CHAPTER 3
DATA AND METHODOLOGY

This chapter has two major sections. Section I deals with the kind of data used for the purpose of the study. Section II deals with the methodology adopted to make analysis for drawing the conclusion.

I

DATA

The study has used both primary and secondary sources of data. The major sources of secondary data include the following:

(1) All India Reports of the Economic Census of India

(2) All India Reports of the MSME Census of India.

(3) Information given on the Web sites of the Financial Institution dedicated to the cause of Small Sector Enterprises in general such as Small Industries Development Bank of India (SIDBI)

(4) Information given on the Web sites of the Corporations dedicated to the cause of development of the socially backward communities in India, namely, National Scheduled Caste Finance and Development Corporation (NSFDC), National Scheduled Tribe Finance and Development Corporation (NSTFDC) and National Backward Classes Finance and Development Corporation (NBCFDC).

I.1 Data given by Economic Census in India

The economic census in India was first conducted in the year 1977 in order to provide information on the number of enterprises operated in the country and the employment provided by these enterprises. The second, third, fourth and fifth economic censuses were conducted in the year 1980, 1990, 1998 and 2005 respectively. The first two economic censuses were narrow in scope and coverage. But in successive censuses more dimensions were added. For example, the data on the ownership of enterprises by the social grump such as Scheduled Caste (SC) and Scheduled Tribe (ST) were
provided separately with effect from the second census. The dimension of Other Backward Class (OBC) was added in the third census with reference year 1990. The distinction between agricultural and non-agricultural enterprises became very clear with effect from the third census onwards. From the point of view of concepts used, it should be mentioned here that the term “enterprise” and “establishment” were used alternatively by the economic census reports.

For the purpose of our study three important dimensions have been taken from the economic census. They are (a) ownership of enterprises by the social groups, (b) profile of the enterprises and (c) employment situation in the form of employment generation by the social groups through their participation in the small industrial sector.

**I.1.2 Concepts and Definitions used by the Economic Census**

The concepts and definitions used by 2005 economic census as well as the earlier economic census of 1998 are reproduced below by directly extracting them from these reports. This will enable us to know the changes in the definitions/nomenclature made by economic census over time. Concepts and definitions of some of the important terms used in the fifth Economic Census 2005 are given below:

**Enterprise**

An institutional unit in its capacity as a producer of goods and services is known as an enterprise. An enterprise is an economic transactor with autonomy in respect of financial and investment decision making, as well as authority and responsibility for allocating resources for production of goods and services. It may be engaged in one or more economic activities at one or more locations. An enterprise may be a sole legal unit.

**Establishment**

The establishment is defined as an enterprise or part of an enterprise that is situated in a single location in which one or predominantly one kind of economic activity is carried out. It is an economic unit under a single legal entity.

**Own account Establishments**

An establishment without any hired worker on a fairly regular basis is termed as an own account establishment. It is normally run by members of the household.
Establishments with hired workers

(i) Directory Establishment: An establishment with hired worker employing 6 or more persons daily on a fairly regular basis is termed as Directory Establishment.

(ii) Non Directory Establishment: An establishment with hired worker employing less than 6 persons daily on a fairly regular basis is termed as Non Directory Establishment.

Agricultural Establishment

An agricultural establishment for the purpose of Economic Census is defined as one engaged in livestock production, agricultural services, hunting, trapping & game propagation, forestry and logging, fishing (corresponding to Groups 012, 013, 014, 015, 020 and 050 of NIC-2004). Establishments engaged in activities pertaining to crop production and plantation (Group 011 of NIC-2004) are excluded from the coverage of Economic Census.

Non-agricultural Establishment

Establishment engaged in economic activities other than those carried out by agricultural establishments are termed as non-agricultural establishment

Nature of Operation

If the entrepreneurial activity is carried on through out the year more or less regularly is treated as perennial activity. If the activity of the establishment is confined to a particular season, the same is called the non-perennial activity or seasonal activity.

Power/fuel used

If any or more sources of power/fuel are specifically used for carrying the entrepreneurial activity (other than lighting purposes or heating the premises etc.) it is considered as power/fuel used. The different sources of power/fuel considered are electricity, coal/soft coke, petrol/diesel, gas, firewood, kerosene, animal power, non-conventional energy (bio gas, solar and wind energy) and others such as atomic power etc. Establishment using none of these types of power/fuel, are categorized as operation without power.

