CHAPTER – IV

RESULTS AND DISCUSSION

Main aim of present research was an in depth study of shoddy industry of Panipat so as to analyze its strength, weakness, opportunity and threat. Findings of the study have been presented under following headings:

4.1. The process of shoddy yarn making
4.2. Existing practice of yarn making
4.3 Sustainability aspect
4.4 Consumer Survey
4.5 Health Survey

Major findings of the Survey done during August 2011 to December 2012 in various shoddy industries of Panipat reveal that a unique hub of shoddy industry has developed at Panipat, where about 300 industries are engaged in this enterprise having 600 cards. Average production of single card is 800kg of yarn per day. Thus, total production of yarn at Panipat out of shoddy industry is 48000 kg/day, which is 100% blended. One production unit in this industry is known as ‘One Card’. Some industries are having two or more cards as well. Although there is no published source of production data, yet the information collected through office-bearers of Union of Shoddy industry owners has been cross checked by interviews of sample units surveyed.
For this purpose shoddy industrial units selected and listed in Chapter III, has been visited by the research investigator and the process of shoddy yarn making has been witnessed which is as under:

**4.1. THE PROCESS OF SHODDY YARN MAKING**

The process of shoddy yarn making involves following steps, which is evident from the schematic chart (Figure 4.1). In these steps some are manual while major part of the work is done by machines. This flow chart reveals that, the process of shoddy yarn making starts with the incoming of Truckload of Rags in the industrial unit. The rags are procured from the consignments from European Countries and United Kingdom, as well as, from U.S.A. and Australia. This is so due to the fact that in western society normally people change their wardrobes more frequently than in Indian society and this is why; these rags are preferred over Indian rags because of their greater strength. These rags are supplied to industrial units by traders who are exclusively engaged in this business. These rags are stored in huge godowns in the industrial units so that production work runs smoothly. How these rags are converted into yarn is evident from flow chart, i.e., the Process of Shoddy Yarn Making
Process of Shoddy Yarn Making

- Truckload of Rags
- Procurement of Raw Material
- Sorting/Variety of Colours
- Stripping and Rag Tearing
- Dyeing
- Teaser Mixing
- Carding
- Condensing
- Spinning/Framing
- Winding / Coning
- Packing of Finished Products
As evident from schematic chart (4.1), the process of shoddy yarn making involves some interlinked processes which have been explained in following paragraphs under various sub-heads:

4.1.1. Truckload of Rags

As noted earlier, that shoddy industry relies mainly upon rags from European, American and Australian countries which reach through ships mainly at Mumbai port. These trans- shipments are arranged by indenters who are engaged in shoddy business and supply these materials to industrialists. In shoddy industrial units these rags reach through trucks full of rags and are emptied in huge godowns meant for procurement of raw material for production of yarn, in industrial unit.

4.1.2. Procurement of Raw Material

The raw material is thus procured in godowns so that supply of raw material for production of yarn goes uninterrupted. This is why, sufficient storage of rags is done in each industrial unit and even local suppliers also keep sufficient storage to supply it on demand to industries. To ensure regular supply of raw materials links between shoddy industry owners and intenders are of much significance. With the incoming of IT revolution in India online suppliers of raw material in the form of rags have become more significant. Now there is no wastage of time in sending demand and providing supplier of raw materials. Shoddy industry owners underline this fact that now the things have become much easier, quicker and reliable as compared to Pre-IT Revolution conditions.

4.1.3. Sorting of rags

The process of sorting is first and fundamental step in shoddy industry. Sorting means to arrange the things in order as per alike characteristics. As the truckload of rags reaches the industrial unit, the
The immediate step is that rags are classified as per their colour. This step is beginning of eco-friendly technology as once the rags are classified or sorted as per colours, then no dye is required to give them a uniform shade. The use of dyes is very limited in this industry. This process of classification is known as ‘sorting’ in the language of shoddy industry. The source of raw-material, that is, rags are imported from U.S.A, Europe and Australia, as already noted in Chapter I, Introduction. However, in this survey an attempt was made to work-out the feasibility of local pool for clothing. But, the response of industrialists was negative towards local pool due to the reason that imported rags have more strength than Indian rags as in India people utilize 80% of the strength of the clothing and in western society this utilization is almost 20-30%. In other words one may say that in western society wardrobes are changed more frequently as compared to our society. Higher purchasing power of developed countries makes it feasible. However, in Indian society this trend has started but is only limited up to higher income group. Moreover, in India people dispose their old clothing through giving them to domestic help or charity. This is why local pool for clothing collection cannot be a success and imported rags are preferred.

The labour involved in sorting is mostly contractual as marginal and semi-skilled workers are involved in it. Haryana being an agrarian economy the labour prefers to work in fields during the harvesting and sowing season. Therefore, fluctuation in labour supply may not hinder industrial production, this is why contractual labour is preferred, in the process of sorting which is first and fundamental step in the process of shoddy yarn making.

4.1.4 Stripping and Rag Tearing

In this stage firstly stripping and rag tearing is done manually and thereafter in machine also. Rag tearing machine cuts these pieces into much smaller pieces so that further processing becomes much easier.
In this process, removal of buttons, zips, hooks etc is done and rags torn to a comfortably manageable size so that fabric may be converted into fibre in next step. Plate 4.2 reveals the process of stripping and rag-tearing in which female labour is engaged for the same. The buttons and zips removal is often called stripping and rag-tearing is done in a manner in which larger sized rags are converted into manageable pieces so that in machines these may be crushed smoothly. The stripping and rag-tearing process requires a lot of patience and efficacy in work. This is why; female labour is engaged for the same. For this purpose sickle locally known as ‘Darati’ is used for stripping and rag tearing. The labour used is semi-skilled and contractual. The use of manual labor in this process provides employment to many marginal workers. This process requires a careful handling as any zip or buttons left inadvertently may harm the machines. Therefore, labor supervisors are entrusted with job of cross-checking of stripping and rag tearing. The pieces of rags attained through this process are put in Hopper which further tears them in small pieces.

4.1.5 Dyeing

Although, dyeing is not common in this industry, yet if dye is required for colour harmonies then it is done at this stage only not after preparation of yarn. More commonly, red and green colours are utilized in dyeing. The units which are engaged in dyeing are having Effluent treatment plants (ETPs) as well. Aversion of dyeing or minimizing the need for dyeing is in itself an eco-friendly technique. However, recently dyeing units have been shifted to industrial area, i.e., away from the city residential areas from environmental conservation point-of-view.

At present shoddy units are not engaged in dyeing activity, rather they send their material through tempos or ‘Jhota – buggis’ (Buffalo- driven carts) to dyeing units away from the city and get
back dyed material to convert it into fibre and then into yarn. Therefore, dyeing is, in fact, not a part of these units rather specialized dyeing units work for this purpose.

4.1.6 Teaser Mixing

Teaser Mixing is the stage which is purely mechanical part in which synthetic fiber is added to give strength to yarn. Although, no specific tests are applied to check the strength of yarn, yet conventional method of testing the strength of yarn that is, breaking the yarn with fingers is commonly applied. A Govt. agency NITRA is entrusted with checking quality and strength of yarn. Blending of synthetic yarn with cotton and wool enhances their strength. Most fibres of different counts manufactured in shoddy industry are blended to provide strength to yarn.

