

Report on

**SOCIO ECONOMIC BARRIERS IN
ADOPTION OF IMPROVED
TECHNOLOGY IN THE SSI SECTOR**

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EXECUTIVE SUMMARY

1. Introduction

1.1 The study utilizes the empirical data generated by the survey of small-scale industries in the four states of Maharashtra, Delhi, Haryana, and Rajasthan to assess the problems faced by them especially in respect of adoption of improved technologies. The small-scale industries have come to occupy a vital place in the national economy. Spread all over the country including the semi-urban and rural areas, the number of SSI units has touched 3.4 million and this sector now accounts for 20 million jobs, 6.29 percent of GDP and 35 percent of export earnings.

1.2 The sector has, in the past, functioned under the umbrella of protection and reservations but with economic liberalisation, it is facing increasing international competition. The domestic market has also become more demanding. The sector has to modernize to cater to changing tastes and trends of the domestic and foreign buyers for which upgradation of production technologies and management is essential. The process of technology upgradation by SSI units, however, has been slow in spite of a number of policy initiatives and facilities offered by the Government and financing institutions.

2. Objectives of the Study

2.1 The main objectives of the study are:

- I. To identify major causes inhibiting the adoption of improved technologies in different sub-sector of SSI and to assess the role of existing policies and programmes in over coming them;
- II. To study the present procedure for availability of finance to SSI units for upgrading and modernizing their technologies and suggest measures for facilitating such services to small scale entrepreneurs;

- III. To study the adequacy of Credit Guarantee schemes in facilitating availability of finances specially to the smaller and first generation entrepreneurs;
- IV. To assess the managerial requirements for bringing about greater efficiency and professionalism in management;
- V. To assess the requirements of improvements in skills, education and training of work force and supervisory in SSI units to absorb and implement technologies;
- VI. To assess social / economic discriminatory factors, if any, in availability of finance and other facilities to small entrepreneurs;
- VII. To assess the impact of cultural issues, if any in adoption of improved technologies. Issues like employment of child labour may, also be looked into in a limited manner only to the extent that they relate to adoption of improved technology.

3. Scope of the study

- 3.1 This study has primarily focused on ascertaining the socio-economic barriers to the adoption of improved technology. Data on various issues and constraints in technology adoption in SSIs have been obtained in the survey of small units. Assessment of current technology being adopted by the entrepreneurs in nine groups of industries selected as representative for the survey have also been attempted in the study. The status of indigenously developed technology as compared to the imported one has also been analyzed in relation to their costs and effectiveness. Reasons for not updating present technologies have also been analyzed.
- 3.2 An attempt has been made to relate views on impact of adopting new technologies on production, employment, and efficiency. The requirements of technicians to manage the working of new technology and the need to train fresh skilled manpower, accountability and management of all the processes involved in the

transfer and operation of new technology have also been analyzed in the report for the nine group of industries[#] covered in the study.

4. Tenth five-year plan

4.1 To encourage the SSI sector, the Tenth Plan envisages the industrial sectors to grow at the rate of 10 percent to achieve the plan target of 8 percent growth of GDP. With the objective of making the SSI sector more efficient and competitive in the global market, a Study Group on the Development of SSI was set up under the chairmanship of Member, Planning Commission and its recommendations were reviewed by a Group of Ministers. The package of measures recommended by the Group of Ministers was considered by the Hon. Prime Minister and he announced on 30th, August 2000 comprehensive policy measures for developing and modernizing the sector. Some of these measures were:

- (i) Increase the exemption limit for internal excise duty from Rs. 5 million to Rs. 10 million.
- (ii) Increase the limit of composite loan from Re. 1 million to Re.2.5 million.
- (iii) Industry related services and business enterprises having a maximum investment of Re. 1 million would qualify for priority lending.
- (iv) Increase in the eligible project cost limit for soft loan assistance under national equity fund scheme from Rs. 2.5 million to Rs. 5 million
- (v) Launch a credit guarantee fund scheme
- (vi) Provide capital subsidy of 12 percent of investment in technology in select sectors.
- (vii) Create an inter-ministerial group of experts to define the scope of technology upgradation
- (viii) Continue the grant of Rs 75,000 to each unit that receives ISO-9000 certification, upto the end of the Tenth plan.

[#] Chemical and Chemical products, Rubber and Plastic products, Leather products, Wood products, Paper products and Printing, Hosiery and Garments, Food products, Metal products, Electrical Machinery and Apparatus

5. Sampling frame for the Study

5.1 The study has been conducted in four states, i.e. Delhi, Haryana, Maharashtra and Rajasthan. In all the states, nine groups of industries were identified on the basis of their importance and representative character and these were considered as the sampling frame in each state. The SSI units as a whole are classified into 31 groups and the number of all the registered units in Delhi, Rajasthan, Haryana and Maharashtra on 31st December 2002 has been recorded as 25,000, 82,000, 85,000 and 1,40,000 respectively. As the number of registered units was quite large, we have obtained the list of registered SSI units of each state only for the nine groups, which have been identified for the study. The nine groups of industries are Chemicals and Chemical products, Rubber and Plastic products, Leather products, Wood products, Paper products and Printing, Hosiery and Garments, Food products, Metal products and Electrical Machinery and Apparatus.

