ISSN: 2249-7196
IJMRR/Feb 2016/ Volume 6/Issue 2/Article No-23/300-316
Rashmi Jain *et. al.*, / International Journal of Management Research & Review

TO EXPLORE THE PRODUCTION PRACTICES AND EXAMINE THE PRODUCTIVITY OF APPAREL MANUFACTURING UNITS OF JAIPUR

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ABSTRACT

Apparel industries play a significant role in industrial growth. In order to sustain in the global market, there is a need to improve the performance in terms of productivity, quality and technology. The study was undertaken with an objective to explore the current production practices and to examine the productivity of the units. 150 units were selected randomly to assess the current production practices and, to examine the operator productivity and total labor productivity (sewing) and to identify low, medium and high productivity units. Results revealed that block printed and dyed cotton fabrics of Sanganeri and Bagru are popular in the overseas market for apparel. Japan, USA and EU are the major export destinations. It was further found that there is a lack of awareness in terms of productivity measurement in apparel export units of Jaipur.

Keywords: Apparel industries, Productivity, Labor productivity.

1. INTRODUCTION

Textiles and Apparel Industry plays a pivotal role in the Indian Economy. It constitutes 14% of total industrial production of the country and it is the second largest employer after agriculture in India (Olsen and Thomas, 2008).

Bheda (2004) stated that today apparel exports from India have made inroads into the international market for their toughness, excellence and appearance. One of the reasons for the economical pricing of India's ready-made garments and apparel is the availability of highly skilled cheap labor in the country. Though apparel industry has enough prospective for development, it is not easy for everyone to succeed in this industry. Problem of finance, production and marketing leads to thousands of bankruptcy cases every year, limited knowledge of productivity and quality has built up and remained unnoticed.

In India, ready-made apparel units are concentrated in the cities like Delhi, Mumbai, Kolkata, Bangalore, Chennai, Jaipur, Tripura and Ludhiana. Jaipur is the capital and important part of Rajasthan state, located at North West India. It is the biggest supplier of ready-made apparel in India and is a leading source of casual apparel. Today overseas buyers regard Jaipur as an important location for sourcing of apparel after Bombay, Delhi and Bangalore. The units of Jaipur specialized in manufacture of ladies wear like one piece dress, skirts and tops. Studies

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have shown the direct and indirect employment in the Ready-made Apparel Cluster of Jaipur is more than one lakh.

The readymade apparel industry of Jaipur was started in late 1960's when units were setup for manufacturing hand block printed ladies garments for export. Thereafter ladies garment manufacturing and exports from Jaipur started gaining the ground of fame and picked up pace. It became an important center for readymade ladies apparel. With increasing popularity of the Jaipur prints and designs, there was proliferation of the units manufacturing readymade garments in Jaipur. Today, the hand block printed and dyed fabric of Saganer and Bagru have generated tremendous demand in the overseas market. Today there are approximately 350 readymade manufacturing garment units in Jaipur.

Presently there is a strong competition in survival of apparel export and industries must improve in their actions for maintaining their businesses. There are wide deviations in the level of competency in the apparel units. The major suppliers of this deviation are lack of work study, mismanagement in the finishing departments and a general lack of system to establish performance levels (Olsen and Thomas, 2008).

2. PRODUCTIVITY

Apparel industry is a very labor exhaustive industry; its productivity is mainly motivated by workers stitching skills. Productivity refers to the efficiency of the manufacture system. It is the perception that guides the management. It is an indicator as to how well the factors of production like land, capital, labour and energy are utilized. Productivity is a measure of organization performance, efficiency, resource utilization, and the relationship between real output and inputs (Tadesse, 2011).

In other words, it can be said that productivity is the relationship between output and input. The output in apparel industries can be pieces of finished or produced garments. The output of sections or departments within the apparel industries can be meters of the fabric inspected cut components in cutting room; number of garments ironed in the ironing section and so on. The inputs are in terms of man-hours, machine hours, meter of fabric consumed or electricity consumed. Productivity can be calculated as:

$$\text{Productivity} = \frac{\text{Output}}{\text{Input}}$$

Productivity is the quantitative connection between production and the resources used. In other words, productivity is concerned with the well-organized utilization of resources (input) in producing goods (output). Productivity is expressed in terms of efficiency (Bheda, 2004).