Mixing is also termed as blending, where some synthetic material like nylon or any other synthetic fibre is mixed with cotton or wool fibre. No complex technologies are entrusted for measuring strength of the fibre, rather age-old crude method of breaking thread with fingers is prevalent for the same. For this purpose samples are prepared for yarn of different counts. Count is defined as degree of coarseness or fineness of yarn, smaller the number, coarser the yarn and vice-versa, which has been discussed in detail in table 4.7. Plate 4.3 shows samples which are displayed on the tables for various types of yarns and experienced traders assess tensile strength, elasticity and other characteristics of yarn and give orders to industrialists as per their requirement. The quality of yarn is manufactured and supplied as per the requisition for various items. More often industries engaged in manufacturing of shawls, lois, blankets, sweaters etc. order for yarn as per their specifications. Blending or mixing is the stage where strength modifications can be done and proportion for synthetic mixing is fixed accordingly. Hence, blending/ mixing is a pragmatic utilitarian aspect where strength of yarn to be prepared is determined.
4.1.7 Carding

Carding involves preparation of fibre in which fabric is converted into fibre. In carding, the lap passes between two cylinders covered with clothing, more often which is a heavy fabric with many specially bent wires. Individual fibres are straightened and oriented somewhat parallel. In this machine material is thoroughly cleaned off all embedded dirt and unwanted foreign matter. There is sorting of short, medium or long fibres. The fibres emerge from the carding rolls as a thin sheet. Thus, carding is most important step in the process of shoddy yarn-making.

The process of carding involves the major functioning of the card. This is an altogether multifaceted process which is interesting to observe. In the first stage teared rags are converted into fibre mechanically which is the initial phase of carding (Plate 4.4). Carding being the most significant part of the whole process sometimes the complete machinery is termed as card. If any industrial unit is having more than one system of machinery then it is known by the number of cards in a single unit. Mechanical process is so integrated and continuous that it is difficult to ascertain that from where next step has started.

4.1.8. Condensing

Condensing is the process in which carding rolls are converted into thin sheets. In other words fiber is further condensed and this is why, this segment of the machine is termed as condenser. The ginned material advances in the form of a thin sheet automatically driven by machine (Plate 4.5). The condensed sheet is further dragged to next part of the machine, which spins the material in the form of yarn (4.6).

4.1.9 Spinning / Framing
Yarn is prepared through spinning in which the material ginned through carding is utilized. This is the final stage of yarn–making. The yarn in this stage is put on frames and this is why, sometimes this stage is termed as framing also.

In spinning stage the ginned material is transferred automatically on ring-frame (Plate 4.7) where this material is spun in the form of yarn. The whole process is so intricately related that it is very difficult to discern where one stage has finished and other started. It is a continuous process. On spinning process an efficient worker carefully handles the spindles and end-product yarn is collected and finally shifted to next part of the machine where winding and packing are done on cones, which is also termed as Coning.

4.1.10 Winding or Coning

The cones are prepared out of spun material on the basis of various counts to supply it to weaving industries who utilize these for manufacturing sweaters, lois, shawls, blankets, etc. These cones are easy to pack in sacks for its trans-shipment.

Plate 4.8 reveals the process of Winding or Coning. These cones are classified as per counts packed in huge sacks and these sacks are transported to industrial units which are engaged in weaving shawls, lois, blankets, sweaters etc out of this yarn. Thus, end-product of shoddy-industry yarns becomes raw-material for such industries. These industries are working at Panipat, Ludhiana, Amritsar and some towns of Uttar-Pradesh. In this way, Panipat works as hub for shoddy industry and this centre is largest in terms of shoddy industrial cluster not only in India but in the whole world.

4.1.11. Packing of Finished Products
The packing of finished products in sacks and loading it on trucks, tempos or other vehicles is the last stage of the process.

The yarn is wound on plastic and packed according to their counts. Thereafter, yarn is exported to industries indulged in making clothing from shoddy yarn. Thus, end – product of this industry is yarn in the form of blended yarn which is exported to other industrial cities like Ludhiana and Phagwara in Panjab where clothing is weaved out of this yarn. However, some units at Panipat are also engaged in this enterprise of making clothing out of shoddy yarn.

4.2 EXISTING PRACTICE OF SHODDY YARN MAKING

As evident from Chapter III, Methodology, three different questionnaires have been used to collect information regarding shoddy industry (Appendix I to III). The first questionnaire was meant for owners / managers of the shoddy industrial units, which were surveyed taking a sample of 20% out of 300 units. Thus, these industrial units (N=60) were taken as representatives of the whole shoddy industry located at Panipat and in its surroundings. An analysis of questionnaire I shows the following aspects of shoddy industry:

4.2.1 Profile

Table 4.1 to 4.5 gives general information or profile of the shoddy industry.
Table 1 and Figure shows the number of plants in a single industrial unit, often termed as number of “cards” in a single unit. In response to this question majority of industries revealed that they are having one ‘card’ in their unit. However, in some industrial units number of cards is two or more also, only in one unit it has been found that five cards are there in a single industrial unit. Here, it is pertinent to mention that some industrial units are having more than one card but with separate names and sales-tax number etc. from taxation point of view, while in terms of production control it is common.

**Table 4.1: Number of cards in industrial units (N=60)**

<table>
<thead>
<tr>
<th></th>
<th>Single Card</th>
<th>Two to Three Cards</th>
<th>Four + Cards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>36</td>
<td>23</td>
<td>01</td>
</tr>
<tr>
<td>Percentage</td>
<td>60</td>
<td>38.3</td>
<td>1.7</td>
</tr>
</tbody>
</table>

**Fig 4.1: Number of cards in industrial units**
Data given in table 4.2 shows year of origin of the unit, i.e., year of establishment/starting of production. It is evident that most of the industries have started production 1989 onwards, mainly in early 90’s. However, this factor is not related to present production and in terms of production all units are of the same level, whether started in early years or in later years.

Table 4.2: Year of origin of shoddy units (N=60)

<table>
<thead>
<tr>
<th></th>
<th>Prior to 1990</th>
<th>Between 1990-95</th>
<th>After 1995</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>05</td>
<td>24</td>
<td>31</td>
</tr>
<tr>
<td>Percentage</td>
<td>8.3</td>
<td>40</td>
<td>51.7</td>
</tr>
</tbody>
</table>

Fig 4.2: Shoddy industrial units

- Prior to 1990: 52%
- Between 1990-95: 40%
- After 1995: 8%
Table 4.3 and Figure 4.3 show tentative cost of a single plant. It is apparent that cost of the plants varies between 70 lacs to 80 lacs. However, the present cost is much higher due to increased rates of machinery, but the information has been collected for cost at the time of installation of the machinery which varies between 70 lacs to 80 lacs per card. It can be inferred that about 30 % are large units, 65% medium and 5% small units. However, these tentative costs are only estimations of industrialists and variability is not that high.

Table 4.3: Cost of a plant

<table>
<thead>
<tr>
<th></th>
<th>Less than 70 lacs</th>
<th>70-80 lacs</th>
<th>More than 80 lacs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>03</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Frequency</td>
<td>5</td>
<td>65</td>
<td>30</td>
</tr>
</tbody>
</table>

Fig 4.3: Tentative cost of single shoddy plant
It is clear from table 4.4 and Figure 4.4 that the source of raw material again is common for all firms, as they rely upon foreign consignments through traders. This is also confirmed by the study of Lucy Norris (2012). Although, information regarding local, state and national level sources has also been sought but no industrial unit responded in favour of any other source, rather development of local pool as proposed by the investigator for local collection of clothing also received no response. This is due to the fact that in India one utilizes the clothing up to 70 - 80 % of the strength of the apparel while in European Culture it is utilized up to 20 - 30 % of its strength. This aspect has been dealt in greater detail in response to questionnaire II in attribute of receptivity. Thus, source of raw material is common for all units, that is, international consignments through traders specializing in rag-imports.

