CHAPTER III
RESEARCH METHODOLOGY

3.1 Introduction:

Industrial development in India has been promoted by both private and public sector. Government of India has introduced number of industrial policy to promote and encourage the industrial sector. As a result of it, today Indian industries have reached to a good position. Basic industries, manufacturing industries, processing industries, small scale industries, cottage industries and many other types of industries are being promoted by the government. There are also some industries which are depending on main industries. Small scale industries are providing spare parts and packaging materials to main industries.

Modern industry is characterized by the factory system whose main features are; spatial concentration of the productive process, application of mechanical power, and accumulation of wealth with a developed market mechanism. This was upheld by an individualistic and capitalistic ideology in which self-interest and individual values were encouraged and it brought about a rise in the standard of life, progress in literacy and education, and insistence on democratic ideals and practice. In India, where the system of guilds or serene also existed, early industry was much developed during the middle ages, and some of its manufactured products, especially fine textiles, were highly appreciated in Europe. But in later times its flourishing arts and crafts could not compete with the new machine-made products introduced by the British whose cotton industry had developed owing largely to the high tariffs raised against Indian goods\(^1\).

3.2 Important Definitions and Concepts:

Since the study is based on one new emerging industry i.e. corrugation industry, the researcher has given related concepts and definitions as below.

a) Grammage (gm/m. sq. meter):

Weight in gram per sq. meter. Conditioned grammage is the grammage obtained in a standardized climate. Dry grammage is the grammage of absolutely dry paper.

b) Moisture Content (%):

The loss in weight (%) of a sample when dried to constant weight under specified conditions.

c) Bursting Strength : kg/cm. sq

The maximum pressure, applied at a right angle, that the paper can withstand under well specified conditions.

d) Ring Crush Test RCT kg

The maximum load a strip of paper bent in a ring form can stand when it is edgewise compressed.

3.2.1 Packaging Industry:

Packaging is generally seen as a good barometer of economic development and improvements in life-style. The overall global trend showing that packaging industry is growing at higher rate. The primary packaging manufacturing industries composed of four competing material sectors each with a different set of operating conditions, i.e. paper/board, plastics, glass and metals. Within this make-up there are sub-divisions, i.e. corrugated board, cartons, rigid plastics, flexible plastics, steel and aluminium as well as a combination of one, two or even three of these sub-divisions.

The nature of packaging manufacturing industry is changing irrevocably due to the changing customer base, and increasing customer and legislative demands. The challenge of the enlarged industry cannot be ignored, both in terms of market growth

http://www.packagingfedn.co.uk/images/reports/mainreport.pdf
and the potential to attract product manufacturers. This is most effectively done by maintaining an up-to-date knowledge and analysis of competing operations and the changing customer base. The packaging industry in the present time is most essential, since all the products need to be packed some or other material.

3.2.1 The purposes of packaging and package labels:

Packaging is the technology of enclosing or protecting products for distribution, storage, sale, and use. Packaging also refers to the process of design, evaluation, and production of packages. Packaging can be described as a coordinated system of preparing goods for transport, warehousing, logistics, sale, and end use. Packaging contains, protects, preserves, transports, informs, and sells. In many countries it is fully integrated into government, business, institutional, industrial, and personal use.

- **a) Physical protection** – The objects enclosed in the package may require protection from, among other things, mechanical shock, vibration, electrostatic discharge, compression, temperature.
- **b) Barrier protection** – A barrier from oxygen, water, vapor, dust, etc., is often required. The controlled atmospheres are also maintained in some food packages. Keeping the contents clean, fresh, sterile and safe for the intended shelf life is a primary function. A barrier is also implemented in cases where segregation of two materials, prior to end use is required, as in case of special paints, glues, medical fluids etc. At consumer end, the packaging barrier is broken or measured amounts of material removed for mixing and subsequent end use.
- **c) Containment or agglomeration** – Small objects are typically grouped together in one package for reasons of efficiency. For example, a single box of 1000 pencils requires less physical handling than 1000 single pencils. Liquids, powders and granular materials need containment.
- **d) Information transmission** – Packages and labels communicate how to use, transport, recycle or dispose of the package or product. With pharmaceuticals,

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food, medical and chemical products, some types of information are required by governments. Some packages and labels also are used for track and trace purposes. Most items include their serial and lot numbers on the packaging, and in the case of food products, medicine, and some chemicals the packaging often contains an expiry/best before date, usually in a shorthand form. Packages may indicate their material with a symbol.

e) **Marketing** – The packaging and labels can be used by marketers to encourage potential buyers to purchase the product. Package graphic design and physical design have been important and constantly evolving phenomenon for several decades. Marketing communication and graphic design are applied to the surface of the package. Most packaging is designed to reflect the brand's message and identity.

