CHAPTER - I

INTRODUCTION AND DESIGN OF THE STUDY

I think plastics, for young people, is one of the best fields to get into.

I don't see anything that would take a plastic company out of business.

- Jim Brown

INTRODUCTION

India is a favoured destination for overseas investors and offers the advantages of an open economy, increasing liberalization, a stable democratic political scenario, highly skilled work force with fluency in English. Various overseas players wish to explore the Indian market and invest in opportunities thrown open by the country. This increasing trend in foreign investments will leads to a healthy financial position of the various companies in India especially in plastic companies due to it was projected to be world number 3 in plastics consumption by 2010\(^1\). The Indian plastics industry is slated to grow between 10\% to 12\%, in this decade. Consumption level, which is expected to reach 8 to 10 million tons. The Plast India Foundation expects business transactions worth $ 150 million per annum.

CRISIL report suggests HDPE to achieve 74\% growth by 2012 with respect to 2005 figures. The corresponding figures for LDPE, LLDPE and PP
are respectively 2 %, 75% and 141 %. Because, now-a-days plastic products has plays a vital role in part and partial of economic development of our country. This seems a very achievable position as since the past decade, the Indian plastics industry continues to grow at double digit figures. A plethora of queries plague the investor who wishes to tap the Indian market. Few of these queries from overseas include:

- The raw material scenario: demand and supply
- Plastics machinery sector : present technology levels and demand
- Finished products : Export potential
- The major overseas players with base in India
- Current consumption, projected growth of the Indian plastics industry

OPERATIONAL DEFINITION

The word “plastic” comes from the Greek word “plastikos” meaning “to form.” In more technical terms, a plastic is a material that can be heated and moulded so that it keeps its moulded shape after it cools².

**Plastic** - generic name for certain synthetic or semi synthetic materials that can be moulded or extruded into objects or films or filaments or used for making e.g. coatings and adhesives³.
**Amino Plastic, Amino Resin, Aminoplast** - a plastic (synthetic resin) made from amino compounds; used as an adhesive and as a coating for paper and textiles.

**ABS, acrylonitrile-butadiene-styrene** - any of a class of composite plastics used to make car bodies and cases for computers and other appliances.

**Bakelite** - a thermosetting plastic used as electric insulators and for making plastic ware and telephone receivers etc.

**Cellulosic** - a plastic made from cellulose or a derivative of cellulose.

**Coumarone Resin, Coumarone-Indene Resin** - a thermoplastic resin obtained by polymerization of indene and coumarone; used in coatings and paint and asphalt tile.

**Fluorocarbon Plastic** - a plastic made with fluorocarbon.

**Magnetic Stripe** - a short strip of magnetic tape attached to a credit card or debit card; it contains data that will tell a reading device who you are and what your account number is, etc.

**Mylar** - a thin polyester film.

**Phenolic Plastic, Phenolic Urea** - a plastic consisting of phenolic resins.

**Polytetrafluoroethylene, Teflon** - a material used to coat cooking utensils and in industrial applications where sticking is to be avoided.

**Polyester** - a complex ester used for making fibers or resins or plastics or as a plasticizer.
**Polypropene, Polypropylene** - a polymer of propylene used as a thermoplastic moulding material.

**Polyvinyl-Formaldehyde** - a polymer of vinyl formaldehyde.

**Resinoid** - a plastic containing resins.

**Silicone Resin** - a polymeric silicone compound.

**Solid** - matter that is solid at room temperature and pressure.

**Thermoplastic, Thermoplastic Resin** - a material that softens when heated and hardens again when cooled.

**Thermosetting Compositions, Thermosetting Resin** - a material that hardens when heated and cannot be remoulded.

**Vinyl** - shiny and tough and flexible plastic; used especially for floor coverings.

**Vinylite** - any of various vinyl resins.

**TABLE 1.1**

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Processing Unit</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Injection Moulding</td>
<td>58</td>
</tr>
<tr>
<td>2.</td>
<td>Extrusion</td>
<td>30</td>
</tr>
<tr>
<td>3.</td>
<td>Blow Moulding</td>
<td>10</td>
</tr>
<tr>
<td>4.</td>
<td>Others</td>
<td>02</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
</tr>
</tbody>
</table>

**Source:** The Plastics Industry in India Report August 2011

The above table says that main plastics processing technologies in India ranges from 2% to 58% with injection moulding accounts for the maximum percentage.
TABLE 1.2
PLASTIC CONSUMPTION BY APPLICATION

