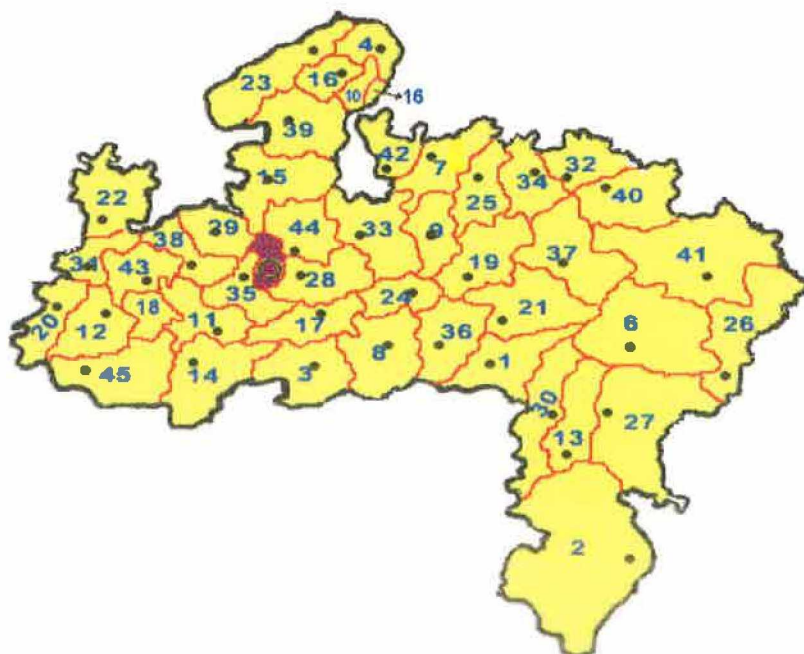


**RESEARCH & DEVELOPMENT ACTIVITIES IN
SMALL SCALE INDUSTRIES
OF
MADHYA PRADESH**



OCTOBER 2000

PROJECT SPONSORED BY:

**GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
DEPARTMENT OF SCIENCE & TECHNOLOGY
NATIONAL SCIENCE & TECHNOLOGY MANAGEMENT
INFORMATION SYSTEMS (NSTMIS) DIVISION,
NEW DELHI**

REPORT BY:

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BHOPAL (M.P.)
(A JOINT VENTURE OF IFCI, IDBI, ICICI, STATE GOVT.
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मध्य प्रदेश कन्सल्टेन्सी ऑर्गेनाईजेशन लिमिटेड

रजि. ऑफिस : पो. बाँक्स क्र. ३३६, गंगोत्री, टी.टी. नगर, भोपाल-४६२ ००३. (म.प्र.) भारत

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Sub : R & D in SSI of Madhya Pradesh.

Dear Sir,

As desired, please find enclosed herewith, duly bound six copies of the final report titled as "Research & Development Activities in Small Scale Industries of Madhya Pradesh " for your record.

Kindly acknowledge the receipt.

Thanking you,

Yours faithfully,

(D.M. MAHASHABDE)
Co Principal Investigator.

Encl : As above

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PREFACE

The present report is an attempt to assess the status of research and development activities in small scale industries in Madhya Pradesh (undivided) during last three years viz. 1996-99.

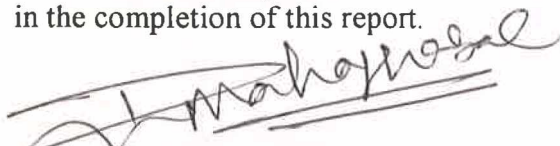
The aim of the report is to provide back-up information to the planners and policy makers, in understanding the nature of R&D activities in SSI sector, so that, the findings could be appropriately used for policy formulations, for SSI sector, which has to make it stand on its own, in today's global economy.

MPCON, wishes to record its deep sense of gratitude to National Science & Technology Management Information Systems Division (NSTMIS) of Department of Science & Technology (DST), Govt. of India. New Delhi for entrusting the Study to M.P. Consultancy Organisation Ltd. (MPCON) which is acting as a catalyst in SSI sector's development in Madhya Pradesh and also performing a vibrant role since last two decades in the development of M.P. Our special thanks are due to Dr.Laxman Prasad Adviser & Head, NSTMIS Division of Department of Science & Technology, Shri R.Chetal, Director, Dr.G.J.Samathanam, Director, Shri Praveen Arora, Principal Scientific Officer and Dr A.N. Rai Senior Scientific Officer all from NSTMIS Division of Department of Science & Technology who were, constant source of inspiration and guidance in the completion of this project.

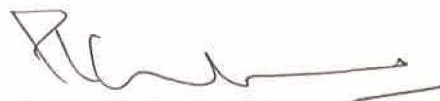
We would also like to put on record, our sincere thanks towards the Chairman and members of the Project Advisory Committee, (Annexure-D) who gave us valuable suggestions and provided guidance from time to time that helped us in enriching the contents of this report.

Our thanks are also due to Shri. M.K.Roy, IAS, Industries Commissioner, the Director (SSI) and other officials of the Directorate of Industries, Govt. of M.P., and its District Trade & Industries Centres (DTICs) spread in 45 district of M.P. which provided us valuable information about the registered SSI units. Lastly, our special thanks are due to the responding SSI units, without which this report could not have taken this shape.

MPCON is grateful to all those who have directly or indirectly supported/assisted in the completion of this report.



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BHOPAL October 2000

EXECUTIVE SUMMARY

A study entitled “ R&D in SSI of M.P.” has been conducted for a period of three years from the year 1996 to 99 at the instance of National Science & Technology Management Information Systems (NSTMIS) Division, DST, Govt. of India, by M.P.Consultancy Organisation (MPCON). The study was undertaken to assess the research and development activities being undertaken by small scale industries of Madhya Pradesh. The study is very significant because it is a well structured, well planned and methodic attempt for the first time in India to determine the use of S&T amongst SSIs. The SSIs play an important and significant role in India’s economy. Their major attribute is to provide large scale employment opportunities at relatively low capital cost and encourage small entrepreneurs to set up state of art projects. SSIs also provide an ever-growing entrepreneurial base in different states of India. They encompass a very large geographical area, which cover tribal and rural populations. In these areas, natural resources, both living and non-living are located. These SSIs also help in equitable distribution of wealth, national income and encourage development of ancillary sectors. The SSIs have also emerged as a dynamic and vibrant sector. They have consistently achieved and maintained higher rate of growth as compared to overall industrial growth of the country. This is an inherent, inbuilt quality, which has manifested itself at the national level, inspite of lower financial allocation, comparatively poorer infrastructure and practical absence of organised marketing system. SSIs have also played a significant role in generating employment and production through tribal people in backward rural areas, where most of the poor people live below the poverty line who urgently need S&T help for improving their skills to become self employed based on utilisation of local resources. This sector of people needs to become knowledge workers so that, by increasing their productivity and output they can ensure nutritional and food security for people of the region.

SSIs AT NATIONAL LEVEL

1. **AT THE NATIONAL LEVEL** Currently SSI sector contributes 40% of the gross turnover in the manufacturing sector, 45% export of manufactured goods and about 45% of India’s exports This is also the major employment sector next to agriculture. There are 3.2 million registered SSI units in India, which account for 95% or the total industrial population of the country.

2. **NEW OPPORTUNITIES, THREATS AND CHALLENGES** Under the new economic policy, WTO, and IPR agreements, Indian markets are flooded with consumer goods, food, health and nutrition products and Indian SSIs are facing severe competition with reference to quality, standardisation of products, costing, packaging and delivery systems.

At Global level all these components have evolved long term application of S&T to make market oriented products, which have consumer demand and acceptance. Therefore, now SSIs in India are facing serious competition and threats of existence and closing down. They must change their production line and start making contemporary and state of art products of excellent quality at economically reasonable price. In order to achieve their

goals, it is essential that ongoing R&D, use S&T to develop knowledge based system, get rid of obsolete technology and practices and use modern equipments and machinery to economically produce quality products, which can meet the consumer demand and have excellence. Therefore, this study is externally valuable for developing consumer-oriented projects in areas, which have a ready market.

3. **NEED TO STRENGTHEN R&D SUPPORT** The study clearly brings out that smaller industries are continuously facing the threat of market obsolescence. There is an utmost need for product development and make sincere efforts to use R&D. Therefore this sector needs greater support of DST. This support will bring about a quantum change in use of R&D. It will also remove the misconception that only large industries spend on R&D. It may also be mentioned that most of these small industries used R&d but even then sector is not aware about the existence of NSTMIS and the R&D assistance available from DSIR, DST & other science departments. This is a weak link and needs special support during tenth plan. This assistance is particularly essential to meet the market challenges due to implication of new economic policy and W.T.O.

HIGHLIGHTS

OVERALL R&D SCENARIO

- The study covered R&D activities in SSI of M.P. during the last three years viz. 1996-99.
- M.P. has over 4 lakhs SSI units permanently registered with District Trade & Industry Centers (erstwhile District Industry Centers). Out of which, the data collection was planned for a Gross Representative Sample (GRS) of 51,900 SSIs from 45 Districts and 3 Growth Centers.
- A Direct Sample (DS) of 38000 SSIs, was drawn from the Gross Representative Sample (GRS) after excluding traditional industries, incomplete addresses, closed units etc.
- Out of 38000 units contacted as above 5622 SSIs responded to the mail card questionnaires, from which, 2282 SSIs were found carrying out R&D activities during the reference period.
- The Gross Turnover (GTO) of the 2282 SSIs carrying out R&D was as under :-

Year	GTO (Rs.Lakhs)
1996-97	38680.85
1997-98	48361.41
1998-99	64710.14

- The expenditure on R&D by 2282 SSIs was as under:-

Year	R&D (Rs.Lakhs)
1996-97	730.80
1997-98	999.07
1998-99	1602.80

- The expenditure on Advertisement and Publicity by 2282 SSIs was as under:-

Year	Adv. & Pub.(Rs.Lakhs)
1996-97	548.95
1997-98	759.74
1998-99	976.62

- The expenditure on New P&M/c by 2282 SSIs was as under:-

Year	New P&M/c (Rs.Lakhs)
1996-97	2008.23
1997-98	1951.74
1998-99	3029.57

- SSIs spent 1.88%, 2.06% and 2.48% of their Gross Turnover (GTO) on R&D in 1996-97, 1997-98, and 1998-99 respectively.
- SSIs spent 1.42%, 1.57% and 1.50% of their gross turnover on advertisement & publicity in 1996-97, 1997-98 and 1998-99 respectively.
- SSIs spent 5.19%, 4.04% and 4.68% of their respective gross turnover on new plant & machinery in 1996-97, 1997-98 and 1998-99 respectively.
- 26465 Personnel were employed in 2282 SSIs, out of which 20832 were males & 5633 were females with a male-female ratio of 3.69
- In all 3720 S&T personnel were engaged in R&D activities, out of which 3114 were males and 606 were females with a male-female ratio of 5.13
- Out of 2282 SSIs, 1669 (73.14 %) had a total employment in the range of 1 to 10 , where as 327 (14.33%) had a total employment in the range of 11 to 20
- Out of 2282 SSIs, those having an employment size in the range of 1 to 10, spent Rs.493.58 lakhs (30.79 %) on R&D followed by employment size in the range of 101 and above which spent Rs.298.55 lakhs (18.63 %) on R&D based on 1998-99 figures.
- Out of 2282 SSIs those having an employment size in the range of 1to10 spent Rs 440.76 lakhs (45.18%) on Advertisement & Publicity followed by SSIs with the employment size 11to12 where the corresponding expenditure was Rs 137.55 lakhs (14.1%) in the years 1998-99
- Out of 2282 SSIs, those spending maximum on new P&M/c were the SSIs as under

Employment Size	Invt. in New P&M/c (Rs lakhs)
1-10	592.29 (19.55%)
11-20	592.77 (19.57%)
101 and above	556.87 (18.38%)

- Out of the total 2282 SSIs the tiny units with investment in P&M/c upto Rs.4 lakhs were 1863 (81.63 %) in number, which on an average spent about 3.58 % of their gross turnover on R&D activities.
- The full time male-female ratio for 1863 tiny units with investment in P&M/c upto Rs.4 lakhs came out as

Male-Female Ratio

Total Employment	3.65
S&T Employment	6.96

R&D SCENARIO IN SSIs WITH INVESTMENT P&M/c ≥ RS 25 LAKHS AND < RS 25 LAKHS

139 SSIs with investment in P&M/c ≥ Rs.25 lakhs and 2143 SSIs with investment in P&M/c < Rs.25 lakhs carrying out R&D activities, revealed following facts:

R&D Expenditure

Year	≥ Rs 25 lakhs	< Rs 25 lakhs
1996-97	Rs. 285.22 lakhs	Rs. 445.58 lakhs
1997-98	Rs. 394.45 lakhs	Rs. 604.62 lakhs
1998-99	Rs. 654.50 lakhs	Rs. 948.30 lakhs

Average R&D expenditure per unit R&D manpower came out as

P&M/c	
≥ Rs.25 lakhs	Rs.0.43 lakhs
< Rs.25 lakhs	Rs.0.20 lakhs

R&D Expenditure v/s Gross Turnover

Year	≥ Rs 25 lakhs	< Rs 25 lakhs
1996-97	1.29%	2.69%
1997-98	1.34%	3.20%
1998-99	1.55%	4.23%
Average	1.42%	3.45%

Industry groups spending maximum on R&D (Year 1998-99)

Ind.Group	≥ Rs 25 lakhs	Ind.Group	< Rs 25 lakhs
Electrical Ind.	(31.06 %)	Mech. Engg. Ind.	(16.95%)
Agro & Food Ind.	(12.76 %)	Agro & Food Ind.	(12.31%)
Chem. Ind. & Allied Prod	(12.30 %)	Metal Ind. & Allied Prod	(10.24%)
Metal Ind. & Allied Prod	(10.52 %)	Textile, Hosiery & Allied Prod	(9.95%)
Mech. Engg Ind.	(8.43 %)	Ceramic Ind. & Allied Prod	(8.97%)

- (The figures in brackets indicate percentage to total R&D expenditure for the Yr.1998- 99)

Advertisement & Publicity Expenditure

Year	≥ Rs 25 lakhs	< Rs 25 lakhs
1996-97	Rs. 187.01 lakhs	Rs. 361.94 lakhs
1997-98	Rs. 277.19 lakhs	Rs. 482.55 lakhs
1998-99	Rs. 362.98 lakhs	Rs. 613.64 lakhs

Advertisement & Publicity Expenditure v/s Gross Turnover

Year	≥ Rs 25 lakhs	< Rs 25 lakhs
1996-97	0.85%	2.18%
1997-98	0.94%	2.55%
1998-99	0.86%	2.74%
Average	0.88%	2.90%

Expenditure on New P&M/c

Year	≥ Rs 25 lakhs	< Rs 25 lakhs
1996-97	Rs. 1520.43 lakhs	Rs. 487.80 lakhs
1997-98	Rs. 1410.83 lakhs	Rs. 540.91 lakhs
1998-99	Rs. 2395.63 lakhs	Rs. 633.94 lakhs

Expenditure on New P&M/c v/s Gross Turnover

Year	≥ Rs 25 lakhs	< Rs 25 lakhs
1996-97	6.88%	2.92%
1997-98	4.79%	2.86%
1998-99	5.67%	2.83%
Average	5.68%	2.87%

MANPOWER

- For the full time employment , the male-female ratios were

Category	Type	Male-Female Ratio
P&M/c ≥ Rs.25 lakhs	Total Man Power	4.30
„	S&T Man Power	3.80
P&M/c < Rs.25 lakhs	Total Man Power	3.47
„	S&T Man Power	6.00

Industry groups having maximum S&T Personnel were

Ind. Group	≥ Rs 25 lakhs	Ind. Group	< Rs 25 lakhs
Agro & Food Ind.	(14.82 %)	Ceramic Ind. & Allied Prod	(18.55 %)
Chem. & Allied Prod.	(14.06 %)	Mech. Engg. Ind.	(18.00 %)
Mech. Engg. Ind.	(13.76 %)	Agro & Food Ind.	(9.03 %)
Rubber & Plastic Prod	(13.01 %)	Rubber & Plastic Prod	(7.57 %)

- Manpower on auxiliary activities in R&D expressed as a percentage to the total manpower.

P&M/c	
≥ Rs.25 lakhs	4.7 %
< Rs.25 lakhs	1.6 %

- S&T Employment Per thousand of total employment came out as

Category	R&D Employment Per thousand of Total manpower
P&M/c ≥ Rs.25 lakhs	189.90
P&M/c < Rs.25 lakhs	156.15

R&D UNITS AND TYPE OF R&D ACTIVITIES

- The type of R&D activities carried out by SSIs in both the categories were

Type of R&D Activity	No. of SSIs	
Experimental Development	1903	(83.40 %)
Applied Research	297	(13.01 %)
Basic Research	82	(3.59 %)

- In case of SSIs with investment in P&M/c ≥ Rs. 25 lakhs 137 (98.56%) out of 139 R&D units were situated inside the respective units premises where as in case of SSIs with investment in P&M/c < Rs.25 lakhs 2088 (97.4%) out of 2143 R&D units were situated inside respective units premises.

CHAPTER I

INTRODUCTION

Role & Importance of SSI Sector

All through the planning era, the Small Sale Industries have played an important role in the nation's economy by providing (i) Large scale employment opportunities at relatively low capital cost (ii) establishment of a wide entrepreneurial base (iii) dispersal of industries in rural and backward areas (iv) equitable distribution of national income/wealth and (v) promotion of ancillarisation.

In short the small scale sector has emerged as a dynamic and vibrant sector in the process of development by consistently recording higher level of growth as compared to overall industrial growth.

The SSI sector presently contributes 40% to the gross turnover in the manufacturing sector, about 45% of the manufacturing export, besides providing maximum employment next to agriculture. The SSI population 3.2 million registered units in the country are 95% of total industrial population of the country.

Definition of SSI Sector

Small scale industries sector of India has been defined in terms of limits on investment in plant and machinery (original value). Legal framework is provided by Industries (Development & Regulation) Act briefly known as IDR Act 1951.

The Act specifically refers to only two categories of the SSI sector

- (I) Small Scale Industrial undertaking
- (II) Ancillary Industrial Undertaking.

Over the years, however, some sub sectors have been identified within overall SSI sector. These are.

- a) Tiny Enterprises (TE)
- b) Export Oriented Units (EOU)
- c) Small Scale Service and Business Enterprises (SSSBE)
- d) Women Enterprises (WE)

IDR Act also provides for statutory reservation of items/products for exclusive production in the SSI sector. Such products therefore are reserved for manufacture only in the SSI sector. At present 836 products are reserved for exclusive production in SSI sector.

Investment Ceiling over the Years.

The following table gives an idea about the historic evaluation.

Year	Investment in fixed assets	Employment less than
1955	Upto Rs.5 lakhs	50 with power
	Invest in Plant & Machinery	100 without power
1960	Upto Rs. 5 lakhs	----
1966	Upto Rs. 7.5 lakhs	SSI
	Upto Rs. 10.00 lakhs	Ancillary
1975	Upto Rs. 10.00 lakhs	SSI
	Upto Rs. 15.00 lakhs	Ancillary
1980	Upto Rs. 20.00 lakhs	SSI
	Up to Rs. 25.00 lakhs	Ancillary
1985	Upto Rs. 35.00 lakhs	SSI
	Upto Rs. 45 lakhs	Ancillary
1991	Upto Rs. 60.00 lakhs	SSI
	Upto Rs. 75 lakhs	Ancillary

Present Definition

Investment in Plant & Machinery

SSI	Upto Rs. 3 crores (Brought down to Rs. 1 crore)
Ancillary Industrial Undertakings	Upto Rs. 3 crores
Export Oriented Units	Rs. 75.00 lakhs (Minimum 30% export by the end of third year)
Tiny Enterprises	Upto Rs. 5.00 lakhs
Small Scale Service & Business Enterprise	Upto Rs. 5.00 lakhs
Women Entrepreneur	Women entrepreneur having minimum 51% Financial holding.

Government Policies Related To SSI Sector

The Government policies for SSI sector have two characteristics:

- i) They seek to protect SSIs from large units.
- ii) They extend support directly to firms in selected areas.

Need of the Present Study

There are several of studies on SSI sector carried out by various organisations. But so far no one has attempted to study the nature of R&D activities in SSIs.

The present study will be of immense use to the planners and policy makers in understanding the nature of R&D activities ongoing, in small scale sector in the country and thereby this sector could be appropriately reflected in national statistics.

SSI Sector in Madhya Pradesh -An Overview

Madhya Pradesh is located in the hilly regions of Vindhyaachal and Satpura and Aravale plateau. The region is very rich in natural, living and non-living resources. 75% of the population lives in the villages and depend on agriculture for their livelihood. Approximately 70% population of M.P. consists of tribal and their living is based on forest produce and sale out the unprocessed raw material to local middleman. Similarly, agriculture produce is marketed as raw materials and the development of value-added products and industrial products is nominal. Agri business occupies a very good scope and has extensive possibilities for future development. It is, in this context that the small scale industries have a very important role for development of the industry in rural and semi urban areas and for benefit of SC & ST and tribal population. In view of the extensive availability of the raw materials and higher marketing margins, a large number of small-scale industries had been developed.

Located centrally and surrounded by seven states, Madhya Pradesh which stands first in area and sixth in population among the states of the union, has over 4 lakh SSI units permanently registered with District Trade & Industries Centres (DTICs) in 45* districts and 3 growth centres having DTIC offices.

By the end of year 1996-97 a total of 4.53 lakhs small/cottage industries had been established in the state, with a capital investment of Rs.1242.42 crores generating employment for 11.57 lakhs persons. (Source-Industries A-Profile Nai Duniya Publication Year 2000 Page 132)

The 45 districts of the state have been classified by the State Directorate of Industries as Advanced, A, B and C depending upon the level of industrialisation and existence of medium and large-scale industries in the respective districts. On this basis, the 45 districts have been categorized as -

1. Advanced category:

1. Bhopal
2. Durg
3. Gwalior
4. Indore
5. Jabalpur
6. Raipur

2. Growth centres:

1. Mandideep
2. Malanpur
3. Pithampur

4. Category 'B'

1. Betul
2. Raigarh
3. Rajnandgaon
4. Sehore

5. Category 'C'

1. Bhind
2. Balaghat
3. Bastar
4. Chhatarpur
5. Chhindwara
6. Dhar
7. Datia
8. Damoh
9. Guna
10. Jhabua
11. Khargone
12. Mandla
13. Narsinghpur
14. Panna
15. Rewa

3. Category 'A'

1. Bilaspur
2. Dewas
3. Hoshangabad
4. Khandwa
5. Morena
6. Mandsaur
7. Ratlam
8. Shahdol
9. Satna
10. Ujjain
11. Vidisha

16. Raisen
17. Rajgarh
18. Shivpuri
19. Sagar
20. Sidhi
21. Surguja
22. Seoni
23. Shajapur
24. Tikamgarh

Note*: MP had 45 districts when the study was started. Later on with splitting of districts the no. of districts became 61. Now with the formation of separate Chhatisgarh State with 16 districts, the new MP State has again left with a combination of earlier existing and newly formed districts totaling to 45.

Envisaged Sample and Grouping of SSIs

Based on the above facts and after looking into the basic infrastructure, MPCON conducted survey in the 45 districts through DTICs. During the survey, it was found that SSIs in M.P. used tested technologies, which have been drawn mostly from the neighboring areas or from the other industries located, in the other States. The methods used by these industries and enterprises are simple and out-dated. These industries generally kept the technology as per the traditional systems and used low cost equipments. In view of the limitations of finance, they had not been able to use advance machines and undertake comparative study of the technologies to adopt the advanced technologies used elsewhere. Therefore, under this situation, it had become absolutely essential to study the current use of Science & Technology to formulate the modernisation efforts, which can be put through by research and development.

The study team had preliminary interaction with the Director of Industries, Chairman, Small Scale Industries Association and M.P. Laghu Udyog Nigam. Owners who are operating small, medium and major SSIs were also contacted. Thereafter, discussions were held to identify the functional units, that use medium level of technology. It was observed during this interaction that, the industry owners are conscious of improving their products to get a higher market share. As a result of this, the Project Advisory Committee (Annexure-D) examined the matter, as per their suggestions, smaller number of 51,900 SSIs were selected for Mail Card Survey. In order to undertake the basic data collection, a format was developed and later a questionnaire was designed.

The SSI units were grouped into 29 groups. After editing the list on the basis of repetitive nature of units, exclusion of traditional industries (Atta chakkies, readymade garments etc), incomplete address etc., the final gross sample came down to 38000 SSI units. The questionnaire was mailed to these 38,000 SSIs and a continuous dialogue was established. These SSIs were reminded by letters, telephones, etc. Out of the 38000 SSIs contacted, 5622 SSIs responded. Out of which only 2282 found carrying R&D activities. Of this 37,000 No. of units fall in the category of investments in plant and machinery less than Rs. 25 lakhs, while 1000 No of SSI units fall in the category of investment in plant and machinery as Rs. 25 lakhs or more. (The list of 29 groups and the indicative list of type of SSI units included in these groups are enclosed in Annexure-C). The reason of the non-response was that some of these units were closed or they were not keen on any further improvement and some of them had shifted from their locations or changed their line of production system. During this extensive survey, it was found that a section of industries was set up under difficult financial conditions and they opted for ready market demand items and traditional tested industries.

The survey also revealed that they neither have the finance or payment from the market for improving their products. Consequently, they did not foresee any possibility nor had any desire to undertake R & D.

CHAPTER-II

OBJECTIVES, SCOPE AND METHODOLOGY

Main Objective: Assessment of quantum of expenditure in Research & Development (R&D) activities other than routine testing and quality control in the Small Scale Industries (SSIs) of Madhya Pradesh in last 3 years 1996-97, 97-98 and 98-99 (Till 31st March 1999).

Additional Objectives:

- Assessment of industry group wise R&D units
- Geographical Distribution of R&D units and R&D expenditure
- Assessment of industry groupwise R&D expenditure
- Assessment of R&D units by R&D expenditure
- Assessment of R&D expenditure versus gross turnover, advertisement and publicity expenditure versus gross turnover and investment in new P&M/C versus gross turnover
- Assessment of industry groupwise manpower
- Assessment of S&T manpower, manpower engaged in auxiliary activities in R&D, male-female ratio etc.
- Analysis of type of R&D activities viz. basic research, applied research, experimental development etc
- Appropriate statistical analysis to establish correlation

Scope and Coverage

1. SSI units from 45 districts and three Industrial Growth Centers of Madhya Pradesh.
2. Only Permanently registered units with District Trade & Industries Centers (DTICs).
3. Assessment of R&D activities of all the SSI units during 3 years 1996-97, 97-98 and 98-99.
4. Data Analysis based on responding units doing R&D as per UNESCO definition of Basic Research, Applied Research, Experimental Development etc.

Methodology

- I Manual collection of first hand information from 48 DTICs.
Name of unit and Promoter's address, annual production, investment in plant and machinery when registered, installed and registered capacities, manpower etc.
- II Editing the list for data entries on basis of investment in plant and machinery, novel units, exclusion of lower size units and traditional units (Atta chakkies, Garment units etc.).
- III Data entry phase-I to take an overview of SSIs in M.P.
- IV Contacting SSI units with the help of semi-structured questionnaire having four Sections.
Section I - SSI units Profile
Name, address, Tel. No., Fax No., E-mail address, year of establishment, promoters information, paid-up capital, gross turnover, expenditure on advertisement and publicity, investment in new plant and machinery etc.
Section II - Research & Development (R&D)
R&D expenditure, Inhouse R&D, Outside experts, type of R&D, registration with DSIR etc.
Section III - Details of Manpower
Total manpower, S&T manpower engaged on R&D, manpower on auxiliary activities in R&D.
Section IV - Additional Information
Summary of novel activities, summary of suggestions on making R&D more effective and similar relevant information.
- V Sending reminders at regular intervals to non responding units.
- VI Telephonic contacts to selected units doing R&D to know more details and to follow-up responses.
- VII Personal visits to SSI units with P & M/c \geq Rs. 25 Lakhs especially in growth centers and surrounding areas of MPCON head office and branch offices.
- VIII Data entry in software phase-II to arrive at the findings in concurrence with the objectives and scope of work.
- IX Data analysis in identified 29 industry groups on the basis of objectives, scope and coverage.

LIMITATIONS OF THE STUDY

- The data has all the limitations of the Mail Survey. Thus the information given by the respondents is treated as correct. Also all the questions asked in the questionnaire have not been replied, as per expectations. The SSIs who did not respond have been treated, as not doing R&D. As a result, the choice of analysis of the collected data was limited to a few tables only.
- Only permanently registered units in DTICs were contacted whereas reportedly a good no. of good performing units which otherwise are not registered with DTIC, are not covered in the study.
- Units doing R&D activities other than reference period (prior or after) are not considered.
- Since DTICs do not have authentic information whether a unit is closed, shifted or not functioning, hence in case of majority of the SSIs, responses could not be received.
- Some of the respondents treated R&D as invention and hence either did not reply or replied inappropriately.
- Due to lack of awareness, lower literacy level amongst SSI entrepreneurs, the questions were not attempted properly. For instance, some of the SSI unit owners treated this as a loan recovery movement and either did not reply or replied improperly. Some of the SSI unit owners treated the study as a relief operation and demanded loan and in this process gave overenthusiastic responses. Some of the respondents treated this as an employment drive and responded accordingly.

- Separate analysis is not available for both the investment categories in case of analysis of type of R&D activities (Table 8), total employment wise R&D expenditure (Table 18), expenditure on advertisement and publicity (Table 10) and expenditure on new P&M/c. (Table 12).
- To enhance the responses, three reminders were sent, which took more time.
- S&T manpower includes manpower as per their job function in R&D or auxiliary activities in R&D units.
- The definition of SSI is a dynamic function and changes are taking place in the SSI scenario with WTO implications, hence the study is limited to the definition prevailing at the time of carrying out the study.

CHAPTER III

DATA ANALYSIS

In concurrence with the main objective, attributed features and based on the observations made by Project Advisory Committee (PAC) four categories of the tables have been included in this report.

- General Tables
- R&D Units and R&D expenditure
- R&D Manpower
- Statistical Tables

UNIVERSE

- I. Total number of SSI units permanently registered with DIC – 415000 (1998 figures as per State Directorate of Industries)
- II. Geography

Advance Districts	6
‘A’ Category Districts	11
‘B’ Category Districts	4
‘C’ Category Districts	24
Growth Centers	3
- III. Sample size for which study was planned = 28,000 only.
 Composition - 100% SSI units with investment in plant & machinery
 ≥ Rs. 25 lakhs
 5% SSI units with investment in plant & machinery
 < Rs. 25 lakhs
- IV. Sample size for which DTIC data collection was planned

GEOGRAPHICAL COMPOSITION OF THE SAMPLE

District Category (1)	No. of Districts (2)	Size (3)	Total (4=3*2)
Advance + “A”	17	1,500	25,500
“B”	4	1,200	4800
“C”	24	800	19,200
Growth Centers	3	800	2400
Gross Representative Sample (GRS)			51,900

Gross Representative Sample (GRS) 51,900 as per break-up given above.
Depending upon actual available number of registered units with DTICs, legibility etc, Actual Representative Sample (ARS) = 45000 SSI units.

- V. Direct Sample (DS) after editing traditional industries, incomplete addresses, closed units etc. 38000 SSI units. [Adv.+A → 21400 (56.32%) B → 4000 (10.53%) C → 12600 (33.15%)].
- VI. Response Status – As per Response Profile (Table-1)
(This was the result of in all about 70 thousand questionnaires sent in first round followed by three reminders at regular intervals to 38000 SSI units)

RESPONSE PROFILE

Table 1 contains information about SSIs in both the categories viz. SSIs with investment in P&M/c \geq Rs.25 Lakhs. It gives information about No of SSIs contacted, responded, doing R&D and not doing R&D.

In case of SSIs with investment in P&M/c \geq Rs. 25 Lakhs, out of 1000 SSIs contacted, only 264 responded, out of which only 139 were doing R&D and 125 were not doing R&D activities.

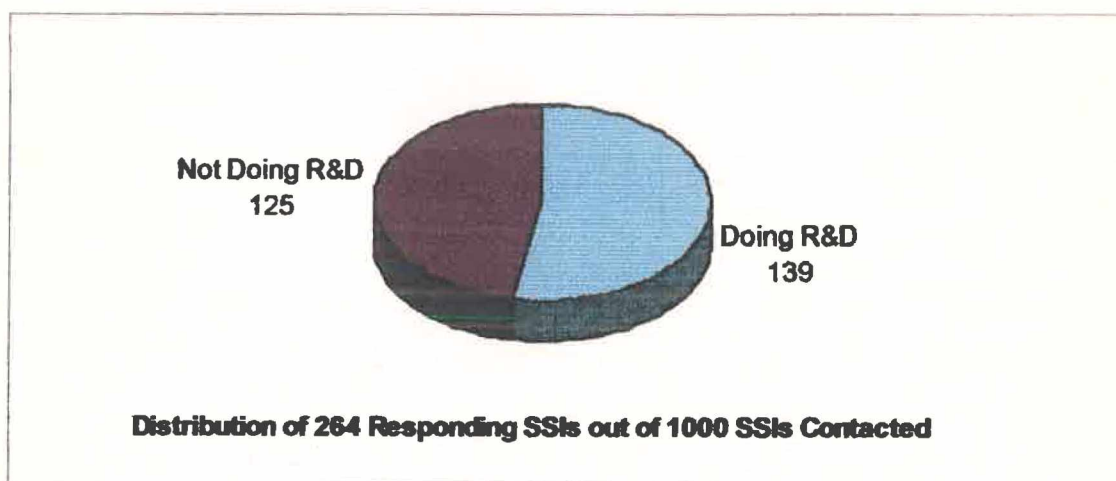
In case of SSIs with investment in P&M/c $<$ RS.25 Lakhs, out of 37000 SSIs contacted, only 5358 responded, out of which 2143 SSIs were found carrying out R&D activities and 3215 SSIs had not undertaken any not doing R&D activity.

It overall may be seen from Table-1, that out of 38000 SSIs (100%) contacted in both the categories, 5622 SSIs (14.79%) responded, out of which, 2282 SSIs (6%) were doing R&D activities and 3340 SSIs (8.79 %) were not doing any R&D activity.

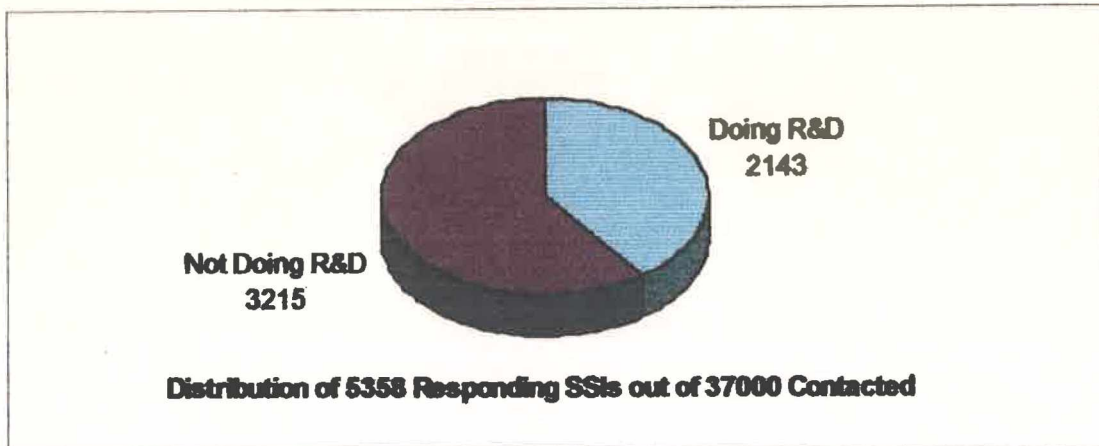
The information leads to the fact that SSIs in the higher investment range doing R&D are proportionately more than those doing R&D, in the lower investment range.

Thus, all the forth coming Tables are the out come of 139 SSIs with investment in P&M/c \geq Rs 25 Lakhs and 2143 SSIs with investment in P&M/c $<$ Rs 25 Lakhs that had undertaken R&D activities during reference period.