3.2.2 **Corrugation Industry**\(^4\):

Corrugated fiberboard is a paper-based material consisting of a fluted corrugated sheet and one or two flat linerboards. It is made on "flute lamination machines" or "corrugators" and is used in the manufacture of shipping containers and corrugated boxes. Corrugated fiberboard is sometimes called corrugated cardboard or corrugated paper. The corrugated paper can be used for manufacturing the boxes, which can be use later for packaging various materials. The corrugated box factories are increasing over the years. The aggregate corrugated factories are called corrugated industries.

3.2.3 **Micro, Small and Medium Scale Industries**\(^5\):

The definition of micro, small and medium scale industry is changing over the years. Recently, the Government of India has passed an Act in the year 2006 to promote the Micro, Small and Medium Enterprises in India. The Reserve Bank of India has given clear idea about the meaning MSME in India. The Government of India has enacted the Micro, Small and Medium Enterprises Development (MSMED)

\(^4\)http://en.wikipedia.org/wiki/Corrugated_fiberboard

\(^5\)http://www.rbi.org.in/scripts/FAQView.aspx?Id=84
Act, 2006 in terms of which the definition of micro, small and medium enterprises is as under:

(a) Enterprises Engaged in Production or Processing:

The Act has given clear guidelines for those enterprises which are engaged in the manufacture or production, processing or preservation of goods as specified below:

i) A micro enterprise is an enterprise where investment in plant and machinery does not exceed Rs. 25 lakh;  
ii) A small enterprise is an enterprise where the investment in plant and machinery is more than Rs. 25 lakh but does not exceed Rs. 5 crore; and  
iii) A medium enterprise is an enterprise where the investment in plant and machinery is more than Rs.5 crore but does not exceed Rs.10 crore.

(b) Enterprises Engages in Services

The Act also has given clear guidelines for such enterprises, which are engaged in providing or rendering of services and whose investment in equipment (original cost) excluding land and building and furniture, fittings and other items not directly related to the service rendered or as may be notified under the MSMED Act, 2006 are specified below.

i) A micro enterprise is an enterprise where the investment in equipment does not exceed Rs. 10 lakh;  
ii) A small enterprise is an enterprise where the investment in equipment is more than Rs.10 lakh but does not exceed Rs. 2 crore; and  
iii) A medium enterprise is an enterprise where the investment in equipment is more than Rs. 2 crore but does not exceed Rs. 5 crore.

Further the Act in association with the Reserve Bank of India, has guided the public sector banks to promote these enterprises. Public Sector banks have been advised to open at least one specialized branch in each district. The banks have been permitted to categorize their MSME general banking branches having 60% or more of their advances to MSME sector, as specialized MSME branches for providing better service to this sector as a whole. As per the policy package announced by the
Government of India for stepping up credit to MSME sector, the public sector banks will ensure specialized MSME branches in identified clusters/centres with preponderance of small enterprises to enable the entrepreneurs to have easy access to the bank credit and to equip bank personnel to develop requisite expertise. Though their core competence will be utilized for extending finance and other services to MSME sector, they will have operational flexibility to extend finance/render other services to other sectors/borrowers. The banks have been advised to put in place loan policies governing extension of credit facilities for the MSE sector duly approved by their Board of Directors. Banks have, however, been advised to sanction limits after proper appraisal of the genuine working capital requirements of the borrowers keeping in mind their business cycle and short term credit requirement.

The Ministry of MSME, Government of India and SIDBI set up the Credit Guarantee Fund Trust for Micro and Small Enterprises (CGTMSE) with a view to facilitate flow of credit to the MSE sector without the need for collaterals/third party guarantees. The main objective of the scheme is that the lender should give importance to project viability and secure the credit facility purely on the primary security of the assets financed. The Credit Guarantee scheme (CGS) seeks to reassure the lender that, in the event of a MSE unit, which availed collateral-free credit facilities, fails to discharge its liabilities to the lender, the Guarantee Trust would make good the loss incurred by the lender up to 85 per cent of the outstanding amount in default.