In case more than one type of power/fuel is used for carrying out the entrepreneurial activity the code will refer to the major source or on which more expenditure is incurred.
Number of persons usually working daily

The total number of persons i.e. workers usually working daily in an establishment. This will include all persons whether hired or not. The workers with age less than 15 years have been categorized as children. Household members whether paid or not if engaged in any of the activities carried out by the establishments will be included. The figure of number of persons is a position in the last year for perennial establishment and last working season for seasonal establishment. This also includes both supervisory and primary workers. A worker need not mean the same person is continued but refers to a position. Part time workers are also treated employees as long as they are engaged on a regular basis.

Concepts and definitions of some of the important terms used in fourth economic census 1998 are given below

Enterprise

An enterprise is an undertaking engaged in production and / or distribution of goods and / or services not for the sole purpose of own consumption.

Own account Enterprises

An enterprise normally run by members of the household without hiring any worker on a fairly regular basis is an own account enterprise.

Establishment

An enterprise run by employing at least one hired worker on a fairly regular basis is an establishment

Agricultural Enterprise

An agricultural enterprise for the purpose of Economic Census is defined as one engaged in livestock production, agricultural services hunting trapping & game propagation, forestry and logging, fishing (corresponding to Divisions 02,.03, 04, 05 and 06 of NIC-1987).Enterprises engaged in activities pertaining to agricultural
production and plantation (Divisions 00 and 01 of NIC-1987) are not considered as agricultural enterprise for the purpose of Economic Census.

**Non-agricultural Enterprise**

Enterprises engaged in economic activities other than agricultural activities (excluding activities pertaining to agricultural production and plantation) are termed as non-agricultural enterprises (corresponding to economic activities covered by Sections 1 to 9 and X of NIC-1987.

**Nature of Operation**

If the entrepreneurial activity is carried on through out the year more or less regularly is treated as perennial activity. If the activity of the enterprise is confined to a particular season, the same is called the non-perennial activity.

**Type of Ownership**

Ownership of the enterprise is classified into four broad types (a) Private Non-profit Institutions (NPI) (b) Private Others (c) Co-operatives and (d) Government. Institutions which are financed and controlled by households (e.g. a Dharamshala, a Trust or a Temple etc.) are treated as NPIs serving households, Institutions, which are financed and controlled by commercial organisations e.g. FICCI, ASSOCHAM are treated as NPIs serving commercial organisations/business houses. Both types of such institutions fall under the category of Private NPI.

An enterprise is treated as private if it is managed by a single or a group of private persons, without Governments participation, both in terms of management and shares. Loans granted by the Government to a private enterprise do not make the enterprise a Government enterprise. All private enterprises other than those mentioned in the category of 'Private NPI' are categorised as 'Private Others'.

All enterprises, which are registered under the Act of Co-operative Societies, fall under the category of 'Co-operative'.

50
All other enterprises which have ownership such as Central Government, State Government, Public Sector undertakings, local bodies (Zila Parishad, Municipal Corporation, Municipal Authority etc.) are considered as Government enterprises. Universities, educational boards which are autonomous but are getting grants from the Central or State Governments or local bodies are also included in the category of 'Government'.

**Social Group of Owner**

This information is collected in respect of the private enterprises which are operated on sole proprietary or on partnership basis and has been grouped into eight categories of social groups viz. ST Female, ST Male, SC Female, SC Male, OBC Female, OBC Male, Others Female and Others Male.

**Power/fuel used**

If any or more sources of power/fuel are specifically used for carrying the entrepreneurial activity (other than lighting purposes or heating the premises etc.) it is considered as power/fuel used. The different sources of power/fuel considered are electricity, coal/soft coke, petrol/diesel, gas, firewood, kerosene, animal power, non-conventional energy (bio gas, solar and wind energy) and others such as atomic power etc. Enterprises using none of these types of power/fuel, are categorised as operation without power.

**Number of persons usually working daily**

The total number of persons usually working daily in an enterprise with break-up of Adult male, Adult female, Child male and Child female and component of hired was taken in to account. The workers with age less than 15 years have been categorised as children. Workers include members of the household whether paid or not engaged in any activity. The figure of number of persons is a position in the last year for perennial enterprises and last working season for seasonal enterprises. The category of workers includes both supervisory and primary workers. A worker need not mean the same person is continued but refers to a position. Apprentices whether paid or not are...
treated as hired workers. Part time workers are also treated employees as long as they are engaged on a regular basis. Exchange of labour mutually between households is regarded as household labour and not as hired labour.

