CUTTING METHOD STANDARDIZATION

DR. JANARTHANAN ME[1], SARANKUMAR E[2], RAKUL A[3]

[1]**DR. JANARTHANAN M** Assistant Professor-Level-II, Department of Textile Technology, Bannari Amman Institute of Technology, Sathyamanagalam, Erode, Tamil Nadu, India.

[2,3]students, Department of Textile Technology, Bannari Amman Institute of Technology, Sathyamanagalam, Erode, Tamil Nadu, India.

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Abstract - *An Aditya Birla Fashion and Retail Limited is one of the largest apparel manufacturer and retailer in India manufacturing top brands like Louis Philippe, Allen Solly, Peter England, Van heusen and export brands like Superdry, Mar co polo etc. The garment industry is constantly working to enhance production and garment quality in order to compete in such a crowded market. The productivity of the clothing industry determines its long-term viability and profitability. A variety of procedures are carried out at various locations during the garment manufacturing process. Because of the operators to obtain the desired results, all of these activities must be coordinated, scheduled, and completed on time, productivity. In industries, many practises and procedures are used to increase production. Almost every garment company uses time study as one of the most effective tools for optimising output rate. This article examines the production process of shirt. which we have investigated the time spent on each phase of the process.*

Key Words: Garment Industry, checked shirts, feature line, checks repeat, pinning, spreading, ready cut, block cut, CAD

1. INTRODUCTION

This study is conducted in the cutting section to identify the areas that need standardization and improvement. Observed that Production of shirts with versatile designs take place in the production floor. One of the challenging and important aspect in the process of manufacturing of checked shirts is to maintain the feature line matching throughout the garment. The line matching is very important for shirt parts like pocket, front plaquette, both sleeve panels, sleeve plaquette and yoke panels. For this line matching aspect measures should be made in the first process of garment manufacturing knows as fabric spreading or laying. The main factor plays a major role in this line matching are the checks and striped repeats in the fabric rolls. This repeat varies from roll to roll which is a challenging thing. For this issue the clubbing to rolls based on the repeat size difference was proposed by using which we can make CAD markers for each repeat clubs. This implementation will automatically reflect in perfect feature line matching and increase in ready cut percentage. The garment manufacturing involves many processes like cutting, fusing, sewing and finishing. And for all the above-mentioned processes there are separate departments at Aditya Birla Fashion and Retail Limited.

Departments

- Fabric store
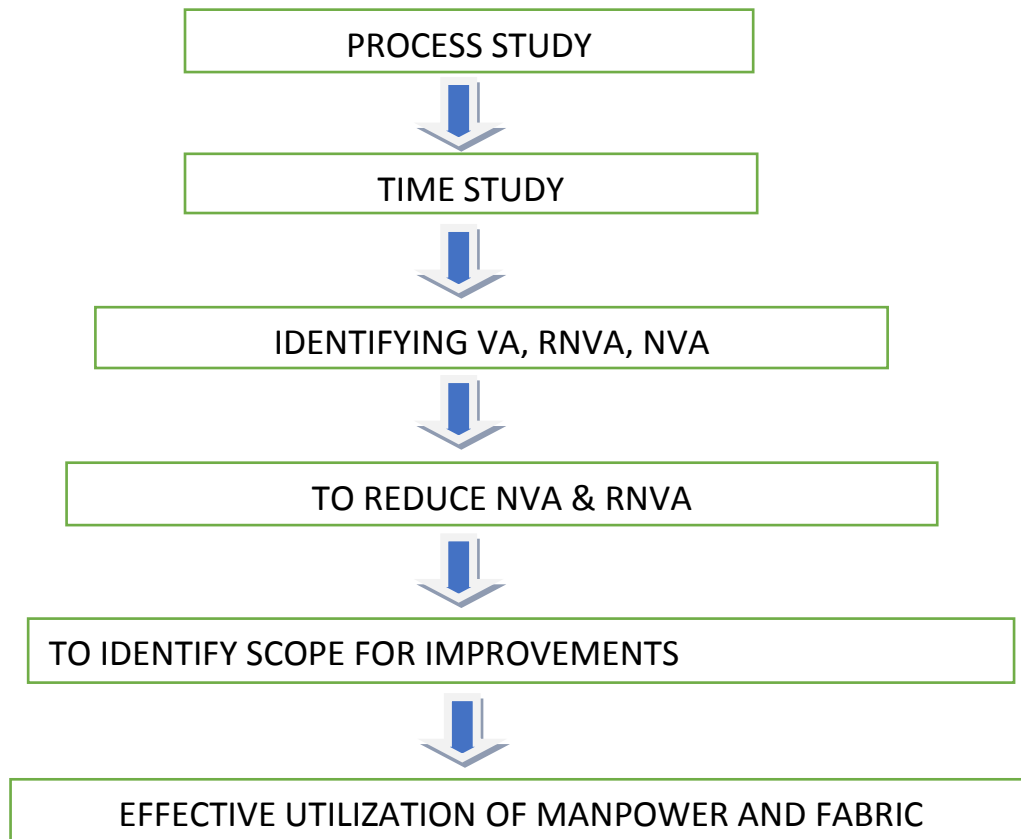- Trim store
- CAD
- Cutting
- Sewing
- Finishing

