

A Study of Fashions and Changing
Trends on Knitted Made - Ups

BY

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Introduction

I INTRODUCTION

The term 'knitting' is used to describe the technique of constructing textile structures by forming continuous lengths of yarn into vertically intermeshed loops. It is the most common method of interlooping and is second only to weaving as a method of manufacturing textile structures. It is estimated that over seven million tons of knitted goods are produced annually throughout the world, Spencer (1983). It is seen that knit wear products have today come to occupy the position of an essential part of the daily attire of the common man.

Modern changes taking place in every area revolve around science and technology. With regard to textiles, there has been a number of innovations and improvements leading to greater production rates, finer quality, increased uses and much more practical applications. In the field of knitting, there has been growth, improvement and scope for increased applications to varied areas. Changing trends of production, design and the actual knitting process involving new machinery and their attachments have made a distinguishing mark in this area of textiles and clothing. The manufacturing sector has also grown in size and today it offers a wide variety of attractive products to satisfy every individual taste. Munden (1985) points out that changes within the industry has never been so rapid and the industry is based on a much stronger foundation of comprehensive technology.

Knitted goods are in tune with the fast paced modern life style and provide for easy performance and comfort, that is demanded today. Their excellent performance has also increased their popularity and aesthetic appeal. Kucera (1985) states that the 1950s to 1970s saw quite a remarkable increase in the use of knitted constructions for apparel and furnishings, increasing in a matter of 20 years, from approximately 10 per cent of the total market to 60 per cent at its peak. The use of knitted goods has increased due to the development of modern machinery and new man-made fibres which have readily lent themselves to these fabrics through style, functionality and promotion. The main use of knitted apparel is for Leisurewear, Innerwear, Outerwear and Sportswear. They also provide warmth, comfort and caters to movements of the body.

Knitted textiles has shown its popularity for the following reasons:

One of the greatest advantage of knitwear is its pliability, its elastic properties of extension and recovery. When attempting to render the knitted article dimensionally stable, these properties are tried to be retained, at the same time, engineering the structure and size of the garments in such a way that during its life-time it will not shrink out of fit when subjected to normal washing conditions points out Kwatra (1988).

The special characteristic of knitted fabrics such as elasticity and openness of structure, have made them traditionally

popular for socks and stockings, where elasticity is of prime importance. They have also been used for Innerwear and Sportswear where the ability to 'give' and 'breathe' are necessary.

It has been seen that fashions - a governing factor, has had both direct and indirect impact on the knitting scenario, creating waves of change. Fringes (1982) is of the opinion that the interaction between fashion and society is a fascinating area for study. Fashion is an intangible and ever changing force and since 1960, it has been an integral part of everyday living.

Such popularity and increase in demand for knitted made-up goods has caused the setting up of more manufacturing units of knitted goods. These units produce en masse Inner garments and also fashionable Outerwear.

In this study the investigator has planned to carry out a survey in the knitting units with the following objectives:

..... Study the influence of fashions and changes in style with regard to the manufacture of knitted goods, by taking into account the production trend at the time of inception of the knitting unit, till date.

..... Study the various changing trends in the areas of material make-up, machinery, garment construction, printing and other related areas.

The investigator hopes this study will induce the manufacturers to be ready for the changing fashion trends.

Review of Literature

II REVIEW OF LITERATURE

The literature for this study has been reviewed under the following headings:

- A. History of Knitting
- B. Types of Knitting Machines
 - 1. Warp Knitting Machinery
 - 2. Weft Knitting Machinery
 - 3. Comparison of Weft and Warp Knitting
- C. Knitting Industry
 - 1. History and Development
 - 2. Size and Structure
 - 3. Major Locations
 - 4. Types of Products
- D. Exports of Knitted Goods
- E. Progress Made By The Knitting Industry
- F. Changing Fashion Trends and their Influence on Knitted Goods.
- G. Future Prospects
- H. Problems of the Industry

A. History of Knitting

The term 'Knitting' has evolved from the Saxon word 'Cnythan' which in turn was derived from the ancient Sanskrit word 'Nahyali'. Both words were less precise in their meaning indicating that knitting probably developed from experience

gained by knotting and twisting of yarns states Spencer (1983). He adds that crossed loop stitches were employed long before the open loops of modern hand pin knitting. In the case of Coptic knitting, loops of very short lengths of yarn were pulled through each other by means of single eyed needles. Knitting by using only the fingers may have been practised as long ago as 1000 B.C. There is also strong possibility that techniques employing rectilinear and circular peg frames in a similar manner to 'french' bobbin knitting were probably practised simultaneously with those of hand pin knitting. Stout (1979) defines knitting as the art of constructing a fabric with needles by interlooping one or more yarns in several series of connected loops.

Sreenivasan and Doraiswamy (1973) point out that two major developments have been responsible for the rapid growth of knitting in the post-war period. One is the development of synthetic filament yarns, the other, the development of High Speed Warp knitting machines. Synthetic Filament yarns are strong, smooth, free from hairiness, neps and foreign matter and from any weak places, all of which are characteristics of even the very best quality spun yarns from natural fibres. High Speed Warp knitting machines demand such high quality yarns for their successful performance. Further, the speed of a warp knitting machine is not limited by the speed at which the weft can be inserted; nor does the increase in the width of the machine reduce its speed. Consequently, warp knitting

machines have a high rate of production. By using filament yarns on these machines it has been possible to produce a wide variety of fabrics such as shirtings and ladies dress materials which at one time were the monopoly of weaving.

Tate and Glisson (1961) point out that knitted apparel has gained importance very much in recent years because of such factors as comfort, light weight, warmth, durability and non creasability. Because knits prove to be more elastic than woven goods they quickly gained opportunity especially for making knitted fabrics. Their special properties have made them popular and Corquidate (1964) adds that the main properties of knitted fabrics are stretch, comfort and drape which are particularly appreciated in apparel end uses. Growth in apparel is expected in not only well established end uses such as sweaters, stockings and tights, but also in jersey fabrics, for dresses and other Outerwear for women and men. Kornreich (1982) further adds, knitted fabrics are soft and elastic. It does not stick to the skin, when they are damp. They are also very flexible and porous.

Thus it can be said that knitted apparel is in a position to compete with woven fabrics in the clothing field due to the fact of improved machinery and technology which have rendered them suitable to clothing for all end purposes.

B. Types of Knitting Machines

Knitted goods are generally produced by two types of machines, Warp Knitting Machines and Weft Knitting Machines, states Ishida (1977). Scardino (1987) adds that knitting technologies offer the widest range of engineered fabric behaviour. While warp knits offer the possibility of greater fabric width and greater productivity, weft knits offer a choice of tubular or flat fabrics. Appendix I gives end-use of garment knitting Machines.

1. WARP KNITTING MACHINERY

Thomson (1967) indicates that warp knitting provides the fastest means of making cloth. Spencer (1983) explains warp knitting as the second and smaller sector of machine knitting. It was first developed by Crane and Porter in 1769 as a method of embroidery patterning on the hand frame, by means of multiple warp thread guides. As the technique improved, purely warp intermeshed structures without the weft knitted ground fabric began to be knitted and Crane patented his warp loom in 1775. Tarrat is credited with developing the first efficient treadle operated warp knittingg frame in 1785. In 1807, S.Orgill, introduced the rotary shaft driven warp knitting frame, having a knitting width upto seventy two inches and cam-controlled knitting motions capable of knitting upto thirty rows of loops/minute. It has been said that warp knits fall between double knits and wovens combining the best qualities of both. Warp knit fabrics tend to be less resilient and lighter in weight than weft knits according to Kornreich (1982).

Types in Warp Knitting Machinery

Spencer (1983) classifies warp knitting machines into two major types namely, Tricots and Raschels. Tricot machines have a gauge expressed in needles/inch and chain link numbering 0,1,2,3,4, generally with three links/course. Raschel machines on the other hand have a gauge expressed in needles/two inches and chain link numbering 0,2,4,6 generally with two links/course.

2. WEFT KNITTING MACHINERY

The weft knitting type method forms loops running crosswise on the fabric and links each loop into the one on the preceding rows states Wingate (1979). Miller (1968) adds that here the yarn is fed horizontally to form rows of loops which are individually locked vertically with the corresponding loop in the next horizontal row. Spencer and Smirfitt (1983, 1975) broadly classify weft knitting machinery into straight bar frames, flat bed machines and circular machines according to their general design and needle bed arrangement.

Types in Weft Knitting Machinery

a. STRAIGHT BAR FRAMES

The machine is usually divided into a number of sections each capable of knitting a separate but identically dimensional garment panel and is noted for the production of high quality

garments as a result of the gentle knitting action, low fabric tension and fashion shaping reducing the waste of expensive yarn during cutting explains Spencer (1983).

b. FLAT BED MACHINES

Spencer (1983) points out that the number of garments or panels simultaneously knitted across the machine is dependent upon its knitting width, yarn carrier arrangement and path, and package accommodation. Articles knitted range from trimmings, edgings and collars to garment panels and integrally knitted garments. Scardino and Schneider (1987, 1988) elaborate that almost all of the flat bed knitting machines can now be delivered with electronic control which controls fully fashioned knitting and also patterning minimizing cutting waste and hand lay-up operations.

c. CIRCULAR MACHINES

Sreenivasan and Doraiswamy (1973) state that circular knitting machines were developed in 1816 but came into general use about the middle of the 19th century and cover all those weft knitting machines whose needle beds are arranged in circular cylinders and dials. They produce a wide range of fabric structures, garments, hosiery and other articles in body-width size or larger. For underwear and interlock knitting, mechanical circular knitting machines are speeded up to higher production, due to better material and more accurate matching of the cams.

3. COMPARISON OF WEFT AND WARP KNITTING

Spencer (1983) states that a major part of the weft knitting industry is directly involved in the assemble of garments using operations such as overlocking, cupseaming and linking which have been specifically developed to produce seams with compatible properties to those of weft knitted structures. There are, however, production units which concentrate on the knitting of continuous lengths of weft knitted fabric for apparel, upholstery, furnishings and certain industrial end-uses.

Warp-knitted fabric is knitted at a constant continuous width, although it is possible to knit a large number of narrow width fabrics within a needle bed width and separating them after finishing. There is considerable potential for changing fabric properties during the finishing process as well as during knitting.

C. Knitting Industry in India

1. HISTORY AND DEVELOPMENT

The textile industry is one of the oldest and the most developed of all the industries in India. It is classified into two major sectors; organised sector consisting of spinning and composite mills and decentralised sector consisting of handlooms, powerlooms and knitting machines opine Sivakumar, Ratnam and Sreenivasan (1985. 1984). Sivakumar and Ratnam (1985) are of a further view that whilst the arts of spinning, weaving, dyeing

and printing have been practised in India for the last 5000 years or so, the art of knitting is of a fairly recent addition to the textile industry in India and knitting, as a means of assembling yarns to make fabrics, was introduced in India during the beginning of this century. Parikh (1979) states that knitting in India started with the setting up of the first weft knitting unit in West Bengal in 1893. The unit produced Underwear, Outerwear, Socks, Stockings and Sweaters first with cotton and then with wool. The first woollen unit was set up in 1902.

Ishida (1977) points out that knitting is generally classified into two main industries, one is production of finished goods and the other is the production of piece goods. Miller (1981) further divides the knitting industry in India into four branches - Knit Outerwear, Knit Yard Goods, Knit Hosiery and Knit Underwear. According to Sreenivasan and Doraiswamy (1973) the knitting industry accounts for a significant portion of the textile industry from the point of view of the capital employed, total value of production, the number of people employed and the potentiality for future growth.

Hollen and Saddler (1969) point out that knitting has traditionally been a standard construction of some types of apparel, such as Sweaters, Innerwear and Hosiery but for many years knit goods represented only a small part of the apparel market. O'Brien (1985) emphasizes that presently with the electronic

selection devices, versatile electromechanical and information devices, electronic measuring and information facilities have all created a climate where the manufacturer can produce better and more efficiently.

2. SIZE AND STRUCTURE

The size of the Industry according to Sivakumar and Ratnam (1985) can be inferred from Table 1 below.

TABLE 1
SIZE OF THE INDUSTRY (1983)

S.No.	ITEM	No.
1.	No. of units (large machines only)	6,000
2.	No. of people employed (Direct and Indirect)	1,50,000
3.	Quantity of yarn consumed Cotton only (million kgs)	80
4.	Production of all knit goods (Million kgs)	153
5.	Total value of exports of knitted garments (Billion Rs.)	1.90

Sreenivasan (1984) adds that most of the units are small having one or two machines and being run more or less on a cottage industry basis. But there are a few medium sized units in centres like Maharashtra, West Bengal and Punjab with a total

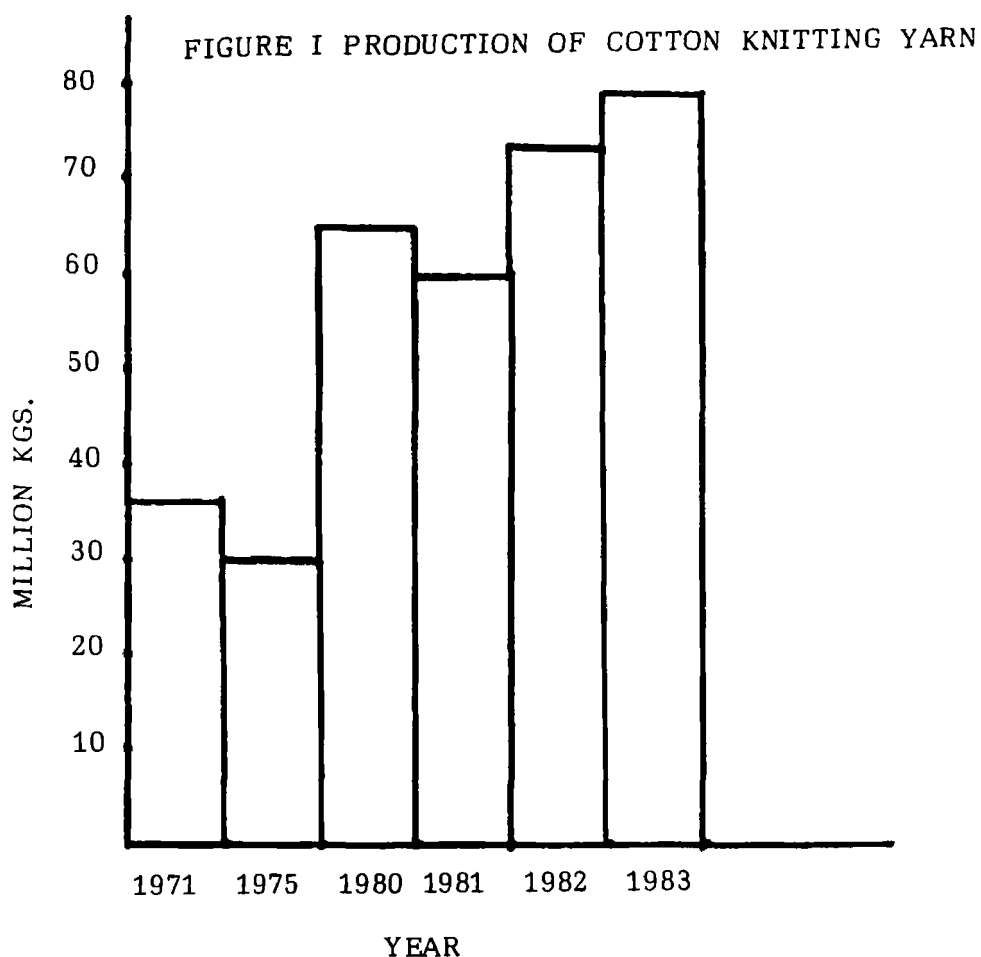
of approximately 40,000 circular machines mostly manufacturing Innerwear.