6. Sample Size and Sampling Procedure

6.1 As indicated in the project proposal, 500 SSI units were to be surveyed, 125 each in the four states of Maharashtra, Delhi, Haryana, and Rajasthan. While selecting a sample from the registered units of each state, the Stratified Random Sampling method was basically employed, strata being the products/SSI category as stated above. For each industrial category, the sample was drawn independently using Random Sampling Technique selecting minimum of 8 units and maximum upto 20 units from each stratum. However, the number of units was increased in some of the strata where the sampling frame was quite large. The number of sampled units in each state selected was at least 125.

7. Methodology

7.1 The study is empirical in nature, as statistical and other primary data have been collected through field survey. Altogether 529 units covering nine groups of small industries were selected to collect data through a well-designed questionnaire. Primarily, it was intended to collect information from the owner/entrepreneurs of

the SSI units. However, due to non-availability of the owner, in certain cases, information has been obtained from the representatives like managers, supervisors, and financial officers. The industries selected for the survey represent a cross section of numerous small, medium and larger ones – all within the scope of SSIs- old and new industries and those located in and around the main cities, towns and talukas.

8. Nature of Data Collected

8.1 The study was designed to collect information primarily on the social and economic barriers which make adoption of new technology difficult by the small entrepreneurs in the SSI sector. To the extent possible, information regarding other important factors which are considered helpful in understanding these barriers and problems has also been collected. For example, data on types of technology, nature of consultancy needed for technology upgradation, availability of technology, indigenous and external, perception of entrepreneurs on technology adoption, external competitiveness, Chinese goods vs. Indian goods, labour relations, discriminatory access to finance, WTO commitments, role of women entrepreneurs in creating jobs for women workers etc. have also been obtained in the survey. Specific information collected in the survey includes:

- i. Capital output ratios in nine group of industries covered
- ii. Capital labour ratios
- iii. Total productive capacity and the range of utilization of capacity by each group
- iv. The net value added per worker
- v. Magnitude of capital employed
- vi. Source of finance
- vii. Nature and type of ancillary relationship with larger units
- viii. Utilization of capacity by individual units
- ix. Suggestions to improve performance of the SSI sector in the on going changing economic scenario

- x. Information gaps relating to the knowledge of different types of technology for different categories of units on research and development, role of industrial associations, role of fairs and exhibitions, seminars/workshops etc.

9. The salient features of the study are presented below.

9.1 Classifications of industries by registration

9.1.1 More than 45 percent of the SSI units were established after 1990 indicating favourable impact of National Industrial Policy, 1991. Haryana showed specially commendable growth of SSIs during this period as around 80 percent of SSI units in the state were established after 1990.

9.2 Classification of industries by main activity

9.2.1 More than 80 percent of SSI units were found engaged in manufacturing activities and 5 percent units were found to undertake more than one activity (or performing secondary activity). In Maharashtra the SSI units engaged in manufacturing activities are around 70 percent

9.3 Classification of industries by ownership

9.3.1 More than 55 percent of SSI units were found to have the status of proprietorship and only 14 percent units could achieve the status of a Company whereas household industries were only 5 percent.

9.4 Classification of industries by investment (fixed capital)

9.4.1 More than 20 percent of the SSI units surveyed in the four states were having investment below Rs. 5 lakhs on fixed assets whereas the investment below Rs. 20 lakhs was found in more than 60 percent of SSI units. Such industries in Delhi are 80 percent whereas in Haryana they are more than 70 percent and in Maharashtra such industries are around 30 percent.

9.5 Employment by category

- 9.5.1 The total employment in the sampled SSI units in four states altogether has been of the order of 9000; of which around 18 percent are technical persons and more than 55 percent are daily wage workers.
- 9.5.2 Women participation in total employment is around 7 percent, which varies from state to state significantly. The share of women employees in Maharashtra is around 14 percent; in Delhi it is 6 percent and in Haryana only 4 percent. In Rajasthan women employment is insignificant (only 1 percent).
- 9.5.3 The average employment in the SSI units comes to 17 (16 male and 1 female) in the four states altogether. In Maharashtra and Haryana, the average employment is 21 (18 male and 3 female) and 18 (17 male and 1 female) respectively while in Delhi and Rajasthan the average employment is found to be lower being 17 persons.
- 9.5.4 Average employment in the SSI units using improved technology has been of the order of 19 which is significantly higher as compared to 11 in the units without improved technology indicating that technology use has substantial employment potential. This condition is satisfied in all the four states.

9.6 Growth of output

- 9.6.1 The growth of output over a period of one year (i.e. 2001-02 to 2002-03) has been observed as around 15 percent in all the four states together. However the growth of output in Rajasthan is significantly higher and estimated at around 23 percent. In Delhi also the growth rate was obtained as 17 percent.
- 9.6.2 The growth of output in the SSI units using improved technology in the state of Delhi has been observed around 20 percent whereas in Rajasthan it was around 22 percent indicating higher output with use of improved technology.

9.7 Labour productivity

- 9.7.1 The output per worker has been worked out as Rs. 4.6 lakhs in the SSI units; Rs. 5 lakhs in the units using improved technology and Rs. 3.2 lakhs in the units without improved technology indicating the beneficial impact of technology on output.
- 9.7.2 Maximum output per worker was found in the SSI units of Rubber and Plastic products which is Rs. 9.3 lakhs, Rs. 10.6 lakhs in the units using improved technology and only Rs. 3.5 lakhs in the units without improved technology indicating wide difference in the output of SSI units with and without improved technology. .
- 9.7.3 Rubber and Plastic units stand first in all states except in Maharashtra which is at second place in respect of output per worker.