1.2 Data given by MSME Census

The government India conducted the first census on the small scale industries (SSIs) in the year 1980-81. It provided data on the areas which include (i) small units owned and managed by males and females in India, (ii) employment in these units, (iii) the nature of activity of these enterprises. A new dimension relating to the ownership of small units by the social groups (SC and ST) only for the registered sector was given in the second SSI census conducted in the year 1987-88. The third census with reference year 2001-2002 changed the nomenclature of SSI to MSME where MSME stands for Micro, small and Medium enterprises. The change of name to MSME was directed by the investment limit of the enterprises i.e. investment on fixed capital/machinery installed in the enterprises. The third census covered more aspects relating to the social groups, such as, (i) number of units owned and managed by all the social groups (SC,ST and OBC) both in registered and unregistered sector, (ii) employment of social group in the MSME sector, and (iii) values of gross output, export, planted machinery, fixed capital by social group ownership. The fourth census, conducted for the year 2006-07 (the latest so far) was broader in scope and coverage as compared to the third MSME census. The fourth census provided data on the distribution of number of enterprises as well as employment by the social groups and others with respect to the enterprises classified on the basis of type of enterprise, nature of activity, type of organization and nature of operation in addition to the data given by the third census.

1.2.1 Concepts and Definitions given by the MSME Census

As per the MSME census the Type of Enterprise includes Micro, Small and Medium Enterprises spanning the non-agricultural sector of the economy. The definitions of these different type of enterprises as provided by the First schedule of Industries
(Development and Regulation) Act, 1951 and also adopted by the MSME Census are given in Table 3.1.

### Table: 3.1 Investment Limit of Different Types of Enterprises

<table>
<thead>
<tr>
<th>Type of Enterprise</th>
<th>Manufacturing of Products</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Investment in Plant and Machinery</td>
<td>Investment in Equipment</td>
</tr>
<tr>
<td>MICRO</td>
<td>Up to Rs. 25 Lakh</td>
<td>Up to Rs. 10 Lakh</td>
</tr>
<tr>
<td>SMALL</td>
<td>Rs. 25 Lakh to Rs. 5 Crore</td>
<td>Rs. 10 Lakh to Rs. 2 Crore</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>Rs. 5 Crore to Rs. 10 Crore</td>
<td>Rs. 2 Crore to Rs. 5 Crore</td>
</tr>
</tbody>
</table>

As shown in the table above the different type of industries is defined on the basis of investment limit by nature of activity the enterprise. Investment up to Rs. 25 lakh in plant and machinery in manufacturing (up to Rs.10 lakh in equipment in service) is called micro enterprise. Investment of Rs. 25 lakh to Rs.5 crore in plant and machinery in manufacturing (Rs.10 lakh to Rs.2 crore in equipment in service) is called small enterprise. Finally investment of Rs. 5 crore to Rs.10 crore in plant and machinery in manufacturing (Rs.3 crore to Rs. 5 crore in equipment in service) is called medium enterprise.

The Nature of Activity of the MSMEs include: Manufacturing, Repairing and Maintenance and Services.

Type of Organization of MSME include: Sole proprietary or HUF, Partnership, Private Company, Public Limited Company, Cooperatives and Others.

Finally Nature of Operation of MSMEs include: Perennial, Seasonal and Casual.

The present study uses data of both the Economic Census and MSME Census to give a statistical picture of the growth in the number of enterprises owned and managed by the social group population as well as the profile of entrepreneurship with respect to the participation of the social group in entrepreneurship development in India.
II

RESEARCH METHODOLOGY

The present study is empirical in nature and hence is based on Primary Data.

The geographical area for the collection of primary data has been the National Capital Region (NCR) which includes the National Capital Territory (NCT) i.e. Delhi and the surrounding cities and urban areas. NCR has been expanding over time. (See Map).

II.1 A Brief Account of Delhi NCR and Areas of Field Survey

Delhi is the capital city state of India. To protect Delhi’s infrastructure from excessive pressure and a planned development of the region, the concept of National Capital Region was mooted in first master plan of Delhi, notified in 1962. As of now, the National Capital Region (NCR) in India includes a total of 15 districts in three neighbouring states- nine from Haryana, five from Uttar Pradesh and Alwar in Rajasthan along with the National Capital Territory (NCT). Currently, NCR is spread across 33,578 km2 of total area. Recently the National Capital Region Planning Board (NCRPB) has given green signal to further include three more districts to the NCR. Bhiwani and Mahendragarh districts of Haryana, and Bharatpur in Rajasthan will now be under the coverage of the NCR. With the inclusion of the three new districts, the total area of the NCR would be increased by 12,024 sq km to 45,602 sq km.