### Table 4.4: Source of raw material

<table>
<thead>
<tr>
<th></th>
<th>Local Rags</th>
<th>Through Local Traders</th>
<th>Traders Abroad</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>0</td>
<td>45</td>
<td>15</td>
</tr>
<tr>
<td>Percentage</td>
<td>0</td>
<td>75</td>
<td>25</td>
</tr>
</tbody>
</table>

![Fig 4.4: Sources of raw material](chart.png)
Information on storage system employed by shoddy industry has been collected. Table 4.5 and Figure 4.5 show the result. Most of the units have their own godowns. Industrialists informed that they have arranged huge godowns for the same. The capacity of godowns varies as per number of cards in a single industrial unit. The units which have a single card store material for foreign consignments are delayed due to multiple reasons. For this purpose storage requirement is must. The units which have more than one card, store more rags in their storehouses, so that production pattern is not disturbed. Huge godowns of rags are characteristic feature of shoddy industry. (Plate……)

Table 4.5: System of storage of raw material (N=60)

<table>
<thead>
<tr>
<th></th>
<th>Own Godowns</th>
<th>Pool System Storage</th>
<th>Local Traders</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency</strong></td>
<td>48</td>
<td>10</td>
<td>02</td>
</tr>
<tr>
<td><strong>Percentage</strong></td>
<td>80</td>
<td>16.67</td>
<td>3.33</td>
</tr>
</tbody>
</table>

Fig 4.5: Storage pattern for raw materials
4.2.2 Production

The information regarding production of shoddy industry was also collected. An analysis of these responses reveals quantum and trend of production of shoddy industry. The average production of a single ‘card’ in shoddy industry is 800 kg per day. But no sure production quantity was revealed by industrialists, as they were of the opinion that, the amount depends upon demand. As they receive orders, the production starts as per orders received.

Data given in table shows the quantity of cotton, wool or blended yarn produced in shoddy units. In response to this question most of the industrialists opined that blended yarn is dominant in demand and this is why, much of the yarn produced is of this type.

However, strictly speaking all yarns are blended but the categorization as woolen, acrylic fancy and cotton etc. are only the dominance of yarn mixed with rags in blending and end products are classified accordingly.

As far cotton yarn is concerned none of the units is engaged in exclusively cotton yarn production. Multiple type of yarn producing units are 25%. While 53.33% of the units are engaged in producing blended yarn and percentage share of woolen, acrylic and fancy yarn is 10%, 8.33% and 3.33% respectively. The industries producing various types of yarn in a single unit have been taken as producing multiple types of yarn.

Table 4.6: Types of yarns manufactured in shoddy industry (N=60)

<table>
<thead>
<tr>
<th></th>
<th>Blended Yarn</th>
<th>Woolen</th>
<th>Acrylic</th>
<th>Fancy</th>
<th>Multiple types of yarn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>32</td>
<td>06</td>
<td>05</td>
<td>02</td>
<td>15</td>
</tr>
<tr>
<td>Percentage</td>
<td>53.33</td>
<td>10</td>
<td>8.33</td>
<td>3.33</td>
<td>25</td>
</tr>
</tbody>
</table>
The type of yarn depends upon types of rags available, as well as, yarn mixed for providing strength. This is why, all types of yarn produced in shoddy industry are termed as ‘Blended Yarn’ or ‘Synthetic Shoddy Yarn’.

An attempt has been made to find out the different counts of yarns produced in shoddy industry. There also it has been found that the count of yarn is again order based. However, the yarn produced is of the following counts –

<table>
<thead>
<tr>
<th>COARSE</th>
<th>2</th>
<th>4</th>
<th>6</th>
<th>8</th>
<th>10</th>
<th>12</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blended Yarn</td>
<td>3%</td>
<td>8%</td>
<td>10%</td>
<td>25%</td>
<td>54%</td>
<td>25%</td>
<td>8%</td>
</tr>
</tbody>
</table>

The count is a number which denoted fineness of yarn. Count of yarn has been described in cotton English system which is indirect system of yarn number. Larger the number, finer is the yarn. It is
clear from findings presented in table that production on yarn of 4 Ne is highest. The yarns of 2, 4 and 6 counts are used in blankets, while yarn of 12 or 14 counts are used for sweaters and shawls.

Table 4.7: Different count of yarns produced in shoddy industry (N=60)

<table>
<thead>
<tr>
<th>Yarn Counts</th>
<th>2 to 2.5 Ne</th>
<th>4 to 6 Ne</th>
<th>8 to 10 Ne</th>
<th>12 to 14 Ne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>15</td>
<td>30</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>Percentage</td>
<td>25</td>
<td>50</td>
<td>10</td>
<td>15</td>
</tr>
</tbody>
</table>

Testing of Yarn

An attempt has been made to find out whether the yarn produced in shoddy industry is tested or not. In response to this question, answers have been of mixed type. Most of the industrialists are of the
opinion that the strength is mostly tested by breaking the yarn with fingers – a crude but practical method. However, some industrialists informed that there is an agency named NITRA (Northern India Textile Research Association, Ghaziabad), entrusted with testing of yarn’s strength, but nobody is sure of what type of tests are performed to check the strength.

**Type of dyes used for dyeing yarn**

The dyeing aspect has also been investigated, and it has been found that yarn is not dyed in shoddy industries. Dyeing units are separate and these have been shifted to outskirts of city as inflow of contaminated water in underground water-table was noted. Thereafter, eco-friendly measures have been implemented and every dyeing unit is having ETP (Effluent Treatment Plant) and no contaminated water is allowed at surface flow or in deep underground water aquifer. The dyes used are mainly chemical based and yarn producers send their semi-finished raw material to these units; and after getting them dyed, yarn is produced. The various classes of dyes are used for different types of yarn as presented in the following table:

<table>
<thead>
<tr>
<th>Class of Dyes</th>
<th>Type of Yarn</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Dye</td>
<td>Cotton</td>
</tr>
<tr>
<td>Acid Dye</td>
<td>Woolen</td>
</tr>
<tr>
<td>Basic Dye</td>
<td>Acrylic</td>
</tr>
</tbody>
</table>

**Demand for Yarn**

The response pertaining to demand/supply status for various yarns revealed that most of the demand is for blended yarn and this is also mediocre or average. Demand for pure wool and cotton yarns is
very less. Supply of yarn is hundred percent i.e. industry is able to fulfill the demand. Very high demand for yarn is not received and therefore, no higher supply trends prevail. The industry being in an unorganized sector, no compiled data are available and most of the industrialists provide production information in approximations.

Table 4.8: Nature of demand and supply (N=60)

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Types of Yarn</th>
<th>Demand</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Cotton</td>
<td>4%</td>
<td>100%</td>
</tr>
<tr>
<td>2.</td>
<td>Wool</td>
<td>10%</td>
<td>100%</td>
</tr>
<tr>
<td>3.</td>
<td>Blended</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>4.</td>
<td>Fancy</td>
<td>4%</td>
<td>100%</td>
</tr>
<tr>
<td>5.</td>
<td>Acrylic</td>
<td>2%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Fig 4.8: Nature of Demand and Supply

- Cotton
- Wool
- Blended
- Fancy
- Acrylic
4.2.3 **Disposal Pattern of Yarn, Labour and Raw Material**

The disposal pattern of yarn produced in shoddy industry has been shown in table. It is clear that most of the yarn produced is transported out of Panipat, mainly to Ludhiana and Amritsar in Punjab, which are major centers for producing woolens out of shoddy yarn like shawls, lois and sweaters. Besides it some towns of U.P. like Meerut, Kairana and Gajraula and Bidasar in Rajasthan also, trade in shoddy yarn from Panipat. About 63% of the industries export their products while, only 10% of the units consume their own yarn for making products and 27% of the industries supply yarn to local units for making products. (Table 4.9)

However, the shoddy industry being in unorganized sector, the volume of trade cannot be discerned due to paucity of data. Moreover, industrial concerns were either not having a data bank or not willing to part such information due to tax structure etc.