9.8 Capital/labour ratio

- 9.8.1 The maximum investment per worker has been observed in the SSI units of Paper products and Printing in Maharashtra, units of Electrical Machinery and Apparatus in the states of Delhi and Rajasthan and SSI units of Rubber and Plastic products in Haryana.

9.9 Impact of technology on SSI units

- 9.9.1 The use of technology has a favourable impact on production, employment, social empowerment and economic development of the country.
- 9.9.2 In all the four states together the analysis indicates that more than 70 percent of SSI units using improved technology indicated substantial quality improvement, 46 percent indicated reduction of cost in production and more than 20 percent units indicated the achievement of competitiveness in domestic and international markets through adoption of improved technology. A similar trend was observed in Maharashtra.

9.9.3 In Haryana, out of 100 units using improved technology, 51 have indicated quality improvement, 47 units indicated increase in quantity produced and 31 units indicated reduction in cost of production. Only 2 units have indicated achievement of competitiveness in domestic market.

9.9.4 In Delhi more than 85 percent of SSI units using improved technology indicated quality improvement and more than 75 percent indicated increase in quantity produced whereas increase in efficiency and better capacity utilization have been indicated by more than 50 percent units.

9.9.5 In Rajasthan only 35 percent of the units using improved technology have indicated quality improvement and 17 percent units have mentioned increase in the quantity produced. Better capacity utilization and reduction in cost of production have been mentioned by 14 percent units whereas 8 percent units have reported increase in efficiency.

9.10 Impact of technology on working capital

9.10.1 The working capital on an average for the SSI units using improved technology in all the four states together is Rs. 45.3 lakhs and Rs. 20.4 lakhs for the units not using improved technology, indicating higher working capital requirements for the units using improved technology.

9.11 Impact on technology on social empowerment

9.11.1 Education either general or technical has a great impact on technological development and this could raise the social and cultural level of the population as well. It has been observed that religion and castes are no bars against technological development.

9.12 Impact of technology on economic development

9.12.1 With improved productivity and profits, technological development in SSI units would assist in the economic development of the country. The analysis of capital /

output ratio indicates that for the output of Rs. 1 crore, an average investment of Rs. 47.6 lakhs is required in the units using improved technology whereas investment of Rs. 49.3 lakhs is required for the same output in the units without improved technology. This identity holds good for all industries except Metal products and Electrical Machinery and Apparatus. The state wise analysis also projects the same identity.

9.13 Barriers in adoption of improved technology in the SSI sectors

9.13.1 The most important barriers in adoption of improved technology are the financial aspects, basically the inadequacy of financial capacity of the unit. At other times, the costs of technology make it difficult to adopt as being economically not viable.

9.13.2 A large number of SSI units reported difficulty in obtaining sufficient funds from banks and financial institutions. There was lack of awareness about the credit guarantee scheme.

9.13.3 The other barriers observed are lack of awareness or lack of knowledge and information about the availability of requisite technology, desire to avoid risk in adoption of improved technology, low level of indigenous R and D, inadequate management skills and non-availability of technically qualified persons to operate the new technology.

9.13.4 The R&D institutions should proactively assist the SSI units by giving all possible counseling on technology development, manpower planning, market development, equipment problem and other technical help in imparting technical know how to the SSI units.

9.13.5 The reduction of cost of production is an important factor for achieving competitiveness, market penetration and sometimes the very existence of the SSI units themselves. The demands of the industry for reducing excise duties, taxes, interest rates etc. need sympathetic consideration by the Government,

9.13.6 The small-scale industry of India has a great role to play in the development of the country. It has the potential of being an important “engine of growth” for this century serving national priorities of generating employment, removal of poverty and removal of regional disparities. The adoption of new and improved technologies is vital for the growth of this sector and the removal of all types of barriers for the adoption of new technologies must be taken up in all earnestness by the Government, by the financial institutions, by the research and development agencies and also by the private sector acting together with a sense of mission. The efforts to date which, no doubt, have to be strengthened, promise that the future for this sector is bright.

Chapter V

CONCLUSIONS AND RECOMMENDATIONS

V.1 Barriers to Technology Upgradation

V.1.1 The contribution of the small-scale industries sector in generating employment and in export performance is well recognised. The sector is often termed as the engine of growth for the national economy for this century. It is also felt that in this era of increasing global competition, the sector is not able to realize its full potential on account of a number of problems both internal and external. The most serious problem identified is the use of outdated and obsolete technology by a large number of units and the inability or even the unwillingness of the owners and managers to upgrade to modern and appropriate technologies which would enable them to improve the quality of their products to international standards, reduce production costs and improve the profitability of their units. The responses received in the study indicate that adoption of improved technology is a complex issue in which factors other than availability of finance and access to the desired technology are also involved. These include the pattern of ownership and management, the existing utilisation of capacity which could generate the surplus needed to finance improvements, the requirements and availability of manpower, the willingness to take risks and other related factors which could motivate and encourage the owner to upgrade the existing technology of his unit. These factors are briefly analyzed below. Specific problems of the nine categories of industries selected for the study are also stated briefly.