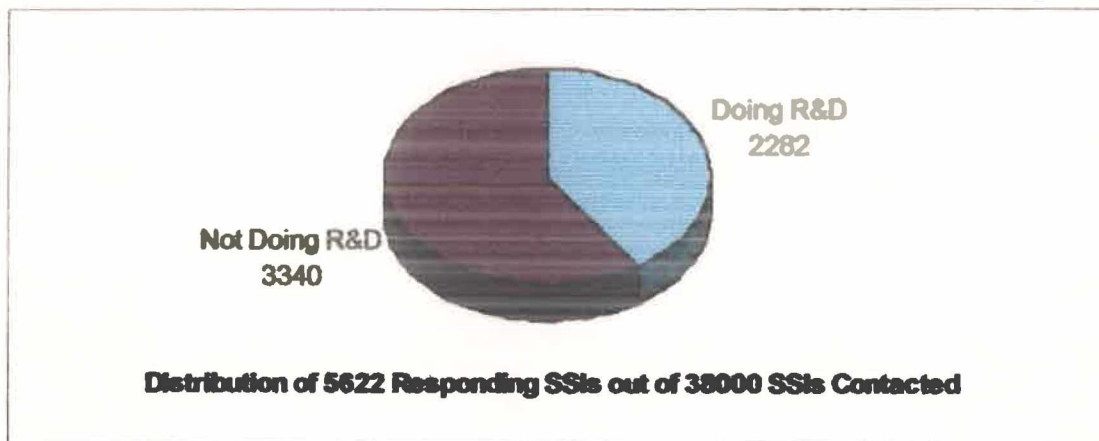
SSIs with investment in P&M/c \geq Rs.25 Lakhs



SSIs with investment in P&M/c < Rs.25 Lakhs



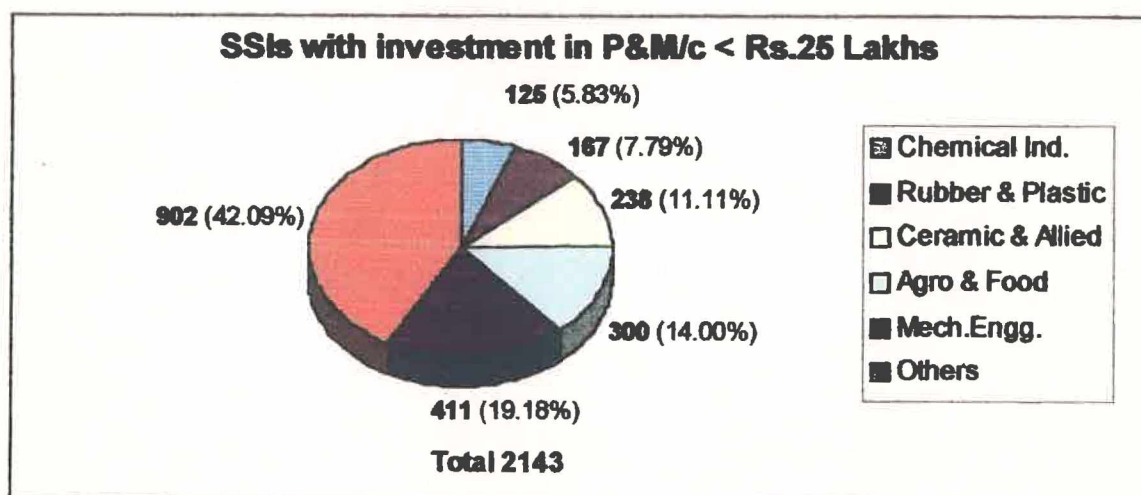
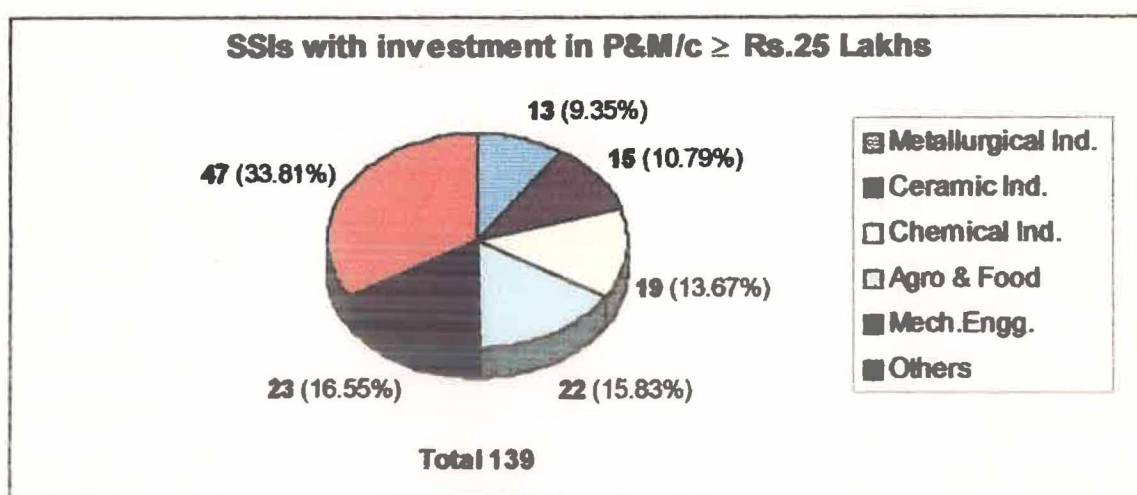
Overall Picture



INDUSTRY GROUPWISE POSITIVE RESPONSES RECEIVED

Table-2 gives industry group wise distribution of the SSIs in both the categories. As may be seen from the Table, in case of SSIs (\geq Rs.25 Lakhs), maximum responses were received in respect of Mechanical Engg. Industries 23 (16.55%) closely followed by Agro & Food 22 (15.83%), Chemical Industries & Allied Products 19 (13.67%), Ceramic industries & Allied Products 15 (10.79%) and Metallurgical Industries & Allied Products 13 (9.35%).

In case of SSIs ($<$ Rs.25 Lakhs), maximum No of SSIs belong to Mechanical Engg. Industries 411 (19.18%), followed by Agro & Food Industries 300 (14.00%), Ceramic & Allied Products 238 (11.11%), Rubber & Plastics 167 (7.79%), and Chemical Industries & Allied Products 125 (5.83%).



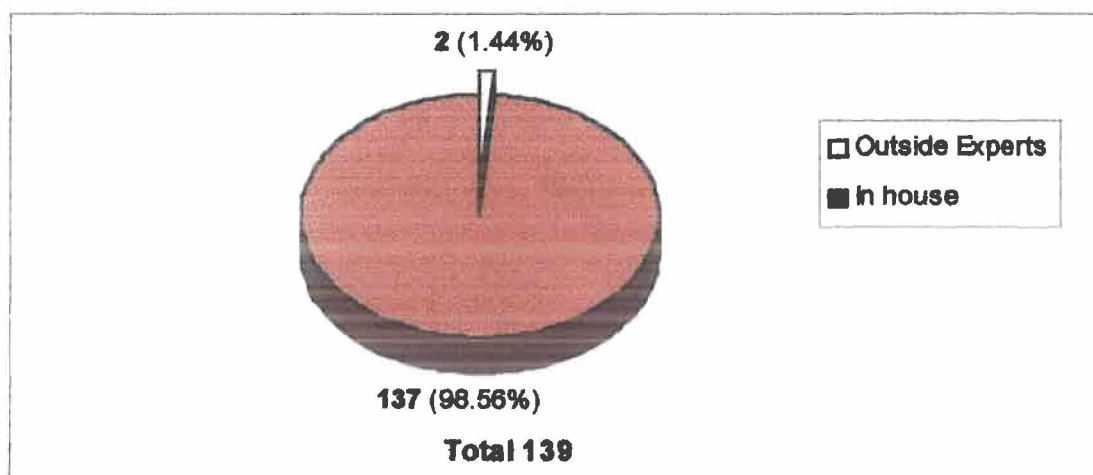
INDUSTRY GROUPWISE R&D UNITS WITH INVESTMENT IN PLANT & MACHINERY ≥ Rs.25 LAKHS

Table-3A contains the data received in response to question 15,16 and 17 of the questionnaire, in connection with, whether R&D units are in house or the R&D activities carried out with the help of out side experts.

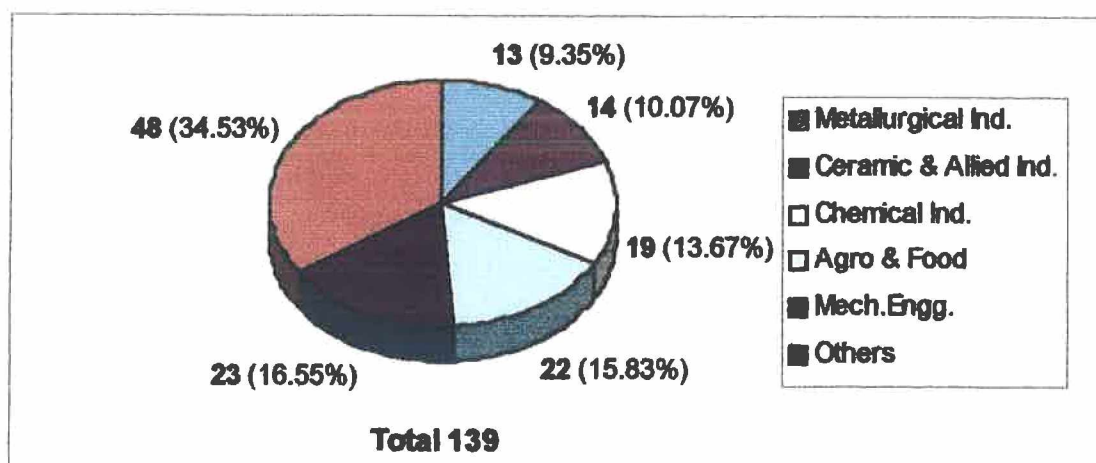
It is interesting to note that most of the R&D units 137 (98.56%) are in house and are located inside the SSI units premises.

The table also indicates that the role of out side experts in R&D is negligible. This may be due to the fact that the respondents have not given the information regarding association with outside experts as a business policy.

Regarding Industry Groupwise distribution, Mechanical Engg. Industries 23 (16.55%) lead the show closely followed by Agro & Food Industries 22 (15.83%), Chemical Industries & Allied Products 19 (13.67%) Ceramic Industries & Allied Products 14 (10.07%) and Metallurgical Industries & Allied Products 13 (9.35%)



Distribution of R&D Units

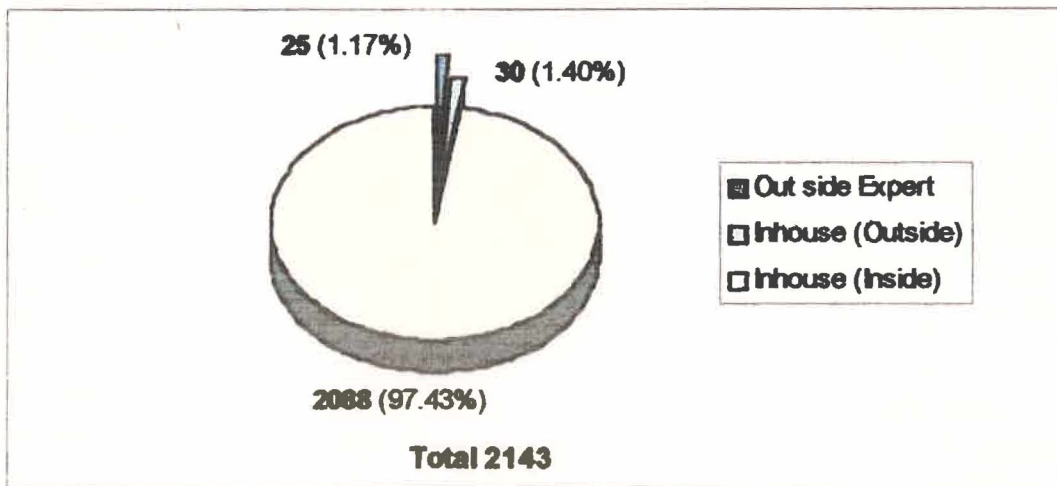


Industry Groupwise Distribution of R&D Units

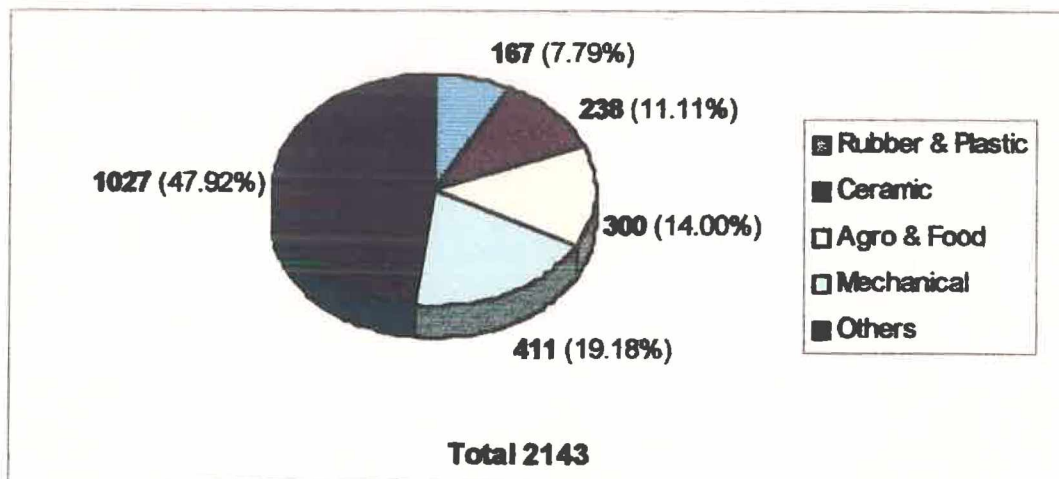
INDUSTRY GROUPWISE R&D UNITS WITH INVESTMENT IN PLANT & MACHINERY <Rs. 25 LAKHS

As shown in Table 3B, out of the total 2143 SSI units doing R&D 2088 (97.43%) are inhouse and situated inside the SSI units premises, 30 (1.40%) though in house but are situated outside the SSI units premises. Only 25 (1.17%) SSIs carried out R&D activities with the help of outside experts.

The industry groupwise distribution of R&D units is also similar to Table 3A i.e. maximum in-house R&D units belong to Mechanical Engineering Industries 411 (19.18%), followed by Agro & Food Industries 300 (14.0%), Ceramic Industries and Allied Products 238 (11.11%).



Distribution of R&D Units

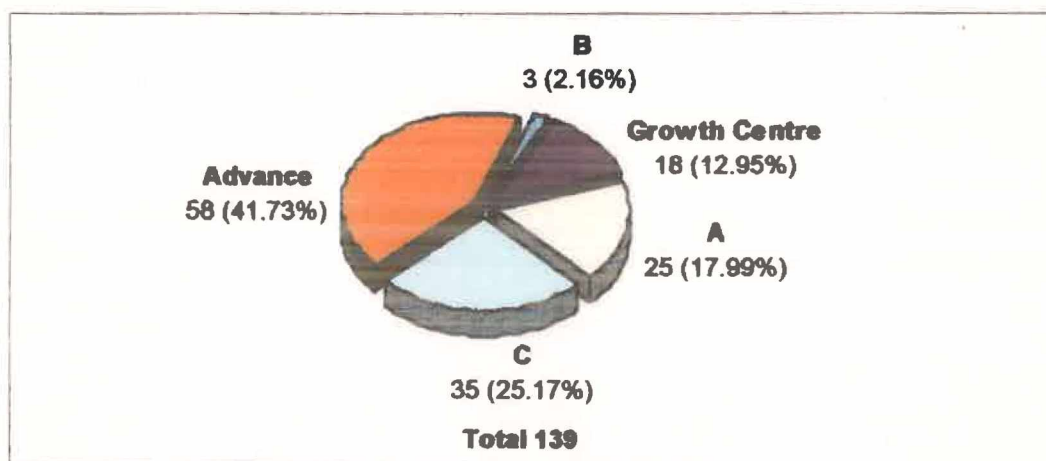


Industry Groupwise Distribution of R&D Units

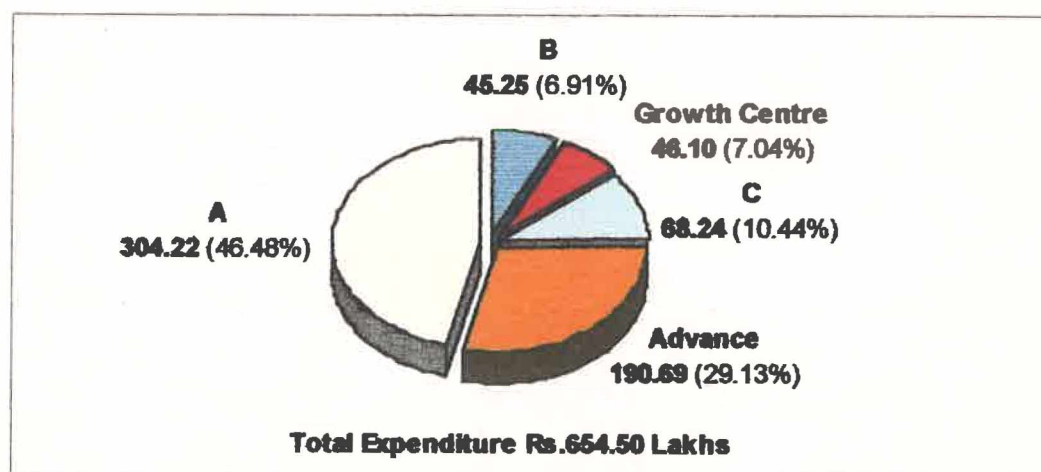
DISTRICTWISE R&D UNITS AND R&D EXPENDITURE WITH INVESTMENT IN PLANT & MACHINERY \geq Rs. 25 LAKHS.

As may be seen from Table 4A, out of the 139 SSI units doing R&D activities maximum 58 (41.73%) are situated in Advanced districts viz. Bhopal, Durg, Gwalior, Indore, Jabalpur and Raipur. Out of these Indore has maximum no. of R&D units 22 (15.82%) followed by Jabalpur with 13 (9.35%). The prevalence of maximum no. of R&D units in advance districts is obvious due to the fact that awareness about R&D activities is expected to be more in advanced districts having higher level of industrialisation as compared to other districts. In category "A" comprising of 11 districts the number of R&D units is 25 (17.99%), where as in category "C" comprising of 24 districts the number of R&D units is only 35 (25.17%) which itself speaks about awareness and level of industrialisation in these districts.

Regarding R&D expenditure, industrial category "A" districts recorded maximum expenditure on R&D as Rs. 304.22 Lakhs (46.48%), followed by Advanced category districts accounting for Rs.190.69 Lakhs (29.13%) of the total expenditure on R&D of Rs. 654.50 Lakhs (Yr.1998-99).



Geographical Distribution of R&D Units (Yr.1998-99)



Geographical Distribution of R&D Expenditure (Yr.1998-99)

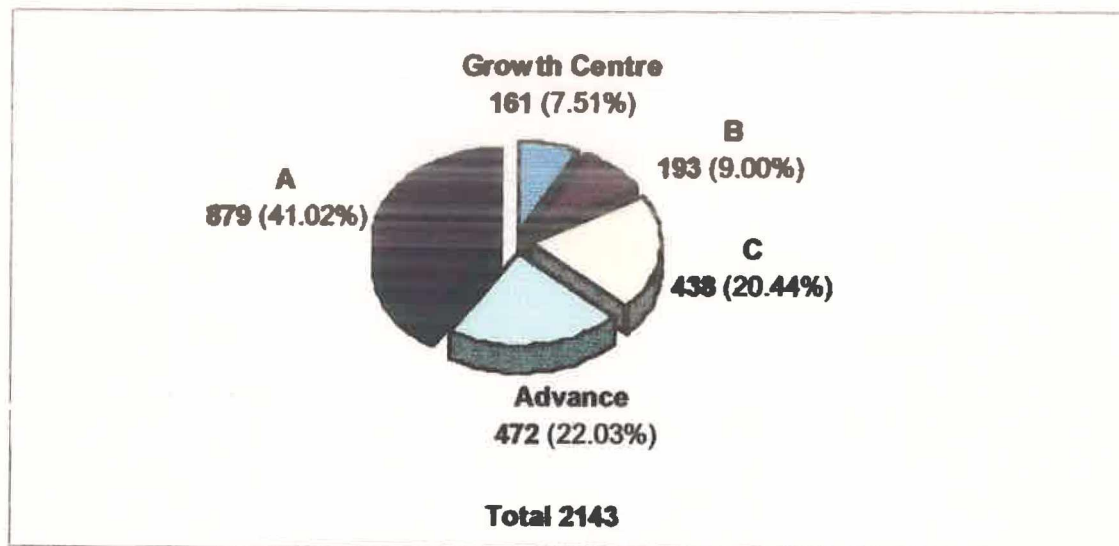
DISTRICTWISE CATEGORYWISE R&D EXPENDITURE FOR SSIs WITH INVESTMENT IN P&M/c \geq Rs.25 LAKHS

Table 4AA gives an abstract information of Table 4A. As may be seen from Table 4AA maximum no. 58 (41.73%) of R&D units are situated in advance districts (viz. Indore, Bhopal, Gwalior, Jabalpur, and Raipur) that account for Rs. 190.69 Lakhs (29.13%) of the total R&D expenditure (Yr.1998-99). Followed by this is industrial category "A" where 25 (17.99%) R&D units account for Rs. 304.22 (46.48%) of the total R&D expenditure (Yr.1998-99).

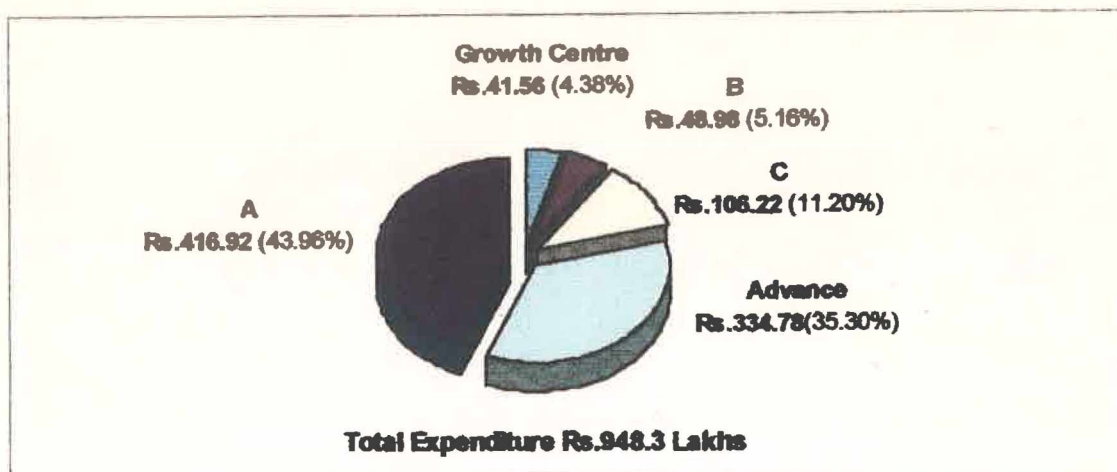
In all, in 45 districts and 3 growth centres, 139 SSI units spent Rs. 654.50 Lakhs on R&D activities. Thus, per SSI unit R&D expenditure in SSIs (P&M/c \geq Rs.25 Lakhs) works out to Rs. 4.70 Lakhs (Yr.1998-99).

DISTRICTWISE NO.OF R&D UNITS AND EXPENDITURE FOR SSIs WITH INVESTMENT IN P&M/c < Rs 25 LAKHS.

As may be seen from Table 4B out of 2143 SSI units doing R&D activities 472 (22.03%) are situated in advance districts viz. Bhopal, Durg, Gwalior, Indore, Jabalpur and Raipur followed by 'A' category districts having highest no. of R&D units as 879 (41.02%). Regarding expenditure on R&D, category 'A' districts account for 43.96% followed by Advance Districts with 35.30% (Year 1998-99).



Geographical distribution of R&D Units



Geographical distribution of R&D Expenditure (Yr.1998-99)

DISTRICTWISE CATEGORYWISE R&D EXPENDITURE WITH INVESTMENT IN P&M/c < Rs. 25 LAKHS

Table 4BB gives an abstract information of Table 4B. As may be seen from the table, contrary to earlier table 4AA, maximum no. 879 (41%) R&D units are in Category "A" followed by Advance Category with 472 (22%). As regarding R&D expenditure (Yr.1998-99) industrial Category "A" accounts for 43.96% of the total expenditure on R&D followed by districts belonging to Advance Category which account for 35.3% of the total expenditure on R&D.

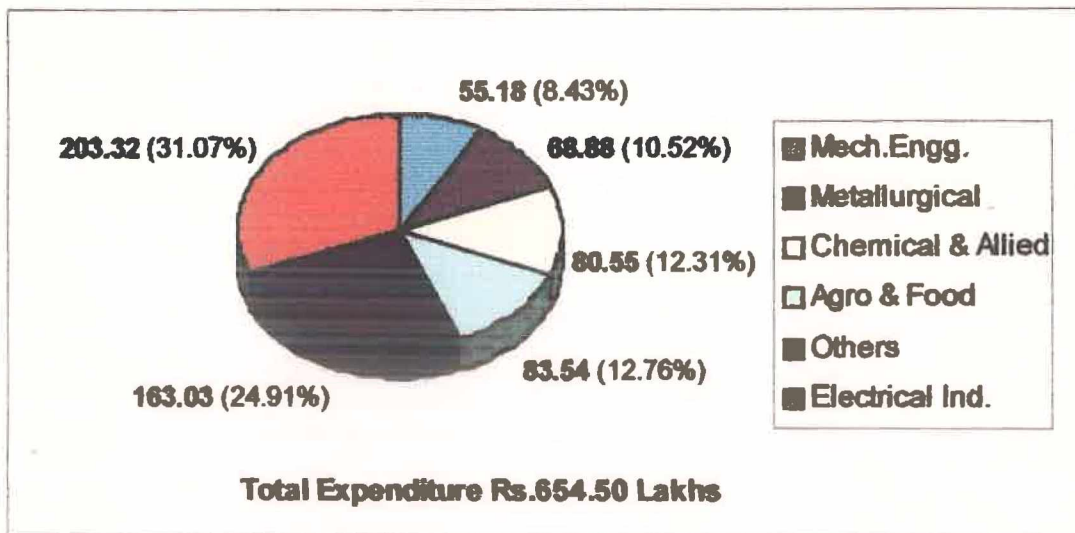
In all, 2143 R&D units spent Rs. 948.3 Lakhs. Thus per R&D unit expenditure on R&D works out to Rs. 0.44 Lakhs.

INDUSTRY GROUPWISE DISTRIBUTION OF R&D UNITS AND EXPENDITURE ON R&D FOR SSIs WITH INVESTMENT IN P&M/c \geq Rs.25 LAKHS.

The information related to industry groupwise distribution of R&D units has already been covered in the write-up under Table 3A

As regarding R&D expenditure, the same was recorded maximum in respect of Electrical Industries as Rs.203.32 Lakhs (31.07%), followed by Agro & Food industries with corresponding fig. Rs.83.54 Lakhs (12.76%) etc. for 1998-99 as shown in pie chart.

In all, 139 R&D units in this category spent Rs 1334.17 Lakhs on R&D during reference period of last three years 1996-97, 97-98 and 98-99.



Industry Groupwise R&D Expenditure (Year 1998-99)

The Successive growth in expenditure on R&D works out as under-

Year	R&D Expenditure (Rs.Lakhs)	Successive Growth
1996-97	285.22	-
1997-98	394.45	38.29%
1998-99	654.50	65.92%

The above table clearly indicates that the awareness about R&D and expenditure on R&D has grown manifold during reference period of three years.

INDUSTRY GROUPWISE EXPENDITURE ON R&D IN SSIs WITH INVESTMENT IN P&M/c < Rs. 25 LAKHS

As may be seen from Table 5B, the R&D Expenditure (For the Yr.1998-99), Mechanical Engineering Industries group records highest expenditure of Rs, 160.77 Lakhs (16.95%) followed by Agro & Food Industries corresponding fig. Rs.116.8 Lakhs (12.32%) etc as shown in Pie chart.

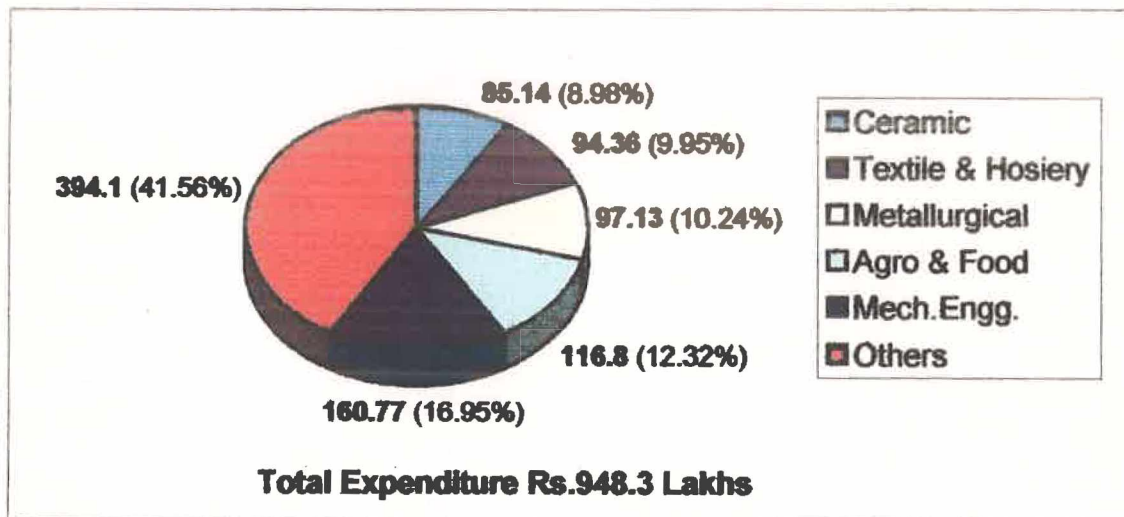
The annual successive growth in expenditure on R&D works out as under.

Year	R&D Expenditure (Rs.Lakhs)	Annual Successive Growth
1996-97	445.58	--
1997-98	604.62	35.67%
1998-99	948.30	56.84%

In all, Rs. 1998.50 Lakhs were spent on R&D activities in all the 29 Industry groups during all the three years in SSIs in this category.

Table 5B reveals that per unit R&D expenditure in the year 1998-99 was highest (Rs.2.10 Lakhs) for Stationary & Allied Products amongst all the three years, followed by Pesticides and Fertilisers where the corresponding figure is Rs.1.92 Lakhs.

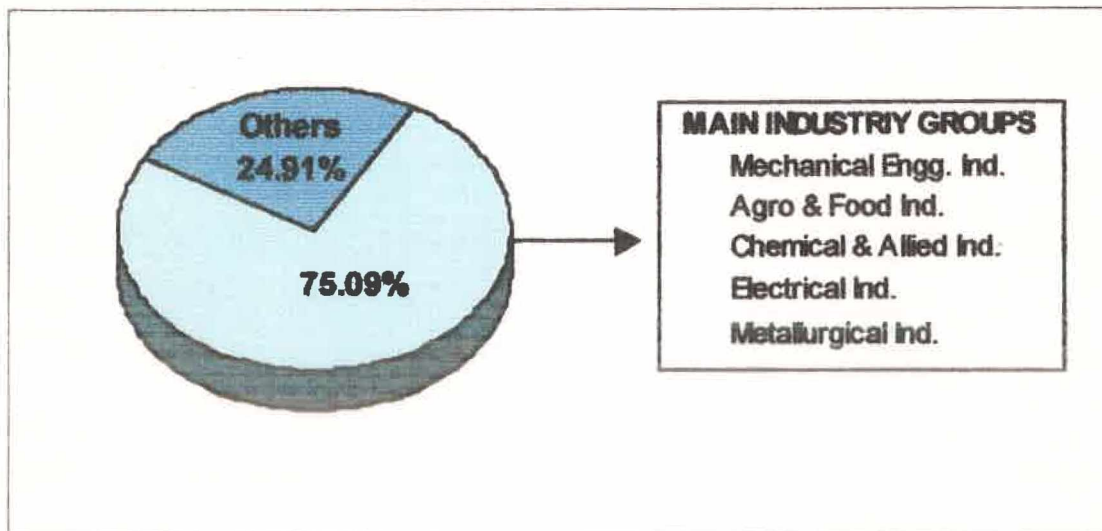
Overall, per R&D unit expenditure on R&D in this Category, worked as Rs.0.44 Lakhs.



Industry Groupwise R&D Expenditure (Year 1998-99)

INDUSTRY GROUPWISE R&D EXPENDITURE BY MAIN INDUSTRY GROUPS WITH INVESTMENT IN P&M/c \geq Rs. 25 LAKHS

Table 6A gives information about five industry groups spending maximum on R&D. As may be seen from this table, Industry Groups viz. Mechanical Engineering Industries, Agro & Food Industries, Chemical Industries & Allied Products, Metallurgical Industries, and Electrical Industries account for an expenditure on R&D of the order of Rs. 491.47 Lakhs (75.09%) in the year 1998-99. In all 83 R&D units (59.7%) of these main industry groups account for an aggregate R&D expenditure works out as Rs. 905.31 Lakhs (67.85%) of the cumulative R&D expenditure for all the 29 groups for all the three reference years.



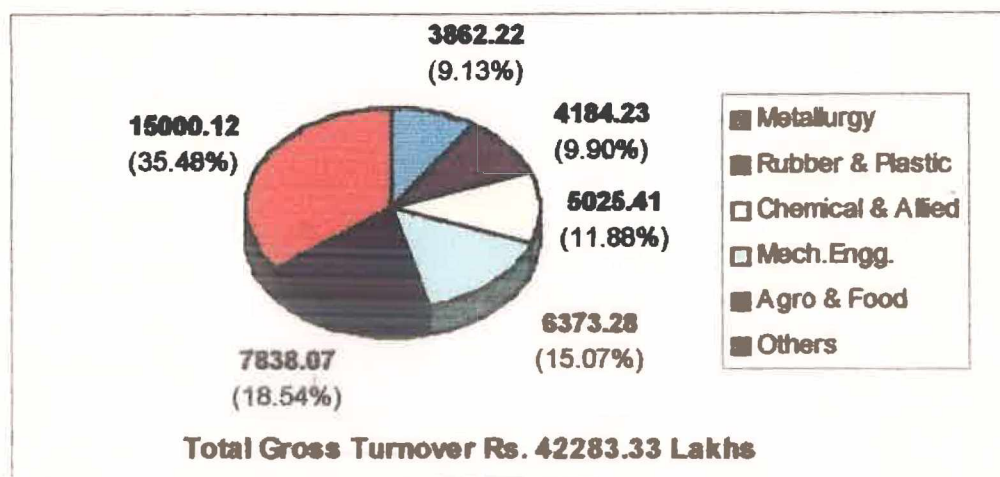
Expenditure on R&D by Main Industry Groups

INDUSTRY GROUPWISE R&D EXPENDITURE BY MAIN INDUSTRY GROUPS IN SSI's WITH INVESTMENT IN P&M/c < Rs. 25 LAKHS.

As may be seen from Table 6B, 981 R&D units (45.77%) in this category, account for a cumulative expenditure on R&D of all the three reference years as Rs.956.18 Lakhs which is 47.84% of the total cumulative expenditure of Rs.1998.50 Lakhs for all the three reference year in this category.

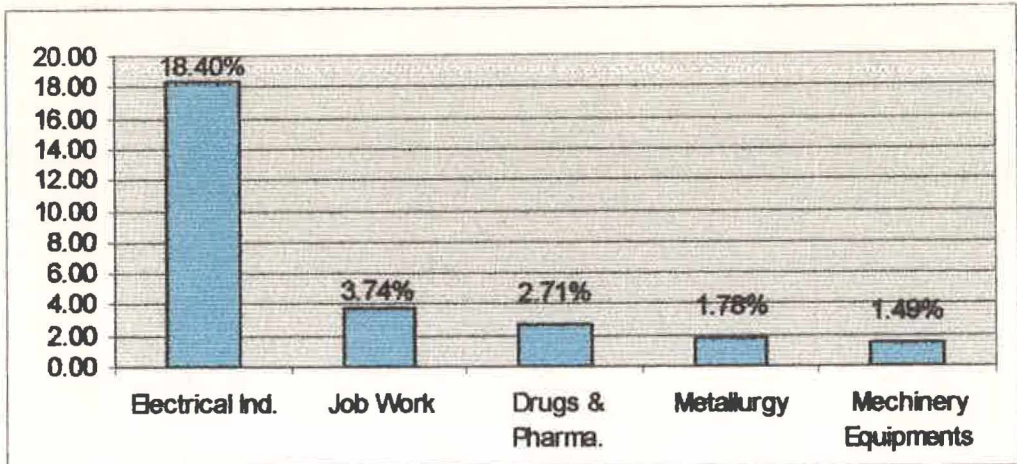
R&D EXPENDITURE VERSUS GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M/c \geq Rs. 25 LAKHS

Table 7A contains Industry groupwise information about R&D expenditure versus annual gross turnover for three reference years. As may be seen from this table, Agro & Food Industries record annual gross turnover of Rs.7838.07 Lakhs (18.53%) for the year 1998-99), which is highest amongst all Industry groups, for all the three years under study, followed by Mechanical Engg. Industries with annual gross turnover of Rs.6373.28 Lakhs (15.07%), Chemical Industries & Allied Product with annual gross turnover of Rs.5025.41 Lakhs (11.88%) and Rubber & Plastic Products with corresponding figure of Rs.4184.23 Lakhs (9.90%).



Industry Groupwise Distribution of Gross Turnover (Year 1998-99)

Regarding R&D expenditure expressed as a percentage of corresponding annual gross turnover, Electrical Industries express highest figure of 18.40 % followed by job work (3.74 %), Drugs & Pharmaceuticals (2.71 %) and Metallurgical Industries & Products (1.78 %). It is interesting to note that in case of Electrical Industries there is a steep rise in Percentage of R&D expenditure (0.5 % to 18.40 %) due to the fact that Electrical Industries as mentioned in Annexure-A spent more on R&D during the Year (1998-99).

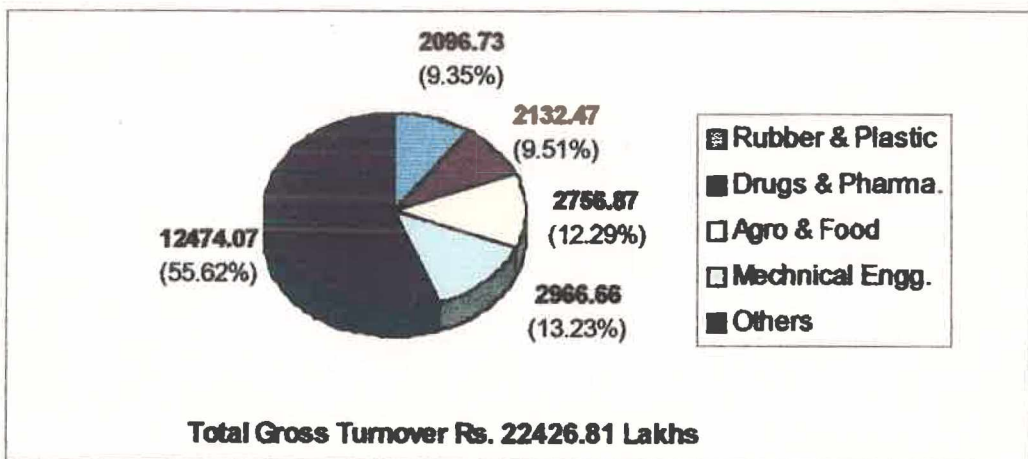


R&D Expenditure versus Gross Turnover (Year 1998-99)

Overall, with a cumulative expenditure on R&D for all the three years as Rs.1334.17 Lakhs and the corresponding cumulative gross turnover of Rs.93839.06 Lakhs, the average R&D expenditure versus gross turnover works out as 1.42%.

