4 Research Methodology

Research Methodology is a technique to solve problems systematically. It is considered as a science of understanding how research is done logically. Research methodology has several determinants. It comprises of objectives for which the study was carried out. Other important feature was procedures which were used for the study. In short this chapter facilitate to the researcher to fix pathway of research work.

Why Research?

The more and more difficult nature of business and government, it has resolute awareness to use research in resolving functioning problems. Research is movement of known to unknown. When unknown confront us we wonder so we discover wonder. Research is input to present knowledge for its advancements. Logical way of discovering answer to a trouble is research.

The research methodology of the study gives detailed logical approach of finding the answers to questions. Moreover, this endow with unambiguous pathway to carry out and attain the clear answer for defined problems. The trustworthiness and exactness of the study primarily depend upon methodology. The next are the steps by which research had went through the gathering, examining and understanding different types of information relating to the study. Methodology shall be regarded as a process used in the study for deciding samples, sample size, data collection and different aids of data analysis and interpretation. The Methodology is the techniques that are to be adopted for obtaining necessary information from units under study. The major sources of information for the study were collected from Entrepreneurs who were registered with Maharashtra Industrial District Center, Latur and District Industrial Center, and Latur respectively. For the purpose of doing research study, primary as well as secondary data were used.

4.1 Research Design

Research Design is planning of parameters for gathering and investigation of data in a way that seeks to combine relevant research intention. Descriptive research contains surveys and fact-finding investigation of diverse category. The major reason of this descriptive research is explanation of entrepreneurship development, government initiatives for entrepreneurs and entrepreneur’s problems, as it exists at present. The foremost feature of
this method is that the researcher had no control over variables; he can only describe what had taken place or what was happening at that time.

Figure 21: Research Process

4.1.1 Descriptive research: It is called as Ex post facto research. Descriptive type of research design was used in this study as different questions like what is the study concerning, intention behind study, where will the study be executed, what kind of data is essential, where can the requisite data be found, can be easily answered. In investigative research, researcher has to use information previously available and evaluate them.

Descriptive research design is related with unfolding qualities of a specific individual group. It was implemented as to shed light on the nature of problem and discover factors that lead to the problem. The study describes factors influencing introduction of socio-economic aspects and problems generally faced by entrepreneurs and government initiatives for entrepreneurship development in Latur MIDC. In this connection, matters pertaining to Entrepreneurial problems and Government Initiatives were already discussed with entrepreneurs from time to time. The researcher found that it was possible for conducting the research in the area of Latur MIDC especially with entrepreneurs. Statistical techniques were used for analysing data.

4.2 Flow chart of research process

For good understanding of research study the researcher has followed certain basic steps in the research process. The flow chart of research means the steps followed by the researcher to accomplish research study. It includes number of steps and stages carried out in the research work and finally conclude entire study with systematic way. The flow chart of research methodology is as follows.

![Flow chart of research methodology](image)

4.3 Sampling Design

Research Method, sampling design and Statistical techniques:

The present study is a qualitative as well as quantitative research. For qualitative analysis how respondents are influenced by taking part in the research process together with an
awareness of researchers own experience and preferences have been measured. For present study, the researcher considered entrepreneurs located in Latur MIDC as the universe. Researcher selected sampling by mean method to determine sample size. By studying sample, researcher was seeking to know population. Further researcher divided different segments of units into different strata micro, small, Medium, Large. The total number of entrepreneurs from 2010 to 2014 in Latur MIDC is 150. Out of that micro size unit Entrepreneurs (33), small size unit Entrepreneurs (84), medium size unit Entrepreneurs (21) and large size unit Entrepreneurs (12). In this report, the researcher used descriptive and analytical methods to derive conclusions on the basis of experiences and figures to shape suggestions. In the present study, researcher viewed all concepts, tables and graphs in proper alignments and made interpretation on all points in sequential manner and elaborated in descriptive manner.

4.3.1 Symbols:
Following are symbols used by researcher in his study.

\[ N \] number of observations (sample size)
\[ N \] number of samples (each having \( n \) elements)
\[ \alpha \] level of significance
\[ Df \] degrees of freedom
\[ \sigma \] standard deviation (population)
\[ \mu \] population mean
\[ \chi^2 \] Chi-square
\[ r \] sample correlation coefficient

1. Area of the Study: Latur M.I.D.C. Area, State of Maharashtra, India

2. The period under study: The year from 2010-2014 taken as time period study.

3. Population size: There are almost 300 Business Units in Latur M.I.D.C. including micro, small, medium and large enterprises.