The type of machines installed and the growth of the industry over a period of seven years can be seen from Table 2., Sivakumar and Ratnam (1985).

TABLE 2
NUMBER OF KNITTING MACHINES

S.No.	TYPE OF MACHINE	YEAR	
		1977	1983
1.	Large diameter circular	26,500	50,000
2.	Small diameter circular	10,850	11,225
3.	Flat machines	8,550	8,600
4.	Warp machines	845	850

Sreenivasan (1984) points out that the cotton hosiery units manufacture mainly Innerwear and Sportswear to some extent. But the manufacture of Sportswear is increasing at present. The woollen units produce jerseys, sportswear and socks. The units using synthetic yarn also make socks, saris and shirtings. There is thus a regional specialisation with regard to fibres as well as garments. He adds, a majority of the units use cotton or blended yarn while only about five per cent of the units use pure wool and another five percent use pure synthetics. The growth of the cotton knitting industry can be seen from fig.1. according to Sreenivasan and Ratnam (1985).



3. MAJOR LOCATIONS

Sivakumar and Ratnam (1985) point out that knitting units are spread throughout the country. Ninety per cent of the cotton knitting units are situated in Tirupur in Southern India, and in Calcutta in Eastern India. Woollen knit goods are manufactured exclusively in Ludhiana in North Western India. Delhi in Northern India and Bombay in Western India produce most of the synthetic weft knitted fabrics. Warp knitted fabrics are produced in Surat in Western India and Amritsar in North Western India.

4. TYPES OF PRODUCTS

Buresh (1962) opines that knit yard goods mills produce a

variety of fabrics in either flat or circular machines which can be cut and sewn into apparel and other items. Some mills produce garments, outerwear, hosiery and innerwear which are directly sewn or cut and sewn together. The type of products manufactured can be seen from Table 3 according to Sivakumar and Ratnam (1985).

TABLE 3
TYPE OF PRODUCTS MANUFACTURED

S.No.	YARN TYPE	END PRODUCTS
1.	Cotton/Viscose	Innerwear, Sportswear, Casualwear.
2.	Wool and Acrylic	Jerseys, Sportswear, Halfhose.
3.	Polyester and its blends	Shirtings, Saris, Halfhose.

According to the Indian Textile Journal (1986) the properties of knitting yarn can be defined by the following, 'knitting yarn should be towards the cylindrical geometry with softer twist'. 40s count yarn is widely used in the knitting industry.

Some details of the production of knit goods, fibre wise, are given in Table 4.

TABLE 4
 PRODUCTION OF KNITTED FABRICS FIBRE-WISE
 (In Million Kgs)

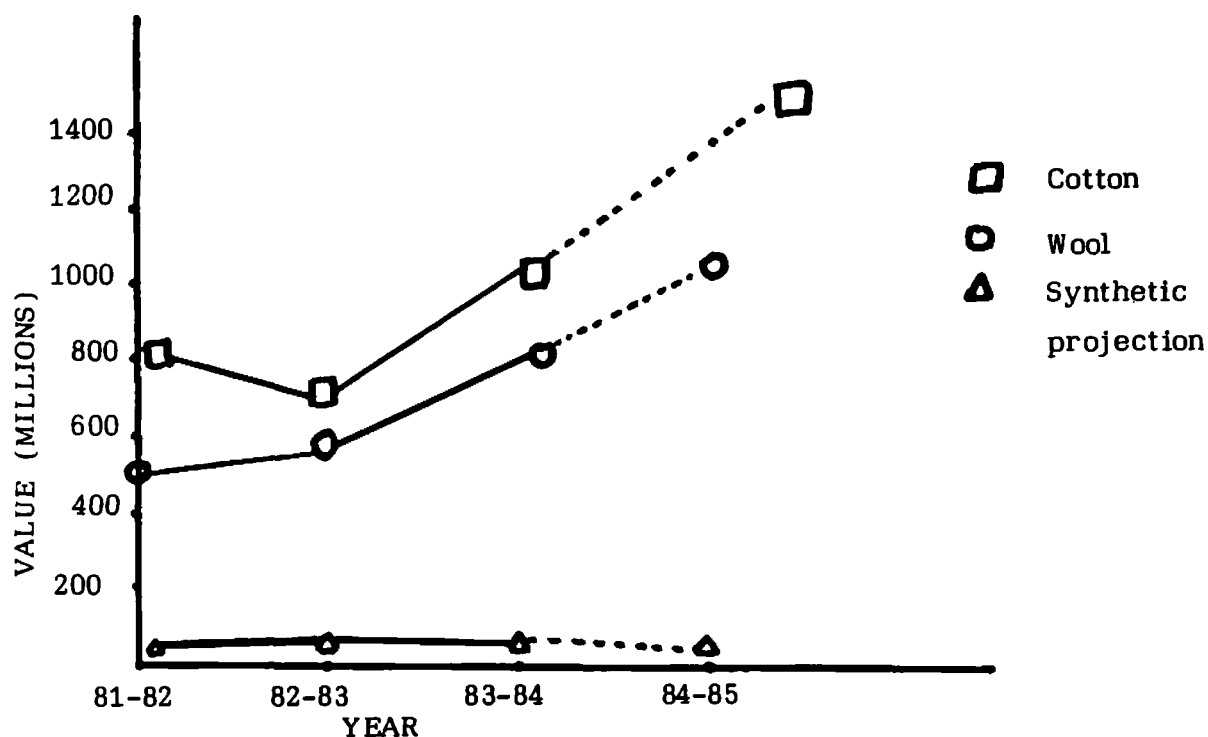
TYPE OF YARN	YEAR			
	1977		1983	
	Quantity (Million Kgs.)	%	Quantity (Million Kgs.)	%
Cellulosics	32	50.0	80	52.3
Synthetics & Blends	29	45.3	66	43.1
Wool	3	4.7	7	4.6
Total	64	-	153	-

D. Exports of Knitted Goods

The demand for Sportswear and Casualwear is very much on the increase and the exports of knitted garments have also been going up opine Sreenivasan and Doraiswamy (1973). According to Sivakumar and Ratnam (1985) the Indian share of the world market of all textile amounts to 2.9 per cent. The export value of all types of fabrics and garments from India amounted to Rs.7.5 Billion in 1983 and knitted fabrics and garments constituted 18.3 per cent of this. Quality wise, knit goods constituted 28 per cent of India's export of all textiles in 1984. Das and Umanathan (1986) add that out of the Rs.80/- crores of knitted goods exported from India, 60 per cent is from Tirupur.

Some indication of export of knit goods, fibre wise, over three years 1982-85 is given in Figure 2.

FIGURE 2
THE EXPORT OF KNIT GOODS



Exports of hosiery items over a period of 10 years can be seen from Table 5.

TABLE 5
EXPORTS OF HOSIERY (Rs. in Crores)

YEAR	HOSIERY ITEMS
1973-74	3
74-75	5
75-76	10
76-77	14

77-78	22
78-79	14
79-80	23
80-81	37
81-82	56
82-83	52

E. Progress made by the Knitting Industry

Screenivasan (1984) states that as a result of various developments, knitting as a method of converting yarns into fabrics has been rapidly gaining over weaving in all the advanced countries as well as in many of the developing nations. During the last few years, there has been a slight set-back to knitting because man-made fibres in general and filament yarn in particular have been losing their popularity and the public seem to like blended or even pure cotton fabrics. But never the less, knitting is certainly very much more important today than it was some three decades ago.

Garments India (1986) states that the contribution from knitwear in the 'Growth of Indian Readymade Garment Industry' is fifteen per cent and Cotton knitwear takes a prime place with a performance of sixty three per cent. The achievement can be attributed mainly to product/market diversification. Indian knitwear/ hosiery fabric has now been accepted by the world over for Outerwears and has been able to catch world market.

Sreenivasan and Doraiswamy (1973) add that today a large number of various types of warp knitting machines are available with electronic patterning devices so that the design of the fabric can be changed easily and quickly. The latest development in warp knitting is the provision for weft insertion. While filament yarn is used for warp, the weft yarn can be of cotton or any other type of spun yarn. Fabrics made out of these machines have the appearance of woven fabrics, better cover factor and are likely to extend further, the range and diversity of knitted fabrics. Developments have also taken place in weft knitting. Fabrics of this type have invaded the Outer garment field and today it is possible to be fully clothed in knitted garments only.

In the field of medicine, Ted Love (1985) states that the particular property of knitted structure, notably the ready stretch and recovery, have led to the long and distinguished history of knitted textiles for certain medical applications. Both warp and weft knitting techniques are used in the production of implantable prostheses.

F. Changing Fashion Trends and Their Influence on Knitted Goods

The technical developments in communication are forcing fashion to become world wide in its approach. There is no longer any fashion left in just clothes - the new way is for fashion to be in everything, opines Cousin (1987). Rigamonti (1987) adds, fashion however, goes beyond apparel. It includes carpets,

towels, sheets, upholstery, automotive fabrics and similar products.

Jarrow et al (1981) state that fashion changes are a result of consumer's constantly changing wants and needs. Grove (1975), however, pointed out that many consumers believe designers dictate fashion but the fashion houses are large business concerns which abide by the decisions of consumers. Gordon (1961) states that "Fashion is stronger than the individual consumer, the producer or group of producers. It would appear that the control of fashion rests with the consumers collectively.

Horn and Gurel (1981) point out that fashion change in today's society might be expressed in terms of the coexistent and interdependent factors of an open class society, affluence, leisuretime, influence of sports, education, cultural contact, youth movements, social agitations, status of women and technological advances. Ross (1982) also suggests that fashion could be seen as ' a series of recurring changes in the choices of a group of people it is marked by rhythmic imitation and innovation, alternative uniformity and change.' He also saw fashion as a social institution while Gibbing (1971) claimed fashion as a mode of communication.

Sherriff (1988) stresses that hosiery now plays an integral role in the modern fashionable women's wardrobe. At the most

basic level women are looking for a functional garment that will fit comfortably, which will provide warmth. At the other end of the scale, the need is for an exciting fashion accessory, in a range of designs and colours, that coordinates both with outerwear and other intimate garments. The fashion element was ranked primary in the purchasing decisions of various groups. There is no doubt that the entry of fashions into hosiery has generated much interest and excitement. He adds that hosiery has moved from being simply a standard commodity item to encompassing a wide range of specialised, high value-added products. Lewis (1988) adds that there is only one word for knit wear fashion at the moment loaded and if there is another supplementary word to describe the current state of knitwear it is conspicuous.

Sherriff (1988) lists the styles for the chic tasteful late 80's international consumer as:

- * Confident-and expresses that confidence in her dress.
- * Critical-purchasing hosiery is now a conscious thought process and they carefully evaluate softness, comfort and aesthetics.
- * Demanding-they are accustomed to a wide and constantly changing choice of hosiery.
- * Affluent-they want to be in fashion and is prepared to pay for it.

Harley (1986) points out that the "Faux-Uni" effect featuring solid patterns created by contrasting textured yarns in the same colour creating a dimensional look for patterning has become very fashionable. Double knits with blistered fabrics, puffed 2-ply jerseys with filament fillings, sweater knits, laceknits for evening and loungewear, sculptured terries and knit denims have made recent introductions in fashion changes. Tubular fabrics and fabrics of the future-ribbed knits, lycra knits, double knits and heavy jersey knits are being used in styling of shapes with physical awareness.

Fashion changes are rapid and Man-made Textiles (1966) states that the knitter has already sampled his following year's fabric ranges to most, if not all his customers. In some cases bulk orders are placed and production planned. The knitter lives twelve months ahead and is in a position to dictate what fashions are going to be for fabrics. At the same time he must aim to develop new ranges atleast one stage further than those offered a year ago.

According to Knox (1989) presently knitted fabrics are generally fine-gauge with discreet fine ribs for spring, finely sculptured and metallic effects. The terry-knitted look fits in well with the ethnic Indian mood, he adds. Another present day fashion in knitted fabrics is the handprint style and batik over dyes feature. Appliques are also used to great effect to enhance the discreetly textured lustrous knitted fabrics.

Munden (1985) states that knitting has the star advantage that it goes a long way towards garment manufacture. Although fashion changes have played a part, the real factors affecting the changes in the industry have been technical developments and innovations. The principal ones are:

- * Stitch length control devices, leading to improved quality.
- * Improved cam design, leading to high knitting speeds.
- * Presser-foot knitting, providing the possibility of multi-tuck stitches, improved dimensional stability, and fashioning.
- * Computer controlled patterning and electromagnetic selection of needles.

Sherriff (1988) summarizes that the constantly evolving field of fashion hosiery is indeed fascinating, but is also fraught with potential damages if one does not keep up with the pace of changes or if one fails to situate what has to be done in the broader fashion context.

G. Future Prospects

The knitting industry in India has an extremely bright prospect. The clothing habits in the country are changing rapidly and there is an ever increasing demand for non-traditional clothing items. In this respect, the knitting industry in India is poised for a break-through in terms of productivity, product quality and diversity of products states Sivakumar and Ratnam (1985). In addition, they say that the

current interest in pure cotton fabrics and garments has shown world wide increase and further diversification in knitting machines and finishing equipment which should be oriented towards processing pure cotton yarns and fabrics. Sreenivasan and Doraiswamy (1973) feel with the establishment of a number of plants producing synthetic filament yarn, the knitting industry is expected to develop along similar lines to what has happened in other countries.