<table>
<thead>
<tr>
<th>Sl.No</th>
<th>Processing Unit</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Building</td>
<td>05</td>
</tr>
<tr>
<td>2.</td>
<td>Packaging</td>
<td>24</td>
</tr>
<tr>
<td>3.</td>
<td>Electronic</td>
<td>16</td>
</tr>
<tr>
<td>4.</td>
<td>Transport</td>
<td>04</td>
</tr>
<tr>
<td>5.</td>
<td>Furniture</td>
<td>01</td>
</tr>
<tr>
<td>6.</td>
<td>Agriculture</td>
<td>23</td>
</tr>
<tr>
<td>7.</td>
<td>House ware</td>
<td>10</td>
</tr>
<tr>
<td>8.</td>
<td>Others</td>
<td>17</td>
</tr>
</tbody>
</table>

Source: The Plastics Industry in India Report August 2011

The above table shows that plastic consumption by application in India. From this it is seen that 24% of plastic used in packaging, followed by agriculture which is 23% while building industry uses 5% of the plastics, 1% is being used by furniture.

Role of the Indian Government in Promoting for Plastic Industry

After liberalization of the economy in 1992, the Government of India has been quite supportive of industry in general, taking many steps over the years for the conducive growth of business. These measures favouring economic growth are being continuously taken by the Indian Government, irrespective of the change in power. The Government of India is endeavouring to achieve GDP growth of more than 7% in the next 10 years. It is quite possible that plastics could grow at 14%, based on historical performance.
The Petrochemical Department of the Government of India is in the process of setting up a development council to promote the development of downstream sectors in India. This clearly illustrates that the Government of India is quite positive and supportive to new investments in India. In fact, many foreign entrepreneurs have been able to set up 100% owned companies in India in the plastics processing and machinery industry sectors. Foreign equity participation in the petrochemical industry has been increased to a 51% stake (a majority stake). However, the polymer manufacturers and other downstream industries are free to set up projects 100% on their own equity.

**FIGURE 1.1**

**USES OF PLASTIC PRODUCTS**

![Diagram of plastic product uses](image)

*Source: Indian Plastic Industry Report*

The historical growth of the plastics industry over the last few decades is at an impressive 12% - 14%, which is twice the GDP growth. The major driver
of this growth is the increased standard of living of people in India (housing the second largest population in the world). It is estimated that almost 35% of the 1 billion populations has a purchasing power equivalent to that in European countries.

The Indian plastics industry is quite upbeat about the future potential of plastics in India, believing that the Plastics industry will grow between 10% and 12%, if not higher, in this decade. The per capita consumption of plastic is 4 Kg, likely to reach beyond 7 Kg by 2010. Consumption level, which was expected to reach 8 million tons by 2010, could touch 10 million tons, if some of the constraints such as Plastic etc are eliminated. The department of petrochemicals of the Government of India has projected a level of 12 million tons by 2011-2012.

Polymer producers like Reliance Industries and IPCL take the lead in developing the markets in India aided by the major processors. The present raw material capacity in India is more than adequate to meet the present consumption level of 4 million tons. In fact, 2003 saw an export of about 700,000 MT of polymer material. Some debottlenecking is being effected in the areas of PE, PP, PVC and Polystyrene, resulting in India being a net exporter of raw material up to 2006. Two major petrochemical projects, with a capacity of 1.5-2 million tons of polymers are likely to be materialized earliest by 2007. If
the execution is in time, India may be self-sufficient up to at least 2012. Raw material supply is no longer a constraint because very large capacities are available either in the Middle East or Far East Asian countries such as Singapore, Korea, Thailand etc. These destinations are close to India, and polymer cost is affected only by a surcharge in the form of about US$ 20-25/ton on account of additional freight.

Imports of specialty materials or the grades not manufactured by the Indian raw material manufacturers continue. It was estimated that almost 250,000 MT of polymers was imported in 2003. The tariff barrier is systematically reducing. The present custom duty is 20%. It is expected that it may come down to about 5%-6% with in next 3-5 years, if not earlier.

The plastics machinery sector has achieved a sales turnover of more than US$ 200 million in 2003. In fact the positive trends of the overall economy in 2003 had given an impetus to the plastic machinery sector, which grew at 25% in 2003. However, being a cyclical business, such spectacular growth may not be witnessed consistently. The major advantages of India could offer is availability of low cost and higher educated people with knowledge of English language. It is therefore not very surprising that W&P sources the parts of their extrusion machinery from an Indian machinery manufacturer.
Quality of finished goods is definitely very good. Production costs in India are estimated to be 20-25% lower than in USA. Plastic products such as BOPP film, BOPET film, and moulded products have a good growth potential for exports from India. There is also a good export potential of CD, DVD etc. K2004 (Plastics Industry’s largest exhibition) to be held in Dusseldorf, will have over 20 exhibitors from India, of which almost half will be machinery manufacturers, and the others would comprise of additive manufacturers, mould manufacturers along with India’s leading petrochemical manufacturers.

