputs on level of technology across various segments of textile value chain and for global benchmarking. We also conducted primary research with 17 industry experts (KII) to assess current technology level in India.

As per UHS analysis, 24% of the beneficiaries felt that technology levels in India have reached global standards and 76% felt that technology levels across segments India is yet to achieve global standard. Spinning was found be the most upgraded segment amongst all because of the organized infrastructure.

As per KII analysis, 70% (12) respondents opined that in spinning segment India has achieved global technology standards, while in all other segments we are lagging behind. India lacks behind in technology in all other segments. Hence, the overall standard of the Indian textile industry is quite low and needs modernization. Most of the respondents also shared that big players (organized sector) uses global level of technology across segments. But the number and share of such organized players in Indian textile value chain is quite low. Hence, overall standard of technology level in textile segments is much lower than global standard.

Global Benchmarking of Technology Level

Technopak conducted primary research with 17 industry experts (KII) to compare the technology level in each segment in India with 5 other competing nations viz. China, Vietnam, Turkey, Bangladesh and Pakistan.

In spinning segment, India ranks at top in terms of technology along with China among the 6 countries followed by Vietnam, Turkey, Bangladesh and Pakistan. In the weaving segment, India has been ranked last, in terms of technology majorly because of high number of power looms in India. China ranks at the top in terms of technology. In processing segment, India has been ranked among the lowest in terms of technology among these 6 countries. India has a lot of unorganized players in processing segment, who use outdated technology. In garmenting segment, India's has been ranked number 4 in terms of technology amongst these 6 countries. In the Technical Textiles segment, India has been ranked 4 by the respondents in terms of technology among these 6 countries. China is the leader in technical textiles technology levels like in most other segments. In Textile Machine Manufacturing segment, India has been ranked 3 in terms of technology among these 6 countries. European countries such as Germany, Switzerland, Italy and Japan are considered the leaders for textile machinery manufacturing.

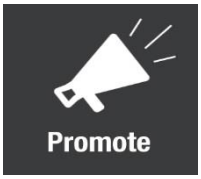
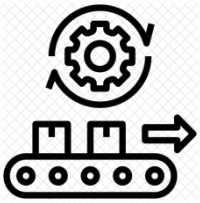
Evaluation Matrix for Technology assessment of Textile Segments

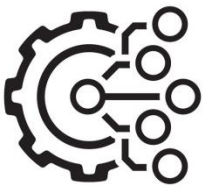
Technopak conducted primary and secondary research to find out which textile segment should be given preference for subsidy under TUFS. Technopak created an evaluation matrix with six parameters important for technology assessment of all major 6 textile segments viz Spinning, weaving, knitting, processing, garmenting, technical textiles.

Technopak has made recommendations for TUFS subsidy based on the ranking arrived from this evaluation matrix. Highest subsidy % and highest budget allocation should be given to the highest ranked segment viz. Processing. Technopak proposes that Subsidy % for processing may be increased to 20-25% and budget allocation for processing should be 30-40%. Similar recommendations have been made for all the textile segments. We propose that spinning and garmenting may be kept out of ATUFS going forward and more focus to be given to processing, weaving, knitting and technical textiles

10. RECOMMENDATIONS

TUFS is the flagship scheme of Ministry of Textiles and has matured over the years since its TUFS is the flagship scheme of Ministry of Textiles and has matured over the years since its inception in 1999. This scheme is very important for the industry and is always taken into consideration while planning investments. During interactions with industry stakeholders (KII), various recommendations and suggestions were discussed. Technopak have summarised the major recommendations given by the stakeholders:

SCHEME STRATEGY AND GUIDELINES	
	**Promotion of TUFS:** Most of the industry people support TUFS and strongly believe that it can help promote investment into textile sector. Overall, TUF scheme is regarded as a successful scheme by the industry. But, in last few years, the scheme has lost its popularity. TUFS should be promoted to the industry at large after some overall changes. It will help to boost investment into textile sector and help to upgrade technology.
	**Balancing the Production Capacity of Textile Value Chain:** India has capacity imbalance from yarn to fabric to garments. ~35% of yarn produced in India is exported as fabric capacity is not available. We lose out on value added exports opportunity. Healthy fabric industry will help utilize capacity of spinning and will boost the garmenting segment by providing quality raw material. We should focus to promote fabric sector viz. weaving, knitting and processing under TUFS. Still, fabric segment is mostly unorganized in India and lacks financial strength to invest in latest technology and add large capacity.
	**Higher Subsidy for weaving, knitting and processing:** Weaving, knitting and processing may be given higher allocation in TUFS subsidy budget. It can be 30-40% for processing and 20% each for weaving and knitting of the overall TUFS budget. Capital Subsidy for these segments may also be kept higher. Capital Subsidy may be increased to 20-25% for processing and 15% each for weaving and knitting. It will be useful to target spinners in India to go for value addition into high end technology machines for weaving, knitting, processing, technical textiles. They already have the raw material availability and better lending capabilities than standalone weavers, knitters and processors.

	**Focus on Man Made Fiber (MMF) Value Chain**: MMF has better potential for growth in domestic and exports markets. Within MMF value chain fabric segment can be focused as mentioned above. Clusters with MMF value chain production may be focused for TUFS benefit.
	**Differential Technology Specifications for MSME:** MSME sector does not have financial capabilities to upgrade to best technology levels. Differential technology specifications slab is proposed for MSME segment under ATUFS machinery listing for some of the machines.
	**Promote Technical Textile under TUFS:** Technical textiles; especially Medical Textiles, should be given special impetus under TUFS to promote more investments and latest technology use. Subsidy budget for technical textiles can be 20% of total TUFS subsidy. Capital Subsidy for technical textiles may be kept as 15%.
TUFS IMPLEMENTATION	
	**Delays in Disbursements:** All the industry stakeholders talked about the delay in disbursements at various stages. Addressing the delays in disbursement of subsidy such as document approval, JIT, final approval and actual disbursement needs to be done. TUFS cases need to be cleared faster to regain the confidence of industry in TUFS.
	**Technical Think Tank with Industry Participation:** Technopak propose that a strong Think Tank with strong industry participation from various industry segments should be created to advise on all technology aspects of TUFS. This Think Tank will consist of government officials, industry leaders, machinery experts, technical consultants. This will help in addressing technology related issues and making the implementation process faster.

MACHINE LISTING AND MANUFACTURERS LISTING UNDER ATUFS	
	Revision of Machine list: Current machine listing needs revision as per the current technology standards and industry requirements. Some recommendations have been given by us but more detailed study is required to finalize it.
	**Promote Industry 4.0 Technology:** Separate list of machines, technology, and software to be included under ATUFS. Separate budget may be allocated for this segment under ATUFS. Garment segment can be promoted in this budget.
	**Promote Domestic Machine Manufacturers**: Sourcing of machines from domestic textile machine manufacturers should be promoted under TUFS. This can be done through higher subsidy provision for domestic manufacturers. Domestic machine manufacturing ecosystem needs to be improved significantly by promoting R&D and innovation for developing state-of-the-art machines. This can be promoted through mega textile parks for machine manufacturing. Encourage JVs (Joint Ventures) and FDIs (Foreign Direct Investment) from European and Japanese machine manufacturers. Devise a special scheme with liberal policies and long-term benefits for machine manufacturing including R&D, plug and play facility.

11. LIMITATIONS OF THE STUDY

The findings of this study must be seen in light of some limitations. These limitations are mentioned below:

1. Technology Upgradation Assessment (Machinery report) – There is lack of data availability (at pan India level) required for the technology assessment across various textile segments and comment on technology upgradation over a period of last 10-15 years. It is difficult to assess the past levels of technology due to data constraints. For this study, we have tried to overcome this limitation by analyzing machine shipment data into India over last many years. We have also done global benchmarking of technology levels in India with other competing nations, using machine shipment data.

2. ATUFS machine listing study was done with the help of inputs from few industry experts and recommendations are provided in this study, based on limited time for this purpose. Detailed study needs to be further done for revising the machine listing under ATUFS; wherein more technical experts from all segments of textile value chain need to contribute.

3. There is lack of existing data available at pan India level for production, total no of machines, no. of units, type and technology of machines, capacity utilization, efficiency, sales output, employment etc. for different segments of textile value chain. For the purpose of this study, we tried to collect this data from different industry experts and available reports.

4. There was limitation of “Recall Bias” for RTUFS and RRTUFS, as data asked from the respondents during UHS was 5-10 years old.

5. There were some cases in the study, where contact details shared were for multiple beneficiaries (for UHS) were of same person. This person was consultant for multiple beneficiaries in the state of Punjab. We observed that Punjab showed contrary trends to other states for some parameters of impact of TUFS.

12. APPENDIX

Appendix 1- Machinery Recommendations

Machinery for Weaving, Weaving Preparatory, Knitting

Machinery for Weaving (Loom shed)

Weaving (Loom Shed)					
Sr. No.	**Name of the machine with specifications**	**Technology Core/Ancillary**	**Technopak Recommendations**		**Unit**
			MSME	**Non-MSME**	
1	Rapier Loom with Weft Insertion Rate (WIR) not less than 380 mtrs per minutes with or without Electric Dobby/Electronic Jacquard	core	500	1000	Metre/min
2	Projectile Loom with Weft Insertion Rate (WIR) not less than 750 mtrs per minutes with or without Electric Dobby/Electronic Jacquard	core	850	1000	Metre/min
3	Air Jet Loom with				
	(i) Weft Insertion Rate (WIR) not less than 1200 mtrs per minutes with or without Electric Dobby/Electronic Jacquard	core	2650	1800	Metre/min
	(ii) Weft Insertion Rate (WIR) not less than 900 mtrs per minutes with or without Electric Dobby/Electronic Jacquard	core	1250	1500	Metre/min
4	Water Jet Loom with (i) Weft Insertion Rate (WIR) not less than 1000 mtrs per minutes with or without Electric Dobby/Electronic Jacquard	core	1200	1350	Metre/min
	(ii) Weft Insertion Rate (WIR) not less than 800 mtrs per minutes with	core	1000	1200	Metre/min

	or without Electric Dobby/Electronic Jacquard				
5	PLC based Circular Looms with Minimum 6 shuttles, Minimum tubular lay flat width of 90 cms and WIR of 600 mpm or more.	core	84	120	cm
6	Carpet loom (Spool gripper looms/Jacquard gripper looms/ Wire loom weaving / Brussels weaving / Face to face weaving)	core	550	1400	Metre/min
7	Electronic Jacquard and Electronic Dobby suitable for Shuttleless Looms having Weft Insertion Rate WIR of 380 mpm or more.	core	650	1600	Metre/min
8	Air Compressor 15 H.P. and above with inbuilt invertors and air driers for Air Jet looms only	Ancillary			
9	Battery operated trolley for beam gaiting	Ancillary			
10	Automatic Beam storage system	Ancillary			
11	Over Head Travelling Clearers	Ancillary			
12	Ultrasonic Cleaning machines for Reed	Ancillary			
13	Electronic Jacquard Computerized Pattern machine for weaving Patterns and Brand Names on the Selvedge.	Ancillary			
14	Shuttleless / Rapier Loom for Sample weaving with or without Electronic Dobby/ Jacquard	Ancillary			

Machines for Weaving Preparatory

Weaving Preparatory					
Sr. No.	**Name of the machine with specifications**	**Technology core/Regular**	**Technopak Recommendations**		**Unit**
			MSME	**Non-MSME**	
1	Single yarn sizing machine with minimum speed of 250 mtrs per minute.	core	250	300	Metre/min
2	High speed multi cylinder sizing machine/ zero twist sizing machine having minimum 8-10 cylinders for single size box and 12-14 cylinders for double size box and minimum speed of 40 mtrs per minutes	core	80	100	Metre/min
3	Direct beam warper with minimum 300 ends creel capacity and minimum speed of 1000 mtrs per minutes	core	1000	1100	Metre/min
4	Computer aided designs system for weaving	Ancillary			
5	Two-for-one Twister operating at the speed of minimum 8000 rpm with cradle, drop wires & overfeed system	core	10400	12000	RPM, For Pot diameter =135 mm
6	Three-for-one Twister operating at the speed of minimum 5000 rpm with cradle, drop wires & overfeed system	Ancillary			
7	Chenille Yarn Manufacturing Machine with spindle speed of more than 7500 rpm	core	8000	8500	RPM
8	Draw/ Air Texturising machine having minimum speed of 800 mtrs per minutes	core	900	1000	Metre/min
9	Sectional warping machine with auto stop & tension control along with	core	500	600	Metre/min

	minimum 300 ends creel capacity and minimum speed of 350 mtrs per minutes				
10	Water Softening / R.O. Plant for Waterjet Looms	Ancillary			
11	Automatic Drawing in/ Warp Reaching, Tying and Leasing-in machine	Ancillary			
12	Automatic Sample Warper Machine	Ancillary			
13	Direct Warping Machine for denim application with bigger flange Dia more than 1000 mm and minimum speed of 700 mpm	core	800	1000	Metre/min
14	Beam to Cone winding machine for Indigo Package.	Ancillary			

Machines for Weaving Preparatory (Energy-Saving)

Weaving Preparatory – Energy saving		**Technology Core/Ancillary**
Sr. No.	**Name of the machine with specification**	
1	Single yarn sizing machine with minimum speed of 250 mtrs per minute with Servo drive and Servo Motor and PLC based.	Ancillary
2	High speed multi cylinder sizing machine/ zero twist sizing machine having minimum 8-10 cylinders for single size box and 12-14 cylinders for double size box and minimum speed of 100 mtrs per minutes with Servo drive and Servo Motor and PLC based	Ancillary
3	Direct beam warper with minimum 300 ends creel capacity and minimum speed of 1000mtrs per minutes and with Servo drive and Servo Motor and PLC based	Ancillary
4	Sectional warping machine with auto stop & tension control along with minimum 300 ends creel capacity and minimum speed of 500 mtrs per minutes with Servo drive and Servo Motor and PLC based	Ancillary

Machines for Knitting

Knitting					
Sr. No.	**Name of the machine with specifications**	**Technology core/Ancillary**	**Technopak Recommendations**		**Unit**
			MSME	**Non-MSME**	
1	High speed circular knitting machine with yarn tension and clearers along with Creel				
	l) Having Dia up to 26" with a minimum speed of 20 RPM and above	core	30	40	RPM
	2) Having Dia above 26" with a minimum speed of 15 RPM and above	core	20	25	RPM
2	High speed socks knitting machine having minimum production of 15 pairs per hour & gloves knitting machines having minimum production of 3 gloves per minute with or without electronic jacquard	core			
3	Computerized flatbed knitting machine with minimum speed of 11 revolutions per minute/minimum speed of 0.3 mts/sec.	core			
4	Warp/ Rasehel knitting machine having minimum working width of 60" and minimum speed of 500 RPM	core	600	700	RPM
5	High speed computerized warping machine for knitting with minimum closed creel capacity of 200 and minimum speed of 500 RPM and minimum speed of 100 mtrs/min.	core	600	700	RPM
6	Computerized label making Knitting machine with minimum 2 heads and minimum speed of 500 RPM & minimum working width of 50 mm per head.	core	600	700	RPM

7	Computerized Strap (Collar/Cuff) Flat Bed Knitting Machine a minimum speed of 0.3 mts/sec with minimum working width of 12".	core			
8	High performance Tricot Machinery with minimum 3 Bar and speed of 2300 rpm and above.	core	2300	3000	RPM
9	Full Fashioned Knitting Machines	Ancillary			
10	Air Compressor 15 H.P. and above with in-built invertors and air driers	Ancillary			

Machines for Knitting (Energy Savings)

Knitting – Energy Saving		
Sr. No.	**Name of the machine with specification**	**Technology – Core/Ancillary**
1	High speed circular knitting machine with servo motors and servo amplifiers and with yarn tension and clearers along with Creel -	Ancillary
	l) Having Dia up to 26" with a minimum speed of 20 RPM and above, 2) Having Dia above 26" with a minimum speed of 15 RPM and above.	
2	High speed socks knitting machine having minimum production of 5 pairs per hour and gloves knitting machines having minimum production of 3(three) gloves per minute with servo motors and servo amplifiers and with or without electronic jacquard.	Ancillary
3	Computerized flatbed knitting machine with servo motors and servo amplifiers and with minimum speed of 11 revolutions per minute / minimum speed of 0.3 Mts/ Sec-	Ancillary
4	Warp/ Raschel knitting machine having minimum working width of 60" and minimum speed of 500 RPM with servo motors and servo amplifiers.	Ancillary
5	High speed computerised warping machine for knitting with minimum closed creel capacity of 200 and minimum speed of 100 Mts/ Min and with servo motors and servo amplifiers.	Ancillary
6	Computerised label making Knitting machine with minimum 2 heads and minimum speed of 500 RPM and minimum working width of 50 mm per head with servo motors and servo amplifiers.	Ancillary
7	Computerized Strap (Collar/Cuff) Flat Bed Knitting Machine with servo motors and amplifiers and with a minimum speed of 0.3 mts/Sec along with minimum working width of 12".	Ancillary
8	High performance Tricot Machinery with minimum 3 Bar and speed of 2300 rpm and above and with servo motors and servo amplifiers.	Ancillary
9	Spin - Knit machine (Rove fed Circular Knitting machine)	Ancillary

Machines for Processing

Machinery for Processing of Fibre/Yarn/Fabric		Technology Core/Ancillary	Comments
Sr. No.	**Name of the machine with specifications**		
1	PLC controlled dye Kitchen management system	Core	
2	Soft Package Precision Winding machine with individual drum/Spindle driven	Core	
3	Automatic Arm Hank Dyeing machine	Core	
4	Air Flow Dyeing machine	Core	
5	Automatic Cabinet type Yarn Dyeing machine	Core	
6	Automatic Sample Yarn Dyeing Machine	Core	
7	PLC based full automatic Jigger with servo/microprocessor control	Core	
8	Industrial washing/drying machine for garments/made ups/industrial tumble dryers/washers	Core	
9	Reverse Osmosis, Nano Filtration , Multiple stage prefabricated steel evaporator excluding civil construction	Core	
10	PLC controlled Shearing/ Cropping machine more than 05 mtrs per minute	Core	
11.	PLC based yarn / fabric Singeing machine with auto mixing of air & fuel for temperature and flame control with or without pre and post brushing and desizing unit.	Core	
12	PLC controlled Singeing machine for tubular fabrics	Core	
13	PLC controlled Knit tubular mercerizing machine or bleaching cum mercerising machine with knit fabric diameter adjuster.	Core	water consumption 6-8 litres/kg

14	PLC controlled Ammonia mercerising machine for fabrics	Core	with ammonia recovery system
15	PLC controlled fully automatic Yarn / fabric mercerizing machine	Core	Mercerization machine steam 0.5 to 0.7 kg and water consumption 5 to 7 litres/kg minimum speed 50 meters/minute
16	PLC controlled continuous Knit fabric bleaching plant	Core	
17	Balloon Padder with silicate dosing along with level control & ratio control mechanism	Core	
18	Slit opener with open width squeeze mangle for knitted fabric.	Core	
19	Fabric automatic reversing machine	Core	
20	PLC & Inverter Controlled Automatic Reeling Machine with stop motion and with length Measuring Device	Core	With auto leasing system
21	PLC based open width/rope and squeezing machine with detwister	Core	No Comments
22	PLC based J Box	Core	Fabric content 50 meter
23	PLC based Solvent Scouring Machine / Vaporlock machine	Core	
24	PLC based Rotary Drum Washer	Core	
25	PLC based Float Dryer with padding mangle.	Core	
26	Fibre cake opener for fibre dyeing machine for yarn dyeing unit	Core	
27	Yarn conditioning machine for Yarn Dyeing units	Core	

28	Precision flock cutting / printing machine for textile processing unit only	Core	
29	PLC based Relax dryer	Core	
30	PLC based Sueding / peach finishing machine with brushing / raising / contipress / pile cutting	Ancillary	
31	Automatic Pleating/Creasing Folding machine for fabrics.	Core	
32	PLC based Microwave dryer / Hot air dryer / Infrared dryer.	Core	
33	Automatic Crush machine for uneven pleat for grey /dyed fabrics.	Core	
34	PLC based Dipping machine	Core	
35	PLC based Foam finishing machine	Core	
36	Water softening plant.	Ancillary	
37	Deminerlisation plant.	Ancillary	
38	Open-width continuous scouring and bleaching range with microprocessor attachments and automatic chemical dosing.	Core	Continous scouring and bleaching machine steam 0.8 to 1.1 kg/kg and water consumption 6 to 9 litres/kg, fabric speed of 80 meters/minute for 150 gsm plain fabric
39	PLC based Package Dyeing machines (cheese, cone, Tops, fibres, dye springs, yarn beam) and with maximum liquor ratio of 1:5	Core	With multi feed input water and multiple discharge

40	PLC controlled Fully Automatic Flat Bed Printing machine with pneumatic blanket control	Core	With 10-16 colors and printing cycles of minimum 10 cycles/minute
41	PLC based Soft flow Dyeing Machine with pre heating chamber (liquor ratio max I : 4)	Core	Two feed water connections,fabric spped to maintain minimum 2 minutes cycle time,teflon lining and With multi funtion rinsing systems
42	PLC based Rapid Jet Dyeing Machines with minimum capacity of 100 kgs and fabric speed of minimum 60 mtrs per minute (liquor ratio max 1:4)	Ancillary	
43	Compact continuous dyeing and finishing machine for tapes / narrow width woven fabric	Ancillary	
44	Open width Pad-dry and / or Pad-Steam continuous dyeing	Core	Speed minimum 30 meters per minute
45	Indigo Rope /Sheet dyeing range including indigo dyeing cum sizing machine	Core	Number of ropes and 28 speed meters per minute with 2 % shade
46	Digital / laser / len engraving / screen making system for rotary screens for textile processing units only	Ancillary	
47	PLC based fully Automatic Rotary Screen Printing Machine with magnetic / Air flow squeegee system, automatic design setting, and quick change over facility/ flying design change (FDC) system with or without on-line washing arrangement	Core	Number of Colours and paste recovery system

48	Digital/lnk jet printing machines (For textile processing units only).	Core	Number of printing minimum 4 heads with guaranteed head life of 4000 working hours
49	High Speed Micro inkjet engraver with UV exposing unit. (For textile processing units only).	Core	
50	Continuous transfer printing machine (cylinder based) for synthetics.	Core	Cylinder diameter and speed meters/minute
51	PLC controlled Thermosoling range (For Synthetics only).	Core	
52	PLC controlled continuous crabbing machine with minimum speed of 15 mtrs per minute.	Core	
53	PLC based scouring and milling machine with minimum speed of 25 mtrs per minute and maximum liquor ratio of 1:5	Core	
54	PLC based Loop ager with arrangement for moist and superheated steaming with minimum speed of 20 mtrs per minute	Core	
55	PLC based Powder dot coating / laminating machine for fabrics with dot roll temperature control.	Core	
56	Continuous weight reduction machine through micro wave technique (for Polyester goods only) with minimum speed of 20 mtrs per minute	Core	

57	PLC controlled Multi Chamber Washing range with minimum 5 chambers	Core	Washing range for COLD Pad batch steam consumption 0.8 to 1.6 kg and water consumption 8 to 16 litres/kg speed minimum 50 meters/minute
58	PLC controlled Multi cylinder Drying range with individual cylinder drives with or without padding mangle	Core	with alternate cylinder with independent drive
59	PLC controlled Multi chamber /Multi layer Stenter (minimum 4 chambers) with arrangement of Thermic fluid / gas heating	Core	
60	PLC controlled Compressive Shrinking range	Core	Minimum Speed 60 meters per minute
61	PLC controlled continuous decatising machine with Wrapper tension and auto clave programming and minimum working speed of 30 mtrs per minute	Core	
62	PLC based Airo Machine (for durable mechanical finishes)	Core	
63	PLC controlled Calendering Machine having Thermoplast/DurapIast/Polyamide sleeve	Ancillary	
64	PLC based Compacting machine	Core	Minimum fabric speed of 80 meters/minute for woven fabrics/40 meters/minute for knitted fabrics

65	PLC Controlled Radio frequency / Radiant gas fired / Loop dryers	Ancillary	
66	Brushing machines for denims	Core	
67	PLC controlled Machine for Softening/Stone wash effect on fabric/ garments.	Core	
68	Robotised automatic roll packing machine.	Core	
69	PLC controlled Plasma Treatment machines	Core	
70	PLC controlled Continuous Pressing and Setting Machine / Super finish machine	Core	
71	AC invertor driven PLC based Fabric inspection machine with fault analyzer and report generator and length measuring and cutting device	Core	
72	Hand held spectro photometer for shop floor colour matching	Core	
73	PLC based HusWoil / gas fired boiler (Steam /Thermic fluid) with automatic control on combustion efficiency, 02 Monitoring Equipments, and with Electrostatic precipitator and Micro dust collector	Ancillary	
74	Wool Carbonising Line / Plant for textile unit only	Ancillary	
75	Automatic Hydroextractor	Ancillary	
76	PLC controlled Curing/ Polymerising Machine	Core	
77	PLC controlled Coating/ Embossing Machine	Core	
78	Multi Cross Linking Resin Finishing Machine.	Core	
79	Pile Lifting Machine.	Core	
80	Latex mixing and dispensing system for Coating Line.	Core	
81	Air compressor 15 H.P, and above with in-built invertors and air driers.	Ancillary	

82	Testing Equipments in Quality Control Lab accredited by National Accrediation Board for Lab (NABL) India and set up in the textile & jute unit.	Ancillary	
83	Full automatic material handling system	Ancillary	
84	Ultrasonic Cleaning machine for fabrics and strips	Ancillary	
85	PLC controlled Denim wet finishing and Shrinking range with inverter motors.	Core	Fabric speed minimum 50 meters/minute

Machines for Processing – Energy Saving

Energy Saving Machinery for Processing of fibre/yarn/fabric – Energy saving		**Technology Core/Ancillary**
Sr. No.	**Name of the machine with specification**	
1	PLC controlled Knit tubular mercerizing machine or bleaching cum mercerizing machine with knit fabric diameter adjuster and with caustic recovery system	Ancillary
2	PLC controlled Ammonia mercerizing machine for fabrics, including ammonia recovery plant	Ancillary
3	PLC controlled fully automatic yarn/fabric mercerizing machine with caustic recovery unit	Ancillary
4	PLC based soft flow Dyeing machine with pre heating chamber (liquid ratio max 1:1)	Ancillary
5	PLC based Rapid jet Dyeing machines with minimum 60 mtrs per minute (liquid ratio max 1:1)	Ancillary
6	Open width pad-dry and/or Pad-steam continuous dyeing range with microprocessor-based energy control & water monitoring	Ancillary
7	Indigo dyeing range including indigo dyeing cum sizing machine with heat recovery system	Ancillary
8	Continuous weight reduction machine through micro wave technique (for poly goods only) with min speed of 20 mtrs per minute with preheating system for recovery tank	Ancillary

9	PLC controlled Multi chamber washing range with minimum 5 chambers with water recovery/reusable system	Ancillary
10	PLC controlled Multi cylinder drying range with individual cylinder drives with heat recovery system & padding mangle	Ancillary
11	PLC controlled Multi chamber stenter (min. 4 chambers) with arrangement of Thermic fluids / gas heating & with Heat recovery system	Ancillary
12	PLC controlled compressive shrinking range & with Heat recovery system	Ancillary
13	PLC controlled calendering machine having thermoplast / duraplast / polyamide sleeve & with Heat recovery system	Ancillary
14	PLC based compacting machine with Heat recovery system	Ancillary
15	PLC based oil/gas fibred boiler (steam/ thermic fluid) with automatic control on combustion efficiency , and heat recovery system with O2 monitoring equipment	Ancillary

Machines for Apparel

Machinery for Apparel and Garments				
Sr. No.	**Name of the machine with specifications**	**Technology Core/Ancillary**	**Technopak Recommendations**	
			MSME	**Non-MSME**
1	Single / two needle power operated industrial lockstitch sewing machine with or without trimmer having speed 4000 RPM and above.	Core	4000	4000
2	Blind stitch machine/ multi needle Chain Stitching machine having speed of 3850 rpm	Core	3850	3850
3	Power Operated loop making and sewing machine having speed of 2500 rpm and above	Core	2500	2500
4	Power Operated flat lock/ overlock machine.	Core		
	• Four / five thread overlock machine with or without trimmer having speed of 4500 rpm and above	Core	4500	4500
	• Five thread flat lock machine with or without trimmer having speed of 4500 rpm and above	Core	4500	4500
	• Five thread flat lock machine with seam joining device Having speed of 4500 rpm and above	Core	4500	4500
5	Zigzag flatbed sewing machine having speed of 2200 rpm and above	Core	2200	2200
6	Button Stitch sewing machine having speed of 3000 rpm and above	Core	3000	3000
7	Label/ elastic attaching machine	Ancillary		
8	Decorative Stitching machine having speed of 2000 rpm and above	Ancillary		
9	Automatic J Stitch Sewing machine having speed of 3000 rpm and above	Ancillary		

10	Edge cutting sewing machine having speed of 4000 rpm and above	Core	4000	4000
11	Automatic Button hole sewing machine having speed of 2500 rpm and above	Ancillary		
12	Trouser gripper making machines	Core		
13	Hydraulic diecutting / clicking machine for collars and cuffs	Ancillary		
14	Socks boarding machine having a minimum cycle time of 2.5 sec-per piece	Core		
15	Belt attaching machine having speed of 3500 rpm and above	Ancillary		
16	Zip attaching machine having speed of 4000 rpm and above	Ancillary		
17	Electronic / mechanical Bar tacking machine having speed of 3000 rpm and above	Core	3000	3000
18	Bottom Hemstitch machine having speed of 2500 rpm and above	Ancillary		
19	Smocking machine/ Automatic multi needle shirring machine having speed of 2000 rpm and above	Ancillary		
20	Computerized Pattern maker/ grader/marker machine[Laser marker	Ancillary		
21	Power driven cloth cutting machine having speed of 2000 rpm / laser fabric or label cutting machine/ laser engraving machine	Core/ Ancillary	2000	2000
22	Power operated Band Knife-cutting machine having speed of 2000 rpm and above	Core	1000	1000
23	Collar/cuff turning/blocking machine/ Pressing machine	Core		

24	Electronic/pneumatic Button and snap fasteners fixing machine having speed of 1000 rpm and above	Core	1000	1000
25	Pocket creasing and welting machine/ Auto Pocket making machine	Ancillary		
26	Industrial stream iron with vacuum table and/or buck press having 2.5 kg/cm2 steam pressure.	Core		
27	Boiler exclusively for steam press/vacuum press, Steam Cabinet/ Vacuum table	Core		
28	Fusing Press having minimum pressure of 1.5 kg/cm	Core		
29	Collar Contour Trimmer	Core		
30	Automatic Spreading & Cutting table with vacuum and/or air blowing device having speed of 18 mtr/min	Ancillary		
31	Shoulder pad- attaching machine	Ancillary		
32	Pocket cutting machine	Ancillary		
33	Automatic Pocket Attaching machine with production capacity 2000 pcs and above	Ancillary		
34	Round Knife cutting machine having minimum blade size of 3.5" and 1000 rpm and above	Core	1000	1000
35	End Cutter with cloth press track	Core		
36	Power operated Cloth drilling machine having speed of 800 rpm and above	Core	800	800
37	Collar Point trimmer/ notch making machine	Core		
38	Computerized High speed fully fashioned flatbed knitted garment manufacturing machine with speed of 10 rpm and above	Ancillary		

39	Whole garment making machine for knitted garments or power operated garment panel forming knitting machine with linking machine	Ancillary		
40	Automatic thread trimming/sucking machine equipped with two motors.	Ancillary		
41	Shirt folding machine with pneumatic system.	Ancillary		
42	Stain/spot removing machine	Core		
43	Pearl/Beads/Stones/Glassete/Hook and Bar attaching machine having speed of 1000 rpm	Core	1000	1000
44	Single and multihead Quilting machine	Ancillary		
45	Fabric inspection/checking machine with fault analyzer and report generator and length measuring and cutting device.	Ancillary		
46	Needle/metal detector machine	Core		
47	Multi head computerized embroidery machine with minimum six heads with or without electronic sequin	Ancillary		
48	Computerised label making machine/computerized label printing machine	Ancillary		
49	Button wrapping/shanking machine	Core		
50	Feed-off-the-arm industrial sewing machine having speed of 2500 rpm and above	Core	2500	2500
51	Automatic dart/pleat making machine having speed of 2000 rpm and above	Ancillary		
52	Automatic label/ply picking machine	Ancillary		
53	Pin tucking machine	Ancillary		
54	Mechanised fabric pinning table	Ancillary		
55	Single needle basting machine having speed of 1500 rpm and above	Core	1500	1500

56	Single needle post bed sleeve setting machine having speed of 1000 rpm and above	Ancillary		
57	Programmable Unit Production hanger and conveyor system with minimum of 24 machines operations	Ancillary		
58	Crochet machine for laces and bands with electronic bar operation	Ancillary		
59	String thrusting machine	Core		
60	Plastic Staple attacher	Core		
61	Brushing machine for jeans	Ancillary		
62	Computer Colour matching machine	Ancillary		
63	Automatic placket making machine for knitted garments.	Ancillary		
64	Belt Loop attaching machine having speed of 2000 rpm and above	Ancillary		
65	Collar Heat Notcher	Core		
66	Spot Welting machine	Core		
67	Laser Colour Fading/Marking/Drawing Machine	Ancillary		
68	Laser operated Color Spraying Machine	Ancillary		
69	RMG curing Wheat setting oven with a tolerance limit of +/- 2^0 C	Ancillary		
70	Air Compressor 15 H.P. and above with in-built invertors and air driers	Core		
71	Computerized Strap(Collar/Cuff) Flat Bed Knitting Machine with minimum speed of 0.3 mts/sec and minimum working width of 12"	Ancillary		
72	Cup Seamer	Ancillary		

73	Automatic Strap cutter machine with electronic feed & cutting device	Core		
74	Cup moulding machine	Ancillary		
75	Auto reeling stitch machine	Core		
76	Automatic combine panel-joining/ tape attaching machine for curtains.	Ancillary		
77	Electronic, pre-programmed, straight line lockstitch curtain pleat tacker with fully automatic curtain hook feeding device	Ancillary		
78	Automatic Combined Panel-joining & [lemming Machine	Ancillary		
79	Automatic Lockstitch Curtain Hemming Machine having speed of 2500 rpm	Ancillary		
80	Fully Automatic Combined Thread Chain Stitch Ring attach/pinch pleat tacking machine	Ancillary		
81	Hydraulic combined cutting/pressing machine for processing metal curtain rings	Ancillary		
82	Fully automatic fabric inspection, measure and length cutting machine equipped with meter counter.	Ancillary		
83	Fully Automatic, Programmable, Electronic vertical curtain cutting machine	Ancillary		
84	Fully Automatic drapery pinch pleater with integrated Microflex (r) adjustable curtain hook feeder	Ancillary		
85	Curtain feeding device for fully automatic pinch pleater	Ancillary		
86	High performance motor driven curtain ironing table	Ancillary		
87	Fully automatic front loaded Garment washing/ Dyeing machine	Ancillary		

88	Tumble dryer	Core		
89	Garment Colour Spray Cabinet	Ancillary		
90	Trouser topper/ Form Finisher machine	Ancillary		
91	Trouser turning machine	Ancillary		
92	Fabric Grinding Machine	Ancillary		
93	Hem Breaking Machine	Ancillary		
94	Fagoting/ Picoting machine having speed of 2500 rpm and above	Core	2500	2500
95	Packeting machine having speed of 4000 rpm and above	Core	4000	4000
96	Sequin punching machine having speed of 800 rpm and above	Core	800	800
97	Paddle Dyeing machines for Rugs/Garments/Made-ups	Core		
98	Open Pocket Dyeing Machines for Rugs/Garments/Made-ups	Core		
99	Automatic Length & Cross Cutting Machine for Sheets/TowelS	Ancillary		
100	Automatic machine for length and cross hemming machinery for Flat Fitted Sheet/TowelS/Pillow/PilIow Sham	Ancillary		
101	Automatic folding and stacking machine for Flat/Fitted Sheets/Towels & Pillow/Pillow sham/Dust Ruffle	Ancillary		
102	Automatic Comforter shell making machine	Ancillary		
103	Compression Bagger for packing (electronic pneumatic bagging machine)	Ancillary		
104	Automatic machine for flange pillow case	Ancillary		

105	Blending, Opening and Pillow Filling Lines	Ancillary		
106	Vacumising Packing Units for Filled Pillow & Quilts	Ancillary		
107	Die Cutting Machine	Ancillary		
108	Table Top Tufting Machine	Core		
109	Moustache making machine	Core		
110	Computerised Bed filling machine	Ancillary		
111	Ball fibre machine	Ancillary		
112	Seamless Knitting machine	Ancillary		
113	Computerized Multi Head printing Machine for Garment and Garment Panels	Ancillary		
114	Dry to Dry cleaning machine for garments	Ancillary		
115	Continuous pressing / folding, machine	Ancillary		
116	Ozone Generator with or without Fully Automatic front loaded Garment Washing Machine	Ancillary		

Machines for Technical Textiles

Machinery for Manufacturing of Technical Textiles		Technology Core/Ancillary	Comments
Sr. No.	**Name of the machine with specifications**		
1	Machinery for POI Tetro Fluro Ethylene (PTFE) Breathable film	Ancillary	
b	**Weaving Preparatory**		
Name of the machine with specifications			
1	PLC controlled High speed computerized warping / sectional warping machine		
	• For Direct warping machines warping speed should be 1000 mpm and above	Core	With creel minimum 300 position
	• For sectional warping machines warping speed should be 900 mpm & above	Core	With creel minimum 300 position
2	PLC Controlled, 4 axis filament winding machine for composites. Specifications: Mandrel Rotation of 150 rpm or more.	Ancillary	
c	**Weaving**		
Name of the machine with specifications			
1	PLC based Shuttle less weaving machine with or without creel & weft yarn feeding device for the manufacturing of technical textiles (with specifications given in MC1)	Core	With Heavy duty let off and take up with minimum 1.5 kw motor

2	Minimum 5.0 mtr wide shuttle loom with computer controlled shedding mechanism to produce seamless tubes, substrate for wide width belting and other technical textiles	Ancillary	
3	PLC based Geo Grid Weaving Machine having minimum width of 380cm with impregnation plant	Ancillary	
4	Multi-axial Loom.	Core	
5	3-D and Block weaving machine/ Non Crimp Weaving Machines for 3D Weaving of Glass and Carbon Fibres.	Ancillary	
6	High Speed Needle looms for narrow woven fabrics	Core	
7	Position Driven Compressor stand assembly for weaving	Ancillary	
8	Narrow width shuttle loom with positive let off and take up motions with electronic jacquard / dobby and with micro-processor controls for producing tubular fabric meant for filters, medical textiles and other technical textiles.	Core	
d	**Knitting**		
Name of the machine with specifications			
1	PLC based Weft Inserted warp Knitting machine (WIWK).	Core	machine 1000 rpm minimum
2	PLC based Knitting machine for spacer fabrics	Core	machine 1500 rpm minimum
3	PLC based Bi- axial & Multi axial knitting machine	Core	
4	PLC based Tricot machinery for the manufacture of technical textiles (Eligible for units having in house capacities for converting grey fabrics into technical textiles)	Core	
5	PLC based Rachel double needle bar Machine	Core	
6	PLC based Rachel machine for netting	Core	