Among these departments our project deals with CAD and Cutting departments which is known as the heart of the factory.

2. METHODOLOGY

The main objective of this implementation is to achieve perfect matching of feature line across the shirt parts. For this the perfect pining lay style should be followed. Pinning lay style is performed on pin table which is about 4 meters in length and 1.8 meters in width which consists 42 pins arrange horizontal and vertical across the table. In pinning style of laying the fabric is spread over the table by pinning the fabric over the pin on the table by the way the feature line is accurate.
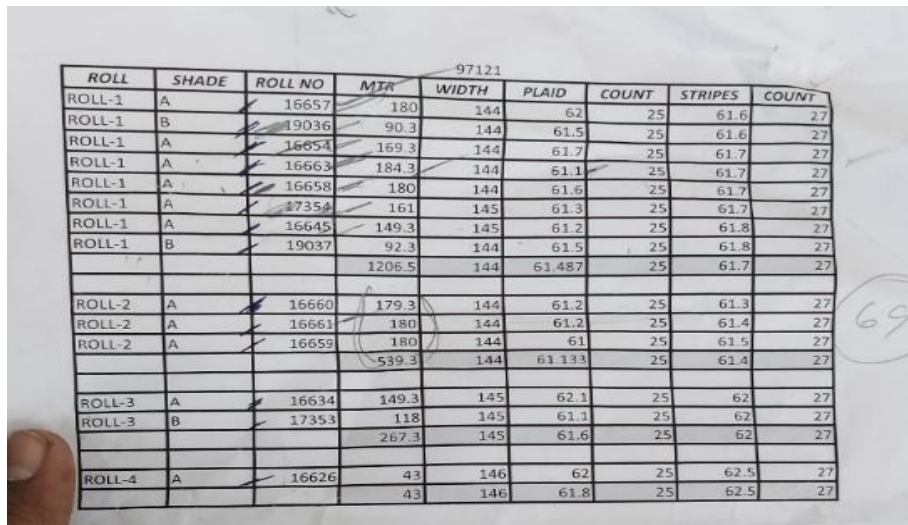

The deviation occurs when a lay requires 50 plies but the roll no.1 can only produce 30 plies so for the next 20 plies roll no. 2 should be used. In this case if the repeat size between the two rolls is more than 3mm then deviation in feature line matching will occur.

Here the repeat wise clubbing of rolls will eliminate the deviation in matching of feature line.

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┌─────────────────────────────┐
│      PROCESS STUDY          │
└─────────────────────────────┘
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┌─────────────────────────────┐
│        TIME STUDY           │
└─────────────────────────────┘
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┌─────────────────────────────┐
│   IDENTIFYING VA, RNVA, NVA │
└─────────────────────────────┘
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┌─────────────────────────────┐
│    TO REDUCE NVA & RNVA     │
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│  TO IDENTIFY SCOPE FOR IMPROVEMENTS │
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│ EFFECTIVE UTILIZATION OF MANPOWER AND FABRIC │
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3. REPEAT WISE CLUBBING OF FABRIC ROLLS

- First the fabric will be issued to the fabric store.
- Where the fabric inspection is carried out and fabric inspection report is made. The fabric inspection report is made by taking a swatch fabric from each roll.
- The fabric inspection report carries details like
- Fabric shrinkage value
- Shade variation type (csv or non csv)
- Roll to roll repeat variation in checked fabric
- Fabric visual inspection report
- Then the rolls are shade wise segregated and the roll list is made.
- After this the newly implemented repeat wise grouping of rolls need to be carried out.
- A fabric swatch of 80 cm from each roll is taken and the repeat sizes are measured. Fabric rolls with repeat sizes within 3mm difference are clubbed together in the roll list.
- Then the fabric inspection report along with roll list containing shade and repeat clubbing is issued to the CAD department.