V.1.2 We have basically relied on the version of the owners / managers whether they have or have not adopted improved technology in their units. Accordingly, out of the 529 SSI units surveyed, we have noted that 356 units are using modern technology whereas 173 are still working either with traditional technology or

with technology which has been rendered obsolete with time. The salient features emerged from the study are described below

V.2 Ownership pattern

V.2.1 The results of the survey indicate that SSI units are primarily proprietary concerns numbering more than 55 percent of such units. This indicates the tendency of entrepreneurs to keep the ownership of the business within the bounds of the family. Most of these units are owned by individuals and the required investment has been provided by the property owners themselves. Such type of ownership pattern suffers from severe limitations. The main limitation that such units face is in their access to institutional finance and development of the units is restricted by non-availability of finance at the time of need. Employment is also not regulated with family members not having any managerial experience trying to manage the industry without appreciating the costs of low productivity. On the other hand, units under company management are better informed about the availability and advantages of adopting new technologies and have better access to institutional resources.

V.2.2 **In order to encourage broad basing of the ownership of SSI enterprises, provision of some additional facilities for units going in for company formation could be considered.**

V.3 Units Having Secondary Activities (Ancillary Activities)

V.3.1 **Closer cooperation between large and small-scale sector is highly desirable to foster the growth of small units as ancillary to large units. Industries associations of both larger or smaller units should play a vital role in creation of such tie-ups.** The members of such association may set-up sub-committees in collaboration with small industry service institute should chalk out a programme for encouraging ancillary relationship. Such relationship of the SSI unit with a large enterprise through manufacturing a specified item for the larger industry

would be beneficial to both. With this arrangement, the large industry would obtain quality components at a reasonable price without investing in infrastructure, equipment or personnel and the SSI unit will be assured of a market and can plan its production in the most economical manner. However, in our survey we found that only 10 percent units had this type of secondary activity with ancillary relationship with larger units.

V.3.2 It is further suggested that the smaller units should be given quality raw material by the larger units for turning it into quality finished goods. Payment for the services rendered by ancillary units must be prompt and accurate. There should be no exploitation of the smaller units by the larger ones in any way.

V.3.3 The tenth plan has also favoured the ancillary relationship of small sector with the larger one as this type of relationship provides mutual benefits to both. It is also suggested that policies should be framed to encourage ancillary relationships and to safeguard the interests of the SSI units. It is also reported that a number of large industries have started sourcing some of their components from external sources to the detriment of local SSI units. It is suggested that the associations of industries, which agitate against dumping and subsidies by other countries, should themselves set up mechanisms to ensure that capacities of SSI units set up as ancillaries are fully utilized while ensuring adherence to quality standards.

V.4 Capacity-utilisation

V.4.1 On analyzing data pertaining to capacity utilization of the units, it was observed that more than 75 percent of them were not able to utilize their full capacity. The reasons mentioned by the units related mostly to lack of finance and power shortage including high power rates. Some of the units also mentioned lack of demand, non-availability of raw materials, labour and marketing problems. Government procedures acting as a hindrance in full utilization of capacities were mentioned in less than 5 percent of the cases.

V.4.2 When we examined the economic implications of the problem of under-utilization of capacity in small units, we found that the real sufferers were the workers. Thus under-utilisation has serious consequences in the case of small industry both from the economic and social points of view. **Availability of assured power supply at reasonable rates, assisting the units in obtaining quality raw materials, assisting them in publicizing their products and advising them about new and emerging markets will improve the health of SSI units.**

V.4.3 Most of the entrepreneurs felt that continuous supply of power at cheaper rates is the only solution to their problem. Easy access to finance and quicker flow of credit from the financial institutions will, also ease the problems faced by SSIs to a great extent.

V.5 Employment pattern

V.5.1 While analyzing the employment pattern in the sector, it was observed that sector has 4 types of employees, these are technical persons, contract workers, daily wages workers, and family workers. Technical persons constitute around 18 per cent, as against 55 per cent of daily wages. Family workers constitute less than 4 per cent. With an inadequate number of technical persons and with large number of untrained workers the performance of the sector is bound to suffer, even if they adopt latest modern technology. There are limited training facilities for preparing trained manpower for the sector. Therefore, to meet such requirements vocational training institutes may be established in the major cities of India to cover the shortage of skilled workers in the related areas.

V.5.2 It has been noticed that women participation in the sector as entrepreneurs or as employees is very low. Only 7 per cent of women have been found as employees in 4 states. Their representation as employer or entrepreneur in the sector has been found nil in the survey. Employment participation of women in 4 states separately, are more or less in the same category, except in Maharashtra (14%). **In order to**

encourage women's participation in the sector special efforts have to be made including:

- **Identification of women's choice of industry, for instance, Garments and Hosiery, Printing, and household industries will be the ideal areas for women's participation**
- **Presently women are facing difficulties in holding, inheriting or bequeathing property. This needs to be modified in the light of these difficulties suitably.**
- **A single window clearance of the project with women officers ready to assist them in all areas of creating a unit should be attempted**
- **Attitude towards women's participation has to be modified by creating awareness for developing their active interest.**
- **Marketing assistance should be provided to SSI units owned by women entrepreneurs through preferential exposure of their products in Buyer-Seller Meets, Vender Development Programmes and Exhibitions.**

V.6 Productivity

V.6.1 One important handicap generally pointed out in case of the SSI sector is that its productivity is low. It is attributed to low capital application and the means of production being labour intensive. For SSI units even with better technology, productivity remains low as compared to large industry. However, data provided by the study have shown a growth of 15 percent in output during one year i.e. between 2001-02 to 2002-03. This good performance may be attributed to the fact that out of 529 units covered, as many as 356 units are working with modern technology. It indicates that substantial development in various dimensions of technology has occurred in these states.