7	PLC based Knitting Machine for the manufacturing of Fish nets with warp knotting system	Core	
8	PLC based Circular warp knitting machine for compression garments	Core	yarn and lycra feeder
9	PLC based Stitch bonding knitting machine	Core	
10	PLC based Seamless Knitting machine	Core	with maximum diameter 16 inch
e	**Processing**		
Name of the machine with specifications			
1	Mechanical foamer with Crush calendar.	Core	
2	Pultrusion machine and equipment for manufacturing of textile composites	Core	
3	FRP (Fibre Reinforced Plastic) processing machine & equipment for manufacturing of textile composites	Core	
4	RTM (Resin Transfer Moulding) machine and equipment for manufacturing of textile composites	Core	
5	Multi cylinder Calendering machines with following specifications: Running Speed : Minimum Pressure : Minimum 35 ton Heating : Steam, Electric, Gas	Core	
6	Finishing machinery for impregnating yarn or fabrics	Core	
7	PLC based Dipping machine for tyre cord / industrial fabrics / belting ducks	Core	
8	PLC based Dipping machine for single end or cord for reinforcement of v-belts / hoses / hose tires	Core	

9	PLC based Coagulated PU or PVC dip coating machine / PU or PVC coating line or coating dl in / knife machine with infrared dryer	Core	
10	PLC based Hotmelt and Hot Glue applicators for coating with working width of 500-2600 mm and working speed of	Core	
11	High precision Plasma Welding and Cutting machines for Sealed Edge Cutting	Core	
12	PLC based Precision Annealing Furnace for Stress relieving of fabrics	Core	
15	HTHP Jigger to process nyIon, aramid fabrics	Core	
f	**Made-up Technical Textile (T T) Store**		
Name of the machine with specifications			
1	RF Radio Frequency welding equipment	Core	
2	Automatic Ultrasonic cutting and sealing equipment.	Core	
3	Laser cutting and sealing equipment.	Ancillary	
4	PLC based Back Coating Lines	Ancillary	
5	PLC based Braiding machinery	Ancillary	
6	Machine for manufacture of clay liner	Ancillary	
7	Machinery for manufacture of prefabricated vertical drains / prefabricated wick drains	Core	
8	Complete line for manufacturing chopped strand glass mat	Ancillary	
g	**Non-woven textile manufacturing machines:**		
Name of the machine with specifications			
1	Complete production lines or the component / parts forming the production line for the manufacture of		

	following non-woven up to rolled goods preparation and packing, viz.,		
i	Chemically bonded non-woven		
ii	Stitch bonded non-woven	Core	
iii	Spun bonded non-woven	Core	
iv	Melt bonded non-woven	Core	
v	Spun bond melt blown non-woven (SMS non-woven)	Core	
vi	Needle punch non-woven	Core	
vii	Thermal bond non-woven	Core	
viii	Spun lace non-woven	Core	
ix	3-D non-woven machines	Core	
x	Electrospun nonwoven machines	Core	
h	**Finishing machines:**		
Sr. No.	**Name of the machine with specifications**		
1	Hot melt cold glue applicators for coating	Core	
2	Ultrasonic slitting machines/edge sealer	Core	
3	Brazing machine with torch (for hot air)	Core	
4	PLC operated system with servo drives for measurement/control of tension and temperature	Core	
5	Heatset oven with stenter facility	Ancillary	
6	Pilot/lab coating line	Ancillary	
7	High pressure pump for water jet cutting system	Ancillary	
8	Robotic waterjet cutting system	Ancillary	
9	Robot for water jet cutting system	Ancillary	

10	Water softening	Ancillary	
11	Machines for powder scattering	Ancillary	
12	PLC based Coating for fusible interlinings	Ancillary	
13	PLC based Padding mangle	Ancillary	
14	PLC based Lamination machine for technical textiles	Ancillary	
15	PLC based Clip / pin stenter for heat setting	Ancillary	
16	PLC based Flame lamination machine	Core	
17	Jacquard machines for joining two edges by inter weaving.	Core	
18	Turret winder and unwinder	Core	
19	High speed precision mixers for lastisols/ or anosols.	Core	
20	Gunning and cutting machine.	Core	
21	PU tumbling machine and drying machine.	Core	
22	Dimethyl formamide DMF recoverant and distillation plant	Core	
23	Multi cylinder drying range	Core	
24	Plasma Machine for Finishing Lines For Technical Textiles	Core	
	Note: The machineries listed at Sr. No. h of above are eligible for non-wovens, wovens, knitted technical textiles and convertors of nonwovens into finished products		
i	**Non-woven converting machinery:**		
Name of the machine with specifications			
1	Complete thermo moulding lines	Core	
2	Complete thermosetting lines	Core	
3	Machinery of carpet/NVH moulding lines oven/press	Core	
4	Conveyor/thermo pack for heating/chiller for cooling	Core	

5	Machinery for moulded roofliners	Ancillary	
6	Machinery for conversion of nonwovens into face masks / dust masks / duck bill masks / earloop mask sealing / tie on mask sealing / blank mask /Gloves	Ancillary	
7	Machinery for conversion of nonwovens into bouffont caps / surgical caps / medicap making machine	Ancillary	
8	Machinery for conversion of nonwovens into gowns / pillowslip / shoe covers / ice pack body / ice pack band sealing and cutting / hand bags / filter pocket /head rest cover / CD / DVD cover and other such items	Ancillary	
9	Machinery for conversion of nonwovens into sanitary napkins / baby diapers / adult diapers	Core	
10	Machinery for conversion of nonwovens into dry and wet wipes	Core	
11	Machinery for slitting and rewinding of nonwoven roll	Core	
12	Surgical gauze machine making	Core	
13	Combined dressing making machine	Core	
14	Bandage Roll making machine	Core	
15	Machine to compress	Ancillary	
16	Abdominal s one making machine	Ancillary	
17	Automatic packing machines	Ancillary	
18	Machine for manufacture Of tubular filter bag	Ancillary	
j	Complete Production Line for Manufacture of Surgical Bleached Cotton		

Machines for Handloom

Machinery For Handlooms			
S. No	**Name of the Machine**	**Technology Core/Ancillary**	**Comments**
1	Electrical winding machine	Core	Required
2	Electrical Warping machine	Core	Required To improve productivity sectional warper capable of making weaver beams with accurate length may be adopted in cluster.
3	Motorised/Pneumatic/Electronic Jacquard	Core	Required This improves working and ease of operation
4	Semi-automatic (ordinary frame handloom with minimum width of 52", with or without dobby / jacquard and benchmarked technology features, viz., take-up motion, smooth sley movement, bigger shuttle and bobbin (minimum 4"), negative let-off motion. It may include attachments such as multiple weft butta mechanism, pick & pick sliding shuttlebox, solid border weaving catchcord attachment. The frame loom should be made out of h" x I h" x 3" steel U channel or steel pipe 2 h" diameter and 8 gauge or sturdy wood with minimum 4" widthx4" thickx6' height. The looms may have additional warp and cloth rollers made of wood or steel to ensure weaving of long length fabric.	Core	Required for better quality and productivity

5	Handlooms of fly shuttle frame loom fitted with Dobby like lattice /barrel/tappet/draw bar/iron frame vertical/centre closed shed/wooden frame vertical/double cylinder iron border, Jacquard like single lift single cylinder wooden frame/single lift single cylinder iron frame bar/double lift single cylinder iron frame/double lift double cylinder iron frame/janata/lino Combination of jala and dobby or jacquard; Fly shuttle sley fitted with drop box on one side/drop box on both sides /circular shuttle box pick & pick sley;	Core	Required for better quality and productivity
6	Fly shuttle frame loom fitted with let off motions like lever and weight let off motion/special spring motion/rope let off motion/weight system/spring system.	Core	Required
7	Fly shuttle frame loom fitted with take up motion like ratchet & pawl motion/3 wheel Ichalkaranji type motion/5 wheel take up motion without emery roller/7 wheel take up motion.	Core	Required
8	Handlooms fitted with special attachments like catch card system/swivel loom/ lappet motion/terry motion/lino mechanism/chennaile weaving (automatic cutting of chennaile while weaving), metal frame handloom/vvider width wooden frame handloom/long length cloth weaving mechanism etc.	Core	Required
	Note: In addition, handloom units may also be provided with piano card punching machine/electronic card punching machine.	Core	
9	Winding machine with multi spindle for preparation of pins/bobbins/drums operated by hand/ peddle/ power.	Core	Required
10	High Speed Doubling machine having spindle fitted on bolster with ball bearing.	Core	Required

11	The mobile textile quality testing equipment only for handloom sector and capable of testing all of the following :	Core	Required
i	Colour fastness to washing at about 40 degree Celsius.	Core	Required
ii	Colour fastness to crocking rubbing	Core	Required
iii	Shrinkage	Core	Required
iv	Ends-Picks per inch	Core	Required
v	Count of yarn	Core	Required
vi	Percentage crimp of yarn	Core	Required
vii	Fabric width, and	Core	Required
viii	Grams per square meter etc.	Core	Required
12	Coating machine for Metallic yarn for jari processing only	Core	Required
13	Universal Double Covering machine for jari processing only	Core	Required
14	Micro slitting machine for jari processing only	Core	Required
15	Coating/Vacuum Metalizer for jari processing only	Core	Required
16	Twisting/Doubling machine for jari processing only	Core	Required

Machines for Jute

Machinery for Jute Industry		Technology - Core/Ancillary
S. No.	**Machine Description**	
1	Two for One Twister with cradle, drop wires and overfeed system and 4500 rpm as minimum speed	Core
2	Winding machine With individual spindle/drum driven With minimum speed of48() mpm	Core
3	PLC Controlled Pre-beaming having minimum speed 135 mpm and , Beaming & Sizing machine having minimum speed of 125 mpm	Core
4	PLC based Dressing Machine/Direct Warper with minimum speed of 30 mpm	Core
5	PLC based Circular Looms with minimum WIR of 400 mpm	Core
6	Warp Knitting Machine with minimum 60" width and minimum speed of 300 rpm	Core
7	Automatic Cutting Machine having minimum speed of 25 cuts per minute	Core
8	Automatic Lapping and Measuring Machine with minimum 25 strokes per minute	Core
9	Sewing Machine with minimum 2900 rpm	Core
10	Automatic Branding (Screen Printing) Machine with minimum speed of 30 rpm	Core
11	Automatic Integrated Damping and Calendering Machine with minimum speed of 27 mpm	Core
12	Integrated Herakle and Safety Stitching Machine with minimum speed of 1400 rpm	Core
13	Automatic Bag Making machine with a capacity of minimum 50 Bags per hour	Core

14	Processing Machines for Jute Diversified Products.	Core
15	Singeing Machine with minimum speed of 30 mpm	Core
16	Pressure Kier/Jumbo jigger with minimum speed of 50 mpm	Core
17	Cloth/ yarn mercerising with minimum speed of 25 mpm	Core
18	Pad batch (Mangle with minimum speed of 25 mpm	Core
19	Winch with minimum speed of 25 mpm	Core
20	Semi-automatic/automatic Jiggers with minimum speed of 50 mpm	Core
21	Automatic PLC based Jet dyeing machine	Core
22	Automatic PLC based Soft Flow Dyeing machine	Core
23	Automatic PLC based Cabinet Dyeing Machine (for yarn)	Core
24	Automatic PLC based Dyeing Machine	Core
25	PLC based Macro Extractor/Hydro Extractor with minimum speed of 200 rpm	Core
26	PLC based Multi Cylinder Dyeing Range with minimum speed of 25 mpm	Core
27	Automatic PLC based Stenter with minimum 3 chambers and minimum speed of 25 mpm	Core
28	Coating machine with or without stenter with minimum speed of 20 mpm	Core
29	Carpet Backing coating machine with minimum speed of 20 mpm	Core
30	Ball making machine (Yarn) with minimum speed of 200 rpm	Core
31	Machinery for Testing Jute Textiles	Ancillary
32	Evenness tester	Ancillary

33	Jute bundle strength tester	Ancillary
34	Yarn tensile strength tester	Ancillary
35	Jute fineness tester	Ancillary
36	Fabric strength tester	Ancillary
37	Jute Moisture meter	Ancillary
38	Scotch guard applicator tester	Ancillary
39	Electronic twist tester	Ancillary
40	Abrasion tester	Ancillary
41	Bending rigidity tester	Ancillary
42	Colour fastness tester	Ancillary
43	Computerized colour matching	Ancillary
44	Rubbing fastness tester	Ancillary
45	Fire Retardancy Tester	Ancillary
46	Light fastness tester	Ancillary
47	Count balance	Ancillary
48	Laundero meter	Ancillary
48	Yarn twist tester	Ancillary
49	Yarn appearance tester (manual/automatic)	Ancillary
50	Ballistic raw jute strength tester	Ancillary
50	Latexing tester	Ancillary
51	Water proofing	Ancillary
52	Computer colour matching machine	Ancillary
53	Coating & Laminating Machinery for Jute Industry	Ancillary

54	Complete Lamination Plant suitable for Poly/Rubber lamination of jute fabric with facility for sandwich lamination/ both side lamination	Ancillary

Machines for Silk

Machinery for Silk		**Technology - Core/Ancillary**
A. Silk Reeling Automated Plant		
1	Automatic silk Reeling Plant having 400 ends capacity and comprising of below mentioned eligible machinery	Core
a.	Cocoon peeling machine	Core
b.	Cocoon sorting machine	Core
c.	Vacuum permeating machine	Core
d.	Cocoon cooking machine (Conveyer type)	Core
e.	Automatic silk reeling machine (400 ends)	Core
f.	Reeled silk humidifier	Core
g.	Re-reeling machine (40 Windows)	Core
h.	Basket conditioning oven	Core
k.	Frision scraping machine	Core
i.	Frision treatment machine	Core
j.	Dewater machine	Core
k.	Skein winder	Core
l.	Reel carrier	Core
m.	Conveyer cocoon drier — 2 ton capacity	Core
n.	IBR Boiler (l ton capacity)	Core

o.	RO based Water Softening equipment (2500 liters/day)	Core
2	**Automatic Dupion silk Reeling Plant having 142 ends capacity and comprising of below mentioned eligible machine**	
a.	Cocoon peeling machine	Core
b.	Cocoon sorting machine	Core
c.	Vacuum permeating machine	Core
d.	Cocoon cooking machine (Conveyer type)	Core
e.	Automatic Dupion Silk reeling machine (142 ends)	Core
f.	Re-reeling machine (20 Windows)	Core
g.	Cocoon Drying Machine	Core
h.	IBR Boiler (1 ton capacity)	Core
k.	RO Water Softening equipment (2500 liters/day)	Core
B. Silk Twisting , Weaving & Knitting Machinery:		
a.	Two for One Twisting Machine having 288 X 2 Spindle	Core
b.	Parallel winder with minimum speed of 300 mts per minute	Core
c.	Cone winding machine 24 spindles capacity having minimum speed of 400 mtrs per minute High speed direct beam warping machine with creel having minimum warping speed of 500 mtrs per minutes and beaming speed of 100 mtrs per minute, Shuttle less loom (Rapier loom) with WIR of 280 mpm	Core
d.	Electronic jacquard with minimum 480 hooks	Core
e.	Electronic fiat bed knitting machine	Core
f.	Automatic circular knitting machine of minimum 22 "dia	Core
g.	Automatic warp knitting machine	Core
h.	Computerized Embroidery machine 16 heads, 8 colours	Core

C. Silk Wet Processing Machinery:		
a.	Automatic 2 Arm Spray Dyeing Machine	Core
b.	4 Arm Spray Dyeing Machine	Core
c.	Winch Dyeing Machine	Core
d.	Calendaring Machine/ Mini Felt Calendaring Machine	Core
e.	Decatizing Machine having	Core
f.	Soft Flow Dyeing Machine with capacity of minimum 5kg	Core
g.	Digital Printing Machine For Silk (8 Heads)	Core
h.	Stenter Machines (4 Chambers)	Core
i.	Reverse Osmosis, Nano Filtration, Multiple stage prefabricated steel evaporator excluding civil	Core
j.	Cabinet dyeing machine for silk (20kg Cap.)	Core
k.	Computer colour matching and automatic dispensing unit	Core
l.	Package dyeing machine for cone or cheese (l Okg/load) Drying system for hanks	Core

Appendix 2- KII List of Machine Manufacturers and other Stakeholders

S. No.	Name of the Person	Sector	Name of the Organization	Designation
1	Mr. Sachin Arora	Machinery Manufacturer	TMMA	Executive Director
2	Mr. Vallabh bhai	Machinery Manufacturer	Weavetech	M.D.
3	Mr. P. Kasiviswanathan	Machinery Manufacturer	Picanol	Executive Director, India
4	Mr. G.V.Aras	Machinery Manufacturer	Ate enterprises pvt ltd.	Director
5	Mr. S. Rajendran	Machinery Manufacturer	Ate enterprises pvt ltd.	Senior Vice President - Processing, Accessories and After Sales Services
6	Mr. Navin Agarwal	Machinery Manufacturer	Ate enterprises pvt ltd.	Vice president
7	Mr. Kiran P Hanchate	Machinery Manufacturer	Ate enterprises pvt ltd.	Vice president
8	Mr. S.P. Setia	Industry Expert (Machinery)	S.P Setia Consulting	Owner
9	Mr. S.P. Verma	Government Official	Textile commissioner office	Deputy Director
10	Mr. Vipan Kohli	Government Official	Textile commissioner office	Deputy Director
11	Mr. M.S. Pradeep	Apparel Industry Expert	Technopak Advisors	Associate Vice President
12	Mr. Rohit Bhardwaj	Machinery Manufacturer	Rieter	General Manager

13	Mr. Guru Prasad	Machinery Manufacturer	Tsudokoma	Sales head
14	Mr. Dharamshil Kothari	Machinery Manufacturer	Benninger	General Manager
15	Mr. Randeep Sahani	Machinery Manufacturer	Brothers	President
16	Ashish Ameen	Machinery Manufacturer	Premier loom	Owner

Appendix 3- List of Expert Panel of 17 from the overall KII list

S.No.	Stakeholder	Name of the Person	Name of the Organisation
1	Industry Expert	S.P. Setia	S.P. Setia consulting
2	Industry Expert	Sanjay Chatrath	SRF Ltd
3	Industry Expert	S.P Oswal	Vardhman Textiles Ltd
4	Industry Expert	B.K Goenka	Welspun Group
5	Industry Expert	Harish Ahuja	Shahi Exports Ltd
6	Industry Expert	Chetan	FICCI
7	Industry Expert	Sanjay Kumar Jain	CITI Past Chairman
8	Research Associations	Anjan K. Mukhopadhyay	BTRA
9	Government Official	Ajay Pandit	Regional Office of the Textile Commissioner NA Noida
10	Industry Association	Mr. Vallabh Bhai	Weavetech Engineers
11	Industry Association	Dr. S. Sunanda	CITI
12	Industry Expert	Pulkit Seth	Pearl Global
13	Industry Association	Sunil Satgonda Patil	PDEXCIL
14	Industry Association	Ronak Rughani	SRTEPC
15	Industry Expert	C A Khan	Saluja
16	Industry Association	Dr. K Selvaraju	SIMA
17	Industry Association	D.K Nair	CITI (Former)

Appendix 4- List of total KIIs of 62 (Key Informant Interviews)

S. No.	Name of the Person	Sector	Organization	Designation
1	Prem Malik	Industry Associations	Confederation of Indian Textile Industry	Past Chairman
2	Dr. S. Sunanda	Industry Associations	Confederation of Indian Textile Industry	Secretary General
3	T.K. Sengupta	Industry Associations	The Textile Association of India	President
4	Sharad Kumar	Industry Associations	Federation of Indian Export Organisation	President
5	Chetan Bijesure	Industry Associations	FICCI	Senior Director & Head Manufacturing
6	Sanjay Jain	Industry Associations	CITI	Immediate past Chairman
7	Sri Narain Aggarwal	Industry Associations	SRTEPC	Chairman
8	Ashok Juneja	Industry Associations	The Textile Association of India	President
9	Rahul Mehta	Industry Associations	Clothing Manufacturers Association of India	President
10	Sunil Satgonda Patil	Industry Associations	PDEXCIL	Chairman
11	Siddharatha Rajagopal	Industry Associations	Texprocil (The Cotton Textiles Export Promotion Council)	Executive Director
12	K Selvaraju	Industry Associations	SIMA	Secretary General
13	Balaraju	Industry Associations	SRTEPC	Executive Director
14	Ronak Rughani	Industry Associations	SRTEPC	Chairman
15	D.K Nair	Industry Associations	CITI	Former CITI Chairman
16	Ashwin Chandran	Industry Associations	SIMA	Chairman

17	R.C Kesar	Industry Associations	OGTC (Okhla Garment & Textile Cluster)	Director General
18	Raja Shanmugham	Industry Associations	TEA (Tirupur Exporters Association)	President
19	Sanjay Chatrath	Industry Experts	SRF Ltd	President
20	Gautam Nair	Industry Experts	CII, Matrix	Managing Director
21	B.K. Goenka	Industry Experts	Welspun	Chairman
22	Pulkit Seth	Industry Experts	Pearl Global	MD
23	Harish Ahuja	Industry Experts	Shahi Exports Ltd.	Managing Director
24	K.K Lalpuria	Industry Experts	Indocount	CEO
25	S.P. Setia	Industry Experts	SP Setia Consulting	Technical consultant
26	S.P.Oswal	Industry Experts	Vardhman Textiles Limited	Chairman
27	Girish Luthra	Industry Experts	GETP	Chairman
28	Dhirubhai Shah	Industry Experts	Fairdeal textile	Owner
29	R.Swaminathan	Industry Experts	ABFRL	COO
30	Jacob John	Industry Experts	Dixcy Textiles	CEO
31	R.D.Udeshi	Industry Experts	Reliance	President, Polyester Chain
32	C A Khan	Industry Experts	Saluja	President
33	Mr. Tayal	Industry Experts	Shivalik Exports	Head of Finance
34	Makrand Kulkarni	Industry Experts	Polygenta	CEO
35	Amit Jain	Industry Experts	Shingora	CEO
36	Wicrant Gambhir	Industry Experts	Jockey	Head of Sourcing
37	M.S Pradeep	Industry Experts	Technopak Advisors	AVP
38	Mr. Ramakrishna	Industry Experts	Tarak Textiles Pvt Ltd	Director
39	GV Aras	Machinery Manufacturers	ATE	Director
40	Randeep Sahani	Machinery Manufacturers	Brother	President
41	Mr. Vallabhai	Machinery Manufacturers	Weavetech	Managing Director
42	Navin Agrawal	Machinery Manufacturers	A.T.E. Enterprises pvt ltd	Vice President
43	S. Rajendran	Machinery Manufacturers	A.T.E. Enterprises pvt ltd	Senior Vice President
44	Kiran P. Hanchate	Machinery Manufacturers	A.T.E. Enterprises pvt ltd	Vice President

45	Sachin Arora	Machinery Manufacturers	TMMA	Executive Director
46	Ashish Ameen	Machinery Manufacturers	Premier Loom	Owner
47	P. Kasiviswanathan	Machinery Manufacturers	PICANOL	Executive Director
48	Rohit Bharadwaj	Machinery Manufacturers	KTTM	Sales Manager
49	Dharmshil Kothary	Machinery Manufacturers	Tsudokoma	Sales Manager
50	Guru Prasad	Machinery Manufacturers	Benninger	Sales Manager
51	S.P. Verma	Government Officials	TxC	Joint TxC
52	Ajay Pundit	Government Officials	Regional Office of the Textile Commissioner – Noida	Director
53	Vipin Kumar Kohli	Government Officials	TxC	Joint TxC
54	Darlie o Koshy	Academia	ATDC (Apparel Training & Design Centre)	Director General & CEO
55	Dr. Rakesh Mohan Joshi	Academia	IIFT	Chairperson, Professor
56	Dr. Biswajit Nag	Academia	IIFT	Professor, Textile Department
57	Dr. Deepti Gupta	Academia	IIT Delhi	Professor
58	Vikas	Lending Agency	Bank of India (BOI)	Nodal Officer
59	Mukesh Kumar	Lending Agency	Canara Bank	Divisional Manager
60	Mr. Nilanjan	Lending Agency	State Bank of India	Nodal Officer
61	Dr. Anjan K. Mukhopadhyay	Textile Research Associations	BTRA	Director
62	R Bachkaniwala	Textile Research Associations	MANTRA	President

Appendix 5- Data Quality Assurance measures

Data Quality Check Measures

1. Screening of Investigators: Pre-Study

Profile and Experience	• Experience of having worked in field primary data collection work • Experience of having worked on B2B studies was the priority in selection process
Telephonic Screening	• Telephonic conversation with the field Investigators to understand their experience, communication skills and command of language

2. Training the Field Investigators: During Study

Team structure	• There was a supervisor to oversee a team of field investigators. In normal cases supervisor and interviewers are maintained in the ratio of 1 : 5 • Investigators were primarily graduates; others were 10+2 pass outs with sound experience in market/filed survey experience
Briefing the Investigators	• A briefing document was created with broad requirements, sample size, explanation of terms and specific instructions on questions • Briefing was given to teams, using the questionnaire and the briefing document. This document was available with each and every investigator while on the field for their reference • In case app-based data collection link was shared along with questionnaire for practice
Debriefing of Investigators and Mock Round	• After the briefing, mock call was conducted. After the mock call, debrief was done with all Interviewers • In outstations, Azul agency checked with the supervisor and ensured that the supervisor debriefed the investigators to ascertain whether the nuances of the study, and its various requirements were captured and understood by them

3. Application - How Does an App Ensure Quality Control?

Location	• Location wise tracking of latitude and longitude • The captured latitude and longitude should match the location of the respondent, as per address mentioned in database

Length of Interview	• The app feature had the length of interview, which helps Azul project managers to understand the time when the interview started and no. of minutes (approx. 40 minutes) it took to finish the interview
Photos	• Image was taken of the sign board of the unit or image of the respondent or the visiting card
Random Recording	• Some apps had provisions of randomly recording whole or part of an interview to ascertain the interview done with respondent

4. Data Quality Control Measures

Once the application was ready, questionnaire was programmed, and screening/briefing of the investigators and teams was done, the data collection process was commenced. The data collection process (fieldwork) had the following quality control measures:

Initial Pilot	• Initial data from all teams • Target was to have initial interviews (at least 1-2) from at least 40% investigators' - part of the pilot exercise • Data was reviewed from the pilot study to revise the questionnaire, to make suitable changes in the questionnaire to get best possible response rate. After that review action was taken to ensure that the post-pilot output was standardized, as much as possible
Open-end Responses	• Quality of open-end responses was reviewed as part of the quality control effort
Same Column Responses	• Checked for duplicate responses in the datasheet • Investigators were replaced in case of suspicious output beyond an acceptable limit
Scrutiny	• 100% of responses were scrutinized for quality. The agency does 100% scrutiny and ensures 70% responses (data) are valid, with emphasis on priority questions
Back-Checks	• Back checks (call backs) of at least 50% respondents were done to ascertain the date, time and quality of interviewing[1]

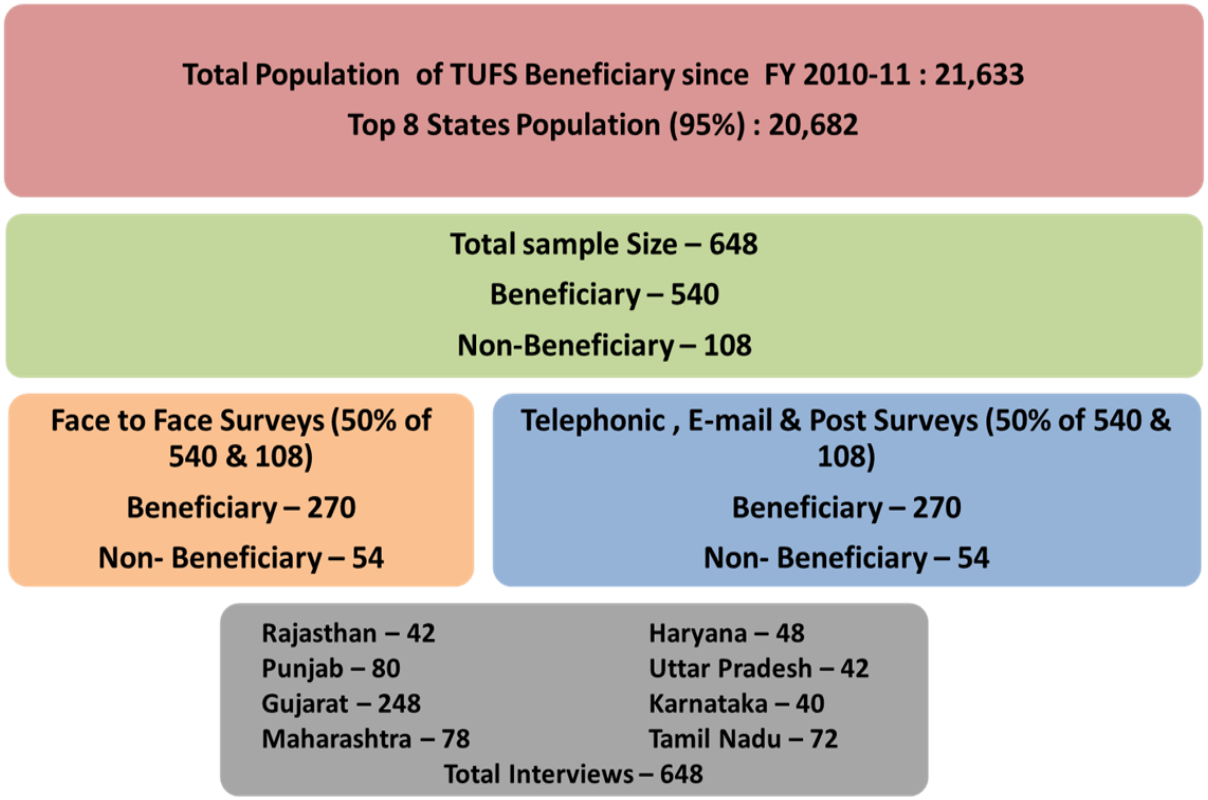
Source: Research Agency

[1] <5%

Appendix 6- Detailed Sampling Plan

Proposed Sampling as per the ToR

Exhibit 230: Proposed Sampling (UHS) as per ToR



Revised Sampling Plan

- On collecting the list of beneficiaries from the Office of Textile Commissioner, it was noticed that the number of beneficiaries under the ATUFS was very limited. The total number of beneficiaries in ATUFS was 584 as per the list shared. Further, the beneficiaries were skewed towards certain states (Gujarat - 49%), sectors (Weaving - 72%) and scale (MSME - 82%). This created issues for us to meet the quotas as mentioned in the TOR for ATUFS.
- In order to address the issue of availability of beneficiaries under ATUFS, Technopak shifted its sampling plan from states where data is not enough, such as Punjab, Haryana, UP, and Rajasthan, to states where data is available in abundance, such as Gujarat, Tamil Nadu, and Maharashtra. To reduce the skewness for these 3 states, Technopak adjusted higher numbers in other states for non-beneficiary quota.
- In addition, in order to address the issue of skewness of data Technopak decided to change the sampling plan for non-beneficiaries (108 sample total). Details of the revised sampling plan is given below (next page):

Exhibit 231: Overall Revised Sampling Plan

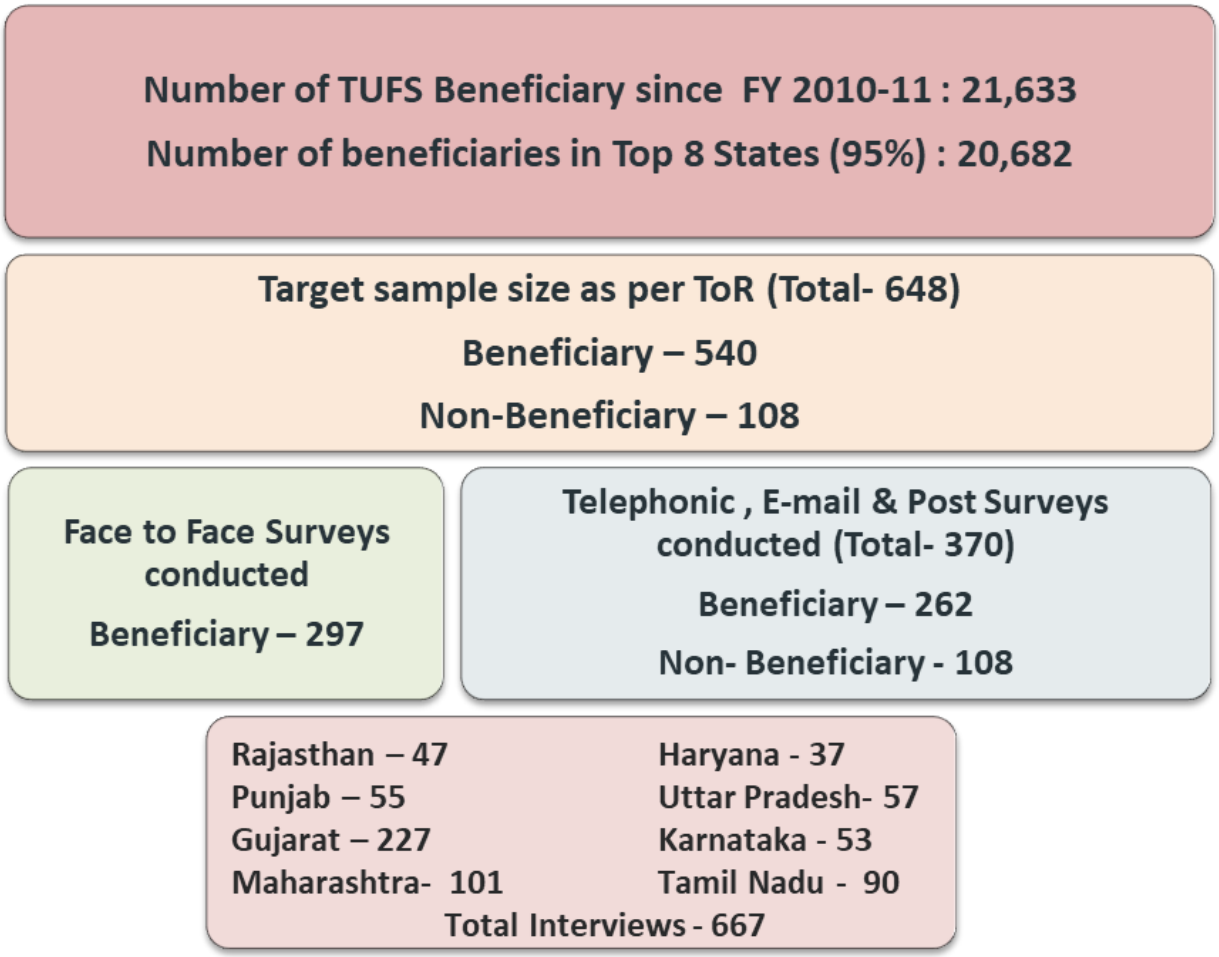
State	State-wise and Scheme-wise Beneficiary Sampling Plan									Non-Beneficiary Sampling Plan		Total Sampling Plan		Face to Face/ Telephonic 270		
	ATUFS			RRTUFS		RTUFS		Total Sampling Plan as per ToR	Total Proposed Sampling							
	No of Beneficiaries in ATUFS	ATUFS Sampling as per TOR	Proposed ATUFS Sampling	No of Beneficiaries in RRTUFS	Proposed RRTUFS Sampling	No of Beneficiaries in RTUFS	Proposed RTUFS Sampling	Sampling Total as per TOR		Non beneficiary Total as per TOR	Proposed Sampling for Non-Beneficiary	Total Sampling as per TOR	Proposed Total Sampling			
	Data Available	Sample Plan	Sample Suggested	Data Available	Sample Plan	Data Available	Sample Plan							ATUFS	RRTUFS	RTUFS
Gujarat	274	101	117	1118	61	1921	41	203	219	41	44	244	263	58	30	20
Maharashtra	81	33	46	364	20	293	13	66	79	13	5	79	84	23	10	6
Punjab	22	33	11	808	20	604	13	66	44	13	5	79	49	5	10	7
Tamil Nadu	144	30	75	767	18	328	12	60	105	12	15	72	120	38	9	6
Haryana	8	20	4	188	12	125	8	40	24	8	9	48	33	2	6	4
Rajasthan	12	19	6	153	11	101	7	37	24	7	5	44	29	3	5	4
Uttar Pradesh	4	17	2	88	10	42	7	34	19	7	21	41	40	1	5	4
Karnataka	17	17	9	39	10	33	7	34	26	7	4	41	30	5	5	4
Total	**562**	**270**	**270**	**3525**	**162**	**3447**	**108**	**540**	**540**	**108**	**108**	**648**	**648**	**135**	**80**	**55**

Source: Technopak Analysis

Research Coverage

As per the revised sampling plan, Technopak have completed 559 beneficiaries and 108 non beneficiaries. In addition, due to pandemic of COVID-19, some of the face-to-face interviews were converted into telephonic interviews after taking permission from NITI Aayog. The revised sampling plan was shared with NITI Aayog team and was approved by them

Exhibit 232: Actual Sampling of UHS



State Wise Sampling Plan - Beneficiary

Exhibit 233: State Wise Sampling - Beneficiary

Parameters	ATUFS		RRTUFS		RTUFS	
State	**Proposed Sampling**	**Sample Covered**	**Proposed Sampling**	**Sample Covered**	**Proposed Sampling**	**Sample Covered**
Gujarat	117	129	61	51	41	29
Maharashtra	46	59	20	23	13	4
Punjab	11	9	20	29	13	8
Tamil Nadu	75	39	18	38	12	2
Haryana	4	9	12	11	8	7
Rajasthan	6	9	11	14	7	9
Uttar Pradesh	2	5	10	28	7	9
Karnataka	9	17	10	9	7	12
Total	**270**	**276**	**162**	**203**	**108**	**80**

Source: Sampling analysis by Technopak

Scale Wise Sampling - Beneficiary

Exhibit 234: Scale Wise Sampling - Beneficiary

Scheme/Scale	Proposed MSME	MSME – Current Status	% Share	Proposed Non-MSME	Non-MSME – Current Status	% Share
ATUFS	224	247	57%	33	29	24%
RRTUFS	129	135	31%	43	68	55%
RTUFS	85	54	12%	26	26	21%
Total	**438**	**436**	**78%**	**102**	**123**	**22%**

Source: Sampling analysis by Technopak

Segment Wise Sampling - Beneficiary

Exhibit 235: Segment Wise Sampling Plan - Beneficiary

Segments	ATUFS		RRTUFS		RTUFS	
	Sample Proposed	Sample covered	Sample Proposed	Sample covered	Sample Proposed	Sample covered
Standalone Spinning	0	0	20	31	10	7
Weaving/Knitting	172	233	54	46	36	11
Processing (Fibers, Yarn, Fabrics, Garments, and Made-ups)	42	25	17	30	12	11
Technical textiles and Non-woven	15	6	9	27	6	15
Garmenting	5	6	34	40	22	5
Others	23	6	38	29	25	8
Total	**257**	**131**	**172**	**203**	**111**	**80**

Source: Sampling analysis by Technopak

State Wise Sampling Plan - Non-Beneficiary

Exhibit 236: State Wise Sampling - Non-Beneficiary

State	Proposed Sampling	Sample Covered
Gujarat	44	18
Maharashtra	5	10
Punjab	5	15
Tamil Nadu	15	15
Haryana	9	9
Rajasthan	5	15
Uttar Pradesh	21	11
Karnataka	4	15
Total	**108**	**108**

Source: Sampling analysis by Technopak

Scale Wise Sampling - Non-Beneficiary

Exhibit 237: Scale Wise Sampling - Non-Beneficiary

Scale	Sample Covered
MSME	98
Non-MSME	10
Total	**108**

Source: Sampling analysis by Technopak

Segment Wise Sampling - Non-Beneficiary

Exhibit 238: Segment Wise Sampling - Non-Beneficiary

Segment	Sample Covered
Standalone Spinning	0
Weaving/Knitting	46
Processing (Fibers, Yarn, Fabrics, Garments, and Made-ups)	22
Technical textiles and Non-woven	7
Garmenting	28
Others	5
Total	**108**

Source: Sampling analysis by Technopak

Profile Analysis

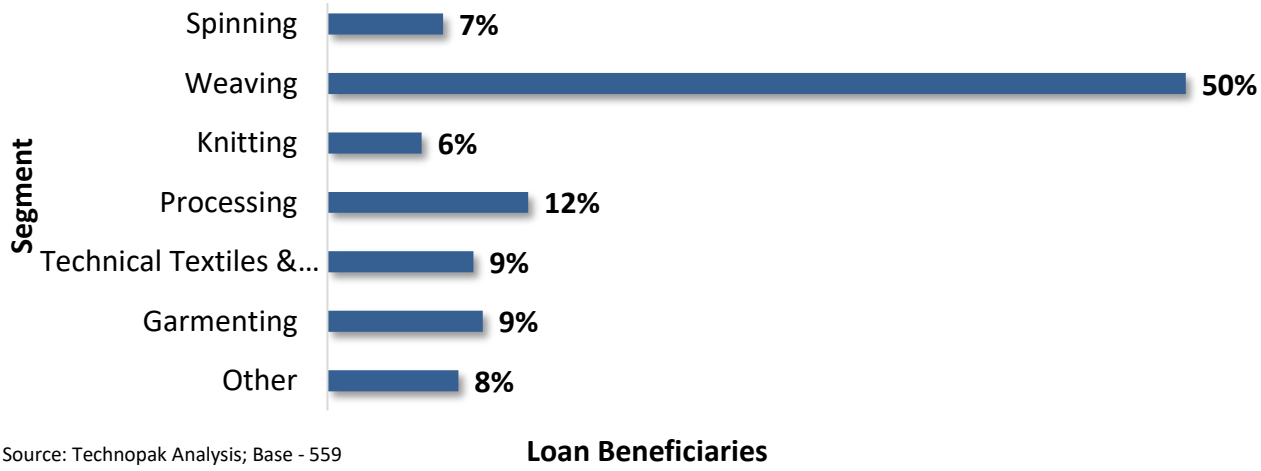
In total, 667 Unit Holder Surveys (UHS) were undertaken to conduct the quantitative analysis. Out of 667, 559 were beneficiary and 108 were non-beneficiary.