Without productivity objectives, a business does not have direction. Without productivity measurement, it does not have control (Drucker, 1974).

There are mainly two approaches to the measurement of productivity. These are partial and total productivity measurements.

Partial Productivity: It is the ratio of output to one class of input. For example, labor productivity (the ratio of output to labor input) is a partial measure. Similarly, material productivity (the ratio of output to material input) and machine productivity (the ratio of

output to machine input) are examples of partial productivity. Partial productivity measures are easy to understand and use. The data needed are both easy to obtain and easy to compute. Partial productivity is also a good diagnostic tool for pinpointing improvement areas.

Total Productivity: It is the ratio of total output to the sum of all input factors. Thus a total productivity measure reflects the joint impact of all inputs in producing the output. It is a higher level of productivity assessment combining several or many partial productivity measures. Total productivity measure considers all the quantifiable output and input factors; so it is a more accurate representation of the real economic picture of an enterprise.

Apparel manufacturers, internationally, prefer to use partial productivity measures like labor or machine productivity. This is mostly because of the fact that the data required for the partial productivity measurement are easily accessible and the result of productivity calculation can be used by the department or the section in-charge to estimate its performance or to plan enhancement.

Productivity Measurement Methods

i. Physical Productivity Measurement Method: This method uses the quantity of output and input as data for calculating productivity.

ii. Value Productivity Measurement Method: This method uses the value of outputs and inputs as data for calculating productivity.

iii. Value- added Productivity Measurement Method: This method uses value – added (expressed in monetary units) as data for calculations, Value added productivity measurement method is generally used in organizations that have highly diverse outputs or have every expensive raw material. Data for value-added computation are taken from the financial statement (Bheda, 2002).

Labor Productivity

To evaluate productivity estimates across products, factories or even industries economists define Labor productivity as the production value added that each worker generates. In this case labor productivity equals the value of production divided by labor input. Within an industry, industrial engineers or factory managers and line supervisors calculate the number of garments produced by a line of sewing machine operators in a particular time frame. Generally factory works from 10 to 12 hours a day. Total production (output pieces) of a line and total labor involved in producing those pieces is required to calculate labor productivity (Roy, Ghosh and Chakraborty, 2012).These calculations are essential to help in scheduling the essential labor resources, and they are used to evaluate how efficiently labor resources are used. The productivity of labor can be improved by rising efficiency of labor, sinking ideal time (Babu, 2012).

Maskell (1991) emphasized the fact that productivity enhancement means the enlargement of the organization and of all its members. To attain impressive productivity growth, exporters should take every day as a challenge and work towards it. They should be free to address the problems, to examine and solve them. Productivity enhancement comes from hard work, but this should not be disappointing, it should be demanding and enhancing. Kobayashi (1998)

stated that in today's fast changing industrial world, "Factory Revolution" aspiring towards higher productivity and a stronger company has become a requirement for the constant, continuing development of manufacturing industries. To survive, industries must continually measure the productivity for enhancing the performance. Therefore, the objectives of the study are to explore the current production practices and examine the productivity of apparel manufacturing units. For this study physical measurement method used to measure the labour productivity and total labor productivity (Sewing) of apparel industries.

3. METHODOLOGY

Locale of the Study - The present study was carried out in Apparel Export Units of Jaipur.

Sample Selection - 150 units were selected randomly. The data were collected from the Supervisors of Apparel Manufacturing units of Jaipur.

Tools and Techniques of Data Collection - The data were collected with the help of structured interview schedule. The schedule was planned in such ways that include all possible information on the current production practices. Supervisors of the apparel units of Jaipur were approached in order to get data on productivity.