The CGTMSE would provide cover for credit facility up to Rs. 100 lakh which have been extended by lending institutions without any collateral security and/or third party guarantees. A guarantee and annual service fee is charged by the CGTMSE to avail of the guarantee cover. Presently the guarantee fee and annual service charges are to be borne by the borrower. With a view to facilitating credit flow to the MSME sector and enhancing the comfort-level of the lending institutions, the credit rating of MSME units done by reputed credit rating agencies should be encouraged. Banks are advised to consider these ratings as per availability and wherever appropriate structure their rates of interest depending on the ratings assigned to the borrowing SME units.
3.3 Statement of Research Problem:

The Indian economy is growing with the growth various industries. As the manufacturing industries have greater potential to grow, there are other alternative industries which also have potential to grow. One of the most innovative and challenging industry is packaging industry. The packaging industry and its market is growing at remarkable rate.

“The packaging market in India seems set for the next level of growth. Strong favourable demographics aside, factors such as increasing disposable income levels, rising consumer awareness and demand for processed food, and the multinational giants taking rapid strides in the food, beverages, cosmetics & toiletries and pharmaceuticals space, are expected to be the key drivers of this growth story. These factors are forcing both packaging suppliers and end-user industry to shift from bulk packaging to retail, and unit-level and small-sized packaging. In addition, exploding organized retail growth and newly relaxed FDI investment norms in retail and other sectors, are well for packaging market in India”6.

“Indian packaging industry is highly fragmented with a large number of small scale companies and a few large integrated players. According to one estimate, there are more than 22,000 registered packaging companies in India, more than 85 percent of which are small scale companies”7. “Indian packaging industry is valued at about US $ 13 billion (2012-13). The industry is expected to grow at 15 per cent (CAGR). India accounts only 2 to 3 per cent of global packaging market.”8

Corrugated factories are major part of packaging industry. There has been increasing number of corrugated factories in India. This trend has promoted the packaging industry in India. According to a Report on Industry Review (2011), the increasing and expanding retail industry has raised the consumption of corrugated

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7 Ibid

boxes. The growth of the retailing industry has led to the growth of packaging industry, especially the corrugated industry in India. Most of the corrugated box plants are small and medium sized and have been located near the customers.

The industry is converting about 2 million tons of Kraft paper into corrugated boxes. Factories are spread out in all parts of India, even in the remote industrially backward areas. This present scenario is already being challenged by the sweeping changes that are beginning to take shape. More and more in-line automatic plants are being set up, as corrugated box makers gear up to meet the new demands for high precision boxes with attractive graphics and large integrated production capacities.

At present maximum products can be effectively packed in corrugated box. From small, fragile & delicate products like crockery, medicines, cosmetics & large products like washing machine, T.V, refrigerators to perishables like fruits & vegetable almost all products can be effectively & economically packed in corrugated boxes. Now a day corrugated boxes are required everywhere. Millions of tones of agricultural & industrial products are packed in cost effective & sturdy boxes for the purpose of transportation from factory to market. This industry also helps to increase the marketability & durability of agricultural product. Indirectly corrugated factories have helped in development of Agricultural industry.

Though these factories have provided huge employment and helps to development of Agro-Industries, there are many economic problems like scarcity of skilled labour, investment level and its returns and other related economics problems. In this study an attempt has been made to find out the economical and other problems of Corrugation factories and solution for the same.

3.4 Objectives of the Study:

The researcher has kept following objectives for the study.

i) To study the present status of Corrugation factories.

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ii) To study the organizational structure of Corrugation factories.
iii) To study the labour problems of Corrugation factories.
iv) To find out economical problems of Corrugation factories.
v) To provide the solutions to the problems of Corrugation factories.

3.5 Importance of the Study:

The packaging industry is growing fastly at the same time it helps to economic development of Nation. Following points state the importance of the study.

i) This study will help to find out present status of corrugation factories.

ii) Corrugated factories have produced large employment opportunities.

iii) This study will help to find out economic problems of corrugated factories.

iv) This study will provide solutions to the economic problems of corrugated industry.

Corrugated packaging industry has provided huge employment and helps to development of trade. The researcher did not find any study on the development and problems of corrugated industry. Therefore, this study will help to know present status and problems of corrugated packaging industry.

3.6 Hypothesis:

i) The financial strength regarding capital investment in corrugated industries is not satisfactory

ii) The corrugation industries have greater potential to grow

iii) The corrugation industry facing economical problems.