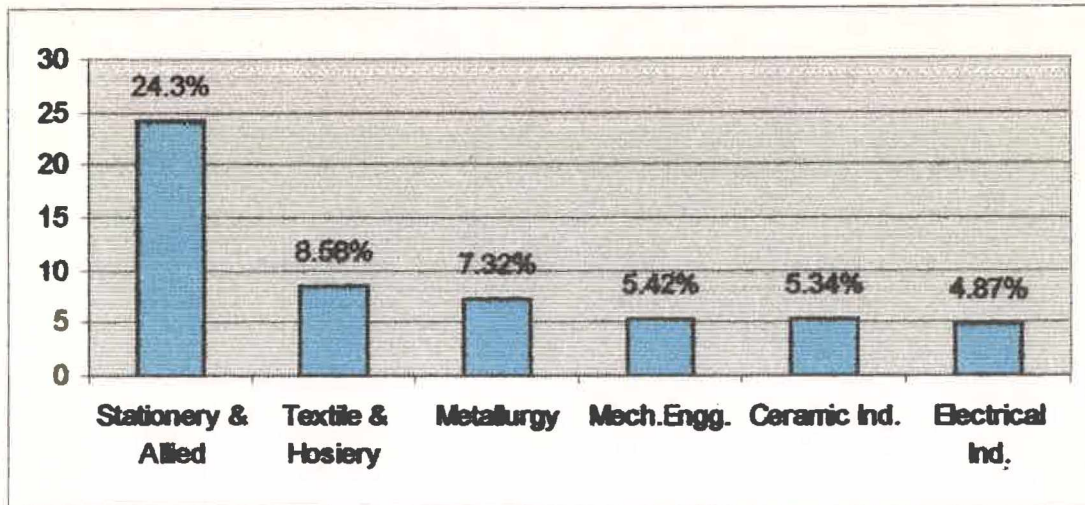
R&D EXPENDITURE VERSUS GROSS TURNOVER IN SSIs WITH INVESTMENT IN P&M/c < Rs. 25 LAKHS

As may be seen from Table 7B highest gross turnover is recorded for Mechanical Engg. Industries as Rs.2966.66 Lakhs (13.23 %) followed by Agro & Food with Rs.2756.87 Lakhs (12.29 %), Drugs & Pharmaceuticals with Rs.2132.47 Lakhs (9.51%) and Rubber & Plastic with Rs.2096.73 Lakhs (9.35%).



Industry Group-wise Distribution of Gross Turnover (Year 1998-99)

As regarding R&D expenditure versus gross turnover, the same was recorded highest (24.30 %) for Stationery & Allied Products followed by Metallurgical Industries & Products (7.32 %), Mechanical Engg. Industries (5.42%), Ceramic Industries & Allied Products (5.34 %), Electrical Industries (4.87 %).



R&D Expenditure versus Gross Turnover (Year 1998-99)

Overall, with a cumulative R&D expenditure of Rs.1998.50 Lakhs and corresponding cumulative gross turnover of Rs.57913.34 Lakhs the average R&D expenditure versus gross turnover works out to 3.45 %.

ANALYSIS OF TYPE OF R&D ACTIVITIES

As per the question no.19 of the semi-structured questionnaire, the SSIs were asked to give information about type of R&D activities carried out, applications made, results and benefits achieved. The information given by respondents about new products, new processes, new technologies, new materials was then categorised into basic research, applied research and experimental development on the basis of UNESCO definitions about R&D and presented in Table 8.

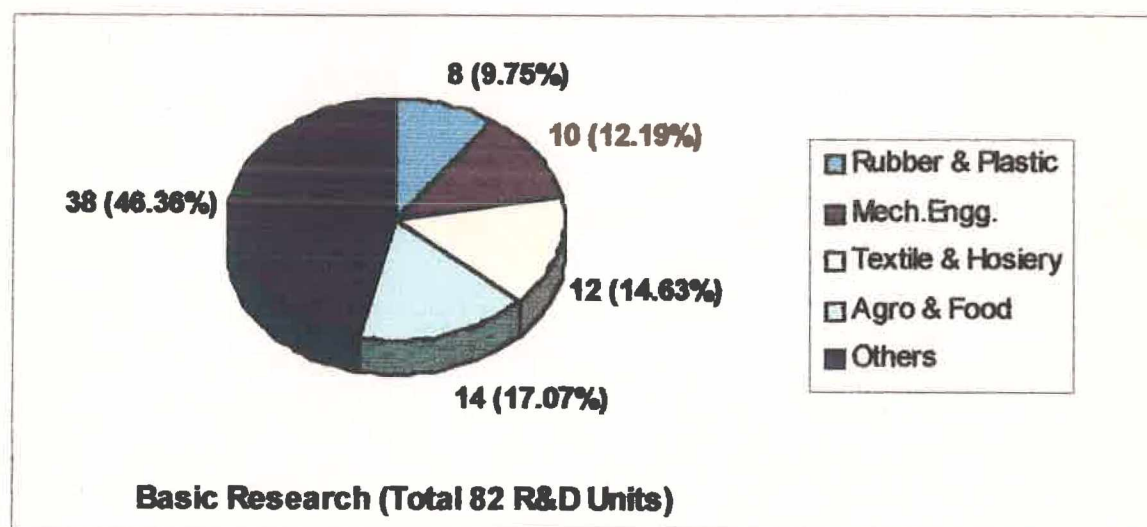
As may be seen from the Table 8 Agro & Food Industries rank on the top amongst all the 29 industry groups for basic research (with 14 R&D units) and applied research (with 45 R&D units). Mechanical Engineering Industries are at first place for Experimental Development (422 R&D units), followed by Agro & Food (263 R&D units) and Ceramic Industries (218 R&D units).

The other industry groups, where basic research activities recorded were viz. Textile, Hosiery & Allied Products (12 R&D units), Mechanical Engineering Industries (10 R&D units), Rubber & Plastic Products (8 R&D units) etc.

Apart from Agro & Food Industries applied research was also carried out by Rubber & Plastic Products (32 R&D units), Ceramic Industries (30 R&D units), Chemical Industries & Allied Products (29 R&D units) etc.

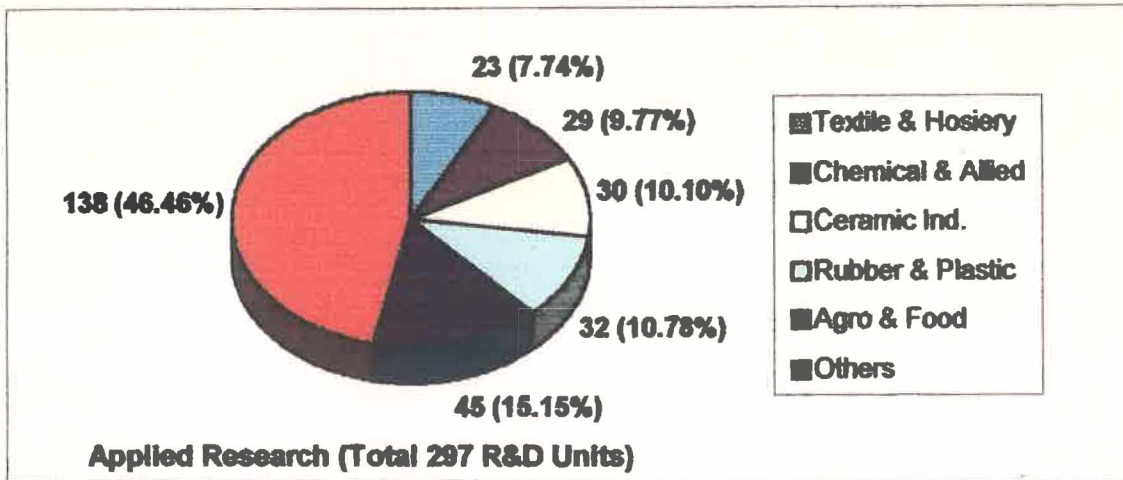
Overall position for all the 2282 SSIs for 29 industry groups emerges as under-

Type of R&D Activities	No.of R&D units
Basic Research	82 (3.59%)
Applied Research	297 (13.01%)
Experimental Development	1903 (83.40%)

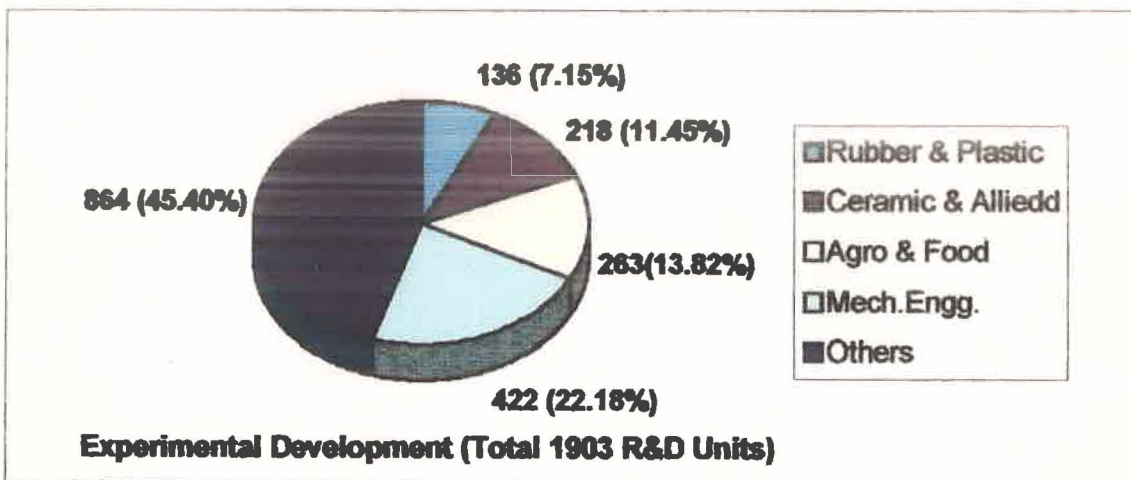


Industry Groupwise R&D Distribution

(In Basic Research, no response could be received for 15 industry groups viz. Cottage Industries, Electrical Industries, Energy & Environment, Glass Industries & Allied products, Job work, Leather, Leather Goods & Allied Products etc)

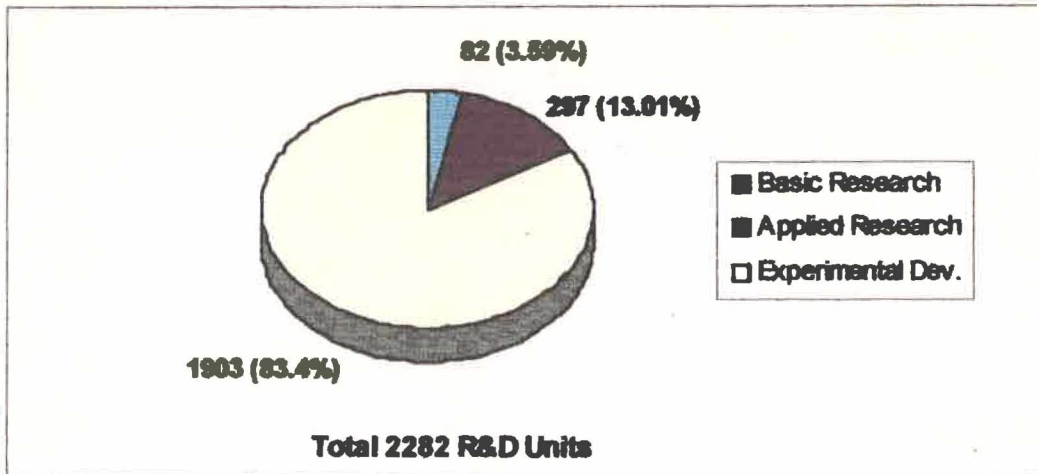


Industry Groupwise R&D Distribution



Industry Groupwise R&D Distribution

(In Applied Research, no response could be received for industry groups viz. Cottage Industries, Energy & Environment, Service Industries, Sports Goods & Allied Products and Telecommunication & Allied Activities.)

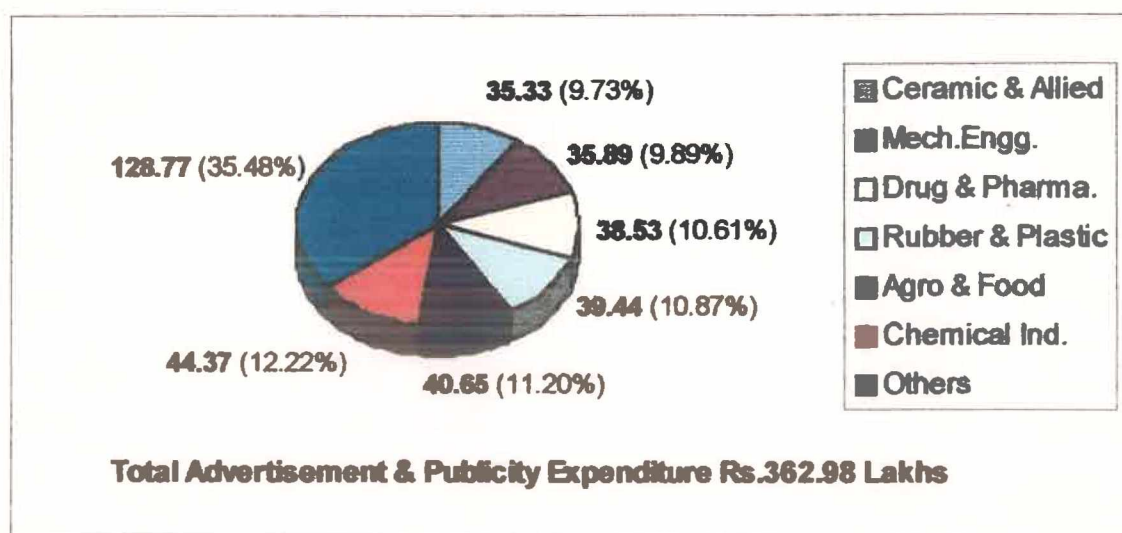


Type of R&D Activities

ADVERTISEMENT & PUBLICITY EXPENDITURE VERSUS GROSS TURNOVER FOR SSI's WITH INVESTMENT IN P&M/c ≥ Rs.25 LAKHS

Table 9A gives industry groupwise information about advertising expenditure compared with corresponding annual gross turnover. If the figures for the year 1998-99 are looked into, it may be seen from the Table 9A that Chemical Industries & Allied Products record highest expenditure of Rs.44.37 Lakhs (12.22%) on advertising & publicity closely followed by Agro & Food with Rs.40.65 Lakhs (11.20%), Rubber & Plastic Rs.39.44 Lakhs (10.87%), Drugs & Pharmaceuticals Rs.38.53 Lakhs (10.61%), Mechanical Engg. Industries Rs.35.89 Lakhs (9.89%) and Ceramic Industries & Allied Products Rs.35.33 Lakhs (9.73%).

The figures in brackets indicate percentage to corresponding years total expenditure.



Industry Groupwise Advertisement & Publicity Expenditure (Year 1998-99)

The successive growth in the advertising & Publicity expenditure has been worked out as under -

Years	Advertisement & Publicity Expenditure (Rs.Lakhs)	Successive Growth
1996-97	187.01	-
1997-98	277.19	48.22%
1998-99	362.98	30.94%

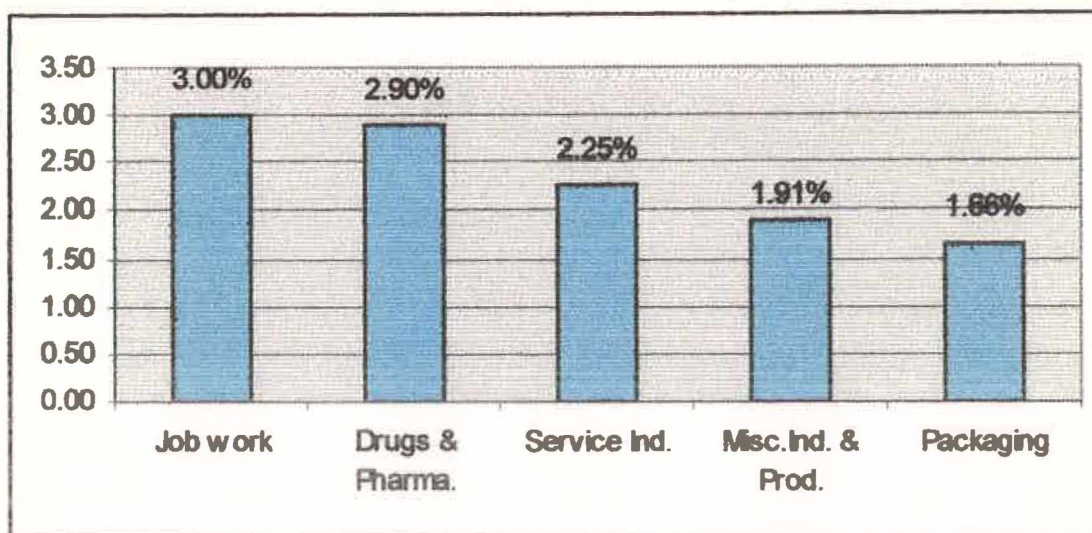
The successive growth in expenditure on advertisement and publicity has a downward trend in 1998-99 probably due to increasing impact of liberalised fiscal policies.

When compared with gross turnover, the advertising expenditure for some of the leading industry groups worked out as Job Work (3.00%), closely followed by Drugs & Pharmaceuticals (2.90%), Service Industry (2.25%).

When compared with the advertising expenditure of Multi National Companies, this percentage is abnormally low and speaks about the significance of SSI Sector in meeting out common man's day to day need, if supported adequately.

However this is also a caution note to the SSI sector to review its Marketing Policies in reference to WTO implications

Overall, SSIs in this Category spent only 0.88% of their gross turnover on advertising & publicity.



Advertisement & Publicity Expenditure v/s Gross Turnover (Year 1998-99)

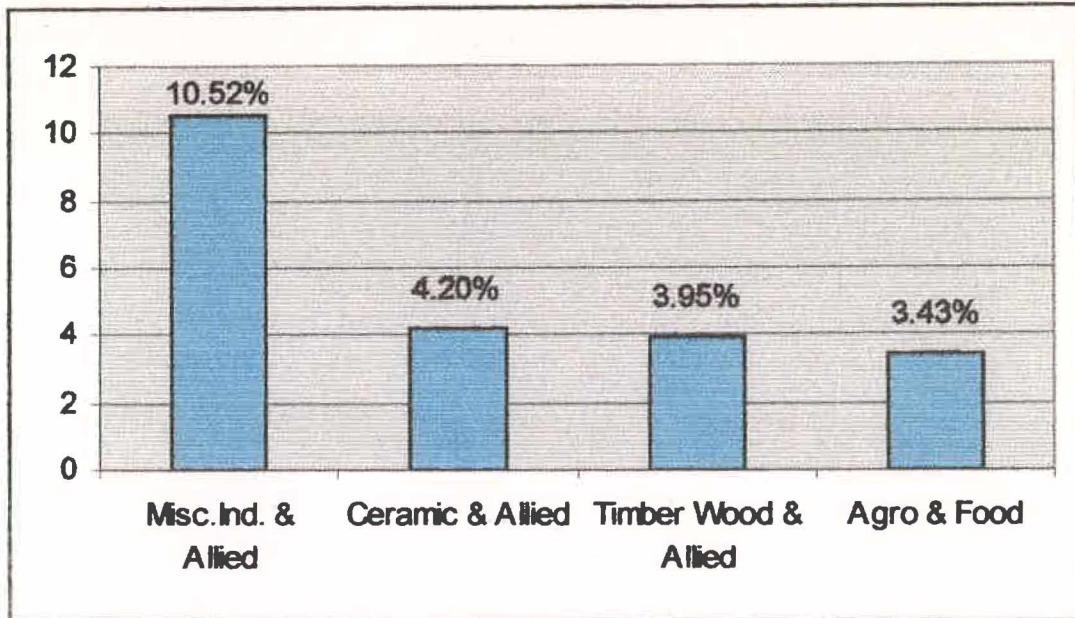
ADVERTISING & PUBLICITY EXPENDITURE VERSUS GROSS TURNOVER IN SSIs WITH INVESTMENT IN P&M/c < Rs.25 LAKHS

Table 9B presents data of industry groupwise expenditure on advertisements and their comparison with corresponding gross turnovers for SSIs with investment in P&M/c < Rs.25 Lakhs.

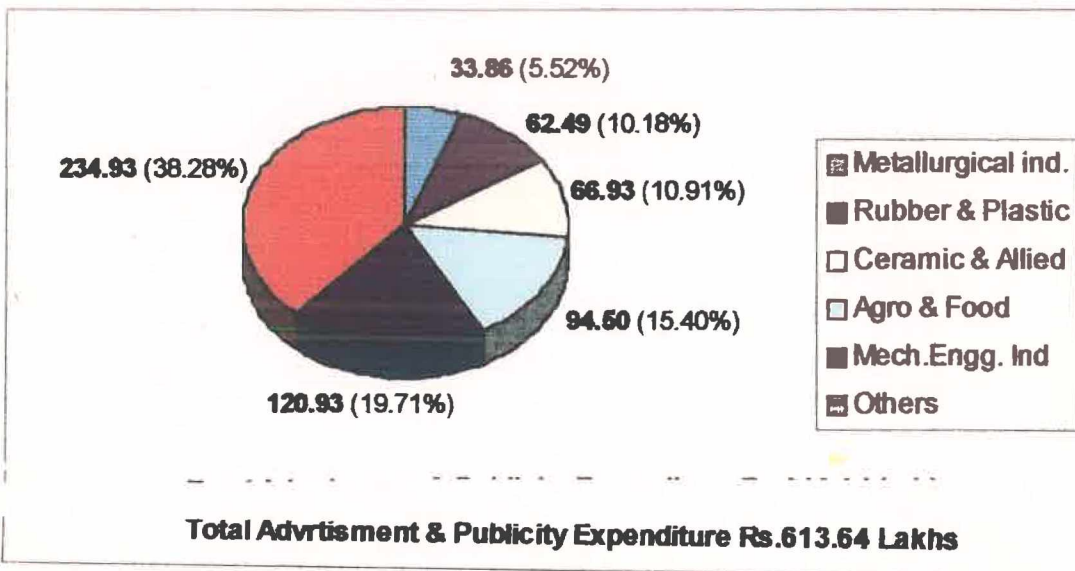
As may be seen from Table 9B, the total expenditure on advertisement & publicity for all the 29 groups is worked out as Rs. 613.64 Lakhs out of which Rs.120.93 Lakhs (19.71%) are contributed by Mechanical Engg. Industries followed by Agro & Food with Rs.94.50 Lakhs (15.40 %), Ceramic Industries & Allied Products Rs.66.93 Lakhs (10.91 %), Rubber & Plastic Products Rs. 62.49 Lakhs (10.18 %), Metallurgical Industries & Products with Rs. 33.86 Lakhs (5.52%). While comparing advertisement & publicity expenditure with gross turnover, the same was found to be highest (10.52%) for miscellaneous industry group followed by Ceramic Industries & Allied Products (4.20 %), Timber, Wood & Allied Products (3.95%), Agro & Food (3.43 %) etc.

Overall, 2143 SSIs in 29 groups in this category on an average spent 2.90 % of their gross turnover on advertisement and publicity.

This is more than the SSIs in higher investment range where the advertisement & publicity expenditure versus gross turnover was recorded as 0.88 %.



Advertising Expenditure v/s Gross Turnover (Year 1998-99)



Total Advtisment & Publicity Expenditure Rs.613.64 Lakhs

Industry Groupwise Advertisement & Publicity Expenditure (Years 1998-99)

DISTRIBUTION OF R&D UNITS AND EXPENDITURE ON ADVERTISEMENT & PUBLICITY BY TOTAL EMPLOYMENT SIZE. (FOR BOTH THE INVESTMENTS ≥RS.25 LAKHS AND <RS. 25 LAKHS)

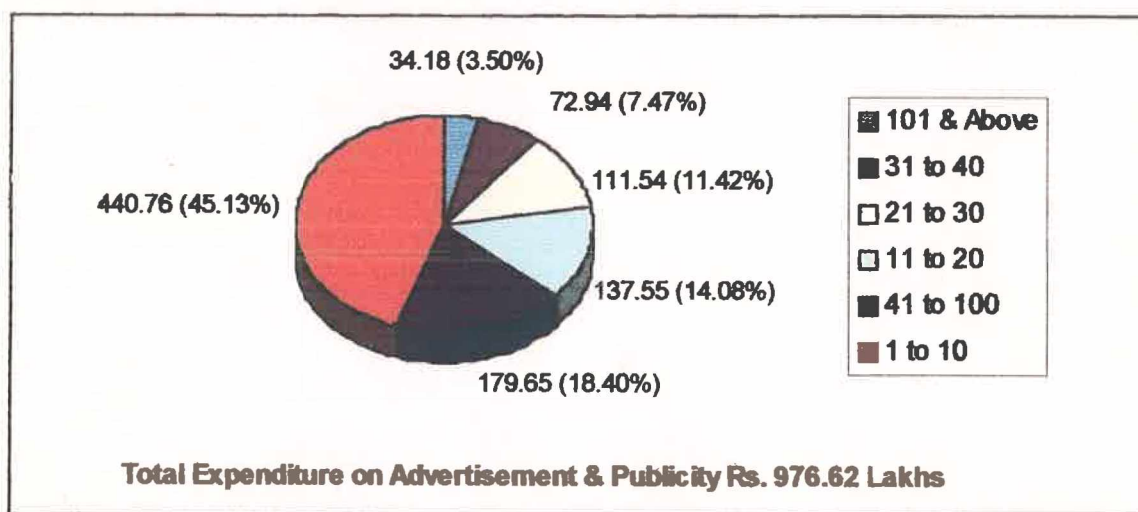
As may be seen from Table 10, SSIs with employment size in the range of 1 to 10 employees spent Rs.440.76 Lakhs (45.13%) of the total expenditure of Rs. 976.62 Lakhs (Year 1998-99) on advertisement & publicity followed by SSIs with employment size in the range of 11 to 20 employees, spending Rs.137.55 Lakhs (14.08%) etc.

It is interesting to note that in most of the SSIs expenditure on advertisement & publicity is growing upwards annually during the reference period.

The per R&D unit expenditure on advertisement & publicity for reference period works out as –

Years	Average Advertisement & Publicity Expenditure (Per R&D Unit wise)
1996-97	Rs.0.24 Lakhs
1997-98	Rs.0.33 Lakhs
1998-99	Rs.0.42 Lakhs

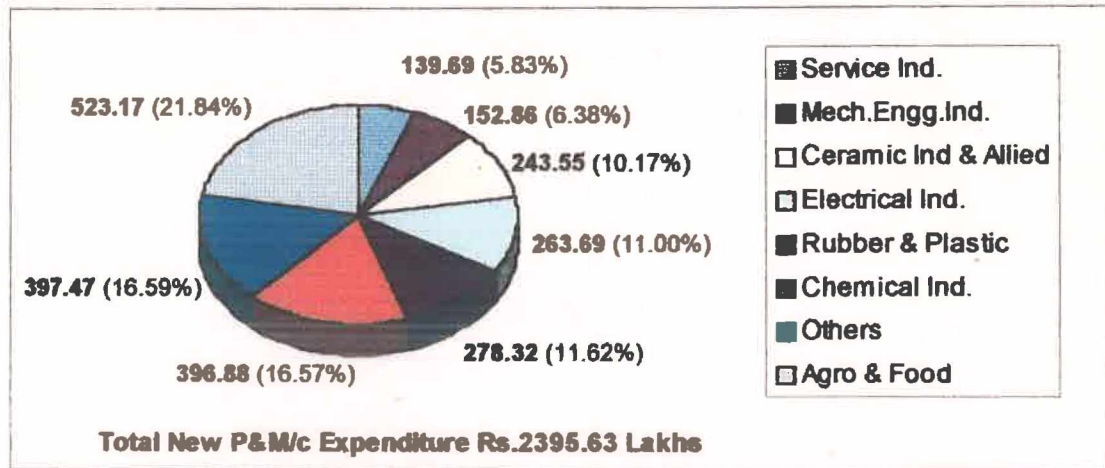
As has also been seen in Table 9A & 9B, the expenditure on advertisement & publicity is abnormally low when compared with products of the multinational companies. This indicates that products manufactured by SSI sector are available to consumers on economical prices. However, in order that these products have a market acceptance especially due to competition with products from Multinational companies, shall have to undertake R&D for innovations.



Distribution of Advertisement & Publicity Expenditure by Total Employment Size (Year 1998-99)

NEW PLANT & MACHINERY EXPENDITURE VERSUS GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M/c ≥ Rs.25 LAKHS

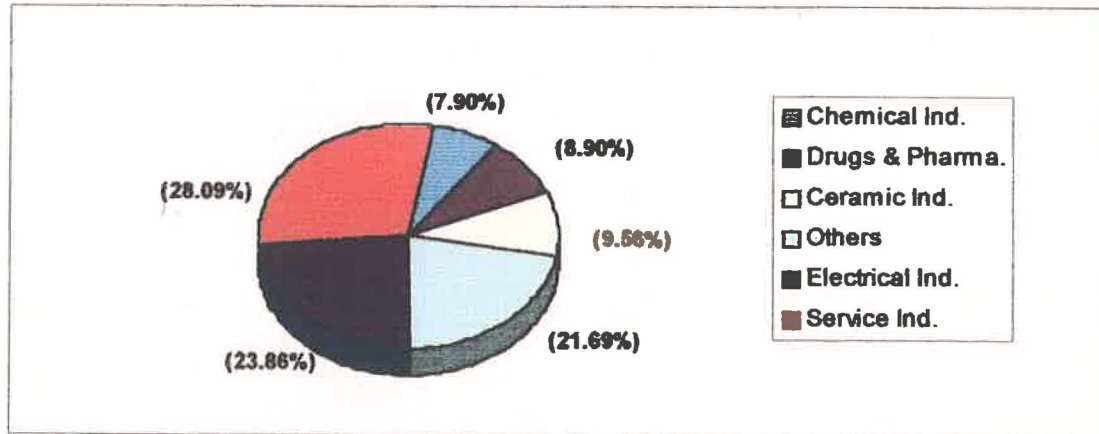
Table 11A is the result of consolidated information of responses to question no. 9 and 11, for all the 29 groups. As may be seen from this table for the year 1998-99, Agro & Food Industries recorded maximum expenditure of Rs.523.17 Lakhs (21.83%) on procurement of new plant & machinery, followed by Chemical Industries & Allied Products Rs.396.88 Lakhs (16.57%), Rubber & Plastics Products with Rs.278.32 Lakhs (11.62%), Electrical Industries with Rs.263.69 Lakhs (11.00%), Ceramic Industries & Allied Products with Rs.243.55 Lakhs (10.17%), Mechanical Engineering Industries with Rs.152.86 Lakhs (6.38%) and Service Industries with corresponding figure of Rs.139.69 Lakhs (5.83%).



Industry Groupwise Expenditure on New P&M/c (Year 1998-99)

Table 11A also contains information about Industry Group wise expenditure on New P&M/c versus Gross Turnover.

As may be seen, Service Industries (28.09%), Electrical Industries (23.86%), Ceramic Industries & Allied Products (9.56%), Drugs Pharmaceutical & Allied Products (8.90%), Chemical Industries & Allied Products (7.90%) were the groups where expenditure on new P&M/c versus gross turnover showed a higher percentage as shown in brackets.



Industry Groupwise Expenditure on New P&M/c v/s Gross Turnover (Yr. 1998-99)

Overall, 29 Industry Groups spent Rs. 5326.89 Lakhs on New Plant & Machinery in three years under study. When this is compared with the corresponding aggregate gross turnover of Rs. 93839.06 Lakhs, the expenditure on new plant & machinery versus gross turnover works out to 5.68%.

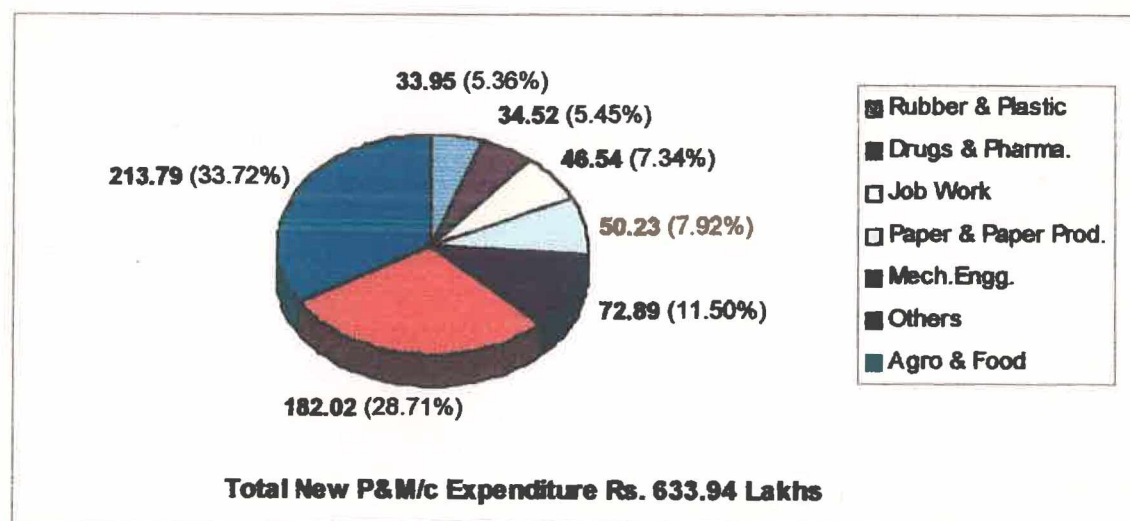
NEW PLANT AND MACHINERY EXPENDIURE VERSUS GROSS TURNOVER IN SSIs WITH INVESTMENT IN P&M/c < Rs. 25 LAKHS.

As may be seen from Table 11B, expenditure on new plant and machinery for the year 1998-99 is Rs. 213.79 Lakhs (33.72%) for Agro & Food which is highest amongst all industry groups followed by Mechanical Engg Rs. 72.89 Lakhs (11.50%), Paper & Paper Products Rs. 50.23 Lakhs (7.92%) Job Work Rs.46.54 Lakhs (7.34%) Drugs Pharmaceuticals & Allied Products Rs. 34.52 Lakhs (5.45%) and Rubber & Plastics Rs.33.95 Lakhs (5.36%) for the year 1998-99.

The column No 9,10 and 11 of the Table 11B gives information about industry groupwise expenditure on new plant and machinery versus gross turnover.

As may be seen in case of Stationery & Allied Products, the expenditure on new P&M/c is highest (26.31%) for 1997-98. Even if we compare year 1998-99 figures Stationery & Allied Products have highest percentage (14.72%) followed by job work (12.60%), Agro & Food (7.75%), Paper & Paper Products (7.49%) and Repairing & Servicing (5.25%).

Overall, SSIs in this category spent Rs. 1662.65 Lakhs (cumulative of all the three years under reference). When this is compared with the cumulative gross turnover, the expenditure on new plant and machinery versus gross turnover works out to 2.87% which is on the lower side as compared to SSIs corresponding in the higher investment range. This indicates that SSIs with higher investment put in more efforts for production facility expansion, product diversification etc.



Industry Groupwise Expenditure on New P&M/c (Year 1998-99)

DISTRIBUTION OF R&D UNITS AND EXPENDITURE ON NEW P&M/c BY TOTAL EMPLOYMENT SIZE

Table 12 contains correlation of information about employment size and R&D units with investment in new P&M/c combinedly for the SSIs in both the categories.

As may be seen from this table except SSIs (R&D Units) having employment sizes 51 to 60, 71 to 80, 81 to 90 and 101 & above, rest all SSIs have annual growth in investment in new P&M/c during reference period.

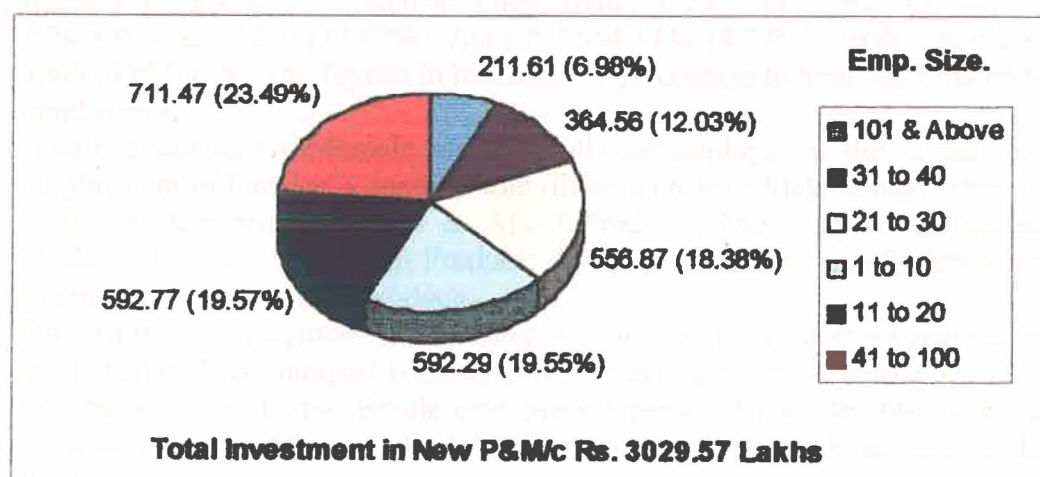
Thus it can be stated that by and that large, R&D activities of these units were associated with investment in new P&M/c.