Measurement of Productivity - For 150 units productivity was examined. The output was converted into standard equivalent products for physical measurement (labor productivity). The performance was evaluated in terms of product and time. Standard formula were used given by (Bheda, 2004) to calculate the operator productivity and total labor productivity.

- Operator productivity - Volume of output / Direct Labour input (volume) = dresses/shift
- Total labor productivity (sewing) – Volume of output / Total labor input = dresses/shift

(Bheda, 2004)

Data Analysis: The data analysis is mainly concerned with reducing the bulk of accumulated data to manageable size. It involves coding, tabulation and analysis.

(a) Coding: The data from the questionnaire were transferred on to the coding sheet by assigning numerals to data to the facilitate tabulation and analysis.
(b) Tabulations: The data were transferred on to the coding sheets. Tabulation was done to arrange the data in the form of table.
(c) Analysis: Collected data were analyzed and reduced in to simple and meaning full figure to describe the characteristics of sample. Frequencies and percentage were computed and graphical presentation of the data was made, bar graphs and pie charts made wherever necessary.
Categorize and Identify Low, Medium and High productivity units: After calculating the operator productivity and total labor productivity of 150 units, the data was categorized into low, medium and high productivity units on the basis of standard benchmarks as mentioned below:

- **Low productivity units: Up to -7.4275 garment/ shift**
- **Medium productivity units: 7.4275 -12.3 garment / shift**
- **High productivity units: more than 12.3 garment/shift**

4. RESULT AND DISCUSSIONS

Table 4.1: Distribution of the units on the basis of the year of establishment

Year of establishment	*f*	%
1961-1970	4	3
1971-1980	11	7
1981-1990	39	26
1991-2000	67	45
2001-2010	29	19

The above table 4.1 indicates that the maximum numbers of units (45%) were established from 1991 to 2000, followed by 26% of units which were established from 1981 to 1990. Nineteen percent of units were established from 2001 to 2010 and 7% units were established from 1971 to 1980. Minimum numbers of units (3%) were established from 1961 to 1970. It was found that the readymade apparel industry of Jaipur started in the late 1960's; initially the units were setup for manufacturing and export of hand block printed ladies garments. Thereafter, export of ladies garment from Jaipur started getting popular and picked up pace from 1981. The results shows that the maximum number of units were established from 1991-2000. After 1990s there was a big boom in apparel export manufacturing units, because of the popularity of Sanganeri and Bagru prints. Devraja (n.d.) viewed that clothing industry grew into a gigantic industry spreading over the country from a modest beginning in the 70s. He reported that the growth rate of clothing industry had almost doubled over the last eight years. The estimated production of this industry was about 8000 million pieces with the market value of US$ 28 billion.

Table 4.2: Distribution of the units on the basis of annual turnover

Annual Turnover (in crores)	*f*	%
2 – 7	56	37
7 – 12	39	26
12 – 17	24	16
17 – 22	17	11
22 – 27	9	6
27 – 32	5	4

Table 4.2 indicates that the annual turnover of 37% of the units was Rs. 2 to 7 crore, followed by the turnover of Rs. 7 to 12 crore of 26% of units and Rs. 12 to 17 crore in 16% of units. Eleven percent of the units had a turnover from 17 to 22 crore and 22 to 27 crore was in 6% of the units. Only 4% units had a turnover of Rs. 27 to 32 crore. The above results show that the highest turnover (27-32 crore) was found only in 4% units. Only a few units had the capacity of higher production as these units had good infrastructure.

Table 4.3: Distribution of units on the basis of number of garments manufacturing per month

Number of garment manufacturing per month	*f*	%
5,000 – 20,000	83	55
20,000 – 35,000	50	33
35,000 – 50,000	17	12

The above data shows in table 4.3 that 55% units produced 5,000 – 20,000 pieces per month, followed by 33% of the units with production of 20,000 – 35, 0000 pieces and only 12% of the units produced 35,000 – 50,000 pieces per month. It was seen that the maximum units attained low production of garments due to poor infrastructure and lack of highly skilled labour. Tadesse (2011) also reported that the capacity was underutilized mainly due to lack of scheduling, low skill employees and low motivation level of the workers.