Sivakumar and Ratnam (1985) point out that knitting machines of single jersey type with multitracks, striping facilities and fine gauge interlock machines should be preferred instead of rib jacquard machines. Taking into account the demand for high fashion cotton knitted sweaters in Europe and particularly in U.S.A sophisticated flat knitting machines and circular body length machines should be installed. In the case of chemical finishing equipment, tubular mercerising machines should be installed and these will be extremely useful for finishing fabrics for high quality Cotton Outerwear fabrics.

They add that the export potential is also tremendous and the official projection for the export of all knit goods in the year 1989-90 is Rs.6.70 billion. This when compared with the value of all knit goods in 1981-82, which was Rs.1.34 billion; there is an increase of 400 per cent. Out of this, the projection, in terms of value, for synthetic knit goods is Rs.500/-

million from the level of Rs.30/- million (1983-84) and it would mean an increase of over sixteen times. This would necessarily mean, that, the knitting industry should gear itself up to the manufacture of synthetic and blend knit goods in a very big way feels Sivakumar and Ratnam (1985).

Sreenivasan (1984) further stresses that if the knitting industry is to progress, the first step is to make people in the industry aware of the importance of quality. Far too many of the smaller units are dependent on what might be called a marginal existence, manufacturing poor quality goods in the hope that cheapness will pay. Qualified technicians should be employed so as to be able to improve quality as well as productivity. Gajents India (1986) adds that the two deciding factors for improving the performance further are quality and international competitive price.

H. Problems of the Industry

Sivakumar and Ratnam (1985) explain some of the major problems inhibiting the growth of the knitting industry in India.

- * Lack of formal technical educational facilities in knitting. There is also lack of professional training and due to this, knitters are not aware of the latest developments in technology and often have to depend upon second hand information. It also means that adequate number of specialists are not available in the industry and consequently the progress of the industry is handicapped to that extent.

- * Smallness of the individual units, thus prohibiting them from making huge investments in sophisticated machines such as high quality knitting machines, suitable dyeing, printing and heat-setting machines.
- * Very high cost of synthetic and blended yarns. This is due to the various duties and taxes imposed by the Government on these yarns. Sreenivasan and Doraiswamy (1973) add that there has also been no standardisation of yarn quality.
- * Lack of proper finishing facilities.
- * High import duty on machines.
- * Ban on the import of warp knitting machines.

Sivakumar and Ratnam (1985) suggest to overcome the problems, action should be taken by the concerned authorities on the following lines:

- * The excise and other duties on synthetic and blended yarns used for knitting should be reduced to encourage the use of these yarns by the knitters. This will help the local knitters to favourably compete in the international market as far as high quality knitted Outer garments are concerned.
- * The import duty on knitting and sewing machines that are not manufactured in India should be removed. Also, the ban on the import of warp knitting machines that can knit cotton yarns should be lifted.
- * Sophisticated finishing facilities should be set up on cooperative basis to facilitate small knitters to take up the knitting of synthetic and blended yarns.

- * Garments India (1986) adds that the only solution to the yarn problem is to have a few co-operative spinning mills, making yarn exclusively for hosiery manufacturers.

Experimental Procedure

III EXPERIMENTAL PROCEDURE

The experimental procedure for this study comprised of the following aspects:

- a) Selection of area
- b) Selection of sample
- c) Selection of method
- d) Formulation of Questionnaire
- e) Conducting Pilot Study
- f) Collection of Data

a) Selection of Area

Tirupur has 1,600 units and employing a total of about 50,000 workers. It has about 15 manufacture-exporters, but a larger number of merchant exporters especially from Bombay. Das and Umanathan (1986) state that out of the Rs.80/- crores of knitted goods exported from India, 60 per cent is from Tirupur. Tirupur 's annual turnover is about Rs.175 crores. About 65 per cent of the turnover is accounted for by the cost of raw materials, reports Garments India (1986). Hence a suitable area for the purpose of the study namely Tirupur in Tamil Nadu was chosen to conduct the survey. The other reasons for choosing Tirupur were:

- * Tirupur is the place where from nearly 90 per cent of cotton knitted goods are made opine Sivakumar and Ratnam (1985) and it is in this material that fashions and styles are being introduced.

* Tirupur also proved relatively near so as to enable the investigator to carry out her survey.

b) Selection of Sample

Collection of data constitute the foundation on which the super structure of statistical analysis is built points out Shiv Kumar (1984). Hence great care was taken while selecting the sample.

Sampling is simply the process of learning about the population on the basis of a sample drawn from it says Pillai (1973). The method of sampling used was convenience sampling. Gupta (1987) refers to convenience sampling as chunk wherein he refers to that fraction of the population being investigated which is selected neither by probability nor by judgement but by convenience.

Fifty manufacturers of knitted goods were selected as samples for the survey from Tirupur area mainly based on their co-operation and willingness to supply information related to the study.

c) Selection of Method

Statistical surveys are the most popular device of obtaining the desired data. A survey is a process of collecting data from existing population units with no particular control over factors that may affect the population characteristics of interest in the

study states Gupta (1987).

The tool selected to carry out the Survey method was the Mailed Questionnaire Method. Questionnaire refers to a device for securing answers to questions by using a form which the respondent fills in himself states Gupta (1987). This method was selected as the manufacturing units selected were spread over a wide area and it was perceived that this method would be the best way by which the respondents could be contacted.

d) Formulation of the Questionnaire

A questionnaire was formed by preparing a list of questions pertaining to the survey. The questions in the questionnaire were in the form of a) Structural type so as to obtain quantitative data b) Openended questions to permit a free response from the respondents c) Fixed alternative questions where options were given and d) scaled type as classified by Gupta and Kapoor (1986).

The questionnaire was discussed under the following major headings: Type of knitted goods manufactured, Specifications of yarns used, Finishing specifications, Garment construction specifications, Fashion factors of manufacture and the Type of assistance received from various bodies.

e) Pilot Study

The questionnaire was pretested by carrying out a

preliminary survey in five manufacturing units selected at random. The purpose was to isolate the shortcomings of the questionnaire and it was thereby revised in the light of the tryout.

The pilot study enabled the investigator to delete certain questions which faced non-response and based on the information supplied by the respondents the questionnaire was modified. These were mailed out to the selected manufacturing units and duly filled in by the Head of the Production Department. The modified questionnaire is presented in the Appendix. II.

f) Collection of Data

Data was collected by mailing out the questionnaires to the selected manufacturing units. A covering letter stating the objective of the survey was also enclosed with the questionnaire. The respondents were given a period of a month so as to enable them to duly fill in the questionnaire before mailing it back.

IV RESULTS AND DISCUSSION

The results of this study are discussed under the following heads:

- A. Details of cotton items manufactured.
- B. Details of the sales value of knitted goods.
- C. Clothing Accessories.
- D. Details of yarn used.
- E. Details of finishing treatments given.
- F. Specifications regarding garment construction.
- G. Destination of knitted goods.
- H. Factors affecting manufacture.
- I. Feed back from customers.
- J. Employment of designers.
- K. Standards and quality control.
- L. Help from agency/council and the government.
- M. Fashion changes on knitted goods.

Knitted goods manufactured

All the knitting units at Tirupur used only cotton for the production of knitted wear. The main reasons cited by the manufacturers included: (a) easy availability, b) abundant supply of cotton yarn, c) increasing demand for cotton knitted wear, d) suitability to the prevailing climate and e) ease of construction. Less than five per cent used other materials like nylon,

polyester, acrylic and their blends for the production of items like Panties, Nightwear, Track/Jogging Suits and Basic and Fancy T-shirts owing to high cost of raw materials.

A. Details of cotton items manufactured

Table I, Figure I reveals the various cotton items manufactured by the knitting units.

TABLE I
DETAILS OF COTTON ITEMS MANUFACTURED

S.No.	Items	Percentage of Units Manufacturing
1.	Vests	70
2.	Briefs	63
3.	Basic T-Shirts	57
4.	Panties	51
5.	Fancy T-Shirts	43
6.	Polo Shirts	40
7.	Track Suits	33
8.	Sweat Shirts	27
9.	Skirts	27
10.	Knitted Shorts	23
11.	Pyjama Suits	20
12.	Blouses	20
13.	Nightwear	13

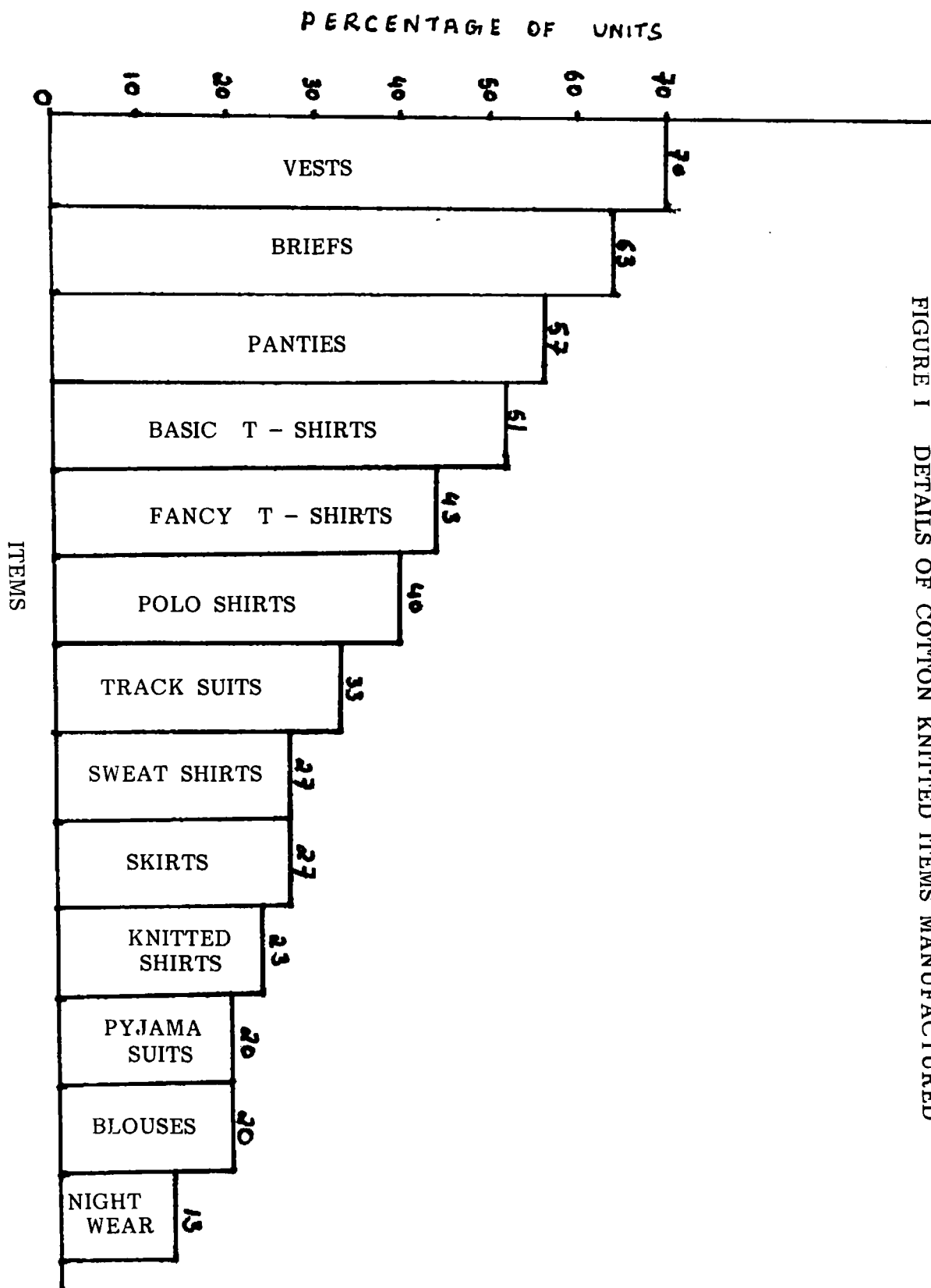


FIGURE I DETAILS OF COTTON KNITTED ITEMS MANUFACTURED

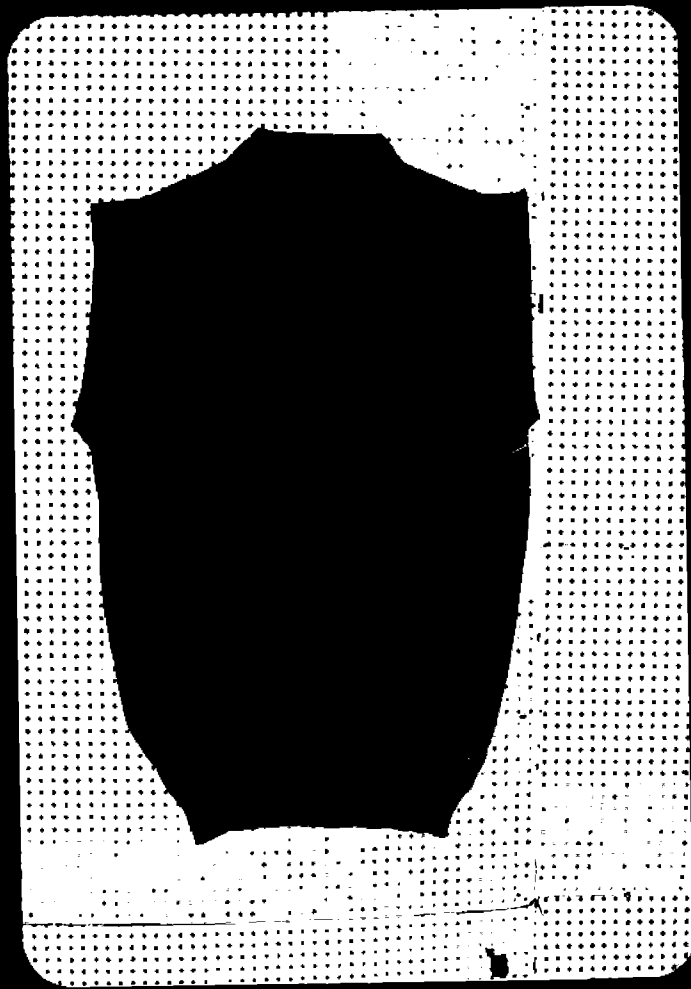


PLATE I BASIC T-SHIRT

From the above table, it is evident that Vests and Briefs are the major items manufactured by 70 and 63 per cent of the knitting units respectively. More than 50 per cent of the units produced Basic T-Shirts and a model of the same is presented in PLATE I. The other items such as Panties, Polo Shirts, Track Suits, Fancy T-shirts, Sweat Shirts, Skirts, Knitted Shorts, Pyjama Suits, Blouses and Nightwear were manufactured by less than 50 per cent of the units.