While there was some anxiety among the common mass about the pace of reforms with the change in power, it seems that the present Government cannot stop the pace significantly. The major coalition partner Congress was in power when the economic reforms were initiated. Interestingly the present President and Prime Minister are very highly educated and revered for their contribution to India’s growth. The present Prime Minister was in fact, the writer of the first reforms in 1991. However, it is too early to predict whether the present Government would be as buoyant about reforms as the previous NDA Govt. mainly because the communist party is supporting the present coalition Govt. However, we strongly believe that the growth of plastics would continue at least at 10% if not at 14% despite some deceleration of the reform process.
There is no reason for the foreign investors interested in Indian market at all. While conducting of detailed investment analysis would be of assistance, it should be feasible to achieve at least 10% return on investment (the earning power) if not higher. The return could be higher in the downstream sectors such as processing and machinery. Perhaps the earning power could be lower for the petrochemical sector. It would be a good idea for a new entrepreneur to study the companies for developing more confidence.

**Latest developments**

- The Indian Plastic industry is at the verge of high growth rate over about 10%-12% which is contributed by high growth rates, in turn, from the end-user industries. This trend has mainly been driving the automotive sector, since the economy is already showing signs of recovery from the downturn.

- As the Plastic industry is heavily dependent on automotive sector, launching of new cars in the small segments are expected to drive the demand for plastics.

- India is likely to dominate the rest of the world’s Plastic with the domestic per capita consumption set to double by 2012. The domestic Indian Plastic Industry has expects for the investment of nearly $80 billion over the next four years.
Indian government has identified the petrochemicals industry as a ‘high priority’ sector, as plastics play an important role in providing the basic necessities for everyday use, while it is conserving the scarce natural resources.

Plastic plays a significant role in the key sectors of the economy, including agriculture, water management, automobiles, transportation, construction, telecommunication and electronics, besides defense and aerospace, computers and power transmissions.

As of now the Indian Plastic industry has enormous potential for growth as polymer use in India is far below the world level. With increasing competition in the global market and the constant drive to improve our living standards, the scope for use of plastics is bound to increase manifold and make the production double in the coming years.

NEED FOR THE STUDY

The turnover of the Indian plastics industry is likely to grow to Rs.1,000 billion (Rs.100,000 crore) in 2012 from the current Rs.85,000 crore according to Plastindia Foundation. The apex forum of India's plastics industry has based its estimate on the expectation that the demand potential will grow from the current nine million metric tons (MMT) to 12.5 MMT. The per capita consumption of plastic products in India is growing, according to the forum,
and the government is trying economic reforms to boost the industry. The number of processing units is expected to increase by 33% to 40%, which in turn will increase the employment potential of the sector. "Independent studies show that the industry that currently hires more than three million people, directly and indirectly, is expected to employ close to four million in 2012 and nine million by 2015," a Plastindia statement said. According to a report of global analytical firm CRISIL, the world trade in plastics is expected to reach 140 MMT in 2012, providing a lucrative opportunity to India. However, the report says, with just a 1.5 percent share in world export volumes, India is not in a position to cash in on the opportunity. The industry needs to enhance capacity, upgrade facilities, improve productivity and increase utilisation of critical plastic applications. "The Indian plastic processing sector needs to consolidate, reap economies of scale and become competitive Plastindia Foundation president Ashok Goel said". The key to achieve this is modernising, improving labour productivity and enhancing exports. He said that the industry in India needed to pull up its socks with regard to recycling plastic products. "Quality standards need to be laid down for the recycling sector and compliance needs to be ensured." The forum said awareness of the energy saving property of plastics and the benefits to industries that utilise plastics was low.
STATEMENT OF THE PROBLEM

An efficient financial management is necessary for the success of the Plastic industry. The Plastic industry has a major place in Indian Economy. Its contribution to income generation is very important for the development of our country. The efficiency can be achieved only through proper long term planning to achieve the objectives. In order to understand how efficiently the organization is performing in this field to achieve the goals through economical use of the resources especially in the field of financial resource, it is interdependent on the issues of Plastic Industry and living standards of the people. Insufficient and inefficient Plastic Industry not only adds to transaction costs but also prevents the economies from realizing their full growth potential.