Table 4.4: Distribution of the units on the basis of garments manufactured

Women wear	*f*	%
One piece dress	150	100
Tops	148	98
Skirts	91	60
Trousers	11	7
Men wear		
Shirts	66	44
T-shirts	16	10
Trousers	8	5
Lowers	5	3
Bermudas	2	1
Children wear		
Top	44	29
Skirts	43	28
Shorts	11	7
Jumpsuits	11	7
Night wears	12	8
Any other	8	5

Above table- 4.4 reveals that different type of garments were manufactured in apparel industries such as women, men and children wear. In the category of women wear all the units manufactured one piece dress, followed by ladies tops (98%), skirts (60%) and only 7% of the units manufactured trousers. In the category of men wear, in 44% of the units shirts were manufactured, followed by T-shirts (10%), trousers (5%), lowers (3%) and only 1% units manufactured bermudas. In the category of children wear, the maximum number of garments manufactured was tops in 29% units, followed by skirts (28%), shorts and jump suits (7%), night wears (8%) and in 5% of the units home furnishing items like cushion covers, pillow covers etc. were manufactured. The above table indicates that ladies wears were produced in the maximum units as compared to men wear and children wear as the demand of ladies wear is more in foreign countries, with the increasing popularity of Jaipur prints and designs. Moreover, the hand block printed and dyed fabric of Sanganer and Bagru has generated tremendous demand in the overseas market.

Table 4.5: Distribution of the units on the basis of export destinations

Export destination	*f*	%
U.S.A.	61	41
Canada	13	9
South Africa	21	14
Japan	98	65
Australia	23	15
Spain	2	2
EU	50	33
Any other	4	3

and varieties of cotton sourced from Tripura, Delhi, Gurgaon, Ahmadabad, Ludhiana, Mumbai and Salem whereas silk fabrics were sourced from Jaipur, Ahmadabad, Surat, Bangalore, Bhagalpur and Varanasi while. Synthetic fabric was procured from Surat, Bhivandi, Bhagalpur, Mumbai and the local market of Jaipur while the knitted fabric was procured from Ludhiana.

Table 4.7: Distribution of the units on the basis of number of employees

Number of employees	*f*	%
Less than 100	3	2
100 – 250	98	66
250 – 500	43	28
500 – 750	6	4

Above table-4.7 indicates that 66% of units had 100 to 250 employees in a unit followed by 250-500 employees in 28% of the units and in 4% of the units 500 to 750 employees were found. Only 2% of the units had less than 100 employees.

It was shown that the majority of units had 100 to 250 employees, as most of the industries were small and medium sized industries. Similar results were obtained by Kelegama and Epaarachchi (2001) they found that approximately 80% of the factories were categorized as small and medium scale enterprises employing up to 500 employees. Similarly Salinger (2006) found that on an average about 1,000 workers were employed in a large factories while less than 500 workers were employed in small factories.

Table 4.8: Distribution of the units on the basis of apparel production system followed

Apparel Production system	*f*	%
Whole garment system	150	100
Assembly line production & Whole garment system	61	40

The data indicates in table-4.8 that all the units used whole garment system and 40% of the units used both whole garment system and assembly line system. It was seen that the maximum units followed the whole garment system. The supervisors were not aware for establishment of assembly line system. It was found that all the units used bundle system. None of the units were using modular system and unit production system. Majority of units worked with the traditional pattern, they were not aware for change the systems for productivity improvement. Units in which both type of system, supervisors reported that type of production system is dependent on the order quantity of the garments. Line system was used only for large orders i.e. above 3,000 garments.