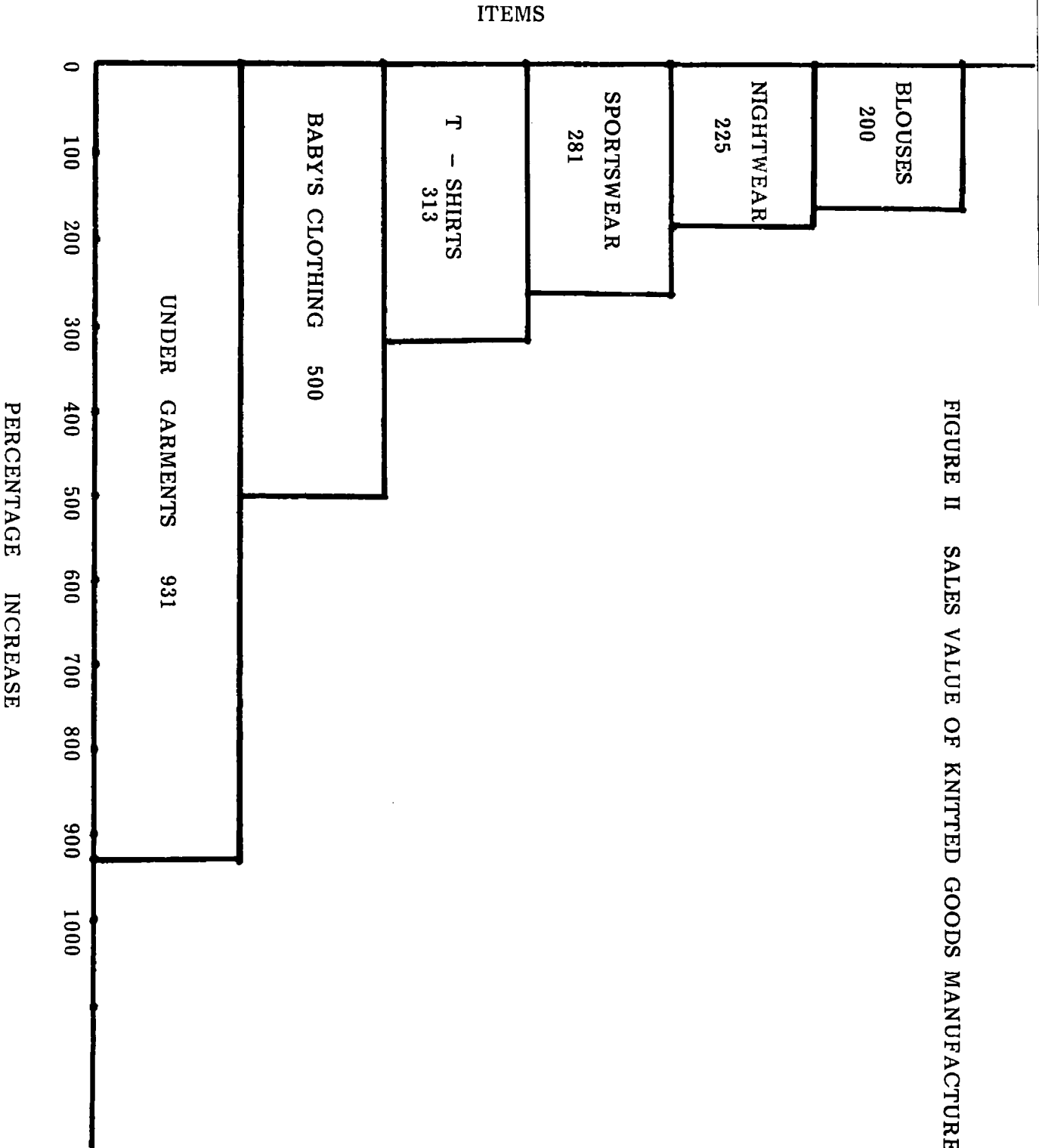
B. Details of the sales value of knitted goods

Table IIa Figure II indicates the various knitted goods manufactured.

TABLE IIa
SALES VALUE OF KNITTED GOODS MANUFACTURED

S.No.	Items	Sales (Value in Thousand Rupees)		Percentage Increase in sales value
		At the time of inception	At present (Per Annum)	
1.	Undergarments	12,492	1,16,313	931
2.	Baby's Clothing	240	1,200	500
3.	T-Shirts	59,220	1,85,155	313
4.	Sports wear	14,819	41,692	281
5.	Nightwear	4,800	10,800	225
6.	Blouses	2,400	4,800	200

FIGURE II SALES VALUE OF KNITTED GOODS MANUFACTURED



From Table II, it is clear that the maximum increase in Sales value of knitted goods lies in Undergarments accounting to a 931 per cent increase. Baby's Clothing saw an increase of 500 per cent while T-Shirts increased in their sales value by 313 per cent. Less than 300 per cent increase was seen in items such as Sportswear, Nightwear and Blouses with regard to their sales value.

The decade wise Sales Value of knitted goods is represented in Table IIb.

TABLE IIb
DECADE-WISE SALES VALUE OF KNITTED GOODS

Decade	Sales Value in Thousand Rupees		Increase in Value	Percentage Increase
	At the Time of Inception	At Present		
1950-60	4,799	35,409	30,610	738
1960-70	1,943	7,838	5,895	403
1970-80	32,200	1,25,436	93,236	390
1980 & above	75,456	2,26,440	1,50,984	300

From the above Table it can be understood that there was an increase of 738 per cent in the year range 1950-60. In 1960-70 there was an increase of 403 per cent while in 1970-80 there was an increase of 390 per cent and in 1980 and above, there has been an increase in the sales value of only 300 per cent.

C. Clothing Accessories

The Clothing Accessories manufactured by the knitting units is presented in Table III.

TABLE III
MANUFACTURE OF CLOTHING ACCESSORIES

S.No.	Clothing Accessories	Percentage of Units Manufacturing	
		White	Coloured
1.	Ribbings	50	43
2.	Flat Knit Collars	30	27
3.	Other Collars	20	23
4.	Pockets	17	20
5.	Sleeves	17	17

It is evident from Table III, that Cotton Ribbings is the main accessory item manufactured. While 50 per cent produced White Ribbings, 43 per cent produced coloured ones. Less than 35 per cent concentrated on the production of both white and coloured collars, pockets and sleeves of cotton variety.

D. Details of yarns used

The details regarding the type of yarn used is presented in Table IVa.

TABLE IVa
TYPE OF YARN USED

Material	Percentage of Units
Cotton	100
Blends	37

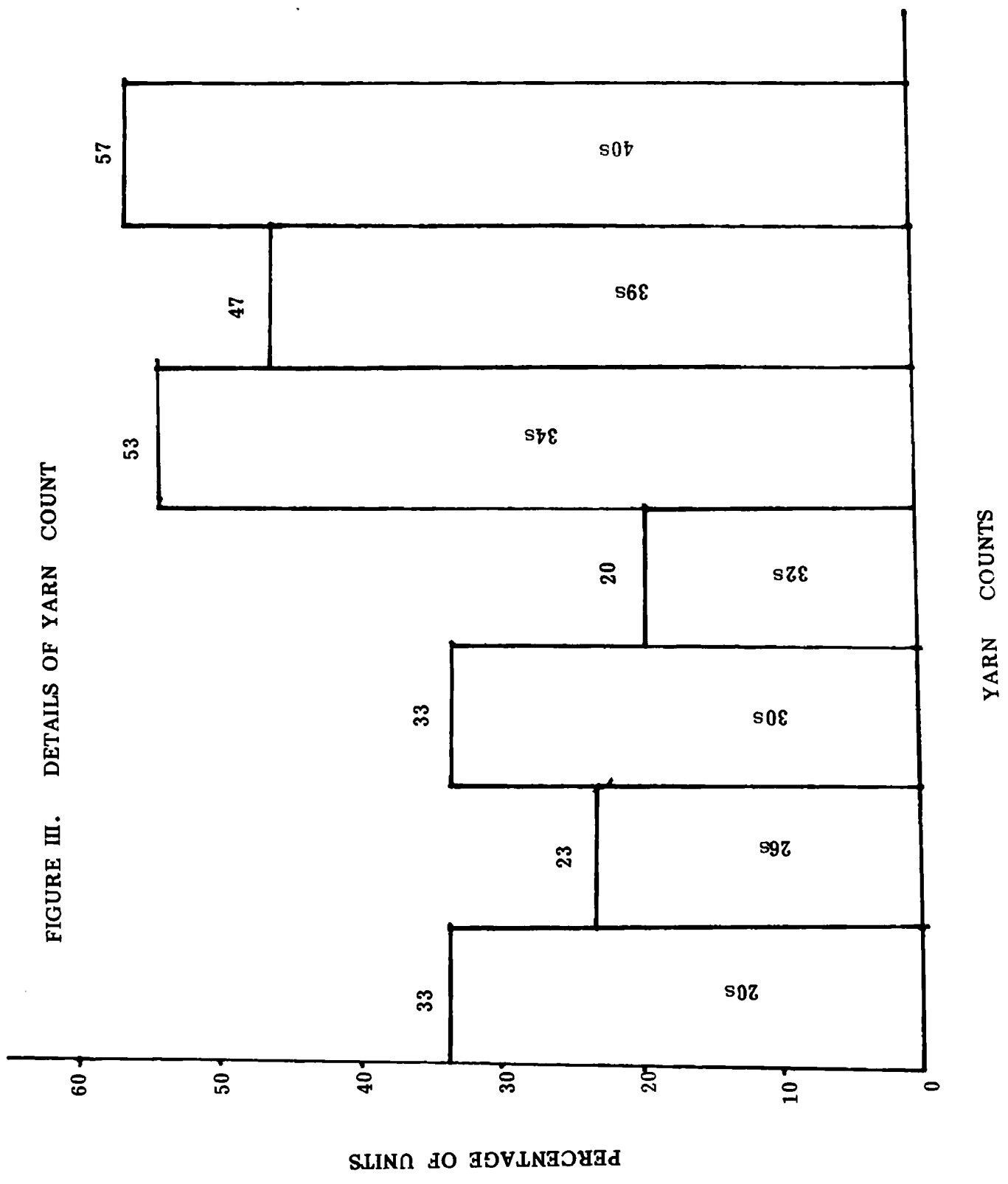
From the above Table, it is obvious that cotton dominates the knitting market, as stated by 100 per cent of the manufactures. Blended yarns were used by 37 per cent of the manufactures in addition to cotton.

The details regarding the Count of Yarn is revealed in Table IV b, Figure III.

TABLE IV b
YARN COUNT

Count	Percentage of Units
20s	33
26s	23
30s	33
32s	20
34s	53
39s	47
40s	57

FIGURE III. DETAILS OF YARN COUNT



From the above Table, it is inferred that yarn counts namely 40s was preferred by 57 per cent of the manufacturers. The other yarn counts such as 20s, 26s, 30s, 32s, 34s and 39s were preferred by less than 55 per cent of the manufacturers.

The details regarding the condition of yarn is shown in Table IVc, Figure IV.

TABLE IV c
CONDITION OF YARN

Condition	Percentage of Units
Gray Yarn	33
Processed yarn	30
Both	37

From Table IV c, it is understood that yarn in Gray stage was used by 33 percent of the manufacturers. While 30 per cent used processed yarn, 37 per cent used both Gray and Processed yarns.

The Special Treatments given to yarn is given in Table IVd, Figure V.

FIGURE IV. CONDITION OF YARN

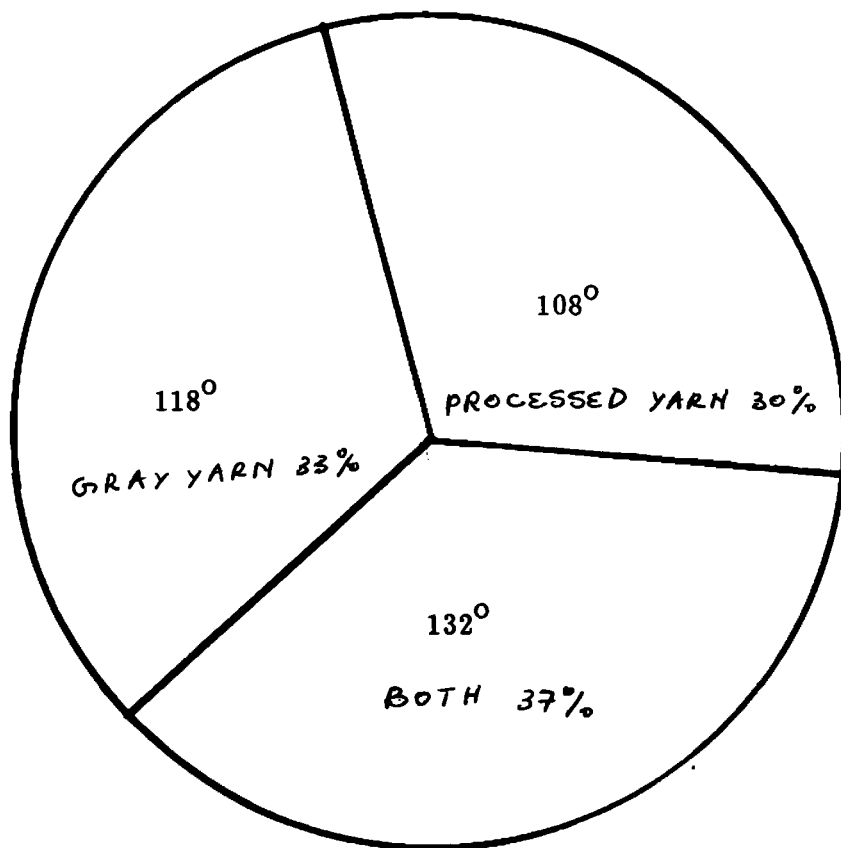


TABLE IVd
SPECIAL TREATMENT GIVEN

Treatment	Percentage of Units
Textured Yarns	40
Fancy Dyeing	37
Printed Yarn	29
Stone & Acid Wash	10

From Table 4d it is clear that Textured and Fancy Dyed Yarns were used by 40 and 37 per cent of the manufacturers respectively. Printed, Stone and Acid Wash Yarns were used by less than 30 per cent of the manufacturers.