4. Target population/Sampling Frame: micro enterprises (64), small size enterprises (182), Medium size enterprises (36), Large size enterprises (18) at Latur MIDC Area.

4.3.2 Sample design:

6. Sample size \((n)\): Estimating sample size is 150 Entrepreneurs. The survey was conducted from respondents of a wide cross section of different units.

Sample size was decided using sample size determination by mean method.

- **Sampling Method**: sample size determination by mean method.
  The mean method was implemented because variables in study were measured using a five point measurement scale.

Formula

\[
N = \frac{z^2 \times S^2}{E^2}
\]

Where, ‘\(z\)’ is the standard score related with confidence level (95% in the current case). Hence standard scores equals to 1.96 (borrowed from normal table).

‘\(S\)’ is the variability in the data set, calculated as a ratio of variability / 6. Variability is equal to 5-1 = 4 (the difference between minimum and maximum value in five point scale). 6 refer to ±3 standard deviation values on the X axis of the standard normal curve, which takes in all the data set in study.

Hence variability = \(\frac{4}{6} = 0.66\)

\(E\) is the acceptable standard error = 11% (in the present study).

Standard error: It is a standard deviation of sampling distribution.

Sample size \(n = \frac{1.96^2 \times 0.66^2}{0.11^2} = 138\).

Hence a buffer sample of 150 was selected for study.

- **Sample Size**: Micro size unit Entrepreneurs (33), Small size unit Entrepreneurs (84), Medium size unit Entrepreneurs (21) and large size unit Entrepreneurs (12)

4.3.3 **Sampling Technique**: Stratified Random Sampling

Researcher divided sampling units into different strata micro, small, medium & large size business units. This division is on basis of investments in plant & machinery in their business units. Then randomly sample was selected.

For the present study, data were collected through questionnaires, interview and discussions with entrepreneurs at Latur MIDC. The sampling technique was exploited to
obtain responses from entrepreneurs. The statistical tools were applied for analysis of the collected data.

4.3.4 Scale of Measurement:

Scaling defines procedures of allocating numbers to different degrees of opinion, attitude, and concepts. Scaling can be done by making judgement about individual’s perception, asking questions in such a way that score can be assign. Scale is continuum (consist highest point and lowest point) and it contains ratios/degree for ex: higher than, lesser than. The Likert scale was implemented to measure intensity or degree of agreement and percentage of favourable and unfavourable respondents to the question. The Likert scale is deviation of summated rating scale, this scale enquires a respondent to agree or disagree with statements that directs their agreement or disagreement towards statements. The Likert scale used when a large number of statements that were generated and an item analysis are to be performed. The five point Likert scale and seven point scale have been used and their ratings were as follows:

For five point scale:

1- Strongly Disagree (SD)
2- Disagree (D)
3- Neutral (N)
4- Agree (A)
5- Strongly Agree (SA)

For seven point scale:

1- Extremely Dissatisfied
2- Dissatisfied
3- Moderately Dissatisfied
4- Neither Satisfied nor Dissatisfied
5- Moderately Satisfied
6- Satisfied
7- Extremely Satisfied

Further, in this study scientific tests and statistical tools have been used to proven statements as quoted in hypothesis. However, in this research representation has been given to entrepreneurs businesses. It seems true participation and expects genuine results from the data collected and its interpretation. The entrepreneurs expressed their perception in Likert five point scale and seven point scales.

In the questionnaire, it has been noted that five is assigned to strongly agreeableness and one strongly disagreeableness. Further, with the help of statistical techniques the data is measured based on variables.

4.3.5 Source of Data:

Based on the objectives, current study was executed with both primary and secondary data. The primary data was acquired by administering a structured questionnaire to the respondents to obtain information on several problems relating to socio-economic parameters, Entrepreneurial problems, Government initiatives and day to day practical approach. The questionnaire was directed to a sample of 150 respondents in Latur MIDC and covered entrepreneurship development parameters and problems of entrepreneurs. In depth interviews were conducted with the authorities of DIC and MIDC office in Latur. Secondary data were also collected from Governments authorities, journals, magazines and a published report from Internet.

4.3.6 Period of the Study:

For purpose of the study, the researcher selected period from 2010 to 2014.