V.6.2 The output per worker has been worked out as Rs. 4.6 lakhs in all the surveyed units. It was Rs. 5 lakhs in units with improved technology and Rs. 3.2 lakhs in units without improved technology.

V.6.3 The units belonging to Rubber and Plastic, Chemical, Electrical and Electronic products, Paper Printing, Garment and Food products were the best users of high technology. It is obvious that there is urgent need for increasing capitalization of SSIs to enable them to procure better technical equipment, training inputs, marketing management etc. in order to increase the efficiency of the units and their workers.

V.6.4 In order to get integrated into the international trade networks, these units have to satisfy buyer's standards in terms of quality, price and delivery schedules. It is, therefore, suggested that selected industries namely Garments, Electronics, Food products /processing, Leather products and Chemical and Chemical products should be equipped and strengthened with fully updated machines. **Economic policies for the small scale sector should enable these industries to integrate with the global industry by getting into their global commodity chains for which they have to upgrade themselves in terms of improved technology, better management and marketing. Government must provide them with the facilities on priority basis towards financing, market networking, trained manpower and information technology.**

V.7 Capital Adequacy

V.7.1 Majority of smaller units have indicated that their investment in fixed capital is much lower than what they are required to invest in their working capital. The low level of investment in fixed capital is an impediment in the production capacity of their units. **Provision of well-equipped sheds for the new and socially backward entrepreneurs has been demanded.**

V.8 Employment coefficients

- V.8.1 The average employment in SSI units surveyed in 4 states was found to be 17 (16 males and 1 female).
- V.8.2 There are minor differences in the average employment in the states. It is somewhat high in Maharashtra being 21 (18 males and 3 females) and Haryana being 18 (17 males and 1 female). The average employment in Delhi and Rajasthan is 13 and 15 persons respectively.
- V.8.3 It has been observed the average employment in a SSI unit employing improved technology is of the order of 19 whereas it is only 11 for units without improved technology. This situation exists in all the four states. It is therefore established that for the small-scale sector, use of improved technology has no adverse effect on employment and, in fact, leads to increase in employment. **The primary focus of the Tenth Plan being provision to increase employment opportunities, it is recommended that facilities of credit etc. provided to SSI units for improving their technologies should further be liberalised to create additional productive employment, particularly for the technically trained personnel.**
- V.8.4 As regards employment potential of different SSI categories, the maximum average employment has been found in Hosiery and Garment manufacturing units followed by units of Electrical Machinery and Apparatus, Chemical and Chemical products and Rubber and Plastic products. These units are trying to keep up with the latest technology. **They should be encouraged to keep track of the on going changes in respective technologies. Marketing facilities for such units also should be improved.**
- V.8.5 It has been observed that wherever concentration of workers is high, there is a danger of labour disputes and litigations. Consortia type organizations may be created to deal with such problems without costly and lengthy litigation.

V.9 Performance and problems of different categories of industries

The responses received in the survey revealed that in addition to some common features, problems and suggestions of owners / managers, there are some specific problems of different categories which are briefly mentioned below with suitable suggestions

V.9.1 Garments and Hosiery Industry

V.9.1.1 The industry manufactures a variety of goods like socks, stockings, sweaters, knitted goods for ladies wear, mufflers, jerseys, T- shirts, coats, trousers, children wear and many other items of fashion wear.

V.9.1.2 Garment exports from India started with low-cost and low-quality products whose market is now drying up. The growing demand now even in the domestic market is for high quality garments. This requires upgradation of technology at all levels, pre-sewing, sewing and post-sewing. Computer Aided Design (CAD) packages for development of weaves and prints are essential. In house tailoring with high quality power driven machinery is needed to ensure quality and timely delivery of the products. The small-scale electronic units must be assisted in updating to bring them at par with their international counterparts. This could be achieved by assisting such units with high quality testing facilities. Different agencies in charge of developing SSIs must also help these units to improve their organizational methods such as total quality management system and ISO-9000 certification, which is essential for the SSI units to ensure the supply of quality goods in time.

V.9.1.3 Out of 56 units surveyed only a few were using the latest available technologies. We found that a large number of them were working with traditional technology. Technologies available in the area are Spreader, Cutter, Fusing, Compressing, Computer Aided Designs etc. Assistance for upgradation is available through SIDBI and other agencies. These are not very sophisticated machines and can be manufactured in India. The import of these machines is costly and our industries

desire that the Government must assist in their indigenous manufacture. Their maintenance, servicing and repairs will also be economic and timely.

V.9.1.4 Information technology is the backbone of apparel industry. The industries desire that information about latest trends and fashions should be collected centrally by the Government or other agency and passed on expeditiously to the manufacturers.