Fig 1: Repeat wise grouped lay sheet

Repeat wise grouping is clubbing of rolls in a single workorder with similar repeat size. This process should be carried out in fabric store and this report should be done along with the fabric inspection report.

➢ For checks shirts the matching of feature line with parts like pocket, front plaquette, yoke, both sleeves, sleeve plaquette is important.

➢ For this purpose, checks fabric is lay using a special method called pinning which is performed on a pinning table.

➢ Pinning table is 4 meters long table with 1.8 meters of length which consists of 42 pins arrange vertically and horizontally over which the fabrics are fabrics are laid by pinning the feature line over the pins.

➢ This helps in mismatching of the feature lines among the plies in a lay. The repeat size will vary from roll to roll, so even if the follow of pinning lay style will not give perfect matching of feature lines and this will reduce the percentage of ready cut.

4. CONTRIBUTION OF CAD

CAD department analyses the fabric inspection report considering factors like fabric shrinkage, width, csv or non csv shade and prepares maker.

Now as the rolls are repeat wise clubbed, the marker can be made with the average repeat size mention in the roll list for each club. CAD department will also add the pre-planned laying column to the cut plan which will reduce the non-value-added activities and helps in increasing production. This also helps in end bit fabric standardization.

Name of Marker Maker	Work Order No	Brand	Gold Seal No	Fabric Code	Product	Work Order Qty	BOM - Fabric Width	BOM - Fabric Qty	BOM Consumption	Act-Cutable Width	Fabric Type	Repeat Size- stripe	Repeat Size- plaid	CAD Marker Consumption	Work Order Average Efficiency	Final-Consumption	No of Markers	No of Markers REPEATED	Marker Paper Utilisation	Fabric required(As per CAD marker)	Excess percentage	Fabric to be issued to cutting	EC %	Fabric issue to cutting (Fabric mtr)
BAKYARAJ.E	229000121500	LP	LPSFG0157CL	F322LPSH5294	SHIRT	200	0.000	290.00	1.45	147.5	PS	0.3	0	1.44	82.58%	1.48	6	0	17.38	287.96	3%	296.5988	0%	296.5988

	Size	36	38	39	40	42	44	46	48	50	0	0										
	Order/modified qty	0	4	50	66	60	18	2	0	0	0	0	200									
CMs	Cut order qty						FS						Total	No of Plies	Marker Length	Lay length	Marker Eff	Pc's to be cut	Weighted Eff	Fabric Required(ML)	Fabric availability	
Size		36	38	39	40	42	44	46	48	50	0	0										
Cut Order Qty	Cut width	0	4	50	66	60	18	2	0	0	0	0	200									
Marker 1							1						1	2	1.74	1.76	80.84	2	0.81	3.5	0	
Marker 2			1										1	4	1.32	1.34	81.41	4	1.63	5.3		
Marker 3				1			1						2	18	3.01	3.03	81.29	36	14.63	54.2		
Marker 4				2									2	16	2.69	2.71	83.38	32	13.34	43.0		
Marker 5					1	1							2	60	2.89	2.91	82.92	120	49.75	173.4		
Marker 6					1								1	6	1.43	1.45	80.63	6	2.42	8.6		
Marker 7													0		0.02			0	0.00	0.0		
Marker 8													0		0.02			0	0.00	0.0		
Marker 9													0		0.02			0	0.00	0		
Marker 10													0		0.02			0	0.00	0		
Marker 11													0		0.02			0	0.00	0		
Marker 12													0		0.02			0	0.00	0		
Marker 13													0		0.02			0	0.00	0		
Marker 14													0		0.02			0	0.00	0		
Marker 15													0		0.02			0	0.00	0		
Marker 16													0		0.02			0	0.00	0		
Marker 36													0		0.02			0	0.00	0		
Planned Qty		0	4	50	66	60	18	2	0	0	0	0		106	13.08	2.12	289.55	200	82.58	287.96	290.08	
Diffrence		0	0	0	0	0	0	0	0	0	0	0										

Fig 2: New cut plan

5. LAYING

Now the laying operators should spread the fabrics from rolls from a particular group.