Profile of Unit Holder Surveyed - Beneficiaries

Segment Wise

50% of UHS were from weaving sector, which is in line with the TUFS applications

Exhibit 239: UHS Profile – Segment Wise

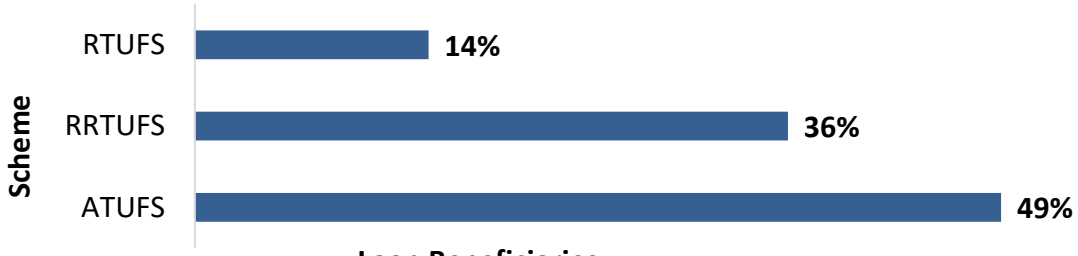


Source: Technopak Analysis; Base - 559

Scheme Wise

Scheme-wise target was 50:30:20 for ATUFS: RRTUFS: RTUFS. However, the sample had more applications from RRTUFS as there were fewer beneficiaries available in ATUFS

Exhibit 240: UHS Profile - Scheme Wise

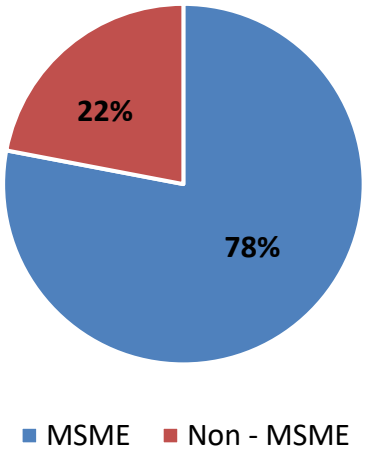


Source: Technopak Analysis; Base - 559

Scale Wise

MSME sector witnessed higher no. of beneficiaries (78%) as no. of applications are skewed towards MSME sector

Exhibit 241: UHS Profile - Scale Wise



Source: Technopak Analysis, Base - 559

Summary

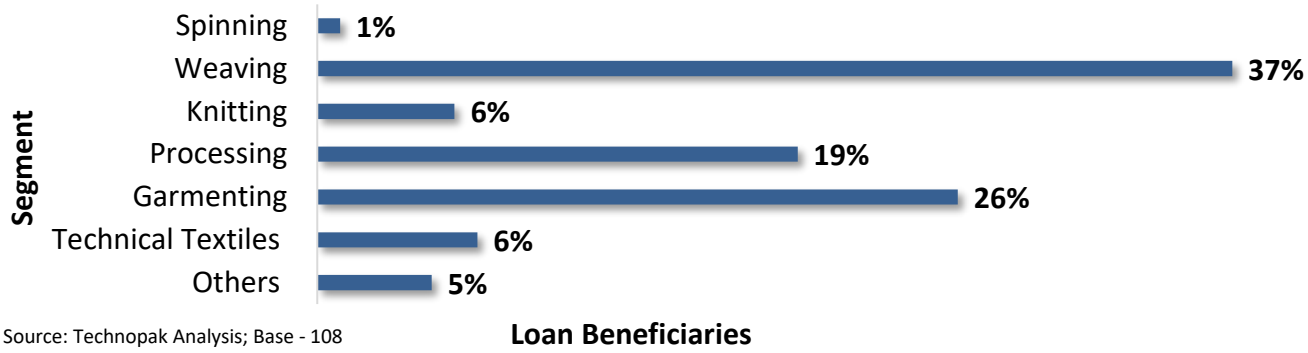
For the purpose of the report, Technopak has completed 667 UHS across different geographies, segments, and scale. Of 667 UHS, 559 were beneficiaries. Of 559 beneficiaries, 50% were completed from weaving sector, which is in line with the TUFS applications. The scheme-wise survey was completed in the ratio of 50:36:14 for ATUFS: RRTUFS: RTUFS. The sample had more applications from RRTUFS as there were fewer beneficiaries available in ATUFS.

Profile of Unit Holder Surveyed - Non-Beneficiaries

Segment Wise

37% of UHS were from weaving sector, which is in line with the TUFS applications

Exhibit 242: UHS Profile - Segment Wise

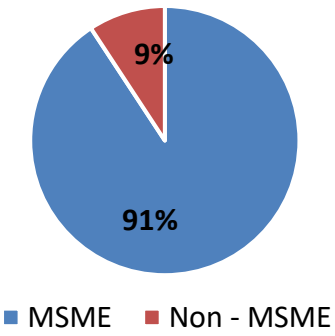


Source: Technopak Analysis; Base - 108

Scale Wise

MSME sector witnessed higher no. of non-beneficiaries (91%) as no. of applications are skewed towards MSME sector

Exhibit 243: UHS Profile - Scale Wise



Source: Technopak Analysis, Base - 108

Summary

Of 667 UHS, 108 were non-beneficiaries. Of 108 non beneficiaries, 37% were completed from weaving sector. More number of MSME were included in the UHS sample, in line with the higher number of MSME demand.

Appendix 7- Deep dive into UHS Analysis

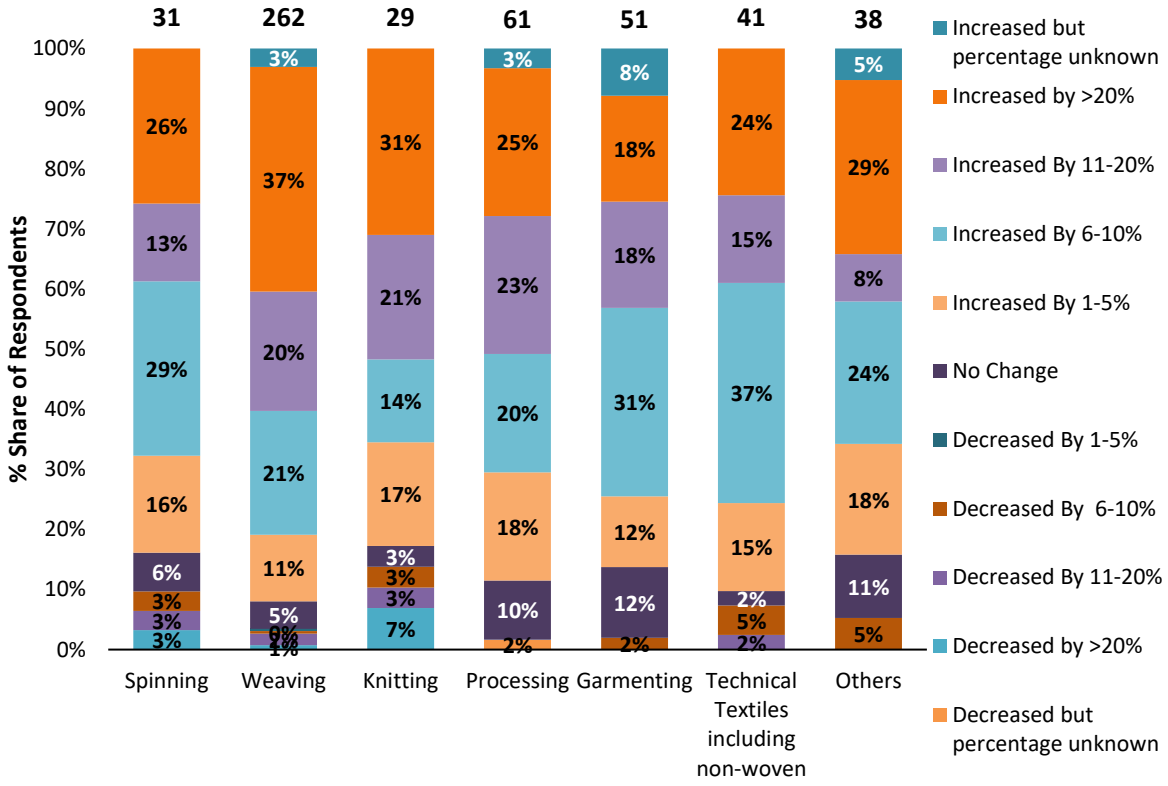
FINANCIAL PERFORMANCE

Beneficiaries

Annual Sales

Majority of the segments have similar rise in annual sales. Knitting, Weaving and Processing have witnessed high percentage increase in sales >10% by around 50% of the respondents. Relatively, Technical Textiles has witnessed more increase in sales (37% of respondents, 6-10%) because this is not a commodity product.

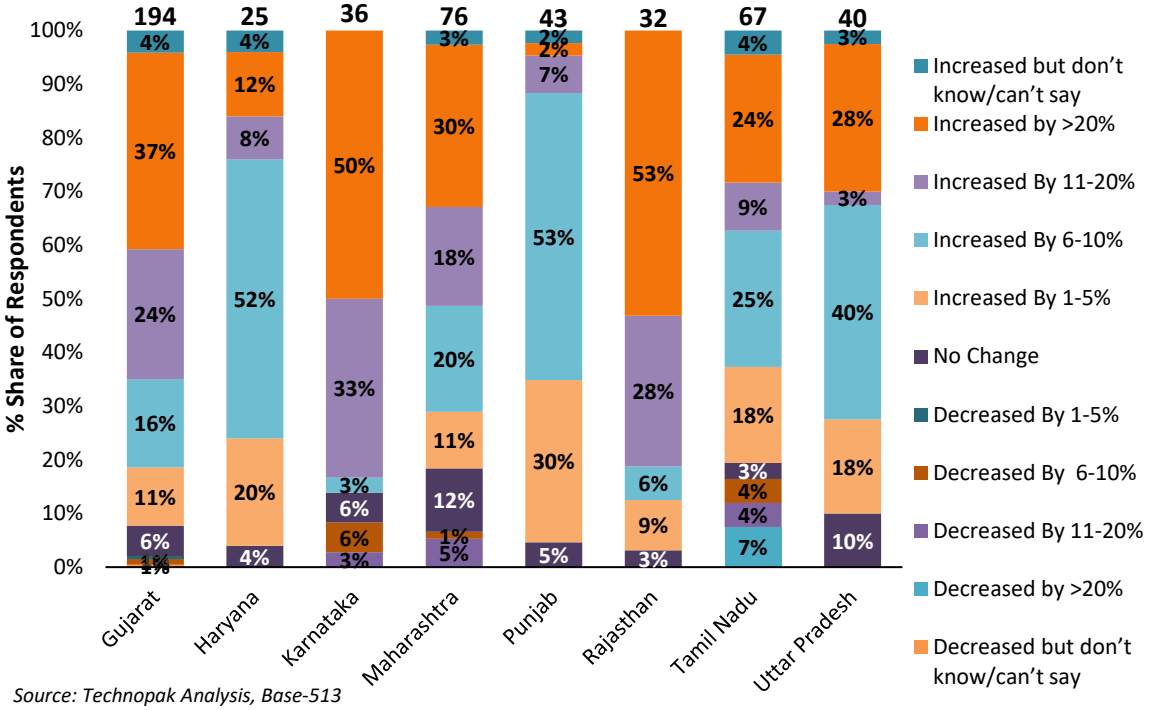
Exhibit 244: Change in Annual Sales - Segment Wise



Source: Technopak Analysis, Base-513

Among states, Rajasthan and Karnataka have witnessed high percentage increase in annual sales of >20% due to TUFS responded by ~50% of their respondents. Punjab has witnessed lesser increase in annual sales (6-10%) responded by 53% of the 43 respondents.

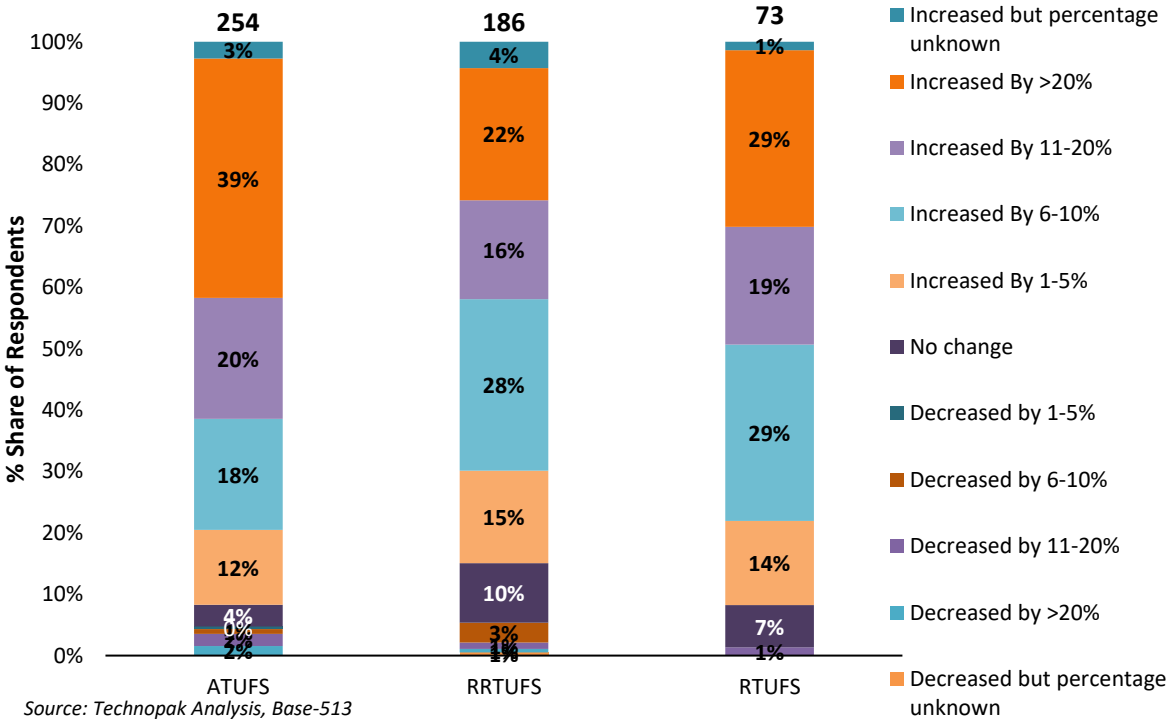
Exhibit 245: Change in Annual Sales - Geography Wise



Source: Technopak Analysis, Base-513

Across schemes, the highest increase in annual sales was exhibited during ATUFS scheme with 39% of the respondents suggesting an increase >20%.

Exhibit 246: Change in Annual Sales - Scheme Wise

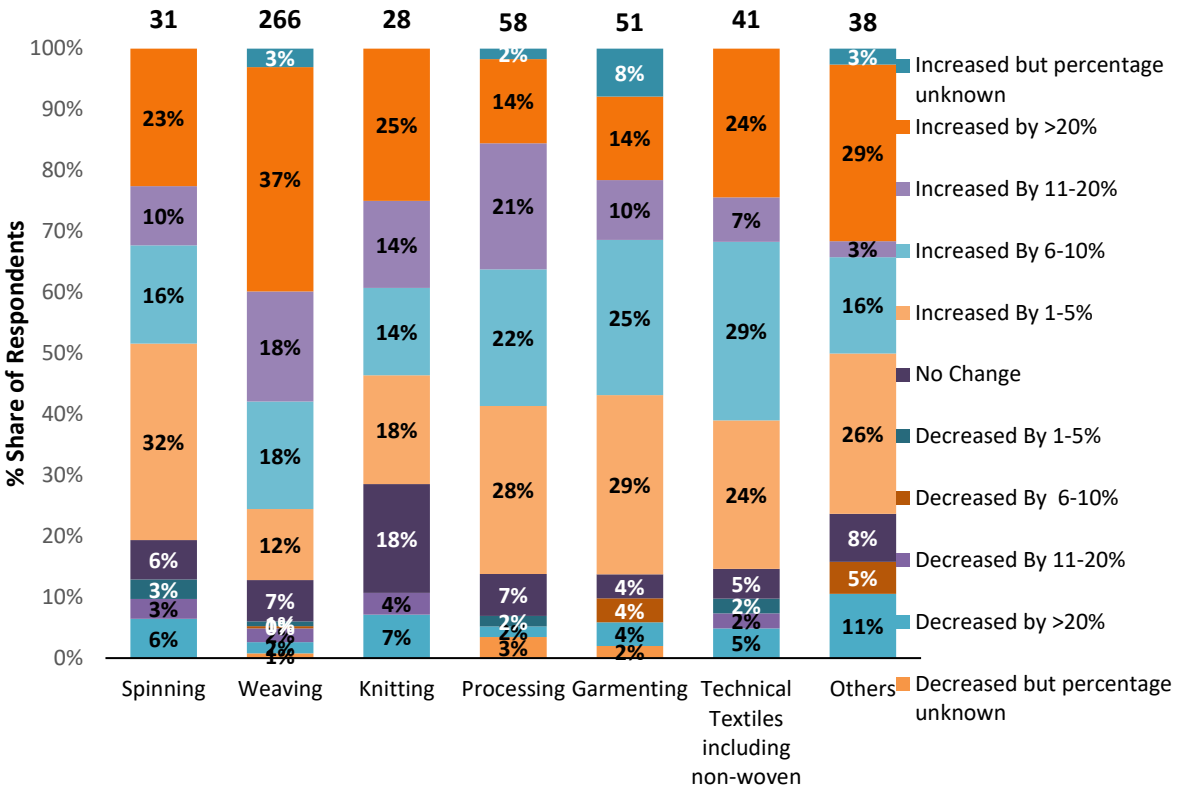


Source: Technopak Analysis, Base-513

Net Profit

Majority of respondents have witnessed an increase in net profit with weaving segment having highest positive response of 63% for profit increase greater than 6%. Some respondents in Spinning (6%) and Knitting (7%) segments have witnessed high reduction in net profit of >20%. Net profits increment can be attributed to productivity improvement and wastage reduction.

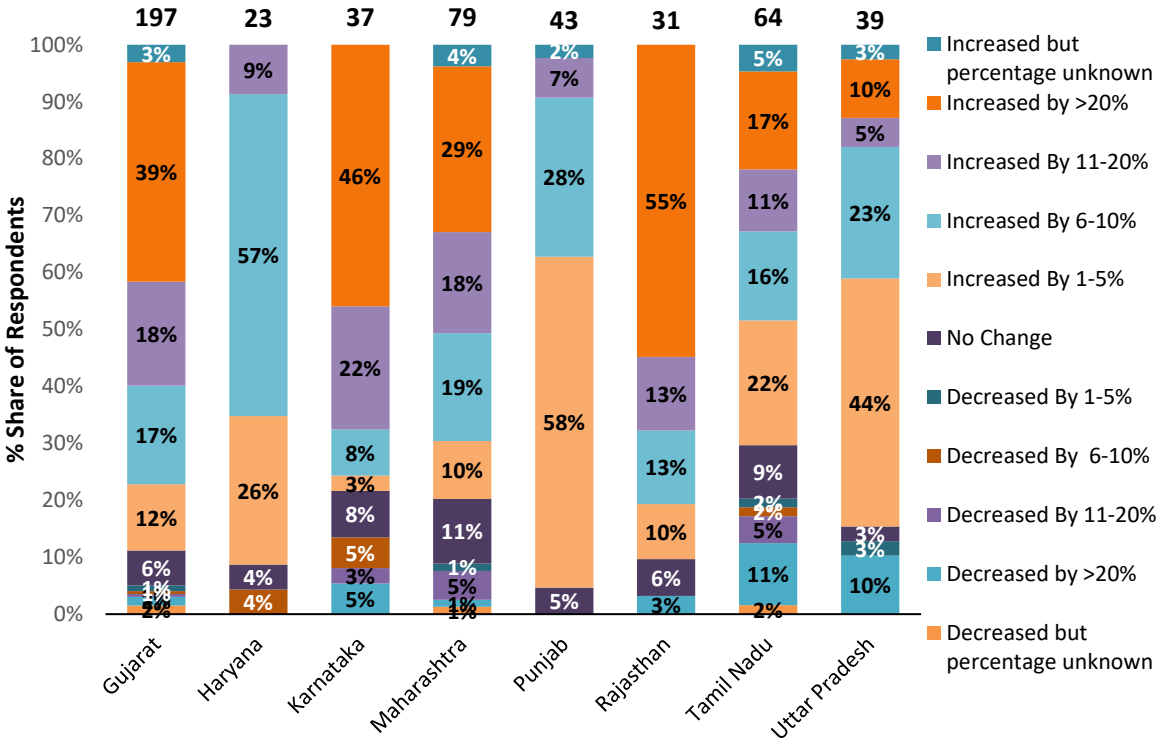
Exhibit 247: Change in Net Profit - Segment Wise



Source: Technopak Analysis, Base-513

Among states, Rajasthan (55%), Karnataka (46%) and Gujarat (39%) have witnessed high percentage increase in net profit of >20% due to TUFS. Tamil Nadu has witnessed decrease in net profits responded by 22% of the 64 respondents.

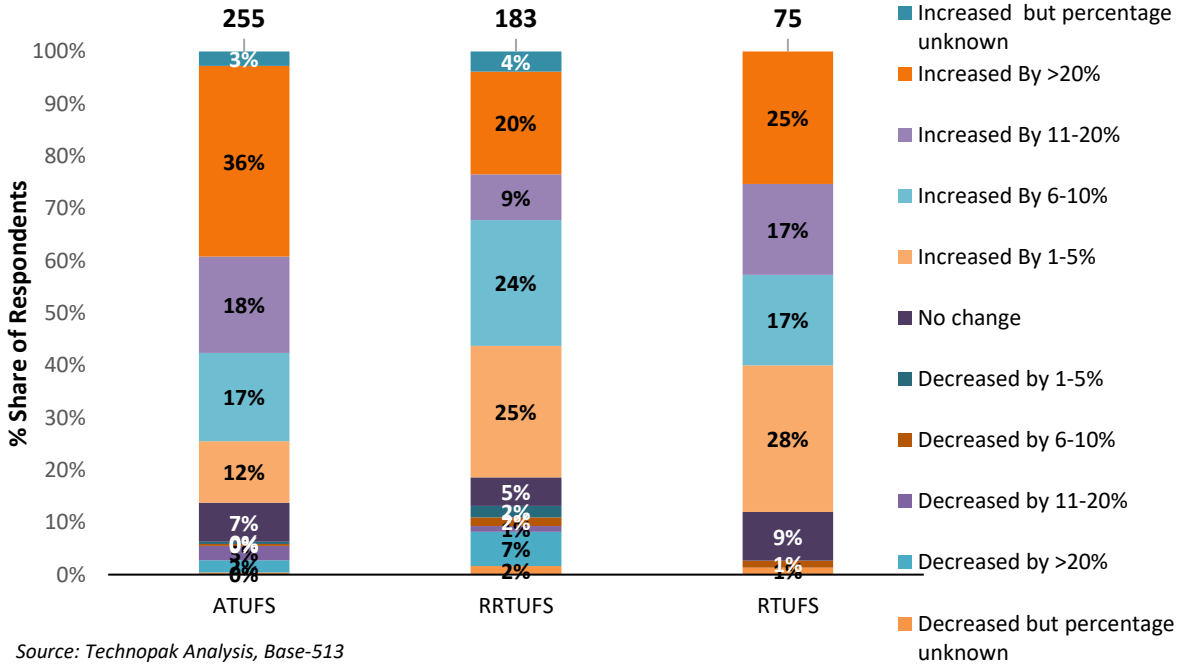
Exhibit 248: Change in Net Profit - Geography Wise



Source: Technopak Analysis, Base-513

Across schemes, the highest increase in net profit was exhibited during ATUFS scheme with 36% of the respondents suggesting an increase >20%.

Exhibit 249: Change in Net Profit - Scheme Wise

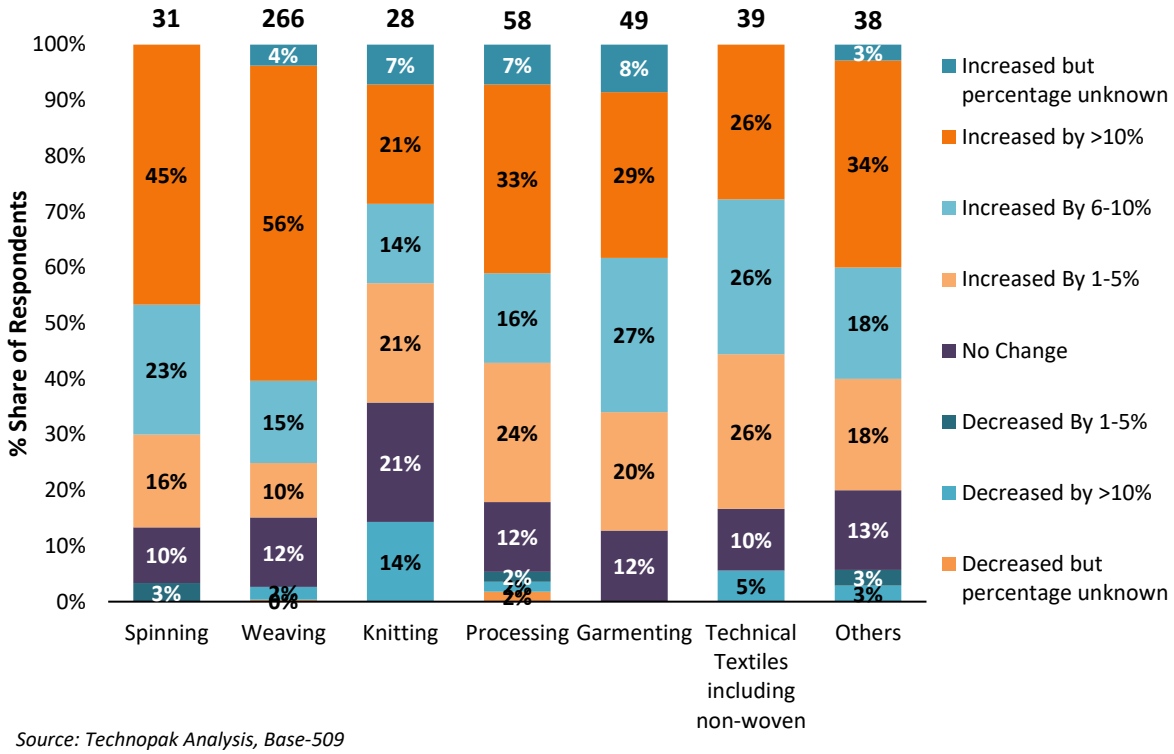


Source: Technopak Analysis, Base-513

Sales Price

Weaving segment has had tremendous gains >10% in the per unit sales price with 56% respondents suggesting the same. Spinning segment has also witnessed high increase in average sales price. Knitting respondents have witnessed lower sales price growth as compared to the other segments.

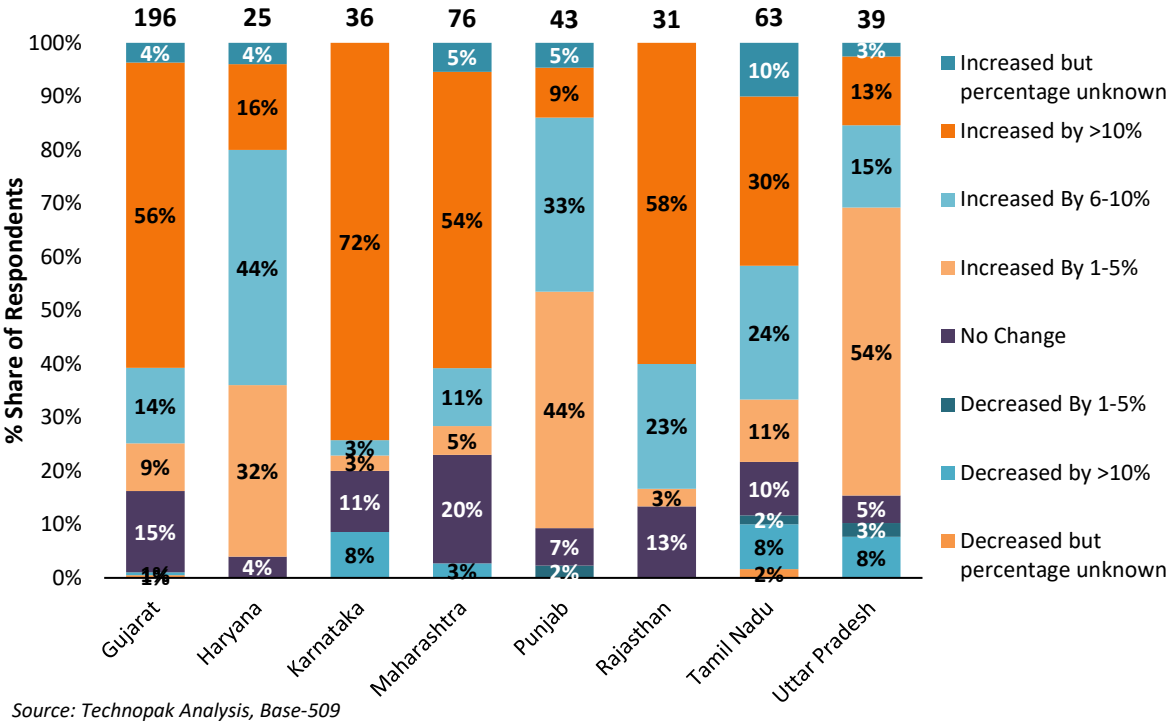
Exhibit 250: Change in Average Sales Price - Segment Wise



Source: Technopak Analysis, Base-509

Majority of the states, have witnessed high percentage increase in net profit due to TUFS. Karnataka has witnessed the highest growth in the average sales price (72% respondents responding >10% increases in sales price). However, some of the respondents (12% of the 64 respondents) of Tamil Nadu have witnessed decrease in average sales price.

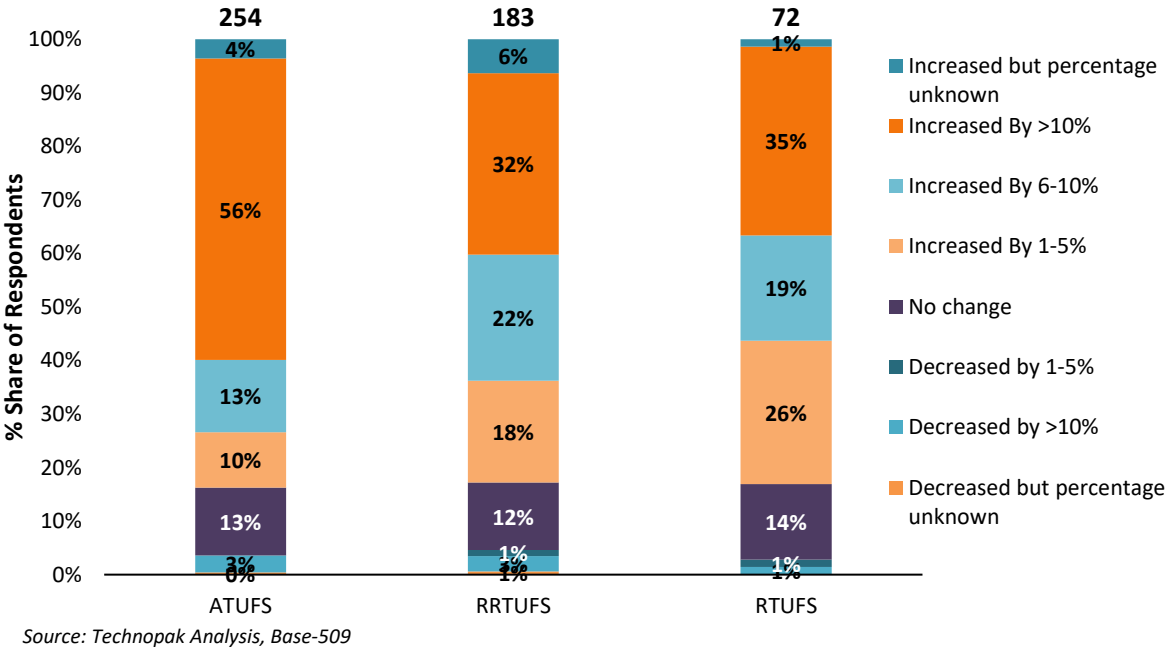
Exhibit 251: Change in Average Sales Price - Geography Wise



Source: Technopak Analysis, Base-509

Across schemes, the highest increase in average sales price was exhibited during ATUFS scheme with 56% of the respondents suggesting an increase >10%.

Exhibit 252: Change in Average Sales Price - Scheme Wise



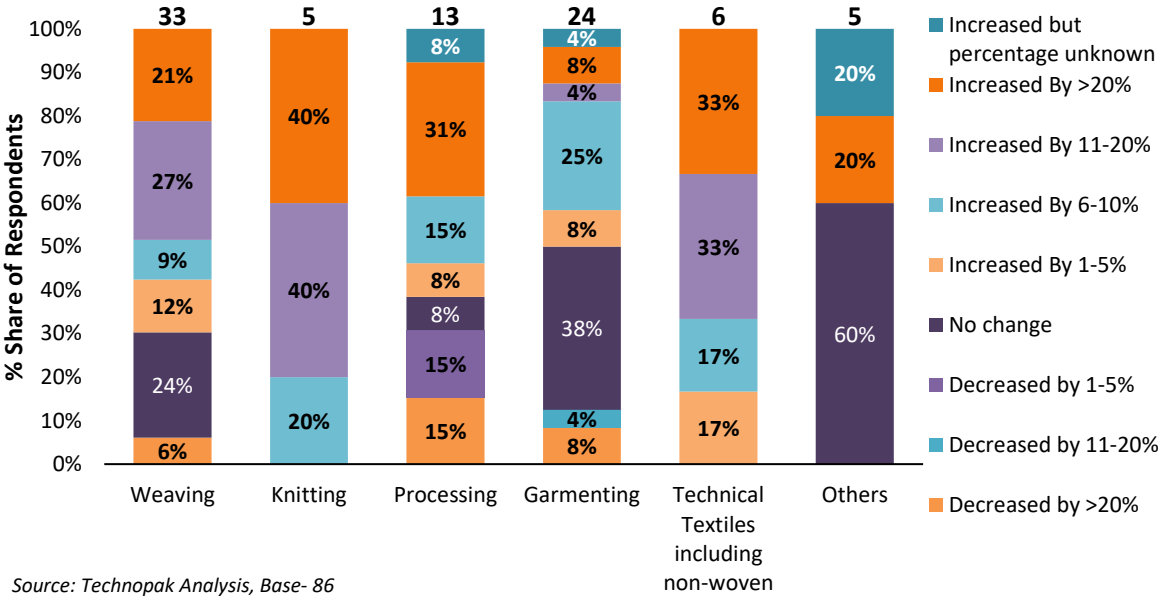
Source: Technopak Analysis, Base-509

Non-Beneficiaries

Annual Sales

Weaving has witnessed high increase in annual sales with 21 % of the respondents reporting >20% increase. Processing segment has witnessed increase of >20% in annual sales as reported by 31% of 13 respondents.