V.9.1.5 India's share in the global trade of ready-made garments is nearly 3 percent at present. The entrepreneurs feel that the inability of the sector to cater to foreign countries' changing tastes and preferences is mainly due to technological obsolescence of their units. The sector exporting garments to U.S.A, Latin America and Europe is facing tough competition from China, Pakistan and Sri Lanka. It is obligatory for the sector to keep on improving the quality of goods and innovate in new designs and products. If the Government facilitates provision of modern technology at reasonable rates and within reasonable time, the sector can achieve target of 5 percent business in the global market in spite of problems created due to phasing out of MFA. **The sector should be helped prepare to face the challenges created by the WTO regime in conducting global business. Greater R&D support for the sector should be provided under the guidance of CSIR and SIDBI**

V.9.1.6 The basic raw material required for this sector are textile fabrics, threads, buttons and other items. Cost of these items is high and their supply is erratic. **Supply channel pertaining to these materials must be quick and reliable. In order to reduce the cost of raw material, Government must reduce the excise duty.**

V.9.2 Food Processing Industry

V.9.2.1 Food processing covers a wide variety of industries including food and vegetable processing, dairy processing, spices and flavour foods, oilseeds and oil processing, sugar and confectionery products, beverage foods and baked foods. While we have mainly confined our study to two main categories having better representation in

the areas surveyed namely biscuits and bakery products, pulses and oil processing, we have interacted with owners regarding possibilities in other food related products also.

V.9.2.2 Products of SSI bakery units have to compete with the products of large-scale industries who take advantage of economies of scale and have the resources to acquire modern technologies to improve their quality.

V.9.2.3 Automated machines for manufacture of biscuits and other bakery products are costly and the best ones are imported. **The unit owners desire that these machines should be produced indigenously and made available at rates much cheaper as compared to those of imported ones. Their product can be absorbed in the local markets and they will get a profitable sale price for good quality.**

V.9.2.4 Processed foods in general have good export potential but the products have to be processed under very strict hygienic conditions.

V.9.2.5 Spices, of which India is one of the biggest producers, have been a valuable export of India for more than two millenniums past. They are now in demand for their antioxidant, digestive and curative properties. More attention needs to be given to higher value added products such as spice concentrates and spice emulsions. These products are suitable for small-scale industry with the availability of appropriate technologies. **Processed dried and frozen fruits and vegetables have a vast market but the common complaint is inadequate infrastructure of transport, cold storage and marketing. These inadequacies have to be rectified and strict quality controls observed to tap the vast potential of overseas markets.**

V.9.3 Leather products

V.9.3.1 The study covered 41 establishments in the 4 states. They are manufacturing footwear, leather dresses, bags and several other items. With production of 700 million pairs of footwear, India ranks second only to China. Lately, however, the Indian leather industry has not been able to make its presence felt in the international market mainly because of technological obsolescence and is losing to China in cost leadership. Major leather goods manufacturers are also shifting their production centres to south Asian countries posing stiff competition to Indian goods. East European countries are also taking over a part of the West European market due to proximity. Another problem for Indian manufacturers is that almost the entire range of machines for making quality leather goods are imported making them costly for small entrepreneurs. The availability of chemical inputs used in leather processing is also limited. With proper planning, India's leather industry can become a major export earner. **The sector should be made aware of new technologies and excise duty on chemical inputs used for leather processing must be reduced to achieve the target. Ancillary tie-ups of SSI units with large manufacturing houses in the sector should be encouraged.**

V.9.4 Electrical Machinery and Apparatus

V.9.4.1 It is one of the most important segments of the small-scale industrial fraternity. Seeing the potential of the sector, and associated demands of the products, the sector is required to get into mechanized and automated production with high quality testing instruments. **The sector should develop sales and marketing strategies to dispose off the variety of goods produced by it. The sector, also must develop ancillary relationships with the larger industries. It is also highly advisable that the sector must adopt organizational improvements such as total quality management system (ISO 9000). Ancillary tie-ups of SSI units in this sector with main manufacturers should be encouraged.**

V.9.5 Chemicals and Chemical Products

V.9.5.1 A large number of Chemicals and Chemical products are produced in the small sector. Most of the sector establishments are concentrated in Maharashtra. Drugs constitute the most important segment for the SSI sector. There are about 24,000 SSI units in the country producing mainly drug formulations. They have contributed through import substitution in making the pharmaceutical sector more self-reliant. The sector is also getting into herbal drugs.

V.9.5.2 The sector is now expected to have serious problems under our obligations under the Trade Related Intellectual Property Rights (TRIPS). The manufacturing processes of bulk drugs and drug intermediates are continuously changing with a view to reduce the cost of production and improve the quality of the product. The technology upgradation will aim at longer shelf life, more or less nil toxicity, sustained release etc. **Improved technology can be obtained through own R&D efforts, technical collaborations and purchase of know-how. Small scale units, in themselves, have little capacity for such efforts and need the assistance of the Government and national and regional research institutions for providing viable technologies at reasonable cost and training their personnel.**

