SUMMARY, FINDINGS AND CONCLUSION

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Chapter VI

SUMMARY, FINDINGS AND CONCLUSION
This chapter is the summary of the study and also gives the important findings of the study as well as the major conclusions derived from it.

In chapter I we have given a brief introduction to the topic, that is, the plastics industry. As all of us know plastics are now indispensable in our day-to-day life. Though the industry has been developed since four decades, its growth is significant. In India as well as in Kerala there was a steady and fast growth for the industry during the last two decades. So it is of great importance to study the economics of such a Sunrise industry.

The second chapter depicted the current status of plastics industry in India. It is observed that in India along with the world the plastics industry enjoys high growth and high revenue earning potential. It is the material for the masses. The Indian plastic industry has registered an exponential growth in the last decade. The growth of plastic industry is at a rate of 18.80 per cent, which is higher than the plastic industries worldwide. The plastic industry has outpaced all other industries in India in growth and served the needs of the common man at lowest cost with innumerable products to meet the daily life and convenience.
With the globalisation of Indian economy, the demand for better energy efficiency has meant greater need of plastics. The per capita consumption of plastics in India is 1.7 Kg. Though it is less in quantity than the world average of 13 Kg, plastics have become popular all over India. Even in the remotest village or town of India plastics have become the preferred choice, whether it is for fertiliser packaging in woven sacks, or the medicine tablets in blister packing or the water tank remoulded or installed in plastics in the hilly regions of Assam and Himachal Pradesh. The agriculturists in Himachal Pradesh and Kashmir insist on plastic crates for apples and pears, as they do not want their beautiful forests denuded to meet the demand for packaging boxes. The smallest farmer in Andhra or Gujarat insists on plastic pipes for irrigating their farms, whether it is groundnut or rice, cotton or sugarcane.

The third chapter analysed the financial performance of the plastic industries in Kerala. A sample of 60 units, 20 each from Kozhikkode, Thrissur and Alappuzha districts was selected for the study. The sample units are selected in such a way that all investment groups and product groups are included from each of
the three districts. The method of stratified random sampling was used for this purpose.

The study showed that around 90 per cent of the units have started within the period of 1986 to 1995 when there was a boom in the number of plastic industry units. Around 35 per cent of the units are in rural areas and the remaining in urban areas.

Around 50 percent of the entrepreneurs are in the age group of below 40 years. Most of the small industries are those started by youngsters after a long search for a gainful employment or due to the dissatisfaction in the previous employment. 42 per cent of them were unemployed when starting the unit while 22 per cent were employed as operators in similar units. 15 per cent of the entrepreneurs are retired government servants.

Almost 57 per cent of the entrepreneurs are well educated and half among them are technically qualified. 35 per cent of the entrepreneurs got entrepreneurial training before starting the unit. These training courses were conducted by agencies like Kerala Industrial and Technological Consultants Organisation.
The ratio of external capital to internal capital is comparatively high in large units than small units. The ratio is around 1.04 per cent, which means that above 50 percent of the capital is obtained through loans.

More than 54 per cent of the capital is invested in plant and machinery. This shows the capital intensity of the industry. Machines are important as far as plastics industry is concerned and with that even at home one can produce small size plastic products.

In the analysis of cost of production it has seen that 83 per cent of the total cost of production goes to the purchase of raw materials. Wages constitute only 7 per cent of the cost of production. This shows that the production system is an activity of processing the raw materials, in which major role is carried out by machines. Extra machinery activities are less. This again shows the high degree of capital intensity of the industry.
The monthly profit ranges from Rs. 7000 to Rs. 2 lakhs depending on the size of the firm. No unit has been found working in loss. The average monthly profit when all the units taken together is Rs. 88411.

The gross profit margin ranges from 12 per cent to 32 per cent with an average of 16.62 per cent. The gross profit as percentage of net sales first declines and lastly increases with the increase in net sales.

Operating Margin is found to be decreasing with increase in total expenses. The average is 19.93 for plastic industry. The firms could not run profitably if operating margin is below 10 per cent. It is a comparatively good ratio as compared to many other industries.

The rate of return on investment is declining with increasing investment. It ranges from 5 per cent to 24 per cent. The average rate of return on investment is only 10.05 per cent, which corresponds with the general rate of interest in the economy.

The core of any economic activity is to strive for the maximum possible efficiency. In chapter IV the productivity and
efficiency aspect of the industry is analysed. The capital output ratio ranges from 1.35 to 5.12. The average capital output ratio when all the units put together irrespective of size is 3. This shows that the capital required per unit of output is less than most of the other industries in small-scale sector. That is the reason for attraction of a number of new investors and entrepreneurs to plastic industry.