This has facilitated the plastic processors to build capacities for the service of both the domestic market and the markets overseas. Today Indian Plastic processing sector comprises of over 30,000 units involved in producing a variety of items through injection moulding, blow moulding, extrusion and calendaring. The capacity built in most segments of this industry coupled with inherent capabilities has made us capable of servicing the overseas markets. The Indian plastic industry has taken great strides and in the past few decades, the industry has grown to the status of a leading sector in the country with a sizable base.
Plastic material is gaining notable importance in different spheres of activity and the per capita consumption is increasing at a fast pace. Continuous advancements and developments in Plastic technology, processing machineries, expertise, and cost effective manufacturing is fast replacing the typical materials. On the basis of value added share, the Indian Plastic industry is about 0.5% of India's GDP. The export of plastic products also yields about 1% of the country's exports. The sector has a large presence of small scale companies in the industry, which account for more than 50% turnover of the industry and provides employment to an estimated 0.4 million people in the country. Approximately Rs.100 billion is invested in the form of fixed assets in the plastic processing industry.

Typically, in an emerging market, demand growth for plastics is 2 to 2.5 times the GDP growth. Sadly this is not the case in India where the growth at times has been lower than the GDP growth. The per capita consumption of plastics in India at 5kg is much lower than that of China which averages 25kg. But India could see very soon improvement in the production of Plastic. India today represents a wide range of promising opportunities for growth of plastics producers worldwide. The fragmented plastics industry in India is beginning to consolidate, governmental regulations and trade barriers are coming down due
to India's recent admission to the WTO, and some large North American plastics manufacturers have already begun doing business here.

In the year 2006, the value of world plastic export was US$ 375 billion and the share of India was less than 1% with exports worth US$ 3.187 billion. During this same period the percentage of growth in export was 21%. During this trend of growth in exports, the exports of plastic raw material increased from 55% to 60% of the total export of plastic goods, while the export of processed plastic goods registered a negative growth from 45% to 9%. According to recent reports of analysts, the industry is said to be losing an opportunity of USD 300 million through value addition on the raw materials that are exported. Indian Plastic Industry today is symbolizing a promising industry and at the same time creating new employment opportunities for people in the country. The per capita consumption of plastic products in India is growing and is moving towards 8% GDP growth.

**SCOPE OF THE STUDY**

Now-a-days, plastic industry has taken the responsibility to clean the world concerned by freeing the environment from pollution. Environmentalists or people concerned should have knowledge that plastic itself does not harm rather it contributes to energy efficiency, resource conservation as well as waste
reduction. The raw materials which are needed for the production of plastic require only 1.5% of total energy consumption.

Plastic actually saves energy. It takes only 4% energy of total energy consumption needs for total plastic production, it takes less energy to convert into plastic from raw materials. During their whole life circle one-third less energy needs than making paper bags. Without plastic, whole packaging would take almost double energy by around 160 percent. Plastics are far lighter, durable as well as versatile than any other alternatives and it has drastically reduced the truck payload. For example: one truck can deliver 2.8 million plastic glossary bags at a time. Saving of 53 kilowatt hours of electricity has been possible by improvement in major appliance only because of plastic application, without plastic 30% more energy would be needed. Recycling a one gallon plastic milk jug saves the energy which can keep 100-watt bulb burning for almost 11 hours. Product manufacturers save power that can be provided to one million homes in a city every year.

Plastic is responsible for lots of facilities we are enjoying in the modern life from health, shelter, designing, communication, sports, leisure to safety and security. SPI plastic industry trade association tries continuously to improve and increase the sustainability in the manufacturing, distributing and using plastic materials.
The demand of plastic injection moulding is steadily increasing and without this technology, it will not be possible to make bulk of industrial components as also many common items of domestic use. The salient feature about plastic injection moulding is the low cost of the parts being produced. When you need a large volume of parts, Injection moulding is the most common method of part manufacturing in the industrial sector. Injection moulding is indispensable for producing high volumes of the same item. The distinct advantages of injection moulding are accelerated production rates, repeatable high tolerances, and possibility of using a wide range of materials, low labour cost, minimum scrap losses, and very little necessity to finish parts after moulding. The fact also remains that plastic injection moulding is actually a very safe way to create environmentally friendly plastic products in mass quantity.

Precision Plastic Injection Moulding is also rapidly gaining in importance as precision moulded products are increasingly replacing their metallic counter parts. The one big reason is metallic components are not only expensive, but also need much times to make. Precision injection moulded plastics also has a clear advantage over other materials such as precision moulded rubber or castings.
The plastic varieties used in the process of plastic injection moulding are usually thermoplastics and thermo sets. Some thermoplastics used are nylon, polyethylene, polystyrene and rubber, and Bakelite. A highly elastic polymer, known as elastomer, is also selectively used.