3.7 Methodology:

This research is based on primary data however secondary data will also be used for the research. The primary data has been collected through questionnaires. Extensive field survey has been conducted along with it, interviews & free discussion with selected respondents also has been conducted. In order to conduct the research, references will be taken from important Journals, Magazines, Materials, Periodicals, Reports, Booklets, News papers and through internet also. Secondary data has been
collected from ‘Western India Corrugated Box Manufacturers Association’, ‘Indian Institute Of Packaging’, and ‘Federation of Corrugated Box Manufacturers of India’, ‘Asian Corrugated Case Association’ etc. These are the Associations of Packaging Industry, which has published various information and data related to the packaging industry.

3.7.1 Universe of the Study and Sample Size

The researcher has selected Pune city and sub-urban area of Pune city on the basis of purposive sampling. At the pilot study, there are 300 corrugated packaging factories/units in the selected region. For the purpose of the study these are classified accordingly to the size and capital investment. Out of total industries (300 units) only 5 industries are large scale units (1.6 per cent of the total units). Hence the researcher has selected only small and medium size corrugated factories by neglecting the large units. Considering this classification, the researcher has used disproportionate sampling and has selected 30 per cent from small size and 15 per cent from medium size factories. Altogether, the researcher has selected 20 per cent of the total universe on the basis of systematic random sampling. Since the production method, machinery and labour size in each classified category is same; the researcher has treated these factories as homogeneous. Therefore, selected samples represent the whole universe. The sample size can be given as below (table 2.1)

Table No. 2.1

<table>
<thead>
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<th>Sr. No.</th>
<th>Size of Unit</th>
<th>Total Universe</th>
<th>Selected Sample size</th>
<th>Percentage</th>
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<td>Small size</td>
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<td>30</td>
<td>30</td>
</tr>
<tr>
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<td>Medium size</td>
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<td>30</td>
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<td>005</td>
<td>00 (00)</td>
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<tr>
<td>Total</td>
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<td>60</td>
<td>20</td>
<td></td>
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</tbody>
</table>
3.8 Data Collection and Analysis:

The collection of data is based on the primary source. The field work has been conducted by using questionnaire. Besides that, interviews also have been conducted. The collected data has been analyses by different statistical methods like, Average, Mean, Mode, Median and Correlation.

3.9 Limitations of the Study:

The researcher has selected corrugation factories in and around Pune city. The exercise of collecting the data and analysis is incomplete without considering the limitations. The researcher has given the following limitations of the study.

3.9.1 This research is more related to the problems of corrugation factories in the selected region. Therefore, other problems which were not in the focus of research have been neglected.

3.9.2 The research is based on the primary data, hence the information provided by the respondents has been assumed as true.

3.9.3 The research is restricted to Pune region only

3.9.4 Automatic plants have not been considered for the study

3.9.5 This study has considered the information of the five years.

3.10 Contribution of the Research to the Society:

This research is based on the corrugation factories and their problems. The researcher found that such research has not been done so far. Therefore, this research can give a contribution to the society and the field of literature as below-

3.10.1 This study will help to solve the problems of corrugated factories.

3.10.2 From the Government side, this study will be helpful for policy framing for the promotion of packaging industry in India.

3.10.3 This study will be helpful for the corrugation factories in the matter of pricing and costing.

3.10.4 This study will help to researcher for further study.
3.11 Chapter Scheme:

The whole thesis has been divided into following chapter scheme.

Chapter 1- This chapter is titled as the Introduction to Packaging Industry in India. This chapter explores the history of Packaging Industry, types of Packaging Industry and manufacturing process of Corrugated Boxes.

Chapter 2- This chapter is titled as Industrial Development in India. This chapter explores the general industrial development in India, which includes industries in ancient period, industries in modern period, Information and Technology industry, structural changes in industries in India etc.

Chapter 3- This chapter is titled as Research Methodology. This chapter explains the statement of research problem, objectives, hypothesis, sampling and methodology.

Chapter 4- This chapter is titled as Pune Profile: An Overview. This chapter includes socio-economic history, geographic location, general demographic profile, agriculture, industry and education.

Chapter 5- This chapter is titled as Review of Literature and Conceptual Framework. This chapter gives extensive review of literature and the conceptual framework to the research topic.

Chapter 6- This chapter is based on data analysis. This chapter has been analysed using questionnaire. The analysis has been carried with various variables.

Chapter 7- This chapter is titled as Findings and Conclusion.

Chapter 8- This chapter explores the Recommendations

The researcher also has attached appendices after bibliography.

Appendix One- Questionnaire
Appendix Two- Selected Photographs of Corrugated Factories
Appendix Three- Costing, Quality and Maintenance Model