If looked into per R&D unit investment in new P&M/c it appears that units having higher employment size, were investing more on new P&M/c, as may be seen from information as under -

Total Employment Size	Investment in New P&M/c per R&D Unit (Year 1998-99)
1 - 10	Rs. 0.35 Lakhs
11 - 20	Rs. 1.81 Lakhs
21 - 30	Rs. 5.20 Lakhs
31 - 40	Rs. 5.60 Lakhs
61 - 70	Rs. 28.10 Lakhs

Overall for 2282 units, the yearwise information, reveals facts as under –

Years	Investment New P&M/c per R&D Unit
1996-97	Rs. 0.88 Lakhs
1997-98	Rs. 0.85 Lakhs
1998-99	Rs. 1.32 Lakhs



**Distribution of Expenditure on New P&M/c by Total Employment Size
(Year 1998-99)**

INDUSTRY GROUPWISE CLASSIFICATION OF PERSONNEL EMPLOYED FOR SSIs WITH INVESTMENT IN P&M/c ≥ Rs. 25 LAKHS

Table 13A presents data in response to Q 24 regarding total manpower (Full Time & Part Time and Male – Female ratios).

As may be seen from Table 13A, maximum full time male employment was recorded for Mech. Engg. Industries 864 (18.21%) followed by Agro & Food with 441 males (9.29%) Metallurgical Industries & Allied Products with 429 males (9.04%), Chemical Industries & Allied Products with 371 males (7.82%), Rubber & Plastic with 293 males (6.17%) etc. where as Industry groups where the presence of full time female employment was found considerable were viz. Agro & Food with 152 females (3.20%), Textile, Hosiery & Allied Products with 123 females (2.59%) Chemical Industries & Allied Products with 106 females (2.23%) Metallurgical Industries & Allied Products with 92 females (1.94%) Ceramic Industries & Allied Products with 86 females (1.81%) and Rubber & Plastics Products with 77 females (1.62%). Full time (as well as part time) female employment was completely absent for Industry groups viz. Jobwork, Packaging Industries, Repairing & Servicing, Service Industries and Miscellaneous Industries & Products, in this category. The figures in brackets indicate percentage to total full time male and female employment.

Overall, male-female ratio for full time employment is worked out as 4.3 while male-female ratio for part time employment is worked out as 2.6.

This indicates that the prevalence of females was more in part time employment.

This is due to fact that traditional Indian women prefer part time employment after finishing daily household duties.

INDUSTRY GROUPWISE CLASSIFICATION OF PERSONNEL EMPLOYED FOR SSIs WITH INVESTMENT IN P&M/c < Rs 25 LAKHS

As may be seen from Table 13B, maximum full time male employment was due to industry groups viz. Mechanical Engg. Industry 2359 (13.49%), Ceramic Industry & Allied Products 2260 (12.92%), Agro & Food 1446 (8.27%), Rubber & Plastic Products 1060 (6.06%) etc. The figures in brackets are percentage to total full time male & female employment.

If looked into the male-female ratios for full time employment, the industry groups where employment of females is considerable (those with least Male-female ratios) are Cottage Industries, Ceramic Industries & Allied Products, Metallurgical Industries & Allied Products, Hospital & Medical Products & Equipment, Pesticides & Fertilizers, Drugs & Pharmaceuticals & Allied products.

For part time employment, in this category, the only group where female employment is more than male counterpart is Cottage Industries (male-female ratio 0.65). Other Industry Groups where part time female employment recorded considerable were Pesticides & Fertilizers, Glass Industries & Allied Products and Drugs, Pharmaceuticals & Allied Products.

Overall, full time male-female ratio worked out as 3.47 while Part time male-female ratio works out as 4.49 as shown in Table 13B.

INDUSTRY GROUPWISE CLASSIFICATION OF S&T PERSONNEL EMPLOYED ON R&D ACTIVITIES IN SSIs WITH INVESTMENT IN P&M/c ≥ Rs.25 LAKHS

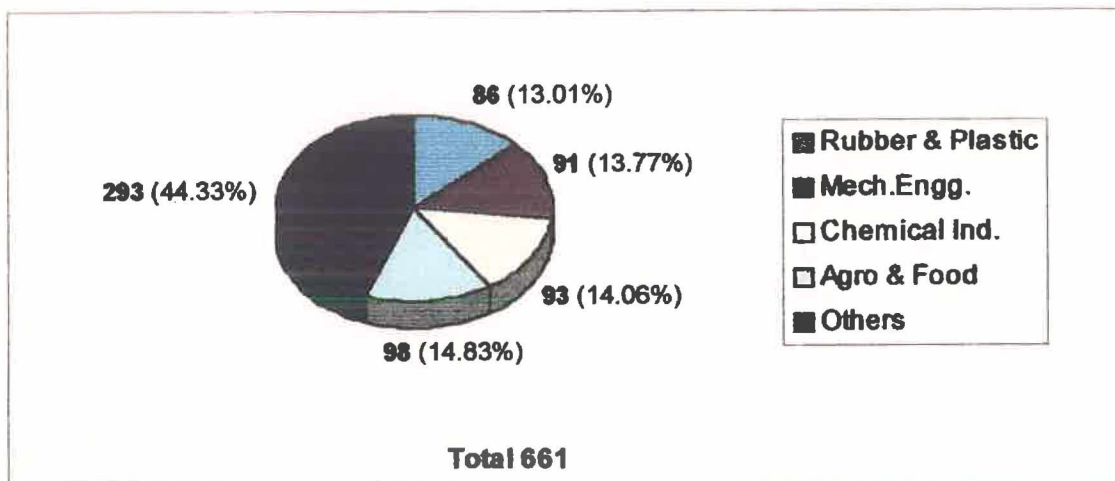
Table 14A gives information regarding full time and part time S&T Personnel engaged in R&D activities.

As may be seen from this table, maximum full time S&T Personnel engaged in R&D activities were the Industry Groups viz. Agro & Food 98 (14.83%) Chemical Industries & Allied Products 93 (14.06%), Mechanical Engg. Industries 91 (13.77%), Rubber & Plastic 86 (13.01%) etc.

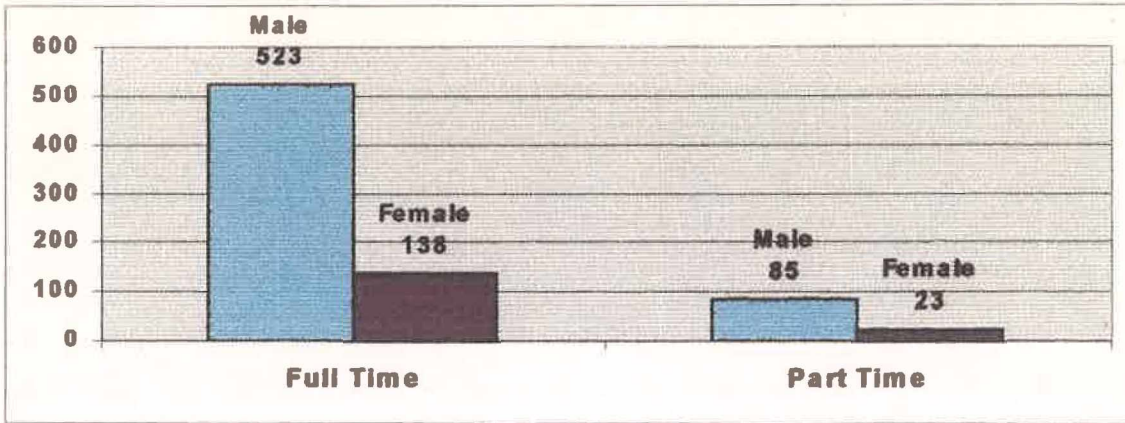
Overall, 661 S&T Personnel (523 males and 138 females) were engaged in full time employment with a male-female ratio of 3.8. Where as in the case of part time employment, the total S&T employment worked out to 108 (85 Males & 23 females) a with male-female ratio of 3.7.

The S&T manpower compared with the total man power works out as under –

Total Manpower	S&T Man power	% S&T Manpower
Full Time 4743	661	13.93
Part Time 654	108	16.51



Industry Groupwise Full Time S&T (Male-Female) Employment

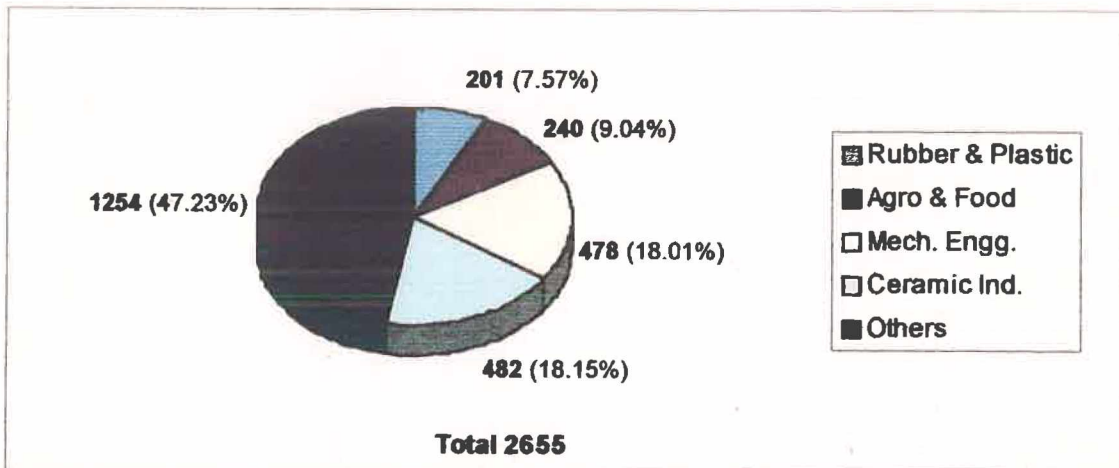


S&T Males-Females on R&D

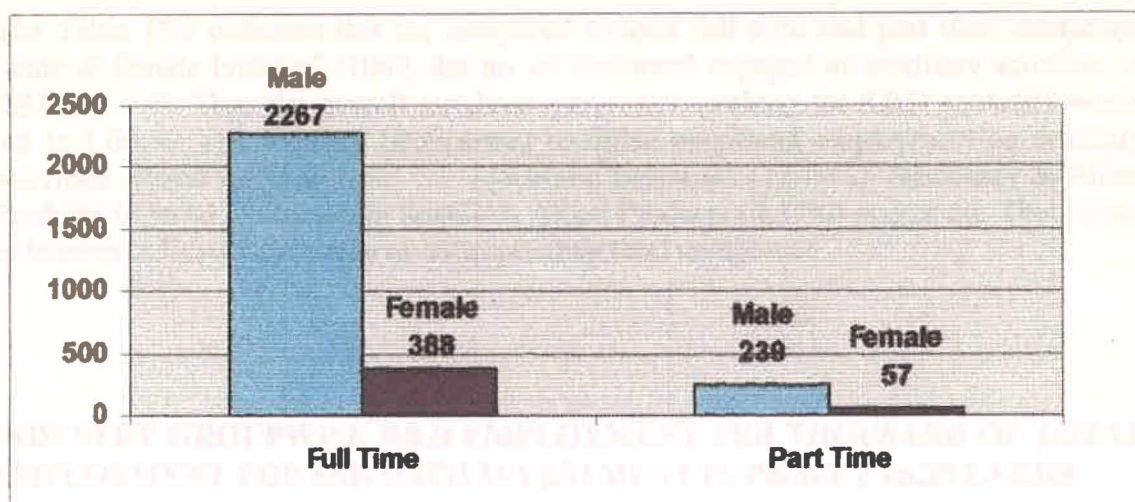
Overall male-female ratio for full time and part time employment works out as 3.8 and 3.7 respectively in this category.

INDUSTRY GROUPWISE CLASSIFICATION OF S&T PERSONNEL EMPLOYED ON R&D ACTIVITIES FOR SSIs WITH INVESTMENT IN P&M/c < Rs.25 LAKHS

As may be seen from Table 14B maximum full time S&T personnel engaged in R&D activities come under industry groups viz. Ceramic Industry & Allied Products 482 (18.15%) followed by Mechanical Engineering Industries 478 (18.01%), Agro & Food 240 (9.04%), Rubber & Plastic Ind. 201 (7.57%) etc.



Industry Groupwise Full Time S&T Manpower (Male-Female) Employed on R&D



S&T Male-Female engaged on R&D

Overall male-female ratio for full time and part time employment works out as 6.00 and 4.2 respectively in this category.

INDUSTRY GROUPWISE R&D EMPLOYMENT (OTHER THAN S&T MANPOWER) ON AUXILIARY ACTIVITIES FOR SSIs WITH INVESTMENT IN P&M/c \geq Rs.25 LAKHS

Table 15A presents data related to Q.24 column II of the questionnaire compared with total full time & part time employment (Male+Female)

As may be seen from the table highest manpower on auxiliary activities related to R&D was recorded for Mechanical Engg. Industries (50), followed by Agro & Food (32) Metallurgical Industries & Allied Products (28) Rubber & Plastic Products (28), Chemical Industries & Allied Products (23)

Where as percentage employment on auxiliary activities related to R&D worked out maximum (9.3%) in case of Miscellaneous Industries & Products followed by Timber, Wood & Allied Products (8.5%), Service Industries (7.5%), Rubber & Plastic (6.5%).

Overall, for all the 29 Industry groups the average figure for employment on auxiliary activities related to R&D worked out as 4.7%

INDUSTRY GROUPWISE, R&D EMPLOYMENT (OTHER THAN S&T EMPLOYMENT) ON AUXILIARY ACTIVITIES IN R&D FOR SSIs WITH INVESTMENT IN P&M/c $<$ Rs.25 LAKHS

Table 15B contains data related to Q 24 column II of the questionnaire for SSIs in this category.

The Table 15B indicates that as, compared to total full time and part time manpower (male & female both) of 21069, the no. of Personnel engaged on auxiliary activities in R&D are 339. Thus the overall auxiliary manpower working for R&D activities works out to 1.60 %. The Industry Groups that recorded maximum employment on auxiliary activities related to R&D were viz. Electronic Industries (12.79%), Stationary & Allied Products (4.96%), Automobile Spares & Allied Products (4.57%) and so on. The figures in bracket indicate percentage to corresponding total manpower.

INDUSTRY GROUPWISE R&D EMPLOYMENT PER THOUSAND OF TOTAL EMPLOYMENT FOR SSIs WITH INVESTMENT IN P&M/c ≥ Rs.25 LAKHS

The information in columns 3,4 and 5 of Table 16A has already appeared in previous tables. However, in Table 16A industry groupwise R&D employment per thousand of total employment has been worked out.

As may be seen from Table 16A, Job Work is at the first place with 800 R&D employees per thousand of the total employment followed by Rubber & Plastic Products (298.6) and Service Industry (298.5). The other prominent groups with R&D manpower on higher side are Timber, Wood & Allied Products (289.1), Miscellaneous Industries (293.3) etc.

Overall, for all the 139 R&D units the R&D employment per thousand of total employment works out as 189.9

INDUSTRY GROUPWISE R&D EMPLOYMENT PER THOUSAND OF TOTAL EMPLOYMENT FOR SSIs WITH INVESTMENT IN P&M/c < Rs 25 LAKHS

The information in Table 16B has been already covered in earlier tables, except the last column of Table 16B where industry groupwise R&D employment per thousand of the total employment has been worked out.

As may be seen from Table 16B highest R&D employment has been worked out for Drugs, Pharmaceuticals & Allied Products (373.10) followed by Electronic Industries (313.95), Energy & Environment (250.00) and Stationery & Allied Products (205.67). The figures in brackets are per thousand to corresponding total employment.

Overall, 2143 R&D units in SSIs in this category have R&D employment of 3290 personnel. Based on this the R&D employment per thousand of total employed worked out as 156.15.

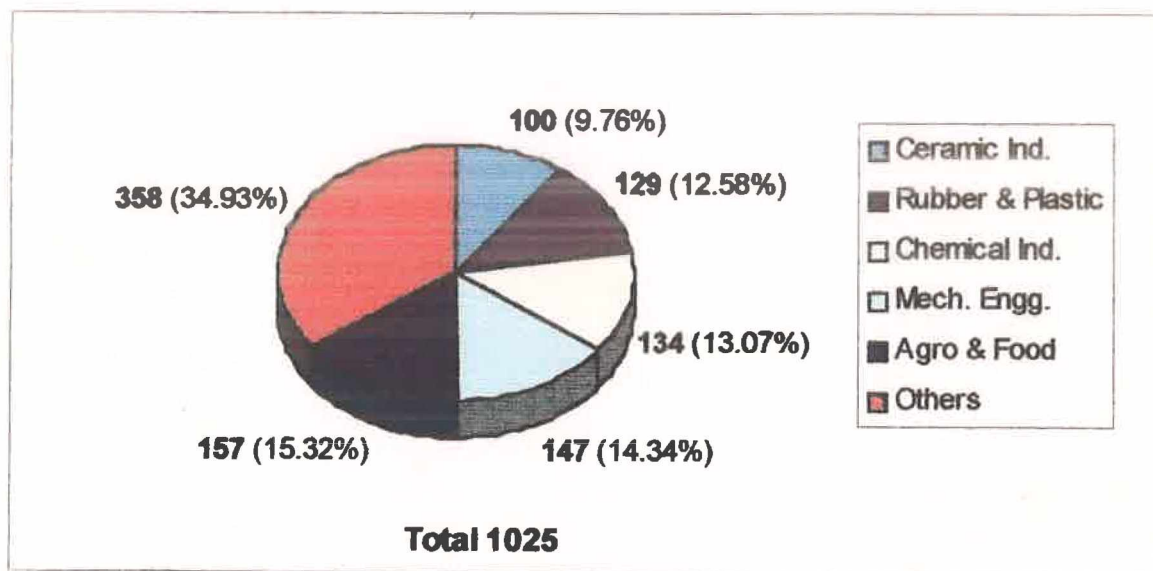
INDUSTRY GROUPWISE, R&D MANPOWERWISE R&D EXPENDITURE FOR SSI's WITH INVESTMENT IN P&M/c ≥ Rs.25 LAKHS

Table 17A gives information about industry groupwise R&D employment (inclusive of full time & part time male & females in S&T and on auxiliary activities related to R&D) compared with expenditure on R&D to arrive at R&D expenditure per unit R&D manpower.

As may be seen from the table, R&D expenditure per unit R&D manpower is highest in case of Electrical Industries (Rs.7.26 Lakhs) followed by Printing & Allied Activities (Rs.1.50 Lakhs) Textile, Hosiery & Allied Products (Rs.1.10 Lakhs) and Drugs, Pharmaceuticals and Allied Products (Rs.0.77 Lakhs) for the year 1998-99.

It is interesting to note that these industry groups as mentioned above are the groups that require experimental development quite often and hence in their case R&D expenditure per unit R&D manpower has come out more than other industry groups.

However, overall average for all the 29 groups in this category works out as Rs.0.43 Lakhs for R&D expenditure per unit manpower, which can not be termed as satisfactory looking to the size of investment in this category. The following pie chart represents industry groupwise R&D employment.



Industry Groupwise Distribution of R&D Employment

INDUSTRY GROUPWISE R&D MANPOWERWISE R&D EXPENDITURE FOR SSI's WITH INVESTMENT IN P&M/c < Rs.25 LAKHS

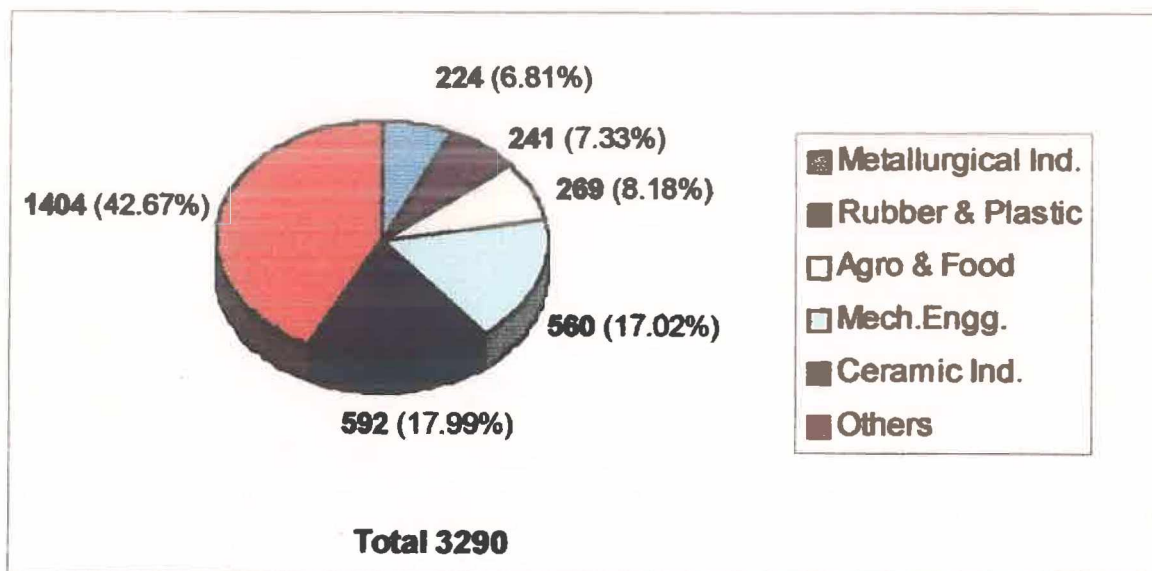
Table 17B gives similar information as in table 17A, but for SSI's with investment in P&M/c < Rs.25 Lakhs.

As may be seen in Table 17B, total R&D-employment (Inclusive of full & part time Male & Female employment for S&T and also for manpower engaged in auxiliary activities related to R&D) works out as 3290. In the last three columns R&D expenditure per unit R&D manpower is given.

The highest R&D expenditure per unit R&D manpower was worked out for Stationery & Allied Products as Rs.1.30 Lakhs followed by Service Industries with Rs 0.64 lakhs, Printing & Allied Activities with Rs.0.53 Lakhs etc.

Overall, average expenditure on R&D per unit R&D manpower works out to Rs .0.20 Lakhs.

As regarding Industry group wise R&D employment the same is the highest in case of ceramic Industries & Allied Products, 592 (17.99%) followed by Mechanical Engg. Industries 560 (17.02 %), Agro & Food 269 (8.18%), Rubber & Plastic Products 241 (7.33%) etc. The percentages in brackets are percentages to total R&D employment.

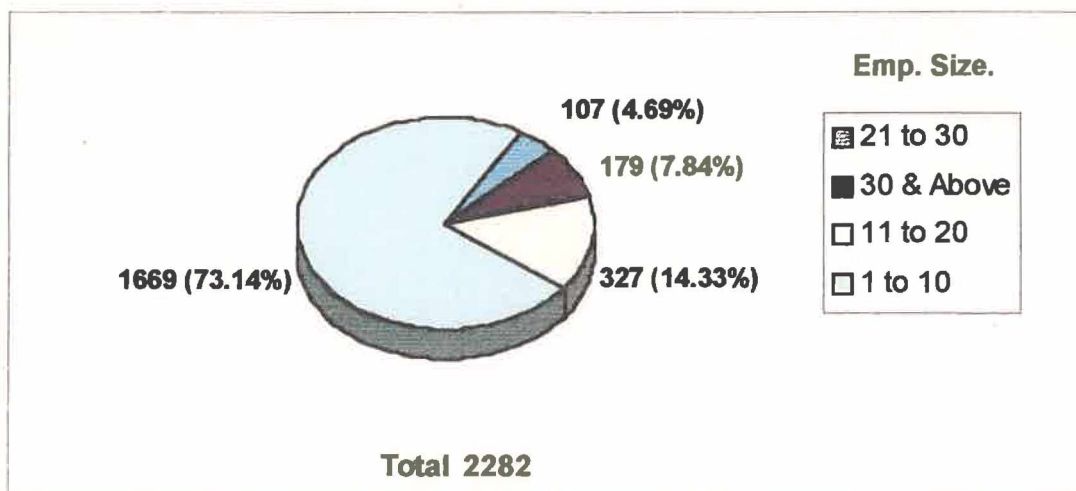


Industry Groupwise Distribution of R&D Employment

DISTRIBUTION OF R&D UNITS AND R&D EXPENDITURE BY TOTAL EMPLOYMENT SIZE (FOR BOTH THE INVESTMENTS \geq Rs.25 LAKHS AND $<$ Rs.25 LAKHS)

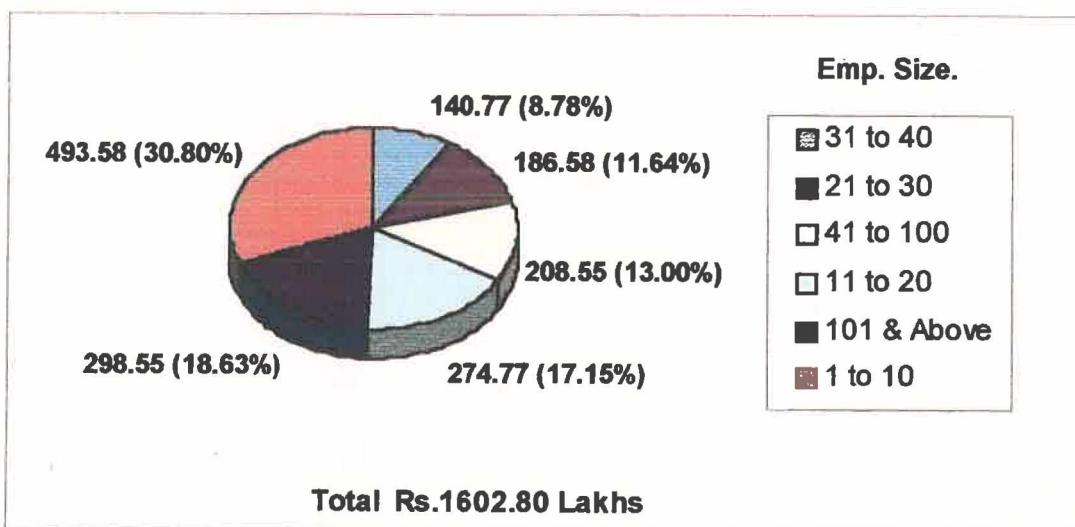
Table 18 gives data on total employment in ranges viz. 1 to 10, 11 to 20, 21 to 30 etc along with distribution of R&D units and R&D expenditure.

As may be seen from the table, out of the total 2282 R&D units, 1669 (73.14%) has total employment size in the range of 1 to 10, followed by 327 (14.33%) R&D units with employment size in the range of 11 to 20 and so on:



Distribution of R&D units based on Total Employment Size

As regarding R&D expenditure, 1669 of the R&D units with total employment size, in the range of 1-10, account for on R&D expenditure of Rs.493.58 Lakhs (30.80%) for the year 1998-99, followed by 327 R&D units with total employment in the range of 11-20 that account for Rs.274.77 Lakhs (17.15%) and so on.



Distribution of R&D Expenditure by Total Employment Size (Year 1998-99)

R&D EXPENDITURE VERSUS GROSS TURNOVER IN R&D UNITS FOR TINY UNITS WITH INVESTMENT IN P&M/c UPTO Rs.4 LAKHS

Table 19 contains industry groupwise data on R&D expenditure versus gross turnover for tiny units with investment in P&M/c upto Rs.4 Lakhs.

As may be seen from the table, 1863 (86.93%) out of 2143 SSIs in the lower investment range of P&M/c < Rs.25 Lakhs are covered in this. R&D expenditure in tiny units also follow the same pattern as that of SSIs in the higher investment range. This may be seen from R&D expenditure for year 1998-99 as per which the main leading Industry Groups in tiny units are Mechanical Engineering Industries with R&D expenditure of Rs.139.93 Lakhs (22.37%) followed by Textile, Hosiery & Allied Products with Rs.84.83 Lakhs (13.56%), Agro & Food with Rs.71.28 Lakhs (11.39%), Ceramic Industries & Allied Products with Rs.64.69 Lakhs (10.34%), Rubber & Plastic Rs.42.23 Lakhs (6.75%) etc as the corresponding figures of R&D expenditure.

The successive growth in gross turnover in said tiny units worked out as under-

Years	Gross Turnover (Rs.Lakhs)	Successive Growth
1996-97	10305.00	-
1997-98	12639.50	22.65%
1998-99	15032.80	18.93%

As regarding R&D expenditure versus gross turnover, Stationery & Allied Products top the list with corresponding figure of (27.5%) followed by Textile, Hosiery & Allied Products (10.1%), Ceramic Industries & Allied Products (6.5%), Electrical Industries (6.4%), Cottage Industries (4.4%), Job Work (4.4%) etc.

INDUSTRY GROUPWISE CLASSIFICATION OF PERSONNEL EMPLOYED FOR TINY OR COTTAGE UNITS WITH INVESTMENT IN P&M/c UPTO Rs. 4 LAKHS

Table 20 gives industry groupwise information on total employment, S&T employment, Personnel employed on auxiliary activities in R&D units alongwith full time and part time male-female ratio for tiny units with investment in P&M/c upto Rs.4 Lakhs.

Following features may be seen from table in the nutshell.

- | | | |
|--------|--|------|
| (i) | Full time male-female ratio for total employment is | 3.65 |
| (ii) | Part time male-female ratio for total employment is | 3.95 |
| (iii) | Full time male-female ratio for S&T manpower on R&D activities is | 6.96 |
| (iv) | Part time male-female ratio for S&T manpower on R&D activities is | 2.95 |
| (v) | Full time male-female ratio for Personnel on auxiliary activities in R&D units is | 6.00 |
| (vi) | Part time male-female ratio for Personnel on auxiliary activities in R&D units is | 2.7 |
| (vii) | In full time as well as part time employment maximum Females were employed in Ceramic Industries & Allied Activities | |
| (viii) | Full time and Part time S&T employment was also recorded highest for Ceramic Industries & Allied Products. | |

RESPONDENTS UNDERSTANDING ABOUT R&D

As per Q. No. 19 of the section II of the questionnaire, when asked about the type of R&D activity carried out and applications made, most of the SSIs responded on the following lines, that reflects their understanding about R&D.

- I. Use of alternative material
- II. Light weight design
- III. New and improved methods
- IV. Use of new equipments
- V. Improved product design
- VI. Use of new technology & improvement in existing one
- VII. Added functional aspects & additional features in the existing product line
- VIII. Higher efficiency or higher recovery at the end point in production.
- IX. Development of new processes

It is interesting to note that all of the activities as above have an aspect of value addition.

RESULTS/BENEFITS OF R&D

Based on the SSI units understanding about R&D, the results/benefits as perceived by the respondents are summarised as under

- I. Achievement of higher production level
- II. Cost reduction
- III. Higher profit
- IV. Better sustainability in market
- V. Stable production
- VI. Shortened production cycle
- VII. Waste minimisation
- VIII. Product diversification

The enclosed ANNEXURE-A highlighting actual R&D activities carried out by the respondents gives a fair idea of respondents understanding of R&D.

SEPARATE ACCOUNTS ON R&D EXPENDITURE

In response to Q. No. 20, almost all the SSIs replied that they do not maintain separate account of R&D expenditure.

REGISTRATION WITH DSIR

None of the respondents were registered with DSIR. Most of them were not aware about DSIR, but were interested to know about its role, incentives available etc.

VIEWS OF THE RESPONDENTS ON MAKING R&D, MORE EFFECTIVE, IN SSI SECTOR

Some thoughts expressed by the respondents for making R&D more effective are mentioned in their own words as under -

- Shortage of quality personnel is major hindrance in R&D work.
- Analysis instruments should be made available with zero import duty and 100% depreciation.
- Libraries and documentation centers are inadequate.
- Financial & infrastructural constraints come in the way of undertaking R&D activities.
- Logistic supports are inadequate.
- R&D infrastructure viz. testing laboratories, libraries, experts should be strengthened and made readily available.
- There is no dissemination of findings of the R&D efforts of the other units or labs and there is likelihood of duplication or repetition of experiments, which may waste precious time and money.
- Lack of training facilities for new skills, new processes, and new products.
- Special attention should be given on R&D needs of rural and backward areas.
- Some of the respondents had an opinion that; a survey on availability of production wastes should be carried out, as the waste of one unit may be a raw material for any other unit, located elsewhere.
- Some respondents, strongly advocate, about simplification of the procedure for patenting etc. and also are of the opinion that, paper formalities should be minimised, and realistic support should be extended, for carrying out R&D.
- Big industries should join hands with government, to establish a network of R&D laboratories all over the country.
- The role of the government agencies should be as facilitators.

RESULTS OF STATISTICAL ANALYSIS

The statistical analysis of the industry groupwise data on gross turnover, R&D expenditure, advertising & publicity expenditure, investment in new P&M/c and total employment with R&D employment has been carried out. The correlation study results and R^2 values for each group is shown in graphical form and also in tabular form. All R^2 values are +ve and X; Y parameters show linear relation for all values, except for the relation between total employment and R&D employment. This indicates a good relationship between expenditure on R&D, Advertisement & Publicity and new P&M/c with gross turnover etc.

In the case of R&D expenditure versus gross turnover, for SSIs with P&M/c \geq Rs. 25 Lakhs, the R^2 value for first two years is constant and considerably reduced in third year, which shows that the relation between R&D expenditure and gross turnover has gone down during reference period. (R^2 for 1996-97 and 1997-98 was 0.83 where as for the year 1998-99 the value came down to 0.22). Similarly for SSIs with investment in P&M/c \geq Rs.25 Lakhs, for advertisement & publicity, the value of R^2 was 0.70 in 1996-97 and came down to 0.65 in 1998-99. The relative change in this case was very little.

In case of SSIs with P&M/c $<$ Rs. 25 Lakhs, the R^2 values have proportionately lesser changes between 1996-97 to 1998-99, as compared to SSIs in the higher investment range. (For example, R^2 value for all the three years for R&D versus G.T.O. was 0.61, 0.70 and 0.71 respectively)

RESULTS OF STATISTICAL ANALYSIS

(Year 1996-97)

SSIs With Investment in P&M/c				
	≥ Rs.25 Lakhs		< Rs.25 Lakhs	
	Correlation	R ²	Correlation	R ²
R&D Exp. V/s G.TO	Y= 0.012x	0.83	Y=0.0244x	0.61
Adv. Exp. V/s G.TO	Y=0.0073x	0.71	Y=0.0215x	0.76
New P&M/c V/s G.TO	Y=0.0729x	0.52	Y=0.0249x	0.20
Total Emplo. V/s R&D Emplo.	Y=0.187x	0.89	Y=0.1506x	0.96

(Year 1997-98)

SSIs With Investment in P&M/c				
	≥ Rs.25 Lakhs		< Rs.25 Lakhs	
	Correlation	R ²	Correlation	R ²
R&D Exp. V/s G.TO	Y= 0.0136x	0.83	Y=0.031x	0.70
Adv. Exp. V/s G.TO	Y=0.0078x	0.64	Y=0.0243x	0.71
New P&M/c V/s G.TO	Y=0.0455x	0.55	Y=0.0261x	0.53

(Year 1998-99)

SSIs With Investment in P&M/c				
	≥ Rs.25 Lakhs		< Rs.25 Lakhs	
	Correlation	R ²	Correlation	R ²
R&D Exp. V/s G.TO	Y= 0.0118x	0.22	Y=0.0418x	0.71
Adv. Exp. V/s G.TO	Y=0.007x	0.65	Y=0.0292x	0.77
New P&M/c V/s G.TO	Y=0.0513x	0.58	Y=0.0312x	0.46

G.T.O. (GROSS TURNOVER)

CHAPTER –IV

ADDITIONAL OBSERVATIONS

Based on the views and comments received during data collection and additional information collected through mailed questionnaires, certain important observations were recorded as under.

Some of the SSIs whether carrying out R&D activities or not were quite interested about the present study. This reflected through their personal attention and efforts in prompt response to the questionnaire. Some respondents, who had initially responded nothing about their R&D activities, provided the information readily, when our survey team personally interacted with them.

Although, the definition of R&D was clearly mentioned in the questionnaire, many respondents did not mention about their R&D activities as they had a feeling that R&D exclusively means invention.

Some of the small units with investment in P&M/c upto Rs. One lakh, spent 20% to 30% on experimental development regularly. (M/s Thakur Agricultural Equipments Seoni, M/s Prime Design Chemical Industries Indore, M/s Modi Pharma Labs Jabalpur, M/s Phytochem Industries Neemuch are some examples)

Some respondents had a distinct identity, because either they had received national awards, or were pioneers in some products or were inventors and had applied for patents for their products. (M/s Nagda Electrical P.Ltd. Indore, M/s Malwa Oxygen & Industrial Gases Ratlam are some examples)

Most of the respondents were not aware of DST, DSIR and other Research Laboratories. Some wanted to know about these departments and laboratories while some entrepreneurs expressed their willingness to register with these departments.

Some of the respondents opined that in some rural areas abundant natural resources are awaiting exploration, so that lot of R&D activities could be taken up based on which industries could be set up to promote local employment.

The forgoing discussions bring following observations in nutshell.

1. Awareness about DSIR & Research Labs & other assistance

There is a strong need to create awareness about assistance available from DSIR, Research Laboratories and other similar assistance.

2. Diversification

Many entrepreneurs are keen to diversify into new production activities. They need to know about new technologies and availability of experts. The state Govt. officers due to lack of information and some inherent attitudes are not able to provide required assistance. This is an area where efforts of DSIR and R&D departments need to focus their attention.

3. Skill artisans and dissatisfied innovators need attention

Skilled artisans are doing innovative work and use R & D approach. Middleman exploits them. Some of them have become frustrated. This is a potential group and needs R & D Support and awareness programmes and on the job training for adopting modern and appropriate technologies.

4. Some SSIs Keen for R & D interaction

Some SSIs entrepreneurs are very keen for R & D and during this study they spent their time and money to present their problems. They need R, & D support and wish to register with DSIR & other R & D institutions.

5. Bright prospects for R & D in SSIs but needs new initiatives

Many SSIs were not aware of R&D efforts and had a negative approach but with personal interaction they have evinced interest in R & D. Thus study briefly indicates that SSI are keen for R&D, provided it will benefit them in modernisation. They also indicated willingness for collaboration in sponsored projects. The picture is brighter and encouraging. New R&D initiatives and specialised on the job trainings are needed to generate excellence & product development with interaction of SSI & R&D institutions.