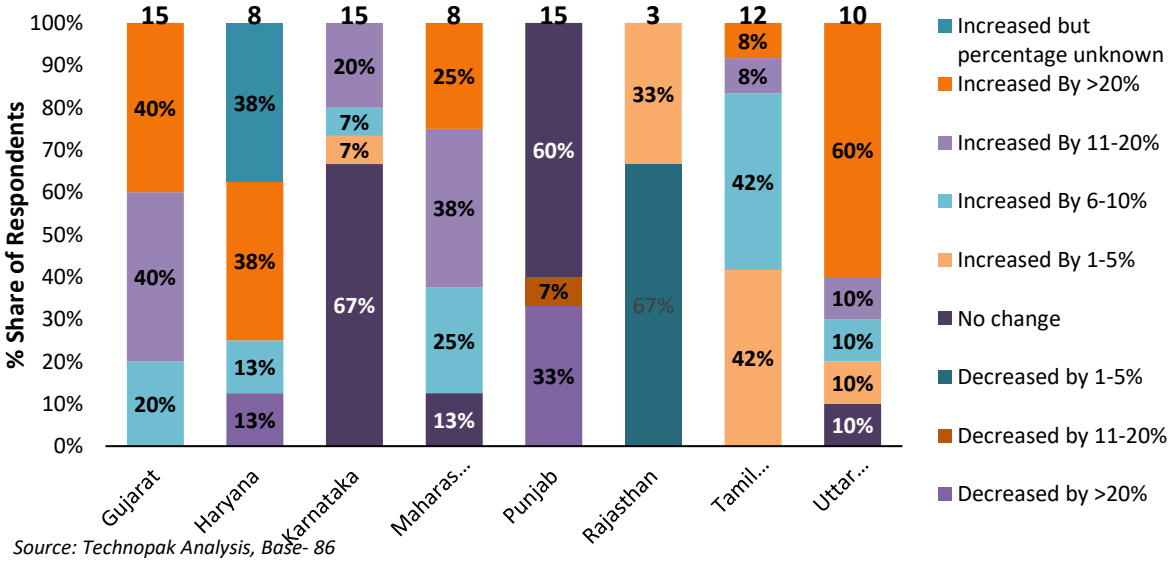
Exhibit 253: Change in Annual Sales - Segment Wise



Source: Technopak Analysis, Base- 86

Among states, Uttar Pradesh's non beneficiary respondents have witnessed increase in annual sales of >20% as responded by ~60% of their respondents. Punjab has witnessed decrease in annual sales >10% as responded by ~40% of their respondents.

Exhibit 254: Change in Annual Sales - Geography Wise

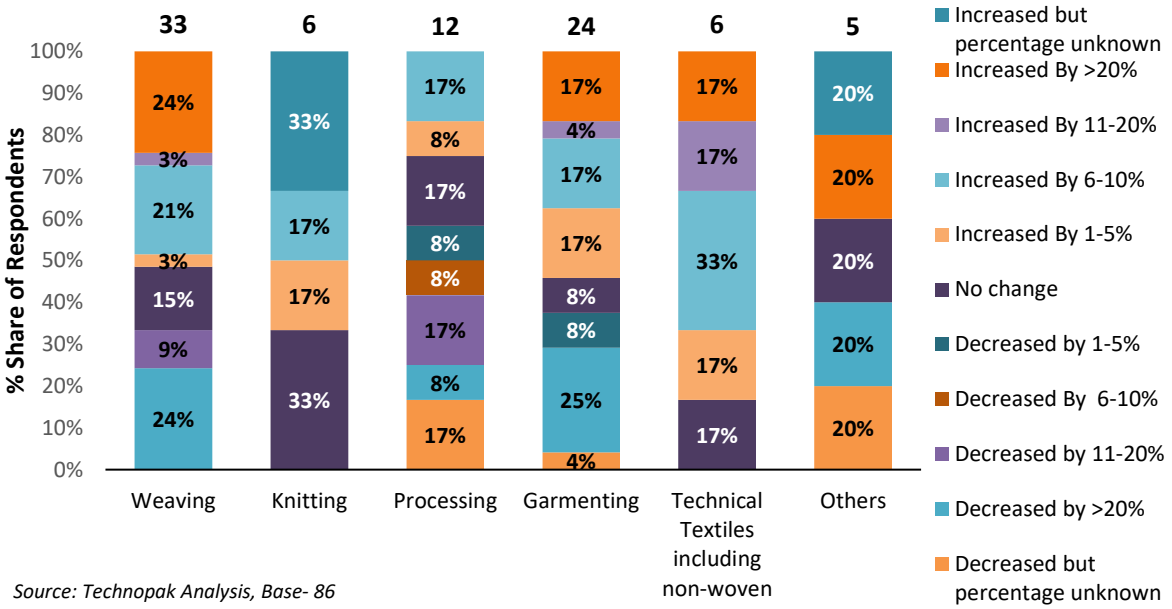


Source: Technopak Analysis, Base- 86

Net Profit

24% respondents in weaving segment have witnessed >20% increase in net profits. Significant number of respondents in weaving (24%), and garmenting (25%) segments have witnessed high reduction in net profit of >20%. In processing segment 58% of the respondents have witnessed loss in net profits.

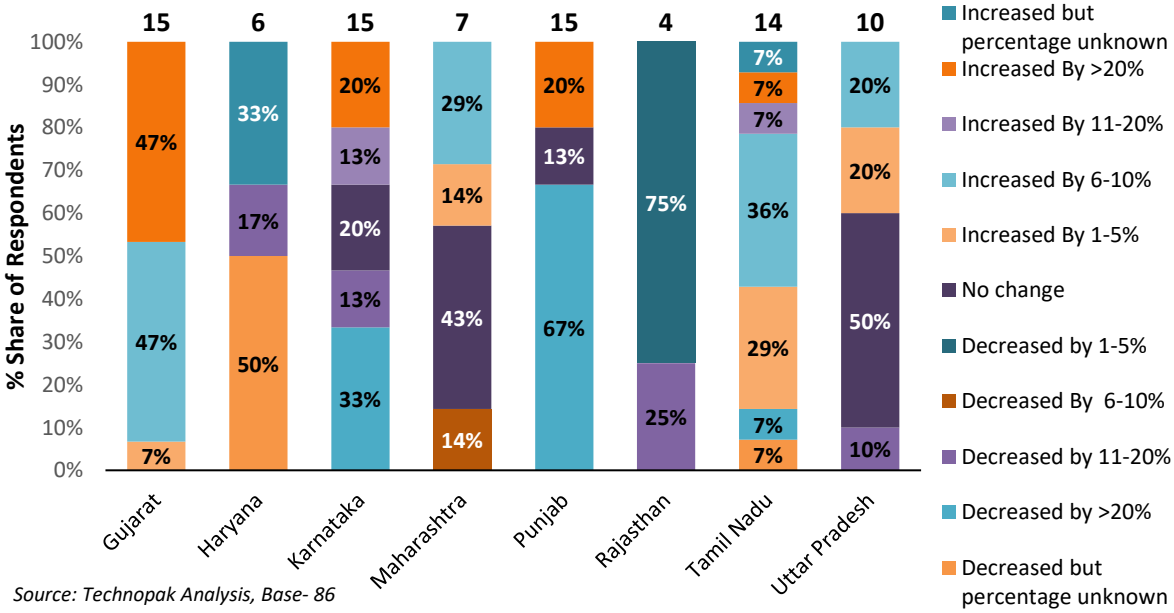
Exhibit 255: Change in Net Profit - Segment Wise



Source: Technopak Analysis, Base- 86

Among states, Punjab (67%) and Karnataka (33%) have witnessed decrease in net profit of >20%. Gujarat is the only state to report an increase in net profit with no unit holder responding decrease in net profits.

Exhibit 256: Change in Net Profit - Geography Wise

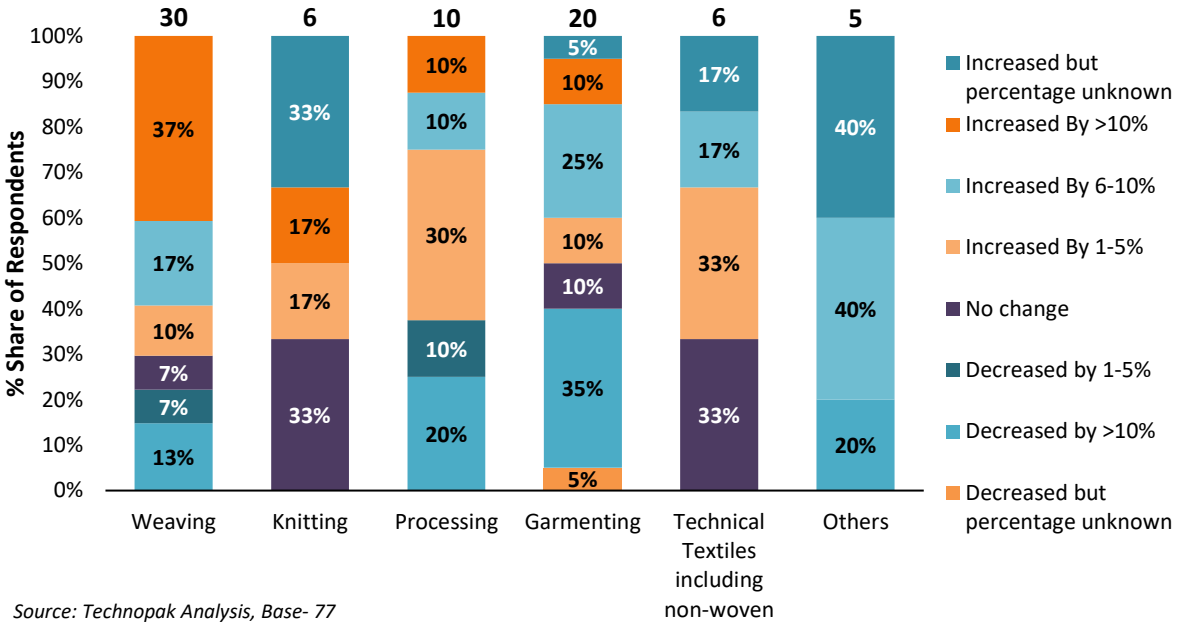


Source: Technopak Analysis, Base- 86

Sales Price

Weaving segment has had tremendous gains >10% in the per unit sales price with 37% respondents suggesting the same. Garmenting segment has witnessed decrease in average sales price with 35% responses indicating >10% decrease.

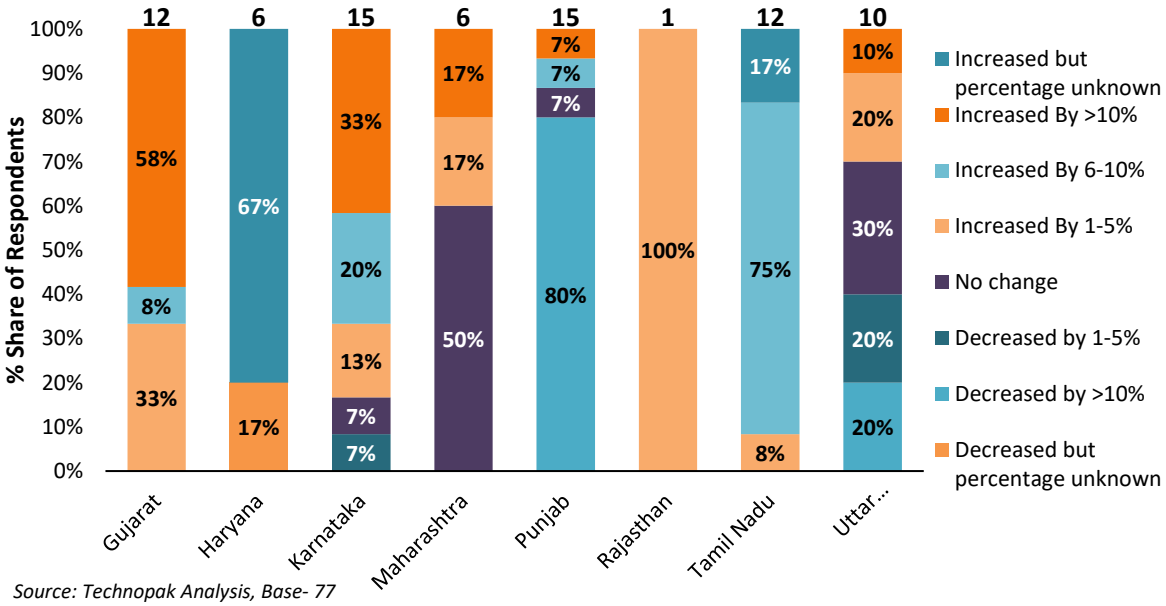
Exhibit 257: Change in Average Sales Price - Segment Wise



Source: Technopak Analysis, Base- 77

Non-beneficiaries' respondents in Gujarat (58% of the 12 respondents) have witnessed increase in average sales price >10%. However, respondents in Punjab have witnessed a decline in the average sales price (80% of respondents responding >10% decrease in sales price).

Exhibit 258: Change in Average Sales Price - Geography Wise



Source: Technopak Analysis, Base- 77

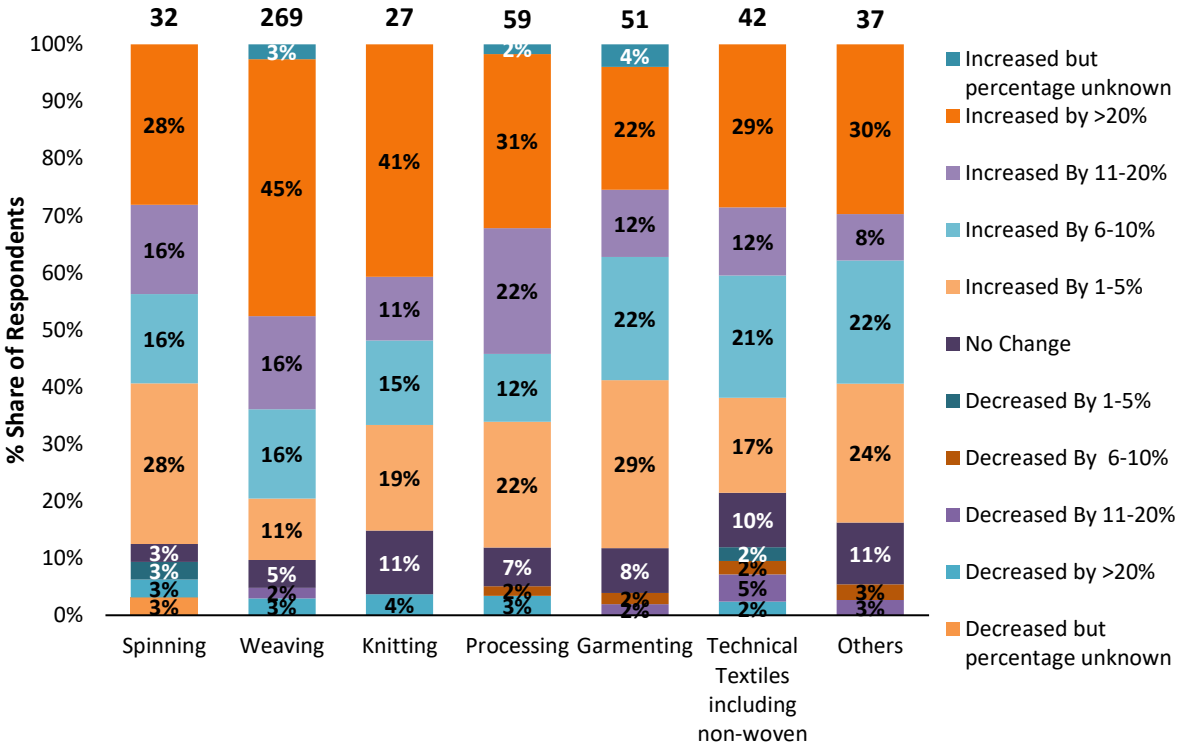
PRODUCTION AND PRODUCTIVITY

Beneficiaries

Production Volume

Most of the respondents from all sectors have witnessed high growth in production volume as a result of productivity improvement; however, 11% of technical textiles' sector respondents have reported significant production volume losses. 77% of weaving unit respondents have witnessed increase in production volume >5%.

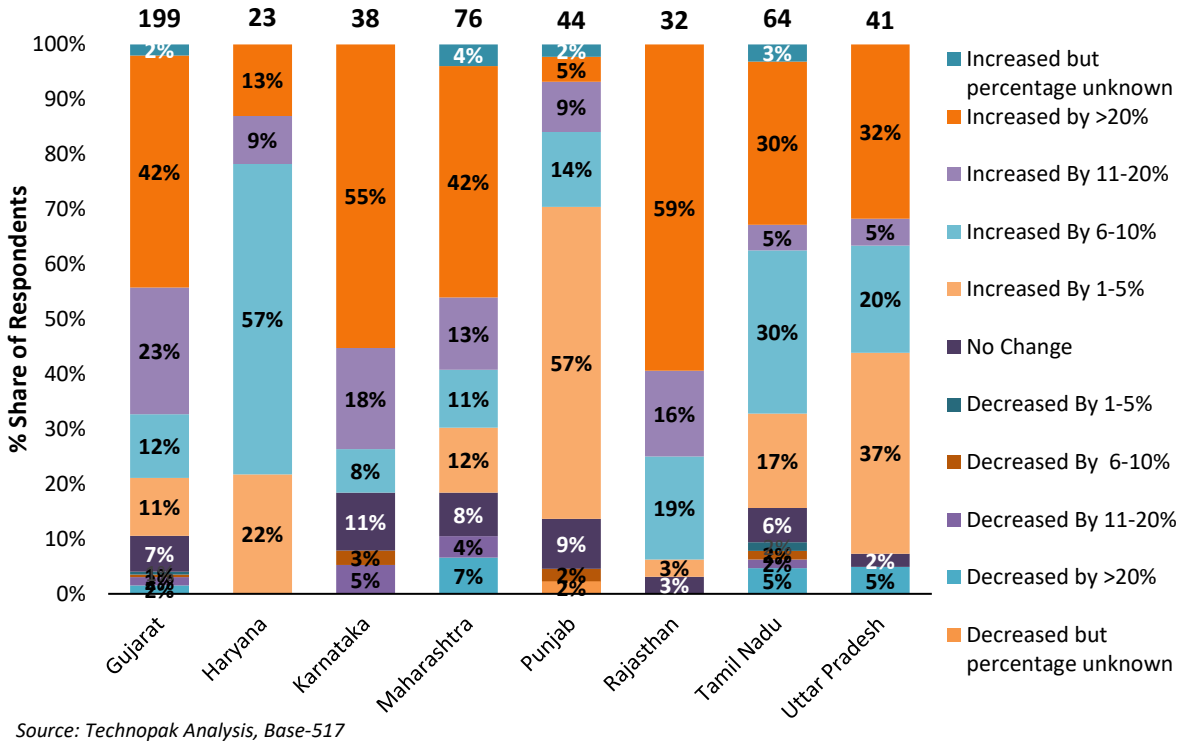
Exhibit 259: Change in Production Volume (%) - Segment Wise



Source: Technopak Analysis, Base-517

Among states, Rajasthan (59%), Karnataka (55%) and Gujarat (42%) have witnessed high percentage increase in production volume of >20% due to TUFS. 57% of the respondents in Haryana have witnessed an increase in production volume between 6-10%.

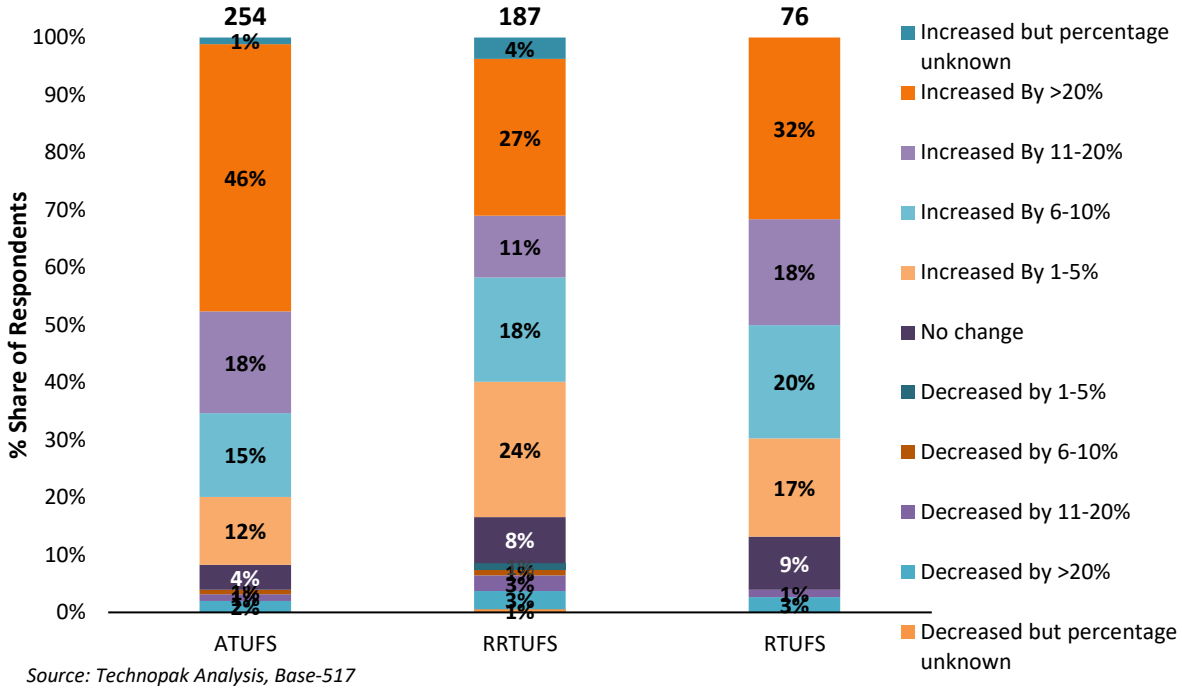
Exhibit 260: Change in Production Volume (%) - Geography Wise



Source: Technopak Analysis, Base-517

Across schemes, the highest increase in production volume was exhibited during ATUFS scheme with 46% of the respondents suggesting an increase >20%.

Exhibit 261: Change in Production Volume (%) - Scheme Wise



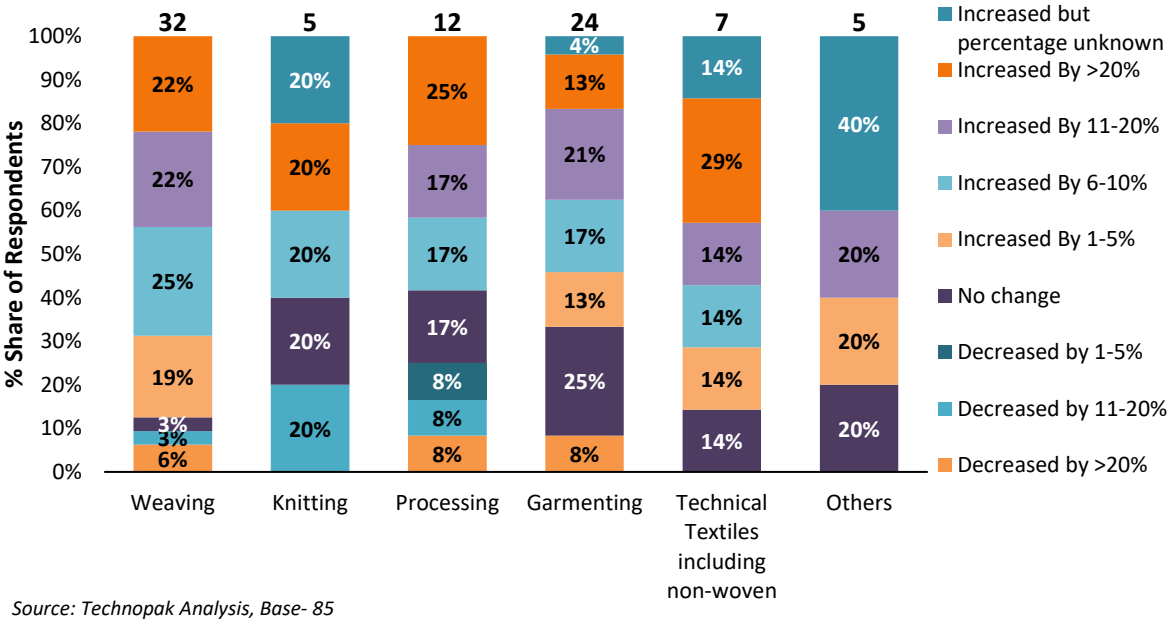
Source: Technopak Analysis, Base-517

Non-Beneficiaries

Production Volume

Most of the respondents from all sectors have witnessed high growth in production volume. 69% of weaving unit respondents have witnessed increase in production volume >5%.

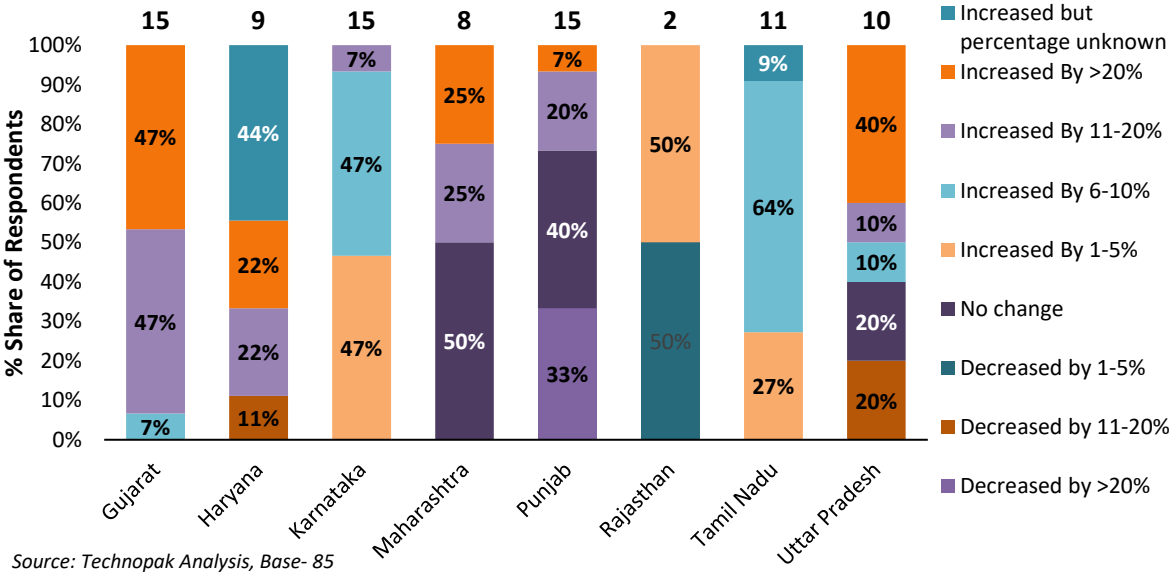
Exhibit 262: Change in Production Volume (%) - Segment Wise



Source: Technopak Analysis, Base- 85

Among states, 94% respondents in Gujarat have witnessed increase in production volume of >10% due to TUFS. 33% of the respondents in Punjab have witnessed a decrease in production volume <20%. 20% of the respondents in Uttar Pradesh witnessed a decrease in production volume between 11-20%.

Exhibit 263: Change in Production Volume (%) - Geography Wise



Source: Technopak Analysis, Base- 85

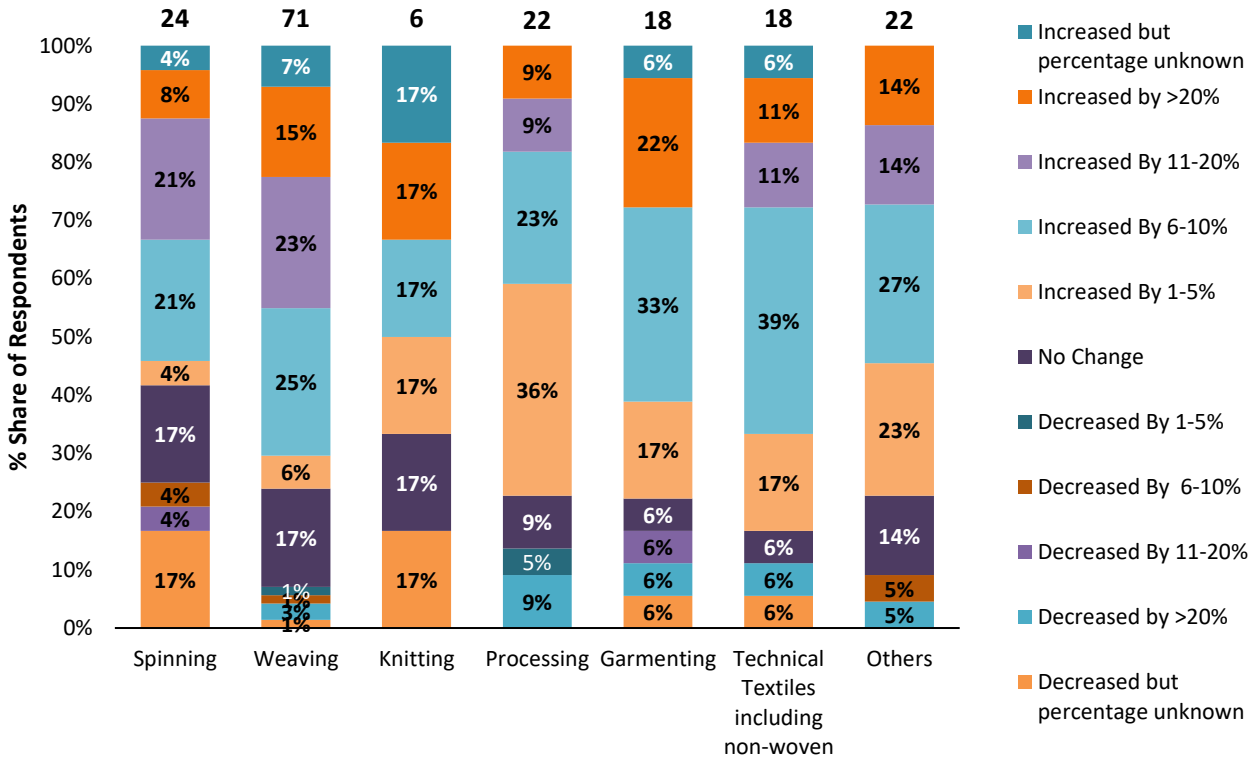
EXPORTS

Beneficiaries

Value of Exports

Majority of the segments have witnessed an increase in exports value with technical textile segment having highest positive response of 84% for export increase. Garmenting segment respondents have witnessed highest increase in value of exports >20%. Some respondents in Spinning and Knitting have witnessed decrease in value of exports.

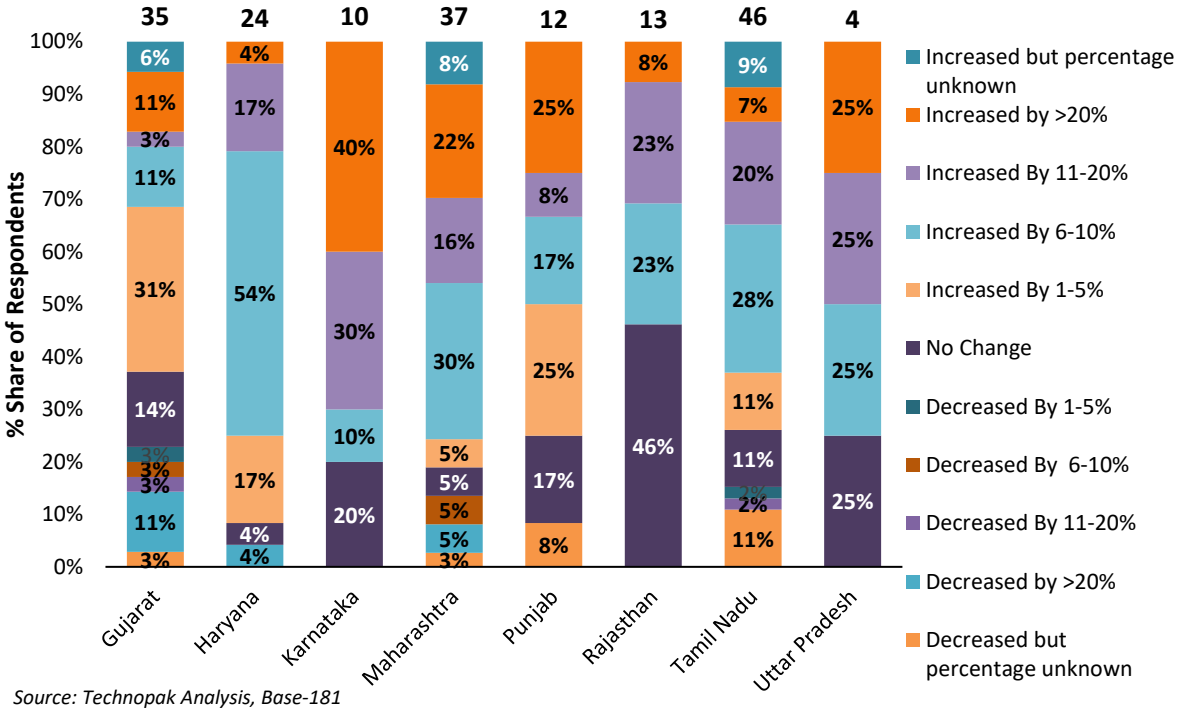
Exhibit 264: Change in Value of Exports (%) - Segment Wise



Source: Technopak Analysis, Base-181

Among states, in Karnataka 40% of 10 respondents have witnessed highest percentage increase in value of exports of >20% due to TUFS. 54% of the respondents in Haryana have witnessed an increase in value of exports between 6-10%.

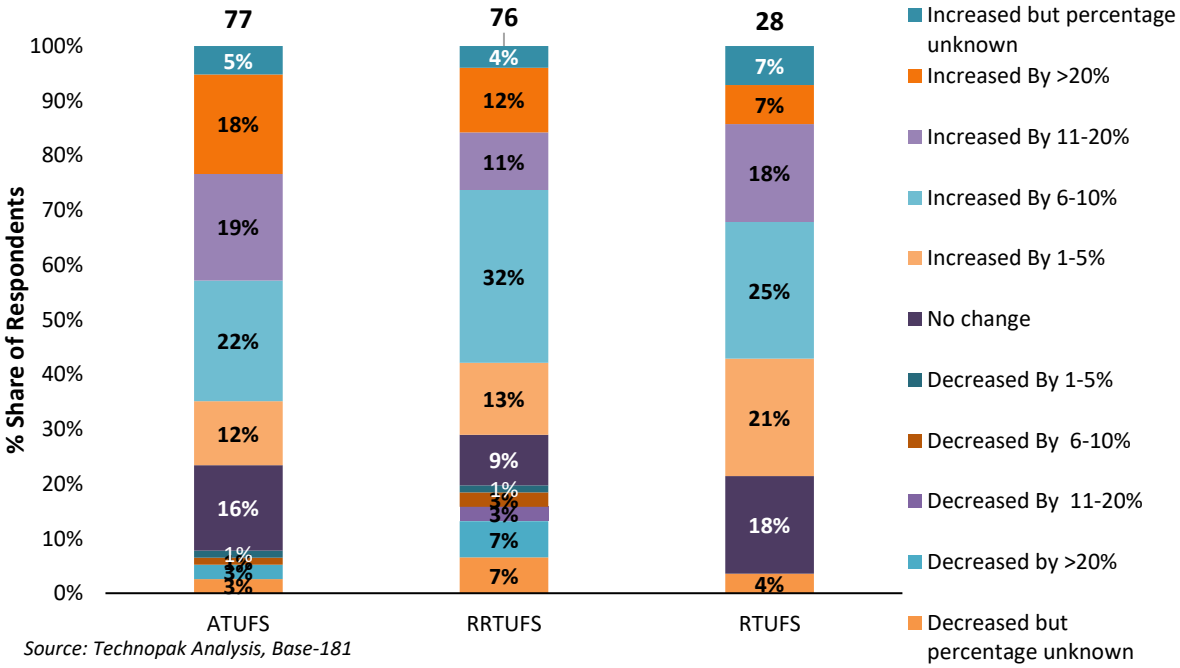
Exhibit 265: Change in Value of Exports (%) - Geography Wise



Source: Technopak Analysis, Base-181

Across schemes, the highest increase in value of exports was exhibited during ATUFS scheme with 76% of the respondents suggesting an increase in value of exports.

Exhibit 266: Change in Value of Exports (%) - Scheme Wise

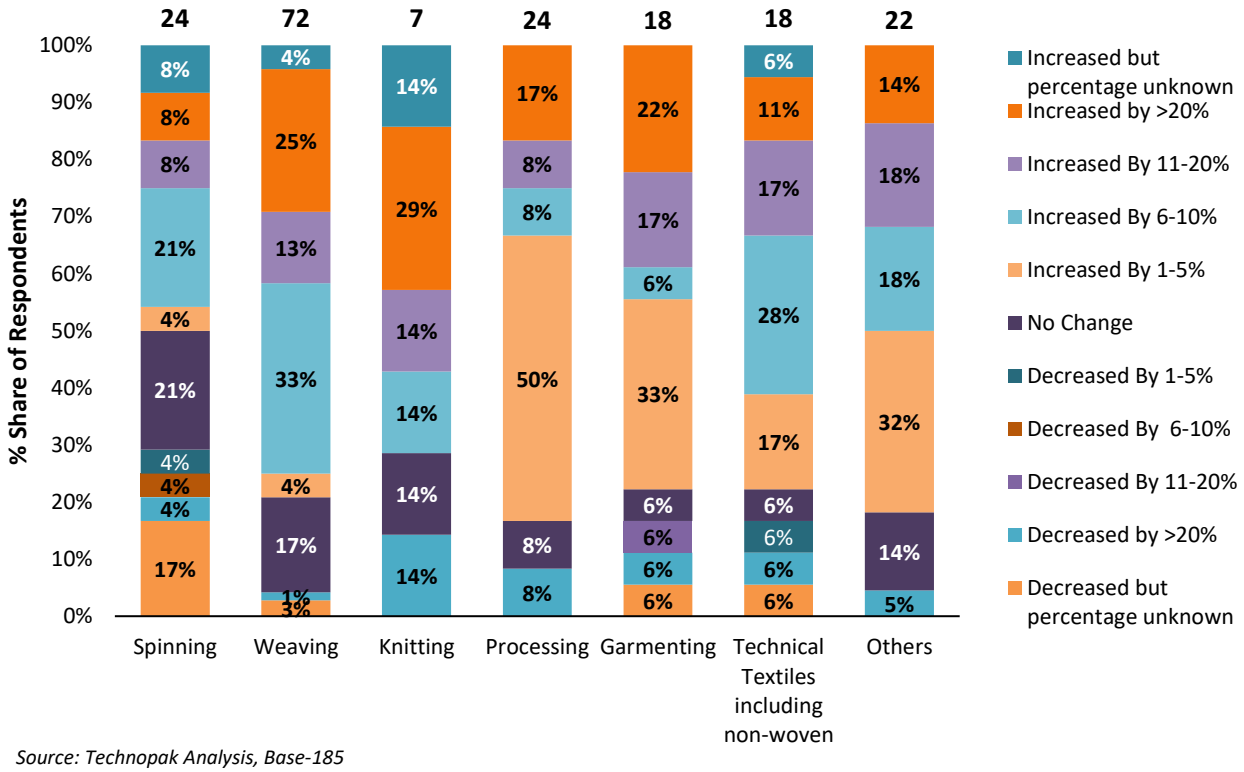


Source: Technopak Analysis, Base-181

Volume of Exports

Highest change in volume of exports has been observed by Weaving and Garmenting segments. Majority of segments have experienced export's volume growth > 6%. Processing has witnessed increase in volume of exports between 1-5% as reported by 50% of the 24 respondents. Export volume has increased due to above stated factors like product development, quality improvement and innovation.