4.3.7 Limitations of the Study:

1. The geographical scope of the study is limited to Latur MIDC of Maharashtra state in India. The deliberate selection of Latur MIDC for the survey has been made with a view to have a broader spectrum of representative samples, which had varied entrepreneurial background. The list of firms to be included in the study was derived from District Industries Centre (DIC), Latur.

2. The present study is a qualitative research. The data analysis is a very personal process and many other researchers might analyse the same. Therefore, on express opinion of entrepreneurs at Latur MIDC, the results and conclusions of the study were comparatively
static in nature and may not be interpreted as forecasts of the variables under qualitative analysis.

3. The study is centred on reliability of primary data. The sampling unit for the research was mainly Latur MIDC. Hence, the sample size of entrepreneurs on an average may not be sufficient to make generalizations of the findings. Views of entrepreneurs may hold good for the time being and may vary in the future.

4.3.8 Pilot Study:

In order to found issues around the topic and earlier to final survey, the questionnaire was pre-tested on a sample of entrepreneurs. The pilot test was drawn on the target population that were designed for data collection.

The aim of pilot survey was to confirm rational arrangements of the questions. The questionnaire was executed by piloting interview with 30 entrepreneurs. The concerns arising from these interviews have formed basis of refining the questionnaire. The entrepreneurs were prepared conscious of the purpose of the survey and go through questionnaire carefully. Finally refinement in questionnaire was made on the basis of their response and data collection was done with the help of improved questionnaire.

4.4 Data collection methods

It was not easy job to collect the data. Many people engaged in small-scale industry were semi-literates and they, therefore, acted in a manner that strained investigation. The management of a number of micro and small sized units did not maintain records on scientific basis. It therefore, required a great deal of time consuming effort to get information which could be described as authentic. Many respondents looked upon statistical enquiries with suspecting eyes. They dreaded that the statistics supplied by them might be used to their disadvantage and were, therefore, hesitant to supply the information needed. The standard method was employed to collect information regarding organizations and institutions, helping entrepreneurs. To obtain relevant information data was collected through primary and secondary sources. The study was based on both primary and secondary data. The following diagram gives an idea of data collection method.
4.4.1 Primary Data:

Primary data are collected for first time and is an inventive in character. The primary data had been collected by the researcher on the basis of a field survey of entrepreneurs and was collected only for the research purpose. Questionnaires were prepared for this purpose. The following methods were used for collecting the Primary data:

- Questionnaire Method (Personal Scheduling)
- Interview Method
- Observation Method

For the study, the data was collected through Interview and Questionnaire method. Observation method was also used for the present study to derive certain observations. The primary data was gathered by means of structured questionnaire. Initial contact with entrepreneurs was done by telephonic discussions. The researcher has shortly explained the objective of the research study and theme to be covered. The questionnaire were got filled at their business unit. Along with that researcher observed many processes, technical procedures and overall atmosphere of the business units. It helped a lot to draw some conclusions. Secondary data was collected from the District Industrial Office, MIDC office, journals, books and reports of Government of India and Maharashtra state.

- **Questionnaire Method (Personal Scheduling):**
  
  After conducting detailed literature review various variables were extracted and analytical and exhaustive structured questionnaires were designed to extract information from
entrepreneurs regarding their socio-economic aspects and problems. The initial few questions in the questionnaire comprise general questions about demographic factors of entrepreneurs like gender, age, educational qualification, etc. Some questions were close type questions (Yes/No) type questions and some questions were structured (limited options to answer). The questions were explained to entrepreneurs where they were not able to understand the questions. The data had been collected through the questionnaires and the collected information was sorted out, arranged and properly classified in such a manner which suits the objective of the study. The study was mainly based on the primary as well as the secondary data. An interview survey was also conducted. Researcher belongs to Latur so Latur MIDC entire area had been selected for the present study.

In Latur MIDC, upto 2014-2015 total 300 units have been registered under micro, small, medium and large scale industry under DIC, Latur. (Source- District Industrial Center Latur, 2014) For the study, out of which total a 50% (sample size) i.e.150 business units considered for study. It was taken through ‘structured questionnaire’, which was adjusted for some specific aspects of sub sectors to find out entrepreneurial problems and government policies implemented. The present research is being completed on the basis of the answers received from entrepreneur and discusses them in the light of other findings from an analysis of MIDC area.