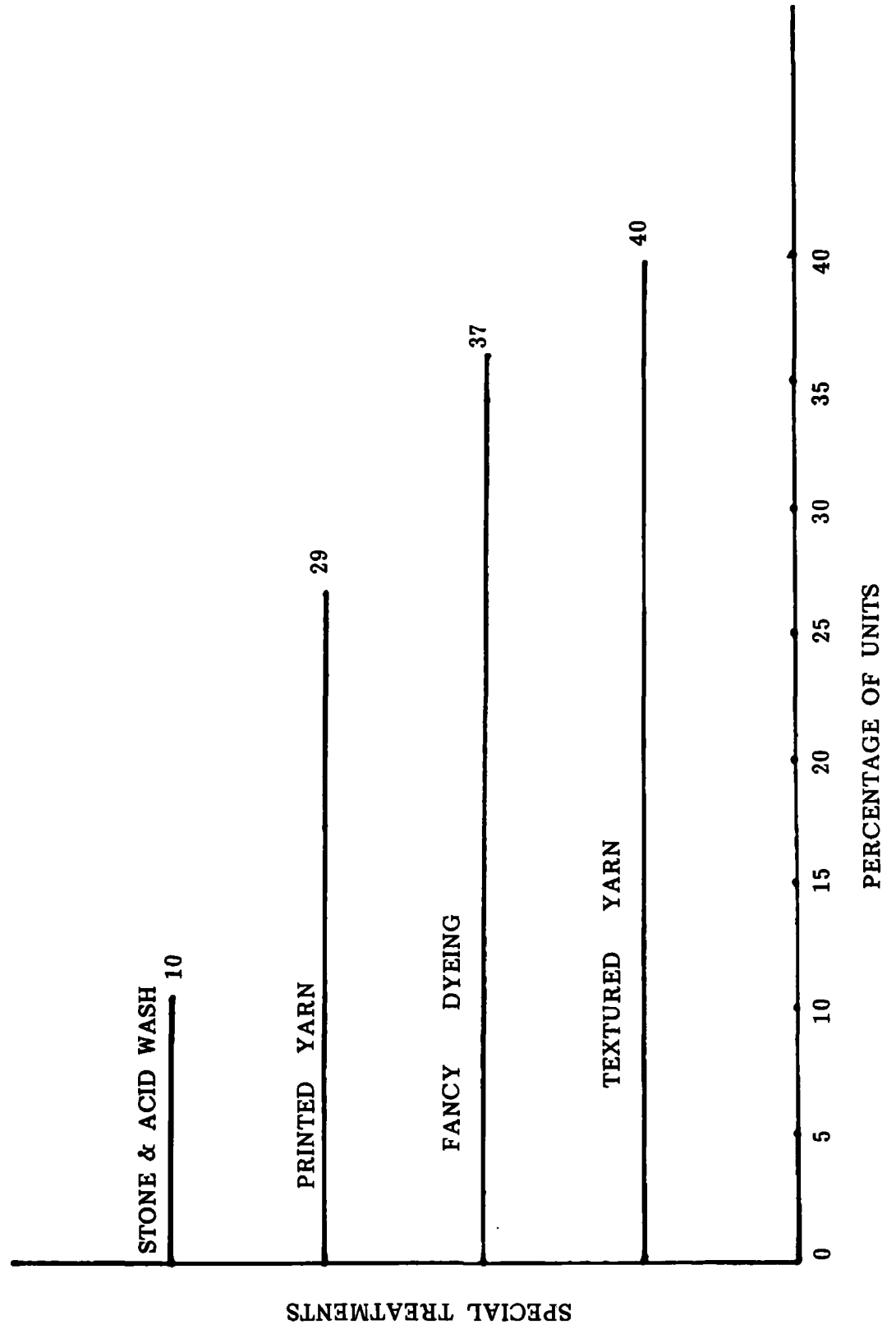
E. Details of Finishing Treatments Given

The details regarding the Type of Dyes used for the finishing of knitted goods is given in Table IVa, Figure VI.

TABLE Va
TYPE OF DYES USED

Dyes	Percentage of Units
Direct	53
Naphthol	50
Vat	27
Reactive	27
Sulphur	23

FIGURE V. SPECIAL TREATMENTS GIVEN TO YARN



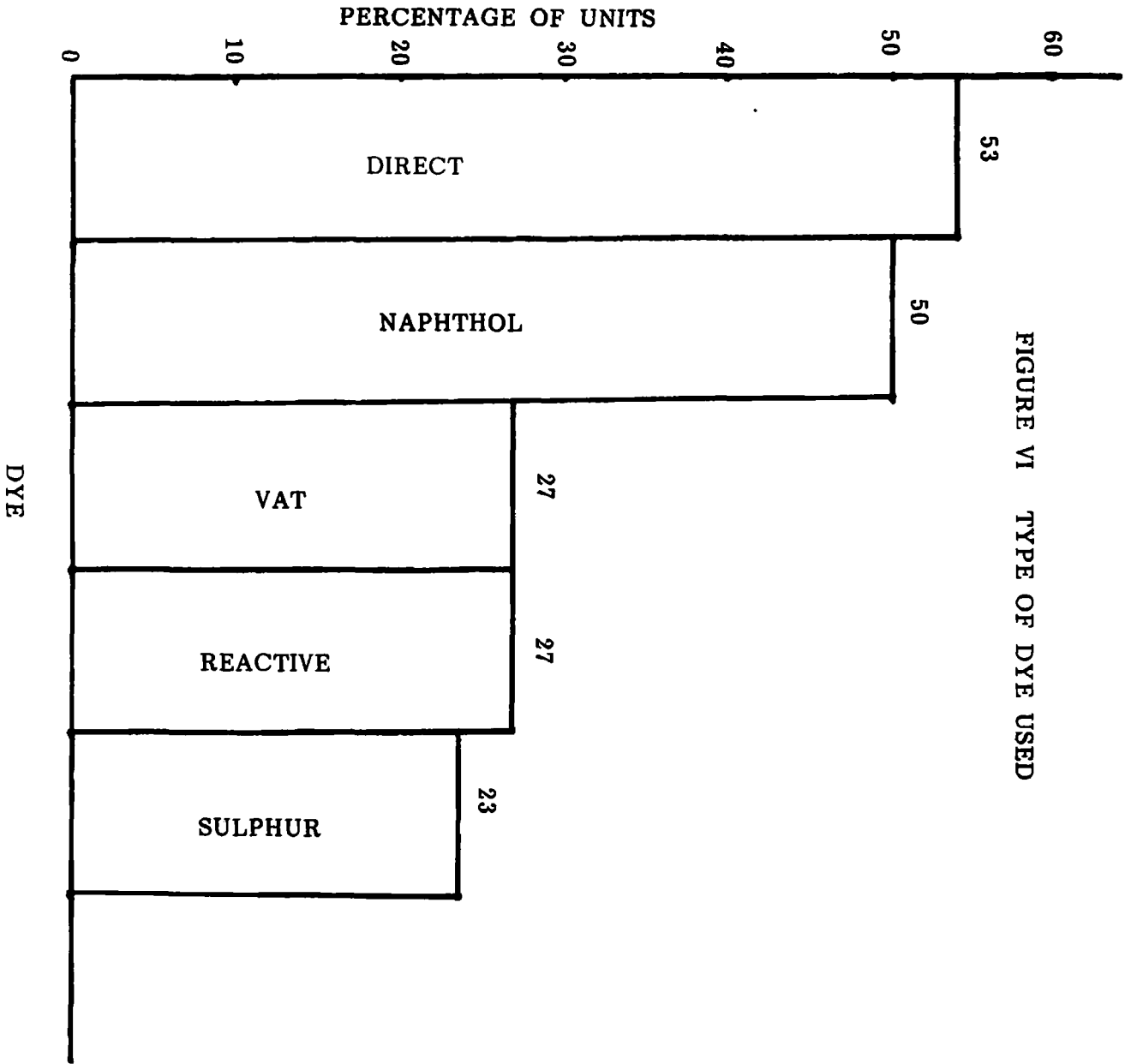


FIGURE VI TYPE OF DYE USED

From Table Va, it is obvious that Direct and Naphthol Dyes were used by 53 and 50 per cent of the manufacturers respectively. The other dyes namely Vat, Reactive and Sulphur were used by less than 30 per cent of the manufacturers.

The type of Printing adopted for the knitted goods is given in Table Vb, Figure VII.

TABLE Vb
TYPE OF PRINTING

Printing Type	Percentage of Units
Screen	73
Pigment	33
Foam	23
Guddi	23
Rubber	23
Flock	20

From Table Vb, it is evident that Screen Printing dominates, as indicated by 73 per cent of the manufactures. The other printing techniques namely Pigment, Foam, Guddi, Rubber and Flock were adopted by less than 35 per cent of the manufacturers.

The stage of printing of the knitted goods is revealed in Table Vc.