**Table 4.9: Consumption of Yarn**

<table>
<thead>
<tr>
<th></th>
<th>Own Units</th>
<th>Local Units</th>
<th>Units outside Panipat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>6</td>
<td>16</td>
<td>38</td>
</tr>
<tr>
<td>Percentage</td>
<td>10</td>
<td>27</td>
<td>63</td>
</tr>
</tbody>
</table>

![Fig. 4.9: Consumption of Yarn](image-url)
Employment Structure

Question Number 12 relating to employment structure, has been analyzed quantitatively on the basis of information provided by the respondents. Interestingly, supervisors and managerial staff in each card range from 1 to 3 in each category, while semi-skilled number of workers range from 45 to 52, and number of working hours are eight in each category. The arithmetic mean (\( \bar{x} \)) computed for semi-skilled category of workers comes out 48 and Standard Deviation (\( \sigma \)) is merely 0.71, which means there is no significant deviation among employment ratio in various cards. In a single shift of 8 hours one skilled labour, one supervisor and 15 to 16 semi-skilled employees are sufficient on a single card, while work is done normally in three shifts, during high demand period thus engaging 45-50 semi-skilled employees on a single card. However, in peak seasons depending upon orders industry works 24 hours in three shifts of 8 hours each. But in lean periods, sometimes work is limited to one or two shifts. Thus pressure of work in industry is variable as per orders for yarn received. Some larger units which are having more than 2-3 cards also receive bulk orders through tenders from government agencies like railways, disaster management departments and relief agencies.

Table 4.10: Employment Ratio (N=60)

<table>
<thead>
<tr>
<th></th>
<th>Managerial Staff</th>
<th>Supervisory Staff</th>
<th>Semi-skilled Labour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>2</td>
<td>3</td>
<td>45</td>
</tr>
<tr>
<td>Percentage</td>
<td>4</td>
<td>6</td>
<td>90</td>
</tr>
</tbody>
</table>
Availability of Raw Material

Manufacturers have been asked “whether they (shoddy industrial unit owner) face any problem with regard to raw material availability.” Then the response has been that sometimes they face such problems. As described earlier in first chapter, Introduction, that raw-material for shoddy industry is rags imported mainly from U.K and continental Europe. Therefore, recent ‘slow-down’ of economy in European countries showed its impact on shoddy- industry at Panipat. The problem for raw materials is faced when shipment of consignments of rags is deferred due to import problems or any other international sea-route problem. However, to avoid the paucity of raw-materials huge godowns have been built by rag- suppliers in Panipat itself to store the imported rags and supply them to the industrialists. This arrangement is quite effective to control supply of raw material to shoddy industry.

**Table 4.11: Problem of availability of raw material**

<table>
<thead>
<tr>
<th></th>
<th>Sometimes</th>
<th>Quiet Often</th>
<th>Very Rare</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>48</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

(N=60)
Government Support

Manufacturers have been asked regarding any incentives provided by Government. The responses are a complete ‘no’. Neither central or state government nor local administration provides any incentive to the industry. Rather most of the respondents were quite critical of the government policies of taxation, Change of Land Use (C.L.U) provisions and labour laws etc which prove an impediment for the shoddy industry. These can be termed as constraints to the shoddy industry.

4.2.4 Eco-friendly Measures, Problems and Profitability

Question no. 15 to 20 in questionnaire I; pertain to eco-friendly measures, problems of the industry and profitability aspects.

Eco-friendly measures
An attempt has been made to determine what environmental-friendly measures are being taken by the shoddy industry for solid-waste management, waste-water management and any other measure.

**Solid waste management**- Question Number 16 which pertains to waste management of shoddy industry reveals that solid waste is being utilized in an efficient manner. In most of the industries it has been found that left over stuff of the shoddy industry (the scrap of rags which has not been utilized in yarn formation) is being sold to the ancillary industries which use this for stuffing cushions, sofas, pillows etc. and thus no waste is there for dumping.

As for waste-water management is concerned, ETP’s (Effluent Treatment Plants) have been installed in those industries which are engaged in dyeing. The treated water is disposed in deep groundwater channels through sink-holes meant for the purpose, in which filtration of water is inclusive in ETP’s.

**Production-Cost Management**

Question Number 17 examined that how production-cost management is being done in shoddy industry. It is being adopted as the shoddy industry has not developed in an organized sector. Therefore, most of the industrialists are evasive to this question, could not provide proper answer and informed that the demand of shoddy yarn is fluctuating. Sometimes it is too high that the supply requires during this period three shifts of working, and when it is lean period then the production decreases. The peak period of demand is before the start of winter

**Problems faced by shoddy industry**

The various problems and cures for the industry have been examined. It has been revealed that Electricity Supply is the major problem and detrimental to the growth of production. Although every industry has their own power generation but the increasing prices of diesel undermine the
profitability in productions as cost of diesel-generated power is higher in comparison to hydle-power. The cure suggested by industrialists is that administration should look into the affairs.

**Profitability**

A direct query has been raised – that whether the industry is profitable and to what extent. The four choices were – very high, moderate, sufficient and low. Out of these four choices majority of the industrialists informed that it was moderate, while some were of the view that it is merely sufficient. However, they avoided to give more details on this issue like percent profit. In present sample of 60 units, eighteen units are of such types which are producing products other than shoddy yarn. These products are curtains, mink-blankets, towels, handlooms, etc. in addition to shoddy yarn. These products have been added to augment profitability.

<table>
<thead>
<tr>
<th>Profitability</th>
<th>Very High</th>
<th>Moderate</th>
<th>Sufficient</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>2</td>
<td>28</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Percentage</td>
<td>3.33</td>
<td>46.66</td>
<td>41.66</td>
<td>8.33</td>
</tr>
</tbody>
</table>

Table 4.12: Profitability of the industry (N=60)
**Table 4.13: Shoddy Units engaged in Other Products**

<table>
<thead>
<tr>
<th>Alternate Products</th>
<th>Engaged in Other Products</th>
<th>Exclusively Shoddy Yarn producing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>18</td>
<td>42</td>
</tr>
<tr>
<td>Percentage</td>
<td>30</td>
<td>70</td>
</tr>
</tbody>
</table>

**Fig. 4.13: Shoddy Units engaged in Alternate Products**

- **Engaged in Other Products** (30%)
- **Exclusively Shoddy Yarn producing** (70%)
Although, at present 70% of the industries are exclusively engaged in shoddy yarn production, yet the tendency of shifting to alternate products plants is gaining momentum with the passage of time. The 30% industries which are engaged in shoddy yarn production along with other products have shifted to alternate enterprises at a later stage give example of alternate products while earlier they were producing exclusively shoddy yarn.