6. RESULTS

The checks ready cut percentage have been increased which automatically increases the production numbers. Also, the lay sheet entry timing has been reduced as a part of this implantation.
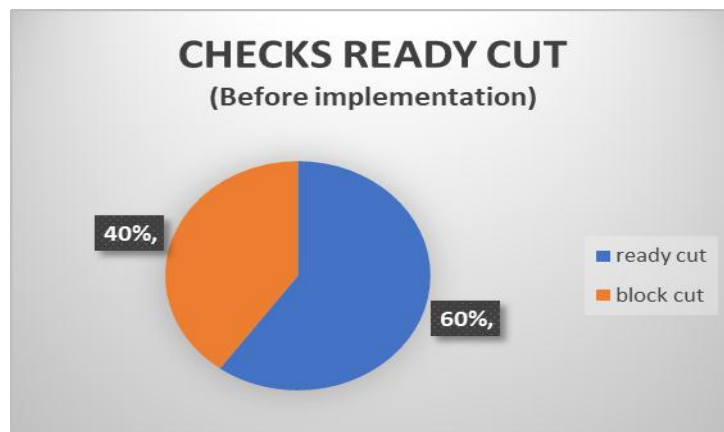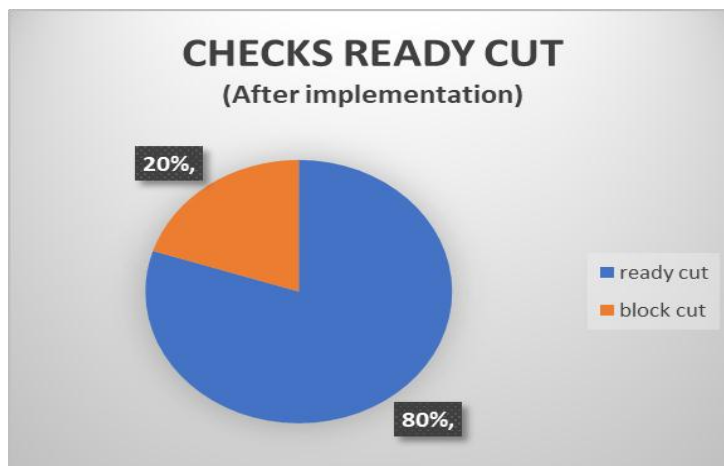
Fig 4: Checks ready cut before implementation