The field survey for the present study was conducted in limited part of NCR which include Delhi, Ghaziababd and NOIDA in Uttar Pradesh and Faridabad and Palwal in Haryana.

A brief account of each of these areas is presented below.
DELHI

Delhi is one of the most developed States of India and has a very rich history. It was made the capital of Independent India in 1950 and it was declared a state in 1992. Delhi is located at 28.61°N 77.23°E, and lies in Northern India. It borders the Indian states of Haryana on the north, west and south and Uttar Pradesh (UP) to the east.
Two prominent features of the geography of Delhi are the Yamuna flood plains and the Delhi ridge which originates from the Aravalli Range in the south and encircles the west, north-east and north-west parts of the city. It reaches a height of 318 m (1,043 ft).

The National Capital Territory of Delhi covers an area of 1,484 km\(^2\) (573 sq mi), As per Census 2011, Delhi has population of 1.68 Crores with the density of population being 11,320 per sq km. The SC population of Delhi is about 24 lakh constituting 16.9 per cent of its total population. Literacy rate in Delhi is 86.21 percent as per 2011 population census.

As per Fifth Economic Census 2006-07 there were 757743 establishments employing 3556387 persons (3.61 per cent of India’s employment). The average comes out to be 4.69 persons per establishment.

**NOIDA**

**New Okhla Industrial Development Authority** (NOIDA), created under the UP Industrial Area Development Act, is one of the largest planned industrial townships of Asia. It came into existence in 1976, with a view to develop an Integrated Industrial Township for the industrial growth of the area. It is located in the state of Uttar Pradesh just 14 kms from Delhi. The development area encompasses about 20, 316 hectares of land consisting of 81 villages. Noida is bounded by NH-24 Bye-Pass in the North beyond which the Ghaziabad Development Area exists, in the East by River Hindon beyond which Greater Noida Industrial Development Area exists, in the West by River Yamuna, beyond which are the States of Delhi and Haryana and in the South is the meeting point of the rivers Yamuna and Hindon.

NOIDA has an area covering 90.43 Sq. km. and population of about 6.42 lakhs as per 2011 census with density 3373.4 inhabitants per sq. km. Its percapita income is one of the highest in the country. About 35.66 % area of NOIDA is being developed as residential areas.

NOIDA is one of the most developed city in the country in terms infrastructure. It is hub of many educational institutes, Multi National as well as Public and Private sector
Corporations. There are about 6014 manufacturing units operating in NOIDA. With an investment of about 12710 crore rupees, these industries provide employment to over 94736 people.

**GHAZIABAD**

The district of Ghaziabad, created on 14th November, 1976, is situated in the middle of Ganga-Yamuna doab. Ghaziabad, the headquarters of the district of the same name, lies on the Grand Trunk road about a mile east of the Hindon river in Lat. 28\(^0\)40' North and Long. 77\(^0\)25' East, 19 Kms. east of Delhi. As its boundary is adjacent to Delhi, it acts as the main entrance of Uttar Pradesh and that is why it is also called the GATEWAY OF U.P.

The total area of the district is 1933.3 sq. kms. Ghaziabad is a growing industrial city. Its population having increased from 5.82 lakhs in 1901 to 46.61 lakhs in 2011 mainly on account of its rapid industrialization and its proximity to Delhi. A large number of persons reside here but carry on their trades in Delhi or are employed there. The density of the population per sq kms. is 1,127 per square km.

As per census of 2011, about 6 lakhs (18.4 percent) of the total population of Ghaziabad belong to SC community. The number of ST population was 207 only in 2006. The literacy rate of Ghaziabad is 69.7 per cent.

By 2011-12, there are about 881 micro, small and artisan units with a total investment of Rs.3913.8 lakhs employing around 8589 people.

**FARIDABAD**

The District Faridabad came on the map of Haryana on 15th August, 1979 as the 12th District of the State. Faridabad is about 25 Kilometers from Delhi in 28\(^0\)25'16" North Latitude and 77\(^0\)18'28" East Longitude. The river Yamuna separate the District Boundary on eastern side with UP State.

The district having an approximate area of 742.90 Sq.Km. accommodates a population of 18.10 lakh as per 2011 Census which is 7.10 percent of the State population. Almost 80% population of the District is urbanized. The district has
almost flat plains. Its literacy rate is 83.0 against 76.64 in the State. It is the most densely populated district in the State with 2442 inhabitants per sq. km. The total SC population in the district is about 1.53 lakh which comes to 11.27 per cent of its total population. ST population is not found in the records.