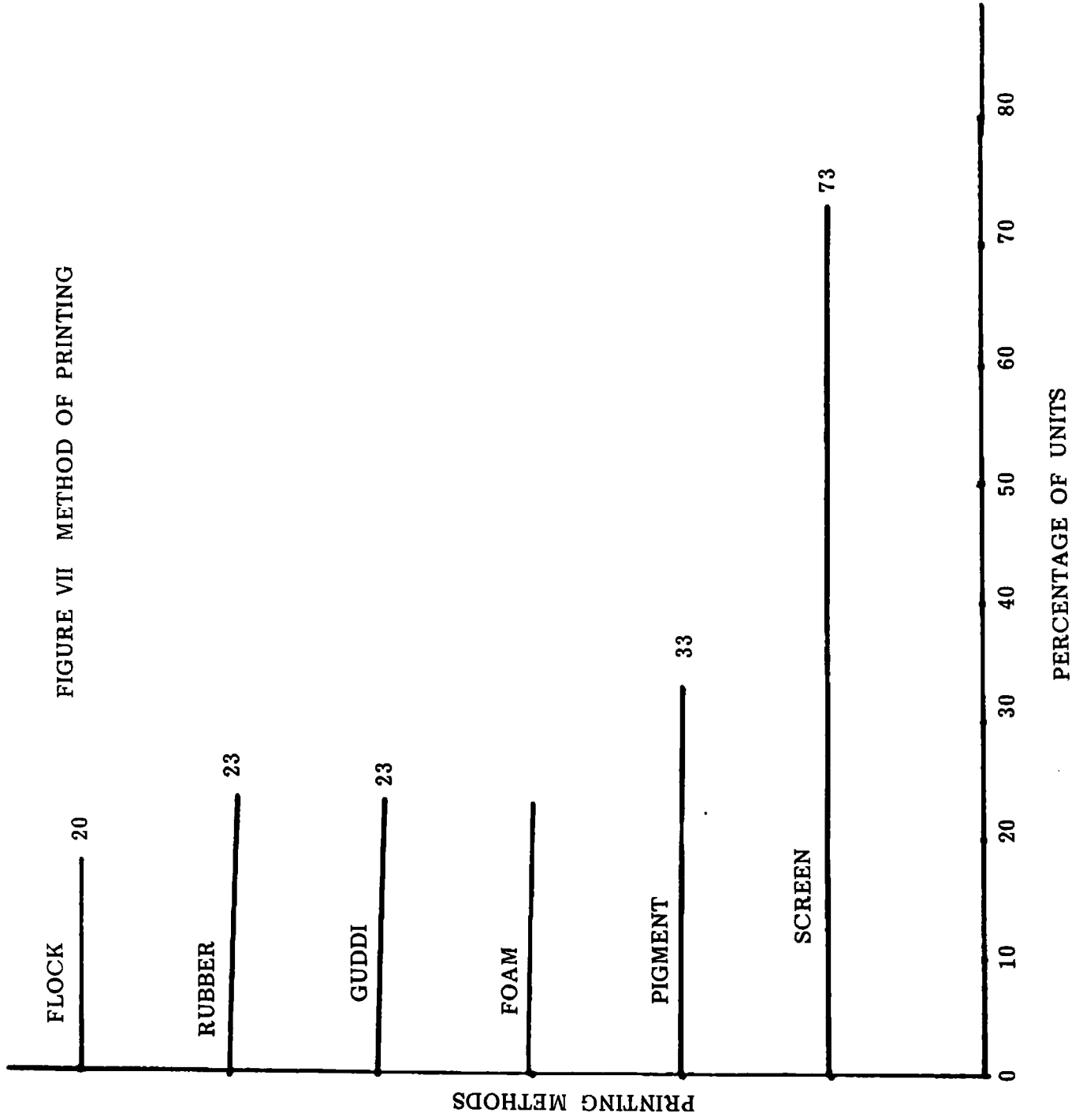


TABLE Vc
STAGE OF PRINTING

Stage	Percentage of Units
Fabric	37
Garment	13
Both	43

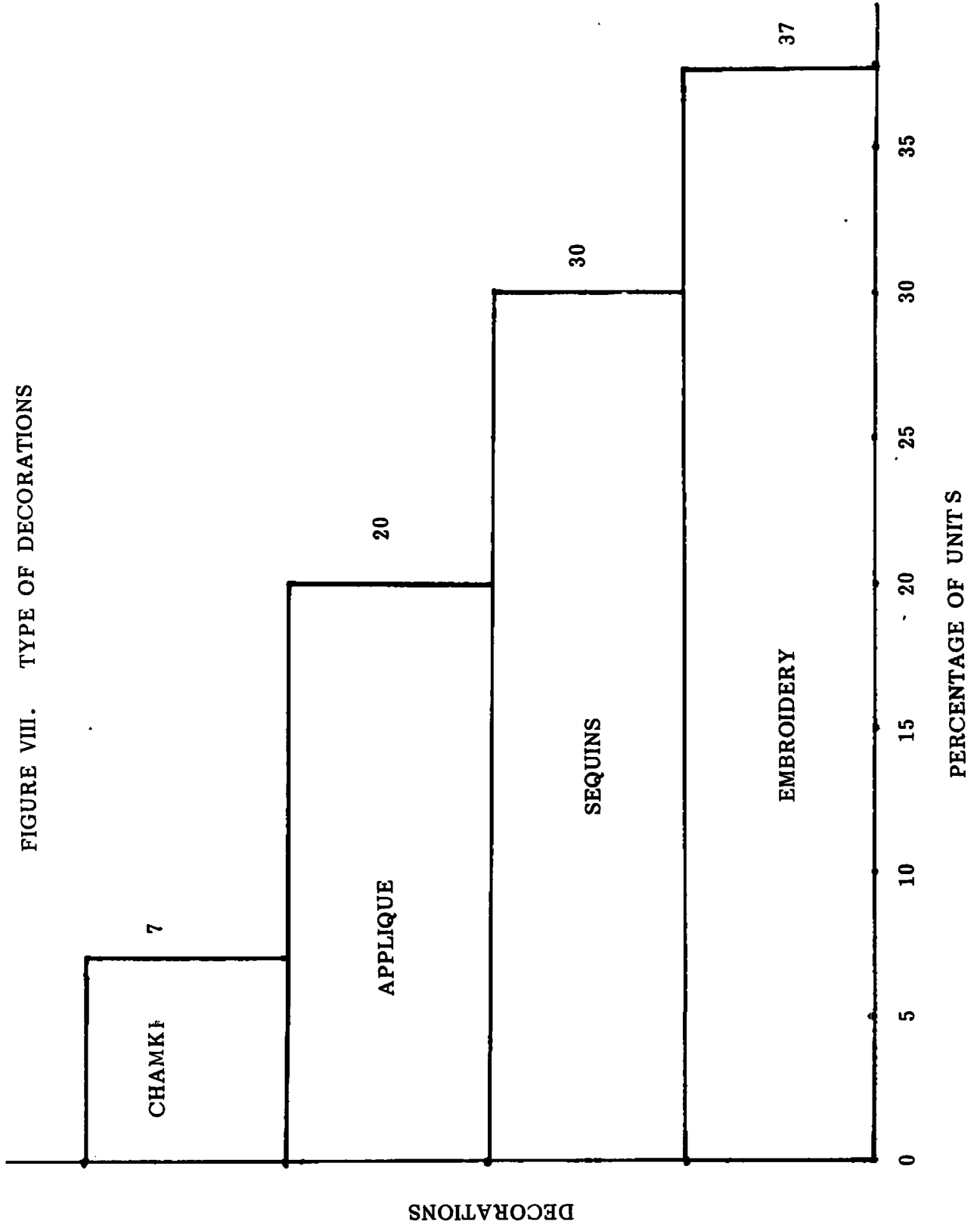
Table Vc indicates that 37 per cent preferred to get their fabrics printed before it was converted into garment. Thirteen per cent preferred to have the printing done on the goods after converting them into garments. Forty three per cent adopted printing both at fabric and garment stage.

The details of decorations done on the knitted goods is presented in Table Vd, Figure VIII and PLATE II a,b,c.

TABLE Vd
TYPE OF DECORATIONS

Decorations	Percentage of Units
Embroidery	33
Sequins	30
Applique	20
Chamki	7

FIGURE VIII. TYPE OF DECORATIONS



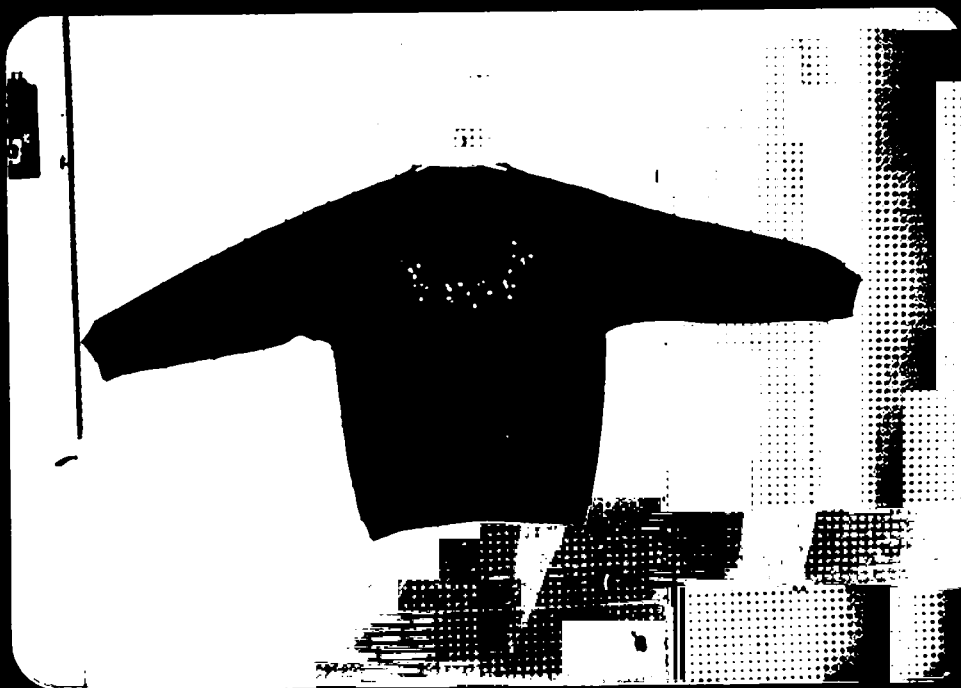


PLATE IIa DECORATIONS APPLIED-EMBROIDERY

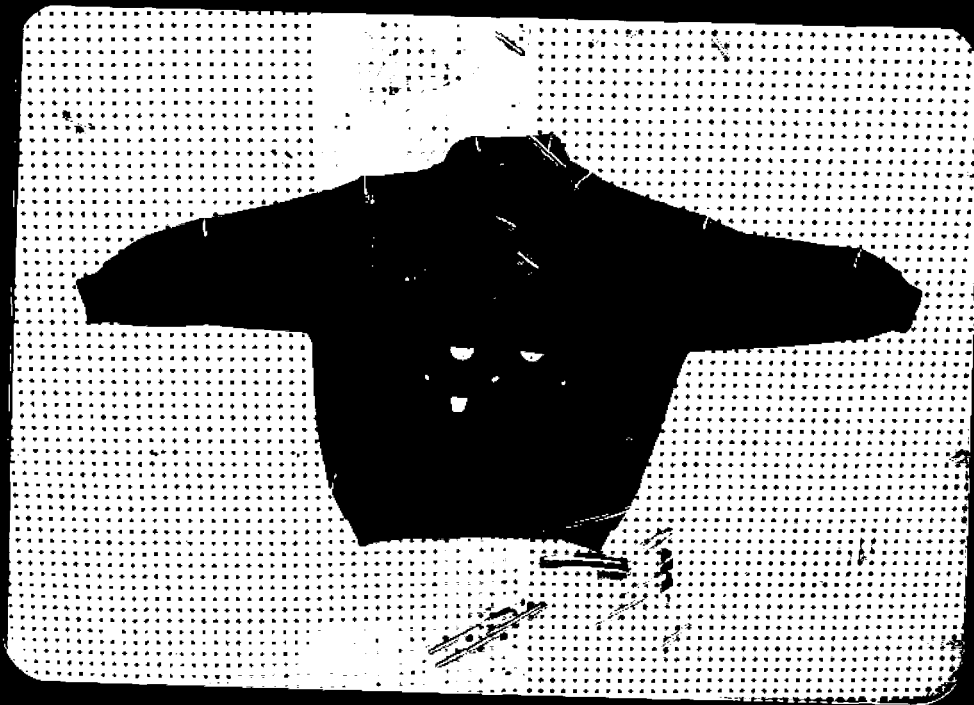


PLATE IIb DECORATIONS APPLIED-APPLIQUE



PLATE IIc DECORATIONS APPLIED-CHAMKI

From Table Vd, it is understood that 33 per cent of the units used Embroidery to decorate their knitted goods. Less than 30 per cent used other decorations such as Sequins, Applique and Chamki.

F. Specifications Regarding Garment Construction

The details regarding the size of the garments manufactured are presented in Table VIa.

TABLE VIa

SIZE

Size	Percentage of Units
Small	47
Medium	93
Large	70
Extra large	50

From the above Table, it is understood that 93 per cent of the manufacturers concentrated on the production of Medium size while large size garments were made by 70 per cent. Less than 50 per cent constructed Extra Large and small sized garments.

The details regarding the type of Patterns used to construct knitted garments is presented in Table VIb, Figure IX.

TABLE VIb
PATTERN

Pattern	Percentage of Units
Commercial	53
Agent's/Buyer's	37
own	20

From Table VIb, it is evident that 53 per cent of the manufacturers use Commercial Patterns for the construction of their knitted garments while 37 and 20 per cent of the manufacturers used Patterns prepared by their Agents/Buyers and the Units own respectively.

Table VIc, Figure X, reveals details regarding the material Combinations popularly used by the knitting units.

TABLE VIc
MATERIAL COMBINATION

Material	Percentage of Units
Cotton	93
Cotton Viscose	23
Cotton Polyester	20
Acrylic	12

FIGURE IX. DETAILS OF PATTERNS USED

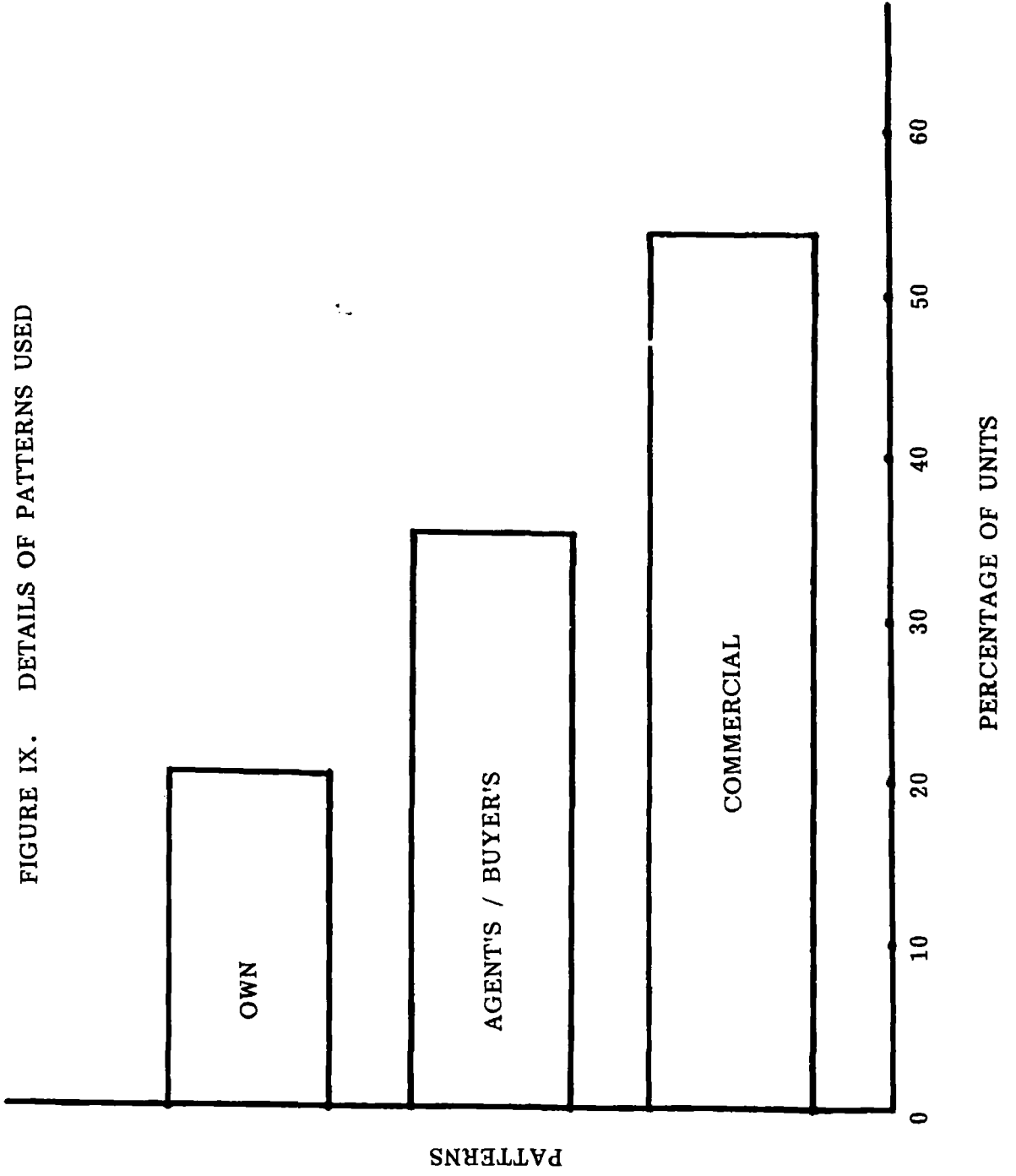
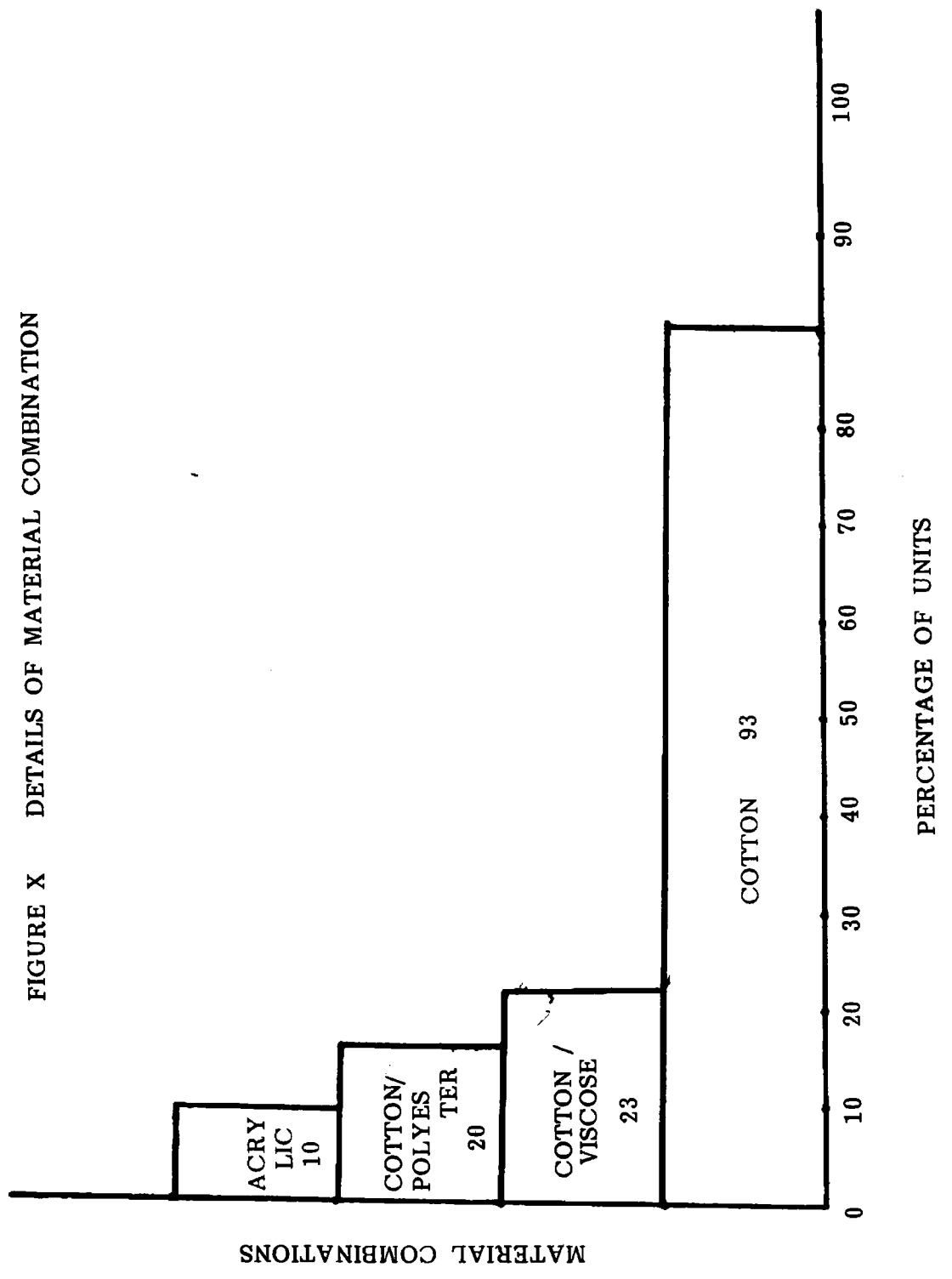