Table 4.9: Distribution of the units on the basis of working shift and breaks in a shift

Working shift (in hours)	*f*	%
10	111	74
12	39	26
Breaks (in a shift)		
Two	72	48
Three	78	52

The above data indicates in table-4.9 that 74% units were working for 10 hours per day and 26% of the units worked for 12 hours per day. All the units work only in 1 day shift. Further table shows that 52% of the units had 3 breaks in a shift. This included one lunch break of 30 minutes and 2 tea breaks for 15 minutes each. Forty eight percentages of the units had two breaks in a shift which included one lunch break of 30 minutes and one tea break of 15 minutes. It was

assumed that these breaks reduced the fatigue level of workers and increased their work efficiency.

Similar results obtained by Arai (n.d.) and Salinger (2006) viewed that the workers worked basically of eight hours, overtime of two hours was regularly added. One factory was working for 10 hours per shift with one hour break time per shift and one hour break between shifts. According to the labour laws, the number of working days was 26 days per month, and 8 hours per day was regular time.

International Labour Organization (2005) recommended that the principle of the eight hour in a day and 48 hour in a week, as maximum normal working hours, had been internationally established since 1919, when the first ILO Convention was adopted. A recent ILO study estimated that 22 percent of the global workforce, or 614.2 million workers, still worked for more than 48 hours per week.

Similarly the study of Aloysius (n.d.) found that most of the industries in Tripura had fixed the regular working hours which was from 8:30 a.m. to 11:30 p.m. one hour was break time. Most of these industries adopt one and a half shifts i.e. 12 hours. Most of the workers work for 60 to 80 hours per week.

Table 4.10: Distribution of the units on the basis of ISO certification

ISO certified	*f*	%
Yes	92	62
No	58	38

Table-4.10 reveals that 62% of the units were ISO certified and 38% were not ISO certified. It was observed that the maximum number of units implemented ISO standards for quality standards, good working conditions, occupational safety and health of workers and better response of buyers. Those units which were not certified with ISO, that were not aware about the working conditions, quality standard and occupational safety of workers.

A study conducted by Casadesus, Gimenes and Heras (2001) indicated that the benefits of ISO certification were, better response to customers requirements, penetration of new markets, improved customer relations, improvement in customer services. Similar results obtained by Masakure, Henson and Cranfield (2009) revealed that export performance was positively associated with certification of ISO 9000. Terziovski and Power (2007) and Curkovic and Pagell (1999) also reported that certification of quality management systems enhance the organizational performance and competitiveness of the organizations. Haider, Gamage, Afzal, Hur and Siddique (2007) viewed that, today the concept of quality; was more challenging and demanding. It required a lot of more effort than in the past days. It required implementing different standards such as ISO 9000, ISO 14000 etc. in order to be competitive in global market.

Table 4.11:Distribution of the units on the basis of establishment of Industrial Engineering Department

Industrial Engineering Department	*f*	%
Yes	3	2
No	147	98

The data in table-4.11 indicates that 98% units did not have industrial engineering department in their units. There were only 2% of the units which had industrial engineering department. It was observed that the units which had the industrial engineering department they access line balancing and target setting. They followed production planning, estimated lead time, this will helped to improve the productivity and attaining higher efficiency.

Similar results were obtained by Haider et al., (2007) found that industrial engineering techniques were very helpful in any organization for increasing its productivity and quality. Industrial Engineering techniques were helped in estimating lead times, working time, costing, process designs, work flow, line balancing and best methods to produce, etc. Similarly Roy, Ghosh and Charkarborty (2012) viewed that in their study industrial engineering plays a pivotal role in increasing productivity. Various industrial engineering techniques are used to analyze and improve the work methods to eliminate waste and proper allocation and utilization of resources. Industrial engineering developed the simplest work method of work. It established the performance standards as per the standard time. It reduces the cost and provided a systematic layout for the smooth work flow of the work.

Table 4.12: Distribution of the units on the basis of training imparted

	Yes		No	
Training imparted	*f*	%	*f*	%
Supervisors	4	2	146	98
Operators	36	24	114	76

The table-4.12 indicates that only 2% units imparted training for supervisors and 98% units did not imparted training. Twenty four percent of the units imparted the training to operators and 76% units did not impart any training for operators. It was found that units provided training to supervisors and operators for their skill development for improve the work efficiency.