Fig 5: Checks ready cut after implementation
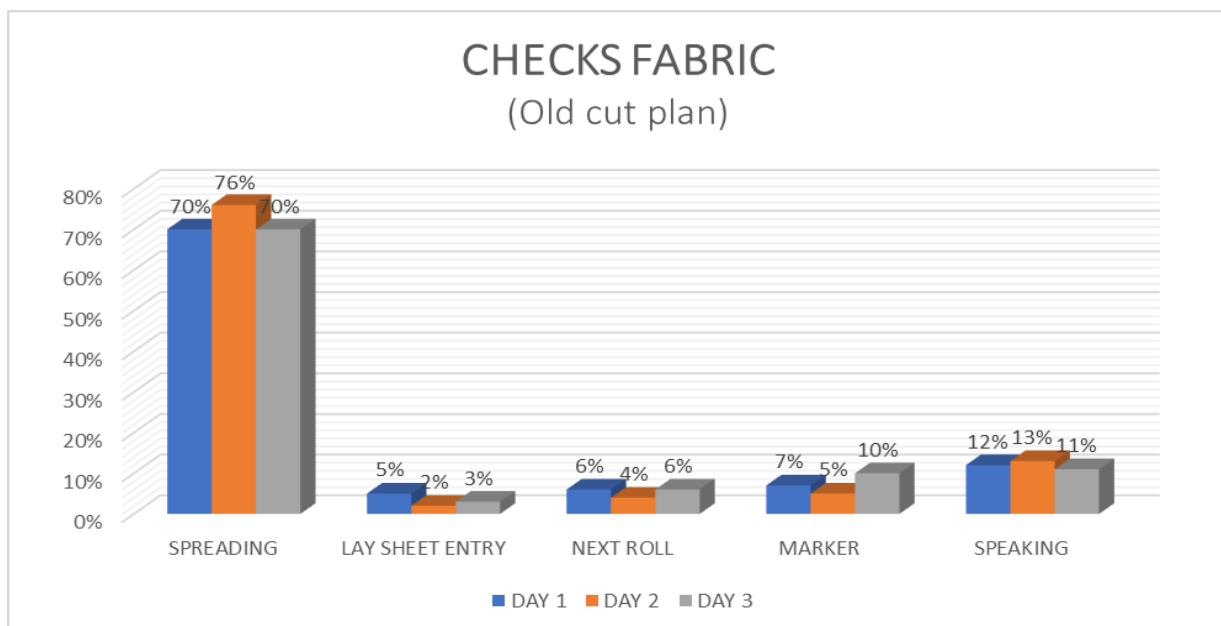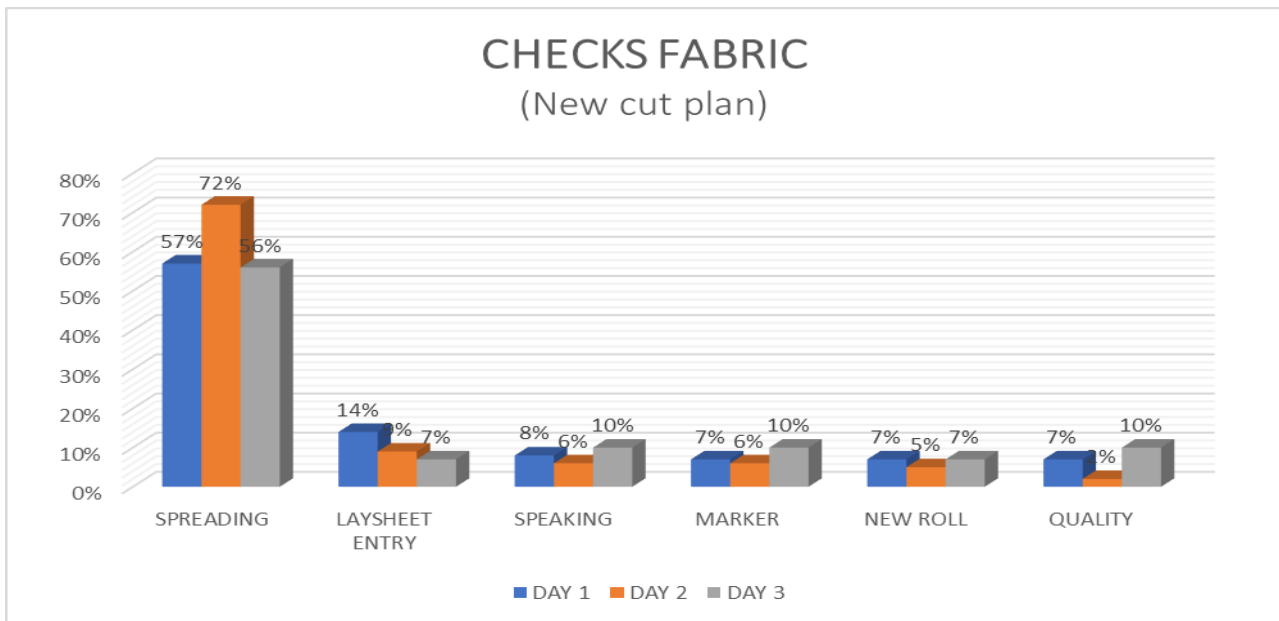