The plastic injection moulding machines have a development history for more than a decade worldwide. Recent studies reveal that the global demand for plastic injection moulding machines has been growing at a tremendous pace. There has been a record sale of plastic injection moulding machines in China and, the export value of plastic injection moulding machines in Germany has almost doubled in recent times. The production output of plastic injection moulding machines in Japan has reached unprecedented levels. The plastic injection moulding machines industry in America and Italy has been performing exceedingly well.

**REVIEW OF LITERATURE**

The researcher had gone through various research works carried out in India and foreign in the field of plastic industry. The methodology and findings of these research works had been carefully studied and analyzed by the researcher. The tips got from these research work helped in putting the present research work in a proper view.
DUBLIN, IRELAND (2007) The Portfolio Analysis - Automotive Plastic Moulders is a comprehensive evaluation of the UK market. The revised and updated 2007 edition analyses the financial performance of the companies important to the success of the business. Using the most up to date information available, the analysis is ideal both as a tool to benchmark the company's results and to study the market in more depth. Aimed at the busy manager, the Portfolio Analysis is both quick and easy to use thanks to the unique visual layout. The Analysis lays bare the performance of each company highlighting their strengths and weaknesses. Do you know which companies are best to do business with? Do you know which companies are selling at a loss and whose profit margins are plummeting? Find out the answers to all these questions and more with the newly published Portfolio Analysis.

PLIMSOLL PUBLISHING LTD., (MARCH 2012), this report gave an in-depth financial evaluation of the Russian Plastic Packaging Manufacturers Industry. Using the unique Plimsoll method of analysis, each of the largest Russian Plastic Packaging Manufacturers is individually assessed and ranked against each other and compared to industry averages. Using the most up-to-date financial information available, the one-page analysis provides detailed financial analysis for each company, including details of; Sales growth, Trading stability, Profitability, Employee performance, Level of debt, Gearing
ratios, Creditor Exposure, Performance ratios and Overall financial rating. Results are shown in graphical, numeric and narrative forms, and all individual analysis are measured in both the company’s own currency, and USD ($) for ease of use. These individual analyses highlight a company’s success just as easily as it can emphasise its vulnerability.

**SPI PLASTIC INDUSTRY TRADE ASSOCIATION (2012)**, This important study includes Plante & Moran's observations and opinions on asset efficiency/utilization; gross profit percent; press utilization; price pressures and material costs; customer strategy; process automation; resin strategy; cost management; sales per customer; value added per employee and labour dollar; EBITOC as a percent of sales; ROA; sales growth; RONCE; Altman Z score; turnover (inventory and employee); lean manufacturing; training costs; on-time delivery; sales and other operating revenue; raw materials, purchased components and other direct costs; gross profit; selling, general and administrative costs and operating income.

**BUSINESS LINE (2012)** Indian plastic majors turn in large numbers at two major industry expose in the UAE later this year, aiming to tap the huge growth prospects of the West Asian market. The events are being organised in Sharjah in association with the All India Plastics Manufacturers Association (AIPMA), and the support of the Sharjah Chamber of Commerce and Industry. “Positioned
as a comprehensive and cost-effective platform for raw material producers, primary processing and auxiliary equipment suppliers and traders, the show has already received confirmations from more than a hundred exhibitors\textsuperscript{10}.

**ECONOMIC TIMES (2007)** Plastic industry, a product of post-world war II era of technological revolution, has played a key role in improving quality of life everywhere in the world. In India, this was regarded as a 'sunrise industry' in the Seventh Plan document. Since then, it has emerged as Rs 55,000 crore industry, employing directly and indirectly over 3 million people and has achieved an export turnover of Rs 13,000 crore. The industry provides vital inputs to all key sectors of the economy like agriculture, infrastructure, healthcare and consumer goods. The industry offers cost effective products that help improve quality of life for common man. One of the most globalised sectors of Indian industry, the plastic industry's paramount role in meeting India's developmental challenges is widely acknowledged\textsuperscript{11}.

**PRNEWswire, REPORTLINKER.COM (2011)** this report offers an in-depth financial evaluation of the Global Plastic Pipe Manufacturers Industry. Using the unique Plimsoll method of analysis, each of the top 100 Global Plastic Pipe Manufacturers is individually assessed and ranked against each other and compared to industry averages. Using the most up-to-date financial information available, the two-page analysis provides detailed financial analysis
for each company, including details of; Sales growth, Trading stability, Profitability, Employee performance, Level of debt, Gearing ratio's, Creditor Exposure, Performance ratio's, and Overall financial rating. Results are shown in graphical, numeric and narrative forms, and all individual analysis are measured in both the company's own currency, and USD ($) for ease of use. These individual analyses highlight a company's success just as easily as it can emphasise its vulnerability.