4.2.5 Future Prospects

*Question Number 21* scanned that what were the future prospects of the shoddy-industry at Panipat, most of the respondents were not optimistic for the growth of industry. This is why, eight industrialists out of the sixty surveyed, have installed shoddy industry along with other enterprises like handlooms, power-loom and mink blankets etc to augment their profitability.

Even some shoddy industrialists have shifted their business due to problems being faced by the industry in terms of power, taxation, import duties, trade policies and so on. Most of the respondents were of the view that lack of government incentives and increasing legislation bindings, as well as, labour laws were proving detrimental to the growth of industry. Thus, future prospects of the shoddy industry are not very good, which is one of the threats to the industry.

**Local pool development**

One of the objectives of this research has been to study the possibility of local pool development for collection of old clothing. It has been found out that industrialists are not interested in local rags, rather they prefer imported rags. The major reason put forward by the industrialists is that Indians use their clothing up to 70-80% of its strength, while Europeans utilize only up to 20-30% of the strength
of the clothing. Even if some local clothing is collected by industries, then that is not used for making yarn rather it is used as fuel for furnaces as most of the rags are worn out. Moreover, people also do not want to part with their old clothing without any return for the pool of rags.

The old clothing in Indian Society are being reused in another manner. These are given to domestic help or in charity to poor people who use these to its full strength unless they are worn out and decomposed. Besides it, these are also used in dusting, mopping, polishing and other rough uses which leads to degradation of garments up to that level that these cannot be reused in recycling for yarn-making. In future, if due to more development in economy, tendencies of European society penetrate in India than possibility of local pools for old clothing cannot be ruled out. Reuse and Recycling both are good for environment as both are eco-friendly in nature.

4.3 SUSTAINABILITY ASPECTS

Question Number 24 and 25 were meant to scrutinize the sustainability of the industry. In response, industrialists are of the viewpoint that industry is sustainable from raw material supply point of view. Although, the quantum of sustainability can’t be determined in numerical numbers yet sustainability persists from a rational or pragmatic point of view. European economy is much effluent than ours and therefore supply of rags from these countries will continue. To be more specific Europeans have to dispose their rags in an efficient manner by exporting it, otherwise they will require big dumping grounds for the same. But, in this manner rags are being recycled through yarn-making and a good measure of solid waste management is avoided in this manner. Moreover, poor folk in Indian Society get a good quality of clothing through shoddy yarns at lower costs. Thus, shoddy industry is proving a boon for less-fortunate.
Eco-friendly implications are evident from the basic concept of shoddy industry which works on the environmental necessity of – Reduce, Reuse and Recycle. The yarn produced in this industry becomes raw material for weaving units which make, shawls, lois, blankets, and sweaters, etc. from this yarn. These products are much lower in cost in comparison to products made from yarn spun through fresh resources which is good for lower income group consumers. Secondly, this industry reduces pressure on fresh resources which leads to sustainability aspect. Decrease in pressure on fresh resources of raw material generates judicious exploitation of the resource base which is fundamental requirement for sustainable development.

Sustainability of the industry thrives upon the judicious exploitation and if recycling continues the resources will be available for future generations as well. Moreover, there is also a decrease in solid waste management aspects as if substances are not recycled properly there will be a huge accumulation of used clothing on the planet earth, where population growth has already reached to an alarming situation. Thus eco-friendly implications and sustainability aspects are intricately interwoven with each other. However, lack of environmental awareness in Indian society has led to lower receptivity to new innovations but if new innovations are adopted, they may lead to a better society.

4.4 CONSUMER SURVEY

The second questionnaire (Appendix II) which pertains to consumer survey is able to retrieve very useful data which is both qualitative and quantitative in nature. In this survey the questionnaire were given to the individuals with three broad categories determined on the basis of their educational standards with an underlying assumption that the persons with higher educational standards have a higher understanding regarding environmental issues and concerns of the industry. Therefore, three
categories on the basis of educational standards determined i.e., having qualifications above graduation, graduates and undergraduates each category having 100 respondents thus making a total of 300 respondents throughout section of the society at Panipat.

The results of this survey are evident from various tables given in various attributes, in which the persons who agreed or disagreed or were undecided on the issue have been analyzed statistically and the percentages of agree/disagree/undecided on the basis of different attributes contained in questions have been given in the form of tables. The whole spectrum of questions was summarized in ten attributes which were tested statistically with the help of a $3 \times 3$ contingency table of $\chi^2$. The results of opinions, $\chi^2$ and level of significance for each attribute have been given in various tables dealing with these attributes. An analysis and synthesis of these attributes leads to the following results:

4.3.1 Analysis of Attributes

Analysis of various questions asked during survey and percentage of responses is evident from following paragraphs, in which rationale behind responses has also been discussed to highlight the importance of shoddy industry and its contribution towards economy of the region.

The responses received were classified, tabulated and analyzed as per the questions. To arrive at significant conclusions all the attributes were tested through $3 \times 3$ contingency table $\chi^2$ test for which the values of $\chi^2$ for each attribute classification and level of significance have been given in tables along with percentage of persons who agree/disagree/undecided on various questions.
Necessary statistical methodology was adopted to verify underlying hypothesis to draw logical and scientific inferences. The null hypothesis $H_0$ for each attribute, that “there is no significant difference between academic standards and responses regarding shoddy industry and its environmental impact,” was tested through $\chi^2$ values as this test is a good measure for association of attributes and variables. In present study attributes discussed in following paragraphs were evaluated against variables, that is, responses in affirmative (agree), negative (disagree) and undecided (can’t say), which are as under –
The First Question, that shoddy industry is good for poor attracted 79% positive responses, while 11% responses were negative and another 10% were undecided on the question. The respondents who were affirmative had a reason to say so, as products derived from fresh resources of yarn rather than recycled yarn were much higher in cost, while the worth of recycled yarn clothing is not that lower in terms of utility. Moreover, through this process cheap clothing is available and that also new one. On the other hand respondents who had negative response to the question, they were of the view that imported clothing from China is giving a tough competition to these clothing in terms of costs, as well as, in terms of quality. So the consumer has better choices available at hand and this is why, shoddy industry in spite of being an eco-friendly technology has not been able to cope-up with such imported clothing. The respondents who were undecided also quoted similar reasons.

Table 4.14: Responses, $\chi^2$ and significance level – Orientation (N=300)

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation</td>
<td>79</td>
<td>11</td>
<td>10</td>
<td>12.23</td>
<td>5%</td>
</tr>
</tbody>
</table>

Fig. 4.14: Orientation
**Orientation:** The attribute on orientation was tested through the data generated by survey done regarding shoddy industry through a questionnaire mentioned earlier. As already mentioned in Chapter II, Review of Literature, the shoddy industry at Panipat has been reported as poor-oriented by various previous researchers. But to test this hypothesis in an objective and quantitative manner an analysis of responses was made based upon the question asked in questionnaire, whether shoddy industry at Panipat was good for poor? About 79% of the respondents agreed with the statement, while 11% disagreed and another 10% were undecided on the issue (fig 4.15). However, the null hypothesis is that, ‘there is no association between academic standards and responses towards orientation attribute’, had been tested through 3×3 contingency table, the null hypothesis was rejected at 5% level of significance, which means that there is a good reasons to believe that two attributes are dependent on each other, as persons with higher education standards tend to be more aware about economic and ecological aspects of the industry. However, the percentages of responses, as revealed in Fig.4.1 highlight that even persons with medium and low academic standards also had a larger share of agree responses like person with higher academic standards. Therefore, scientific and logical inferences regarding association between the two attributes under study had been derived. One may safely infer from analysis of this attribute that shoddy industry is poor oriented. Moreover, demand for products of shoddy yarn also substantiates the hypothesis which has been discussed in detail in utilitarian attribute, which is to follow in this Chapter.
The Second Question that whether shoddy industry has given employment to many, 62% were positive, while 25% denied it and another 13% were not able to decide either way. The rationale behind the controversy is that shoddy industry has given rise to marginal workers only as most of the labour engaged in sorting, stripping and rag-tearing is unskilled or semi-skilled, while other steps are undertaken by skilled labour, which is not very high. The availability of the cheap labour in the region is also controlled by cropping seasons as Haryana is primarily an agrarian economy. The labour shifts to farm sector in harvesting and sowing seasons while in other times it is not having work at their disposal. Therefore, shoddy industry provides them opportunities for additional work which is a boon for semi-skilled labour force as it enhances their earning potentials through a substantial increase in working days. The analysis of this question has led to attribute of employability which is evident from table 4.16.