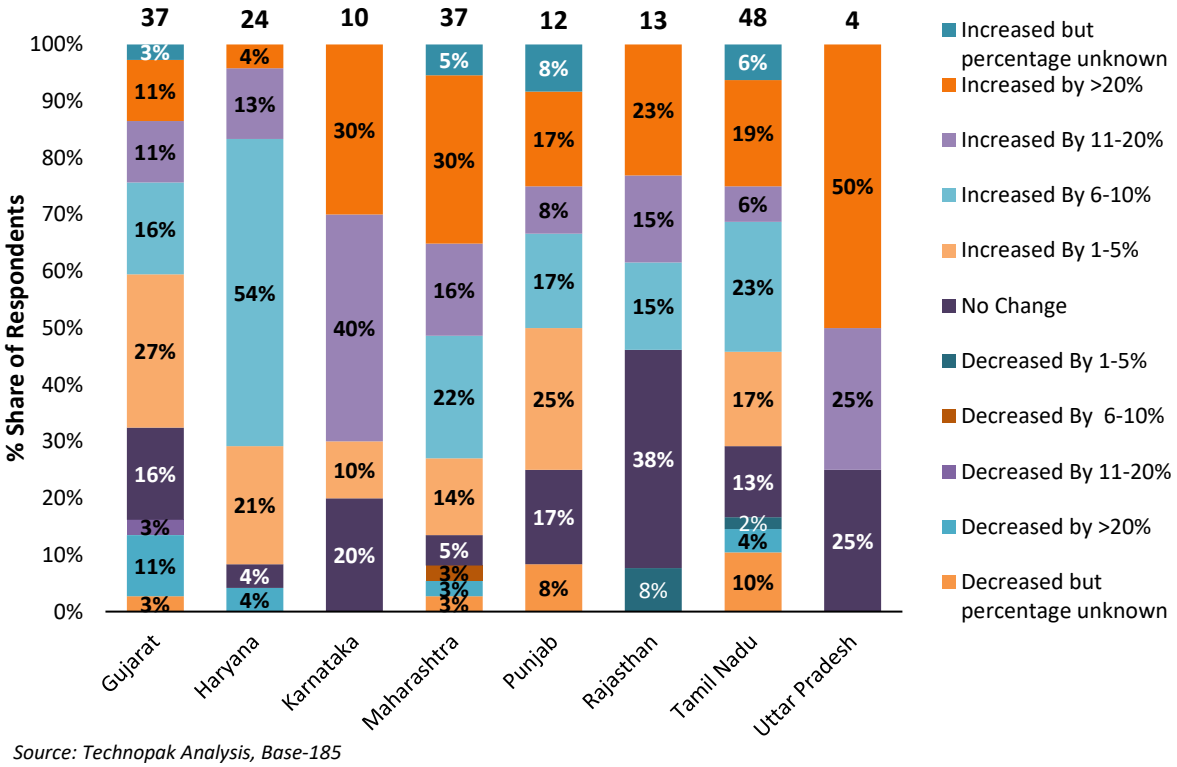
Exhibit 267: Change in Volume of Exports (%) - Segment Wise



Source: Technopak Analysis, Base-185

Among states, in Maharashtra, 30% of 37 respondents have witnessed highest percentage increase in volume of exports of >20% due to TUFS. 54% of the respondents in Haryana have witnessed an increase in volume of exports between 6-10%.

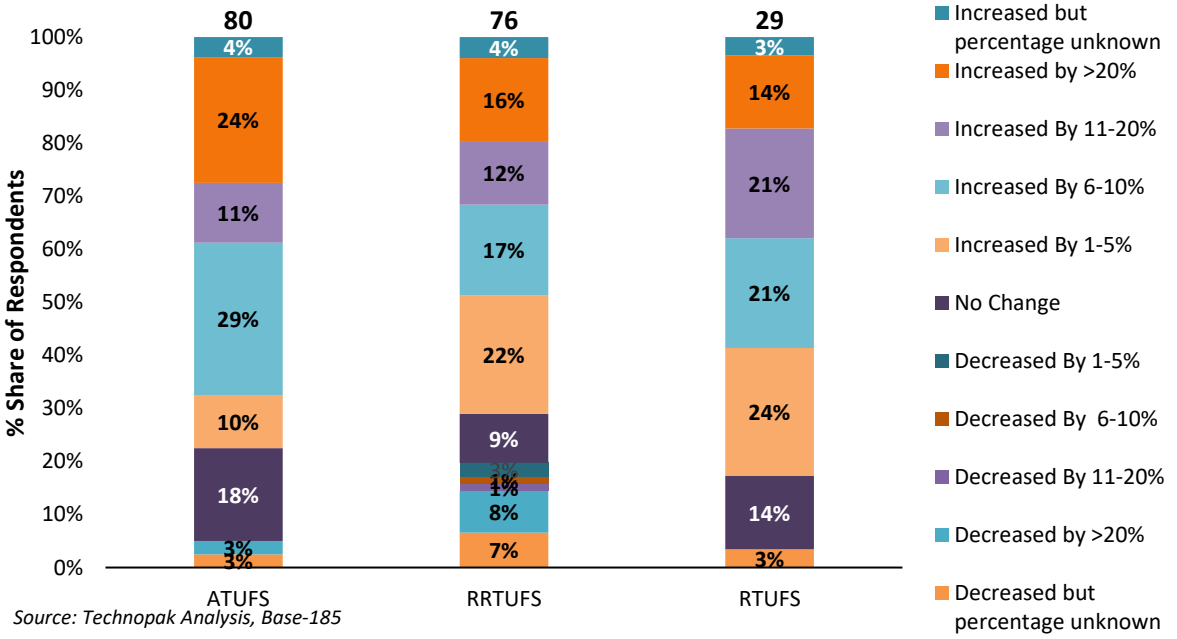
Exhibit 268: Change in Volume of Exports (%) - Geography Wise



Source: Technopak Analysis, Base-185

Across schemes, the highest increase in volume of exports of >20% was exhibited during ATUFS scheme with 24% of the respondents reporting the same.

Exhibit 269: Change in Volume of Exports (%) - Scheme Wise

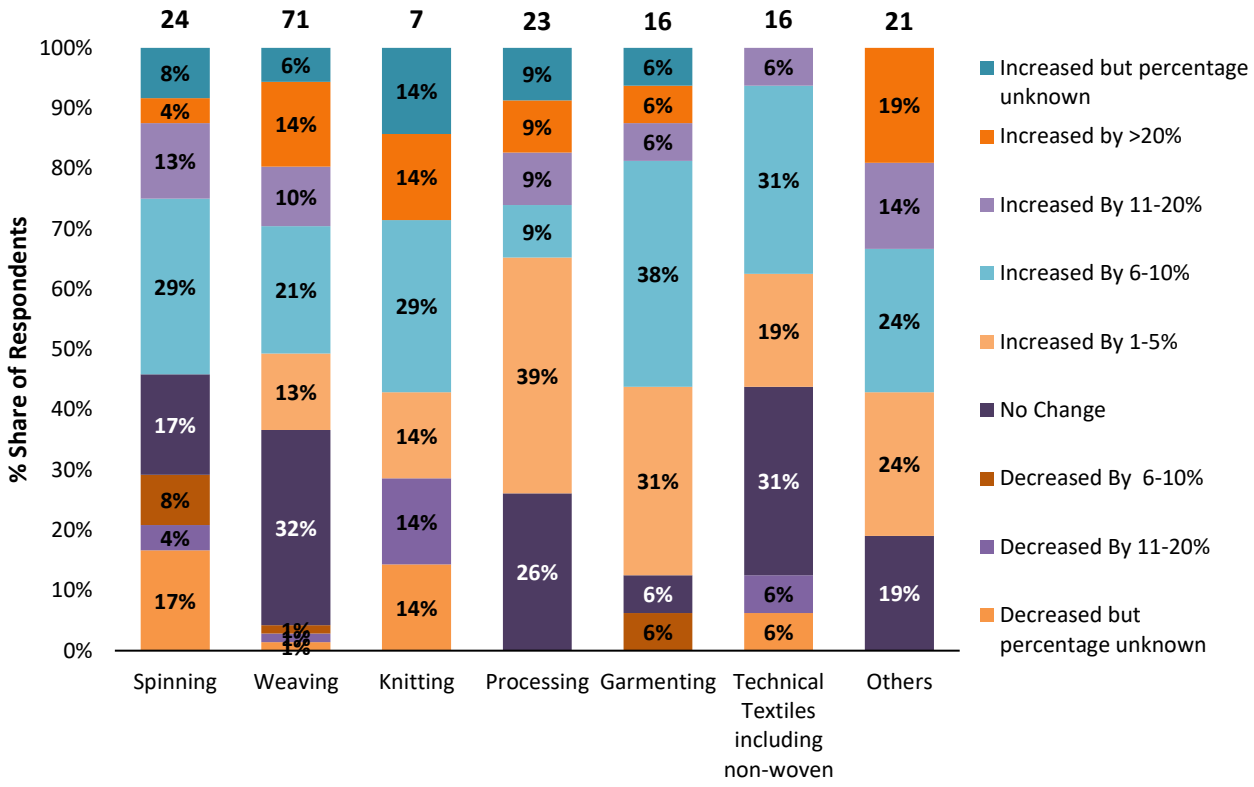


Source: Technopak Analysis, Base-185

Average Unit Price

Highest change in average unit price has been observed by Garmenting segment. Weaving and technical textile respondents' have indicated that almost one-third of them witnessed no change in average unit sales price. Average unit price has increased due to above stated factors like high value product mix, quality improvement and research and development.

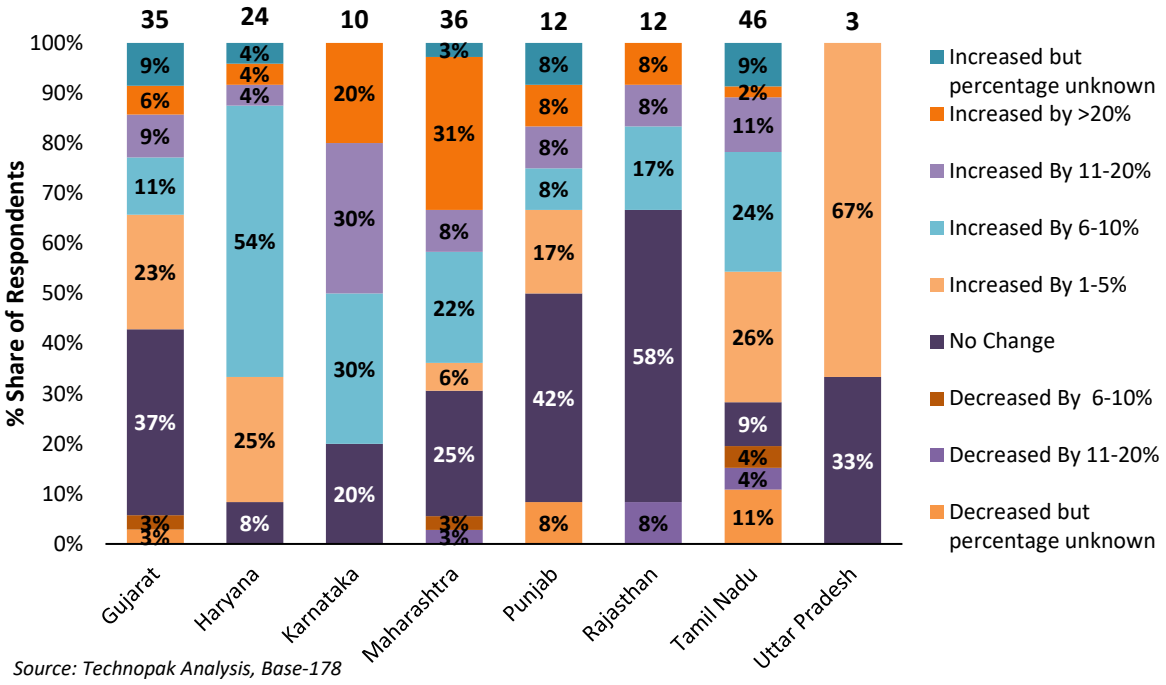
Exhibit 270: Change in Average Unit Price (%) - Segment Wise



Source: Technopak Analysis, Base-178

Among states, in Maharashtra 31% of 36 respondents have witnessed highest percentage increase in average unit price of >20% due to TUFS. 54% of the respondents in Haryana have witnessed an increase in average unit price between 6-10%.

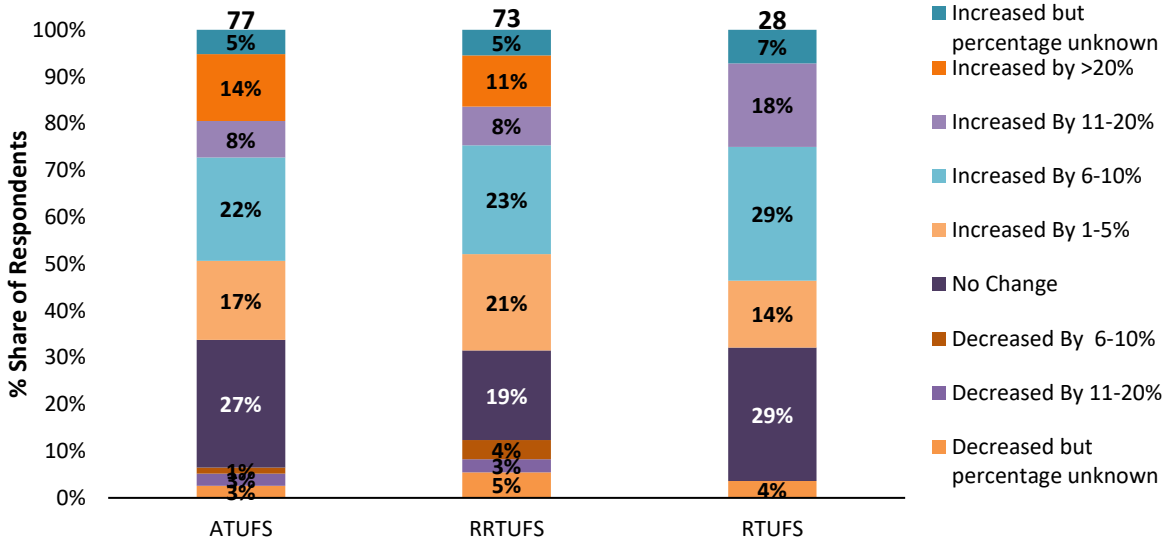
Exhibit 271: Change in Average Unit Price (%) - Geography Wise



Source: Technopak Analysis, Base-178

Across schemes, the highest increase in volume of exports of >20% was exhibited during ATUFS scheme with 24% of the respondents reporting the same.

Exhibit 272: Change in Average Unit Price (%) - Scheme Wise



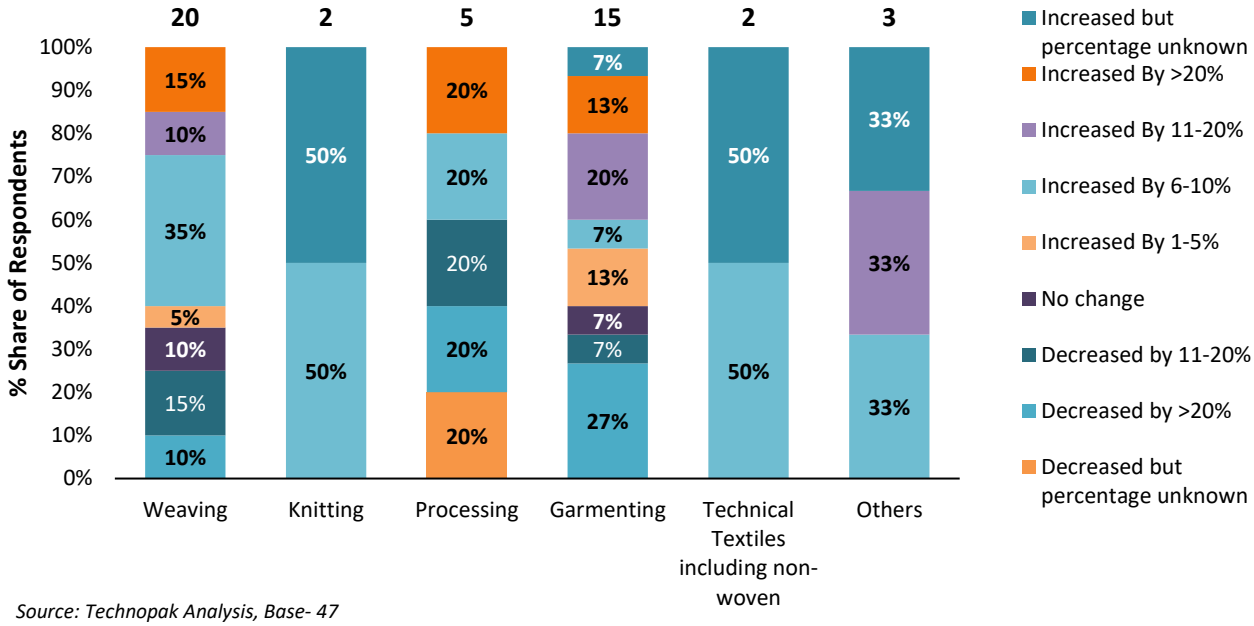
Source: Technopak Analysis, Base-178

Non-Beneficiaries

Value of Exports

According to responses by non-beneficiaries, 25% in weaving segment and 34% in garmenting segments have witnessed a decrease >11% in the value of exports.

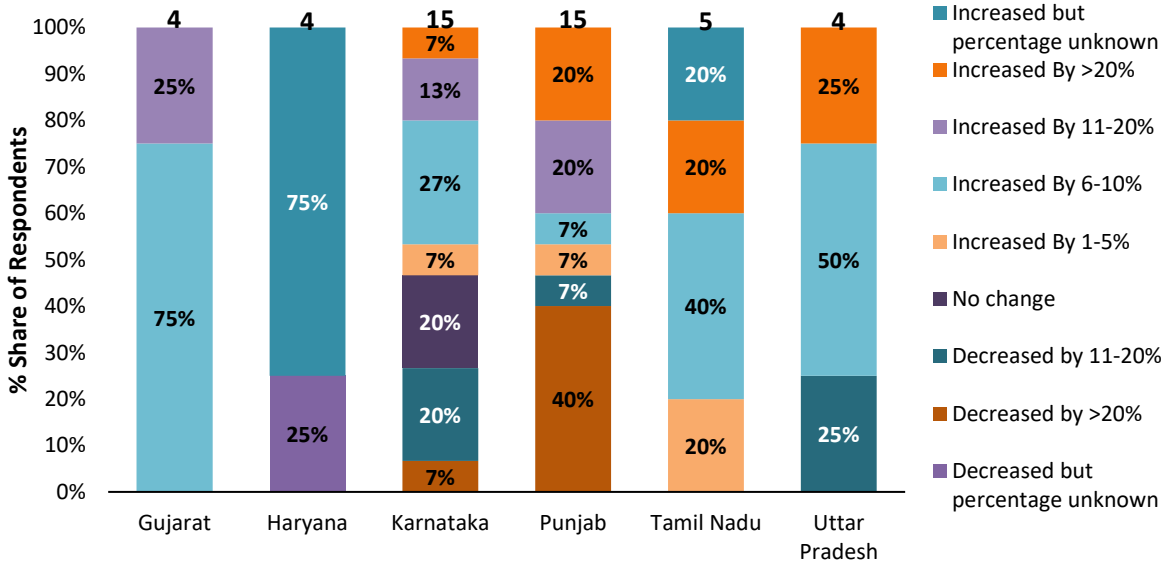
Exhibit 273: Change in Value of Exports (%) - Segment Wise



Source: Technopak Analysis, Base- 47

Among states, in Punjab 40% of 15 non-beneficiaries' respondents have witnessed highest percentage decrease in value of exports of >20%.

Exhibit 274: Change in Value of Exports (%) - Geography Wise

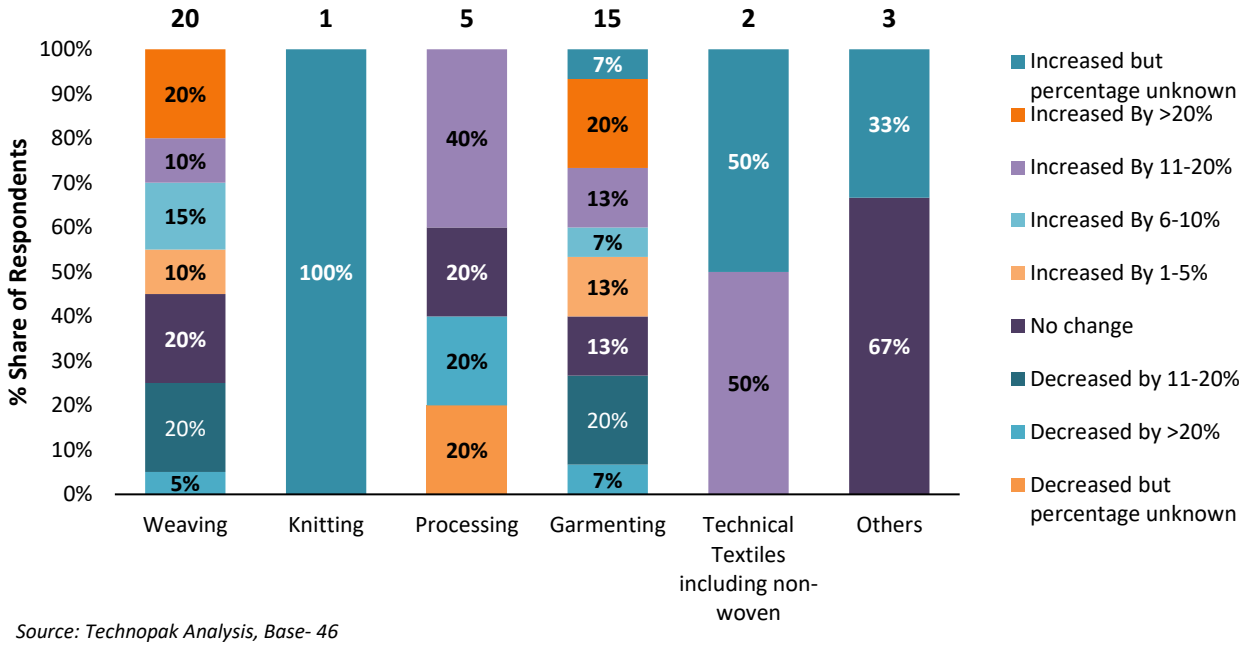


Source: Technopak Analysis, Base-47

Volume of Exports

According to responses by non-beneficiaries, 25% in weaving segment and 27% in garmenting segments have witnessed a decrease >11% in the volume of exports. Also, the increase in volume of exports >20% has been witnessed by 20% of non-beneficiary respondents both in weaving and garmenting.

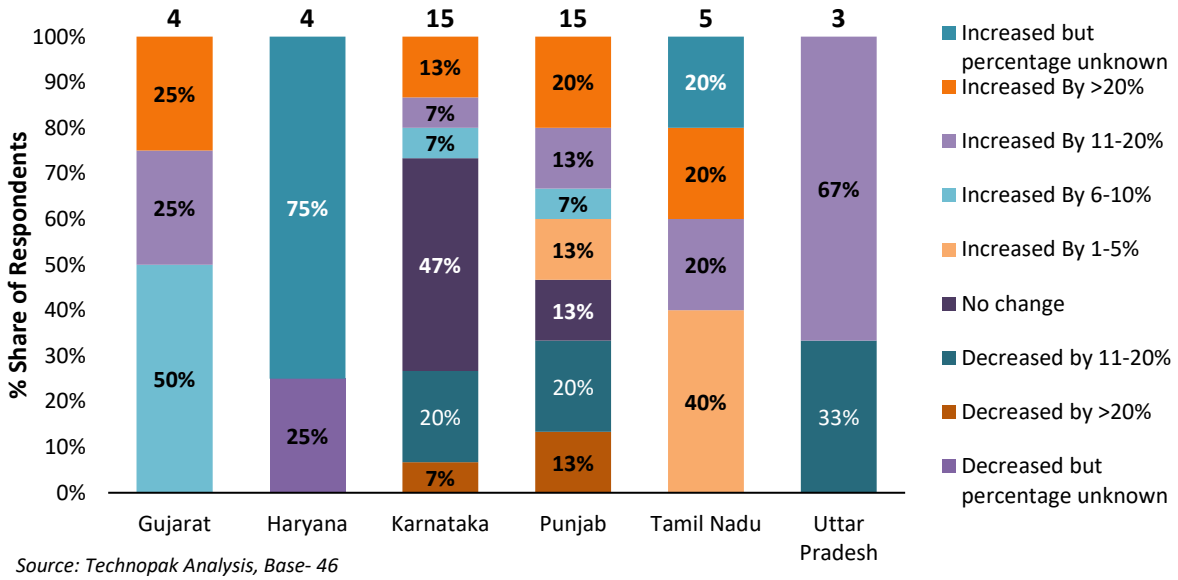
Exhibit 275: Change in Volume of Exports (%) - Segment Wise



Source: Technopak Analysis, Base- 46

Among states, in Punjab, 33% of 15 non-beneficiaries' respondents have witnessed highest percentage decrease in value of exports of >11%.

Exhibit 276: Change in Volume of Exports (%) - Geography Wise

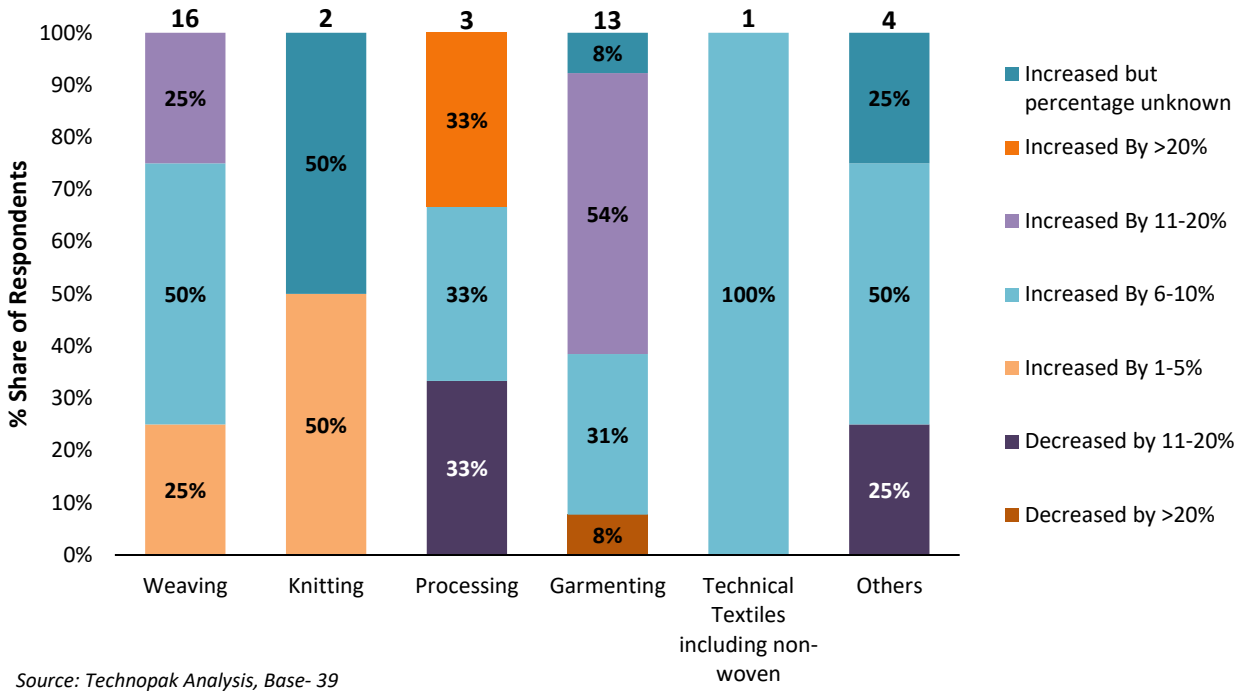


Source: Technopak Analysis, Base- 46

Average Unit Price

Highest change in average unit price has been observed by Garmenting segment with 54% of 13 respondents suggesting an increase between 11-20%.

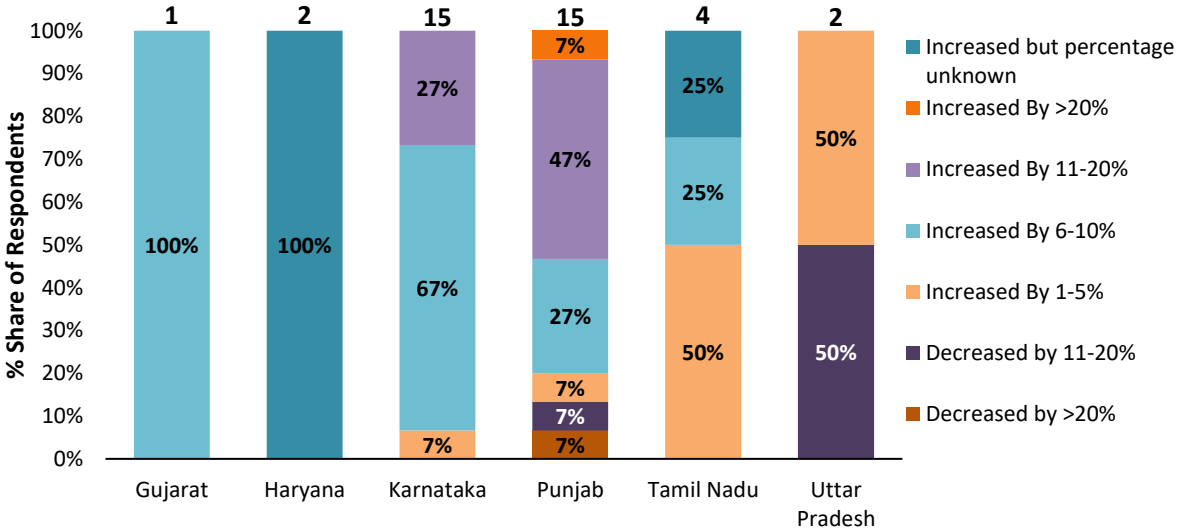
Exhibit 277: Change in Average Unit Price (%) - Segment Wise



Source: Technopak Analysis, Base- 39

Among states, in Punjab 47% of 15 non-beneficiaries' respondents have witnessed highest percentage increase in average unit price between 11-20%. 67% of the respondents in Karnataka have witnessed an increase in average unit price between 6-10%.

Exhibit 278: Change in Average Unit Price (%) - Geography Wise



Source: Technopak Analysis, Base- 39

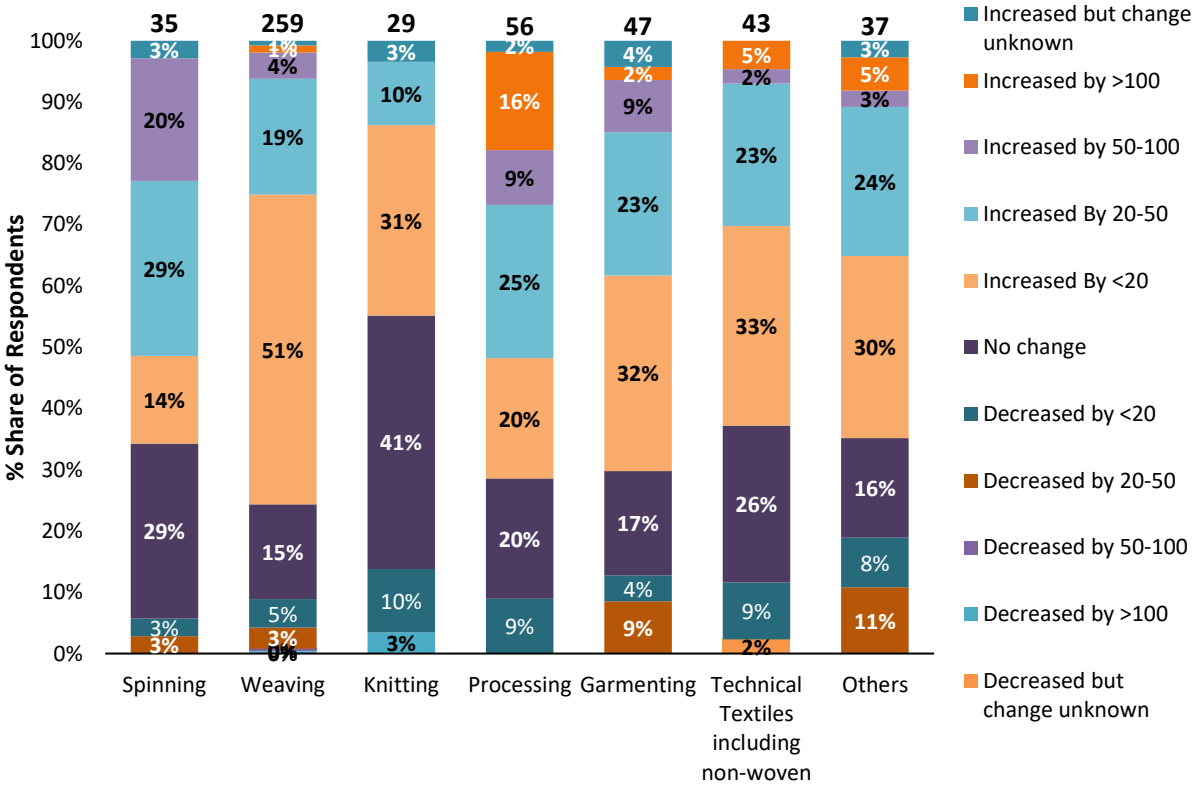
EMPLOYMENT GENERATION

Beneficiaries

Change in Total Manpower before and after Taking Loan

Total manpower has increased across all the segments. Processing segment has seen significant >100 manpower addition. Although, technology upgradation normally reduces the manpower requirement but no. of employees has been increased by capacity addition in this case. Capacity additions across the textile value chain have created new jobs for skilled as well as unskilled manpower.

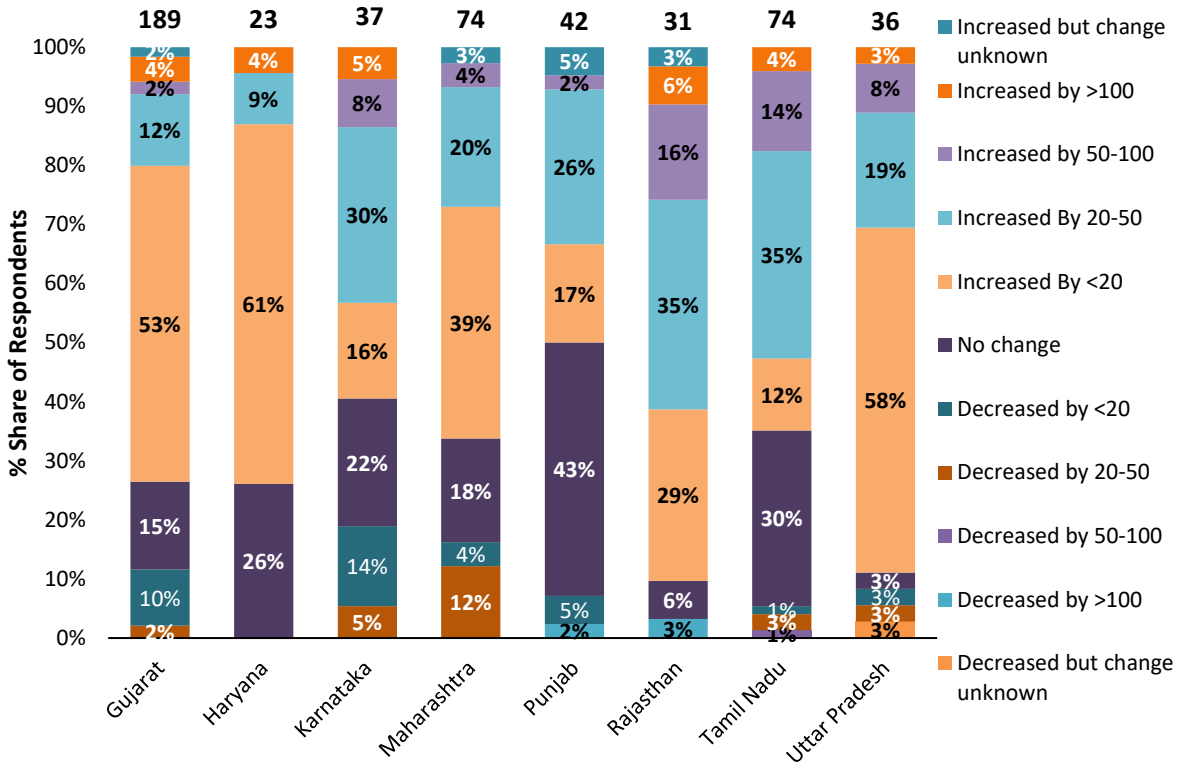
Exhibit 279: Change in Total Manpower - Segment Wise



Source: Technopak Analysis, Base- 506

Among states, Rajasthan and Tamil Nadu have witnessed highest percentage increase in total manpower of 20-50 due to TUFS. Majority of states have witnessed total manpower increase <20 while 12% of 74 of Maharashtra's respondents indicating a decrease between 20 and 50.