V.9.6 Printing and Allied Activities

V.9.6.1 The rapid growth of the cities like Delhi, Mumbai, Jaipur etc. have created a huge demand for printing services. A variety of activities like publishing of books, magazines, posters etc. are undertaken by the printers. This is a very cost conscious and demanding segment and it is necessary to have the most modern technology to satisfy the demanding purchaser. Proven technologies which are being used in the sector are Offset printing machines and Computerized printers. The latest technology is that of Web Offset Printing machine which is known for its quality of printing and swift printing in sheet and books. This machine is very costly for SSI units and has to be imported. **Indigenous substitute needs to be**

developed. The Indian version of these machines as available are reported to be qualitatively inferior to the imported ones. Entrepreneurs who want such printing technology in their industry must be financially helped. The repayment should be through lower installments. Servicing and maintenance must be the responsibility of the equipment supplying agencies for a reasonable period. Majority of the workers in this industry are trained on the job. **For use of sophisticated equipment, these workers need special training for which adequate arrangements for off job training should be made through vocational institutions.**

V..9.7 Metal Products

V.9.7.1 This sector manufactures a vast range of products. The sector has great export potential and is currently exporting their products to ASEAN countries as also to some European countries. Metal cutting machines, finishing and polishing machines, computer design machines, lathe and drilling machines, gas solder machines etc. are popular products in India and abroad.

V.9.7.2 **Introduction of software driven technology even in the small industry sector is necessary. There is also need for skill upgradation for workers. Proper supply of raw material for this sector needs to be streamlined, so that every entrepreneur gets his quota on time.**

V.9.8 Wood Products

V.9.8.1 This sector has been covered in all the four states. The sector is producing a variety of items like household and office furniture, chairs, tables, door and window frames, roof ceilings etc. They are using natural woods and plywood and other materials such as sun mica etc.

V.9.8.2 The sector works both with and without modern technology. However, the number of units working with traditional technology is much higher and their sizes

are also small. The number of units using modern technology for their processes is small. Automatic machines for cutting woods, mechanical benders, polishing and furnishing machinery of 2 BT system etc. are some high technical machines being used for manufacturing different varieties of luxury items and other goods. Majority of the entrepreneurs in the sector are not aware of the different facilities of technology upgradation available in the country. **Awareness about existence of these facilities should be developed through publicity and through wood manufacturing associations etc.**

V.9.8.3 The sector continues to remain a traditional one even though it has diversified its products to various types of demand in domestic and overseas markets. This has necessitated a change in the manpower requirements of the SSI units. The sector is no more comfortable with manpower trained on the job on the shop floor. The existing institutional capacity in training workers for the industry has to be expanded. With liberalization, this sector is also exposed to global competition. The only way to face competition would be to improve productivity and quality and to reduce cost. **In order to have success, modern technology has to be adopted even by the small units. Modern methods in management, marketing and finance need to be adopted.**

V.9.9 Plastic and Rubber Product

V.9.9.1 Due to multidimensional uses, Plastic and Rubber industry has been acknowledged as the 'sunrise industry' and has become an integral part of day-to-day life. A large number of processing units have been established in the country.

Plastic and rubber products are being used in areas like domestic use. They also find use in high technology spheres like space technology, and electronics. With more than 30,000 processing units in our country, number of plastic products has exceeded one lakh.

V.9.9.2 Investment has also increased tremendously. By the end of 2000, the investment in this sector had crossed Rs. 53,000 crores and is increasing further. The contribution of the sector towards generating employment is also substantial. The opportunities for direct employment in the sector are estimated to have crossed one million.

V.9.9.3 The development of the sector is linked with the country's economic development. The sector has ancillary relationship with several large industries including multinational companies both in India and abroad. The sector is a valuable source of foreign exchange. In India, the present per capita consumption of plastics is 4.5 kg as compared to about 50 kg in the developed countries. Even with this low consumption, most of cities in India are facing environmental problems because of the non-degradable nature of most of the plastic products like bags. R&D institutes in our country are developing technologies to create biodegradable plastics, which will reduce environmental pollution

V.9.9.4 The growth rate of plastic industry has been consistent at 12 to 15 percent. A steady supply of inputs is needed to continue such performance. It is hoped that by 2010 India will emerge as the third largest producer and consumer of polymers after US and China.

V.9.9.5 Thousand of products from toys to umbrellas to space ship components are manufactured in this sector. There is also scope for marketing these products in South East Asian countries and even European markets. **It is necessary that the sector should make efforts to match prices of domestic products with world prices. This can be achieved by adopting methods to reduce wastage in production, making improvement in designs, use of better raw materials, improved inventory management etc.**

V.9.9.6 **It is also advised that the sector should expand areas of ancillarisation and develop linkages with other enterprises. The sector should have a vertical expansion by installing more modern machinery and tie-up with external**

firms. Such tie-up will take care of export marketing through their external channels to encourage foreign exchange and having financial support.

V.10 Conclusion

V.10.1 India has a large infrastructural network to develop technology for use of industry and the small sector, yet only a handful of indigenous technologies could be developed. As a result our small-scale sector has to depend largely on imported technologies. Dependence on imported technology is very costly making it the privilege of a few richer entrepreneurs in this sector. Under this scenario, it is not surprising that more than 30 per cent of the units are not having the benefits of advanced technologies.

V.10.2 The study has highlighted several barriers in the adoption of improved technologies. In addition to the known problems of lack of finance, lack of information on availability of the required technology, inadequate skills etc. the survey indicates that an important reason for not adopting it is the factor of uncertainty and apprehension.