CHAPTER-V

CONCLUSIONS

The present chapter is an outcome of screening, consolidation, processing analysis and synthesis of the primary and secondary data in respect of 139 SSIs with investment in P&M/c \geq Rs.25 lakhs and 2143 SSIs with investment in P&M/c $<$ Rs.25 lakhs, spread all over 45 districts (Advance, A,B,C and growth centres) of Madhya Pradesh. The data is also substantiated with the information collected during personal interaction etc.

- The SSIs with lower investment in P&M/c spent more on R&D of their gross turnover than those with higher investment in P&M/c. (SSIs with investment in P&M/c $<$ Rs.25 lakhs spent 3.45 % of their gross turnover while SSIs with investment in P&M/c \geq Rs.25 lakhs spent 1.42 % of their gross turnover).
- The SSIs with lower investment in P&M/c spent more on advertisement and publicity as compared to the SSIs with higher investment in P&M/c when compared with their corresponding gross turnover (SSIs with investment in P&M/c \geq Rs.25 lakhs spent on an average about 0.88 % of their gross turnover where as SSIs with investment in P&M/c $<$ Rs.25 lakhs spent on an average about 2.90 % of their gross turnover)
- The SSIs with higher investment in P&M/c spent more on new P&M/c as compared to those with lower investment in P&M/c (SSIs with investment in P&M/c \geq Rs 25 lakhs spent 5.68 % of their gross turnover while SSIs with investment in P&M/c $<$ Rs 25 lakhs spent 2.87 % of their gross turnover).
- The SSIs with investment in P&M/c \geq Rs 25 lakhs spent Rs 444.72 lakhs (Average of three years) on R&D activities.
- The SSIs with investment in P&M/c $<$ Rs 25 lakhs spent Rs 666.16 lakhs (Average of three years) on R&D activities.
- Based on 1998-99 figures the industry groups for SSIs with investment in P&M/c \geq Rs 25 lakhs spending maximum on R&D were Electrical Industries, Agro & Food, Chemical Industries & Allied Products, Metallurgical Industries & Allied Products and Mechanical Engineering Industries (In decreasing order).
- Based on 1998-99 figures the industry groups for SSIs with investment in P&M/c $<$ Rs 25 lakhs spending maximum on R&D activities were Mechanical Engineering Industries & Allied Products, Agro & Food Industries, Metallurgical Industries & Allied Products, Textile, Hosiery & Allied Products and Ceramic Industries & Allied Products (In decreasing order).
- Majority (83.40 %) of SSIs carry out experimental development under R&D activities.

- Almost all the SSIs in both the investment categories carried out R&D activities inside their respective units premises.
- In case of SSIs with investment in P&M/c \geq Rs 25 lakhs, the industry groups employing maximum S&T personnel belong to Agro & Food Industries, Chemical Industries & Allied Products, Mechanical Engineering Industries, and Rubber & Plastic Products (In decreasing order).
- While in case of SSIs with investment in P&M/c $<$ Rs 25 lakhs, the industry groups employing maximum S&T personnel belong to Ceramic Industries & Allied Products, Mechanical Engineering Industries, Agro & Food Industries, Rubber & Plastic (In decreasing order).
- Majorities of the SSIs carrying out R&D activities are situated in Advance and 'A' category district.
- 139 SSIs with investment in P&M/c \geq Rs 25 lakhs employed 661 S&T personnel on full time basis and 108 S&T personnel on part time basis.
- Where as 2143 SSIs with investment in P&M/c $<$ Rs 25 lakhs employed 2655 S&T personnel on full time and 295 S&T personnel on part time basis.
- In case of SSIs with investment in P&M/c \geq Rs 25 lakhs, based on male-female ratios, full time S&T female employment was found more in industry groups viz. Agro & Food, Ceramic Industries & Allied Products, Chemical Industries & Allied Products, Drugs & Pharmaceuticals, and Textile, Hosiery & Allied Products while in case of SSIs with investment in P&M/c $<$ Rs 25 lakhs, based on male-female ratios, maximum full time S&T female employment was recorded in respect of industry groups viz. Cottage industries, Paper & Paper Products, Drugs & Pharmaceuticals, Electronic Industries and Metallurgical Industries & Allied Products.
- Majority of SSIs carried out R&D activities for profitability, sustainability and better market share.

The key areas that emerged during the study leads us to including remarks as under-

1. New & an innovative study

The study group presents its compliments to NSTMIS Division of DST, Govt. of India for selecting a very vital area of investigations for SSI, which has far reaching impact on the survival of small scale industries. Their products need quality improvement to ensure greater market acceptance. R&D can play a vital role by introducing innovative plans for modernisation to meet consumer requirements, needs and preference.

2. New, Market Challenges are evolving day to day due to new economic policy & W.T.O. agreement.

This study is particularly helpful in view of new economic policy and W.T.O. implications. This programme will assure SSI to meet market challenges and prepare for situation arising due to greater import of goods and services. It will also help in improving particularly custom made products and also explore possibilities of capturing export market. This is also seen from responses of a few enthusiastic SSIs, which has been brought out in the main report.

3. SSIs desire to meet market challenges & consumer demands

SSIs are also conscious of product development, market challenges and innovate to meet the consumer demands. Both small and large industries in SSI sector undertake R&D for innovations and improving their products to meet the requirement of market forces. This kind of expenditure is more in selected sectors where there is large scope to improve designs and shapes to meet consumer preferences.

4. Market Research for Quality Requirements and Improvements

The SSIs need greater support from R&D institutions for market research and indicate areas where R&D can help them for improving their products, performances and systems. Some of them have also suggested organisations of workshop to explain implications and benefits of R&D.

5. Sector specific R&D needs and interaction to provide R&D solutions

The companies are engaged in different sectors of productions. Each of these sectors need to know what is the state of art at national and multinational level, what are market challenges & how R&D institutions can help them to overcome these impediments.

6. Innovative and Conscious SSIs to adopt excellence and develop fare produce with international Standard need special attention.

Some industries believe they have a special niche and can make excellent products for global market. They are enthusiastic and have leadership. They can become trendsetters for R & D innovations. They need special study and attention of DSIR and R&D departments. They are capable of producing optimum results per unit of time, effort and expenditure.

Overall Conclusion

Overall 2282 SSIs spent on an average Rs 1110.89 lakhs (Average of three years for both types of SSIs) on R&D activities for the year 1996-97, 97-98 and 98-99 where this is compared with the corresponding industry groups average turnover of Rs 50584.13 lakhs, the R&D expenditure versus gross turnover work out as 2.19 %. The SSIs by and large are interested in undertaking R&D activities for their survival and look forward to know more about this. Thus an utmost need is felt for linkages between SSIs sector and R&D institutions/ departments/ laboratories in the mutual interest and ultimately in the interest of India's economy in the new millennium.

ABBREVIATIONS

ARS	Actual Representative Sample
DS	Direct Sample
DTICs	District Trade and Industries Centres
1R, 2R, 3R	First, Second & Third Reminders
GRS	Gross Representative Sample
IPR	Intellectual Property Rights
<	Less Than
M.P.	Madhya Pradesh
MPCON	Madhya Pradesh Consultancy Organisation
≥	More Than Or Equal To
NSTMIS	National Science & Technology Management Information Systems
P&M/c	Plant & Machinery
R&D	Research & Development
S&T	Science and Technology
SSI	Small Scale Industry
SSIs	Small Scale Industries
WTO	World Trade Organisation

Table-1
RESPONSE PROFILE

SSI Units	Total Contacted	Responded	No.of Units	
			Doing R&D	Not Doing R&D
≥ Rs.25 Lakhs	1000	264	139	125
< Rs. 25 Lakhs	37000	5358	2143	3215
	38000(100%)	5622(14.79%)	2282(6%)	3340 (8.78%)

NB :- 32378 SSIs (85.22%) did not respond.

Table 2

INDUSTRY GROUPWISE POSITIVE RESPONSES RECEIVED

S.No	Industry Group	No. of Units with Investment in Plant & Machinery when registered		Total
		≥ Rs.25 Lakhs (3)	< Rs.25 Lakhs (4)	
(1)	(2)	(3)	(4)	(5)
1	AGRO & FOOD INDUSTRIES	22	300	322
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	2	25	27
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	15	238	253
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	19	125	144
5	COTTAGE INDUSTRIES	0	40	40
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	5	28	33
7	ELECTRICAL INDUSTRIES	6	61	67
8	ELECTRONIC INDUSTRIES	0	15	15
9	ENERGY & ENVIRONMENT	0	1	1
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	0	8	8
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENTS	0	12	12
12	JOB WORK	1	68	69
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	1	32	33
14	MACHINERY, EQUIPMENT & SPARES	2	60	62
15	MECHANICAL ENGINEERING INDUSTRIES	23	411	434
16	METALLURGICAL INDUST & ALLIED PRODUCTS	13	84	97
17	PACKAGING INDUSTRIES	2	23	25
18	PAPER & PAPER PRODUCTS	1	29	30
19	PESTICIDES & FERTILIZERS	1	3	4
20	PRINTING AND ALLIED ACTIVITIES	2	38	40
21	REPAIRING & SERVICING	1	94	95
22	RUBBER & PLASTIC PRODUCTS	9	167	176
23	SERVICE INDUSTRIES	1	18	19
24	SPORTS GOODS & ALLIED PRODUCTS	0	1	1
25	STATIONERIES & ALLIED PRODUCTS	3	18	21
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	1	1
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	6	112	118
28	TIMBER, WOOD & ALLIED PRODUCTS	3	114	117
29	MISCELLANEOUS INDUST. & PRODUCTS	1	17	18
	Total	139	2143	2282

TABLE 3A
INDUSTRY GROUPWISE R&D UNITS WITH INVESTMENT IN P&M/c ≥ Rs. 25 LAKHS

S.No.	Industry Group	No. of R&D Units			
		In-House		Outside experts	
		Inside (3)	Out side (4)		
(1)	(2)	(3)	(4)	(5)	
1	AGRO & FOOD INDUSTRIES	22	0	0	
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	2	0	0	
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	14	1	0	
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	19	0	0	
5	COTTAGE INDUSTRIES	0	0	0	
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	5	0	0	
7	ELECTRICAL INDUSTRIES	6	0	0	
8	ELECTRONIC INDUSTRIES	0	0	0	
9	ENERGY & ENVIRONMENT	0	0	0	
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	0	0	0	
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENTS	0	0	0	
12	JOB WORK	1	0	0	
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	1	0	0	
14	MACHINERY, EQUIPMENT & SPARES	2	0	0	
15	MECHANICAL ENGINEERING INDUSTRIES	23	0	0	
16	METALLURGICAL INDUST & ALLIED PRODUCTS	13	0	0	
17	PACKAGING INDUSTRIES	2	0	0	
18	PAPER & PAPER PRODUCTS	1	0	0	
19	PESTICIDES & FERTILIZERS	1	0	0	
20	PRINTING AND ALLIED ACTIVITIES	2	0	0	
21	REPAIRING & SERVICING	1	0	0	
22	RUBBER & PLASTIC PRODUCTS	8	0	1	
23	SERVICE INDUSTRIES	1	0	0	
24	SPORTS GOODS & ALLIED PRODUCTS	0	0	0	
25	STATIONERIES & ALLIED PRODUCTS	3	0	0	
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0	0	
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	6	0	0	
28	TIMBER, WOOD & ALLIED PRODUCTS	3	0	0	
29	MISCELLANEOUS INDUST. & PRODUCTS	1	0	0	
Total		137(98.56%)	1(0.73%)	Total 139	1(0.73%)

Table 3B

INDUSTRY GROUPWISE R&D UNITS WITH INVESTMENT IN P&M/c < Rs. 25 LAKHS

S.no.	Industry Group	No. of R&D Units		
		In-House		Outside Experts
		Inside (3)	Out side (4)	
(1)	(2)	(3)	(4)	(5)
1	AGRO & FOOD INDUSTRIES	298	0	2
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	25	0	0
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	236	0	2
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	123	0	2
5	COTTAGE INDUSTRIES	39	0	1
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	26	0	2
7	ELECTRICAL INDUSTRIES	59	2	0
8	ELECTRONIC INDUSTRIES	15	0	0
9	ENERGY & ENVIRONMENT	1	0	0
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	8	0	0
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENTS	12	0	0
12	JOB WORK	67	1	0
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	29	3	0
14	MACHINERY, EQUIPMENT & SPARES	57	3	0
15	MECHANICAL ENGINEERING INDUSTRIES	399	4	8
16	METALLURGICAL INDUSTRY & ALLIED PRODUCTS	81	1	2
17	PACKAGING INDUSTRIES	23	0	0
18	PAPER & PAPER PRODUCTS	26	1	2
19	PESTICIDES & FERTILIZER	3	0	0
20	PRINTING AND ALLIED ACTIVITIES	38	0	0
21	REPAIRING & SERVICING	90	3	1
22	RUBBER & PLASTIC PRODUCTS	161	5	1
23	SERVICE INDUSTRIES	18	0	0
24	SPORTS GOODS & ALLIED PRODUCTS	1	0	0
25	STATIONERIES & ALLIED PRODUCTS	18	0	0
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	1	0	0
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	110	2	0
28	TIMBER, WOOD & ALLIED PRODUCTS	107	5	2
29	MISCELLANEOUS INDUST. & PRODUCTS	17	0	0
		Total 088 (97.43%)	30 (1.40%)	25 (1.17%)
		Total 2143 SSIs		

TABLE 4A
DISTRICT-WISE NO.OF R&D UNITS AND R&D EXPENDITURE FOR SSIs
WITH INVETMENT IN P&M/c ≥ Rs. 25 LAKHS

S.No	Industrial Category	District	No of R&D Unit	R & D Expenditure '(Rs.in Lakhs)		
				1996-97	1997-98	1998-99
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	ADVANCE	BHOPAL	2	23.50	22.24	23.25
2	DO	DURG	4	10.00	6.77	10.48
3	DO	GWALIOR	9	22.50	34.75	31.25
4	DO	INDORE	22	48.96	45.64	71.43
5	DO	JABALPUR	13	12.80	27.95	29.05
6	DO	RAIPUR	8	17.20	20.25	25.23
6 Districts		Total	58(41.73%)	134.96(47.32%)	157.6(39.96%)	190.69(29.13%)
7	GROWTH CENTRES	MANDIDEEP	0	0.00	0.00	0.00
8	DO	MALANPUR	1	0.00	0.00	2.50
9	DO	PITHAMPUR	17	40.70	40.51	43.60
3 Centres		Total	18(12.95%)	40.7(14.27%)	40.51(10.27%)	46.10(7.04%)
10	"A"	MORENA	4	5.42	10.40	15.80
11	"A"	SATNA	1	0.00	0.00	3.75
12	"A"	SHAH DOL	0	0.00	0.00	0.00
13	"A"	BILASPUR	2	2.50	0.10	1.10
14	"A"	HOSHANGABAD	1	0.01	0.01	5.50
15	"A"	VIDISHA	3	11.64	13.00	12.00
16	"A"	UJJAIN	2	0.00	3.15	6.85
17	"A"	DEWAS	5	2.95	4.90	206.47
18	"A"	KHANDWA	2	0.07	0.08	1.75
19	"A"	RATLAM	3	25.85	48.25	47.60
20	"A"	MANDSAUR	2	0.75	1.05	3.40
11 Districts		Total	25(17.99%)	49.19(17.25%)	80.94(20.52%)	304.22(46.48%)
21	"B"	RAIGARH	0	0.00	0.00	0.00
22	"B"	RAJNANDGAON	3	16.50	40.25	45.25
23	"B"	BETUL	0	0.00	0.00	0.00
24	"B"	SEHORE	0	0.00	0.00	0.00
4 Districts		Total	3(2.16%)	16.50(5.78%)	40.25(10.20%)	45.25(6.91%)
25	"C"	BHIND	5	13.10	30.46	14.02
26	"C"	DATIA	2	4.00	5.00	6.50
27	"C"	SHIVPURI	0	0.00	0.00	0.00
28	"C"	GUNA	0	0.00	0.00	0.00
29	"C"	SAGAR	1	0.00	1.75	2.20
30	"C"	TIKAMGARH	1	1.50	8.50	0.60
31	"C"	CHHATARPUR	0	0.00	0.00	0.00
32	"C"	DAMOH	0	0.00	0.00	0.00
33	"C"	PANNA	1	3.50	4.00	4.00
34	"C"	REWA	0	0.00	0.00	0.00
35	"C"	SIDHI	0	0.00	0.00	0.00
36	"C"	SURGUJA	1	0.00	0.00	3.15
37	"C"	BASTAR	1	0.00	0.00	2.30
38	"C"	BALAGHAT	0	0.00	0.00	0.00
39	"C"	MANDLA	2	3.83	4.45	5.02
40	"C"	NARSINGHPUR	0	0.00	0.00	0.00
41	"C"	SEONI	0	0.00	0.00	0.00
42	"C"	CHHINDWARA	2	2.25	2.89	3.87
43	"C"	RAISEN	2	3.65	4.30	4.65
44	"C"	RAJGARH	3	4.29	1.45	1.60
45	"C"	SHAJAPUR	2	1.34	1.72	4.20
46	"C"	KHARGONE	6	2.35	5.23	9.38
47	"C"	DHAR	5	3.31	4.30	5.40
48	"C"	JHABUA	1	0.75	1.10	1.35
24 Districts		Total	35(25.17%)	43.87(15.38%)	75.15(19.05%)	68.24(10.44%)
Grand Total			139	285.22	394.45	654.50(All 100%)

Table 4B
DISTRICT-WISE NO.OF R&D UNITS AND R&D EXPENDITURE FOR SSIs
WITH INVETMENT IN P&M/c < Rs. 25 LAKHS

S.No	Industrial Category	District	No of R&D Unit	R&D Expenditure '(Rs.Lakhs)		
				1996-97	1997-98	1998-99
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	ADVANCE	BHOPAL	78	16.9	24.04	38.43
2	DO	DURG	12	4.58	6.81	68.09
3	DO	GWALIOR	82	10.95	19.08	25.45
4	DO	INDORE	133	56.17	50.68	58.78
5	DO	JABALPUR	87	17	22.28	28.72
6	DO	RAIPUR	80	15.81	34.61	115.31
6 Districts			Total 472(22.03%)	121.41(27.19%)	157.5(26.06%)	334.78(35.30%)
7	GROWTH CENTRES	MANDIDEEP	53	5.9	12.48	12.93
8	DO	MALANPUR	29	7.01	13.71	8.65
9	DO	PITHAMPUR	79	18.38	17.91	19.98
3 Centres			Total 161(7.51%)	31.29(7.01%)	44.1(7.30%)	41.56(4.38%)
10	"A"	MORENA	114	56.41	74.82	96.19
11	"A"	SATNA	69	6.12	9.02	12.91
12	"A"	SHAHDOL	74	7.43	10.48	15.52
13	"A"	BILASPUR	117	23.53	35.02	56.01
14	"A"	HOSHANGABAD	37	9.60	8.24	9.08
15	"A"	VIDISHA	54	6.70	9.2	13.02
16	"A"	UJJAIN	51	8.12	25.06	20.82
17	"A"	DEWAS	83	44.02	46.94	65.85
18	"A"	KHANDWA	61	22.51	31.30	56.20
19	"A"	RATLAM	120	21.54	30.26	53.09
20	"A"	MANDSAUR	99	15.50	10.32	18.23
11 Districts			Total 879(41.02%)	221.48(49.60%)	290.66(48.10%)	416.92(43.96%)
21	"B"	RAIGARH	5	0.21	0.35	0.35
22	"B"	RAJNANDGAON	72	12.46	20.79	28.58
23	"B"	BETUL	53	3.25	6.98	5.68
24	"B"	SEHORE	63	9.48	11.73	14.37
4 Districts			Total 193(9.00%)	25.4(5.68%)	39.85(6.59%)	48.98(5.16%)
25	"C"	BHIND	39	1.42	3.01	5.56
26	"C"	DATIA	3	2.7	2.49	2.24
27	"C"	SHIVPURI	4	0.12	0.18	0.26
28	"C"	GUNA	1	0.2	0.06	0.00
29	"C"	SAGAR	38	13.04	19.78	22.34
30	"C"	TIKAMGARH	5	1.57	1.53	1.24
31	"C"	CHHATARPUR	14	2.68	1.25	1.27
32	"C"	DAMOH	3	0.18	0.21	1.02
33	"C"	PANNA	4	0.09	0.29	0.26
34	"C"	REWA	7	0.58	1.13	0.84
35	"C"	SIDHI	78	5.27	8.85	41.1
36	"C"	SURGUJA	91	2.68	13.94	1.57
37	"C"	BASTAR	13	1.39	2.47	2.83
38	"C"	BALAGHAT	13	0.74	1.09	1.83
39	"C"	MANDLA	13	1.82	1.40	1.93
40	"C"	NARSINGHPUR	6	0.95	1.07	1.28
41	"C"	SEONI	65	3.11	5.03	10.46
42	"C"	CHHINDWARA	4	0.55	0.66	1.66
43	"C"	RAISEN	7	3.69	4.58	5.76
44	"C"	RAJGARH	8	1.02	1.15	1.12
45	"C"	SHAJAPUR	2	1.27	0.03	0.04
46	"C"	KHARGONE	3	0.09	0.13	0.13
47	"C"	DHAR	8	1.31	1.18	0.72
48	"C"	JHABUA	9	0.52	0.7	0.76
24 Districts			Total 438(20.44%)	46.99(10.52%)	72.21(11.95%)	106.22(11.20%)
Grand Total			2143	446.57	604.32	948.3(All 100%)

Table 4 AA

DISTRICTWISE, CATEGORYWISE R&D EXPENDITURE WITH INVESTMENT IN P&M/c \geq Rs.25 LAKHS

S.No. (1)	Industrial Category (2)	No. of Districts (3)	No. of R&D Units (4)	R&D Expenditure (1998-99) (5)
1	Advance	6	58 (41.73 %)	190.69 (29.13 %)
2	Growth Centres	3	18 (12.95 %)	46.10 (7.04 %)
3	"A"	11	25 (17.99 %)	304.22 (46.48 %)
4	"B"	4	3 (2.16%)	45.25 (6.91 %)
5	"C"	24	35 (25.17%)	68.24 (10.44 %)
		48	139 (100 %)	654.5 (100 %)

Table-4BB

DISTRICTWISE, CATEGORYWISE R&D EXPENDITURE WITH INVESTMENT IN P&M/c < Rs.25 LAKHS

S.No. (1)	Industrial Category (2)	No.of Districts (3)	No.of R&D Units (4)	R&D Expenditure Rs.In Lakhs (1998-99) (5)
1	Advance	6	472 (22.03%)	334.78 (35.30%)
2	Growth Centres	3	161 (7.51%)	41.56 (4.38%)
3	"A"	11	879 (41.02%)	416.92 (43.96%)
4	"B"	4	193 (9.00%)	48.98 (5.16%)
5	"C"	24	438 (20.44%)	106.22 (11.20%)
		48	2143(100%)	948.3 (100%)

Table 5A

INDUSTRY GROUPWISE EXPENDITURE ON R&D IN SSIs WITH INVESTMENT IN P & M/c \geq Rs. 25 LAKHS

S.No.	Industry Group	No. of R&D Units	R&D Expenditure (Rs.In Lakhs)			Per R&D unit Exp. (Rs.In Lakhs)		
			1996-97 (4)	1997-98 (5)	1998-99 (6)	1997-98 (7)	1998-99 (8)	1998-99 (9)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	AGRO & FOOD INDUSTRIES	22	25.56	57.39	83.54	1.16	2.61	3.80
2	AUTOMOBILE SPARES AND ALLIED PRODUCT	2	4.75	5.50	2.10	2.38	2.75	1.05
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	15	9.25	18.40	31.20	0.62	1.23	2.08
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	19	42.86	75.35	80.55	2.26	3.97	4.24
5	COTTAGE INDUSTRIES	0	0.00	0.00	0.00	0.00	0.00	0.00
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	5	38.40	31.80	36.00	7.68	6.36	7.20
7	ELECTRICAL INDUSTRIES	6	2.61	4.42	203.32	0.44	0.74	33.89
8	ELECTRONIC INDUSTRIES	0	0.00	0.00	0.00	0.00	0.00	0.00
9	ENERGY & ENVIRONMENT	0	0.00	0.00	0.00	0.00	0.00	0.00
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	0	0.00	0.00	0.00	0.00	0.00	0.00
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENT	0	0.00	0.00	0.00	0.00	0.00	0.00
12	JOB WORK	1	5.58	6.00	7.00	5.58	6.00	7.00
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	1	0.00	0.00	0.75	0.00	0.00	0.75
14	MACHINERY, EQUIPMENT & SPARES	2	0.00	0.00	3.50	0.00	0.00	1.75
15	MECHANICAL ENGINEERING INDUSTRIES	23	30.46	39.93	55.18	1.32	1.74	2.40
16	METALLURGICAL INDUST & ALLIED PRODUCTS	13	65.38	69.88	68.88	5.03	5.38	5.30
17	PACKAGING INDUSTRIES	2	0.35	0.20	0.32	0.18	0.10	0.16
18	PAPER & PAPER PRODUCTS	1	2.00	2.30	3.00	2.00	2.30	3.00
19	PESTICIDES & FERTILIZER	1	7.50	2.24	1.25	7.50	2.24	1.25
20	PRINTING AND ALLIED ACTIVITIES	2	7.50	6.50	6.00	3.75	3.25	3.00
21	REPAIRING & SERVICING	1	0.75	1.05	1.25	0.75	1.05	1.25
22	RUBBER & PLASTIC PROD.	9	9.84	31.95	21.28	1.09	3.55	2.36
23	SERVICE INDUSTRIES	1	1.50	1.75	2.50	1.50	1.75	2.50
24	SPORTS GOODS & ALLIED PRODUCTS	0	0.00	0.00	0.00	0.00	0.00	0.00
25	STATIONERIES & ALLIED PRODUCTS	3	1.41	1.39	0.98	0.47	0.46	0.33
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0.00	0.00	0.00	0.00	0.00	0.00
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	6	18.97	26.15	31.80	3.16	4.36	5.30
28	TIMBER, WOOD & ALLIED PRODUCTS	3	4.05	4.75	7.10	1.35	1.58	2.37
29	MISCELLANEOUS INDUST. & PRODUCTS	1	6.50	7.50	7.00	6.50	7.50	7.00
Total		139	285.22(19.56%)	394.45(27%)	654.50(44.8%)	2.05	2.84	4.70
Total R&D Expenditure			Rs. 1334.17 lakhs.					

Table 5B

INDUSTRY GROUPWISE EXPENDITURE ON R&D IN SSIs WITH INVESTMENT IN P&M/c<Rs.25 LAKHS

S.no.	Industry Group	No. of R&D Units	R&D Expenditure (Rs.In Lakhs)			Per R&D unit Expenditure (Rs.In Lakhs)		
			1996-97	1997-98	1998-99	1996-97	1997-98	1998-99
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	AGRO & FOOD INDUSTRIES	300	48.04	72.05	116.8	0.16	0.24	0.39
2	AUTOMOBILE SPARES AND ALLIED PRODUCT	25	4.88	3.77	7.38	0.20	0.15	0.30
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	238	36.93	47.13	85.14	0.16	0.20	0.36
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	125	43.06	72.32	62.86	0.34	0.58	0.50
5	COTTAGE INDUSTRIES	40	2.31	4.64	6.04	0.06	0.12	0.15
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	28	6.59	7.29	16.69	0.24	0.26	0.60
7	ELECTRICAL INDUSTRIES	61	20.49	28.46	32.03	0.34	0.47	0.53
8	ELECTRONIC INDUSTRIES	15	12.27	5.17	10.64	0.82	0.34	0.71
9	ENERGY & ENVIRONMENT	1	0.00	0.35	0.00	0.00	0.35	0.00
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	8	0.51	2.51	2.01	0.06	0.31	0.25
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENTS	12	2.27	1.9	4.27	0.19	0.16	0.36
12	JOB WORK	68	7.47	12.88	15	0.11	0.19	0.22
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	32	3.29	5.95	7.01	0.10	0.19	0.22
14	MACHINERY, EQUIPMENT & SPARES	60	14.63	21.35	24.94	0.24	0.36	0.42
15	MECHANICAL ENGINEERING INDUSTRIES	411	58.36	83.75	160.77	0.14	0.20	0.39
16	METALLURGICAL INDUST & ALLIED PRODUCTS	84	29.77	30.29	97.13	0.35	0.36	1.16
17	PACKAGING INDUSTRIES	23	8.82	11.08	13.78	0.38	0.48	0.60
18	PAPER & PAPER PRODUCTS	29	19.4	28.06	33.01	0.67	0.97	1.14
19	PESTICIDES & FERTILIZER	3	5.35	5	5.75	1.78	1.67	1.92
20	PRINTING AND ALLIED ACTIVITIES	38	6.66	9.46	12.1	0.18	0.25	0.32
21	REPAIRING & SERVICING	94	6.63	7.91	13.11	0.07	0.08	0.14
22	RUBBER & PLASTIC PROD.	167	31.44	50.69	58.16	0.19	0.30	0.35
23	SERVICE INDUSTRIES	18	2.96	3.34	5.09	0.16	0.19	0.28
24	SPORTS GOODS & ALLIED PRODUCTS	1	0.04	0.08	0.15	0.04	0.08	0.15
25	STATIONERIES & ALLIED PRODUCTS	18	1.79	3.58	37.84	0.10	0.20	2.10
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	1	0.03	0.05	0.07	0.03	0.05	0.07
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	112	55.66	62.4	94.36	0.50	0.56	0.84
28	TIMBER, WOOD & ALLIED PRODUCTS	114	13.96	20.68	24.02	0.12	0.18	0.21
29	MISCELLANEOUS INDUST. & PRODUCTS	17	1.97	2.48	2.15	0.12	0.15	0.13
Total			445.58(22.29%)	604.62(30.25%)	948.3(47.45%)	0.21	0.28	0.44
Total R&D Expenditure			Rs. 1998.50 lakhs.					

Table 6A

**INDUSTRY GROUPWISE R&D EXPENDITURE BY MAIN INDUSTRY GROUPS WITH INVESTMENT IN
P&M/c \geq Rs.25 LAKHS**

S.No (1)	Industry Group (2)	No. of R&D Units	R&D Expenditure (Rs. In Lakhs)			Total R&D Exp. (Rs.Lakhs)
			1996-97	1997-98	1998-99	
1	Mechanical Engineering Industries	23	30.46	39.93	55.18	125.57
2	Agro & Food Industries	22	25.56	57.39	83.54	166.49
3	Chemical Industries & Allied Products	19	42.86	75.35	80.55	198.76
4	Metallurgical Industries	13	65.38	69.88	68.88	204.14
5	Electrical Industries	6	2.61	4.42	203.32	210.35
	Total	83	166.87	246.97	491.47	905.31

Table 6B

**INDUSTRY GROUPWISE R&D EXPENDITURE BY MAIN INDUSTRY GROUPS WITH INVESTMENT IN
P&M/c < Rs.25 Lakhs**

S.No. (1)	Industry Group (2)	No. of R&D Units	R&D Expenditure (Rs.In Lakhs)			Total R&D Exp. (Rs.In Lakhs)
			1996-97	1997-98	1998-99	
1	Mechanical Engineering Industries	411	58.36	83.75	160.77	302.88
2	Agro & Food Industries	300	48.04	72.05	116.8	236.89
3	Chemical Industries & Allied Products	125	43.06	72.32	62.86	178.24
4	Metallurgical Industries	84	29.77	30.29	97.13	157.19
5	Electrical Industries	61	20.49	28.46	32.03	80.98
	Total	981	199.72	286.87	469.59	956.18

Table 7A

R&D EXPENDITURE VERSUS GROSS TURNOVER IN SSIs WITH INVESTMENT IN P&M/c ≥ Rs.25 LAKHS

S.No.	Industry Group	R&D Expenditure (Rs.In Lakhs)					Gross Turnover (Rs.In Lakhs)					% R&D Exp.	
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)			
(1)	(2)	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99
1	AGRO & FOOD INDUSTRIES	25.56	57.39	83.54	2809.37	4018.42	7838.07	0.91	1.43	1.07	0.91	1.43	1.07
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	4.75	5.50	2.10	490.20	540.79	525.09	0.97	1.02	0.40	0.97	1.02	0.40
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	9.25	18.40	31.20	563.22	1185.42	2548.16	1.64	1.55	1.22	1.64	1.55	1.22
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	42.86	75.35	80.55	3819.51	4124.18	5025.41	1.12	1.83	1.60	1.12	1.83	1.60
5	COTTAGE INDUSTRIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	38.40	31.80	36.00	1960.45	948.92	1328.90	1.96	3.35	2.71	1.96	3.35	2.71
7	ELECTRICAL INDUSTRIES	2.61	4.42	203.32	771.53	881.78	1105.26	0.34	0.50	18.40	0.34	0.50	18.40
8	ELECTRONIC INDUSTRIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	ENERGY & ENVIRONMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	GLASS INDUSTRIES & ALLIED PRODUCTS & EQUIPMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	JOB WORK	5.58	6.00	7.00	186.00	186.00	187.00	3.00	3.23	3.74	3.00	3.23	3.74
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	0.00	0.00	0.75	0.00	0.00	142.19	0.00	0.00	0.53	0.00	0.00	0.53
14	MACHINERY,EQUIPMENT & SPARES	0.00	0.00	3.50	0.00	0.00	234.80	0.00	0.00	1.49	0.00	0.00	1.49
15	MECHANICAL ENGINEERING INDUSTRIES	30.46	39.93	55.18	3201.18	4588.71	6373.28	0.95	0.87	0.87	0.95	0.87	0.87
16	METALLURGICAL INDUST. & PRODUCTS	65.38	69.88	68.88	3438.52	4215.91	3862.22	1.90	1.66	1.78	1.90	1.66	1.78
17	PACKAGING INDUSTRIES	0.35	0.20	0.32	0.00	0.00	36.21	0.00	0.00	0.88	0.00	0.00	0.88
18	PAPER & PAPER PRODUCTS	2.00	2.30	3.00	231.60	231.39	240.92	0.86	0.99	1.25	0.86	0.99	1.25
19	PESTICIDE & FERTILIZER	7.50	2.24	1.25	1507.74	1970.14	3179.34	0.50	0.11	0.04	0.50	0.11	0.04
20	PRINTING AND ALLIED ACTIVITIES	7.50	6.50	6.00	190.00	570.00	750.00	3.95	1.14	0.80	3.95	1.14	0.80
21	REPAIRING & SERVICING	0.75	1.05	1.25	99.03	135.00	169.00	0.76	0.78	0.74	0.76	0.78	0.74
22	RUBBER & PLASTIC PROD.	9.84	31.95	21.28	452.25	1828.67	4184.23	2.18	1.75	0.51	2.18	1.75	0.51
23	SERVICE INDUSTRIES	1.50	1.75	2.50	284.10	402.79	497.36	0.53	0.43	0.50	0.53	0.43	0.50
24	SPORTS GOOD & ALLIED PRODUCTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	STATIONERIES & ALLIED PRODUCTS	1.41	1.39	0.98	175.33	236.71	210.94	0.80	0.59	0.46	0.80	0.59	0.46
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	18.97	26.15	31.80	1250.66	2380.06	2701.38	1.52	1.10	1.18	1.52	1.10	1.18
28	TIMBER,WOOD & ALLIED PRODUCTS	4.05	4.75	7.10	289.70	474.45	620.57	1.40	1.00	1.14	1.40	1.00	1.14
29	MISCELLANEOUS INDUST. & PRODUCTS	6.50	7.50	7.00	366.00	550.00	523.00	1.78	1.36	1.34	1.78	1.36	1.34
Total		285.22	394.45	654.50	22086.39	29469.34	42283.33	1.29	1.34	1.55	1.29	1.34	1.55
		1334.17		93839.06		1.42							

Table 7B

R&D EXPENDITURE VERSUS GROSS TURNOVER IN SSIs WITH INVESTMENT P&M/c < Rs.25 LAKHS

S.No.	Industry Group	R&D Expenditure (Rs.In Lakhs)					Gross Turnover (Rs.In Lakhs)					% R&D Exp.	
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)			
(1)	(2)	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99
1	AGRO & FOOD INDUSTRIES	48.04	72.05	116.8	1727.28	2112.91	2756.87	2.78	3.41	4.24			
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	4.88	3.77	7.38	218.23	256.55	285.91	2.24	1.47	2.58			
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	36.93	47.13	85.14	1036.16	1343.99	1595.19	3.56	3.51	5.34			
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	43.06	72.32	62.86	1277.18	1415.67	1621.47	3.37	5.11	3.88			
5	COTTAGE INDUSTRIES	2.31	4.64	6.04	98.36	142.68	170.08	0.00	0.00	0.00			
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	6.59	7.29	16.69	728.58	1875.98	2132.47	0.90	0.39	0.78			
7	ELECTRICAL INDUSTRIES	20.49	28.46	32.03	568.81	667.42	658.21	3.60	4.26	4.87			
8	ELECTRONIC INDUSTRIES	12.27	5.17	10.64	113.49	163.22	291.52	0.00	0.00	0.00			
9	ENERGY & ENVIRONMENT	0.00	0.35	0.00	1.98	2.75	3.85	0.00	0.00	0.00			
10	GLASS INDUSTRIES & ALLIED PRODUCTS & EQUIPMENTS	0.51	2.51	2.01	71.58	86.49	101.35	0.00	0.00	0.00			
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	2.27	1.9	4.27	145.08	143.22	144.73	0.00	0.00	0.00			
12	JOB WORK	7.47	12.88	15	278.07	341.24	369.50	2.69	3.77	4.06			
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	3.29	5.95	7.01	136.42	198.49	250.96	0.00	0.00	2.79			
14	MACHINERY, EQUIPMENT & SPARES	14.63	21.35	24.94	716.82	892.81	997.77	0.00	0.00	2.50			
15	MECHANICAL ENGINEERING INDUSTRIES	58.36	83.75	160.77	2042.50	2426.28	2966.66	2.86	3.45	5.42			
16	METALLURGICAL INDUST. & PRODUCTS	29.77	30.29	97.13	1067.57	1281.33	1326.93	2.79	2.36	7.32			
17	PACKAGING INDUSTRIES	8.82	11.08	13.78	300.95	344.13	414.70	0.00	0.00	3.32			
18	PAPER & PAPER PRODUCTS	19.4	28.06	33.01	313.95	516.41	670.68	6.18	5.43	4.92			
19	PESTICIDE & FERTILIZER	5.35	5	5.75	1350.00	327.50	429.00	0.40	1.53	1.34			
20	PRINTING AND ALLIED ACTIVITIES	6.66	9.46	12.1	368.20	476.37	566.09	1.81	1.99	2.14			
21	REPAIRING & SERVICING	6.63	7.91	13.11	246.69	309.57	480.88	2.69	2.56	2.73			
22	RUBBER & PLASTIC PROD.	31.44	50.69	58.16	2208.22	1789.82	2096.73	1.42	2.83	2.77			
23	SERVICE INDUSTRIES	2.96	3.34	5.09	104.35	131.67	138.43	2.84	2.54	3.68			
24	SPORTS GOOD & ALLIED PRODUCTS	0.04	0.08	0.15	1.50	2.00	3.00	0.00	0.00	0.00			
25	STATIONERIES & ALLIED PRODUCTS	1.79	3.58	37.84	115.23	113.33	155.75	1.55	3.16	24.30			
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0.03	0.05	0.07	1.08	1.20	1.50	0.00	0.00	0.00			
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	55.66	62.4	94.36	812.39	914.64	1100.25	6.85	6.82	8.58			
28	TIMBER, WOOD & ALLIED PRODUCTS	13.96	20.68	24.02	426.98	498.10	580.03	3.27	4.15	4.14			
29	MISCELLANEOUS INDUST. & PRODUCTS	1.97	2.48	2.15	116.81	116.30	116.30	1.69	2.13	1.85			
	Total	445.58	604.62	948.3	16594.46	18892.1	22426.81	2.69	3.20	4.23			
			1998.50			57913.3			3.45				