FIGURE X DETAILS OF MATERIAL COMBINATION



57a

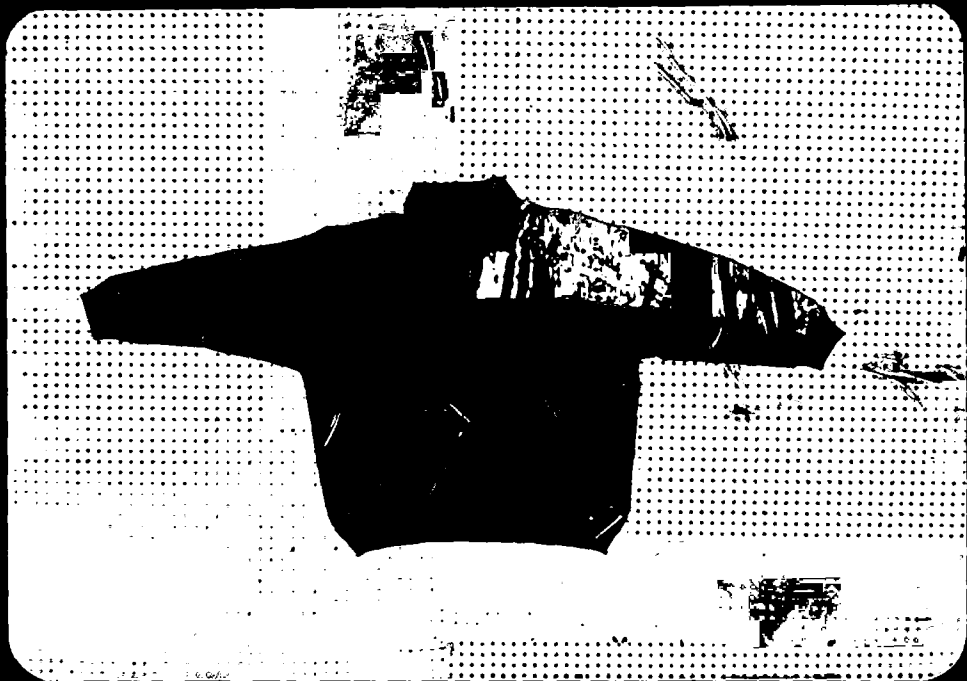


PLATE IIIa CURRENT COTTON CASUALS*BASIC T. SHIRT



PLATE IIIb CURRENT COTTON CASUALS-ONE.PIECE MIDI

From the above Table it is inferred that 93 per cent of the manufacturers used pure cotton for the production of knitted wear. PLATE III, a and b show models of current cotton casuals. Less than 25 per cent of the manufacturers used in addition to cotton, the following material combinations such as Cotton/Viscose, Cotton/Polyester and Acrylic.

The details regarding the Seam Finishes used by the knitting units is given in Table VI d.

TABLE VI d
SEAM FINISHES

Seam Finishes	Percentage of Units
Overlock	80
Flat	60
Sinker	57

It is obvious from the above Table that manufacturers constituting 80 per cent use the Overlock Seam Finish. The Flat and Sinker Seam Finishes are used by 60 and 57 per cent of the manufacturers respectively.

The details regarding the type of Sleeves used by the manufacturers are expressed in Table VIe.

TABLE VIe
SLEEVES

Sleeves	Percentage of Units
Plain	80
Magyar	17
Kimono	13
Dolman	13

From Table VIe it is clear that 80 per cent of the manufacturers use the Plain Sleeves for their knitted garments and less than 20 per cent use the Magyar, Kimono and the Dolman Sleeves.

The Type of Knit used in constructing the knitted garments is given in Table VI f.

TABLE VI f
TYPE OF KNIT

Knit Type	Percentage of Units
Single Jersey	53
Interlock	50
Pique	17

From the above Table it is understood that Single Jersey is the Knit Type used by 53 per cent of the manufacturers. Interlock is used by 50 per cent while only 17 per cent of the manufacturers used Pique.

The most popular Colour Combinations used by 70 per cent of the manufacturers are listed below: Green & Yellow, Blue & Red, Yellow & Navy Blue, Pink & White, Red & Green, Navy Blue & Green, Yellow & Brown, White & Blue and White & Red. The other colours used were Turq, Jade, Caff Brown, Bottle Green, Steel Gray, Moga and Biscuit.

The commonly used Trimmings and Decorations by almost all units included Embroidery, Wequins, Applique, Chamki and Elastics.

Padding; Gadda, Paper Canvas and other Non-Woven Synthetics were stated to be the widely used lining materials.

Plackets of the Single Ribbed and the Two piece kind were used by all of the manufacturers. The fasteners used included zips, Buttons, Metal Snaps and Velcro.

According to 60 per cent of the manufacturers the specifications for internal and foreign market varied.

G. Destination of Knitted Goods

Knitted goods move at the Internal Market Level through the following places; Baroda, Belgaum, Bangalore, Bombay, Calcutta, Coimbatore Cochin, Delhi, Hooglee, Ernakulam, Kutch, Mysore, Nagpur, Madras, Quilon, Hyderabad, Amritsar and Trivandrum.

At the Foreign Market level, the goods move through the following countries; Europe, U.S.A., Australia, Gulf, Canada, Hamburg, Rotterdam, Japan, England, France, Italy, Germany, Pakistan and Hong Kong.

Fifty per cent of the manufacturers are Exporters of Knitted garments.

H. Factors Affecting Manufacture

It was seen that 93 per cent of the knitting units manufactured their goods to suit different Age Groups primarily. Seventy five per cent were affected by the changing fashion scene and manufactured goods accordingly. Less than 45 per cent of the manufacturers were affected by factors such as Season, Country, Celebrity Persons and profession.

I. Feedback from Customers

Fifty per cent of the manufacturers stated that they received feedback from their customers. This feedback was

received through the Exporters, Agents, Buyers and Shopkeepers with regard to the shrinkage, colour fastness, and the fastness of the printed applications on the goods. Positive feedback was also there in the form of increased orders due to expanding demand.

J. Employment of Designers

Only 20 per cent of the knitting units employed designers. Those units which employed designers, revealed that Fashion Books and Journals, Visiting Readymade Garment Fairs held within the country and abroad, and Apparel Export Promotion Council were the means for the designers to keep in touch with the changing fashions. The designers job included working out measurements, making patterns and looking into the construction of the garment.

K. Standards and Quality Control

Less than 30 per cent of the manufacturing units followed the Standards of the Bureau of Indian Standards. The various Quality Control Tests undergone by the knitting units were of the following; Tests of Colour fastness, Shrinkage, Inspection of Stitching, Measurements, Elasticity, Seam Finishings, Damages in Goods, Trimming of Threads and Tex mark. These tests were carried out by Inspecting Agencies/Buyers staying at Tirupur, by the Management and by Proprietor and the Chief Executive of the units in all departments.

L. Help from Agency/Council and the Government:

The units stated that most of the help received by them was through the A.E.P.C. which gave them quota allotments, helped them in the export process, supplied addresses of the Foreign Buyers/Agents, arranged for Document endorsement and the issue of Export Certificates.

The Government helps the units by providing them Export Duty drawbacks, Tax reliefs, Bank Loans, Lower Rate of Interest, Non quota relief and by other incentives.

M. Fashion Changes on Knitted Goods

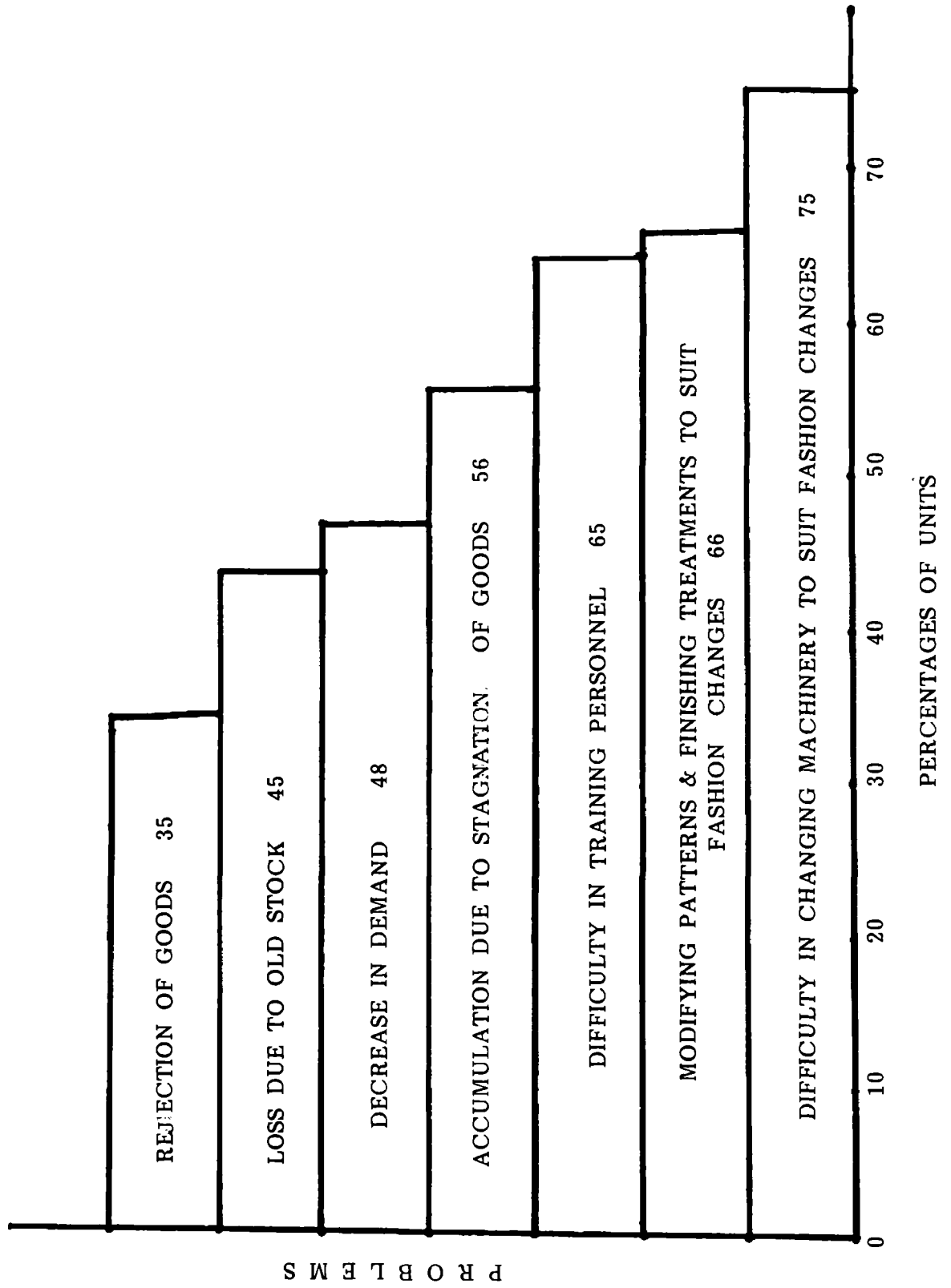
Seventy per cent of the Knitting Units claimed to be affected by fashion changes and the extent to which they are affected by fashion changes can be referred to as 'much'.

The list of Problems Faced Due To Fashion Changes is presented in Table VIIa, FigureXI.