THE GLOBAL PLASTIC FILM & SHEET MANUFACTURERS INDUSTRY REPORT (2012), this report provides an in-depth financial evaluation of the Global Plastic Film & Sheet Manufacturers Industry. Using the unique Plimsoll method of analysis, each of the top 250 Global Plastic Film & Sheet Manufacturers is individually assessed and ranked against each other and compared to industry averages. Using the most up-to-date financial information available, the two-page analysis provides detailed financial analysis for each company, including details of; Sales growth, Trading stability, Profitability, Employee performance, Level of debt, Gearing ratios, Creditor Exposure, Performance ratios and Overall financial rating. Results are shown in graphical, numeric and narrative forms, and all individual analysis are measured in both the company’s own currency, and USD ($) for ease of use. These individual
analyses highlight a company’s success just as easily as it can emphasise its vulnerability\textsuperscript{13}.

WWW.GLOBALINTELLIGENCE.COM, REPORT (2012), The case study referred that the Amcor Limited (Amcor) is a leading packaging solution provider focused on providing broad range of plastic, fiber, metal and glass packaging products and packaging services to enhance the product use and help cater to the specific needs of the customers. The packaging options provided by the company are available for food wholesale and retail, household items, personal care, health care, tobacco packaging and industrial applications. The company functions through six reporting divisions, namely, Amcor Australasia and packaging distribution, Amcor flexibles Asia pacific, Amcor flexibles America and Europe, Amcor rigid plastics, Amcor tobacco packaging and AMVIG. Amcor has its operations spread to 43 countries and its revenues are principally recorded from Western Europe, Australia, New Zealand and North American regions. The company employs around 35,000 people and is headquartered in Victoria, Australia. This comprehensive SWOT profile of Amcor Limited provides an in-depth strategic analysis of the company’s businesses and operations. The profile has been compiled by GlobalData to bring to out a clear and an unbiased view of the company’s key strengths and weaknesses and the potential opportunities and threats. The profile helps to
formulate strategies that augment business by enabling one to understand partners, customers and competitors’ better\textsuperscript{14}.

**GLOBAL DATA (2011)**, this report provides an in-depth strategic analysis of the company’s businesses and operations comprehensive SWOT profile of Anhui Guofeng Plastic Industry Co., Ltd. The profile has been compiled by Global Data to bring out a clear and an unbiased view of the company’s key strengths and weaknesses and the potential opportunities and threats. This company report forms part of Global Data’s ‘Profile on Demand’ service, covering over 50,000 of the world’s leading companies. Once purchased, Global Data’s highly qualified team of company analysts will comprehensively research and author a full financial and strategic analysis of Anhui Guofeng Plastic Industry Co., Ltd including a detailed SWOT analysis, and deliver this directly to the company in pdf format within two business days\textsuperscript{15}.

**HTTP://WWW.CHEMEUROPE.COM/EN/STUDIES/163\textsubscript{(2011)}**, This study covered operations of the Union Plastic Public Company Limited (Union Plastic) which is engaged in the production and sales of plastic components and injection moulds. Union Plastic is a part of the Saha-Union Group of companies, one of Thailand's leading commercial companies. The manufacturing of plastic thermoplastic injection process comprises one-stop-service in finishing, assembly, painting, silkscreen and hot stamping. The
company offers thermoplastic injection moulding for the plastic products used in the automobile, electrical appliance, industries, household products and vacuum bottles. Union Plastic uses CAD/CAM technology to design and fabricating mould, including high speed machine. It employs modern machinery and equipment in its thermoplastic injection manufacturing. The company has a registered capital of Bt 250 million. It operates two production sites in Bangkok and Chachoengsao provinces. The company also has a subsidiary, Union Kotecmoulds Co., Ltd., and two associated companies namely, PSV Moulds Co., Ltd. and Union Nifco Co., Ltd. It is headquartered in Bangkok.

THE ASIAN PLASTIC PIPE MANUFACTURERS INDUSTRY REPORT (2011), this report offers an in-depth financial evaluation of the Asian Plastic Pipe Manufacturers Industry. Using the unique Plimsoll method of analysis, each of the top 1000 Asian Plastic Pipe Manufacturers is individually assessed and ranked against each other and compared to industry averages. Using the most up-to-date financial information available, the one-page analysis provides detailed financial and statistical information for each companies, including details of; Sales growth, Trading stability, Profitability, Employee performance, Level of debt, Gearing ratios, Creditor Exposure, Performance ratios, and Overall financial rating. Results are shown in graphical, numeric and narrative forms, and all individual analysis are measured in both the company’s own
currency, and USD ($) for ease of use. These individual analyses highlight a company’s success just as easily as it can emphasise its vulnerability\textsuperscript{17}.