Table 8

COMPOSITION OF SSIs DOING BASIC, APPLIED & EXPERIMENTAL RESEARCH

S.No.	Industry Group	No. of SSI Units	Basic Research	Applied Research	Experimental Development
(1)	(2)	(3)	(4)	(5)	(6)
1	AGRO & FOOD INDUSTRIES	322	14	45	263
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	27	2	5	20
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	253	5	30	218
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	144	4	29	111
5	COTTAGE INDUSTRIES	40	****	****	40
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	33	3	7	23
7	ELECTRICAL INDUSTRIES	67	5	12	50
8	ELECTRONIC INDUSTRIES	15	****	5	10
9	ENERGY & ENVIRONMENT	1	****	****	1
10	GLASS INDUSTRIES & ALLIED PRODUCTS	8	****	2	6
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	12	2	3	7
12	JOB WORK	69	****	5	64
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	33	****	5	28
14	MACHINERY, EQUIPMENT & SPARES	62	5	12	45
15	MECHANICAL ENGINEERING INDUSTRIES	434	10	2	422
16	METALLURGICAL INDUST. & ALLIED PRODUCTS	97	3	13	81
17	PACKAGING INDUSTRIES	25	****	8	17
18	PAPER & PAPER PRODUCTS	30	4	8	18
19	PESTICIDE & FERTILIZER	4	****	1	3
20	PRINTING AND ALLIED ACTIVITIES	40	****	8	32
21	REPAIRING & SERVICING	95	****	15	80
22	RUBBER & PLASTIC PROD.	176	8	32	136
23	SERVICE INDUSTRIES	19	****	****	19
24	SPORTS GOODS & ALLIED PRODUCTS	1	****	****	1
25	STATIONERIES & ALLIED PRODUCTS	21	****	4	17
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	1	****	****	1
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	118	12	23	83
28	TIMBER, WOOD & ALLIED PRODUCTS	117	5	18	94
29	MISCELLANEOUS INDUST. & PRODUCTS	18	****	5	13
	Total	2282 (100%)	82 (3.59%)	297 (13.01%)	1903 (83.40%)

Table 9A

ADVERTISEMEMENT & PUBLICITY EXPENDITURE VERSUS GROSS TURNOVER IN SSIs WITH INVEST. IN P&M/c ≥ Rs.25 LAKH

S.No.	Industry Group	Adv. Expenditure (Rs.In Lakhs)			Gross Turnover (Rs.In Lakhs)			% Adv. Exp.		
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1	AGRO & FOOD INDUSTRIES	10.95	28.17	40.65	2809.37	4018.42	7838.07	0.39	0.70	0.52
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	0.54	2.06	2.79	490.20	540.79	525.09	0.11	0.38	0.53
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	9.63	19.85	35.33	563.22	1185.42	2548.16	1.71	1.67	1.39
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	18.58	21.98	44.37	3819.51	4124.18	5025.41	0.49	0.53	0.88
5	COTTAGE INDUSTRIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	28.12	31.22	38.53	1960.45	948.92	1328.90	1.43	3.29	2.90
7	ELECTRICAL INDUSTRIES	9.96	13.11	17.99	771.53	881.78	1105.26	1.29	1.49	1.63
8	ELECTRONIC INDUSTRIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	ENERGY & ENVIRONMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	GLASS INDUSTRIES & ALLIED PRODUCTS & EQUIPMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	JOB WORK	5.58	5.58	5.61	186.00	186.00	187.00	3.00	3.00	3.00
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	0.00	0.00	1.05	0.00	0.00	142.19	0.00	0.00	0.74
14	MACHINERY/EQUIPMENT & SPARES	0.00	0.00	3.31	0.00	0.00	234.80	0.00	0.00	1.41
15	MECHANICAL ENGINEERING INDUSTRIES	30.01	28.54	35.89	3201.18	4588.71	6373.28	0.94	0.62	0.56
16	METALLURGICAL INDUST. & PRODUCTS	29.90	38.32	30.35	3438.52	4215.91	3862.22	0.87	0.91	0.79
17	PACKAGING INDUSTRIES	0.00	0.00	0.60	0.00	0.00	36.21	0.00	0.00	1.66
18	PAPER & PAPER PRODUCTS	0.00	0.00	0.00	231.60	231.39	240.92	0.00	0.00	0.00
19	PESTICIDE & FERTILIZER	0.51	0.24	0.10	1507.74	1970.14	3179.34	0.03	0.01	0.00
20	PRINTING AND ALLIED ACTIVITIES	6.00	5.50	5.00	190.00	570.00	750.00	3.16	0.96	0.67
21	REPAIRING & SERVICING	1.20	1.53	1.24	99.03	135.00	169.00	1.21	1.13	0.73
22	RUBBER & PLASTIC PROD.	4.19	24.35	39.44	452.25	1828.67	4184.23	0.93	1.33	0.94
23	SERVICE INDUSTRIES	3.77	5.88	11.21	284.10	402.79	497.36	1.33	1.46	2.25
24	SPORTS GOOD & ALLIED PRODUCTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25	STATIONERIES & ALLIED PRODUCTS	2.23	1.63	0.68	175.33	236.71	210.94	1.27	0.69	0.32
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	13.10	33.20	32.93	1250.66	2380.06	2701.38	1.05	1.39	1.22
28	TIMBER, WOOD & ALLIED PRODUCTS	3.74	4.03	5.91	289.70	474.45	620.57	1.29	0.85	0.95
29	MISCELLANEOUS INDUST. & PRODUCTS	9.00	12.00	10.00	366.00	550.00	523.00	2.46	2.18	1.91
Total		187.01	277.19	362.98	22086.39	29469.34	42283.33	0.85	0.94	0.86
Cumulative of Three Years					93839.06			0.88		

Table 9B

ADVERTISEMENTS & PUBLICITY EXPENDITURE VERSUS GROSS TURNOVER IN SSIs WITH INVEST. IN P&M/c< Rs.25 LAKHS

S.No.	Industry Group	Adv. Expenditure (Rs.In Lakhs)			Gross Turnover (Rs.In Lakhs)			% Adv. Exp.		
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)		1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99
1	AGRO & FOOD INDUSTRIES	56.40	68.78	94.50	1727.28	2112.91	2756.87	3.27	3.26	3.43
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	3.66	4.27	4.22	218.23	256.55	285.91	1.68	1.66	1.48
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	28.64	36.72	66.93	1036.16	1343.99	1595.19	2.76	2.73	4.20
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	21.83	26.91	30.70	1277.18	1415.67	1621.47	1.71	1.90	1.89
5	COTTAGE INDUSTRIES	3.90	4.95	6.21	98.36	142.68	170.08	0.00	0.00	0.00
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	6.11	6.59	8.54	728.58	1875.98	2132.47	0.84	0.35	0.40
7	ELECTRICAL INDUSTRIES	14.95	16.16	14.19	568.81	667.42	658.21	2.63	2.42	2.16
8	ELECTRONIC INDUSTRIES	2.07	3.17	3.87	113.49	163.22	291.52	0.00	0.00	0.00
9	ENERGY & ENVIRONMENT	0.10	0.11	0.12	1.98	2.75	3.85	0.00	0.00	0.00
10	GLASS INDUSTRIES & ALLIED PRODUCTS & EQUIPMENTS	1.60	2.38	2.16	71.58	86.49	101.35	0.00	0.00	0.00
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	2.11	2.33	3.09	145.08	143.22	144.73	0.00	0.00	0.00
12	JOB WORK	9.51	11.48	11.69	278.07	341.24	369.50	3.42	3.36	3.16
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	2.35	13.49	8.05	136.42	198.49	250.96	0.00	0.00	3.21
14	MACHINERY, EQUIPMENT & SPARES	11.46	13.83	16.87	716.82	892.81	997.77	0.00	0.00	1.69
15	MECHANICAL ENGINEERING INDUSTRIES	52.12	64.55	120.93	2042.50	2426.28	2966.66	2.55	2.66	4.08
16	METALLURGICAL INDUST. & PRODUCTS	29.45	31.66	33.86	1067.57	1281.33	1326.93	2.76	2.47	2.55
17	PACKAGING INDUSTRIES	6.14	7.48	9.07	300.95	344.13	414.70	0.00	0.00	2.19
18	PAPER & PAPER PRODUCTS	9.02	11.90	15.75	313.95	516.41	670.68	2.87	2.30	2.35
19	PESTICIDE & FERTILIZER	3.65	4.40	5.85	1350.00	327.50	429.00	0.27	1.34	1.36
20	PRINTING AND ALLIED ACTIVITIES	5.46	37.73	13.35	368.20	476.37	566.09	1.48	7.92	2.36
21	REPAIRING & SERVICING	7.43	9.99	12.04	246.69	309.57	480.88	3.01	3.23	2.50
22	RUBBER & PLASTIC PROD.	39.16	53.96	62.49	2208.22	1789.82	2096.73	1.77	3.01	2.98
23	SERVICE INDUSTRIES	1.94	2.31	2.63	104.35	131.67	138.43	1.86	1.75	1.90
24	SPORTS GOOD & ALLIED PRODUCTS	0.04	0.06	0.09	1.50	2.00	3.00	0.00	0.00	0.00
25	STATIONERIES & ALLIED PRODUCTS	5.02	4.24	3.46	115.23	113.33	155.75	4.36	3.74	2.22
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0.03	0.04	0.05	1.08	1.20	1.50	0.00	0.00	0.00
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	17.65	20.67	27.79	812.39	914.64	1100.25	2.17	2.26	2.53
28	TIMBER, WOOD & ALLIED PRODUCTS	18.55	20.65	22.90	426.98	498.10	580.03	4.34	4.15	3.95
29	MISCELLANEOUS INDUST. & PRODUCTS	1.59	1.74	12.24	116.81	116.30	116.30	1.36	1.50	10.52
Total		361.94	482.55	613.64	16594.46	18892.07	22426.81	2.18	2.55	2.74
Cumulative of Three Year					57913.34			2.90		

Table- 10

DISTRIBUTION OF R&D UNITS AND EXPENDITURE ON ADVERTISEMENT & PUBLICITY BY TOTAL EMPLOYMENT SIZE

S.No.	Total Employment Size	No. of R&D Units	Expenditure on Advertisement & Publicity (Rs. In Lakhs)		
			1996-97	1997-98	1998-99
1	1-10	1669(73.14%)	243.2(44.30%)	324.56(42.72%)	440.76(45.13%)
2	11-20	327(14.33%)	83.79(15.26%)	104.65(13.77%)	137.55(14.08%)
3	21-30	107(4.69%)	46.04(8.39%)	74.7(9.83%)	111.54(11.42%)
4	31-40	65(2.85%)	34.59(6.30%)	50.55(6.65%)	72.94(7.47%)
5	41-50	34(1.49%)	20.34(3.71%)	22.77(3.00%)	30.1(3.08%)
6	51-60	26(1.14%)	35.08(6.39%)	59.85(7.88%)	52.16(5.34%)
7	61-70	14(0.61%)	32.29(5.88%)	44.13(5.81%)	61.54(6.30%)
8	71-80	11(0.48%)	12.47(2.27%)	16.87(2.22%)	17.02(1.75%)
9	81-90	7(0.31%)	8.83(1.61%)	27.1(3.57%)	9.17(0.94%)
10	91-100	8(0.35%)	5.83(1.06%)	7.66(1.01%)	9.66(0.99%)
11	101- Above	14(0.61%)	26.49(4.83%)	26.9(3.54%)	34.18(3.50%)
	Total	2282(100%)	548.95(100%)	759.74(100%)	976.62(100%)

Table 11A

NEW PLANT & MACHINERY EXPENDITURE VERSUS GROSS TURNOVER IN SSIs WITH INVESTMENT IN P&M/c ≥ Rs. 25 LAKHS

.No	Industry Group	New Plant & Machinery Exp. (Rs.In Lakhs)					Gross Turnover (Rs.In Lakhs.)					% New P&M/c	
		1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99	1996-97	1997-98	1998-99
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	AGRO & FOOD INDUSTRIES	224.98	376.71	523.17	2809.37	4018.42	7838.07	8.01	9.37	6.67			
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	3.44	42.35	0.89	490.20	540.79	525.09	0.70	7.83	0.17			
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	8.15	172.22	243.55	563.22	1185.42	2548.16	1.45	14.53	9.56			
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	149.05	150.34	396.88	3819.51	4124.18	5025.41	3.90	3.65	7.90			
5	COTTAGE INDUSTRIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	40.76	51.24	118.24	1960.45	948.92	1328.90	2.08	5.40	8.90			
7	ELECTRICAL INDUSTRIES	0.53	26.05	263.69	771.53	881.78	1105.26	0.07	2.95	23.86			
8	ELECTRONIC INDUSTRIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
9	ENERGY & ENVIRONMENT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
10	GLASS INDUSTRIES & ALLIED PRODUCTS & EQUIPMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
12	JOB WORK	0.00	0.00	0.00	186.00	186.00	187.00	0.00	0.00	0.00			
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	0.00	0.00	35.00	0.00	0.00	142.19	0.00	0.00	0.00			
14	MACHINERY, EQUIPMENT & SPARES	0.00	0.00	81.75	0.00	0.00	234.80	0.00	0.00	0.00			
15	MECHANICAL ENGINEERING INDUSTRIES	547.30	177.17	152.86	3201.18	4588.71	6373.28	17.10	3.86	2.40			
16	METALLURGICAL INDUST. & PRODUCTS	209.91	95.17	24.03	3438.52	4215.91	3862.22	6.10	2.26	0.62			
17	PACKAGING INDUSTRIES	0.00	0.00	48.95	0.00	0.00	36.21	0.00	0.00	0.00			
18	PAPER & PAPER PRODUCTS	9.02	3.68	0.16	231.60	231.39	240.92	3.89	1.59	0.07			
19	PESTICIDE & FERTILIZER	4.44	28.19	45.24	1507.74	1970.14	3179.34	0.29	1.43	1.42			
20	PRINTING AND ALLIED ACTIVITIES	0.00	0.00	0.00	190.00	570.00	750.00	0.00	0.00	0.00			
21	REPAIRING & SERVICING	0.00	1.62	0.00	99.03	135.00	169.00	0.00	1.20	0.00			
22	RUBBER & PLASTIC PROD.	237.89	165.22	278.32	452.25	1828.67	4184.23	52.60	9.03	6.65			
23	SERVICE INDUSTRIES	36.30	108.21	139.69	284.10	402.79	497.36	12.78	26.87	28.09			
24	SPORTS GOOD & ALLIED PRODUCTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
25	STATIONERIES & ALLIED PRODUCTS	0.00	0.94	2.54	175.33	236.71	210.94	0.00	0.40	1.20			
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	37.46	8.69	3.35	1250.66	2380.06	2701.38	3.00	0.37	0.12			
28	TIMBER, WOOD & ALLIED PRODUCTS	7.08	2.86	36.78	289.70	474.45	620.57	2.44	0.60	5.93			
29	MISCELLANEOUS INDUST. & PRODUCTS	4.12	0.17	0.54	366.00	550.00	523.00	1.13	0.03	0.10			
Total		1520.43	1410.83	2395.63	22086.39	29469.34	42283.33	6.88	4.79	5.67			
Cumulative of Three Years				5326.89			93839.06			5.68			

Table 11B

NEW PLANT & MACHINERY EXPENDITURE VERSUS GROSS TURNOVER IN SSIs WITH INVESTMENT IN P&M/c< Rs.25 LAKHS

S.No.	Industry Group	New Plant & Machinery Exp. (Rs.In Lakhs)					Gross Turnover (Rs.In Lakhs)					% New P/M				
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1	AGRO & FOOD INDUSTRIES	21.21	83.60	213.79	1727.28	2112.91	2756.87	1.23	3.96	7.75						
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	0.60	14.68	4.96	218.23	256.55	285.91	0.27	5.72	1.73						
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	18.72	59.69	14.08	1036.16	1343.99	1595.19	1.81	4.44	0.88						
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	47.38	53.49	24.47	1277.18	1415.67	1621.47	3.71	3.78	1.51						
5	COTTAGE INDUSTRIES	11.47	5.30	1.02	98.36	142.68	170.08	11.66	3.71	0.60						
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	93.35	23.75	34.52	728.58	1875.98	2132.47	12.81	1.27	1.62						
7	ELECTRICAL INDUSTRIES	1.27	3.25	1.43	568.81	667.42	658.21	0.22	0.49	0.22						
8	ELECTRONIC INDUSTRIES	5.83	7.00	9.68	113.49	163.22	291.52	5.14	4.29	3.32						
9	ENERGY & ENVIRONMENT	0.00	0.00	0.00	1.98	2.75	3.85	0.00	0.00	0.00						
10	GLASS INDUSTRIES & ALLIED PRODUCTS & EQUIPMENTS	0.30	0.65	2.25	71.58	86.49	101.35	0.42	0.75	2.22						
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	0.75	0.25	0.00	145.08	143.22	144.73	0.52	0.17	0.00						
12	JOB WORK	10.91	2.87	46.54	278.07	341.24	369.50	3.92	0.84	12.60						
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	0.02	2.26	1.03	136.42	198.49	250.96	0.01	1.14	0.41						
14	MACHINERY, EQUIPMENT & SPARES	5.43	10.82	5.70	716.82	892.81	997.77	0.76	1.21	0.57						
15	MECHANICAL ENGINEERING INDUSTRIES	41.61	51.01	72.89	2042.50	2426.28	2966.66	2.04	2.10	2.46						
16	METALLURGICAL INDUST. & PRODUCTS	120.67	35.31	22.79	1067.57	1281.33	1326.93	11.30	2.76	1.72						
17	PACKAGING INDUSTRIES	1.49	1.56	9.78	300.95	344.13	414.70	0.50	0.45	2.36						
18	PAPER & PAPER PRODUCTS	23.31	9.23	50.23	313.95	516.41	670.68	7.42	1.79	7.49						
19	PESTICIDE & FERTILIZER	0.00	0.00	0.00	1350.00	327.50	429.00	0.00	0.00	0.00						
20	PRINTING AND ALLIED ACTIVITIES	2.83	57.35	2.17	368.20	476.37	566.09	0.77	12.04	0.38						
21	REPAIRING & SERVICING	15.03	19.73	25.26	246.69	309.57	480.88	6.09	6.37	5.25						
22	RUBBER & PLASTIC PROD.	36.31	30.69	33.95	2208.22	1789.82	2096.73	1.64	1.71	1.62						
23	SERVICE INDUSTRIES	8.50	12.77	6.85	104.35	131.67	138.43	8.15	9.70	4.95						
24	SPORTS GOOD & ALLIED PRODUCTS	0.00	0.00	0.00	1.50	2.00	3.00	0.00	0.00	0.00						
25	STATIONERIES & ALLIED PRODUCTS	3.47	29.82	22.92	115.23	113.33	155.75	3.01	26.31	14.72						
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0.00	0.00	0.00	1.08	1.20	1.50	0.00	0.00	0.00						
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	6.38	7.66	24.93	812.39	914.64	1100.25	0.79	0.84	2.27						
28	TIMBER, WOOD & ALLIED PRODUCTS	9.91	15.42	2.39	426.98	498.10	580.03	2.32	3.10	0.41						
29	MISCELLANEOUS INDUST. & PRODUCTS	1.05	2.75	0.31	116.81	116.30	116.30	0.90	2.36	0.27						
Total		487.80	540.91	633.94	16594.46	18892.07	22426.81	2.94	2.86	2.83						
Cumulative of Three Years												57913.34	2.87			

Table- 12

DISTRIBUTION OF R&D UNITS AND EXPENDITURE ON NEW P&M/c BY TOTAL EMPLOYMENT SIZE

S.No.	Total Employment Size	No. of R&D Units	Investment in New P&M/c (Rs. In Lakhs)	
			1996-97	1997-98
1	1-10	1669(73.14%)	374.97(18.67%)	477.1(24.45%)
2	11-20	327(14.33%)	171.76(8.55%)	196.43(10.07%)
3	21-30	107(4.69%)	381.67(19.01%)	149.99(7.69%)
4	31-40	65(2.85%)	227.76(11.34%)	314.19(16.10%)
5	41-50	34(1.49%)	50.07(2.49%)	88.5(4.54%)
6	51-60	26(1.14%)	122.94(6.13%)	47.97(2.46%)
7	61-70	14(0.61%)	56.89(2.83%)	229.8(11.78%)
8	71-80	11(0.48%)	103.06(5.13%)	94.11(4.82%)
9	81-90	7(0.31%)	2.97(0.51%)	5.87(0.30%)
10	91-100	8(0.35%)	3.44(0.17%)	3.05(0.16%)
11	101- Above	14(0.61%)	512.7(25.53%)	343.99(17.63%)
	Total	2282(100%)	2008.23(100%)	1951(100%)
				3029.57(100%)

Table 13A

**INDUSTRY GROUPWISE CLASSIFICATION OF PERSONNEL EMPLOYED FOR SSIs WITH INVESTMENT IN
P&M/c ≥ Rs.25 LAKHS**

S.N (1)	Industry Group (2)	Personnel Employed								Male/Female Ratio (8)
		Full Time		Male/Female		Part Time		Male/Female Ratio (6)	Female (7)	
		Male (3)	Female (4)	Ratio (5)	Male (6)	Female (7)				
1	AGRO & FOOD INDUSTRIES	441	152	2.9	97	46			2.1	
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	125	10	12.5	8	2			4.0	
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	216	86	2.5	65	25			2.6	
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	371	106	3.5	90	33			2.7	
5	COTTAGE INDUSTRIES	0	0	***	0	0			***	
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	213	52	4.1	19	7			2.7	
7	ELECTRICAL INDUSTRIES	191	50	3.8	3	0			***	
8	ELECTRONIC INDUSTRIES	0	0	***	0	0			***	
9	ENERGY & ENVIRONMENT	0	0	***	0	0			***	
10	GLASS INDUSTRIES & ALLIED PRODUCTS	0	0	***	0	0			***	
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	0	0	***	0	0			***	
12	JOB WORK	2	0	***	1	0			***	
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	72	1	72.0	0	0			***	
14	MACHINERY, EQUIPMENT & SPARES	43	18	2.4	9	5			1.8	
15	MECHANICAL ENGINEERING INDUSTRIES	864	76	11.4	41	10			4.1	
16	METALLURGICAL INDUST. & ALLIED PRODUCTS	429	92	4.7	50	18			2.8	
17	PACKAGING INDUSTRIES	16	0	***	0	0			***	
18	PAPER & PAPER PRODUCTS	31	4	7.8	0	0			***	
19	PESTICIDE & FERTILIZER	80	0	***	0	0			***	
20	PRINTING AND ALLIED ACTIVITIES	11	3	3.7	1	0			***	
21	REPAIRING & SERVICING	4	0	***	1	0			***	
22	RUBBER & PLASTIC PROD.	293	77	3.8	47	15			3.1	
23	SERVICE INDUSTRIES	67	0	***	0	0			***	
24	SPORTS GOODS & ALLIED PRODUCTS	0	0	***	0	0			***	
25	STATIONERIES & ALLIED PRODUCTS	33	1	33.0	0	0			***	
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0	***	0	0			***	
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	140	123	1.1	16	9			1.8	
28	TIMBER, WOOD & ALLIED PRODUCTS	138	37	3.7	25	11			2.3	
29	MISCELLANEOUS INDUST. & PRODUCTS	75	0	***	0	0			***	
Total		3855	888	4.3	473	181			2.6	

Table 13B

**INDUSTRY GROUPWISE CLASSIFICATION OF PERSONNEL EMPLOYED FOR SSIs WITH INVESTMENT
IN P&M/c < Rs.25 LAKHS**

S.No. (1)	Industry Group (2)	PERSONNEL EMPLOYED								MALE/FEMALE RATIO (8)
		FULL TIME		PART TIME		RATIO		RATIO		
		MALE (3)	FEMALE (4)	MALE (5)	FEMALE (6)	MALE/FEMALE (5)	MALE/FEMALE (6)	MALE/FEMALE (7)	MALE/FEMALE (8)	
1	AGRO & FOOD INDUSTRIES	1446	444	3.26	353	98	3.60			
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	277	20	13.85	72	3	24.00			
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	2260	917	2.46	587	169	3.47			
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	870	241	3.61	175	33	5.30			
5	COTTAGE INDUSTRIES	123	82	1.50	26	40	0.65			
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	238	86	2.77	51	19	2.68			
7	ELECTRICAL INDUSTRIES	345	61	5.66	95	5	19.00			
8	ELECTRONIC INDUSTRIES	120	30	4.00	18	4	4.50			
9	ENERGY & ENVIRONMENT	8	0	****	0	0	****			
10	GLASS INDUSTRIES & ALLIED PRODUCTS	98	25	3.92	29	12	2.42			
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	71	25	2.84	11	2	5.50			
12	JOB WORK	292	95	3.07	36	1	36.00			
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	184	55	3.35	35	12	2.92			
14	MACHINERY, EQUIPMENT & SPARES	462	118	3.92	77	14	5.50			
15	MECHANICAL ENGINEERING INDUSTRIES	2359	524	4.50	466	50	9.32			
16	METALLURGICAL INDUST. & ALLIED PRODUCTS	858	357	2.40	229	83	2.76			
17	PACKAGING INDUSTRIES	150	42	3.57	43	4	10.75			
18	PAPER & PAPER PRODUCTS	212	67	3.16	24	4	6.00			
19	PESTICIDE & FERTILIZER	57	22	2.59	20	12	1.67			
20	PRINTING AND ALLIED ACTIVITIES	143	21	6.81	25	5	5.00			
21	REPAIRING & SERVICING	330	21	15.71	56	0	****			
22	RUBBER & PLASTIC PROD.	1060	272	3.90	157	20	7.85			
23	SERVICE INDUSTRIES	57	14	4.07	11	0	****			
24	SPORTS GOODS & ALLIED PRODUCTS	4	0	****	0	0	****			
25	STATIONERIES & ALLIED PRODUCTS	111	23	4.83	7	0	****			
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	2	0	****	0	0	****			
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	850	267	3.18	224	29	7.72			
28	TIMBER, WOOD & ALLIED PRODUCTS	464	66	7.03	85	30	2.83			
29	MISCELLANEOUS INDUST. & PRODUCTS	127	18	7.06	14	2	7.00			
	Total	13578	3913	3.47	2926	651	4.49			

Table 14A

**INDUSTRY GROUPWISE CLASSIFICATION OF S&T PERSONNEL EMPLOYED ON R&D ACTIVITIES
FOR SSIs WITH INVESTMENT IN P&M/c \geq Rs.25 LAKHS**

S.No.	Industry Group	S&T Personnel Employed on R&D Activities					
		Full Time		Part Time		Ratio	
		Male (3)	Female (4)	Male (5)	Female (6)	Male/Female (7)	Male/Female Ratio (8)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	AGRO & FOOD INDUSTRIES	71	27	2.6	19	8	2.4
2	AUTOMOBILE SPARES AND ALLIED PRODUCT	21	2	10.5	0	0	***
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	47	14	3.4	18	2	9.0
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	71	22	3.2	14	4	3.5
5	COTTAGE INDUSTRIES	0	0	***	0	0	***
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	20	7	2.9	4	1	4.0
7	ELECTRICAL INDUSTRIES	15	3	5.0	1	0	***
8	ELECTRONIC INDUSTRIES	0	0	***	0	0	***
9	ENERGY & ENVIRONMENT	0	0	***	0	0	***
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	0	0	***	0	0	***
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENT	0	0	***	0	0	***
12	JOB WORK	0	0	***	0	0	***
13	LEATHER, LEATHER GOODS & ALLIED PRODUCT	0	0	***	0	0	***
14	MACHINERY, EQUIPMENT & SPARES	9	3	3.0	2	0	***
15	MECHANICAL ENGINEERING INDUSTRIES	71	20	3.6	6	0	***
16	METALLURGICAL INDUST & ALLIED PRODUCTS	55	6	9.2	4	1	4.0
17	PACKAGING INDUSTRIES	0	0	***	0	0	***
18	PAPER & PAPER PRODUCTS	0	0	***	0	0	***
19	PESTICIDE & FERTILIZER	0	0	***	0	0	***
20	PRINTING AND ALLIED ACTIVITIES	3	1	3.0	0	0	***
21	REPAIRING & SERVICING	4	0	***	0	0	***
22	RUBBER & PLASTIC PROD.	69	17	4.1	11	4	2.8
23	SERVICE INDUSTRIES	15	0	***	0	0	***
24	SPORTS GOODS & ALLIED PRODUCTS	0	0	***	0	0	***
25	STATIONERIES & ALLIED PRODUCTS	2	0	***	0	0	***
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0	***	0	0	***
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	6	8	0.8	2	1	2.0
28	TIMBER, WOOD & ALLIED PRODUCTS	29	8	3.6	4	2	2.0
29	MISCELLANEOUS INDUST. & PRODUCTS	15	0	***	0	0	***
	Total	523	138	3.8	85	23	3.7
	Total	661	108				

Table 14B

**INDUSTRY GROUPWISE CLASSIFICATION OF S&T PERSONNEL EMPLOYED ON R&D ACTIVITIES
FOR SSIs WITH INVESTMENT IN P&M/c < Rs.25 LAKHS**

S.No.	Industry Group	S&T Personnel Employed on R&D Activities							
		Full Time		MALE/FEMALE		Part Time		MALE/FEMALE	
		Male	Female	Ratio	Male	Female	Ratio	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1	AGRO & FOOD INDUSTRIES	207	33	6.27	15	2	7.50	***	
2	AUTOMOBILE SPARES AND ALLIED PRODUCT	50	1	50.00	4	0	***		
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	396	86	4.60	38	19	2.00		
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	142	17	8.35	13	5	2.60		
5	COTTAGE INDUSTRIES	22	13	1.69	5	4	1.25		
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	63	21	3.00	19	15	1.27		
7	ELECTRICAL INDUSTRIES	58	2	29.00	2	0	***		
8	ELECTRONIC INDUSTRIES	19	6	3.17	6	1	6.00		
9	ENERGY & ENVIRONMENT	2	0	***	0	0	***		
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	21	5	4.20	3	2	1.50		
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENTS	12	1	12.00	1	0	***		
12	JOB WORK	33	2	16.50	2	0	***		
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	23	3	7.67	4	1	4.00		
14	MACHINERY, EQUIPMENT & SPARES	77	17	4.53	11	1	11.00		
15	MECHANICAL ENGINEERING INDUSTRIES	426	52	8.19	31	2	15.50		
16	METALLURGICAL INDUST & ALLIED PRODUCTS	143	44	3.25	26	3	8.67		
17	PACKAGING INDUSTRIES	36	9	4.00	5	0	***		
18	PAPER & PAPER PRODUCTS	33	20	1.65	0	0	***		
19	PESTICIDE & FERTILIZER	11	3	3.67	3	1	3.00		
20	PRINTING AND ALLIED ACTIVITIES	22	1	22.00	0	0	***		
21	REPAIRING & SERVICING	51	0	***	3	0	***		
22	RUBBER & PLASTIC PROD.	189	12	15.75	16	0	***		
23	SERVICE INDUSTRIES	7	0	***	0	0	***		
24	SPORTS GOODS & ALLIED PRODUCTS	1	0	***	0	0	***		
25	STATIONERIES & ALLIED PRODUCTS	21	1	21.00	0	0	***		
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0	***	0	0	****		
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	121	29	4.17	19	0	***		
28	TIMBER, WOOD & ALLIED PRODUCTS	60	7	8.57	6	1	6.00		
29	MISCELLANEOUS INDUST. & PRODUCTS	21	3	7.00	7	0	***		
Total		2267	388	6	239	57	4.2		
Total		2655			295				

Table 15A

**INDUSTRY GROUPWISE, R&D EMPLOYMENT (OTHER THAN S&T) ON AUXILIARY ACTIVITIES
FOR SSIs WITH INVESTMENT IN P&M/c \geq Rs.25 LAKHS**

S.No.	Industry Group	Total Manpower (3)	No. of Personnel Employed on Auxiliary Activities In R&D (4)	% of Total Manpower (5)
1	AGRO & FOOD INDUSTRIES	736	32	4.3
2	AUTOMOBILE SPARES AND ALLIED PRODUCT	145	8	5.5
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	392	19	4.8
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	600	23	3.8
5	COTTAGE INDUSTRIES	0	0	***
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	291	15	5.2
7	ELECTRICAL INDUSTRIES	244	9	3.7
8	ELECTRONIC INDUSTRIES	0	0	***
9	ENERGY & ENVIRONMENT	0	0	***
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	0	0	***
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENTS	0	0	***
12	JOB WORK	3	0	0.0
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	73	0	0.0
14	MACHINERY, EQUIPMENT & SPARES	75	2	2.7
15	MECHANICAL ENGINEERING INDUSTRIES	991	50	5.0
16	METALLURGICAL INDUST & ALLIED PRODUCTS	589	28	4.8
17	PACKAGING INDUSTRIES	16	0	0.0
18	PAPER & PAPER PRODUCTS	35	0	0.0
19	PESTICIDE & FERTILIZER	80	0	0.0
20	PRINTING AND ALLIED ACTIVITIES	15	0	0.0
21	REPAIRING & SERVICING	5	0	0.0
22	RUBBER & PLASTIC PROD.	432	28	6.5
23	SERVICE INDUSTRIES	67	5	7.5
24	SPORTS GOODS & ALLIED PRODUCTS	0	0	***
25	STATIONERIES & ALLIED PRODUCTS	34	0	0.0
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0	***
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	288	12	4.2
28	TIMBER, WOOD & ALLIED PRODUCTS	211	18	8.5
29	MISCELLANEOUS INDUST. & PRODUCTS	75	7	9.3
	Total	5397	256	4.7

Table 15B

**INDUSTRY GROUPWISE, R&D EMPLOYMENT (OTHER THAN S&T) ON AUXILIARY ACTIVITIES
FOR SSIs WITH INVESTMENT IN P&M/c < Rs.25 LAKHS**

S.no.	Industry Group	Total Manpower	No. of Personnel Employed on Auxiliary Activities In R&D	% of Total Manpower
(1)	(2)	(3)	(4)	(5)
1	AGRO & FOOD INDUSTRIES	2341	12	0.51
2	AUTOMOBILE SPARES AND ALLIED PRODUCT	372	17	4.57
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	3933	53	1.35
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	1319	9	0.68
5	COTTAGE INDUSTRIES	271	10	3.69
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	394	29	7.36
7	ELECTRICAL INDUSTRIES	506	8	1.58
8	ELECTRONIC INDUSTRIES	172	22	12.79
9	ENERGY & ENVIRONMENT	8	0	****
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	164	2	1.22
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENTS	109	4	3.67
12	JOB WORK	424	3	0.70
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	286	4	1.39
14	MACHINERY, EQUIPMENT & SPARES	671	25	3.73
15	MECHANICAL ENGINEERING INDUSTRIES	3399	49	1.44
16	METALLURGICAL INDUSTRY & ALLIED PRODUCTS	1527	8	0.52
17	PACKAGING INDUSTRIES	239	7	2.93
18	PAPER & PAPER PRODUCTS	307	0	****
19	PESTICIDE & FERTILIZER	111	1	0.90
20	PRINTING AND ALLIED ACTIVITIES	194	0	****
21	REPAIRING & SERVICING	407	9	2.21
22	RUBBER & PLASTIC PROD.	1509	24	1.59
23	SERVICE INDUSTRIES	82	1	1.22
24	SPORTS GOODS & ALLIED PRODUCTS	5	0	****
25	STATIONERIES & ALLIED PRODUCTS	141	7	4.96
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	2	0	****
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	1370	25	1.82
28	TIMBER, WOOD & ALLIED PRODUCTS	645	8	1.24
29	MISCELLANEOUS INDUST. & PRODUCTS	161	2	1.24
	Total	21069	339	1.60

Table 16A
INDUSTRY GROUPWISE R&D EMPLOYMENT PER THOUSAND OF TOTAL EMPLOYMENT FOR SSIs WITH
INVESTMENT IN P&M/c \geq Rs.25 LAKHS