Table 4.15: Responses, $\chi^2$ and significance level – Employability

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employability</td>
<td>62</td>
<td>25</td>
<td>13</td>
<td>16.46</td>
<td>1%</td>
</tr>
</tbody>
</table>

(N=300)
**Employability:** The attribute pertaining to employability of shoddy-industry was derived through a question in questionnaire that 'shoddy industry has given employment to people. As apparent from Fig1 about 62% of the respondents agreed with the statement while 25% disagreed and another 13% were undecided on the issue. However, to find-out the association between employability and academic standards 3×3 contingency table had been analyzed which showed $\chi^2$ value of 16.46 (table 4.2) which was found to be significant at 1% level as per table values of $\chi^2$. In other words one may say that the null hypothesis ‘there is no association between employability and academic standards’ had been rejected at 1% level of significance. Therefore, there is a good reason to believe that there was a strong association between attribute of employability and responses as per academic standards of the respondents. However, empirical observations and interviews with industrialists revealed many practical problems of employability which have been discussed in detail in next chapter, where the problems of the industry have been analyzed. Most of the labor work in this industry is got carried out by contractual labor which cannot be taken as permanent employees of shoddy- industry, though the earnings of the labor depend on this particular industry. Therefore, quantitative analysis is also to be verified empirically, so that rational and realistic conclusions may be drawn, otherwise dry statistical tables may mislead the investigator. This is why; both were incorporated in the present study. Thus it can be derived that shoddy industry at Panipat has given employment to quite a
significant number of population, as well as, business opportunities to dealers dealing in shoddy yarn products. The benefits of employability lead to betterment of the economy in general, and labour class in particular.
The Third Question was regarding quality of shoddy yarn products. In response to this question, majority of respondents are crystal clear that products are not of good quality, but the cost factor is more dominant as these products are cheaper.

Table 4.16: Responses, $\chi^2$ and significance level – Quality

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality</td>
<td>34</td>
<td>61</td>
<td>5</td>
<td>12.88</td>
<td>5%</td>
</tr>
</tbody>
</table>

(N=300)

Quality: The attribute of quality is another significant parameter which was required for purposeful derivations. For this purpose, question asked in questionnaire was that, ‘the products of shoddy industry was of good quality’, in which about 61% of the respondents disagreed while only 34% agreed with the statement. Another 5% were undecided over the issue. Although, products are cheap
as already mentioned in preceding discussion that shoddy-industry is poor oriented, but the quality of the products made from new Yarn. The reliability of responses may be deemed good as the null hypothesis that ‘there is no association between attribute of quality and levels of academic standards of the respondents’ was rejected at 5% level of significance. Thus there is a strong reason to believe that a strong association is there between quality and academic standards of respondents as $\chi^2$ values of 3×3 contingency table in this case is 12.88 as apparent from table 4.2 and null hypothesis had been rejected at 5% level of significance. Hence, the attribute of quality of the products is not that good, yet cost factor dominates over attribute of quality in terms of preferences. Thus it can be analyzed that though the quality of products is not that good yet demand is there as the products being less costly.
The Fourth Question where cost factor was analyzed again confirms the findings of third question, where 60% of the respondents have replied in affirmative that the products are cheap. The same percentage of respondents denied that the products are of good quality. Thus question three and four are complimentary to each other which attest the hypothesis that shoddy products are cheaper, though not of good quality like clothing made from fresh yarn.

Table 4.17: Responses, $\chi^2$ and significance level – Cost-effectiveness

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost-effectiveness</td>
<td>70</td>
<td>22</td>
<td>8</td>
<td>11.57</td>
<td>5%</td>
</tr>
</tbody>
</table>

Cost-effectiveness: The attribute related to cost-effectiveness signifies that consumers’ preferences had more orientation towards cost factor as compared to quality factor. For this purpose, the question asked, questionnaire was that ‘the products of shoddy industry are cheap. In response to this question 70% respondents agreed with the statement (fig 4.1), while only 22% disagreed and another 8% were
undecided over the issue. However, a 3×3 contingency table was applied to find out the association between cost-effectiveness and level of academic standards, in which null hypothesis is that there is no association between attribute of cost-effectiveness and academic standards of the respondents’ was rejected at 5% level of significance as the value of $\chi^2$ was 11.57 (Table 4.2). Hence, there is a strong reason to accept the association between attribute of cost-effectiveness and academic standards. Similar viewpoint conforms in another attribute orientation which has already been discussed under the sub-head, orientation. Therefore, it is strongly established that shoddy industry is cost-effective as it provides the consumer with cheaper options and, that is why this industry is poor-oriented. However, in present times this industry is facing a tough competition with Chinese products as noticed during interviews with industrial producers, which will be discussed in detail in next chapter.
The Fifth Question pertains to utility aspect of the old clothing. In response to this question 82% respondents were of the opinion that old clothing is properly utilized through this industry, while 8% were negative responses and another 10% were undecided on the issue. Thus, utilitarian aspect is approved by a great majority of the respondents.

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility</td>
<td>82</td>
<td>8</td>
<td>10</td>
<td>27.98</td>
<td>1%</td>
</tr>
</tbody>
</table>

Utility: The attribute of utility was another significant indicator of the shoddy industries’ success story. For evaluation of this attribute the question asked in the questionnaire was that ‘Old clothing is utilized properly in this industry’. A strong response accounting to 82% of the respondents agreed (Table 4.1) while only 85 disagreed and another 10% were undecided. The $3 \times 3$ contingency table
depicts a $\chi^2$ value of 27.98 which was significant at 1% level of significance (Table 4.2). Therefore, the null hypothesis that ‘there is no association between utility attribute and academic standards of the respondents’ was rejected at 1% level of significance. That led to the conclusion that a strong association persists between utility attribute and levels of academic standards of the respondents. The objective of studying utilitarian aspects of shoddy yarn was attained through interviews with industrialists engaged in manufacturing products out of shoddy yarn and traders dealing in these products. The weaving units engaged in making products out of shoddy yarn and traders informed that in Panipat 95% of the yarn produced is being utilized in making blankets of various types. The characteristic features of major types of blankets woven in Panipat are as under-

1. Shoddy Blankets
2. Relief Blankets
3. Hospital Blankets
4. Railway Blankets
5. Barrack Blankets

- The blankets are manufactured as per the bulk orders received from Government or Private Agencies. The blankets are classified as per their weight, which are available between 1 kg to 3 kg of weight in different colours and textures, as per requirement of orders. Texture, finishing, weight and yarn content are variable from purpose to purpose.
- Shoddy Blankets are manufactured for various purposes. These are mainly – Relief blankets, Hospital blankets, Railway blankets and Shoddy blankets for BPL Population.
- Besides blankets Army Lois (Locally known as pattu) are also weaved at Panipat.
• The quality of blankets varies with the content of wool in yarn. The good quality blankets have more than 75% wool content, while the average quality has 50% wool content. Blankets having less than 50% wool content are of poor quality.