\textbf{GLOBALDATA (2011)}, this case study referred to the DongNai Plastic Joint Stock Company (DongNai Plastic) which is a Vietnam-based manufacturer of plastic products. DongNai Plastic was formerly known as Diem Dong Nai. The company is engaged in the production and marketing of uPVC pipes; HDPE pipes; matches; shopping bags; and spare parts of uPVC pipes. In addition, DongNai Plastic is engaged in the construction of water utilities systems, and in merchandising equipment for water supply and drainage sectors. The company also specializes in water supply engineering, construction, drainage and electrical fields. The company exports its products to the Europe, America and Asia. DongNai Plastic is headquartered in Dong Nai, Vietnam. This comprehensive SWOT profile of DongNai Plastic Joint Stock Company provides an in-depth strategic SWOT analysis of the company’s businesses and operations. The profile has been compiled by GlobalData to bring out a clear and an unbiased view of the company’s key strengths and weaknesses and the potential opportunities and threats. The profile helps one formulate strategies that augment the business by enabling us to understand partners, customers and competitors’ better\textsuperscript{18}. 

26
DR. HEMAL PANDYA (2011), this study aims at estimating the Deterministic and Stochastic Production Frontiers to analyze the Technical Efficiency of Indian Plastic Industry with special reference to Poly Vinyl Chloride (PVC) Plastic as it is the most widely used form of Plastic. Last few decades have experienced a significant growth in Indian Plastic Industry. The study includes Productivity Measurement for Indian PVC Plastic Industry using various Productivity and Performance ratios. It also includes estimation of Deterministic and Stochastic Production Frontiers for the PVC Plastic Industry. The Cobb-Douglas Production Function is used for this purpose since it has been found to be the most appropriate form for Indian Industries from several research studies. Productive Capacity Realization Ratios have been obtained using the Frontier Estimates and thereby the efficiency levels in the PVC Plastic Industry are evaluated. The paper ends with identifying some reasons for the prevailing inefficiency in the industry and some measures to reduce these inefficiencies have been suggested.

BUSINESS RESEARCH PAPERS (2008) Evaluating financial performance is an integral part of any business. Without the ability to measure performance, a company will have no grasp of its financial health. All companies must evaluate past performance and plan for the future. This is done through both internal and external analysis of performance. The following paper analyzes the
financial performance of Riordan Manufacturing through trend analysis, common-size analysis, ratio analysis, and industry analysis\textsuperscript{20}.

**OBJECTIVES OF THE STUDY**

The following are the objectives of the study.

1. To present an overview of plastic companies in abroad and India,
2. To study the profile of select Plastic companies in India,
3. To measure the operational efficiency, productivity and solvency of the select plastic companies in India through ratio analysis.
4. To evaluate the variables of Profit and Loss account and Balance Sheet of the select plastic companies.
5. To evaluate the performance of the select plastic companies in India with reference to EVA, MVA and SVA.
6. To summarize the findings and offer suggestions to improve the performance of plastic companies in India.

**HYPOTHESES**

The following hypotheses have been framed;

- There exists significant difference in the mean financial performance among the plastic companies during the period of study.
- There exists significant trend in the performance during the period of study among the companies studied.
• There exists significant functional relationship between the dependent ratios and a set of independent ratios.

• There exists significant difference in EVA, MVA and SVA among the plastic companies during the study period.

In addition to this, the following null hypotheses have been framed;

• There is no significant difference in the mean operating profit among different companies during the study period.

• There is no significant difference in the mean total income among different companies during the study period.

• There is no significant difference in the mean net sales among different companies during the study period.

• There is no significant difference in the mean net current assets among different companies during the study period.

• There is no significant difference in the mean total current liabilities among different companies during the study period.

• There is no significant difference in the mean total debts among different companies during the study period.
METHODOLOGY

Research Design

The arrangement conditions for collection and analysis of data in a manner that aims to combine relevant to the research proposal with economy in procedure. Research design is the blueprint of the proposed study it represents the overall scheme of the study. “A research design is a logical and systematic planning and it helps directing a piece of research”. The study is a combination of both descriptive and analytical.

Data Collection

This study is based on secondary data only. Data relating to profit and loss account, balance sheet, overall financial statements and some of the important key ratios were collected from the published annual reports of Plastic companies. The researcher referred books, journals, magazines, reports, newspaper and websites. Besides, the researcher had personal discussion with the officials of plastic companies. To conclude the data has been correlated and the performance level of the companies is evaluated.