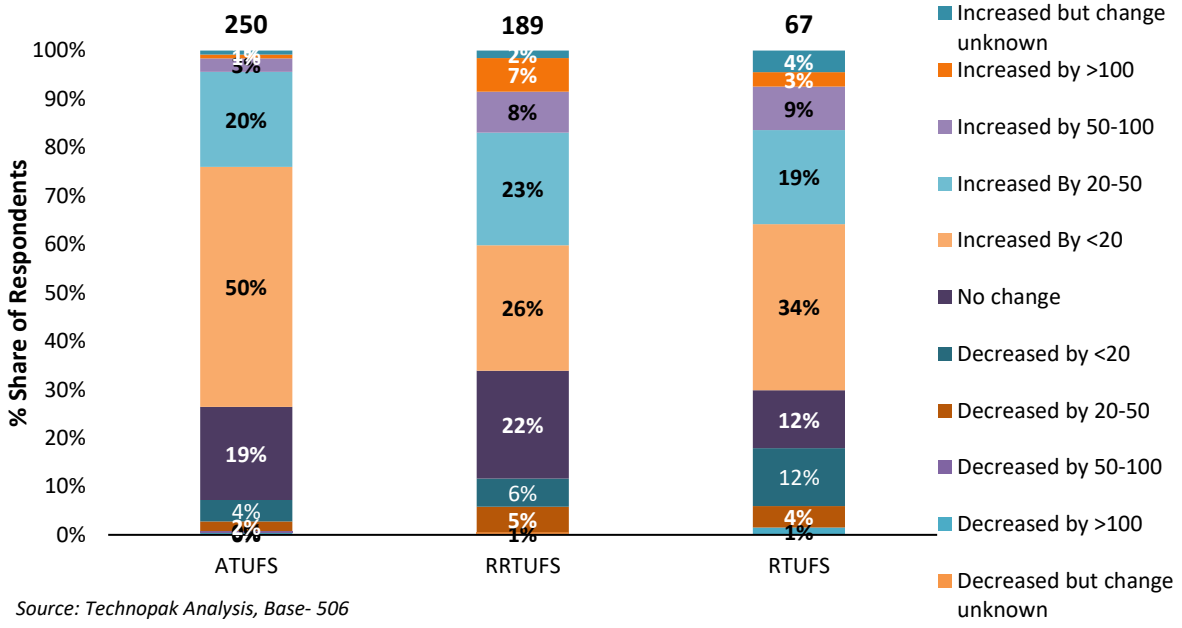
Exhibit 280: Change in Total Manpower - Geography Wise



Source: Technopak Analysis, Base- 506

Across schemes, during ATUFS scheme primarily increase in labour was <50 while during RTUFS and RRTUFS ~15% have achieved an increase of >50 in total manpower.

Exhibit 281: Change in Total Manpower - Scheme Wise

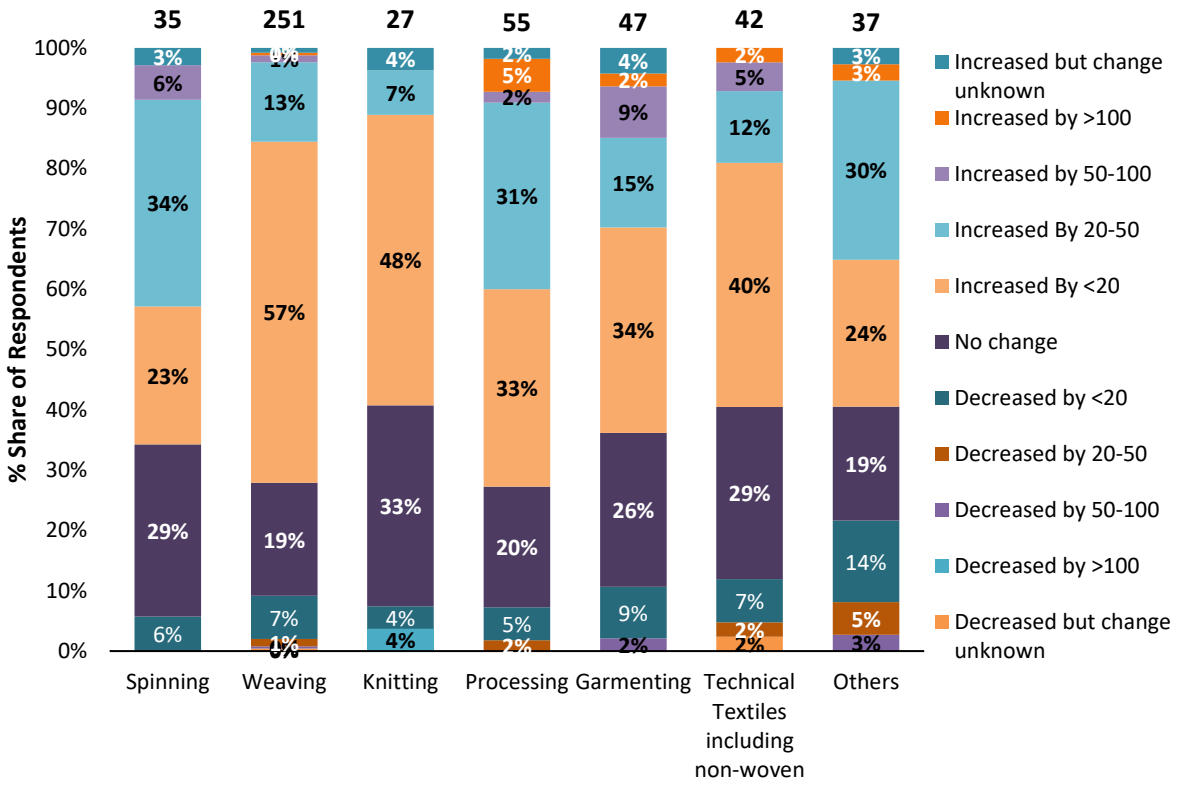


Source: Technopak Analysis, Base- 506

Change in Skilled Manpower before and after Taking Loan

Overall majority of the segments have witnessed less than 20 additional skilled labour. Demand for skilled labour has increased due to installation of new technology machines across the segments. Spinning and processing segments have seen influx of skilled labour between 20 and 50.

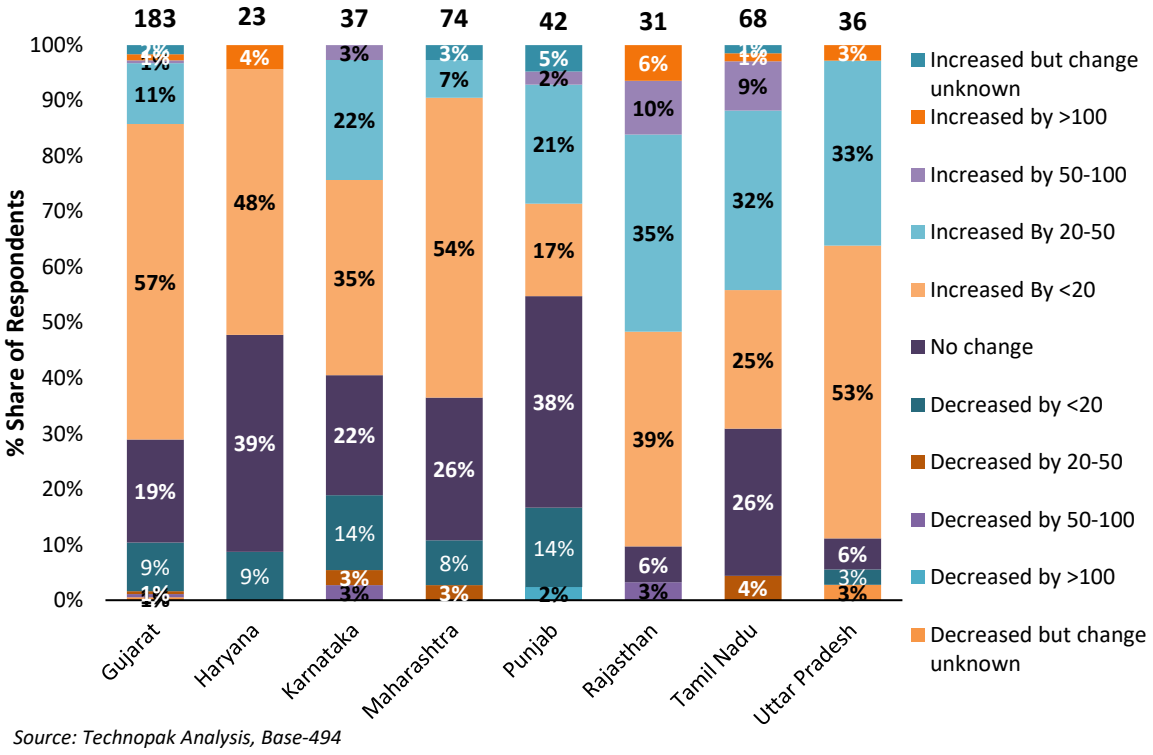
Exhibit 282: Change in Skilled Manpower - Segment Wise



Source: Technopak Analysis, Base-494

Among states, Rajasthan, Uttar Pradesh and Tamil Nadu have witnessed highest percentage increase in skilled manpower of 20-50 due to TUFS. Majority of states have witnessed skilled manpower increase <20 while 14% of the respondents from Karnataka and Punjab have indicated a decrease of <20.

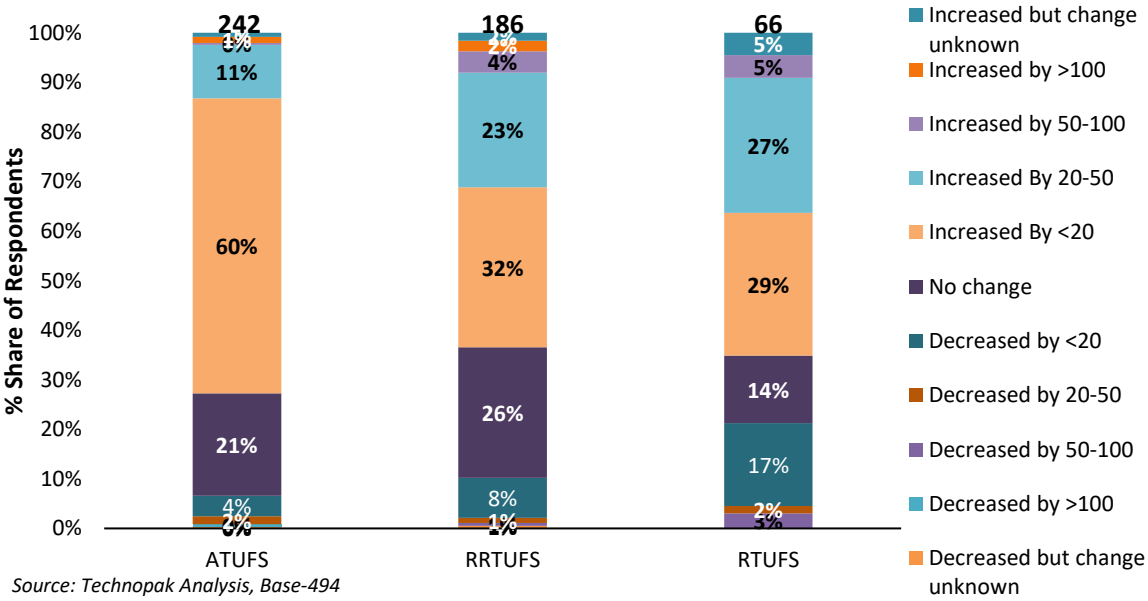
Exhibit 283: Change in Skilled Manpower - Geography Wise



Source: Technopak Analysis, Base-494

Across schemes, during ATUFS scheme primarily increase in skilled labour was <20 while during RTUFS and RRTUFS ~30% achieved an increase of >20 in skilled manpower.

Exhibit 284: Change in Skilled Manpower - Scheme Wise

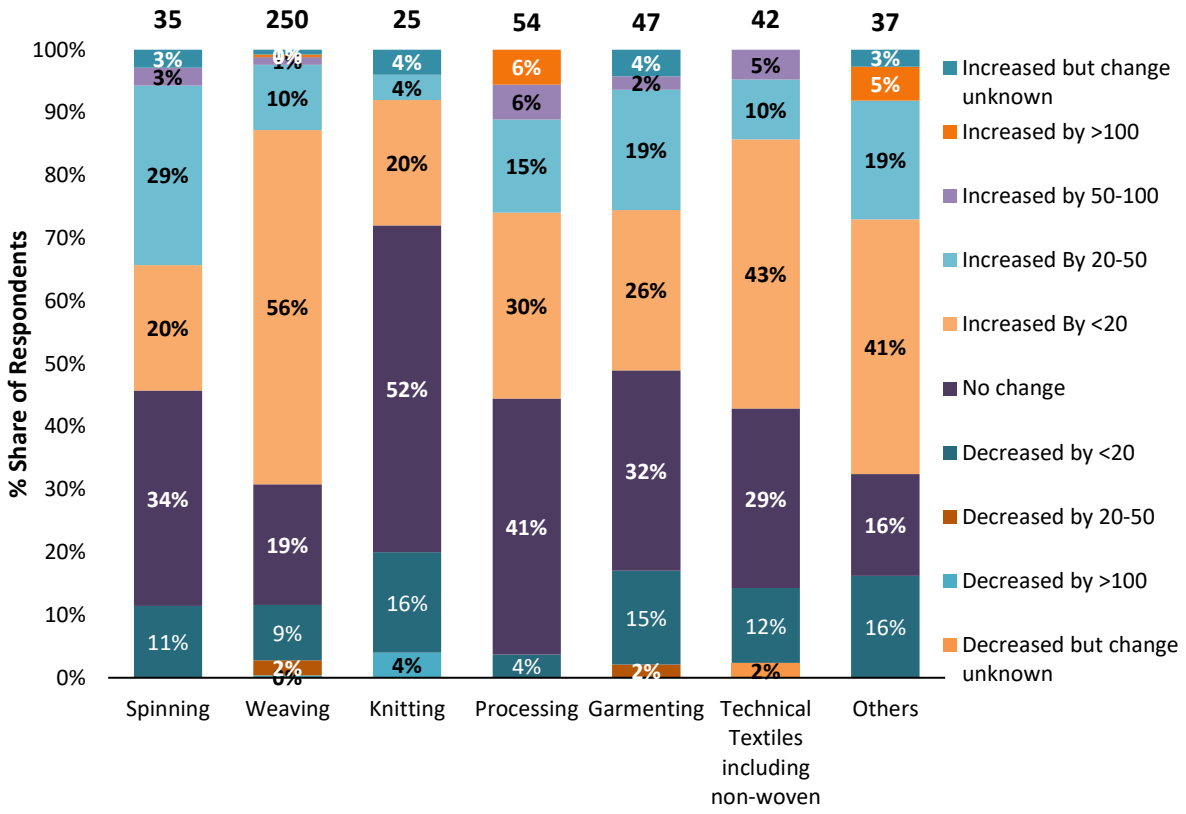


Source: Technopak Analysis, Base-494

Change in Unskilled Manpower before and after Taking Loan

In Spinning, Knitting, Processing and Garmenting segment, a significant >30% of the respondents have indicated no change in unskilled manpower. Spinning segment has witnessed 29% respondents suggesting increase in unskilled manpower 20-50.

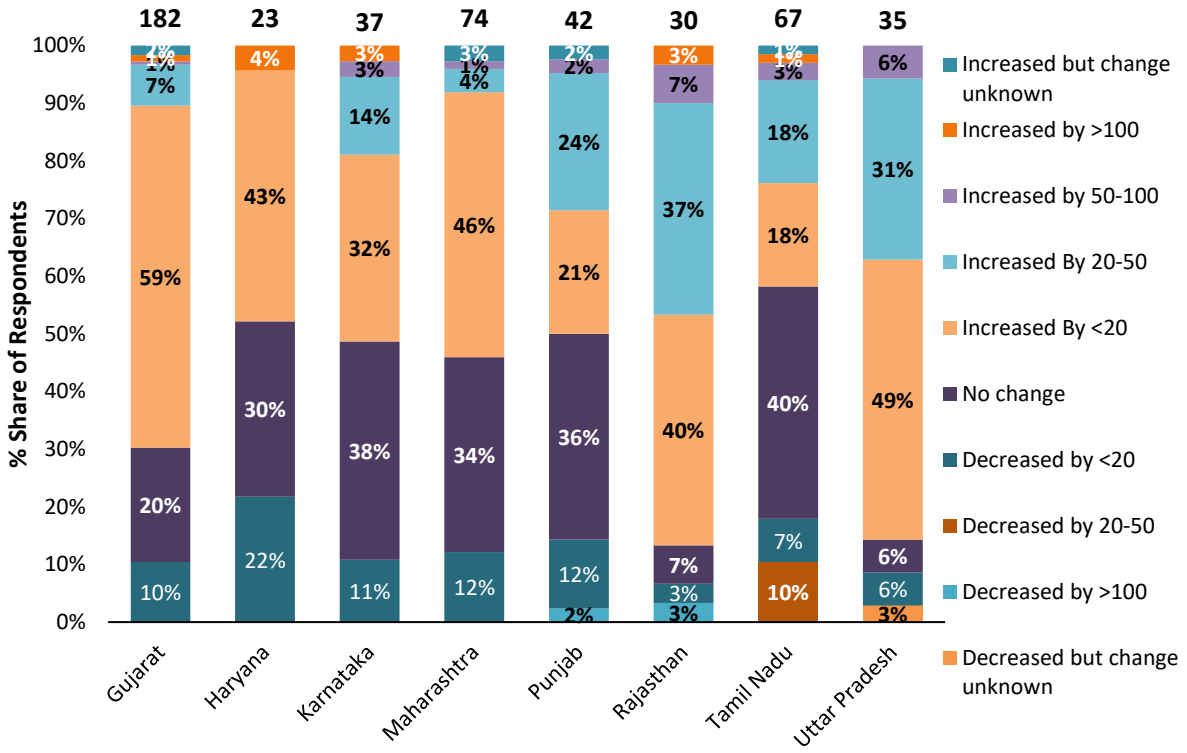
Exhibit 285: Change in Unskilled Manpower - Segment Wise



Source: Technopak Analysis, Base-490

Among states, Rajasthan and Uttar Pradesh have witnessed highest percentage increase in unskilled manpower of 20-50 due to TUFS. Majority of states have witnessed unskilled manpower increase <20 while 22% of Haryana's respondents indicating a decrease of <20.

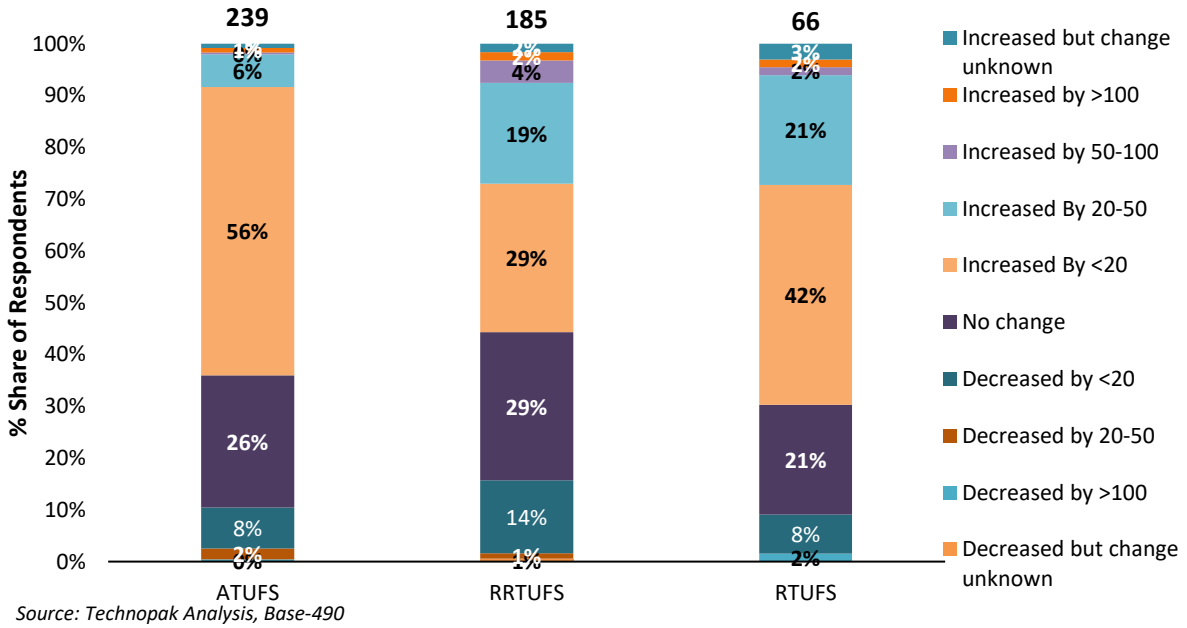
Exhibit 286: Change in Unskilled Manpower - Geography Wise



Source: Technopak Analysis, Base-490

Across schemes, during ATUFS scheme primarily increase in unskilled labour was <20 while during RTUFS and RRTUFS ~20% have achieved an increase of >20 in unskilled manpower.

Exhibit 287: Change in Unskilled Manpower - Scheme Wise

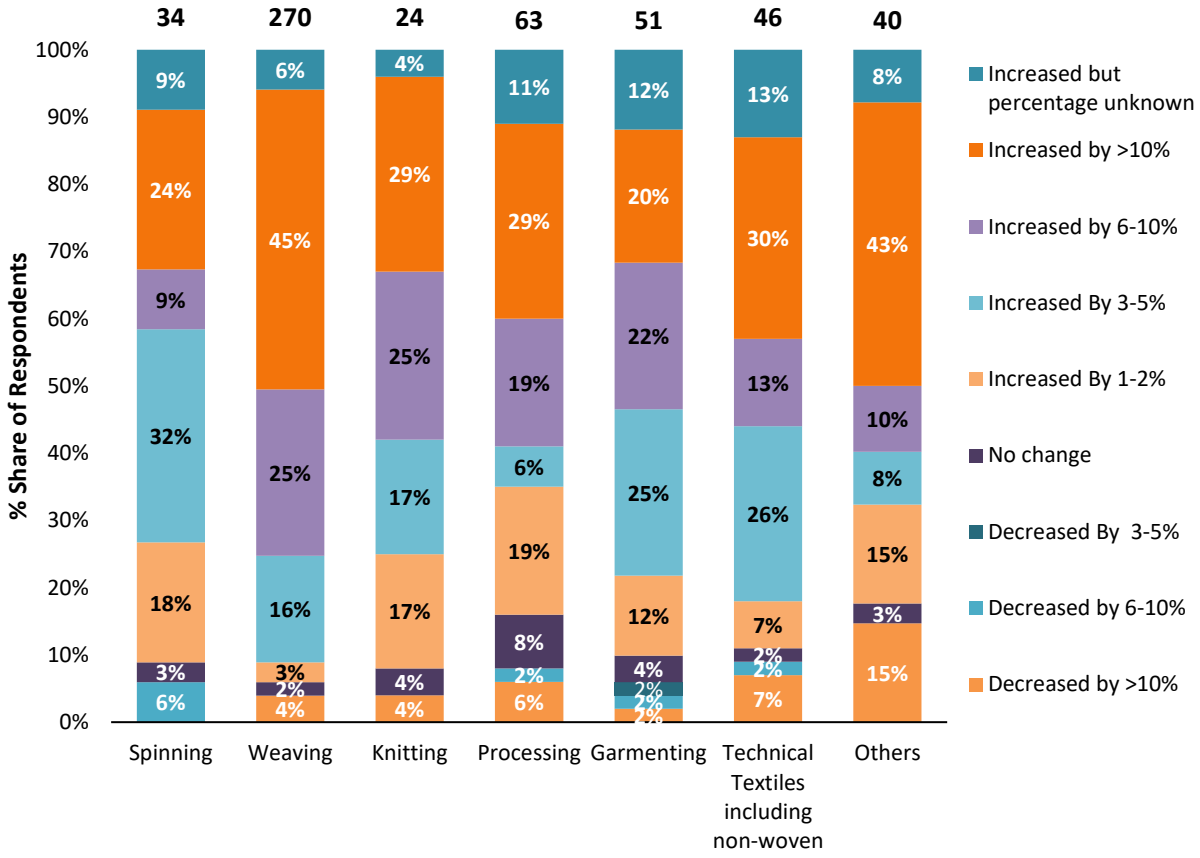


Source: Technopak Analysis, Base-490

Change in Average Salary of Skilled Manpower before and after Taking Loan

In weaving sector, 70% of the 270 respondents have witnessed >6% growth in the salary of the skilled manpower. Majority of the segments have witnessed majorly average salary increases of >6% for skilled manpower.

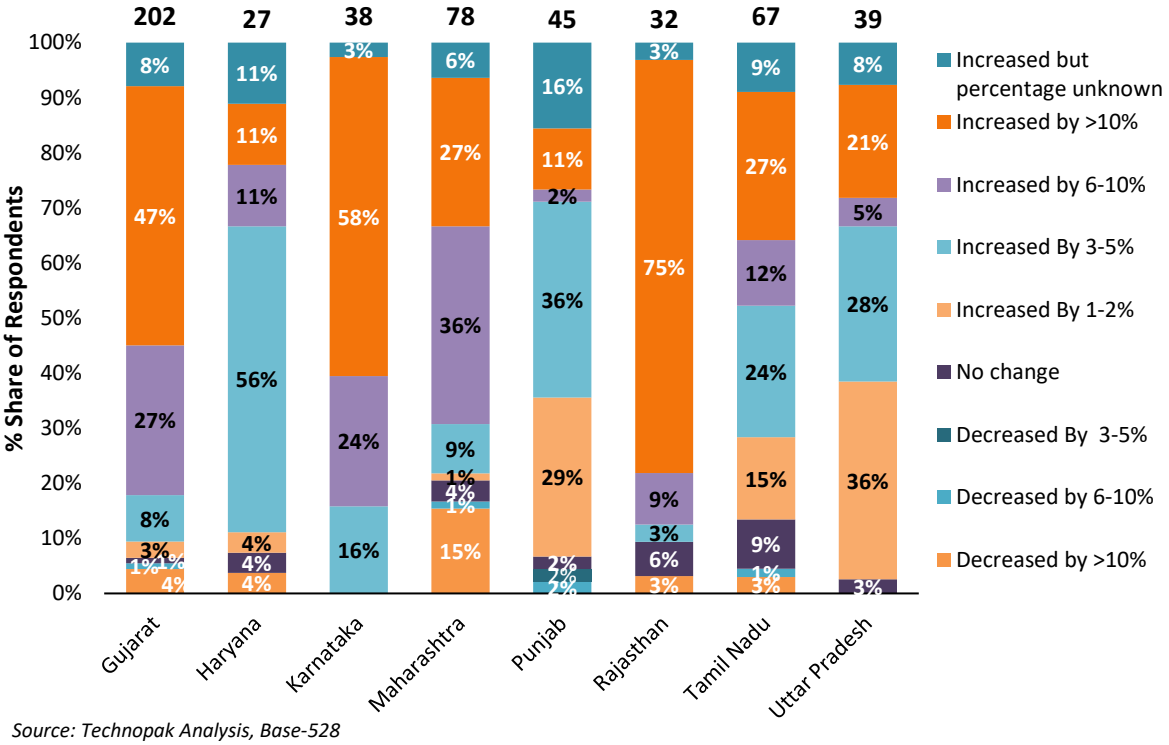
Exhibit 288: Change in Average Salary of Skilled Manpower - Segment Wise



Source: Technopak Analysis, Base-528

Among states, 75% respondents from Rajasthan have witnessed increase in average salary of skilled manpower of >10% due to TUFS. Majority of states have witnessed average salary of skilled manpower increase >6%.

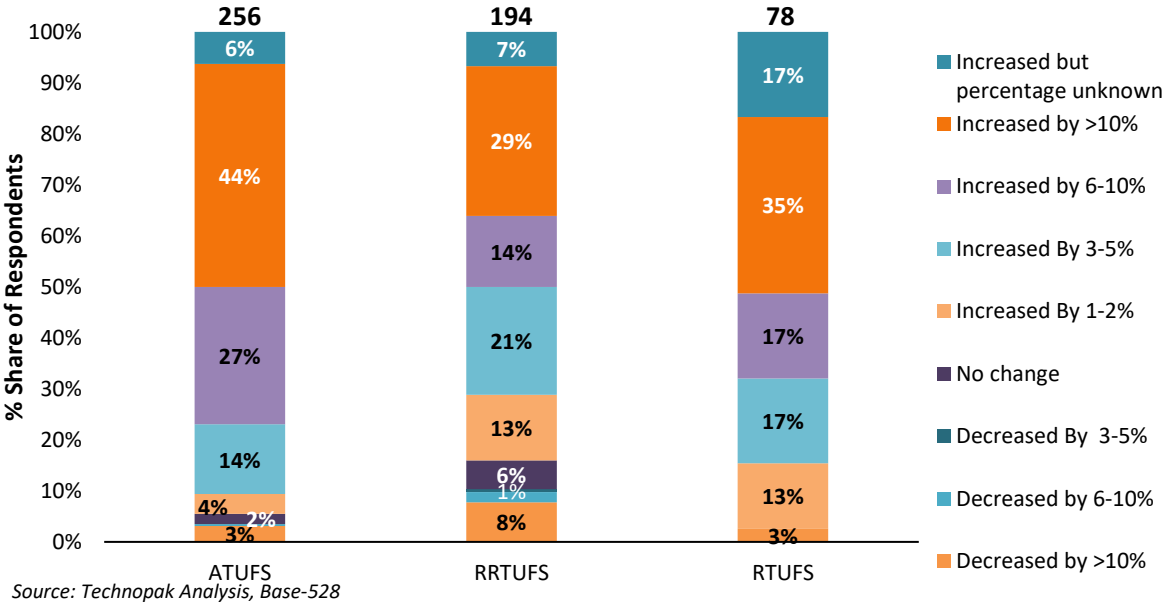
Exhibit 289: Change in Average Salary of Skilled Manpower - Geography Wise



Source: Technopak Analysis, Base-528

Across schemes, during ATUFS scheme respondents have witnessed primarily increase in average salary increase of skilled labour of >10% and almost 70% have witnessed an increase in average salary >6% during ATUFS.

Exhibit 290: Change in Average Salary of Skilled Manpower - Scheme Wise

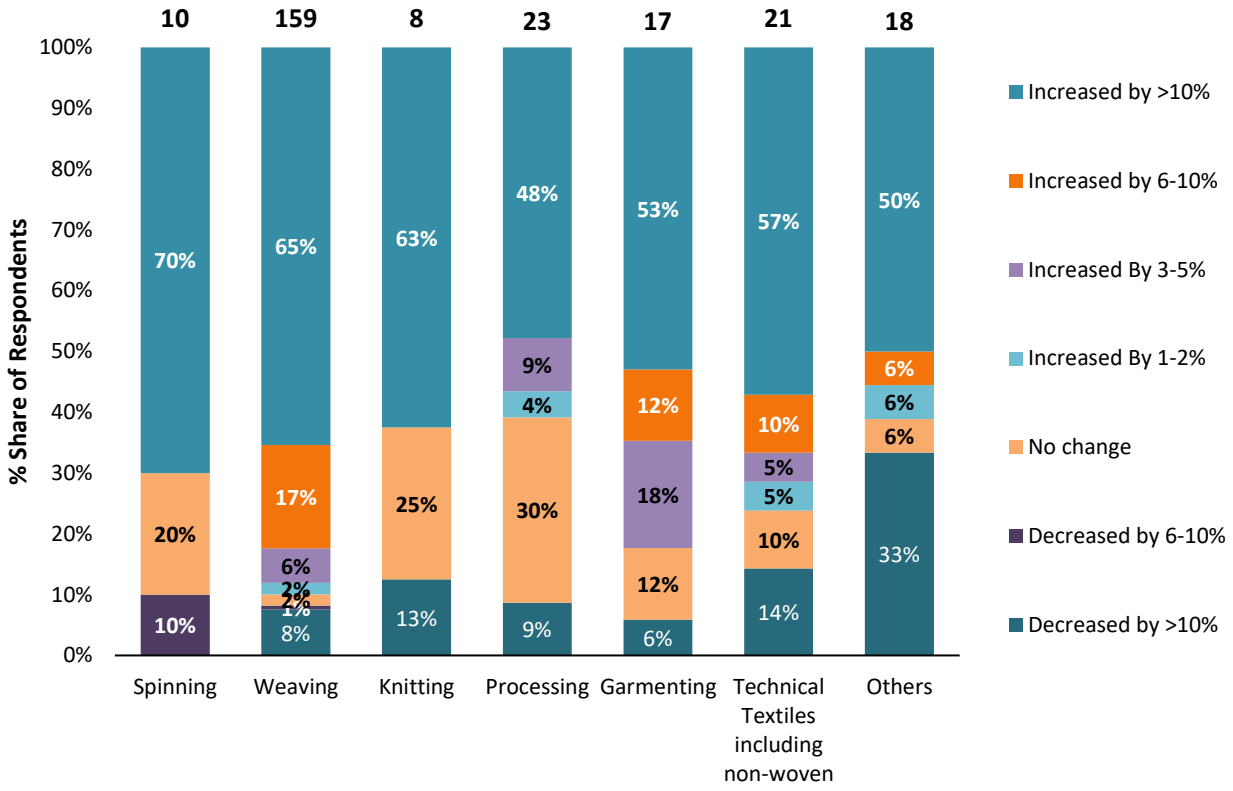


Source: Technopak Analysis, Base-528

Change in Average Salary of Unskilled Manpower before and after Taking Loan

In weaving sector, 65% of the 159 respondents have witnessed >10% growth in the salary of the unskilled manpower. Majority of the segments have witnessed; majorly average salary increases of >6% for unskilled manpower.

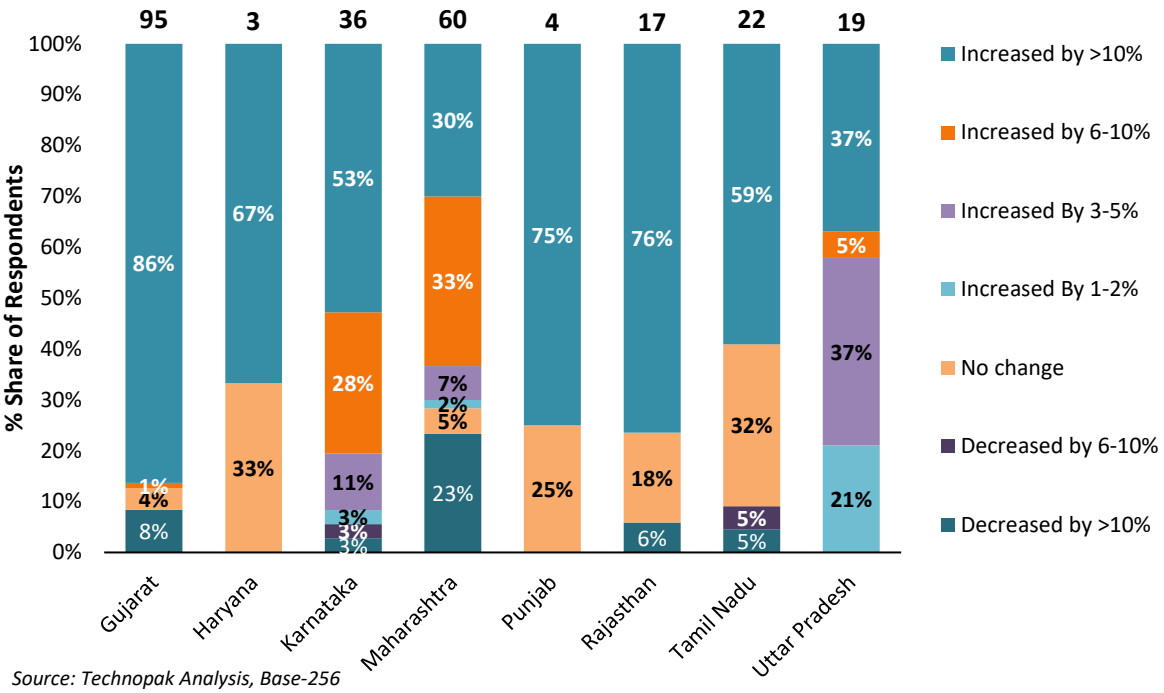
Exhibit 291: Change in Average Salary of Unskilled Manpower - Segment Wise



Source: Technopak Analysis, Base-256

Among states, 86% respondents from Gujarat have witnessed increase in average salary of unskilled manpower of >10% due to TUFS. Majority of states have witnessed average salary of unskilled manpower increase >6%.

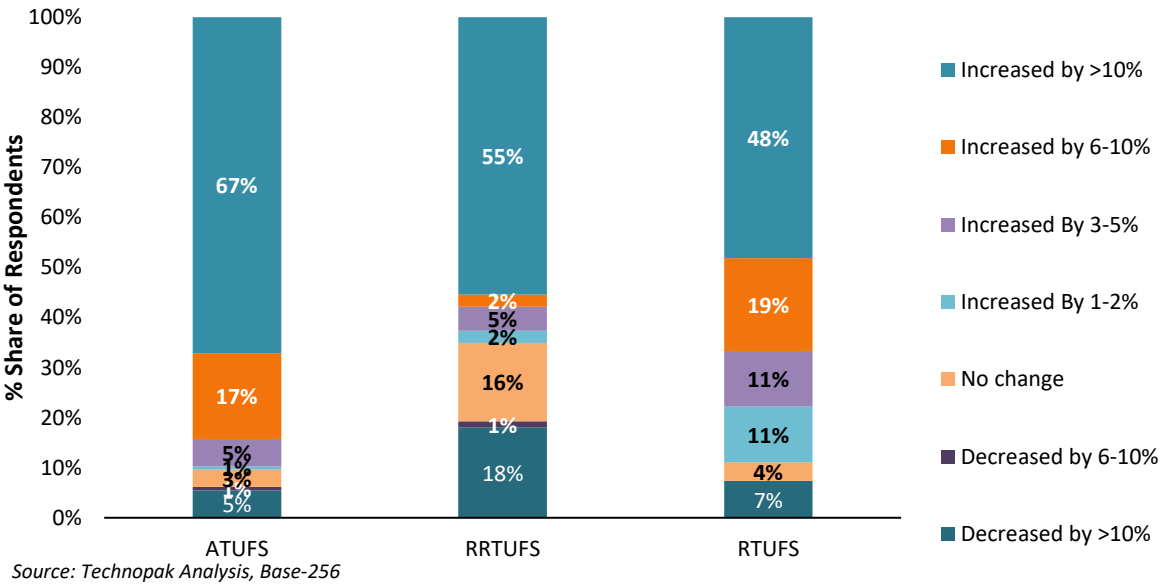
Exhibit 292: Change in Average Salary of Unskilled Manpower - Geography Wise



Source: Technopak Analysis, Base-256

Across schemes, during ATUFS scheme respondents have witnessed primarily increase in average salary increase of unskilled labour of >10% and almost 80% have witnessed an increase in average salary >6% during ATUFS.