TABLE VIIa
PROBLEMS FACED DUE TO FASHION CHANGES

S.No.	Problems	Percentage of Units
1.	Difficulty in Changing Machinery to suit Fashion Changes.	75
2.	Modifying Patterns and Finishing Techniques to suit Fashion Changes	66
3.	Difficulty in Training Personnel	65
4.	Accumulation due to Stagnation of goods	56

FIGURE XI PROBLEMS FACED DUE TO FASHION CHANGES



S.No.	Problems	Percentage of Units
5.	Decrease In Demand	48
6.	Loss due to Old Stock	45
7.	Rejection of goods	35

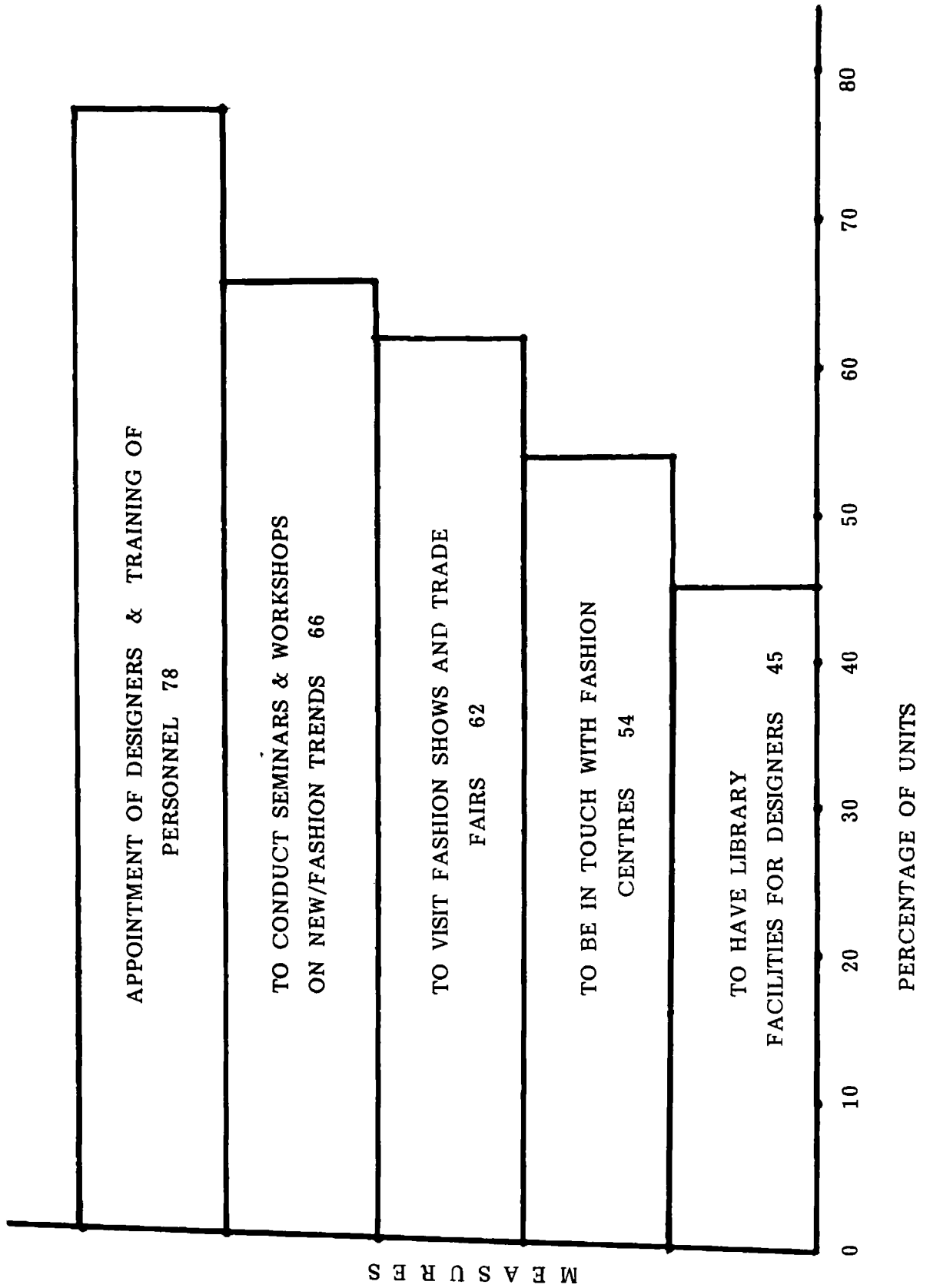
From the above Table it can be understood that the major problem constituting 75 percent of the manufacturers is the Difficulty faced in changing Machinery to suit the Changing Fashions. Modifying Patterns and Finishing Techniques to suit Fashion Changes was stated to be the next biggest problem faced by 66 percent of the knitting units. Sixty five per cent of the manufacturers faced difficulty in training personnel. Less than 60 per cent of the knitting units faced the following type of problems such as, Accumulation due to stagnation of goods, Decrease in demand, Loss due to old stock and Rejection of goods.

The measures taken to overcome these problems due to Fashion Changes is discussed in Table VII b, Figure XII.

TABLE VII B
MEASURES TAKEN TO OVERCOME PROBLEMS DUE TO
FASHION CHANGES

S.No	Measures	Percentage of Units
1.	Appointment of Designers & Training of Personell.	78

FIGURE XII MEASURES TAKEN TO OVERCOME PROBLEMS
DUE TO FASHION CHANGES



Summary and Conclusion

V SUMMARY, AND CONCLUSION

Construction of textile structures have been done by woven and non-woven methods. Knitting, a process of interlooping continuous lengths of yarn has created a niche for itself in the field of clothing and other textile and products. Knitted made-ups are witnessing an increased demand provoked by various factors of which changing fashion trends stand first.

The changes in fashions has been a rapid process and the manufacturers have necessarily to be upto date to cope with the changes. Changing trends in the use of modern machinery, design applications, finishing treatments and construction aspects has given knitted made-ups a totally new look.

These Changing Fashion trends have been studied by carrying out a survey of knitting units situated at Tirupur using Questionnaire as the tool.

The results of the response has been summerized in the following headings:

Manufacture of Knitted Made-Ups

It was seen that out of the knitted goods manufactured, the most popularly used material was cotton. This is the result of its properties such as absorbancy, cool and casual look,

suitability to hot weather conditions and its present fashionable status. Items such as Vests, Briefs, Panties, T-Shirts and other dresses were all of cotton. In addition, blends of Cotton such as Cotton/Viscose and Cotton/Polyester were also used.

Knitted garments is now an item of easy accessibility and within every man's reach. There has been a tremendous increase in the sales of Undergarments and T-Shirts in particular.

The other knitted made-ups such as Clothing Accessories are also beginning to take a very important place in the construction of knitted garments.

Details of Yarn Used :

Cotton yarn is used by 100 per cent of the manufacturers of knitted goods. The most widely used yarn count being that of 40s. Yarns in Gray and Processed conditions are used and they are given treatments such as Texturizing, Fancy Dyeing, Printing and Stone & Acid wash.

Finishing Treatments

The most popularly used dyes were Direct followed by Naphthol dyes mainly for their cost and fastness characteristics. The knitted goods were given various printing treatments at both the fabric and garment stages such as Screen, Pigment, Foam, Guddi, Rubber and Flock printing which are greatly

influenced by fashion trends. The other decorative treatments applied are Embroidery, Sequins, Applique and Chamki.

Aspects of Garment Construction

Most of the knitting units concentrated on the production of Medium and Large size garments which were constructed using Commercially available patterns or those of the Agents/Buyers. Only few units used their own patterns. The garments were constructed using the overlock seam finish and the single jersey knit in precedence to Interlock and picque knits. Most of the garments had plain sleeves and in addition Magyar, Kimono and Dolman were also used. Various colour combinations have been used in tune with the changing fashion trends. Fasteners such as zips, metal buttons, velcro; and plackets such as single ribbed and two piece types are used.

DESTINATION OF KNITTED GOODS

Knitted goods are being sent all over India and to many places and countries abroad showing the universal usage and need for knitted garments.

FACTORS AFFECTING MANUFACTURE

Various factors such age group, changing fashions, seasons, Country, celebrity persons and profession affected manufacture of knitted goods.

EMPLOYMENT OF DESIGNERS

Only few of the units employed designers whose job include working out measurements, making patterns and looking into the construction of garments.

STANTARDS AND QUALITY CONTROLS

Standards and quality controls are imperative measures for maintaining quality of goods manufactured. It was unfortunate that less than 30 per cent followed standards of Bureau of Indian Standards. Whereas many units followed various quality control measures ensuring quality of the goods.

FASHION CHANGES AND KNITTED MADE- UPS--

It was to note that 67 per cent of the knitting units were much affected by fashion changes. Due to the fashion changes, problems such as accumulation of stagnation of goods, loss due to old stock, rejection of goods, decrease in demand, modifications of patterns and difficulties such as the training of personnel and changing machinery to suit fashion changes are being faced. Suggestions to tide over these problems such as appointment of designers, training of personnel, holding seminars and workshops on new fashion trends, visiting fashion shows and trade fairs, keeping in touch with fashion centres and having library facilities for designers were offered by the manufactures.

Thus it can be said that to bring about faster adaptation to fashion changes, orientation in this regard should be given to the manufacturers and others responsible for production of knitted made-ups.

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Appendix

APPENDIX I END - USE OF GARMENT KNITTING MACHINES

FULLY FASHION MACHINES	FLAT - BAR MACHINES	CIRCULAR SWEATER STRIP MACHINES	HOISERY MACHINES
1. Blouses	1. Children's & Baby's wear	1. Children's & baby's wear	1. Foot wear
2. Cardigans	2. Cardigans	2. Sweaters	2. Stockings
3. Sweaters	3. Sweater	3. Vests	3. Panty- hose
4. Vests	4. Vests	4. Cardigans	4. Socks
5. Pull overs	5. Pull overs	5. Dresses	5. Half hose
6. Shawls	6. Scarfs	6. Pull overs	6. Tubular pipes for packing
7. Panties	7. Ribbons		7. Tights
8. Stockings	8. Trimmings		8. Panties
9. Collars & Cuffs	9. Dresses		9. Brassiers
	10. Blouses		10. Industrial Tubes
	11. Collars & Cuffs		11. Gaslap Tubes
	12. Elastical Surgical Articles		12. Sanitary Towels
			13. Bandages
			14. Surgical Articles
			15. Laboratory knits
			16. Knit-de knit yarns

APPENDIX II

**STUDY OF FASHIONS AND CHANGING TRENDS ON
KNITTED MADE-UPS**

1. Name:
Address:

2. Year of Establishment:

3. Tick the Knitted Made-Up Goods manufactured by you and give details pertaining to them.

ITEM	MATERIAL				
	Cotton	Wool	Nylon	Polyester	Acrylic
1. Vests					
2. Breifs					
3. Panties					
4. Slips					
5. Socks					
6. Gloves					
7. Swimwear					
8. Nightwear					
9. Pyjama Suits					
10. Track/Jogging Suits					
11. Body Warmers					
12. Jackets					
13. Jerseys					
14. Basic T-Shirts					
15. Polo Shirts					
16. Sweat Shirts					
17. Fancy T-Shirts					
18. Sweaters					
19. Tank Tops					
20. Tunics					

ITEM	MATERIAL				
	Cotton	Wool	Nylon	Polyester	Acrylic
21. Skirts					
22. Blouses					
23. Knitted Shorts					
24. Baby's Clothes					
25. Napkins					
26. Knitted Towels					
27. Any others					

4. State your sales value (in Rs.) for the mentioned time periods.

ITEM	At The Time of Inception	At Present
1. Under garments		
2. Socks		
3. Nightwear		
4. Sportswear		
5. Swimwear		
6. Warm Clothing		
7. T-Shirts		
8. Blouses		
9. Baby's Clothing		
10. Towels & Napkins		

5. Give details pertaining to Clothing Accessories manufactured by you for the specifications mentioned.

CLOTHING ACCESSORIES	COLOUR		MATERIAL
	White	Coloured	
1. Flat Knit Collars			
2. Other Collar Types			
3. Sleeves			
4. Ribbings (Single & Double)			
5. Pockets			
6. Cuffs			
7. Bands -Hair Bands -Wrist Bands			
8. Laces			
9. Other trimmings			
10. Any others			

6. Tick the characteristic features of the yarns used by you.

Details of yarns used

- a. Material:
- Cotton
 - Wool
 - Polyester
 - Acrylic
 - Nylon
 - Blends
- b. Yarn Count:
- 20s
 - 26s
 - 30s
 - 32s
 - 34s
 - 39s
 - 40s

- c. State of Yarn: Gray Yarn
Processed Yarn
Both
- d. Special Treatment/Effect given to Yarn: Fancy Dyeing
Tie & Dye
Printed Yarn
Stone & Acid Wash
Textured Yarns

7. Tick the following specifications employed by you.

Specifications

- a. Type of Dyes used: Direct
Vat
Sulphur
Naphthol
Reactive
- b. Printing of goods: Pigment
Screen
Roller
Foam
Guddi
Flock
Rubber
- c. State of Printing: Garment
Fabric
Both
- d. Application of Special Treatments: Chamki paper
Sequins
Embroidery
Applique

8. In the following list, state the specifications of garment construction given to you by the Agent/Buyer.

	<u>Specifications</u>
a. Size:	Small Medium Large Extra Large
b. patterns:	Commercial Unit's own Agent's/Buyer's
c. Material Combinations:	Cotton Cotton Polyester Cotton Viscose Polyester Wool Acrylic
d. Seam Finishes:	Over Lock Flat Sinkar
e. Sleeves:	Ordinary Shirt Sleeves Kimono Dolman Magyar
f. Colour combinations: (list out popular combinations)	
g. Plackets: (list out the plackets used)	
h. Type of knit:	Single Jersey Interlock Picque
i. Fasteners: (list out)	

- j. Trimmings & Decorations: (list out)
- k. Linings: (list out)
9. Do the stated specifications vary for Internal & Foreign Markets?
- | | |
|-----|----|
| YES | NO |
|-----|----|
10. Do you manufacture goods to suit a particular:
- | | | |
|----------------------|-----|----|
| a. Profession | YES | NO |
| b. age group | YES | NO |
| c. religion | YES | NO |
| d. state | YES | NO |
| e. country | YES | NO |
| f. season | YES | NO |
| g. Political system | YES | NO |
| h. changing fashion | YES | NO |
| i. celebrity persons | YES | NO |
11. How do you get feed back (if any) from the customers?
12. Do you employ designers? YES NO
13. if yes, tick the means by which the designers get to know the change in fashions.
- | |
|---|
| a. Fashion Books & Journals |
| b. Attending/Organising Fashion Parades |
| c. Visiting Readymade Garment Centres |
| d. Through A.E.P.C. |

14. List the work of the designers.

15. State the destination of your goods for:

INTERNAL MARKET	FOREIGN MARKET
-----------------	----------------

17. a. Is your product subjected to B.I.S. standards? YES NO
b. If yes, list the standards.

18. List the quality control tests undergone by your finished products.

19. a. Do you take assistance from any agency/council for the export of your goods? YES NO

b. If yes, specify the agency/council and the type of help rendered.

Agency/Council

Help Rendered

20. a. Do you get any help from the Government? YES NO

b. If, yes state the type of help rendered by the Government.

21. a. Does fashion changes affect your production trends?

YES NO

b. If yes, state to what extent.

Very much

Much

Not at all

22. What are the problems faced due to fashion changes?

23. What are the measures taken to overcome these problems?