S.No.	Industry Group	No. of R&D Units	Employment	Total	Employment	R&D	R&D Employment per
(1)	(2)	(3)	(4)	(4)	(5)	(5)	Thousand of Total Employment (6)=(5)*1000/(4)
1	AGRO & FOOD INDUSTRIES	22	736	157	213.3		
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	2	145	31	213.8		
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	15	392	100	255.1		
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	19	600	134	223.3		
5	COTTAGE INDUSTRIES	0	0	0	***		
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	5	291	47	161.5		
7	ELECTRICAL INDUSTRIES	6	244	28	114.8		
8	ELECTRONIC INDUSTRIES	0	0	0	***		
9	ENERGY & ENVIRONMENT	0	0	0	***		
10	GLASS INDUSTRIES & ALLIED PRODUCTS	0	0	0	***		
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	0	0	0	***		
12	JOB WORK	1	3	0	0.0		
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	1	73	0	0.0		
14	MACHINERY, EQUIPMENT & SPARES	2	75	16	213.3		
15	MECHANICAL ENGINEERING INDUSTRIES	23	991	147	148.3		
16	METALLURGICAL INDUST. & ALLIED PRODUCTS	13	589	94	159.6		
17	PACKAGING INDUSTRIES	2	16	0	0.0		
18	PAPER & PAPER PRODUCTS	1	35	0	0.0		
19	PESTICIDE & FERTILIZER	1	80	0	0.0		
20	PRINTING AND ALLIED ACTIVITIES	2	15	4	266.7		
21	REPAIRING & SERVICING	1	5	4	800.0		
22	RUBBER & PLASTIC PROD.	9	432	129	298.6		
23	SERVICE INDUSTRIES	1	67	20	298.5		
24	SPORTS GOODS & ALLIED PRODUCTS	0	0	0	***		
25	STATIONERIES & ALLIED PRODUCTS	3	34	2	58.8		
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0	0	***		
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	6	288	29	100.7		
28	TIMBER, WOOD & ALLIED PRODUCTS	3	211	61	289.1		
29	MISCELLANEOUS INDUST. & PRODUCTS	1	75	22	293.3		
Total		139	5397	1025	189.9		

Table 16B

**INDUSTRY GROUPWISE R&D EMPLOYMENT PER THOUSAND OF TOTAL EMPLOYMENT FOR SSIs WITH
INVESTMENT IN P&M/c < Rs.25 LAKHS**

S.No.	Industry Group	No. of R&D Units	Total Employment	R&D Employment	R&D Employment per Thousand of Total Employment
(1)	(2)	(3)	(4)	(5)	(6)=(5)*1000/(4)
1	AGRO & FOOD INDUSTRIES	300	2341	269	114.91
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	25	372	72	193.55
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	238	3933	592	150.52
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	125	1319	186	141.02
5	COTTAGE INDUSTRIES	40	271	54	199.26
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	28	394	147	373.10
7	ELECTRICAL INDUSTRIES	61	506	70	138.34
8	ELECTRONIC INDUSTRIES	15	172	54	313.95
9	ENERGY & ENVIRONMENT	1	8	2	250.00
10	GLASS INDUSTRIES & ALLIED PRODUCTS	8	164	33	201.22
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	12	109	18	165.14
12	JOB WORK	68	424	40	94.34
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	32	286	35	122.38
14	MACHINERY, EQUIPMENT & SPARES	60	671	131	195.23
15	MECHANICAL ENGINEERING INDUSTRIES	411	3399	560	164.75
16	METALLURGICAL INDUST. & ALLIED PRODUCTS	84	1527	224	146.69
17	PACKAGING INDUSTRIES	23	239	57	238.49
18	PAPER & PAPER PRODUCTS	29	307	53	172.64
19	PESTICIDE & FERTILIZER	3	111	19	171.17
20	PRINTING AND ALLIED ACTIVITIES	38	194	23	118.56
21	REPAIRING & SERVICING	94	407	63	154.79
22	RUBBER & PLASTIC PROD.	167	1509	241	159.71
23	SERVICE INDUSTRIES	18	82	8	97.56
24	SPORTS GOODS & ALLIED PRODUCTS	1	5	1	200.00
25	STATIONERIES & ALLIED PRODUCTS	18	141	29	205.67
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	1	2	0	0.00
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	112	1370	194	141.61
28	TIMBER, WOOD & ALLIED PRODUCTS	114	645	82	127.13
29	MISCELLANEOUS INDUST. & PRODUCTS	17	161	33	204.97
	Total	2143	21069	3290	156.15

Table 17A

**INDUSTRY GROUPWISE, R&D MANPOWERWISE R&D EXPENDITURE FOR SSIs WITH INVESTMENT
IN P&M/c ≥ Rs.25 LAKHS**

.No (1)	Industry Group (2)	R&D Exp. (Rs.In Lakhs)					Per unit R&D Manpower wise R&D Expenditure (Rs.In Lakhs)		
		R&D Emp.size (3)	1996-97 (4)	1997-98 (5)	1998-99 (6)	1996-97 (7)	1997-98 (8)	1998-99 (9)	
1	AGRO & FOOD INDUSTRIES	157	25.56	57.39	83.54	0.16	0.37	0.53	
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	31	4.75	5.50	2.10	0.15	0.18	0.07	
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	100	9.25	18.40	31.20	0.09	0.18	0.31	
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	134	42.86	75.35	80.55	0.32	0.56	0.60	
5	COTTAGE INDUSTRIES	0	0.00	0.00	0.00	0.00	0.00	0.00	
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	47	38.40	31.80	36.00	0.82	0.68	0.77	
7	ELECTRICAL INDUSTRIES	28	2.61	4.42	203.32	0.09	0.16	7.26	
8	ELECTRONIC INDUSTRIES	0	0.00	0.00	0.00	0.00	0.00	0.00	
9	ENERGY & ENVIRONMENT	0	0.00	0.00	0.00	0.00	0.00	0.00	
10	GLASS INDUSTRIES & ALLIED PRODUCTS & EQUIPMENTS	0	0.00	0.00	0.00	0.00	0.00	0.00	
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	0	0.00	0.00	0.00	0.00	0.00	0.00	
12	JOB WORK	0	5.58	6.00	7.00	0.00	0.00	0.00	
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	0	0.00	0.00	0.75	0.00	0.00	0.00	
14	MACHINERY,EQUIPMENT & SPARES	16	0.00	0.00	3.50	0.00	0.00	0.22	
15	MECHANICAL ENGINEERING INDUSTRIES	147	30.46	39.93	55.18	0.21	0.27	0.38	
16	METALLURGICAL INDUST. & PRODUCTS	94	65.38	69.88	68.88	0.70	0.74	0.73	
17	PACKAGING INDUSTRIES	0	0.35	0.20	0.32	0.00	0.00	0.00	
18	PAPER & PAPER PRODUCTS	0	2.00	2.30	3.00	0.00	0.00	0.00	
19	PESTICIDE & FERTILIZER	0	7.50	2.24	1.25	0.00	0.00	0.00	
20	PRINTING AND ALLIED ACTIVITIES	4	7.50	6.50	6.00	1.88	1.63	1.50	
21	REPAIRING & SERVICING	4	0.75	1.05	1.25	0.19	0.26	0.31	
22	RUBBER & PLASTIC PROD.	129	9.84	31.95	21.28	0.08	0.25	0.16	
23	SERVICE INDUSTRIES	20	1.50	1.75	2.50	0.08	0.09	0.13	
24	SPORTS GOOD & ALLIED PRODUCTS	0	0.00	0.00	0.00	0.00	0.00	0.00	
25	STATIONERIES & ALLIED PRODUCTS	2	1.41	1.39	0.98	0.71	0.70	0.49	
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0.00	0.00	0.00	0.00	0.00	0.00	
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	29	18.97	26.15	31.8	0.65	0.90	1.10	
28	TIMBER,WOOD & ALLIED PRODUCTS	61	4.05	4.75	7.10	0.07	0.08	0.12	
29	MISCELLANEOUS INDUST. & PRODUCTS	22	6.50	7.50	7.00	0.30	0.34	0.32	
Total		1025	285.22	394.45	654.50	0.28	0.38	0.64	
Average of three Years				444.72			0.43		

Table 17B
INDUSTRY GROUPWISE R&D MANPOWERWISE R&D EXPENDITURE FOR SSIs WITH INVESTMENT
IN P&M/c < Rs.25 LAKHS

S.No. (1)	Industry Group (2)	R&D Emp.size (3)	R&D Exp. (Rs.In Lakhs)			Per unit R&D Manpower Wise		
			1996-97 (4)	1997-98 (5)	1998-99 (6)	1996-97 (7)	1997-98 (8)	1998-99 (9)
1	AGRO & FOOD INDUSTRIES	269	48.04	72.05	116.8	0.18	0.27	0.43
2	AUTOMOBILE SPARES AND ALLIED PRODUCTS	72	4.88	3.77	7.38	0.07	0.05	0.10
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	592	36.93	47.13	85.14	0.06	0.08	0.14
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	186	43.06	72.32	62.86	0.23	0.39	0.34
5	COTTAGE INDUSTRIES	54	2.31	4.64	6.04	0.04	0.09	0.11
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	147	6.59	7.29	16.69	0.04	0.05	0.11
7	ELECTRICAL INDUSTRIES	70	20.49	28.46	32.03	0.29	0.41	0.46
8	ELECTRONIC INDUSTRIES	54	12.27	5.17	10.64	0.23	0.10	0.20
9	ENERGY & ENVIRONMENT	2	0.00	0.35	0.00	0.00	0.18	0.00
10	GLASS INDUSTRIES & ALLIED PRODUCTS & EQUIPMENTS	33	0.51	2.51	2.01	0.02	0.08	0.06
11	HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS	18	2.27	1.9	4.27	0.13	0.11	0.24
12	JOB WORK	40	7.47	12.88	15	0.19	0.32	0.38
13	LEATHER, LEATHER GOODS & ALLIED PRODUCTS	35	3.29	5.95	7.01	0.09	0.17	0.20
14	MACHINERY,EQUIPMENT & SPARES	131	14.63	21.35	24.94	0.11	0.16	0.19
15	MECHANICAL ENGINEERING INDUSTRIES	560	58.36	83.75	160.77	0.10	0.15	0.29
16	METALLURGICAL INDUST. & PRODUCTS	224	29.77	30.29	97.13	0.13	0.14	0.43
17	PACKAGING INDUSTRIES	57	8.82	11.08	13.78	0.15	0.19	0.24
18	PAPER & PAPER PRODUCTS	53	19.4	28.06	33.01	0.37	0.53	0.62
19	PESTICIDE & FERTILIZER	19	5.35	5	5.75	0.28	0.26	0.30
20	PRINTING AND ALLIED ACTIVITIES	23	6.66	9.46	12.1	0.29	0.41	0.53
21	REPAIRING & SERVICING	63	6.63	7.91	13.11	0.11	0.13	0.21
22	RUBBER & PLASTIC PROD.	241	31.44	50.69	58.16	0.13	0.21	0.24
23	SERVICE INDUSTRIES	8	2.96	3.34	5.09	0.37	0.42	0.64
24	SPORTS GOOD & ALLIED PRODUCTS	1	0.04	0.08	0.15	0.04	0.08	0.15
25	STATIONERIES & ALLIED PRODUCTS	29	1.79	3.58	37.84	0.06	0.12	1.30
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	0	0.03	0.05	0.07	0.00	0.00	0.00
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	194	55.66	62.4	94.36	0.29	0.32	0.49
28	TIMBER,WOOD & ALLIED PRODUCTS	82	13.96	20.68	24.02	0.17	0.25	0.29
29	MISCELLANEOUS INDUST. & PRODUCTS	33	1.97	2.48	2.15	0.06	0.08	0.07
Total		3290	445.58	604.62	948.3	0.14	0.18	0.29
Average of Three Years			666.16				0.20	

Table- 18

DISTRIBUTION OF R&D UNITS AND EXPENDITURE ON R&D BY TOTAL EMPLOYMENT SIZE

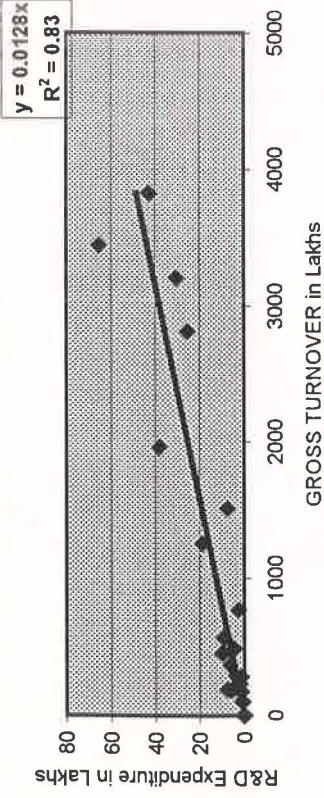
S.No	Total Employment Size	No. of R&D Units	Expenditure on R&D (Rs.In Lakhs)		
			1996-97	1997-98	1998-99
1	1-10	1669(73.14%)	260.72(35.68%)	350.89(35.12%)	493.58(30.80%)
2	11-20	327(14.33%)	97.64(13.36%)	140.69(14.08%)	274.77(17.15%)
3	21-30	107(4.69%)	87.47(11.97%)	131.21(13.13%)	186.58(11.64%)
4	31-40	65(2.85%)	86.05(11.77%)	114.54(11.46%)	140.77(8.78%)
5	41-50	34(1.49%)	15.9(2.18%)	23.31(2.33%)	36.73(2.29%)
6	51-60	26(1.14%)	27.23(3.73%)	39.77(4.00%)	42.42(2.65%)
7	61-70	14(0.61%)	33.19(4.54%)	45.72(4.58%)	54.85(3.42%)
8	71-80	11(0.48%)	32.06(4.38%)	16.08(1.61%)	10.31(0.64%)
9	81-90	7(0.31%)	35.52(4.86%)	42.51(4.25%)	47.84(2.98%)
10	91-100	8(0.35%)	9.89(1.35%)	12.89(1.29%)	16.4(1.02%)
11	101 - Above	14(0.61%)	45.13(6.18%)	81.46(8.15%)	298.55(18.63%)
	Total	2282(100%)	730.80(100%)	999.07(100%)	1602.80(100%)

Table 20

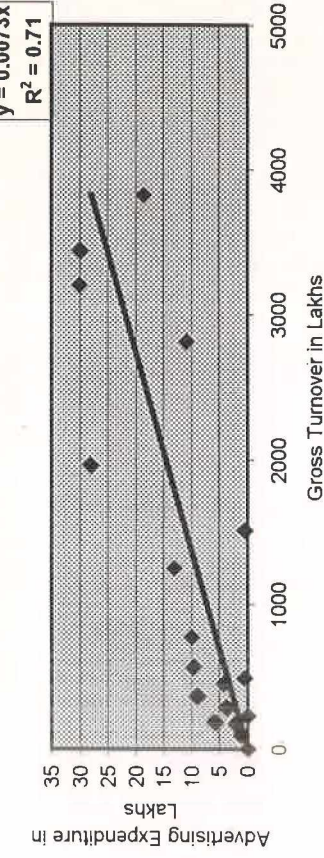
INDUSTRY GROUP WISE CLASSIFICATION OF PERSONNEL EMPLOYED FOR TINY UNITS WITH INVESTMENT IN P&M/c UPTO Rs. 4 LAKHS

S.no	Industry Group	Total No. of Employees				S&T Personnel Employed on R&D activities				Personnel on Auxiliary activities in R&D Units			
		Full Time		Part Time		Full Time		Part Time		Full Time		Part Time	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1	AGRO & FOOD INDUSTRIES	1095	294	248	80	148	12	6	0	5	0	0	0
2	AUTOMOBILE SPARES AND ALLIED PRODUCT	140	20	15	3	20	1	1	0	3	0	0	0
3	CERAMIC INDUSTRIES AND ALLIED PRODUCTS	1911	760	505	153	330	63	28	17	21	7	2	1
4	CHEMICAL INDUSTRIES & ALLIED PRODUCTS	585	113	63	17	91	9	5	5	4	0	0	2
5	COTTAGE INDUSTRIES	106	74	20	38	18	12	4	4	0	0	5	5
6	DRUGS PHARMACEUTICAL & ALLIED PRODUCTS	150	68	43	19	41	16	18	15	13	3	3	0
7	ELECTRICAL INDUSTRIES	231	39	62	2	31	1	0	0	2	0	0	0
8	ELECTRONIC INDUSTRIES	114	27	11	4	18	6	5	1	7	3	7	0
9	ENERGY & ENVIRONMENT	8	0	0	0	2	0	0	0	0	0	0	0
10	GLASS INDUSTRIES AND ALLIED PRODUCTS	34	9	10	1	7	0	0	0	0	0	0	0
11	HOSPITAL & MEDICAL PRODUCTS & EQUIPMENT	47	15	5	2	7	0	0	0	1	0	0	0
12	JOB WORK	268	91	31	1	28	1	2	0	1	0	1	0
13	LEATHER, LEATHER GOODS & ALLIED PRODUCT	90	23	16	4	19	3	4	1	2	2	0	0
14	MACHINERY, EQUIPMENT & SPARES	280	69	26	7	33	6	3	0	7	1	2	0
15	MECHANICAL ENGINEERING INDUSTRIES	1909	385	313	34	335	44	19	1	37	1	1	1
16	METALLURGICAL INDUSTRY & ALLIED PRODUCTS	424	177	90	39	43	4	4	0	0	0	0	0
17	PACKAGING INDUSTRIES	90	25	22	0	20	4	3	0	3	1	0	0
18	PAPER & PAPER PRODUCTS	139	26	13	2	12	0	0	0	0	0	0	0
19	PESTICIDE & FERTILIZER	9	5	0	3	2	1	0	0	0	0	0	0
20	PRINTING AND ALLIED ACTIVITIES	116	19	23	5	21	1	0	0	0	0	0	0
21	REPAIRING & SERVICING	265	21	35	0	39	0	2	0	5	0	1	0
22	RUBBER & PLASTIC PROD.	781	228	78	15	126	11	5	0	9	0	0	0
23	SERVICE INDUSTRIES	48	14	8	0	5	0	0	0	1	0	0	0
24	SPORTS GOODS & ALLIED PRODUCTS	4	0	1	0	1	0	0	0	0	0	0	0
25	STATIONERIES & ALLIED PRODUCTS	81	13	7	0	15	1	0	0	2	0	0	0
26	TELECOMMUNICATION AND ALLIED ACTIVITIES	2	0	0	0	0	0	0	0	0	0	0	0
27	TEXTILE, HOSIERY AND ALLIED PRODUCTS	707	192	163	21	87	21	11	0	8	5	2	1
28	TIMBER, WOOD & ALLIED PRODUCTS	443	66	84	30	60	7	6	1	5	0	3	0
29	MISCELLANEOUS INDUSTRY. & PRODUCTS	127	18	14	2	21	3	7	0	2	0	0	0
Total		10204	2791	1906	482	1580	227	133	45	138	23	27	10
Male/Female-RATIOS		3.65	3.95	6.96	2.95	6	2.7	2.95	6	2.7	2.7	2.7	2.7

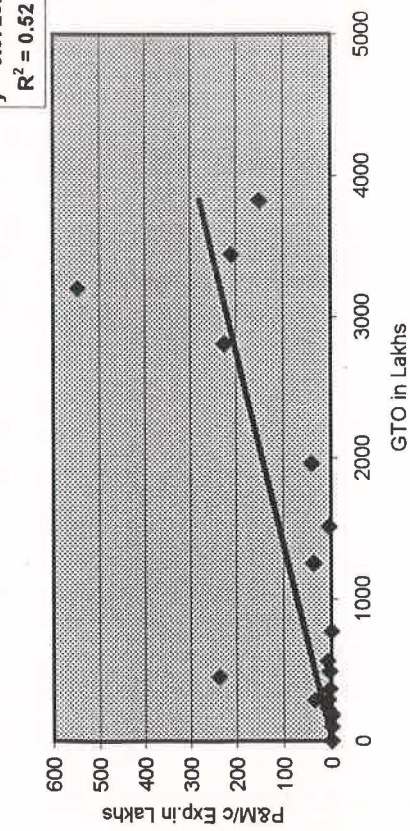
CORRELATION OF R&D EXPENDITURE v/s GROSS TURNOVER FOR SSI's WITH INVESTMENT IN P&M >Rs.25 LAKHS in 1996-97



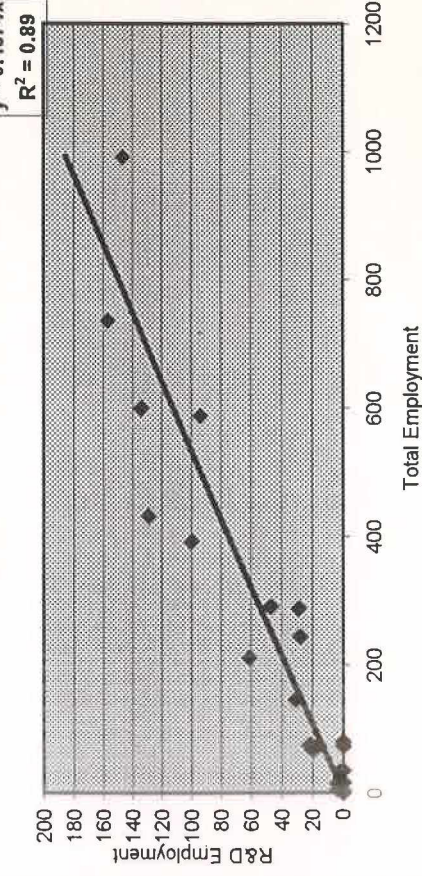
CORRELATION OF ADVERTISING EXPENDITURE v/s GROSS TURNOVER FOR SSI's WITH INVESTMENT IN P&M >Rs.25 LAKHS in 1996-97



CORRELATION OF NEW PLANT & MACHINERY EXPENDITURE v/s GROSS TURNOVER FOR SSI's WITH INVESTMENT IN P&M >Rs.25 LAKHS in 96-97

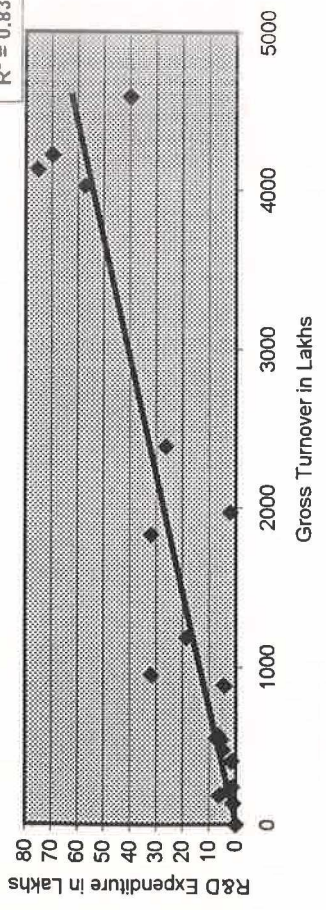


CORRELATION OF TOTAL EMPLOYMENT v/s R&D EMPLOYMENT IN SSI's WITH INVESTMENT IN P&M >Rs.25 LAKHS



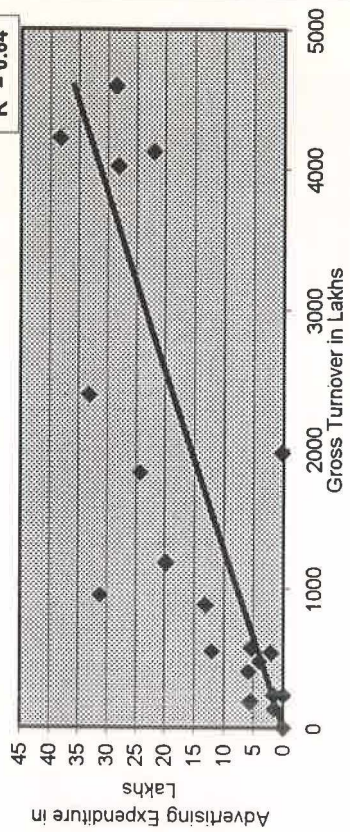
CORRELATION OF R&D EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M >Rs.25 LAKHS in 1997-98

$y = 0.0136x$
 $R^2 = 0.83$



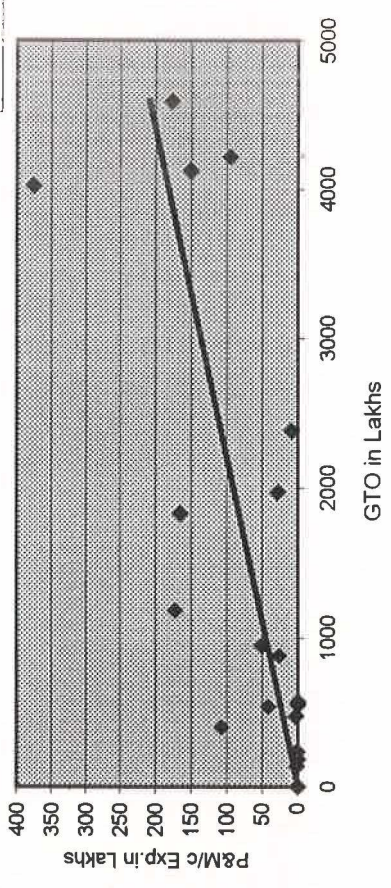
CORRELATION OF ADVERTISING EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M >Rs.25 LAKHS in 1997-98

$y = 0.0078x$
 $R^2 = 0.64$



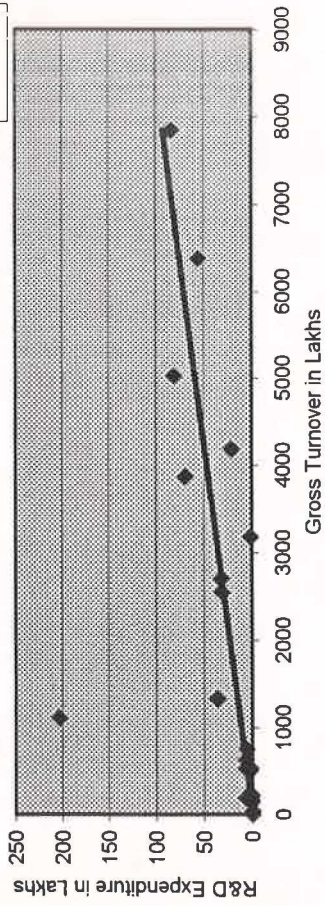
CORRELATION OF NEW PLANT & MACHINERY EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M>Rs25LAKHS IN 97-98

$y = 0.0455x$
 $R^2 = 0.55$



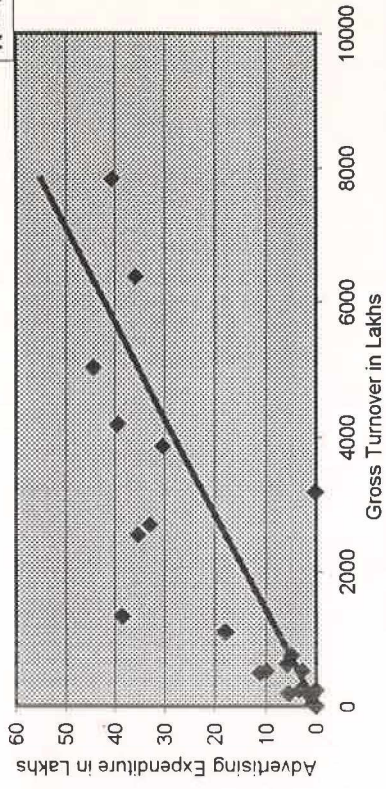
CORRELATION OF R&D EXPENDITURE v/s GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M >Rs.25 LAKHS in 1998-99

$y = 0.0118x$
 $R^2 = 0.22$



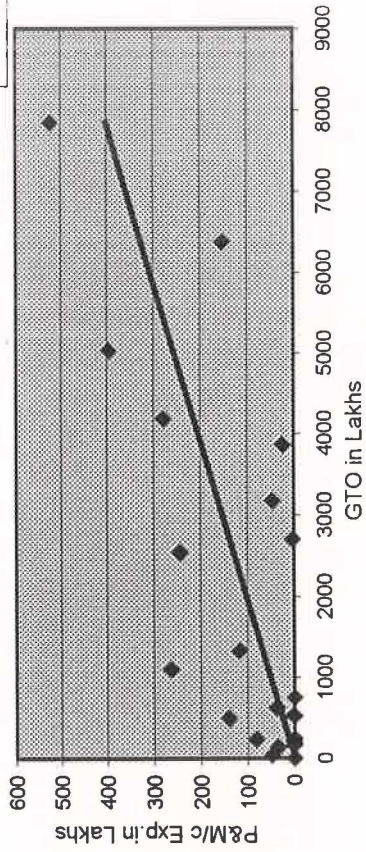
CORRELATION OF ADVERTISING EXPENDITURE v/s GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M >Rs.25 LAKHS in 1998-99

$y = 0.007x$
 $R^2 = 0.65$



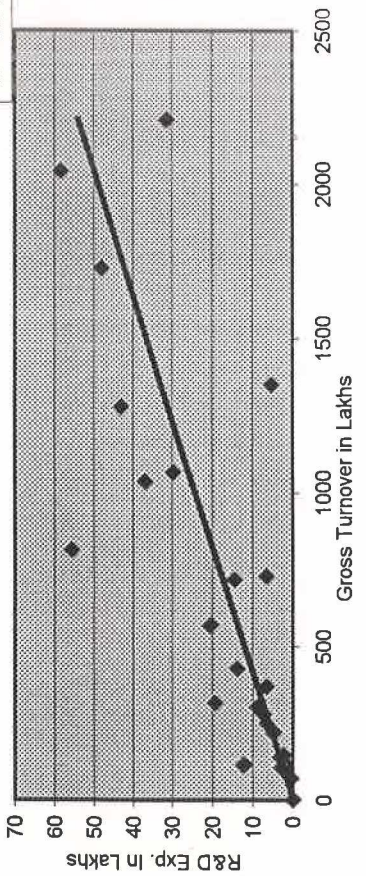
CORRELATION OF NEW PLANT & MACHINERY EXPENDITURE v/s GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M >Rs.25 LAKHS in 98-99

$y = 0.0513x$
 $R^2 = 0.58$



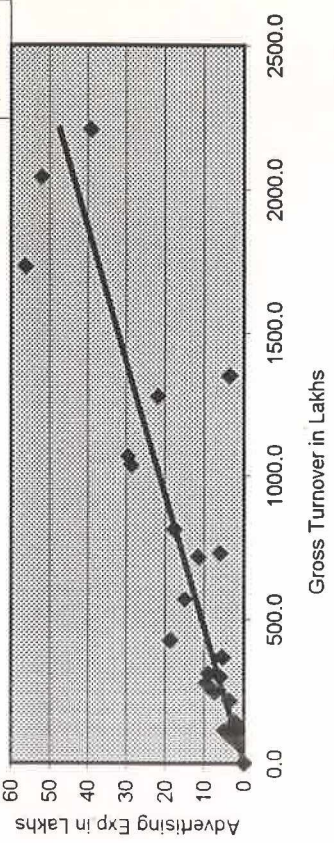
CORRELATION OF R&D EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M <Rs.25 LAKHS in 1996-97

$y = 0.0244x$
 $R^2 = 0.61$



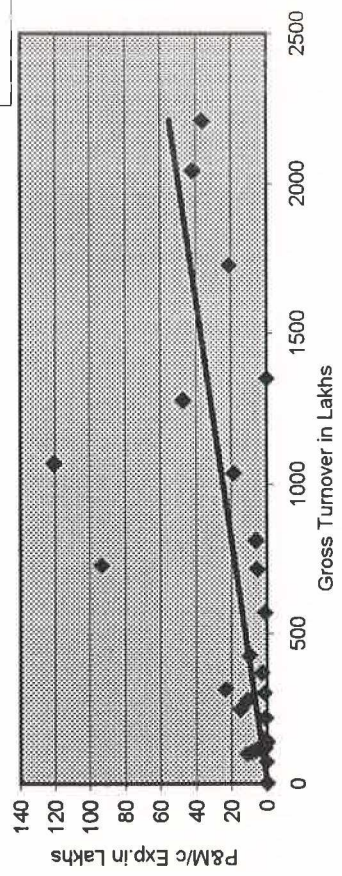
CORRELATION OF ADVERTISING EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M < Rs.25 LAKHS in 1996-97

$y = 0.0215x$
 $R^2 = 0.76$



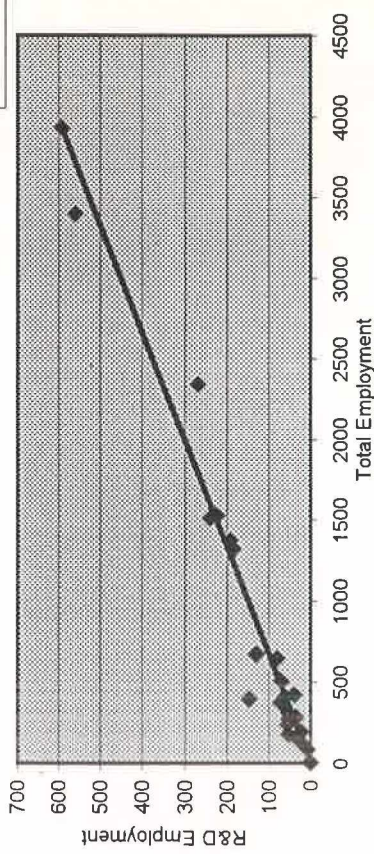
CORRELATION OF NEW PLANT & MACHINERY EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M < Rs.25 LAKHS in 1996-97

$y = 0.0249x$
 $R^2 = 0.20$



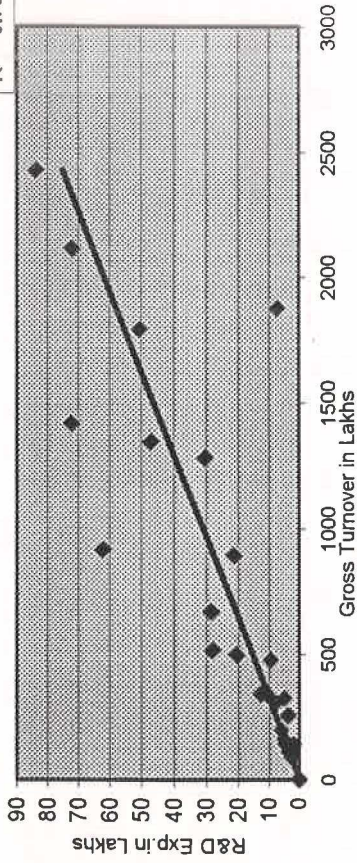
CORRELATION OF TOTAL EMPLOYMENT vs R&D EMPLOYMENT IN INDUSTRIES WITH INVESTMENT IN P&M <Rs.25 Lakhs

$y = 0.1506x$
 $R^2 = 0.96$



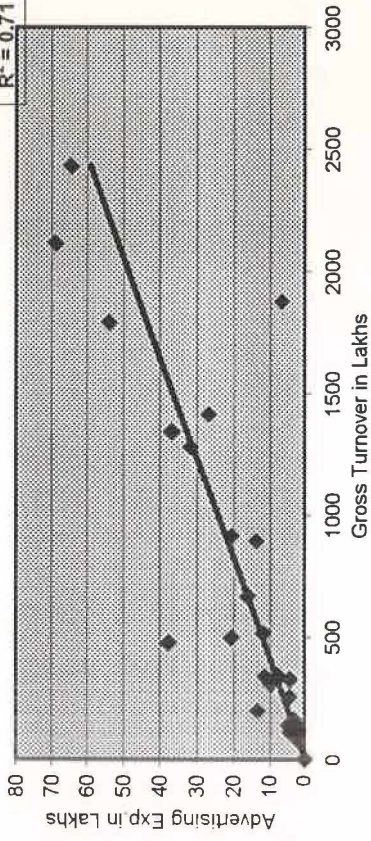
CORRELATION OF R&D EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M < Rs.25 LAKHS in 1997-98

$y = 0.031x$
 $R^2 = 0.70$



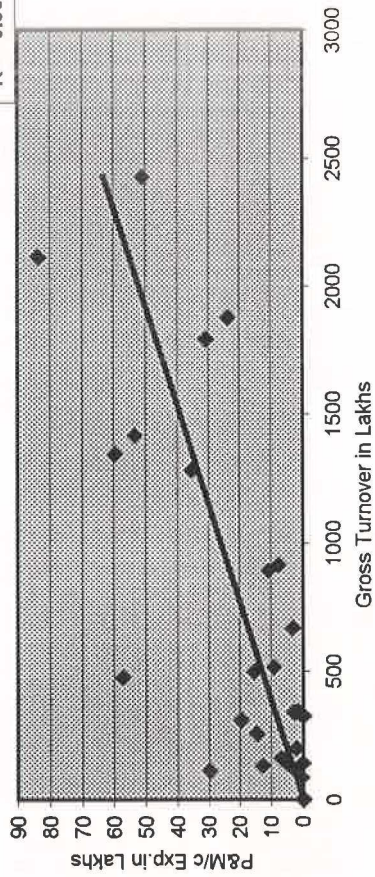
CORRELATION OF ADVERTISING EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M < Rs.25 LAKHS in 1997-98

$y = 0.0243x$
 $R^2 = 0.71$

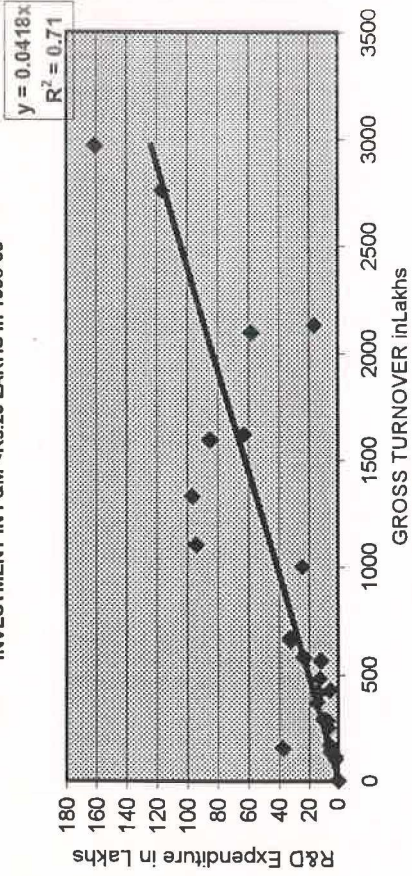


CORRELATION OF NEW PLANT & MACHINERY EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M < Rs.25 LAKHS in 1997-98

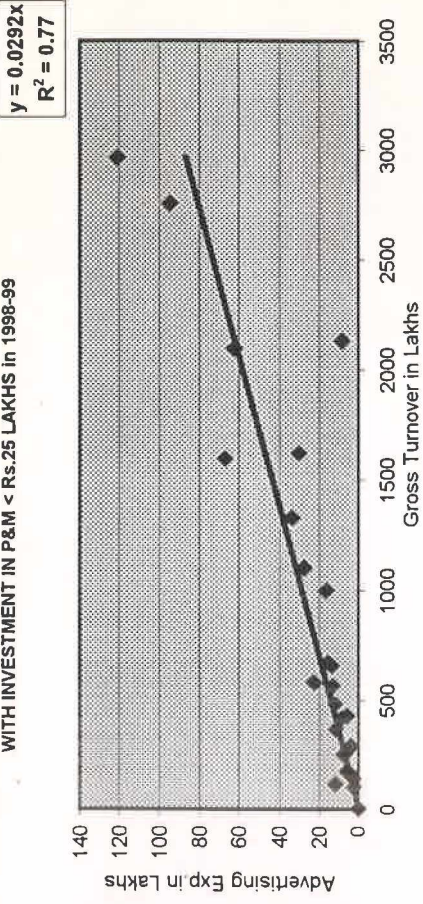
$y = 0.0261x$
 $R^2 = 0.53$



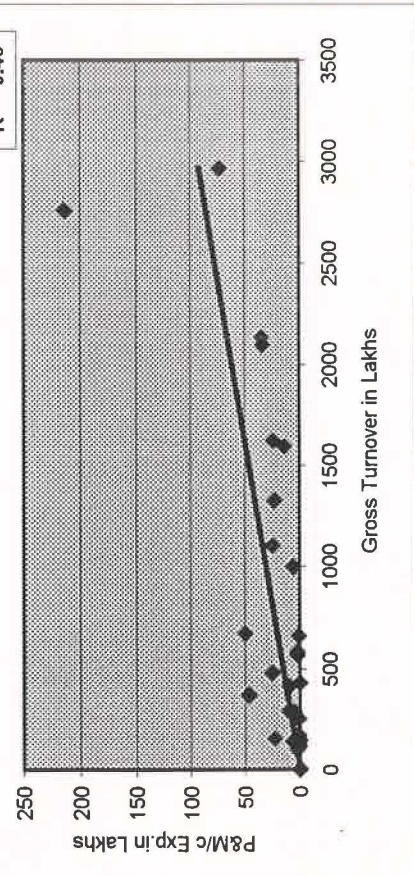
CORRELATION OF R&D EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M < Rs.25 LAKHS in 1998-99



CORRELATION OF ADVERTISING EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M < Rs.25 LAKHS in 1998-99



CORRELATION OF NEW PLANT & MACHINERY EXPENDITURE & GROSS TURNOVER FOR SSIs WITH INVESTMENT IN P&M < Rs.25 LAKHS in 1998-99



ANNEXURE-A

INDICATIVE LIST OF TYPE OF R&D ACTIVITIES IN SOME SSI UNITS

1. **M/S KESARI METAL, RAIPUR-**
THE UNIT HAS DEVELOPED ALUMINIUM FINED TUBE TECHNOLOGY, FOR WHICH IT HAS ALREADY APPLIED FOR PATENT.
(PRODUCT :- ALUMINIUM EXTRUDED SECTIONS)
2. **M/S ITL INDUSTRIES LTD. INDORE-**
NEW DESIGN OF MACHINE ASSEMBLIES, DIFFERENT ASSEMBLY OF BAND SAW MACHINE.
(PRODUCT :- METAL CUTTING BAND SAW MACHINE, POWER HACKSAW MACHINE)
3. **M/S NAGDA ELECTRICALS (P) LTD. INDORE-**
FIRST SSI UNIT IN INDIA MAKING TUNGSTEN FILAMENT ON MODERNIZED MACHINE
(PRODUCT :- TUNGESTAN FILAMENT. LAMP COMPOUNDS)
4. **M/S GOM INDUSTRIES LTD. INDORE-**
NEW PRODUCTS DEVELOPMENT, PROCESS DEVELOPMENT, WANT TO REGISTER THE UNIT WITH DSIR.
(PRODUCT :- SYNTHETIC RESIN, PROCESSED OIL)
5. **M/S SHRI SATYA SAI INDUSTRIES BHOPAL**
APPLIED FOR PATENT FOR (1) ELIPTICAL MACHINENING BED (2) AUTOMATIC GEAR MOTOR. THE ENTREPRENEUR SHRI PREM NARAYAN DHARWAN HAS SUBMITTED HIS PROPOSAL FOR SUPPORT UNDER TEPP TO DST.
6. **M/S MALWA OXYGEN & INDUSTRIAL GASES, RATLAM –** THE ENTREPRENEUR CLAIMS THAT HE IS THE FIRST IN THE COUNTRY TO EXPORT INTERMEDIATES VIZ- OMEPRAZOLE, PARA HYDROXIDE, BENZOPHENONS, WITH LEAST POLLUTION.
7. **M/S RANEKA INDUSTRIES LTD. PITHAMPUR, DHAR-**
(I) MANUFACTURING. HIGH TENSILE B.G. CENTRE BUFFER COUPLERS AND (II) SPECIAL CAST STEEL WHEELS FOR NARROW GAUGE TRAINS. UNIT CLASSIFIED UNDER RESEARCH DESIGN AND STANDARD ORGANIZATION (RDSO) AS CLASS A FOUNDRY AS PER IS 12117.