Faridabad has well connected network of road and Electricity. Faridabad is well connected with other parts of the country by Rail and Road.

There are now about 15,000 small, medium and large industries in this complex providing direct and indirect employment to nearly half a million people and ranks 9th largest industrial estate in Asia. The combined turnover is estimated to be about Rs. 1500 billion.

II.1.2 Method of Collecting Primary Data

Keeping in view of the study which is entitled entrepreneurial development of the socially and economically backward communities in the NCR, about three hundred (300) entrepreneurs were surveyed. The reference time period of data collection is December 2011 to June 2013. The entrepreneurs were chosen on the basis of the following criteria keeping in mind the objectives of the study.

1. Samples are drawn from the various parts of NCR i.e. Delhi, Ghaziabad, NOIDA and Faridabad.

2. More than one third of the entrepreneurs surveyed belong to the socially backward classes where as the rest belong to the “others” who are economically backward.

3. Family Income Status was the criteria for choosing the economically backward persons where as SC, ST and OBC were taken as the socially backward classes.

4. Young entrepreneurs below the age of 35 years with at least three to five years experience of running the business were selected.

5. Care was taken to cover the three types of activities given by MSME census which include- Manufacturing, Repairing and Maintenance and Service.
II.2 Methodology for Analysis.

Besides the use of statistical tools such as tables, graphs and charts the data analysis have been conducted by using Logit and Probit Regression Models.

II.2.1 About Probit Regression Model

In econometrics, a probit model is a type of regression where the dependent variable can only take two values i.e. 0 and 1. The purpose of the model is to estimate the probability that an observation with particular characteristics will fall into a specific one of the categories. A probit model is a popular specification for a binary response model. As such it treats the same set of problems, as does logistic regression using similar techniques. The probit model, which employs a probit link function, is most often estimated using the standard maximum likelihood procedure, such estimation being called a probit regression.

Suppose response variable $Y$ is binary, that is it can have only two possible outcomes, which we will denote as 1 and 0. We also have a vector of regressors $X$, which are assumed to influence the outcome $Y$. Specifically, we assume that the model takes the form

$$\Pr(Y = 1 \mid X) = \Phi(X'\beta),$$

where $\Pr$ denotes probability, and $\Phi$ is the Cumulative Distribution Function (CDF) of the standard normal distribution. The parameters $\beta$ are typically estimated by maximum likelihood. It is possible to motivate the probit model as a latent variable model. Suppose there exists an auxiliary random variable

$$Y^* = X'\beta + \varepsilon,$$

where $\varepsilon \sim N(0, 1)$. Then $Y$ can be viewed as an indicator for whether this latent variable is positive:

$$Y = \begin{cases} 
1 & \text{if } Y^* > 0 \text{ i.e. } -\varepsilon < X'\beta, \\
0 & \text{otherwise}.
\end{cases}$$
II.2.2 About Logit Regression Model

In econometrics, logistic regression or logit regression is a type of probabilistic statistical classification model. It is also used to predict a binary response from a binary predictor, used for predicting the outcome of a categorical dependent variable based on one or more predictor variables. That is, it is used in estimating empirical values of the parameters in a qualitative response model. The probabilities describing the possible outcomes of a single trial are modeled, as a function of the explanatory variables, using a logistic function:

\[ P(t) = \frac{e^t}{e^t + 1} = \frac{1}{1+e^{-t}}, \]

where \( t \) is a linear function of an explanatory variable \( x \) or of a linear combination of explanatory variables. The logistic function can be rewritten as:

\[ \pi(x) = \frac{e^{\beta_0 + \beta_1 x}}{e^{\beta_0 + \beta_1 x} + 1} = \frac{1}{1 + e^{-(\beta_0 + \beta_1 x)}}. \]

This will be interpreted as the probability of the dependent variable equalling a "success" or "case" rather than a failure or non-case. We also define the inverse of the logistic function, the logit:

\[ g(x) = \ln \frac{\pi(x)}{1 - \pi(x)} = \beta_0 + \beta_1 x. \]

The logistic function is useful because it can take an input with any value from negative infinity to positive infinity, whereas the output \( \pi(x) \) is confined to values between 0 and 1 and hence is interpretable as a probability.

Frequently "logistic regression" is used to refer specifically to the problem in which the dependent variable is binary—that is, the number of available categories is two.

Although the dependent variable in logistic regression is binomial, the logit is the continuous criterion upon which linear regression is conducted. The logit of success is then fit to the predictors using linear regression analysis.