Similar study conducted by Slingner, (2006) found that technical training was provided to senior managers, middle managers, technicians, supervisors, sewing operators, cutting, folding and packing operators. Although sewing machine operators usually receive some basic training, this training was supplemented to ensure effectiveness and competitiveness. Kelegama and Epaarachchi (2001) initiated that, inadequate training of managers and workers alike was an important factor constraining productivity and competitiveness. Often, managers did not view training as an investment and were not willing to spend money on it. Initial training was provided for most of the workers, this initial training was not sufficient to ensure consistently high levels of labour productivity and product quality. Premi (1997) viewed that training is important professional activity which helps in improving the overall performance of the organization. It is an important tool to improve job knowledge and skills. Training for skills learning and enhancement provides an opportunity and broad structure for the development of human resources, technical and behavioral skills in an organization. For an Apparel Industry, training and learning skills help to compete in the global market and in increasing productivity of the employees that will help further to achieve its long-term goal.

Table 4.13: Distribution of the units on the basis of salary structure for workers

Salary structure	Cutting section		Stitching section		Finishing section	
	f	%	*f*	%	*f*	%
Daily	-	-	80	53	-	-
Weekly	-	-	60	40	-	-
Monthly	150	100	10	7	150	100

The data indicates in table-4.13 that in all the units workers in cutting and finishing section got the salary on monthly basis where as in 53% of the units, workers in stitching section got the wages on daily basis, followed by 40% of the workers got the wages weekly and only in 7% of the units, workers got the salary at monthly basis. It was found that most of units preferred to give salary on daily basis. As on daily basis the sewing operators received the return for the amount of work done because the wages depended on the number of pieces they manufactured. The rate of the pieces depended on the style of garment; if the style was simple then rate of a simple garment was between ` 25-30/- and operators made 10-12 pieces per day. For difficult style, the rate of garment to be stitched was higher which was between ` 70-80/- and operators made 6-7 pieces per day. Approximately minimum wages for the stitching operator was ` 250 – 300/- and maximum wages ` 300-500/- per day. Average salary of workers in cutting section was ` 10,000-12,000/- while in finishing workers salary was ` 5,000-6,000/- per month. ILO (2005) and Morshed (2007) found in their study that the level of wages was the most significant source of dissatisfaction for workers in the RMG industry. When the due payment is not given on time worker often worry and were anxious about the future. This results in lowering work productivity and increasing job dissatisfaction.

Table 4.14:Distribution of the units on the basis of incentives given to the workers

Incentives given	*f*	%
Yes	107	71
No	43	2

The data shows in table-4.14 that 71% units provided incentives to their workers for the timely and good quality work and 29% units did not provide any incentive. It was shown that majority of units provided the incentives for the workers on the basis of their performance, as they believed that it motivate the workers to produced garments in larger quantities. Workers got usually incentives on completing the given target. Some units provided the incentives for regular attendance. Workers who worked every day without any leave they got the incentives 5% of their salary.

Nenzhelele (2009) viewed that if industries did not offer any incentive to their employees this might result in low level of motivation which could lead to low level of productivity. Incentives such as performance related bonus can encourage higher levels of staff performance. Incentives could increase both motivation all level and job satisfaction. Satisfied employees are more productive than those who are dissatisfied. Incentives and rewards are some of the most powerful management tools available. They suggested incentives were designed before an innovation effort started, and they linked performance measures and rewards. Ahmad (n.d.) viewed that expenditure on benefits contributed to employee retention through increasing job satisfaction and improved productivity.

Table 4.15: Distribution of the units on the basis of availability of cutting machines and equipments

Cutting machines & equipments	*f*	%
Straight knife	150	100
Round knife	134	89
Band knife	30	20
Drill Machine	93	62
Notcher	110	73

The above table-4.15 indicates that all the units used straight knife cutting machine followed by 89% units who used round knife machines. Seventy three percent of units used notcher, followed by 62% units who used drill machine, followed by 50% units used band knife machine. It was seen that none of the unit used fabric spreading machine for layering the fabric though there were helpers for spreading the fabrics on the cutting tables.