• The rates of blankets are determined by quality and weight, which vary from Rs. 100/- per blanket from Rs. 800/- per blanket.

The bulk orders for various types of blankets are supplied from Panipat to various relief agencies in international domain, as well as, to Railways, Hospitals and Disaster Management Agencies.
The Sixth Question that there is no negative impact of the shoddy industry is also approved by 73% respondents while 22% disagreed with it. Another 5% were undecided over the issue. Thus, eco-friendly aspect of the industry is also apparent from this question.

Table 4.19: Responses, $\chi^2$ and significance level – Eco-friendly

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eco-friendly</td>
<td>73</td>
<td>22</td>
<td>5</td>
<td>11.09</td>
<td>5%</td>
</tr>
</tbody>
</table>

Fig. 4.19: Eco-friendly

Eco-friendly: The data regarding eco-friendly attribute was derived on the basis of a question in the questionnaire that ‘the shoddy industry has no negative impact on the environment’. In response to this statement 73% of the respondents agreed with the premise, while 22% disagreed and another 5% were undecided to reach any conclusion. However, an analysis on the basis of 3×3 Contingency table was applied on the basis of null hypothesis that, ‘there was no association between eco-friendly
attribute and academic standards of the respondents’. The null hypothesis was rejected at 5% level of significance while the value of $\chi^2$ was 11.09 (Table 4.2). Therefore, the conclusion arrived at was that there was a strong association between attribute of eco-friendliness of the industry and academic standards of the respondents. The primary data collected from the city of Panipat was more near to reality as the respondents had a first-hand information being residents were living in immediate vicinity of the industrial units which have developed mainly in outskirts of the city. The empirical observation regarding eco-friendly facets of the industry, collected through interviews and interactions have been discussed in next chapter, where major finding have been explained.
Questions Number 7 to 9, which were related to disposal of old clothing by the local population and developing a local pool for the shoddy industry raw material were clubbed in an attribute disposability in which only 17% of the respondents agreed to dispose their clothing without any return, while 68% disagreed with the suggestion and 15% were undecided over the issue. Moreover, neither respondents nor industrialists were interested in developing a local pool.

As far making of local pool is concerned, that may not prove of much worth as per the respondents. Although 80% of the respondents have the opinion that old clothing is properly utilized in this industry for yarn-making, yet they are not in favour of developing such a pool.

This is due to four major factors, which are:

1. Industrialists do not prefer clothing of local pool, as in India clothing is utilized up to 70-80% of its strength, while European Community discards clothing after 20-30% of its strength utilization. Therefore, in yarn-making local pool is not encouraged.
2. People in general in India are not aware about the eco-friendly technique of recycling and reuse.
3. Most of the people want some return for dispensing with old clothing. Therefore, instead of giving these to local pool of clothing, respondents preferred giving old clothing to servants and rough uses like dusting, polishing, mopping and so on.
4. The psyche of Indian society is more economy-oriented rather than environmental-friendly programs as evident from the responses of question.

Table 4.20: Responses, $\chi^2$ and significance level – Disposability

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
</table>

102
The attribute of disposability is significant as this attribute is also related to previous attributes, i.e. receptivity. However, as per Table 4.1 only 17% of the respondents agreed to dispose old clothing without any return, while 68% disagree with the proposal. Therefore, unlike western society, where people are ready to pay for the environmental cause while in Indian society, even disposal of waste clothing is also expected to give some return. Here lack of environmental awareness among masses seems to be the cause of low receptivity of new innovations, as well as, lower tendency for disposability. The 3×3 contingency table revealed that null hypothesis – ‘there is no significant relationship between academic standards and disposability’ was rejected at 1% level of significance, which means that academically advanced people have a concern for environment and therefore strong relationship seems to exist. However, about 15% of the respondents revealed an undecided response, which again shows lack of concern. Thus, association between low receptivity and low disposability shows a general lack of concern for environment.
Table 4.21: Responses, $\chi^2$ level – Receptivity

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptivity</td>
<td>37</td>
<td>46</td>
<td>17</td>
<td>41.9</td>
<td>1%</td>
</tr>
</tbody>
</table>

Fig. 4.21: Receptivity

Receptivity:

The attribute of receptivity as apparent from table 4.1, only 37% of the respondents were in favour of developing a local pool for collection of old clothing while 46% of the respondents disagree with the proposal for developing a local pool, while 17% of the respondents were undecided over the issue. The reasons for low receptivity to this proposal varied from individual to individual, as well as, mill owners were also not much receptive to it. The major reasons that sprang up from the responses are as under:

a) There is a lot of difference between Indian clothing and clothing of western society. The people in effluent western countries change their clothes more frequently while in Indian society the use
of apparel is much higher. As per mill owners, western rags available through import are
generally preferable, as they have been utilized 20 to 30 % of the strength of the fabric while in
Indian clothing it is utilized up to 70 to 80 % of the strength of the fabric. This is why, rags from
western countries are better for yarn-making as compared to clothing to be collected through
local pools.

b) Generally people are not prepared to part with their old clothing without any return, which was
further augmented by the responses by respondents in question 8 of questionnaire II. This is why,
development of local pool for collection of rags is not encouraging.

c) Lack of environmental awareness among masses is another factor which discourages
development of local pool.

d) Some respondents consider as development of local pool an unwanted botheration, while lots of
good quality rags are available through imports.

However, when 3×3 contingency table $\chi^2$ test was applied to this attribute, the null hypothesis was
rejected at 1% level of significance, which means there is a strong association between academic
standards and receptivity regarding development of local pool. The persons with higher educational
standards and who are having concern about the environment and its problems advocate for recycling
and development of local pool for clothing but as discussed earlier, in Indian society reuse of old
clothing is more important than recycling which utilizes the garment strength to its fullest use.
Therefore, if development of local pool for recycling is not developed that does not mean the defeat
of purpose, rather it suggests that reuse of garments in Indian society is already prevalent which in
itself is an eco-friendly tendency.
The Tenth Question relating to acceptability of the industry, as it exists presently, is again positive as 67% of the respondents agree that this industry is a blessing for Panipat while only 23% disagree and 9% were undecided on the issue.

Table 4.22: Responses, $\chi^2$ and significance level – Acceptability

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptability</td>
<td>67</td>
<td>23</td>
<td>9</td>
<td>37.46</td>
<td>1%</td>
</tr>
</tbody>
</table>

Acceptability:

The attribute of acceptability for shoddy industry at Panipat is also significant at 1% level of significance. About 67% of the respondents agree to the premise that this industry is a boon for Panipat, while 23% disagree and another 9% are undecided. Although, in previous two attributes receptivity and disposability the respondents who agreed to the proposals were lower as compared to respondents who disagreed with developing a local pool for rag collection and disposing old clothing.
for no return, yet as far acceptability is concerned, here respondents are of the view that shoddy industry is good for Panipat and has also got international recognition. Moreover, a $3 \times 3$ contingency table suggests that as per $\chi^2$ test the null hypothesis is rejected at 1% level of significance.

**The Eleventh Question** analyzed the productivity aspect. Here also 60% of the respondents agree that this industry has great utility while 30% disagree and 10% are undecided.