Exhibit 293: Change in Average Salary of Unskilled Manpower - Scheme Wise

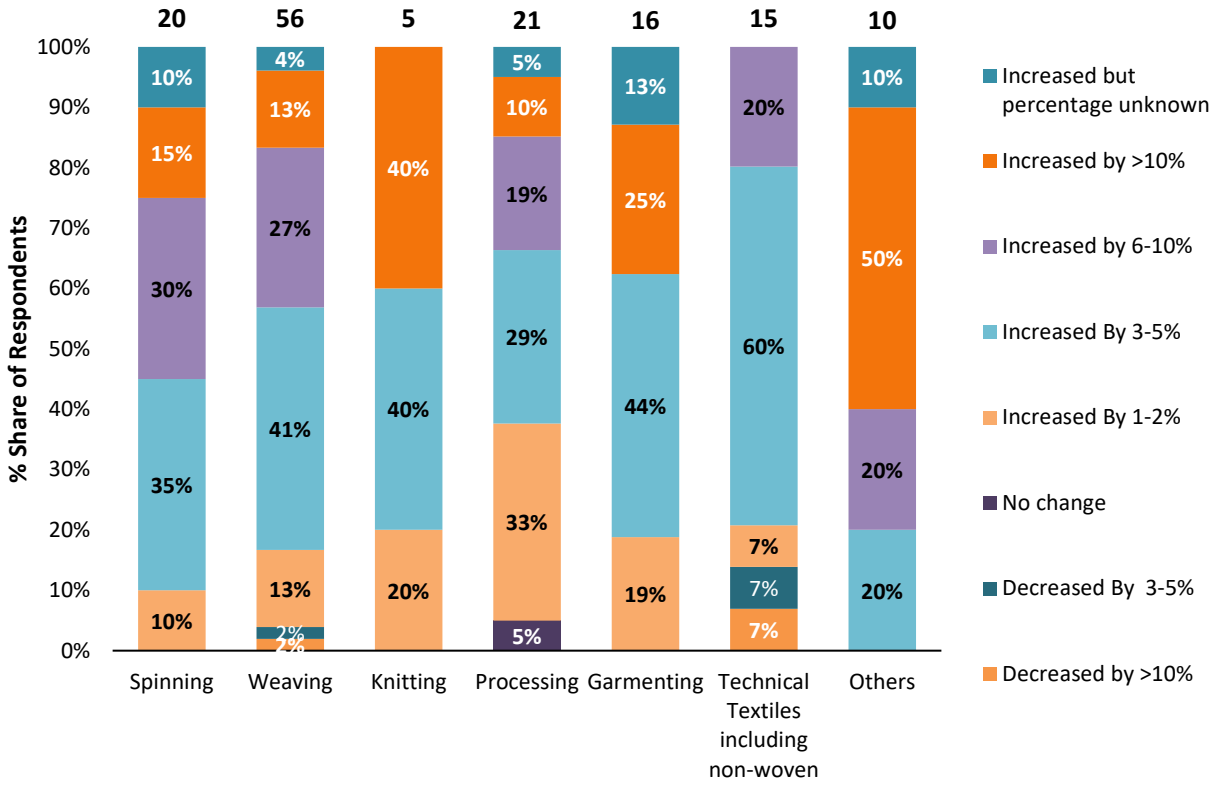


Source: Technopak Analysis, Base-256

Change in training costs before and after taking loan

Almost 45% of the respondents in spinning and weaving segments responded that the training costs were increased >6%. Technical textiles primarily witnessed an increase in training costs between 3-5% as responded by 60% of the 15 respondents.

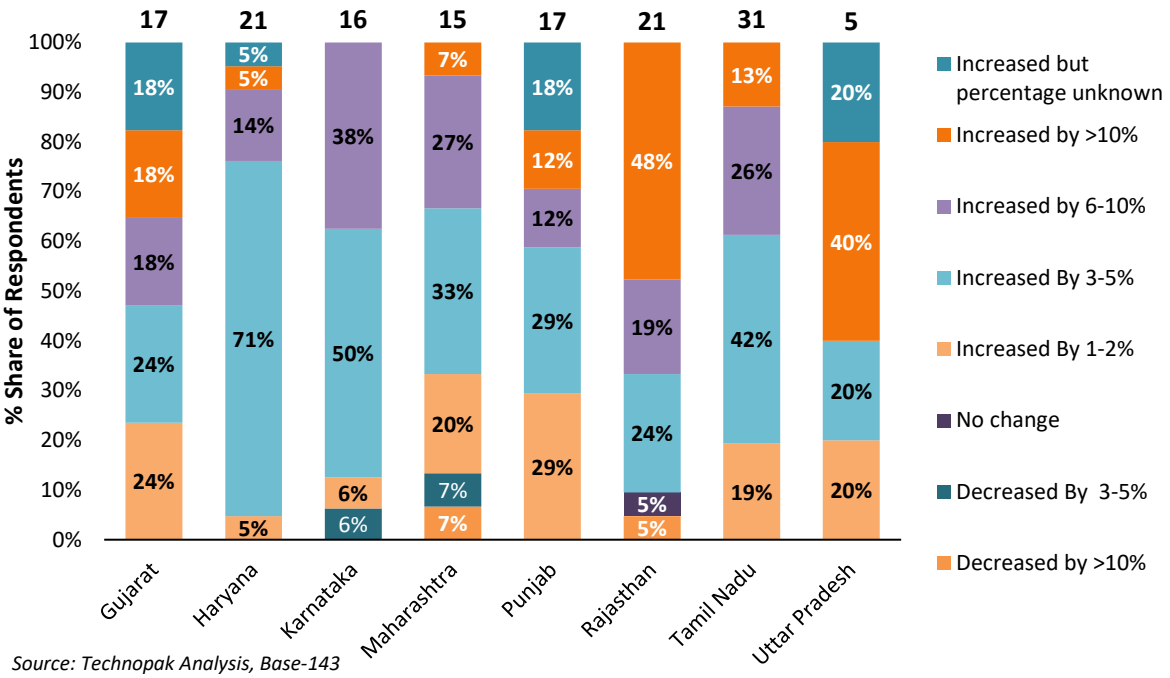
Exhibit 294: Change in Training Cost - Segment Wise



Source: Technopak Analysis, Base-143

Among states, 48% of respondents from Rajasthan have witnessed increase in training costs of >10% due to TUFS. Majority of states have witnessed average training costs increased by >6%.

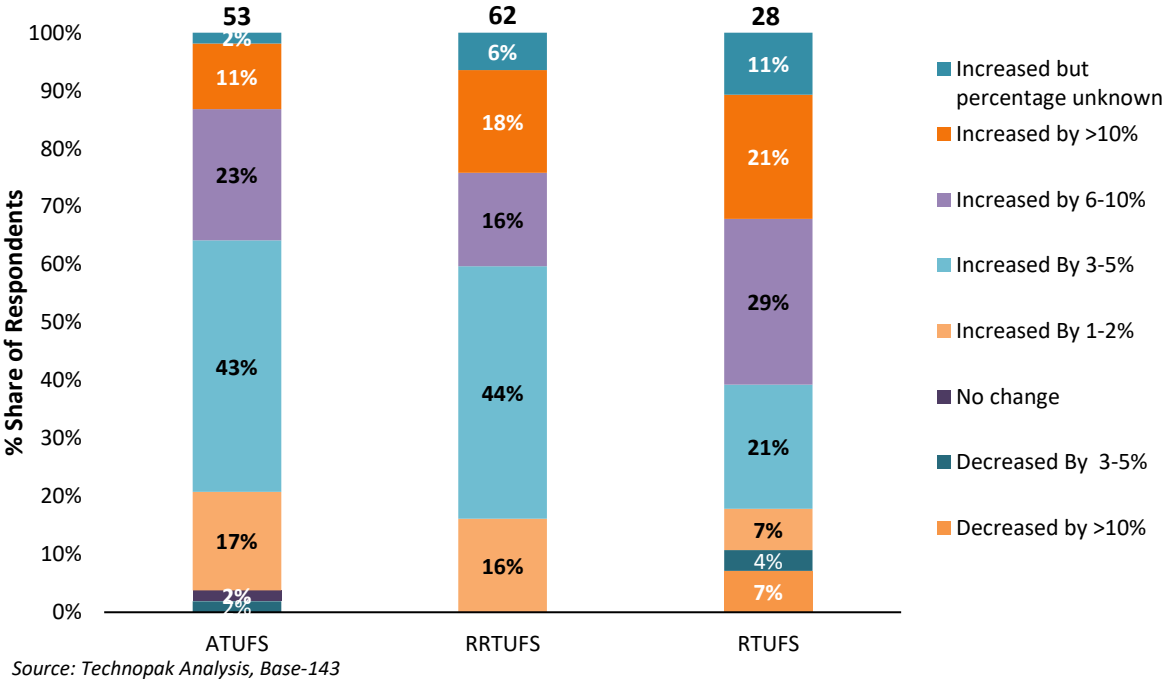
Exhibit 295: Change in Training Cost - Geography Wise



Source: Technopak Analysis, Base-143

Across schemes, during RTUFS scheme respondents have witnessed primarily increase in training costs of >3% and almost 78% have witnessed an increase in training costs >3% during RRTUFS.

Exhibit 296: Change in Training Cost - Scheme Wise



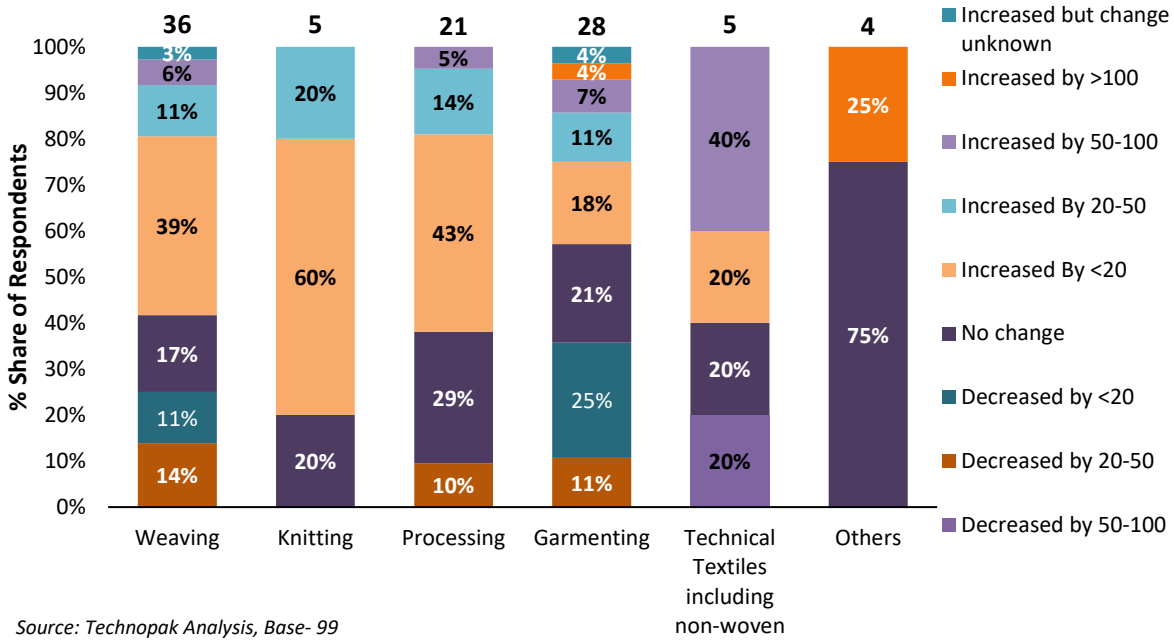
Source: Technopak Analysis, Base-143

Non-Beneficiaries

Change in total no. of employees before and after taking loan

Total manpower has increased across all the segments. Processing and weaving segments have seen significant <20 manpower addition.

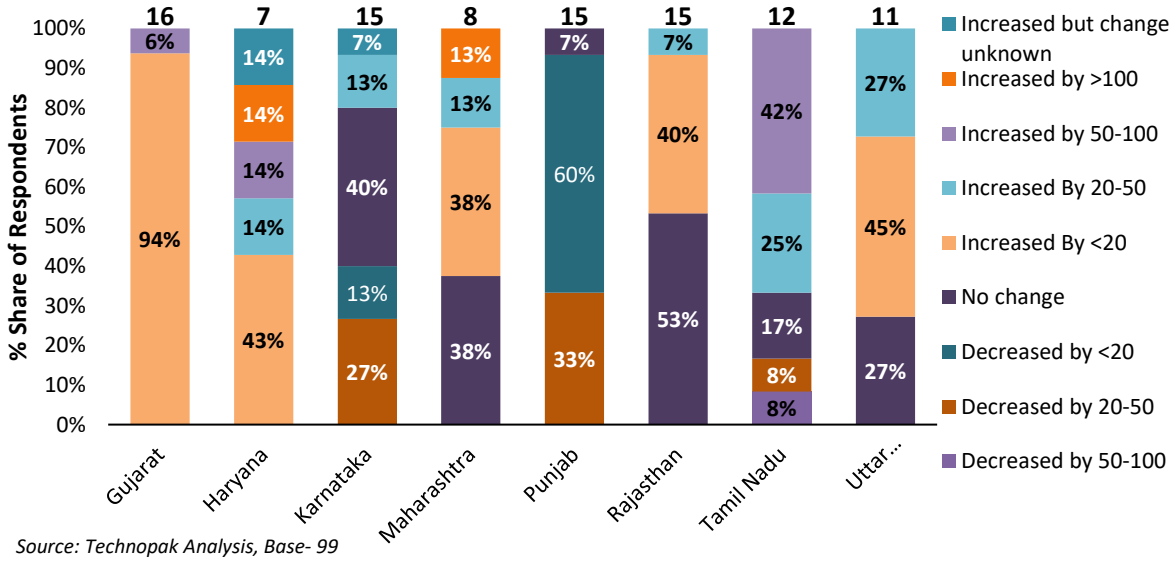
Exhibit 297: Change in Total Manpower - Segment Wise



Source: Technopak Analysis, Base- 99

Among states, non-beneficiaries' respondents in Tamil Nadu have witnessed highest percentage increase in total manpower of 50-100. 60% of 15 respondents in Punjab have witnessed a decrease <20 in total manpower.

Exhibit 298: Change in Total Manpower - Geography Wise

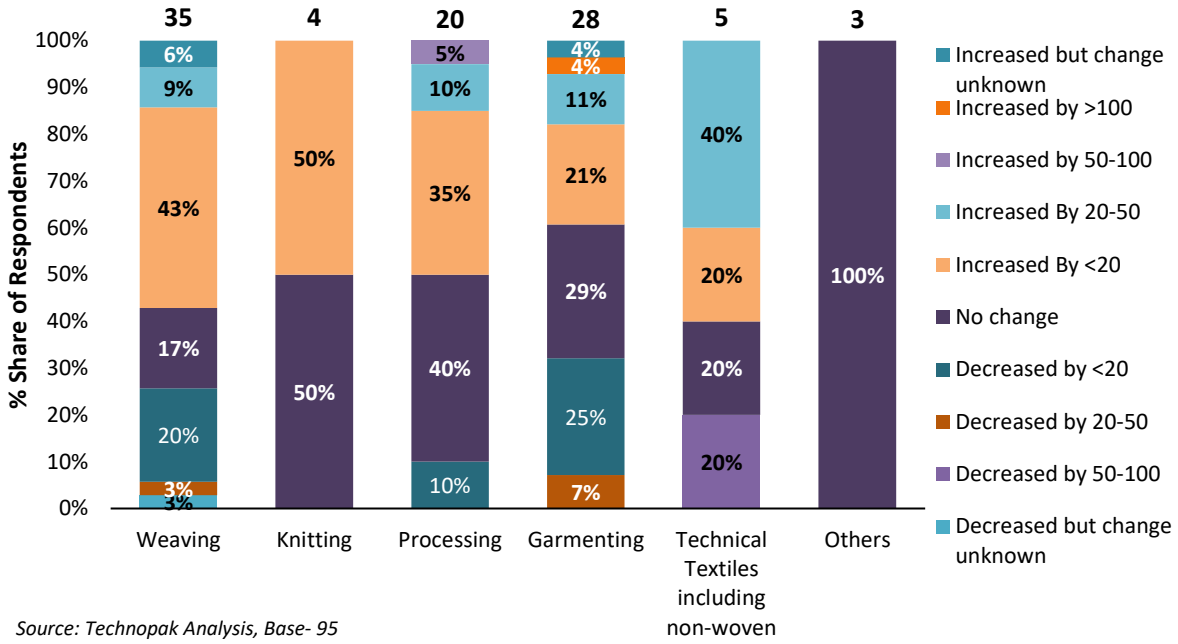


Source: Technopak Analysis, Base- 99

Change in skilled manpower before and after taking loan

Overall majority of the segments have witnessed less than 20 additional skilled labour. Weaving and processing segments have seen influx of skilled labour <20.

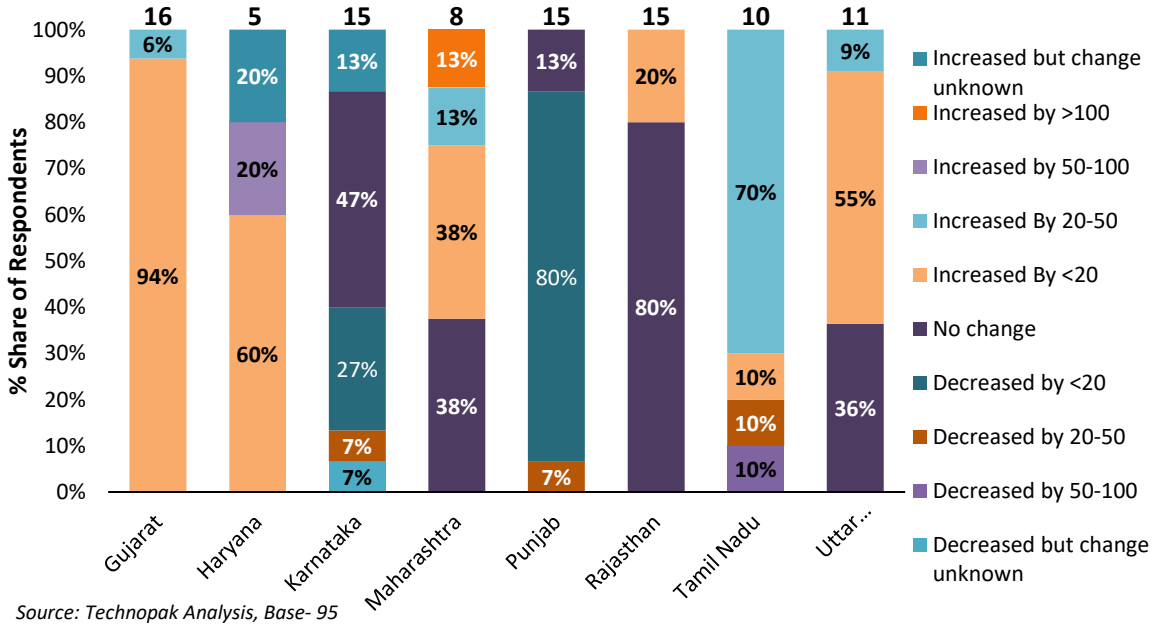
Exhibit 299: Change in Skilled Manpower - Segment Wise



Source: Technopak Analysis, Base- 95

Among states, non-beneficiaries in Gujarat have witnessed highest percentage increase in skilled manpower of <20. Majority of states have witnessed skilled manpower increase <20 while 80% of the respondents from Punjab have indicated a decrease of <20.

Exhibit 300: Change in Skilled Manpower - Geography Wise

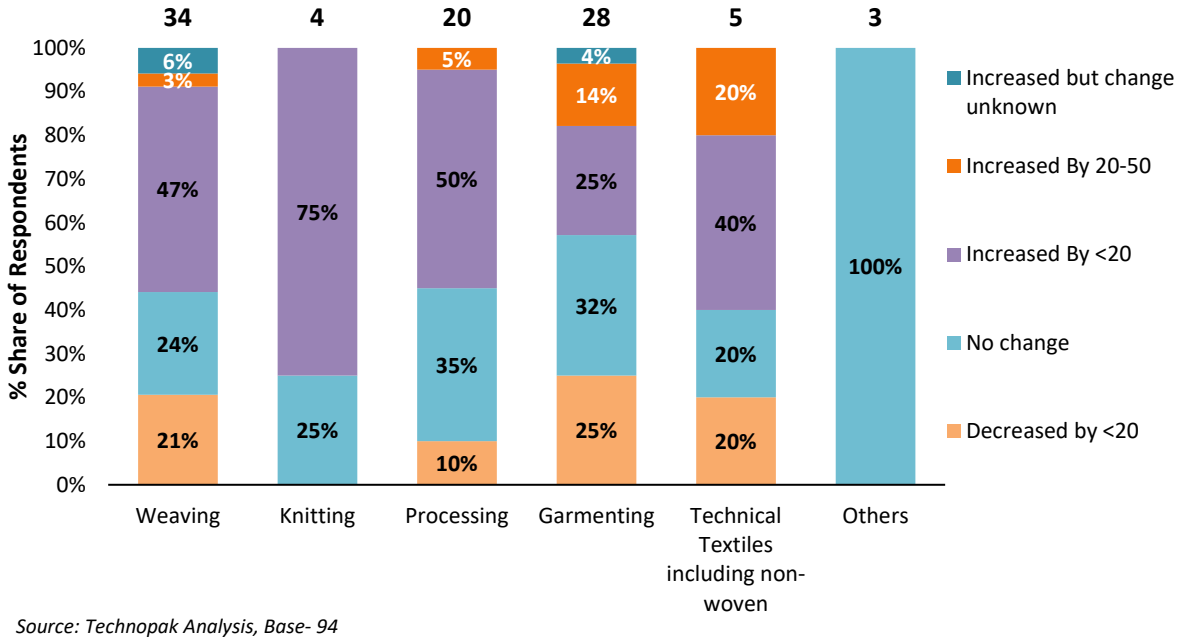


Source: Technopak Analysis, Base- 95

Change in unskilled manpower before and after taking loan

Weaving and processing segments have witnessed primarily additional unskilled labour changes <20. 25% respondents from garmenting segment have witnessed a decrease in unskilled labour <20.

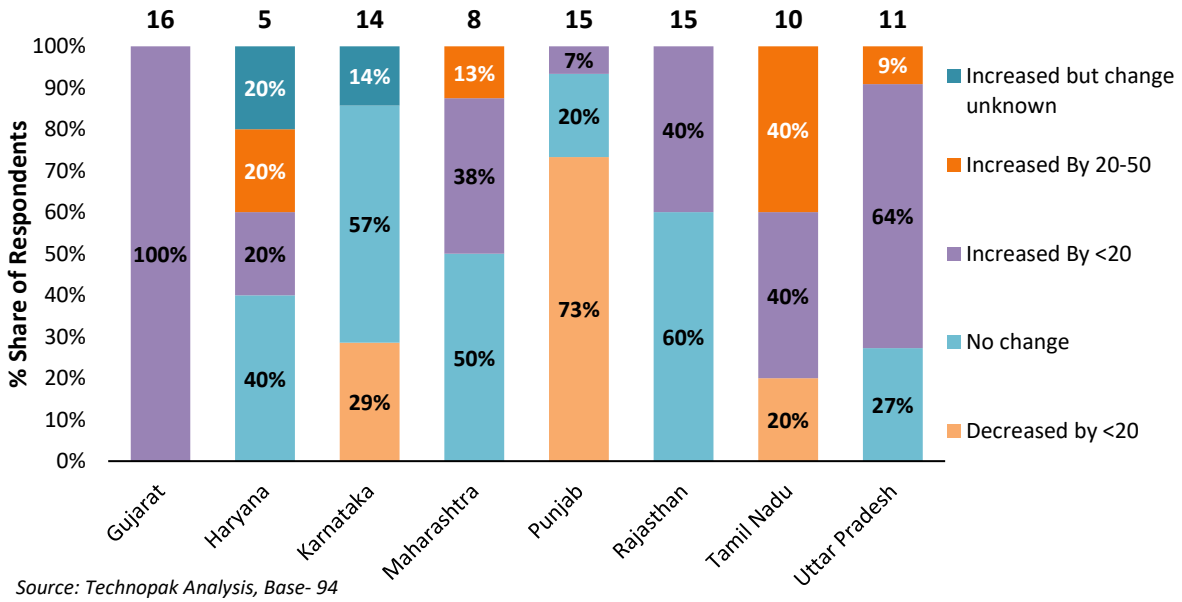
Exhibit 301: Change in Unskilled Manpower - Segment Wise



Source: Technopak Analysis, Base- 94

Among states, all the non-beneficiaries in Gujarat have witnessed increase in unskilled manpower of <20. In Punjab, 73% of the respondents witnessed decrease in unskilled manpower <20.

Exhibit 302: Change in Unskilled Manpower - Geography Wise

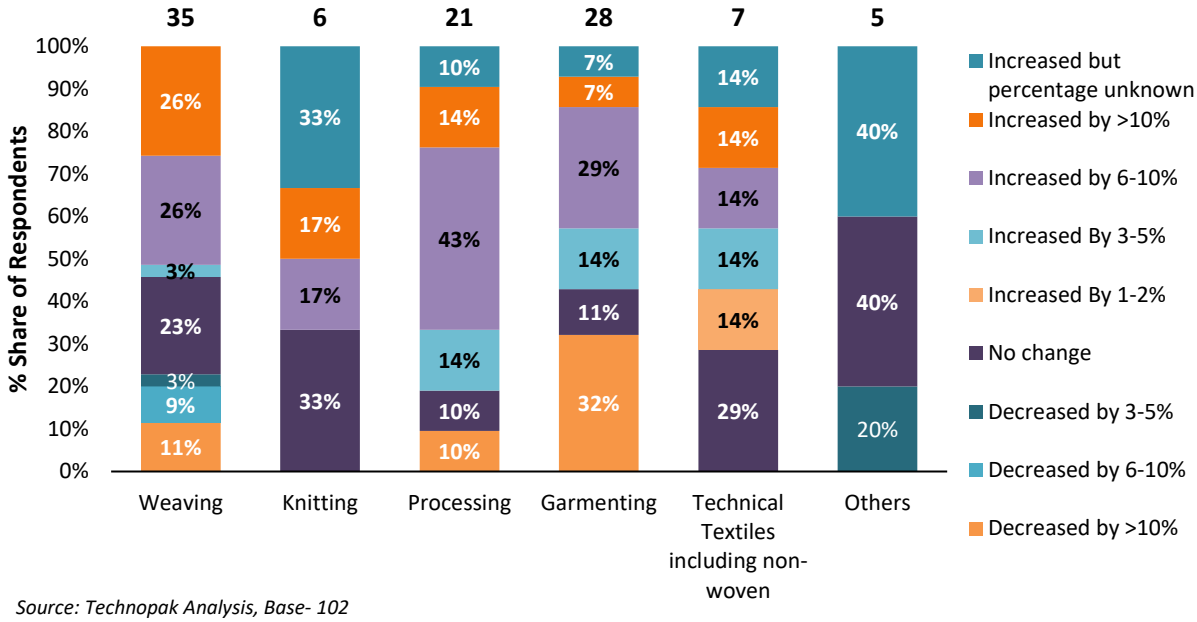


Source: Technopak Analysis, Base- 94

Change in average salary of skilled manpower before and after taking loan

In weaving sector, 26% of the 37 respondents have witnessed >10% growth in the salary of the skilled manpower. In processing sector, 43% of the 28 respondents have witnessed average growth in the salary of the skilled manpower between 6-10%.

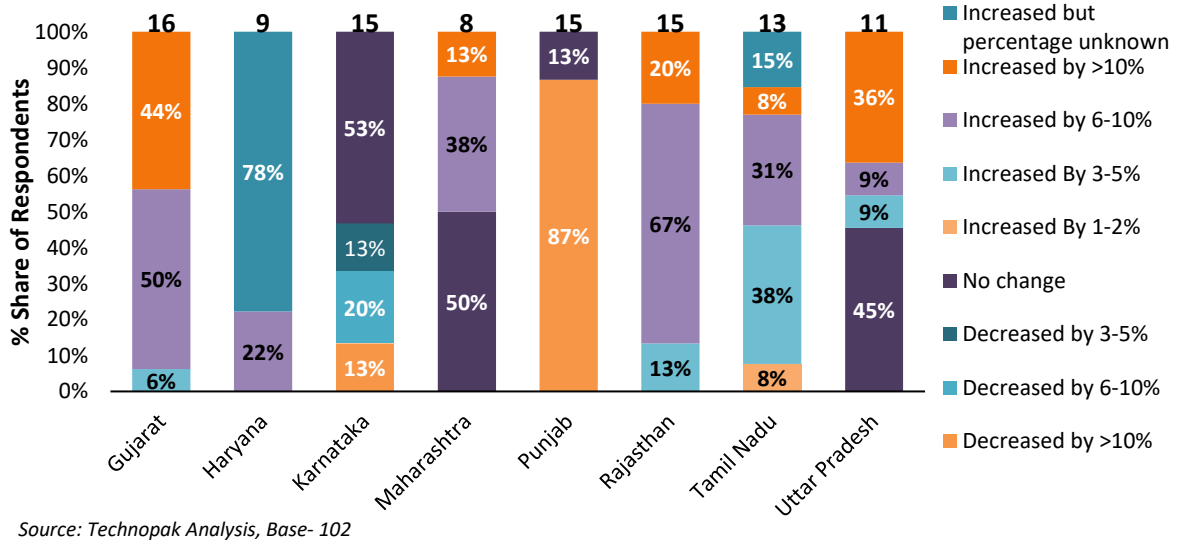
Exhibit 303: Change in Average Salary of Skilled Manpower - Segment Wise



Source: Technopak Analysis, Base- 102

Among states, 44% respondents from Gujarat have witnessed increase in average salary of skilled manpower of >10%. 67% non-beneficiaries from Rajasthan have witnessed an average salary of skilled manpower increase between 6-10%. 87% of the respondents in Punjab have witnessed decrease in average salary >10%. 13% of the respondents from Karnataka have witnessed a decrease in average salary >10%

Exhibit 304: Change in Average Salary of Skilled Manpower - Geography Wise

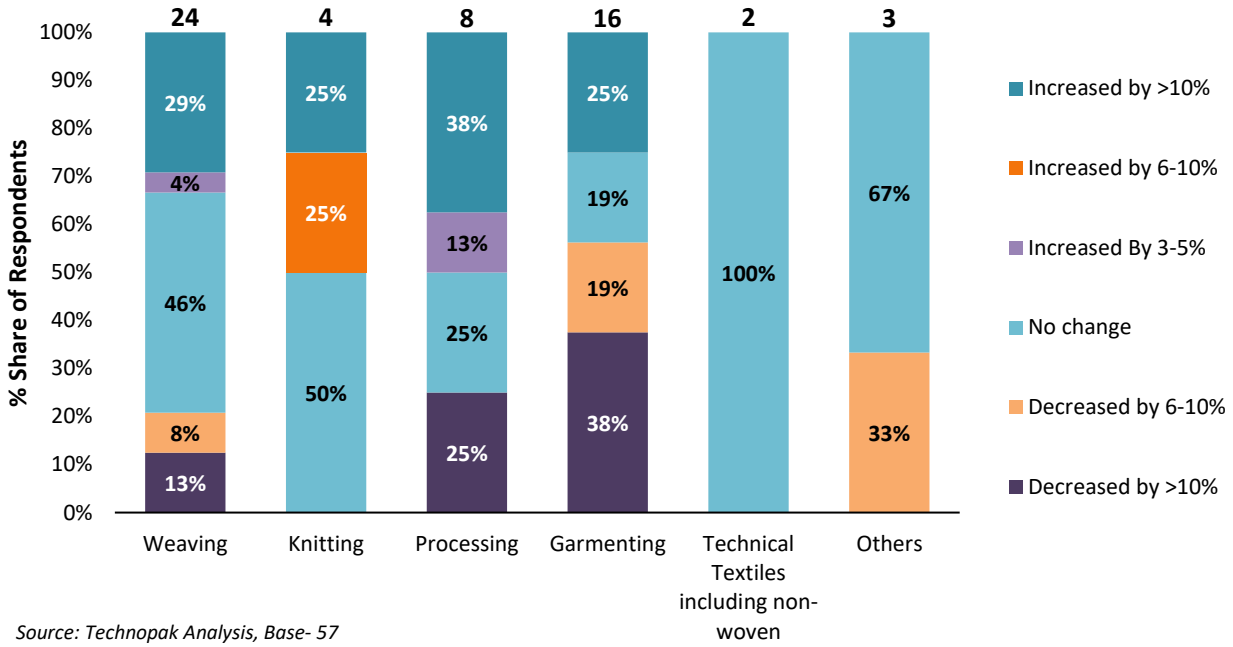


Source: Technopak Analysis, Base- 102

Change in average salary of unskilled manpower before and after taking loan

In weaving sector, 29% of the 24 respondents have witnessed >10% growth in the salary of the unskilled manpower. Majority of the segments have witnessed majorly average salary increases of >6% for unskilled manpower.

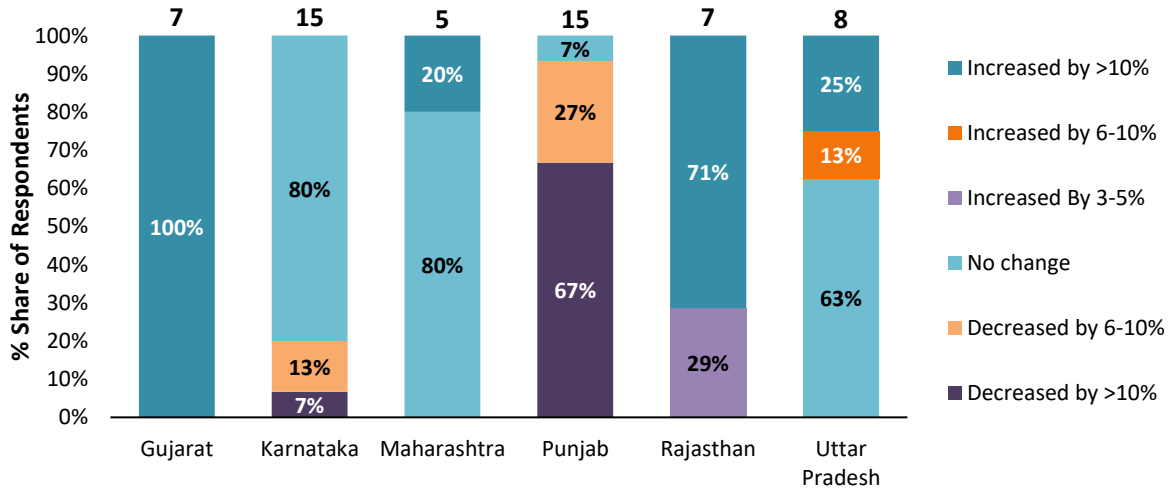
Exhibit 305: Change in Average Salary of Unskilled Manpower - Segment Wise



Source: Technopak Analysis, Base- 57

Among states, all respondents from Gujarat have witnessed increase in average salary of unskilled manpower of >10%. Majority of states have witnessed no change in average salary. Punjab has witnessed decrease in average salary >10% of unskilled labour with 67% of the respondents reporting same.

Exhibit 306: Change in Average Salary of Unskilled Manpower - Geography Wise

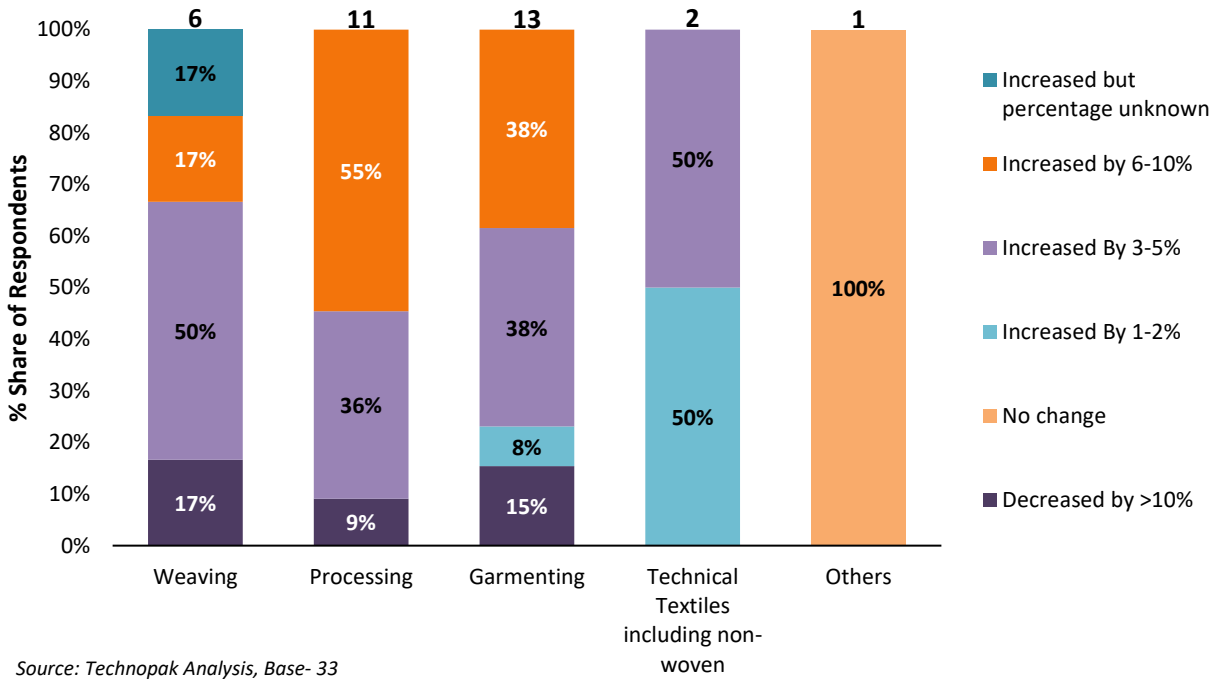


Source: Technopak Analysis, Base- 57

Change in training costs before and after taking loan

55% of the respondents in processing segment responded that the training costs were increased >6%.

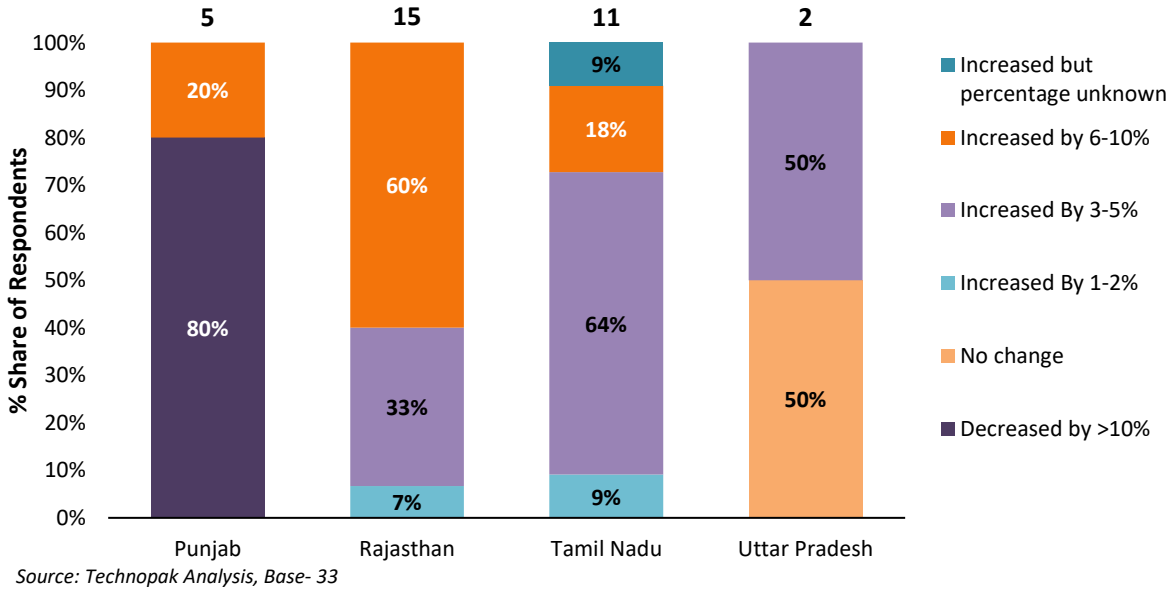
Exhibit 307: Change in Training Cost - Segment Wise



Source: Technopak Analysis, Base- 33

Among states, 60% of non-beneficiary respondents from Rajasthan have witnessed increase in training costs of >10. Majority of states have witnessed average training costs increased by >3%.