Fig 6: Time study with old cut plan

Fig 7: Time study with new cut plan

7. CONCLUSIONS

After implementation of this repeat wise grouping of rolls. The feature line matching is perfect in lays which increase the ready cut percentage by 20% from 60% to 80%. This implementation is also a first step for checked fabric cutting in auto cutter.
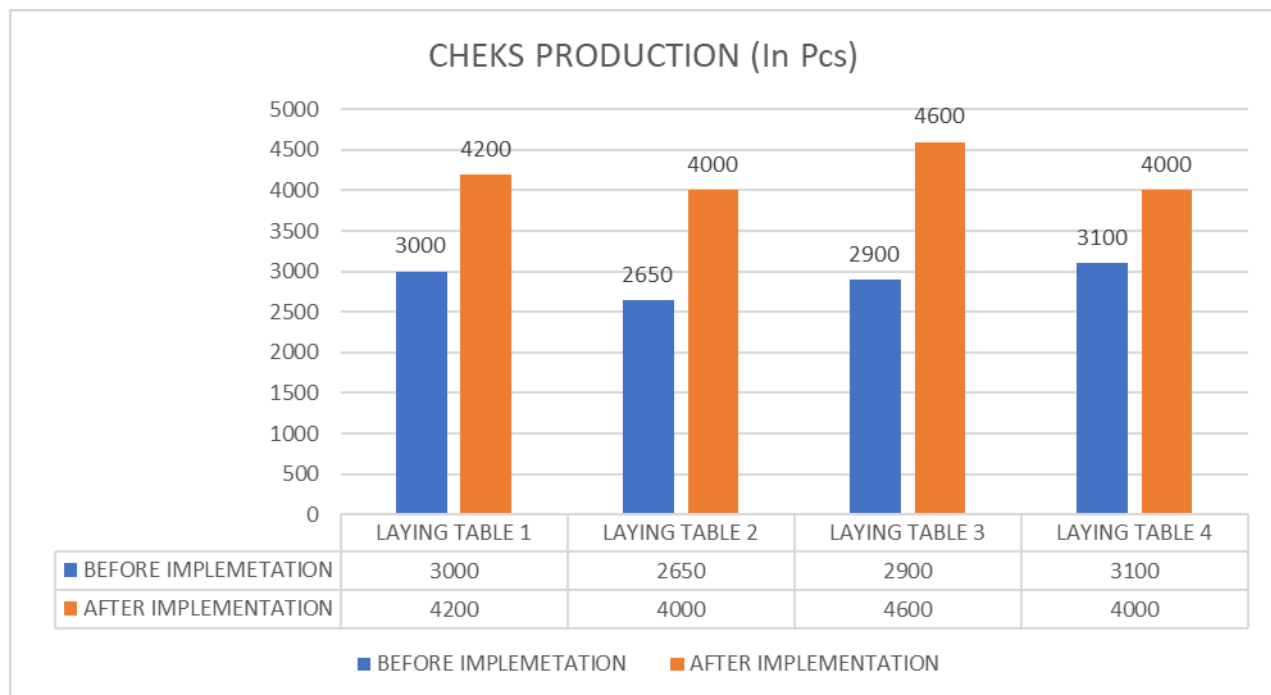

Fig 8: Production improvement

REFERENCES

1. Khatun, Murshida. Application of Industrial Engineering Technique for Better Productivity in Garments Production, International Journal of Science, Environment and Technology, Vol. 2, No 6, 2013, 1361 – 1369.

2. Price, John WH., Industrial Engineering: Important for Management in Australia, Fourth International Conference on Engineering Management, 1994: Preprints. Institution of Engineers, Australia, 1994.

3. Haque Ahasanul, Lead time management in the garment sector of Bangladesh: an avenues for survival and growth, European Journal of Scientific Research, Vol. 33(4) 2009, 617-629.

4. Kader Shahidul, and Maeen Md Khairul Akter, Analysis of the factors affecting the lead time for export of readymade apparels from Bangladesh

5. Dr P Khanna: Work study, time and motion study, Dhanpat Rai and Sons, New Delhi, (pp 21-31). [2] F.M. Gryna, J.A. DeFeo, "Quality Planning & Analysis for Enterprise Quality", Tata McGraw Hill, Edition, 2008

6. https://www.researchgate.net/profile/MadhuriKakde/publication/326534061_Enhancing_Efficiency_and_Productivity_of_Garment_Industry_by_Using_Different_ Techniques/links/5b52d891a6fdcc8dae345688/Enhancing-Efficiency-and-Productivity-of-Garment-Industry-byUsing-Different-Techniques