**Table 4.23: Responses, $\chi^2$ and significance level – Productivity**

<table>
<thead>
<tr>
<th>Attributes</th>
<th>Agree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>$\chi^2$ Value (3 way)</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Productivity</td>
<td>60</td>
<td>30</td>
<td>10</td>
<td>0.433</td>
<td>N.S</td>
</tr>
</tbody>
</table>

**Fig. 4.23: Productivity**

**Productivity:**
The attribute of productivity is the only attribute, where $\chi^2$ values have not been able to refute the null hypothesis, that there is no significant relationship between academic standards and responses regarding productivity of yarn at Panipat. However, in response to question number 10 of the questionnaire II about 60% of the respondents agreed with the premise that yarn production of shoddy industry is good for clothing, while 30% of the respondents disagreed and another 10% were undecided on the issue. But when $3\times3$ contingency table was applied to test the level of significance, then no significant relationship emerged between academic standards and responses regarding productivity of the shoddy industry.

The responses described in preceding paragraphs are simple derivations derived through survey. However, to arrive at concrete, rational and scientific results a synthesis of attributes involved in survey was necessary where statistical analysis was done for each attribute involved in the question. The questionnaire for general survey (Appendix II) was framed in such a manner that each question signifies a single attribute.
4.5 **HEALTH SURVEY**

Health survey for labour class has been done to find out that whether shoddy industry has some negative impact on the health of workers or it is quite safe. As most of the labour is not very literate so that they could not fill the questionnaire at their own, therefore, questions were asked from them in their local dialect and information has been furnished by labours. In this way this questionnaire has been used as interview schedule and information has been analyzed accordingly. The following table acquaints us with the status of health as derived from this survey:

**Table 4.24: Health disorders in workers**

(N=300, M=200, F=100)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Male (%)</th>
<th>Female (%)</th>
<th>Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory</td>
<td>12</td>
<td>08</td>
<td>Common Ailment, Cough, Coughing Up, Mucus</td>
</tr>
<tr>
<td>Skin</td>
<td>16</td>
<td>22</td>
<td>Rashes, Itching</td>
</tr>
<tr>
<td>Eyes</td>
<td>08</td>
<td>06</td>
<td>Itching, Pain</td>
</tr>
<tr>
<td>Ears</td>
<td>11</td>
<td>05</td>
<td>Hearing, Ringing</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>15</td>
<td>27</td>
<td>Headache, Dizziness, Backache</td>
</tr>
<tr>
<td>No Problem</td>
<td>38</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td></td>
</tr>
</tbody>
</table>
As evident from the above table about 2/3 of workers have one problem or the other, while only 1/3 of the respondents have no health problems. Moreover, working conditions cannot be solely responsible for the ailments of the workers, rather malnutrition, poor living conditions and lot of other factors need to be analyzed for going on rigid conclusions. Although Lucy Morris has held shoddy industry responsible for the common diseases, yet this may be contested due to paucity of data. This viewpoint was derived from the discussions with the doctors at Panipat, as they were directly in touch with the patients and their test reports.

No common pattern of ailments can be derived out of respondents, yet some generalizations are quite clear from Table-4 which has been discussed in following paragraphs.

**a) Respiratory Problems**

Respiratory problems have been reported by 12% of male respondents and 8% of female respondents. The common problems are coughing and coughing mucous, which is a common phenomenon in
labour class, particularly owing to their dietary habits, smoking, drinking, gutka chewing being more prevalent in male labour force respiratory disorders are more common. However, the persons working on rag-tearing machines where rags are converted into fibre may blame working conditions for the same, while this fact has not been augmented by particular respondents, as lot of other factors like dwelling conditions, dietary habits and other lifestyle features contribute in such ailments.

Coming to female respondents where respiratory disorders have been reported as 8% of the females, again living conditions play a vital role. Female labour force is not entrusted with machine work, they are primarily engaged in sorting of rags as per shades and colors, rag stripping with sickles etc. However, dampness in rags is not conducive for shoddy yarn-making process and this is why, damp rags are often dried in sun in open spaces. Hence, respiratory disorders may not be imputed upon working conditions as reported by respondents, as well as, medical experts. The average male and female labour force in this category is only 10%.

b) Skin Disorders
Skin diseases as reported by respondents are mainly rashes and itching which are more prevalent in female labour force (22%) then male labourers (16%) (Table.4). This may be attributed to less awareness regarding personal hygiene, as most of the respondents reporting this ailment were of the opinion that these problems are more common in summer season, when perspiring is more as compared to winter conditions. An average of 19% labour force reported skin disorders, while itching in both male and female labourers.

As far serious skin disorders are concerned, they have not been reported in shoddy industry labour force, while there may be common in industries where chemical and synthetic dyes are used. But in shoddy city due to administration’s strict orders as per Environmental Protection Act, 1986.
Shoddy-yarn producers get their stuff dyed by transporting yarn in small tempos, tractors or Bullock-driven Carts. In this way absence of chemical based dyes is another eco-friendly step of shoddy industry.

c) **Eyes Problem**

Eyes problems reported by respondents are the lowest in terms of average of males and females(7%), which is 8% in male laborers and 6% in female (Table 4.24). The common ailments are itching and pain, which are common in poor folk due to malnutrition. Moreover, there is no pressure or vision of the labour as the process of shoddy yarn making is simple and auto-regulatory. In machines rags are put on one end and final product that is to be collected by labour is yarn wrapper upon spindle and shuttle. In between whole work is regulated by machines. Moreover, in the process of shoddy yarn making there are no particles which may work as aerosols to cause any type of Eye problems. Therefore, Eye ailments are not so common or quite possible that owing to lack of health consciousness among labour class they may not respond in affirmative for reporting their minor ailments unless they are inflated due to their negligence.

d) **Ear Problems**

The problems pertaining to ears have an edge over eyes problems that are with 8% average (Table 2.24). However, here male responses are more, that is 11% while only 5% females suffered from ear problems. Common problems are hard of hearing or ringing in the ears particularly in male labour. This may be due to noise level of machines which continuously work for many hours depending upon the target of production. This is why male labour which works on machines are more prone to
these ailments as compared to female labour force. Although, labour says that they are habitual of this noise, yet it may be one of the factors for hearing disorders

e) Miscellaneous Problems

Respondents also reported some other problems of health out of which more common ailments are headache, dizziness and backache. In this category the average percentage of male and female is 21% in which females are more prone to these problems (27%) as compared to males (15%). Backache is reported among females mainly due to biological factors, as well as, working conditions. As pointed out earlier that females are entrusted with mainly, sorting, tearing, and stripping of rags and removing zips and buttons out of these, which is done in sitting on the ground and time and again they have to bend their backs for picking up rags for sorting from the ground while standing and moving. Thus, backache may develop due to these conditions. Moreover, headache and dizziness may also prevail due to undernourishment and noise level of machines.

Thus, it is apparent from above description that health conditions of labour class are not very good, but on an average about 35% of the respondents reported that they have no health problems. However, in labour force mainly young and middle-aged are there, while Old age- group is not prevalent in working force. This may also be one of the reasons that wage earners show themselves as physically fit and even sometimes ailments are concealed with a fear for not getting work. Moreover, contractual labour which is entrusted with sorting, stripping and tearing of rags also show themselves as physically fit, otherwise they fear that they may not be given the work by the contractor. Hence, for a comprehensive health survey proper medical checkup camps and receptivity of the labour towards these camps is required for a better human resource development, which is not
common in our society. This point requires a serious attention from Government agencies and NGO’s working in the field of social welfare.