Exhibit 308: Change in Training Cost - Geography Wise



Source: Technopak Analysis, Base- 33

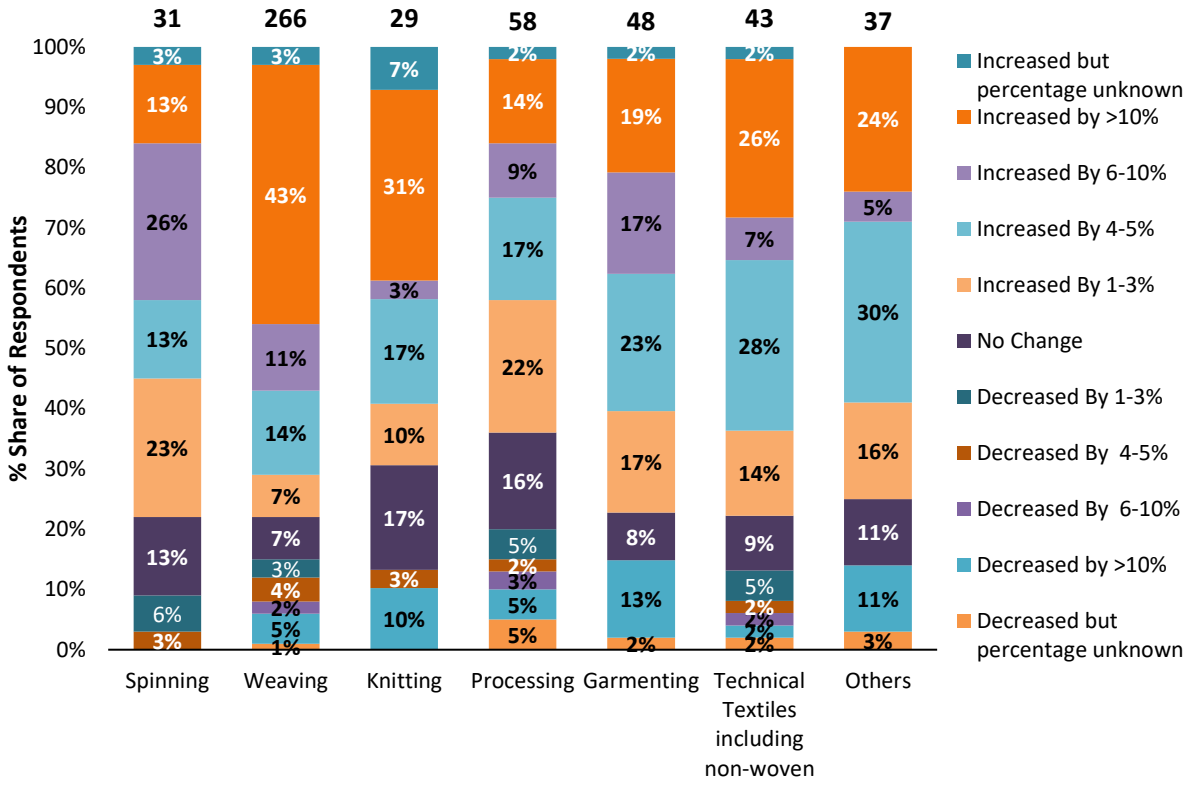
COST SAVINGS

Beneficiaries

Change in Cost Savings per Unit

43% of the respondents in weaving segments responded that the cost savings per unit were increased >10%. Technical textiles witnessed an increase in cost savings between 4-5% as responded by 28% of the 43 respondents.

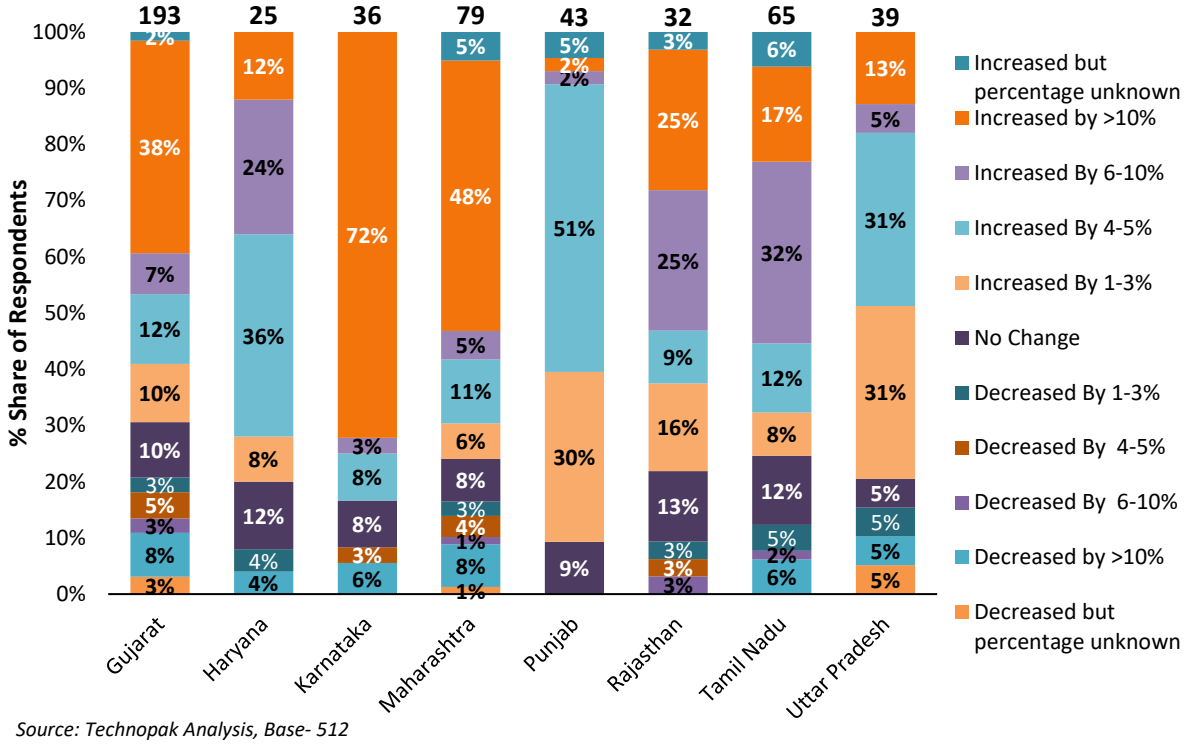
Exhibit 309: Change in Cost Savings Per Unit - Segment Wise



Source: Technopak Analysis, Base- 512

Among states, 72% of respondents from Karnataka have witnessed increase in cost savings per unit of >10% due to TUFS. Of the 193 respondents from Gujarat, 38% witnessed increase in cost savings per unit >10%. Over 15% respondents across the states Gujarat, Maharashtra and Uttar Pradesh have witnessed decrease in cost savings.

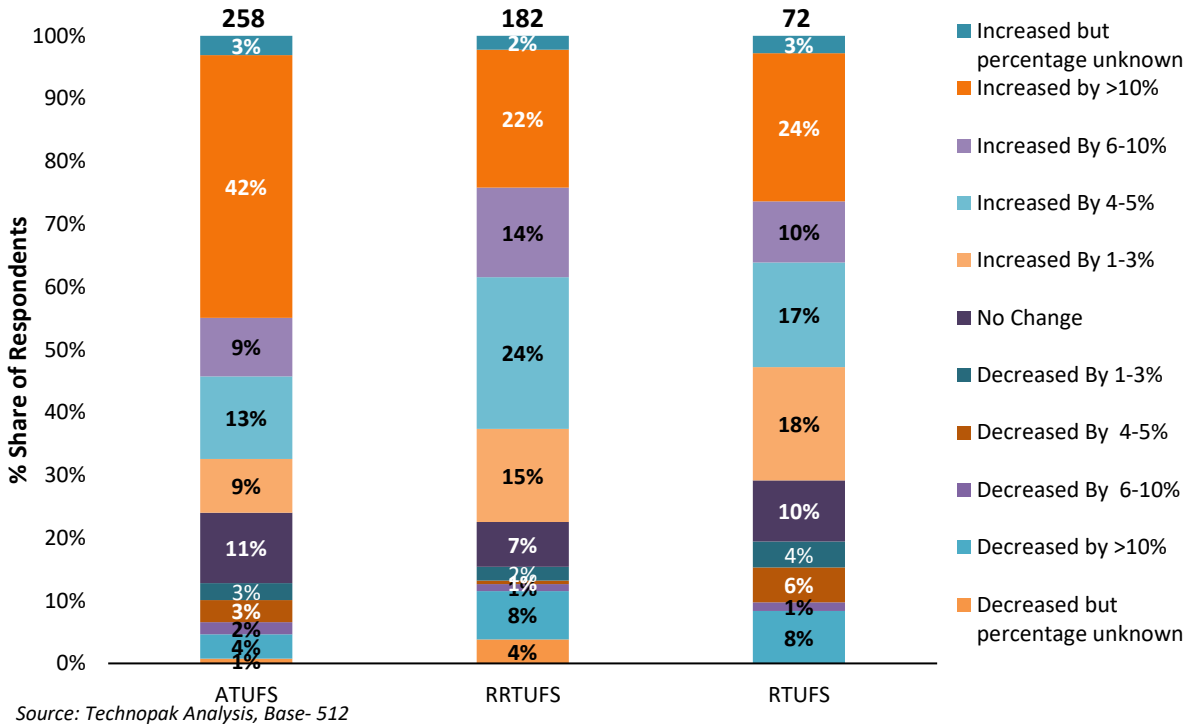
Exhibit 310: Change in Cost Savings Per Unit - Geography Wise



Source: Technopak Analysis, Base- 512

Across schemes, during ATUFS scheme, 42% respondents have witnessed increase in cost savings per unit of >10%.

Exhibit 311: Change in Cost Savings Per Unit - Scheme Wise



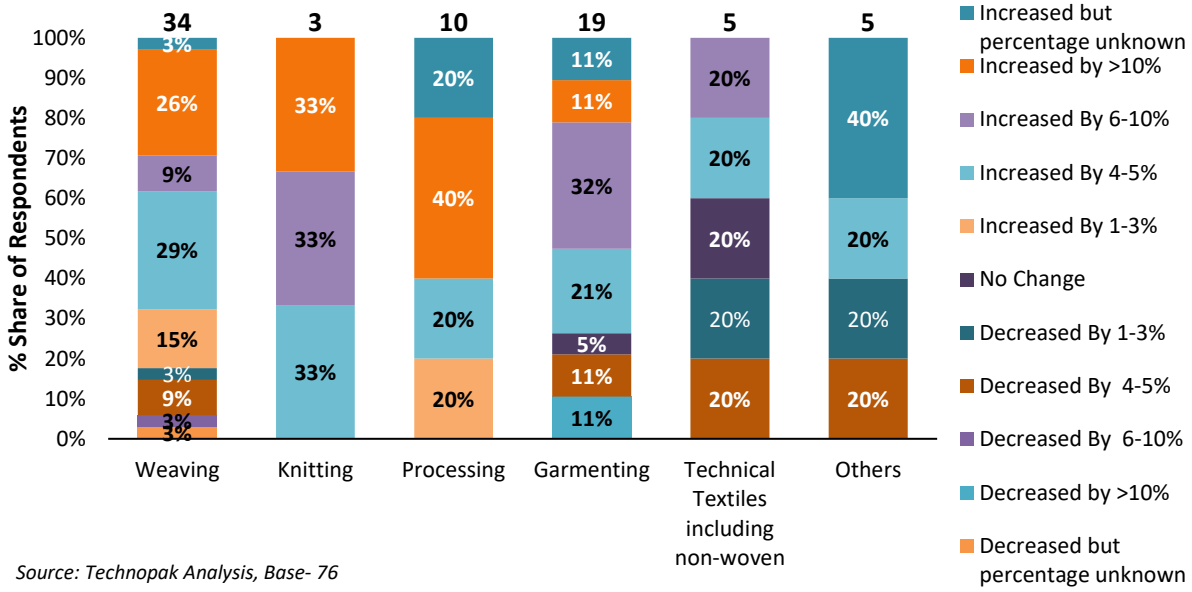
Source: Technopak Analysis, Base- 512

Non-Beneficiaries

Change in Cost Savings per Unit

26% of the respondents in weaving segment responded that average cost savings per unit were increased by >10%. 32% respondents in garmenting have witnessed that the average cost savings per unit have increased by 6-10%.

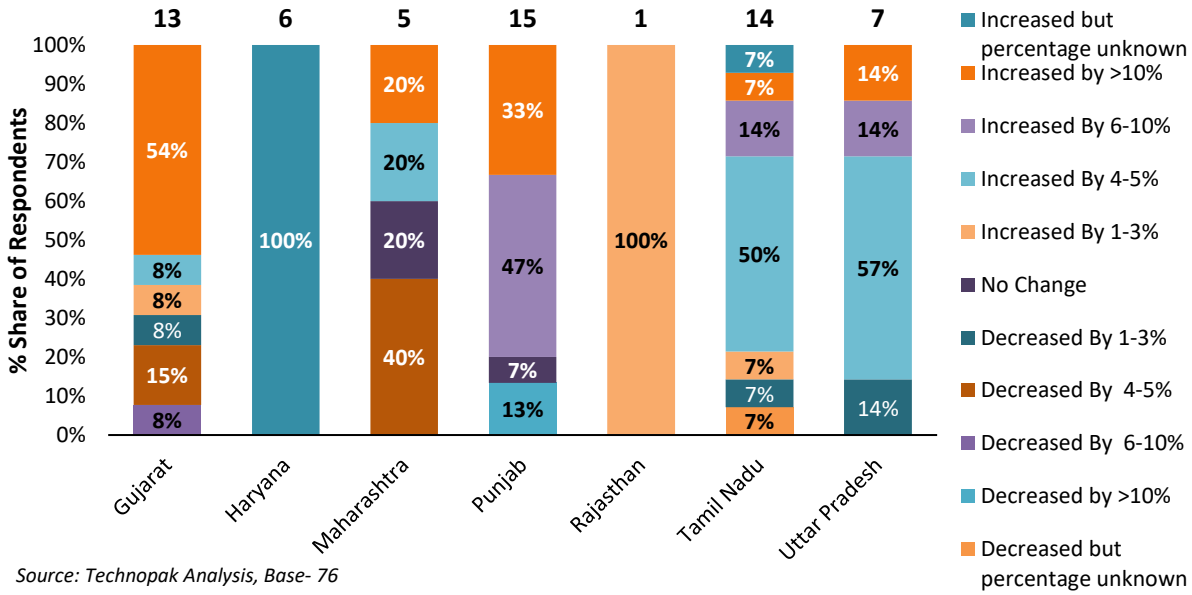
Exhibit 312: Change in Cost Savings Per Unit - Segment Wise



Source: Technopak Analysis, Base- 76

Among states, 54% respondents in Gujarat have witnessed average cost savings per unit increased by >10%. 47% respondents in Punjab have witnessed increase in average cost savings per unit between 6-10%.

Exhibit 313: Change in Cost Savings Per Unit - Geography Wise



Source: Technopak Analysis, Base- 76

Appendix 8- Implementation Mechanisms for ATUFS

As a part of this study Technopak undertook an assessment of the application process followed under ATUFS. The findings of the assessment and the gaps therein are explained in section 8 and 10, under "issues and challenges" and "recommendations".

Please find below the various stages of application process under ATUFS as mentioned in ATUFS policy:

Stage I

The implementation process begins with the registration of the entity in i-TUFS software. The entity is supposed to provide all the relevant documents, after which the entity can apply for term loan from ATUFS notified lending agency. The minimum loan amount must be at least 50% of the total eligible cost of machinery**.** After the completion of the process, an ATUFS reference number is generated and the application is taken forward to the lending agency. Once the proposal is scrutinized and considered viable, the loan is sanctioned and the application is forwarded to the Textile Commissioner Office**.** Once the loan is sanctioned, a Unique Identification number (UID) is automatically generated. The lending agency is supposed to complete the process of sanction of term loan within 4 months from the receipt of application

Stage II

The next step in the process is installation of machinery. The beneficiary can avail the loan on the new machinery and not on the second-hand machinery. The whole process is supposed to be completed within a year. Once the machinery is installed, the beneficiary is supposed to file an online application for Joint Inspection (JIT). The JIT is supposed to complete physical inspection within 88 days of application for JIT

Stage III

Once the JIT is through with its physical verification, the Regional Office (RO) of Textile Commissioner provides a report in i-TUFS. Within 25 days of the filing of JIT report online by RO, the textile commissioner approves the subsidy claim for which an automatic challan is generated in i-TUFS. The challan is sent to the Ministry, which then releases the subsidy into the account of the beneficiary within next 15 working days

Appendix 9- Questionnaire for Industry Associations

Name
Designation
E-mail Id
Phone No.
Name of the Organization
Organization Address
Total Experience in Textile Industry

1. What is your opinion on the current situation of Indian textile industry? What are the major challenges faced by the Indian Textile Industry at the Macro level? What are the key suggestions for the growth of the Indian Textile Industry?
2. Please share your views on the current situation & growth of your focus sector (Spinning/Weaving/Processing/Garmenting/ Technical textiles/Made-ups)?
3. Please rank the following **factors affecting the investment into textile sector** and kindly explain why with some examples.

S. No.	Parameters	Your Ranking	Remarks
1	Interest Rates		
2	Corporate Tax		
3	Power (Cost, Availability)		
4	Man-Power (Cost, availability)		
5	Raw Material Cost		
6	Supply Chain Cost		
7	Government Clearances		
8	Lack of Scale		
9	Lack of visionary entrepreneurs		
10	Others (Pl specify)		

4. What are your suggestions **to the government** for attracting more investment into the Indian Textile Value Chain?
5. What are your suggestions **to the entrepreneurs** for attracting more investment into the Indian Textile Value Chain?
6. What is hindering the **FDI (Foreign Direct Investment)** into the Indian Textile Industry?
7. Please rank the following **factors affecting the growth of Exports** of Garments/Made-ups/Technical Textiles out of India:

S. No.	Parameters	Your Ranking	Remarks
1	Trade Agreements		
2	Labor (Cost, Availability)		
3	Scale (small units)		

4	Power (Cost, Availability)		
5	Raw Material Cost		
6	Supply Chain Cost		
7	Government Clearances		
8	Interest rates		
9	Corporate Tax		
10	Others (Pl. specify)		

8. What are your suggestions **for the government** to increase value added exports of the Indian Textile Industry?
9. What are your suggestions **for the entrepreneurs** to increase value added exports of the Indian Textile Industry?
10. Please rank the following counties in terms of level of technology (machines) being used for each sector:

Sector	**India**	**China**	**Bangladesh**	**Vietnam**	**Pakistan**	**Turkey**
Spinning						
Weaving						
Processing						
Garmenting						
Technical Textiles						
Textile Machine manufacturing						

11. Where is India lacking in terms of technology (Machine)? What can we learn from other countries?
12. How can machine manufacturing be encouraged to grow in India?
13. Which textile segments require more support for technology upgradation and overall growth of textile value chain? **Why?**
14. What is the impact of the scheme on following parameters?

Parameters	**Significant Impact**	**Insignificant Impact**	**No Impact**	**Your Remarks**
Employment Generation				
Average salary				
Increase in Production				
Increase in Sales				
Increase in Profit				
Increase in Average Sales Price				
Increase in Productivity				
Increase in Cost Savings				
Reduction in wastage				
Increase in Exports (Value)				
Increase in Investments				

Increase in Quality				
Increase in Higher Value Product mix				

15. What level of technology benchmark TUFS beneficiaries were able to achieve in the following segments?

Level of Machine (Technology) achieved after TUFS	**TUFS / Indian Standard**			**Achieved Global Standard**			**Your Remarks**
Segment	**Achieved**	**Not Achieved**	**May be**	**Achieved**	**Not Achieved**	**May be**	
Spinning							
Weaving							
Knitting							
Processing							
Garmenting							
Technical Textiles including non-woven							

16. What are your views on the current TUFS scheme implementation mechanism?
17. What are the major issues faced while availing TUFS? What are the major reasons for delay in disbursements?
18. What are your suggestions to improve the TUFS implementation?

Appendix 10- Questionnaire for Industry Experts

Name
Designation
E-mail Id
Phone No.
Name of the Organization
Organization Address
Total Experience in Textile Industry

1. What is your opinion on the current situation of Indian textile industry?
2. What are the major challenges faced by the Indian Textile Industry at the Macro level?
3. What are the key suggestions to the government for the growth of the Indian Textile Industry?
4. What are the key suggestions to the Entrepreneurs for the growth of the Indian Textile Industry?
5. Please share your suggestions on the current situation & growth of your focus sector (Spinning/Weaving/Processing/Garmenting/ Technical textiles/Made-ups)?
6. Please rank the following **factors affecting the investment into textile sector** and kindly explain why with some examples.

S. No.	Parameters	Your Ranking	Remarks
1	Interest Rates		
2	Corporate Tax		
3	Power (Cost, Availability)		
4	Man-Power (Cost, availability)		
5	Raw Material Cost		
6	Supply Chain Cost		
7	Government Clearances		
8	Lack of Scale		
9	Lack of visionary entrepreneurs		
10	Others (Pl specify)		

7. What are your suggestions **to the government** for attracting **more investment** into the Indian Textile Value Chain?
8. What are your suggestions **to the entrepreneurs** for attracting **more investment** into the Indian Textile Value Chain?
9. What is hindering the FDI into the Indian Textile Industry?
10. Please rank the following **factors affecting the growth of Exports** of Garments/Made-ups/Technical Textiles out of India:

S. No.	Parameters	Your Ranking	Remarks
1	Trade Agreements		
2	Labor (Cost, Availability)		
3	Scale (small units)		
4	Power (Cost, Availability)		

5	Raw Material Cost		
6	Supply Chain Cost		
7	Government Clearances		
8	Interest rates		
9	Corporate Tax		
10	Others (Pl. specify)		

11. What are your **suggestions for the government to increase value added exports** of the Indian Textile Industry?
12. What are your **suggestions for the Industry leaders to increase value added exports** of the Indian Textile Industry?
13. Please rank the following counties in terms of level of technology (machines) being used for each sector:

Sector	**India**	**China**	**Bangladesh**	**Vietnam**	**Pakistan**	**Turkey**
Spinning						
Weaving						
Processing						
Garmenting						
Technical Textiles						
Textile Machine manufacturing						

14. Where is India lacking in terms of technology (Machine)? What can we learn from other countries for upgrading level of technology in India?

15. How can machine manufacturing be encouraged to grow in India?
16. Which textile segments require more support for technology upgradation and overall growth of
17. How important is scale for global competitiveness? How can Indian textile companies acquire scale?
18. How to encourage investments in garment, made ups and technical textile sectors?
19. What is the impact of the scheme on following parameters?

Parameters	**Significant Impact**	**Insignificant Impact**	**No Impact**	**Your Remarks**
Employment Generation				
Average salary				
Increase in Production				
Increase in Sales				
Increase in Profit				
Increase in Average Sales Price				
Increase in Productivity				
Increase in Cost Savings				
Reduction in wastage				
Increase in Exports (Value)				
Increase in Investments				
Increase in Quality				

Increase in Higher Value Product mix				

20. What level of technology benchmark TUFS beneficiaries were able to achieve in the following segments?

Level of Machine (Technology) achieved after TUFS	**TUFS / Indian Standard**			**Achieved Global Standard**			**Your Remarks**
Segment	**Achieved**	**Not Achieved**	**May be**	**Achieved**	**Not Achieved**	**May be**	
Spinning							
Weaving							
Knitting							
Processing							
Garmenting							
Technical Textiles including non-woven							
Composite*							
Embroidery							
Others# (segments to be indicated separately)							

21. What are your views on the current TUFS scheme implementation mechanism?
22. What are the major issues faced by your sector? What are the major reasons for delay in disbursements?
23. What are your suggestions to improve the TUFS implementation?

Appendix 11- Questionnaire for Machinery manufacturers

Name

Designation

E-mail Id

Phone No.

Name of the Organization

Organization Address

1. What is your opinion on the current situation of Indian textile industry? What are the major challenges faced by the Indian Textile Industry at the Macro level? What are the key suggestions for the growth of the Indian Textile Industry?
2. Please rank the following **factors affecting the investment into textile sector** and kindly explain why with some examples.

S. No.	Parameters	Your Ranking	Remarks
1	Interest Rates		
2	Corporate Tax		
3	Power (Cost, Availability)		
4	Man-Power (Cost, availability)		
5	Raw Material Cost		
6	Supply Chain Cost		
7	Government Clearances		
8	Lack of Scale		
9	Lack of visionary entrepreneurs		
10	Others (Pl specify)		

3. What are your suggestions for attracting more investment into the Indian Textile Value Chain?
4. How can machine manufacturing be encouraged to grow in India?
5. Which textile segments require more support for technology upgradation and overall growth of textile value chain? Why?
6. What is the impact of the TUFS scheme on following parameters?

Parameters	Significant Impact	Insignificant Impact	No Impact	Your Remarks
Employment Generation				0
Average salary				
Increase in Production				
Increase in Sales				
Increase in Profit				

Increase in Average Sales Price				
Increase in Productivity				
Increase in Cost Savings				
Reduction in wastage				
Increase in Exports (Value)				
Increase in Investments				
Increase in Quality				
Increase in Higher Value Product mix				

7. What level of technology benchmark TUFS beneficiaries were able to achieve in the following segments?

Level of Machine (Technology) achieved after TUFS	**Achieved Indian Standard**			**Achieved Global Standard**			**Your Remarks**
Segment	**Achieved**	**Not Achieved**	**May be**	**Achieved**	**Not Achieved**	**May be**	
Spinning							
Weaving							
Knitting							
Processing							
Garmenting							
Technical Textiles including non-woven							

8. What are your views on the degree of technological upgradation achieved due to TUFS? How far the TUFS beneficiaries were able to achieve TUFS scheme technology benchmark?
9. Please share your views on where does India stand in terms of technology in various segments of textile as per global standards? Also share your views how does TUFS technology specifications compare with global standards?
10. What are your suggestions to include new machinery or change in technology/machinery specifications for TUFS scheme?
11. What are your views on the current TUFS scheme implementation mechanism?
12. What are the major issues faced by industry while availing TUFS? What are the major reasons for delay in disbursements?
13. What are the major issues faced by machinery manufactures or their supply chain partners related to TUFS scheme?
14. What are your suggestions to improve the TUFS implementation?

Appendix 12- Questionnaire for Lending Agency

Name
Designation
E-mail Id
Phone No.
Name of the Organization
Organization Address

1. What is your opinion on the current situation of Indian textile industry? What are the major challenges faced by the Indian Textile Industry at the Macro level? What are the key suggestions to the government for the growth of the Indian Textile Industry?
2. Please rank the following **factors affecting the investment into textile sector** and kindly explain why with some examples.

S. No.	Parameters	Your Ranking	Remarks
1	Interest Rates		
2	Corporate Tax		
3	Power (Cost, Availability)		
4	Man-Power (Cost, availability)		
5	Raw Material Cost		
6	Supply Chain Cost		
7	Government Clearances		
8	Lack of Scale		
9	Lack of visionary entrepreneurs		
10	Others (Pl specify)		

3. What are your suggestions for attracting more investment into the Indian Textile Value Chain?
4. What is the impact of the scheme on following parameters?

Parameters	Significant Impact	Insignificant Impact	No Impact	Your Remarks
Employment Generation				
Average salary				
Increase in Production				
Increase in Sales				
Increase in Profit				
Increase in Average Sales Price				
Increase in Productivity				

Increase in Cost Savings				
Reduction in wastage				
Increase in Exports (Value)				
Increase in Investments				
Increase in Quality				
Increase in Higher Value Product mix				

5. What are your views on the current TUFS scheme implementation mechanism?
6. What are the major issues faced by your sector? What are the major reasons for delay in disbursements?
7. What are your suggestions to improve the TUFS implementation?
8. Please share your viewpoint on the current subsidy disbursement model under TUFS?
9. What are the major issues faced by lending agency while availing TUFS benefits?
10. What are the major reasons for delay in disbursements under TUFS? How it can be improved?
11. What is the level of bad loan and NPAs in the Textile Value Chain? How does it compare with other Industries?

Appendix 13- Questionnaire for UHS (Unit Holder Survey) – Beneficiaries

Name of the Company
Company Address
Respondent Name
Respondent Designation
E-mail Id
Phone No.
Type of company: MSME / Non-MSME / SSI / Non – SSI
Name of the bank & branch used for TUFS subsidy
Name of the fiber the company manufactures/deals in:
Month/Year of Machinery Installation

1. **Production Volumes & Financials of the Company –**

Segments	Production* (Volume)	Total Sales Turnover (Rs Cr)	Domestic (%)	Export (%)
Spinning				
Weaving				
Knitting				
Processing				
Garmenting				
Technical Textiles including non-woven				
Composite				
Embroidery				
Others# (segments to be indicated separately)				

*Production Volume can be in terms of Ton, Meters or No. of Pieces.

Cotton ginning & pressing; Silk sector (i.e. reeling, twisting, spinning, and weaving); Wool sector (i.e. scouring, combing, spinning (worsted, shoddy and woolen) and weaving); Synthetic filament yarn texturizing, crimping & twisting; Manufacturing Viscose filament yarn / viscose staple fiber; Independent weaving preparatory; Made-up manufacturing; Jute Industry; Carpet manufacturing; Handloom weaving

2. **Segments presence and loan/subsidy availed:**

Segments	Please tick all applicable		Please provide details	
	Company segment presence	Segment for which loan availed under	Total Project Cost	Loan availed under RTUFS / RRTUFS/

		RTUFS / RRTUFS/ATUFS		ATUFS
1	**2**	**3**	**4**	**5**
Spinning				
Weaving				
Knitting				
Processing				
Garmenting				
Technical Textiles including non-woven				
Composite*				
Embroidery				
Others# (segments to be indicated separately)				

* Spinning units with weaving / knitting and processing and garmenting

Cotton ginning & pressing; Silk sector (i.e. reeling, twisting, spinning, and weaving); Wool sector (i.e. scouring, combing, spinning (worsted, shoddy and woolen) and weaving); Synthetic filament yarn texturizing, crimping & twisting; Manufacturing Viscose filament yarn / viscose staple fiber; Independent weaving preparatory; Made-up manufacturing; Jute Industry; Carpet manufacturing; Handloom weaving

3. What has been the impact of machinery bought under RTUFS/RRTUFS/ATUFS on following parameters?
    a. Impact on Employment (Yearly Change)

Parameter	**Value in (2011)**	**Value in (2012)**	**Value in (2013)**	**Value in (2014)**	**Value in (2015)**	**Value in (2016)**	**Value in (2017)**	**Value in (2018)**
Total Man Power								
Skilled Man Power								
Un-Skilled Man Power								
Contractual Man Power								
Average Salary								
Training Cost								

b. Impact on Financial Health (Yearly Change)

Parameter	**Value in (2011)**	**Value in (2012)**	**Value in (2013)**	**Value in (2014)**	**Value in (2015)**	**Value in (2016)**	**Value in (2017)**	**Value in (2018)**
Sales (Value)								
Production(Volume)								
Net Profit								
Average Sales Price								

c. Impact on Productivity (Yearly Change)

Parameter	**Value in (2011)**	**Value in (2012)**	**Value in (2013)**	**Value in (2014)**	**Value in (2015)**	**Value in (2016)**	**Value in (2017)**	**Value in (2018)**
Efficiency %								
Cost per unit								
Wastage %								

d. Impact on Exports (Yearly Change)

Parameter	**Value in (2011)**	**Value in (2012)**	**Value in (2013)**	**Value in (2014)**	**Value in (2015)**	**Value in (2016)**	**Value in (2017)**	**Value in (2018)**
Exports (Value)								
Exports (Volume)								
Average Price of Exports								

e. Impact on Investments (Yearly Change)

Parameter	**Value in (2011)**	**Value in (2012)**	**Value in (2013)**	**Value in (2014)**	**Value in (2015)**	**Value in (2016)**	**Value in (2017)**	**Value in (2018)**
Project Investment (Value – Rs Cr/Year)								
Machinery Investment (Value – Rs Cr/Year)								
Number of Machines								

Note: Supporting data / details may please be provided.

4. Has there been improvement in following aspects due to RTUFS/RRTUFS/ATUFS?
(Please tick appropriate option for all aspects)

Aspects	**Yes**	**No**	**Maybe/Not Sure**	**Remarks (if any)**
Overall Productivity*				
Product Quality				
Product Development				
Research & Development				
Higher Value Product Mix				
Export Competitiveness				
Cost Efficiency				

*Productivity (output per unit of input) can be in terms of Ton (for spinning), Meters (for weaving or processing) or No. of Pieces (for garmenting)

Note: Supporting data may please be provided.

5. What is the efficiency of the TUFS fund disbursement process?

Process	**Actual Time**	**Please tick mark the applicable range if exact no. is not Available (Months/Days)**				
Entity applies for the loan through i-TUFS - Sanction of term loan by Lending Agency(Bank)		a) 4-5 months	b) 5-6 months	c) 6-8 months	d) >8 months	e) 1-4 months
JIT Physical Inspection		a) 89-100 days	b) 100-110 days	c) 110-120 days	d) >120 days	e) <88 days
Approval of Subsidy Claim by Textile commissioner Office		a) 25-35 days	b) 35-45 days	c) 45-60 days	d) >60 days	e) <25 days
Ministry of Textiles will release the subsidy into the account of entity		a) 15-30 days	b) 30-90 days	c) 90-180 days	d) >180 days	e) <15 days

6. Have you faced any difficulty in availing RTUFS / RRTUFS/ATUFS benefits?
   a. No
   b. Yes *(If yes,* Tick *the appropriate reason with relevant details)*

Reasons	**Tick**	**Details (if yes)**

Required machinery is not listed		
Complicated and long process		
Delay in processing application by lending agency		
Delay in submission of Final JIT report to Textile Commissioner Office		
Lack of Fund Availability under TUFS		
Government processes / policy		
Any other: …….. ……		

7. Was there any degree of Technological Up-gradation under RTUFS/RRTUFS/ATUFS in the following segments:

Level of Machine Technology after TUFS / Segment	**As per TUFS**	**As per Indian Standard**	**As per Global Standard**
Spinning	a) Yes b) No c) May be	a) Yes b) No c) May be	a) Yes b) No c) May be
Weaving	a) Yes b) No c) May be	a) Yes b) No c) May be	a) Yes b) No c) May be
Knitting	a) Yes b) No c) May be	a) Yes b) No c) May be	a) Yes b) No c) May be
Processing	a) Yes b) No c) May be	a) Yes b) No c) May be	a) Yes b) No c) May be
Garmenting	a) Yes b) No c) May be	a) Yes b) No c) May be	a) Yes b) No c) May be
Technical Textiles including non-woven	a) Yes b) No c) May be	a) Yes b) No c) May be	a) Yes b) No c) May be
Composite*	a) Yes	a) Yes	a) Yes

	b) No c) May be	b) No c) May be	b) No c) May be
Embroidery	a) Yes b) No c) May be	a) Yes b) No c) May be	a) Yes b) No c) May be
Others# (segments to be indicated separately)	a) Yes b) No c) May be	a) Yes b) No c) May be	a) Yes b) No c) May be

Comments ----------
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8. Please rate the following factors affecting the growth of Garments/Made-ups/Technical Textiles Exports out of India

S. No.	Parameters	Your Ranking
1	Interest Rates	
2	Corporate Tax	
3	GST	
4	Power Cost	
5	Man-Power Cost	
6	Labor Productivity	
7	Raw Material Cost	
8	Supply Chain Cost	
9	Infrastructure Cost	
10	Government Clearances	
11	Trade Agreements	
12	Others	

Your Suggestions ----------
---

9. Please rate the following factors affecting the investment into textile sector

S. No.	Parameters	Your Ranking
1	Interest Rates	
2	Corporate Tax	
3	GST	
4	Power Cost	
5	Man-Power Cost	
6	Labor Productivity	
7	Raw Material Cost	
8	Supply Chain Cost	
9	Infrastructure Cost	

10	Government Clearances	
11	Lack of Scale	
12	Lack of visionary entrepreneurs	
13	Others	

Your Suggestions ----------
---

10. What is the impact of the scheme on following parameters?
(Please tick appropriate option for all parameters)

Parameters	**Significant Impact**	**Insignificant Impact**	**No Impact**
Technology up gradation			
Employment Generation			
Capacity expansion			
Export competitiveness			
Quality improvement			
Cost Efficiency			
Resource Efficiency			
Any other:			

11. Please mention if you have any suggestions for improving the scheme?

13. LIST OF EXHIBITS

14. LIST OF ABBREVIATIONS/TERMINOLOGIES

INR – Indian Rupee

USD – U.S Dollar

Bn – Billion

Mn – Million

Cr. – Crore

ToR – Terms of Reference

TUFS – Technology Upgradation Funds Scheme

KII – Key Informant Interviews

UHS – Unit Holder Survey

Beneficiaries – Treatment Group who received TUFS subsidy

Non – Beneficiaries – Control Group who applied but didn't receive TUFS subsidy

Base – No. of KIIs/UHS covered for the purpose of the mid-term report

NCEUS – National Commission for Enterprises in the Unorganised Sector

Others – Includes segments like Embroidery, Composites, Other

t e c h n o p a k

Original for Recipient

TAX INVOICE

Technopak Advisors Private Limited
Address: 5A & 5B, 5th Floor, Block A
Lemon Tree Corporate Park
Sector 60,Gurgaon, Haryana - 122011
State Code: 06
GSTIN: 06AABCK8036A2ZY

Invoice No. TPK/20-21/063
Invoice Date: August 31, 2020
Banking Details:
Bank: Axis Bank Limited
A/c #: 015010200015066
IFSC: UTIB0000015

Billing Address
Customer Name : NITI Aayog
Address:
Sansad Marg
New Delhi-110001
UIN: 07DELPO8094C1D0
State Code: 07

Shipping Address
Customer Name : NITI Aayog
Address:
Sansad Marg
New Delhi-110001
UIN: 07DELPO8094C1D0
State Code: 07

S. NO.	DESCRIPTION	SAC	GROSS	CGST		SGST		IGST	
				Rate	Amount	Rate	Amount	Rate	Amount
1	Towards 3rd invoice for 30% fees (30% of Rs. 24 lacs), due on Submission of project completion report for the assignment "Impact Assessment of Technology Upgraded Fund Scheme/Amended TUFS".	9983	6,10,169		-		-	18%	1,09,831
	Totals		**6,10,169**		**-**		**-**		**1,09,831**

Rupees Seven Lakh Twenty Thousand Only

Gross Value	6,10,169
Tax	1,09,831
Invoice Value	7,20,000

For Technopak Advisors Pvt.Ltd.

Authorised signatory