4.4.2 Secondary Data:

In order to conduct the research, important contributions in the subject through important books, journals, magazines, survey materials, periodicals, reports, booklets, newspapers, official manuals published in India and abroad, mission statements and Internet were used. Available information, literature, plans, and appropriate statistics to the study were gathered from the District Industrial office, MIDC office, SBI Lead Bank, Latur District Gazetteer, District Action Plan, District Statistical office, Director of Census operations, Latur. Comprehensive data was gathered by means of primary research with the help of structured questionnaires equipped for Entrepreneurs. During the course of study, the researcher looked at policies and services offered by government for entrepreneurship development and entrepreneurial problems. The research is designed to capture the pros and cons, views of entrepreneurs in the light of changing world.

The research was administered to entrepreneurs to ensure that the sample was truly representative. The personal interview contained multiple sections with questionnaires
covering all aspects of problems, socio-economic profile and government initiatives for entrepreneurs. The assembling of the facts followed by analysis has been offered with recommendation. Measurement (Likert–type) scale was used to validate the questionnaire and generalize the observations and conclude with the suggestions and recommendations.

4.5 Statistical Tests

Data was processed with the help of different software like MS Excel, MS Word and IBM SPSS 19 (statistical package for the social sciences). Data were analysed by making response sheet (data coding) and then by adapting statistical techniques like graphical analysis, pie chart, bar diagram were used and Independent sample t test, one way Anova, Chi-square test, Bivariate analysis, Friedman chi-square test were conducted for testing hypothesis. Different statistical terms are explained following which are used in statistical analysis. Researcher applied different test which are explained in brief.

I) Independent sample t test:

It is applied when data are parametric i.e. normally distributed and at least one variable is independent variable. Independent variable has no impact on dependant variable. In t test the independent variables is categorical variable and dependant variable is interval scale (Continuous variable). The t-test checks whether the means of two groups are statistically varies from each other. For ex. male and female, yes-no type questions. As researcher wanted to compare the means of two groups so this analysis was appropriate. Dependent variable must be measured on a continuous scale (i.e. it is measured at the interval or ratio level) and Independent variable should comprise of two categorical, independent groups. Dependent variable has to be approximately normally distributed for every group of the independent variable. This test is applied when the population mean and standard deviation are unknown, and two separate groups are being compared.

II) One way Anova test:

Anova is an extension of independent sample t test. Because the one-way ANOVA is applied to check dissimilarities between at least three groups, since the two-group case can be covered by a t-test (Gosset, 1908). Researcher implemented one way Anova because effect of independent variable on dependant variable is measured and not vice-versa so whenever there is one way relationship one way Anova is used. In one way Anova independent variable is categorical variable with more than two responses and dependant
variable interval scale (Continuous variable). The ANOVA produces an F-statistic and from F value, p value is determined. Depending on p value null hypothesis is rejected or accepted.

**III) Chi-Square test of contingency:**

A chi-square test denoted as $\chi^2$ test (or chi-squared test), is statistical hypothesis test. Chi square test of contingency is a parametric test used to study relationship between two nominally scale variables. In chi-square both variables are categorical variable. Chi-square test is applied to examine whether there is a significant difference between the expected frequencies and the observed frequencies in one or more categories. The chi-square test is applied where chi-squared distribution is applicable. For this test, sample must be randomly selected from a large population. Observations are always independent of each other and not co-related.

**IV) Bivariate Co-relation test:**

Bivariate Co-relation test is used to study relationship between two variables. Both variables should be continuous variables. Researcher used this test because in current study both variables are interval scale continuous variables. Bivariate analysis involves the analysis of two variables to observe relationship between them. If the variables are related to one another, it is measured how those two variables simultaneously change together (see also covariance). Bivariate correlation identifies the relationship between the two variables; it recognises the strength of relationship between two variables, which can vary from value 1 to 0. The stronger the association, the value is closer to 1. This two way relationship can be positive or negative, in positive relationship as one value increases another value increases with it. In the negative relationship, as one value increases, the other one decreases.

**V) Friedman chi-square test:**

Friedman chi-square is non-parametric form of repeated Anova and is used for one-way repeated measures analysis of variance by ranks. Researcher wanted to study group differences between various problems faced by entrepreneur and level of satisfaction of entrepreneurs about various parameters which is also considered as group. Friedman chi square test is used to determine rank order based upon differences between mean ranks.