8. **M/S KATNI CEMENT PVT. LTD. PURAINA, DIST.-PANNA**
DAL MILL CONVERTED TO CLOSED CIRCUIT MILL, RESULTING IN 35% INCREASE IN OUTPUT.
9. **M/S PAN INDIA DRUGS & CHEMICALS, INDORE** HAS DEVELOPED PROCESS TECHNOLOGY FOR BULK DRUGS THAT REDUCES PROCESS TIME.
10. **M/S PARAG ENTERPRISES PVT. LTD. DEWAS.** THE UNIT CLAIMS TO HAVE DEVELOPED 1000 KW RADIATOR COOLING FAN FOR RAILWAY DIESEL LOCOMOTIVE AND AIR HEAT EXCHANGER FAN IN GLASSWARE COMPOSITES FOR THE FIRST TIME IN INDIA.
11. **M/S S.S. CROP CARE LTD. GOVINDPURA, BHOPAL** HAVE BUILT A VERTICAL GRANULAR PLANT WHERE MATERIAL MOVEMENT IS GRAVITATIONAL WHICH CONSERVES ENERGY.
12. **M/S HELIWAL COLD STORAGE PVT. LTD. JAGDALPUR (BASTAR)** IS USING BUNKER COIL SYSTEM FOR COOLING CHAMBER AND THUS ELECTRIC ENERGY IS SAVED AND TEMPERATURE COMES DOWN QUICKLY.
13. **M/S KARODIA REFRACTORIES (P) LTD. PANNA** HAS DESIGNED A DROUGHT KILN FOR MINIMISING HEAT LOSSES BY INSULATING TOP, BOTTOM AND SIDE OF KILN.
14. **M/S J.R. CHEMICALS CHHINDWARA,** MANUFACTURES SOLUBLES WITH IMPORT SUBSTITUTION FOR DETERGENT MANUFACTURING

TO WHOM IT MAY CONCERN

Sub:- Research Project entitled "Research and Development Activities in Small Scale Industries of Madhya Pradesh in last three years 1996-99" reg.

The National Science and Technology Management Information System (NSTMIS) Division under the Department of Science & Technology (DST) has sponsored the above research project to Madhya Pradesh Consultancy Organisation Ltd. (MPCON), Bhopal, as a pilot project.

MPCON will be approaching your organisation to collect in-depth information through a questionnaire developed for the study, to quantify the input resources (financial and manpower) devoted to Research and Development (R&D) activities in small scale industries of Madhya Pradesh. It will be highly appreciated if you could extend your cooperation by filling the questionnaire and also by providing other clarifications sought by the investigating team (MPCON).

The findings of the above study are expected to be of immense use to the planners and policy makers in understanding the nature of R&D activities ongoing, in small scale sector in the country and thereby this sector is appropriately reflected in national statistics.

Your prompt response and cooperation is very much solicited for this national endeavour.

Thanking you

(Vipin Kumar Jain)
Secretary General
M.P. Laghu Udyog Sangh
Bhopal (M.P.)

(Dr. Laxman Prasad)
Advisor & Head
NSTMIS, DST
Govt. of India
(New Delhi)

(C.K. Khaitan, IAS)
Director (SSI)
Directorate of Industries
Govt. of Madhya Pradesh
Bhopal

जिससे भी सम्बन्धित हो

(इस पृष्ठ को प्रतिक्रिया व्यक्त करने वाले अपने पास रखें)

विषय :- "मध्यप्रदेश के लघु उद्योगों में विगत तीन वर्षों से (1996-99) शोध तथा विकास की गतिविधियाँ" शीर्षक से शोध परियोजना।

भारत सरकार के विज्ञान और प्रौद्योगिकी विभाग (डी.एस.टी.) के अन्तर्गत "नेशनल सायन्स एण्ड टेक्नालाजी मैनेजमेन्ट इन्फरमेशन सिस्टम" विभाग ने उक्त विषयानुसार शोध कार्य मध्यप्रदेश कन्सल्टैन्सी आर्गनाइजेशन लि. (एम.पी.कॉन) भोपाल को सौंपा है।

उक्त शोध कार्य के लिये आपके संगठन/इकाई से सम्बन्धित विस्तृत जानकारी प्राप्त करने के लिये मध्यप्रदेश की लघु उद्योग इकाईयों में शोध तथा विकास कार्य के लिये लगाये गये वित्तीय तथा जनशक्ति संसाधनों के आंकलन संबंधी जानकारी पूछी गई है, इस संदर्भ में एमपीकॉन आपसे सम्पर्क करेगा।

आपसे यह विनम्र अपील की जाती है कि संलग्न प्रश्नावली को भर कर तथा एम पी. कॉन के सर्वेक्षण दल को सभी आवश्यक स्पष्टीकरण देकर इस शोध कार्य में पूर्ण सहयोग प्रदान करें।

उक्त शोध कार्य से जो निष्कर्ष निकलेगें उनसे योजनाकर्ताओं तथा नीति निर्धारकों को लघु उद्योग क्षेत्र में शोध तथा विकास का स्वरूप समझने में उपयोग होगा तथा इन निष्कर्षों को राष्ट्रीय सांख्यिकी में उचित रूप से प्रकाशित करने में सहायता मिलेगी।

राष्ट्रीय हित में किये जा रहे इस कार्य के लिये आपसे शीघ्र तथा पूर्ण सहयोग की अपेक्षा है।

धन्यवाद

(विपिन कुमार जैन)
महासचिव
मध्यप्रदेश लघु उद्योग संघ
भोपाल

(डॉ. लक्ष्मण प्रसाद)
सलाहकार एवं मुख्य,
एन.एस.टी.एम.आय.एस.
(डी.एस.टी.)
भारत सरकार
नई दिल्ली

(सी.के. खैतान, आई.ए.एस.)
निर्देशक (लघु उद्योग)
उद्योग संचालनालय
म.प्र. शासन
भोपाल

उद्योग समूह

INDUSTRY GROUP

1. AGRO & FOOD INDUSTRIES. (कृषि एवं खाद्य उद्योग)
2. AUTOMOBILE SPARES & ALLIED PRODUCTS. (ऑटोमोबाइल स्पेयर्स एवं समवर्णी उत्पाद)
3. CERAMIC INDUSTRIES & ALLIED PRODUCTS. (सिरेमिक उद्योग तथा समवर्णी उत्पाद)
4. CHEMICAL INDUSTRIES & ALLIED PRODUCTS. (रासायनिक उद्योग तथा समवर्णी उत्पाद)
5. COTTAGE INDUSTRIES. (कुटीर उद्योग)
6. DRUGS PHARMACEUTICAL & ALLIED PRODUCTS. (औषध, औषधीय तथा समवर्णी उत्पाद)
7. ELECTRICAL INDUSTRIES. (विद्युत संबंधी उद्योग)
8. ELECTRONIC INDUSTRIES. (इलेक्ट्रॉनिक उद्योग)
9. ENERGY & ENVIRONMENT. (ऊर्जा तथा पर्यावरण)
10. GLASS INDUSTRIES & ALLIED PRODUCTS. (कांच उद्योग एवं समवर्णी उत्पाद)
11. HOSPITAL AND MEDICAL PRODUCTS & EQUIPMENTS. (अस्पताल तथा चिकित्सा उत्पाद एवं उपकरण)
12. JOB WORK. (जॉब कार्य)
13. LEATHER, LEATHER GOODS & ALLIED PRODUCTS. (चर्म, चर्म उद्योग एवं समवर्णी उत्पाद)
14. MACHINERY, EQUIPMENTS & SPARES (यंत्र उपकरण तथा कलपूजें)
15. MECHANICAL ENGINEERING INDUSTRIES (मेकेनिकल इंजिनियरिंग उद्योग)
16. METALLURGICAL INDUSTRIES & ALLIED PRODUCTS. (धातु उद्योग एवं समवर्णी उत्पाद)
17. MISCELLANEOUS. INDUSTRIES & PRODUCTS. (विविध उद्योग एवं उत्पाद)
18. PACKAGING INDUSTRIES. (पैकेजिंग उद्योग)
19. PAPER & PAPER PRODUCTS. (पेपर एवं पेपर उद्योग)
20. PESTICIDES & FERTILIZERS. (कीटनाशक एवं उर्वरक)
21. PRINTING & ALLIED ACTIVITIES. (छपाई तथा समवर्णी उत्पाद)
22. REPAIRING & SERVICING (मरम्मत एवं सुधार कार्य)
23. RUBBER & PLASTIC PRODUCTS. (रबर एवं प्लास्टिक उद्योग)
24. SERVICE INDUSTRIES. (सेवा उद्योग)
25. SPORTS GOODS & ALLIED PRODUCTS. (खेलो से संबंधित सामान तथा समवर्णी उत्पाद)
26. STATIONERY & ALLIED PRODUCTS. (स्टेशनरी एवं समवर्णी उत्पाद)
27. TELECOMMUNICATION & ALLIED ACTIVITIES. (टेलीकम्यूनिकेशन एवं समवर्णी उत्पाद)
28. TEXTILE, HOSIERY & ALLIED PRODUCTS. (वस्त्र, होजियरी तथा समवर्णी उत्पाद)
29. TIMBER, WOOD & ALLIED PRODUCTS. (टिम्बर, लकड़ी तथा समवर्णी उत्पाद)

**PROJECT ENTITLED
RESEARCH & DEVELOPMENT
ACTIVITIES IN SMALL SCALE INDUSTRIES
OF
MADHYA PRADESH
IN LAST THREE YEARS (1996-99)**

मध्यप्रदेश के
लघु उद्योगों में विगत तीन वर्षों से (1996-99) शोध एवं विकास
कार्य की गतिविधियाँ
शीर्षक से परियोजना

Sponsored by :

Department of Science & Technology, Govt. Of India, New Delhi.
Under National Science & Technology Management
Information System (NSTMIS) Division.

प्रायोजक :-

विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार, नई दिल्ली
राष्ट्रीय विज्ञान एवं प्रौद्योगिकी व्यवस्थापना सूचना व्यवस्था विभाग के अंतर्गत

Conducted By:-

MADHYA PRADESH CONSULTANCY ORGANISATION Ltd. (MPCON), BHOPAL
(A Joint Venture of IFCI, IDBI, ICICI, State Govt. Corporations & Banks)

अध्ययनकर्ता :-

मध्यप्रदेश कन्सलटेन्सी ऑर्गेनाइजेशन लिमिटेड, (एमपीकॉन) भोपाल

(आई.एफ.सी.आई., आई.डी.बी.आई., आई.सी.आई.सी.आई., राज्य शासन के निगमों एवं राष्ट्रीयकृत
बैंको का संयुक्त उपक्रम)

QUESTIONNAIRE

प्रश्नावली

(Please send duly completed and signed questionnaire
within 10 days to following address)

(कृपया सभी प्रश्नों के उत्तर देते हुए १० दिनों में हस्ताक्षरयुक्त प्रश्नावली निम्न पते पर भेजें)

Madhya Pradesh consultancy organisation Ltd. (MPCON)

Post Box No. 339 Gangotri, T.T. Nagar, Bhopal-462003

मध्यप्रदेश कन्सलटेन्सी ऑर्गेनाइजेशन लिमिटेड (एमपीकॉन)

पो. बॉक्स क्रमांक 339, गंगोत्री, टी.टी. नगर, भोपाल-462003

QUESTIONNAIRE (Section I to IV)

प्रश्नावली (खण्ड 1 से 4)

Responses to this questionnaire will be held strictly confidential

(इस प्रश्नावली में आपके द्वारा दिये गये उत्तरों अथवा प्रतिक्रियाओं को पूर्णतः गोपनीय रखा जाएगा)

SECTION (I)

SSI UNIT'S PROFILE

खण्ड - 1 लघु उद्योग इकाई की रूपरेखा

KINDLY FILL-UP AND/OR SELECT & TICK (✓) YOUR REPLY, WHICHEVER IS APPLICABLE.

कृपया नीचे दर्शाये गये प्रारूप को भरे तथा/या चुने तथा (✓) चिन्ह लगावें, जो भी उपयुक्त हो।

1. Name & Address : _____
of the unit _____
इकाई का नाम एवं पता _____
- Telephone No. _____
दूरभाष क्रमांक _____
Telex _____ Fax _____
टेलिक्स क्रमांक _____ फैक्स क्रमांक _____
email _____ Web _____
2. Year of Establishment of : _____
the unit _____
इकाई का स्थापना वर्ष _____
3. Permanent Registration No. of the unit. _____
इकाई का स्थायी पंजीयन क्रमांक _____
4. Promoter's Information : _____
स्वामित्व सम्बन्धी विवरण _____

S.No. क्रमांक	Name नाम	DESIGNATION पद	RESIDENTIAL ADDRESS पता निवास	TELEPHONE No. (Resi) दूरभाष [निवास]
1				
2				
3				

5. Paid-up Capital/Equity : _____
(as on April 1st, 1999) Rs. _____
पूँजी निवेश / अंश _____
{ 1 अप्रैल 1999 के अनुसार }

6. Type of unit _____
इकाई का प्रकार _____

- | | | | |
|-----------------------------|--------------------------|-------------------------|--------------------------|
| a. Manufacturing
उत्पादन | <input type="checkbox"/> | b. Job Work
जॉबवर्क | <input type="checkbox"/> |
| c. Processing
प्रोसेसिंग | <input type="checkbox"/> | d. Assembly
असेम्बली | <input type="checkbox"/> |
| e. Servicing
सेवा कार्य | <input type="checkbox"/> | f. Any other
अन्य | <input type="checkbox"/> |

Definition of Research & Development (Pl. refer footnote on every page)

शोध एवं विकास की परिभाषा (प्रत्येक पृष्ठ पर टीप के रूप में देखें)

- A. Basic Research :- Basic Research may be defined as any experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular or specific application or use in view.
- अ. मौलिक शोध:- वर्तमान में प्रयोग में नहीं आने वाली किसी तथ्य एवं घटना की नींव जो कि प्रायोगिक एवं सैद्धांतिक रूप से की जाये बुनियादी शोध कहलाती है।

7. Give Names of two Major Products Manufactured/ Services Provided /Activities Carried out.
इकाई द्वारा उत्पादित दो मुख्य वस्तुएं/ सेवा कार्य/ क्रियाकलापों का विवरण

8. Product / Service/ Activity Mix
उत्पादन / सेवा कार्य / अन्य क्रियाकलाप आदि का विवरण

S. No. क्रमांक	Name of Product/ Service/Activity उत्पाद/सेवा कार्य/अन्य क्रियाकलाप आदि का विवरण	Grade or Type श्रेणी या प्रकार	Capacity (क्षमता) Please indicate unit alongwith per day/per month or per year कृपया दर्शाएँ इकाई सहित प्रतिदिन/प्रतिमाह/प्रतिवर्ष	
			Registered पंजीकृत	Installed स्थापित

9. Gross Turnover of your unit :
इकाई की कुल परिलब्धियाँ

Year
वर्ष
1996-97
1997-98
1998-99
(Till 31st March 99)
(31 मार्च 99 तक)

Turnover
(Rs. In Lakhs) (परिलब्धियाँ लाख रुपये में)

10. Expenditure incurred on Advertisement & Publicity
विज्ञापन एवं प्रचार पर किया गया व्यय

Year
वर्ष
1996-97
1997-98
1998-99
(Till 31st March 99)
(31 मार्च 99 तक)

Expenditure
(Rs. In Lakhs) (व्यय लाख रुपये में)

11. Investment in New Plant & Machinery
नई मशीनरी एवं उपकरण में निवेश

Year
वर्ष
1996-97
1997-98
1998-99
(Till 31st March 99)
(31 मार्च 99 तक)

Expenditure
(Rs. In Lakhs) (व्यय लाख रुपये में)

12. Industry Group to which your Small Unit could be classified
इकाई किस उद्योग समूह के अंतर्गत वर्गीकृत की जा सकती है।

(Please refer list of Industry Group at the back of front page)
कृपया उद्योग समूह सूची का अवलोकन मुख पृष्ठ के पिछले हिस्से में करें।

B. Applied Research :- Applied Research may be defined as any original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific practical aim or objective.

ब. प्रयुक्त शोध:-नई जानकारी प्राप्त करने हेतु स्वतंत्र रूप से की गई जाँच प्रायोगिक शोध कहलाती है यह मूलतः प्रायोगिक सिद्धांत की प्राप्ति के लिये की जाती है।

SECTION-II RESEARCH & DEVELOPMENT

खण्ड-2 -- शोध एवं विकास

13. Whether your unit performed R&D activities in last three years (1996-99) ? (Please refer foot note D)
क्या आपकी इकाई में विगत तीन वर्षों से शोध एवं विकास कार्य हुआ है ? (1996-99) (कृपया टीप द का अवलोकन करें)

हाँ Yes

नहीं No

14. If yes then

यदि हाँ तो

Total Research and Development expenditure made

शोध एवं विकास कार्य में कुल व्यय

Year Expenditure (Rs. In Lakhs)

वर्ष व्यय { लाख रुपये में }

1996-97

1997-98

1998-99

(Till 31 March 99)

(31 मार्च 99 तक)

15. Whether in-house Research & Development activity carried out ?

क्या इकाई में, इकाई के अन्तर्गत शोध एवं विकास की गतिविधि कार्यान्वित की गई ?

हाँ Yes

नहीं No

16. If yes, whether Research & Development establishment in-house in a separate building Inside/ outside the factory premises ?

यदि हाँ तो शोध एवं विकास प्रतिष्ठान, इकाई के अंदर/बाहर स्थित है ?

Inside

Outside

अंदर

बाहर

17. Whether outside expert/agency engaged for R&D, ? If yes, please specify.

क्या शोध एवं विकास कार्य कोई बाहरी संस्था अथवा विशेषज्ञ द्वारा करवाया गया ?

यदि हाँ तो निम्नानुसार विवरण दें।

S. No. क्रमांक	Name & Address of expert / agency संस्था/विशेषज्ञ का नाम एवं पता	Year of engagement (1996-97 to 31 March '99) नियुक्ति का वर्ष (वर्ष 96-97 से मार्च 99 तक)	Payment made to expert/ agency for R&D work विशेषज्ञ/संस्था द्वारा किये गये शोध तथा विकास कार्य के लिये किया गया भुगतान
01			
02			
03			

18. Whether R&D activities separate from routine tests and quality controls ?

क्या यह शोध कार्य नियमित परीक्षण एवं गुणवत्ता नियंत्रणों से भिन्न है ?

हाँ Yes

नहीं No

- C. Experimental Development:- Experimental Development may be defined as any systematic work, drawing on existing knowledge, gained from research and/or practical experience, that is directed to produce, new materials, products and devices, to install new processes, systems and services, and to improve substantially those already produced or installed.
- स. प्रायोगिक विकास :- कोई भी, सुव्यवस्थित कार्य जो कि किसी ऐसे शोध अथवा व्यावहारिक अनुभव, जिसका आधार वास्तविक ज्ञान रहा हो और जिसे नये माल, उत्पाद या उपकरणों आदि के लिये किया जाय।

19. If yes, Please give information as under.
यदि हाँ, तो कृपया निम्नानुसार जानकारी दें।

S. No.	Type of R&D activity carried out (*) शोध एवं विकास कार्य का प्रकार	Applications made (शोध तथा विकास कार्य का विवरण)	Results/Benefits Achieved परिणाम/अर्जित लाभ
01			
02			
03			
04			

* Example - Research /Development of new products, new processes, new equipments, new technologies, new systems, new services, new materials or improvement in the existing products, processes, systems etc.

उदाहरण - नए उत्पाद, नई प्रक्रियाएँ, नए उपकरणों, नई प्रौद्योगिकियों, नई प्रणालियों, नए सेवा कार्यों, नई वस्तुओं का शोध/विकास या सुधार कार्य या वर्तमान उत्पाद प्रक्रियाओं, प्रणालियों आदि में सुधार।

20. Whether separate accounts maintained on R & D expenditure ?
क्या शोध एवं विकास गतिविधियों हेतु अलग से लेखा-जोखा रखा गया ?

हाँ Yes

नहीं No

21. Whether you are aware of the incentives given by Department of Scientific and Industrial Research (DSIR)?
क्या आपको वैज्ञानिक एवं औद्योगिक अनुसंधान विभाग द्वारा दी जाने वाली रियायतों/सुविधाओं की जानकारी है ?

हाँ Yes

नहीं No

22. If yes, are you registered with DSIR ?

यदि हाँ, तो क्या आप वैज्ञानिक एवं औद्योगिक अनुसंधान विभाग में पंजीकृत हैं ?

हाँ Yes

नहीं No

23. If no, specify reasons.

यदि नहीं, तो कृपया कारण लिखें।

D. Definition of Research & Development Activities

Research and Development activities can be defined as any systematic and creative work undertaken in order to increase the stock of knowledge and the use of this knowledge to devise new applications. Research & Development activities include any one or more of the categories mentioned in footnotes A,B,C.

द शोध एवं विकास की परिभाषा

कोई भी सृजनात्मक तथा सुव्यवस्थित कार्य जो कि ज्ञान का भंडार बढ़ाने के लिये, तथा इस ज्ञान का उपयोग नये अनुप्रयोगों शोध तथा विकास की नया गतिविधियों जो कि अ, ब, स, (टीप में उल्लेखित हैं के लिये किया जाये)।

SECTION-III DETAILS OF MANPOWER

(Please see definitions given below)
(कृपया निम्नानुसार परिभाषाओं को देखें)

खण्ड - 3 जनशक्ति विवरण

24. Give details of personnel employed in your unit (as on 1-4-1999) as below:
आप की इकाई में कार्यरत जनशक्ति का विवरण दिनांक (1 अप्रैल 99 को)

M/F पुरुष/ स्त्री	Total Number of employees on Pay Roll कुल वेतन भोगी कर्मचारी	S&T Personnel employed on R&D activities only केवल शोध एवं विकास कार्य में संलग्न विज्ञान एवं प्रौद्योगिकी जनशक्ति (I)	Personnel employed on auxiliary activities in R&D unit शोध तथा विकास कार्य की सहायक गतिविधियों में कार्यरत जनशक्ति (II)	Personnel employed for administrative activities in R&D unit शोध एवं विकास कार्य की प्रशासनिक गतिविधियों में कार्यरत जनशक्ति (III)
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FULL TIME (पूर्णकालिक)

MALE पुरुष				
FEMALE स्त्री				
TOTAL योग				

PART TIME (अंशकालिक)

MALE पुरुष				
FEMALE स्त्री				
TOTAL योग				

Definitions / परिभाषाएँ

1. S&T Personnel : Personnel engaged in R&D activities (as per definition given in footnote-D) related to libraries, information and documentation centres, data banks and information processing centres.

विज्ञान एवं प्रौद्योगिकी : कार्यरत जनशक्ति टीप- 'द' के अंतर्गत दी गयी शोध तथा विकास की परिभाषा के अनुसार पुस्तकालयों, सूचना केन्द्रों, तथ्य संग्रहण केन्द्रों आदि में कार्यरत जनशक्ति ।

2. Auxiliary Activities: Tasks such as maintenance and operation of specialised experiments, tests and analysis.

सहायक गतिविधियाँ : विशेष प्रयोगों, परीक्षणों, विश्लेषणों से सम्बन्धित कार्य अथवा देखरेख ।

3. Administrative : Tasks which are clerical, secretarial and administrative in character.
Activities

प्रशासनिक गतिविधियाँ : लिपिकीय, सचिवालयीन और प्रशासनिक कार्य ।

E. Other activities - Other activities would include S & T services provided by Libraries, Information & Documentation Centres, Data Banks & Information Processing Departments.

ई अन्य गतिविधियाँ :

पुस्तकालय दस्तावेज केन्द्र इसके अंतर्गत पुस्तकालयों सूचना तथा दस्तावेज केन्द्रों आदि द्वारा विज्ञान तथा प्रौद्योगिकी सेवाओं से सम्बन्धित गतिविधियों का समावेश किया जाता है ।

SECTION-IV ADDITIONAL INFORMATION

खण्ड - 4 अतिरिक्त जानकारी

25. Would you like to highlight any other information about your unit which in your opinion is novel or innovative ?

क्या आप, आपकी इकाई से संबंधित अन्य कोई जानकारी जो आपके मतानुसार नवीन अथवा अनोखी है, का विशेष रूप से उल्लेख करना चाहेंगे ?

26. Would you like to give any information about R&D activities in Small Scale Industries around you ?

क्या आप, आपके आसपास स्थित लघु उद्योग इकाईयों की शोध तथा विकास सम्बंधित गतिविधियों के बारे में कोई भी जानकारी देना चाहेंगे ?

27. What are your suggestions for SSI sector to make the R&D more effective for their benefits.?

शोध एवं विकास गतिविधियों को अधिक प्रभावशाली बनाकर लघु उद्योग क्षेत्र लाभान्वित हो, इसके लिए आपके क्या सुझाव है ?

28. Would you like to give any other information not covered so far in this questionnaire but, in your opinion is important for this study ?

क्या आप ऐसी कोई जानकारी देना चाहेंगे जो इस प्रश्नावली में अभी तक नहीं पूर्ण गयी है, लेकिन इस अध्ययन के लिए आपकी दृष्टि से महत्वपूर्ण है ?

Signature (हस्ताक्षर) _____

Name (नाम) _____

Designation (पद) _____

N.B. :- Please send duly completed and signed questionnaire within 10 days to address given on front page
(कृपया सभी प्रश्नों के उत्तर देते हुए, 10 दिनों में हस्ताक्षरयुक्त प्रश्नावली मुख पृष्ठ पर दिये पते पर भेजें।)

**R&D Activities in SSI of M.P. IN
last three years (1996-99)**

मध्यप्रदेश के लघु उद्योगों में विगत तीन वर्षों
से (1996-99) शोध तथा विकास की गतिविधियाँ

BOOK POST
बुक पोस्ट

Date _____

First Reminder _____

Second Reminder _____

Third Reminder _____

प्रति

If undelivered, please return to :

Madhya Pradesh Consultancy Organisation Ltd.·
(MPCON) P.B. NO. 339, Gangotri, T. T. Nagar, Bhopal-462003

ANNEXURE-C**INDUSTRY GROUP WISE INDICATIVE LIST OF TYPE OF INDUSTRIES**

INDUSTRY GROUP	INDICATIVE LIST OF INDUSTRIES
1. Agro & Food Industries	Rice & Dall Mill, Confectionery, Milk Products, Threshing Work, Oil Mills, Edible Oil & Oil Cakes, Rice Bran Extraction, Bread, Toast, Sugar Cubes, Ice Cream, Ground Spices Etc.
2. Automobile Spares & Allied Products	Spares Parts, U-Bolts & Clamps, Side Bumpers, Luggage Carrier of Two Wheelers & Four Wheelers, Etc.
3. Ceramic Industries & Allied Products	Bricks, Mosaic Tiles, 43-Grade Ordinary Portland Cement, Lime, Fire Bricks, Cement Products, Galicha Tiles Etc.
4. Chemical Industries & Allied Products	Phenyl, Medicated Soap, Paints, Primers, Chemicals, Amyl Alcohol, Disinfectant Fluid & Powder, Synthetic Resins, Carbon-Di-Oxide, Chrome Oxide .
5. Cottage Industries	Kasida Kari Works, Handicraft Items, Murtikala, Agarbatti Making, Hand Made Kaleen, Etc.
6. Drugs & Pharmaceuticals & Allied Products	Tri Metho Prim, Dichlorofenic Sodium, Dextrose 5%, DNS 9%, Dimethyl Diethyl Amino Ethyl Hcl, Tablet Making, Omeprazole, Para Hydroxy, Homeopathic Medicines, Ayurvedic Medicines Etc.
7. Electrical Industries	Tungsten Filament (Lamp Components), Insulation Of Copper & Aluminum Wires, Super Enameled Copper Wire & Coils, Radiator, Cooling Fans, Power Driven Pumps, Lead Acid Battery, Torches, Emergency Lights, Fast Bus Transfer System For Power Stations, Components, Transformers, Cables & Conductors Etc.
8. Electronic Industries	Electronic Weighing Machines, Electronic Items, T.V Tuners, Antennaes, Electronic gas lighters, Audio tape recorders Etc.
9. Energy & Environment	Air Pollution, Water Pollution, Energy Audit, Smokeless Chulhas, Solar Heaters, Solar Pumps, Solar Cookers Etc.
10. Glass Industries & Allied Products	Optical Lenses, Glass Ware, Glass Fibre, Etc.
11. Hospital & Medical Products & Equipment's	Absorbent Cotton, Rolled Cotton Bandages, Syringes Etc.
12. Job Work	Binding Work, Stone Polishing, Rubberstamps, Fabrication Job Work Etc.
13. Leather Goods & Allied Products	Footwear, Leather Bags, Covers, Leather garments Etc.

14. Machinery, Equip. & Spares	Various Types Of Pins, Nuts & Bolts, Jigs & Fixtures, Trolley, Cultivator, Seed Drill, Machineries & Equipment's Etc.
15. Mechanical Engg. Industries	Cycle Mud Guard, M.S Bars & Angles, General Fabrication, Industrial Knives, Punching Machines, Agricultural Implements, Steel Furniture, Stone Crushing, Cutting Tools, Drilling Work, G.I Wires & Barbed Wires, Circular Saw Blades Etc.
16. Metallurgical Industries & Allied Products.	Silver & Gold Ornaments, Ferro Alloys, Casting & Forging, Tin Containers, Alloy Steel & Cast Iron, Wire Drawing, M.S & S.S Ingots & Alloys, Special Cast Steel, Extruded Aluminum Cakes, Re-Rolled Product Etc.
17. Packaging Industries	Gunny Bags, Corrugated Boxes, Polythene Bags, Box Strapping Etc.
18. Paper & Paper Products	Craft Papers, Duplex Board Boxes, Cardboard, paperboard, notebooks, Paper Labels, Etc.
19. Pesticides & Fertilizers	All Types Of Pesticides, Fertilizers,
20. Printing & Allied Activities.	Treadle & Cylindrical, Offset, Screen Printing.
21. Repairing & Servicing	Cycle Repairing, Servicing Of Two & Four Wheelers, Tyre Retreading, Motor Repairing, Motor Rewinding, Watch Repairing, Gas Servicing, T.V Repairing, Etc.
22. Rubber & Plastic Products.	Automobile Rubber Components, Rubber Tubings & Soda Water Rings, Plastic Seal, Molded Plastic Items, Poly Pack, HDPE Pipes, PVC Hose Pipes, Polymers, PVC Footwear, Bottles etc.
23. Service Industries	Software Development, Audio Cassette Recording, Light Decoration, Colour Lab., Dry Cleaning Etc.
24. Sports Goods & Allied Products	Sports Items, Football, Volleyball and Basketball Covers Etc.
25. Stationery & Allied Products	Printer Ribbon, Stationary Items, Copies, Registers, File Covers, Ball pen refills etc.
26. Telecommunication & Allied Activities	Telephone Services
27. Textile Hosiery & Allied Products	Utility Bags, Carpets, Cotton Niwar, Elastic Tape, Laces, Unprocessed Cotton Cloth, Ginning, Pressing, Hosiery Items, Garments, Bed Sheets, Towels, Woolen Items, Power Loom etc.
28. Timber, Wood & Allied Products	Plyboard, Black Board, Wooden Toys & Furniture's, Wooden Interior Works, Aara Machine, Flush Doors,
29. Miscellaneous Industries	Photo Framing, Umbrella Covers, Gudaku making, Dona Pattal, Sericulture, Pisciculture, Hooks, Hangers, Sweets Boxes Etc.

ANNEXURE-D

LOCAL PROJECT ADVISORY COMMITTEE

1. Advisor , Dept of science & Technology [NSTMIS Division] New Delhi
2. Director , Dept of science & Technology [NSTMIS Division] New Delhi
3. Director General , M.P Council of Science & Technology , Bhopal (M.P)
4. Managing Director , M.P Laghu Udyog Nigam , Bhopal (M.P)
5. Director , Small Scale Industries , Directorate of Industries, Bhopal
6. Director , Regional Research Laboratory , Bhopal
7. General Manager, Small Industry Development. Bank of India , Bhopal
8. Director, Small Industries Service Institute, Indore.
9. Director , Ploy-technology Transfer center, Bhopal
10. President, District Industries Association, Industrial Area Bhopal
11. M.D. M.P. Consultancy Organisation, Ltd. Bhopal
12. Co-principal Investigator and Consultant, M.P. Consultancy Organisation, Ltd. Bhopal