Table 4.16: Distribution of the units on the basis of number of sewing machines (single needle lock stitch)

Number of sewing machine	*f*	%
30 – 80	61	41
81 – 130	47	31
131 – 180	30	20
181 – 230	8	5
231 – 280	4	3

The table-4.16 revels that 41% units had 30 – 80 sewing machines; followed by 31% units with 81 – 130 sewing machines. Twenty percent units had 131 – 180 sewing machines. Five percent of the units with 181 – 230 and only 3% units had 231 – 280 sewing machines. It was observed that the maximum of units had less than 100 machines.

Table 4.17:Distribution of the units on the basis of use of specialized machines in stitching section

Specialized machines	*f*	%
3 Thread lock stitch	90	62
4 Thread lock stitch	82	54
5 Thread lock stitch	57	38
Flat lock machine	36	24
Belt loop making machine	53	35
Bar tacking machine	40	26
Button snap machine	150	100
Button holing machine	150	100
Fusing machine	70	46
Computerized embroidery machine	18	12
Sequins attaching machine	2	1
Over lock sewing machine	150	100

The above table-4.17 indicates that all the units had button snap, button holing and over lock machines. Sixty two percent units had three thread machine followed by 54% units with four thread machine, 46% units with machine, 38% units with five thread machine, 35% belt loop making machine, 26% units with bar tacking machine 24% units with flat lock machine, 12% units with computerized embroidery machine and only 1% units with sequins attaching

machine. Three thread, four thread and five thread machines were used only for knitted garments.

Table 4.18: Distribution of the units on the basis of use of specialized machines in finishing section

Finishing section	f	%
Dry-cleaning machine	80	53
Needle detector machine	45	30
Thread sucking machine	60	40

The above table-4.18 reveals that 53% units with dry-cleaning machine followed by 40% units with thread sucking machine and 30% units had needle detector machine. It was observed that unit owners were not aware to the use of advance and automatic machines for productivity improvement. Sometimes garments got soiled during the production and then dry cleaning machines were used. Thread sucking machine was used to remove the all thread. Needle detector machine detect the unnecessary tools such as needle, trimmers etc. from the garments. Similar results obtained by Bheda (1999) conducted a study on technological up gradation needs of readymade garment industry for the increase in production and improvement in work culture. They revealed that manufacturers should focus on adaptation of technology for both domestic and export apparel manufacturing Industries. Kelegama and Epaarachchi (2001) explained in their study that, the garment manufacturing industry has become a hi-tech industry worldwide. It was necessary for manufacturers to invest in advanced technology. The manufacturers were generally unwilling to acknowledge the importance of investment in technology due to the massive capital costs which results increase in overhead costs. This unwillingness and inability is seriously constraining the growth and competitiveness of garment manufacture.

Table 4.19: Distribution of the units on the basis of education level of supervisors

Level of education	f	%
I to VIII standard	52	35
IX to XII standard	77	52
Technical education	21	13

The table 4.20 indicates that 52% unit supervisors had education till IXth to XIIth class, followed by 35% of the units supervisors who had studied till Ist to VIIIth. Only 13% units supervisors had technical education. It was observed that maximum supervisor's level of education was quite low; and most of them did not have any technical education. They worked only with their work experience and followed traditional method of production. It was further found that they were not careful for the benefits of latest method of production and did not know about method of improve productivity. Similar results obtained by Arai (n.d.), he found that clerical and technical officer's levels of education were a little bit higher, education levels among workers in garment industry was an average. In the same way Nenzhelele (2009) reported that, most of the workers did not have relevant qualifications for the type of job that they were doing. The workforce in SMEs should go through different training programs in order to increase their skills.