Sampling

In order to analyze the financial performance of Plastic companies, the data were collected for 160 companies out of 160 companies based on sales 40
companies were selected. Out of this, 8 companies which have data for more than 10 years have been short listed and chosen for study.

The Companies selected were,

1. Acrysil Ltd.
2. Cosmos
3. Fenoplast
4. Jumbo bag
5. Nilkamal Ltd.
6. Hitech
7. Sintex Industries
8. Supreme Industries Ltd.

FRAMEWORK OF ANALYSIS

The statistical tools are used to analyze the financial performance of the select Plastic companies in India, by sorting out and bringing together, the theoretical and practical principles. The study of financial statements like profit and loss account and balance sheet through efficiency ratios, profitability ratios, solvency ratios and also special focus covered Economic Value Added, Market Value Added and Share Value Added constitutes framework of analysis. The framework of analysis includes applications of Statistical tools like Summary Statistics such as Mean, Standard Deviation and Co-efficient of variation,
Compound Growth Rate, Cubic Trend Equation, Factor Analysis, Multiple Regression, Discriminate Function and Analysis of variances of the financial parameters of the data.

STATISTICAL TOOLS

Mean

One of the most important objectives of statistical analysis is to get one single value that describes the characteristic of the entire mass of unwieldy data.

Standard Deviation

The standard deviation measures the absolute dispersion, the greater standard deviation, for the greater the magnitude of the deviation means a high degree of uniformity of the observation and the large standard deviation, for a large magnitude of the deviation means a low degree of uniformity of the observation.

Co-Efficient Of Variation

The corresponding relative measure is known as the Co-efficient of variation. That series for which the Co-efficient of variation is greater is said to be more variable or conversely less consistent and less is said to be more consistent.
**Compound Growth Rate (CGR)**

The compound growth rate measures the average growth of an amount over time. In other words, the compound growth rate assumes a constant rate of growth, thus smoothing the expansion rate. The advantage of the compound growth rate is that it expresses growth as one number. The downside of the compound growth rate is that it can hide sharp growth fluctuations.

**Cubic Trend Equation**

A cubic relationship is one in which a line relating the means to the level of the independent variable has two inflection points—in other words it changes direction twice.

**Factor Analysis**

Factor analysis is a multivariate statistical technique used to condense and simplify the set of large number of variables to smaller number of variables called factors. This technique is helpful to identify the underlying factors that determine the relationship between the observed variables and provides an empirical classification scheme of clustering of statements into groups called factors.
Multiple Regressions

The main objective in using this technique is to predict the variability of the dependent variable based on its covariance with all the independent variables. One can predict the level of dependent phenomenon through multiple regression analysis mode, given the independent variables.

Discriminate Function

Discriminate analysis is a statistical technique to study the differences between two or more groups with respect to several variables simultaneously and provide a means of classifying any object/individual into the group with which it is most closely associated and to infer the relative importance of each variable used to discriminate between different groups.

Analysis of variances

ANOVA is a statistical technique specially designed to test whether the significance of more than two samples means at one and the same time. It consists of classification and cross-classifying statistical results and testing whether the means of a specified classification of differ significantly.

Eigen value

The sum of squared values of factor loadings relating to a factor, is referred to as Eigen Value or Latent root. Eigen value indicates the relative
importance of each factor in accounting for the particular set of variables being analysed.

**Sum of Squares (SS)**

When Eigen values of all factors are totaled, the resulting value is termed as the total sum of squares. This value, when divided by the number of variables, results in an index that shows how the particular solution accounts for what all the variables taken together represent.

**PERIOD OF STUDY**

The researcher has taken a period of 10 years to study the financial performance of Plastic companies from 2001-2002 to 2010-2011.

**LIMITATIONS**

The study is subject to the following limitations.

1. The study covers only the eight select public sector Plastic companies in India.

2. The study considered a decade of performance from 2001-2002 to 2010-2011 only.

3. The study focuses only on the financial aspects of the select Plastic companies in India.
CHAPTER SCHEME

The present study, “A Study on the Financial Performance of Select Plastic Companies in India with special reference to EVA, MVA and SVA”, consists of seven chapters.


The Second Chapter contains an overview of Plastic companies in India.

The Third Chapter describes the profile of the select Plastic companies in India.

The Fourth Chapter focuses on the data analysis and interpretation of the study area with the help of ratio analysis.

The Fifth Chapter evaluates the profitability and liquidity of select plastic companies in India.

The Sixth Chapter highlights the EVA, MVA and SVA analysis of the select plastic companies in India.

In the Seventh and Concluding Chapter, a summary of the main findings, suggestions and conclusion have been made.