V.10.3 Even if a new technology is tested and used somewhere else, the experience gained by that unit owner is hardly shared. The owner relies more upon experiences of their known persons rather than on results of the testing of technology, on official versions or demonstrations etc. There are psychological hurdles also which hold back the adoption of modern technology. The study further indicates that there is a certain account of secrecy with which the small entrepreneurs are surrounded, which make them reluctant to share or exchange technical, management or marketing information. Discrimination in sanction of loan to economically weaker and specially first generation entrepreneurs is also a hurdle in adoption of new technology. Such problems can be overcome through education, through discussions, dissemination through literature, workshops etc. and constant interaction amongst the entrepreneurs themselves as also with official functionaries of the Government and industry associations.

- V.10.4 The survey results have indicated that the SSI units using improved technology have better employment potential as compared to the units which are not using such technology. This is reflected in the data on average employment in different sectors. As the use of technology has positive effect on employment generation, it should be a national priority to provide modern technology to all non-users so that employment at the national level could be accelerated.
- V.10.5 The study has shown that investment in fixed capital is much lower than what is required for working capital. This factor also calls for assessment of technology to reduce high working capital costs to improve the profitability of the unit.
- V.10.6 The study has shown that garments and hosiery units have higher employment content in all the four states followed by electrical machinery and apparatus, chemical and chemical products and plastic and rubber. Profitability of these units can be increased by assisting them through policy measures to get into global commodity chains which will also increase their export potentials. However, to get into international trade networks, they have to upgrade themselves with the latest modern technologies.
- V.10.7 Policy measures will be effective only if the individual entrepreneurs are motivated, ready to take the risks and bear the costs involved in the adoption of the new technology. Industry associations have an important role to educate the small sector about the changes that are going in this sector, the necessity for technological changes and possible increases in profitability with such changes. It is necessary for both the Government and industry associations to change their attitude to inspire trust and confidence in the small units. The SSI owners should also be guided to bring about improvement in quality and efficiency with their own efforts
- V.10.8 This exhaustive survey conducted in four states identifies and highlights the problems faced by the SSI units as perceived by them. The study also summarizes

the suggestions of the owners for removing bottlenecks and bringing about improvements specially as regards adoption of improved technologies. The implementable part of these suggestions have been included in our recommendations. The important recommendations emerging from the study are summarized below.

V.11 (A) General Recommendations

- i. The SSI units going in for company formation should be provided some additional facilities like incentives to form cooperatives, concession to create infrastructure, increase in investment limit etc.
- ii. Small units performing ancillary role to large industrial units may be ensured prompt and effective payments by large units for supplies made by the SSI units as per purchase order and quality standard.
- iii. Continuous quality power supply at reasonable rates needs to be provided to SSI units.
- iv. Proper financial assistance could be provided to the SSI units for marketing their products so that they can withstand competition from large industries.
- v. To improve the profitability of SSI units inputs for marketing intelligence may be given to them about new and emerging markets.
- vi. Difficulty faced by women due to holding, inheriting, bequeathing property etc. should be removed to encourage women entrepreneurs.
- vii. Marketing assistance to women entrepreneurs should be provided through preferential exposure of their products in Exhibitions, Buyers - Sellers Meets and Vendor Development programmes.
- viii. SSI units should be provided facilities for upgrading their technology and also skill of their workers which would result in increasing productivity.
- ix. Adequate infrastructural facilities would help a lot, specially entrepreneurs belonging to economically and socially backward class/communities etc.
- x. Adequate credit at reasonable interest rates for modernization of SSI units would help them in creating new sustainable and productive employment.

V.11 (B) Industry-Specific Recommendations

Hosiery and Garments

- xi. R & D support under the guidance of CSIR and SIDBI should be provided to SSI units for quality improvement of their products
- xii. Quality and quantity wise raw material availability with reduced excise duty on raw material would help SSI units in achieving higher production and exports.

Food Products

- xiii Indigenous automated machines for manufacture of food products should be made available at competitive rates as compared to these of imported ones.

Leather Products

- xiv Excise duty on chemicals, used for leather processing by small units should be reduced and ancillary tie-up of SSI units with large manufacturers should be encouraged so as to bring in value addition and to cater exports of high value items.

Electrical Machinery & Apparatus

- xv Ancillary tie-ups of SSI units in this sector with large manufacturers should be encouraged so that these units are able to take up manufacture of standard and quality product in a planned manner.

Chemical and Chemical Products

- xvi Assistance should be provided by the national/regional research institutions for providing recent technologies at reasonable cost and for diversification into new products

Printing and Allied Activities

- xvii Indigenous Web-Offset Printing Machine presently imported needs to be developed in India to increase printing range of Small and Medium Enterprises
- xviii Adequate arrangement for special training to workers for using the sophisticated and recent technology based equipments should be made through vocational institutions.

Metal Products

- xix Supply of raw material should be streamlined. Simultaneously adequate arrangement for skill upgradation of workers should be made.

Wood Products

- xx SSI units engaged in manufacturing of wood and wood products are using outdated technology. These units need to be modernized by making them aware about modern technologies and fiscal incentives could also be provided.

Plastic and Rubber Products

- xxi Quality raw material should be used to achieve competitiveness in the international market and ancillary tie-up with large industries should be encouraged. Tie – up with external firms should also be developed to encourage exports.
- x.xii** It is felt that the recommendations of the study will provide a benchmark for assessment of the basic problems and these measures would be encouraging this sector for high growth. It is hoped that the study will thus be helpful to the policy planners as well as experts/entrepreneurs associated with this sector.

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