Table 4.20: Distribution of the units on the basis of operator productivity and total labor productivity in sewing section

Level of Productivity (Dress/Shift)	Operator productivity		Total labor productivity (Sewing)	
	f	%	f	%

Low Productivity	48	32	50	33
Medium Productivity	70	47	75	50
High Productivity	32	21	25	17

In table 4.20, the data indicates that 47% units had the medium operator productivity (8-11 garments per shift/operator) followed by 21% units with high productivity (above 12 garments per shift/operator) and 32% units had low productivity (0-7 garments per shift/operator).

The data also shows that 50% units with the medium total labor productivity followed by 33% units which had low total labor productivity and 17% units with high total labor productivity.

It was found that operator productivity was efficient as compared to total labor productivity. Sewing operators worked efficiently rather than helpers and checkers.

Productivity performance of the units varied. The variation might have been caused due to poor production planning. Most of the times, the workers sit idle because they were not provided with the raw material on time. Late delivery and purchasing of wrong material also contributed the wasting of time of operators. Idle machines due to poor maintenance, machine breakdown and small interruptions like thread breakage and needle breakage affected the productivity. Poor working conditions, inadequate seating arrangement, unorganized area of sewing, lack of equipments such as inch tapes, scissors and clippers also affected the productivity. Lack of motivation such as workers benefits, labor rights, absenteeism and poor supervision might have further affected the productivity of units.

Similar findings were indicated by Shanmugasundaram and Panchanatham (2011). They found that absenteeism was one of the crucial factor that affected productivity in majority of the units. Working conditions in the units were not up to the expectation. Frequent changes in garment styles, deviation from the standard time and operator to helper ratio also affected labor productivity in the units. Labor productivity level was also affected due to prevailing labor laws, low wages and inadequate welfare schemes. Better labor retention polices were also not available in the units. Vilasini, Gamage, Kahangamage, and Thibbotuwawa (n.d.) observed that the three most significant sources for low productivity as perceived by respondents in the manufacturing industry were ineffective use of resources (equipment, workers, etc.), poor information flow and non-productive/ unnecessary activities. Indian exporters were faced with increasingly low labor productivity, costs of avoiding obsolescence in technology.Mahmud, Mahbubur, and Nafis (2011) provided the idea how productivity levels changed at different times during normal working hours in Apparel Industries. They further explained that there were many factors which acted as obstacles to achieve higher productivity. Unskilled workers, physical fatigue from extended working hour without rest, lack of training, lack of knowledge, lack of awareness were few factors related to worker which directly affected the productivity. Fatigue lowers average productivity, measured as output per worker hour, for almost all of the Apparel Industries. Bheda, Singla and Narag (2003) evaluated productivity levels of Indian apparel manufacturers by using partial productivity measures as labor and machine productivity. They viewed that India must put in more efforts into efficient manufacturing operations to remain competitive. They emphasized that companies must improve quality, productivity, and technology by means of productivity indicators like ratio of output to labor inputs to achieve a more competitive outcome. They

recommended that productivity can be improved by increasing work measurement, initiating training of supervisor and manager, strengthening quality standards, upgrading strategic technology, and strengthening production planning and scheduling.

5. CONCLUSION

After exploring current production practices and categorizing the productivity into low, medium and high productivity units. It is concluded that in the maximum units women's wear were produced as compared to men wear and children wear. The demand of women wear was more in other countries, with the increasing popularity of Jaipur prints and designs. Moreover, the hand block printed and dyed fabric of Sanganer and Bagru has generated tremendous demand in the overseas market. The fabrics were mainly sourced from power loom units based in south India.Japan, USA and Europe were the major export destinations. Ethnic prints of Jaipur were popular in Japan, USA and Europe and the people of these countries preferred Saganeri or Bagru printed cotton fabric which was the unique feature of the garments being manufactured in Jaipur. It was observed that level of education of supervisors was quite low. Work experience played a very important role in their growth.On the basis of productivity in all the units it was found that there was a lack of awareness in terms of technology adoption. Other major factors were skilled labor, absenteeism, rework rate, incentives, welfare facilities, trainings, technical education among supervisors. These all affected the productivity of units and made the industry less productive. There was lack of measuring productivity and lack of identifying the areas for productivity improvement.

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