The output labour ratio, which is around Rs.40 per man-hour in class I with an investment less than Rs.1 lakh increases to around Rs.400 per man-hour in class VI with an investment greater than Rs.20 lakhs. The average output labour ratio is Rs.296 per man-hour. The increasing labour output ratio with increasing investment means that what make labour more productive is the machine or investment. Hence productivity of labour increases in more automated units.

The output per worker is calculated for a month. It ranges from Rs.9,226 to Rs.1,34,750 per month. The average ratio is Rs.42,325 per month. The output per worker ratio is very high plastic industry compared to other industries. This means that even if fewer workers are employed plastics give more returns for that.
The labour output ratio, which measures the labour required to produce one unit of output, is very less in plastic industry. It ranges from 0.011 to 0.2. The average labour output ratio is 0.025. The highest labour output ratio is seen in units with less investment. These units generally use hand moulding and machines and semi mechanised production system.

The Total Factor Productivity is greater than unity in plastic industry. It is a good trend compared to many of the industries in India. The average Total Factor Productivity ranges from 0.28 to 0.99 if we take the Indian industry as a whole. The Total Factor Productivity in our sample units ranges from 1.13 to 1.48. No class have Total Factor Productivity less than unity. This again shows that the industry provides increasing returns to scale.

From the study it has been seen that more than 37.60 per cent of the workers are skilled labourers. They are possessing qualifications like ITI certificate of Diploma in different trades. Skilled workers contribute a major share in production because the machines are carefully operated. Most of the machines are advanced in nature and imported from abroad.
The capital labour ratio is less than 20 in units in class I with an investment less than Rs.1 lakh. This increases to around 120 in units in class VI with an investment greater than Rs. 20 lakhs. The average capital labour ratio is 77. The capital per worker ratio ranges from Rs.15,147 to Rs.1,84,375 with an average of Rs.1,20,286. This ratio reflects the capital required for generating a unit of employment. The higher level of capital per worker ratio indicates the capital abundance of the production system and industry. Again this ratio increases with increases in investment. Hence more investment could not generate level of employment proportionately.

The Cobb – Douglas Production Function has been fitted in the cross sectional data of plastics industries. The regression analysis is performed on the data from three districts each and separately. The regression results possess overall significance in general. The $R^2$ ranges from 0.892 to 0.943 indicating high overall significance of the regressions.

The coefficients of capital and labour are also significant in all the regressions. The elasticity of output with respect to capital ranges from 0.564 to 0.987. It is 0.756 when all the units are taken together. These high values of individual coefficients reflect the great influence of capital in output determination. All these coefficients are statistically significant.
The coefficient of labour is also significant in all the regressions. The elasticity of output with respect to the input labour ranges from 0.434 to 0.536. It is 0.446 when the regression is performed on combined data. All these coefficients are statistically significant.

The production function is also fitted on a model with three explanatory variables, say, capital, raw material and labour. The regression has become more statistically significant when the raw material included among the explanatory variables. The value of $\text{R}^2$ ranges from 0.985 to 0.996. The analysis showed that the raw material is the most determinant factor of production. The elasticity of output with respect to raw material ranges from 0.638 to 0.748 whereas that of capital and labour are from 0.066 to 0.220 and from 0.075 to 0.777 respectively.

In chapter V the impact of plastics consumption on environment and related aspects were discussed. The study includes a survey on consumption and disposal of plastics in 100 households. The results showed that the per capita consumption of plastics in the study area is very much higher than the national average. The per capita consumption in Kerala is around 38.73 Kg while the national average is 1.76 Kg. Kerala’s plastics consumption is approaching slowly to the developing countries’ per capita rate of 60 Kg.
Major plastic items of consumption are footwear (24.20 per cent) and packaging (20.06 per cent). It has been found that the location of the household and family size is positively influencing consumption of plastics. The consumption rate is higher in urban areas compared to semi-urban and rural areas. Income is significant in rural areas while it is not significant in urban areas.

About 60 per cent of the respondents believed that the plastics pollution is a major problem faced by our society. More than 50 per cent of the people agreed to the opinion that plastics are inevitable in our life. Most of the respondents (52.50 per cent) are of the opinion that plastic is convenient than glass, paper or other materials. According to some of the respondents they also offer safety and purity. 30 per cent argued that it is the cheapness of plastics, which make them more preferable than any other material.

As far as the disposal of plastic waste is concerned the method adopted by most of the families (62.5 per cent) is to gather the plastic waste and later sell it or dispose it by other ways. About 22 per cent of the people are burning plastic waste in air, which is not a good habit as plastics are concerned. Around 16 per cent of the respondent agreed that they were
carelessly throwing up plastics waste to countryside. Which is again a bad habit, which makes huge mounds of plastic wastes across the roads.

Plastics have created severe waste management problem especially in urban areas. Even though the problem is not acute in India demands have been raised from different quarters for the ban on plastics. Many environmental organisations have approached Courts and directions have been issued to the Central and state governments. The state and central governments have issued a series of notification, which are bound to control the use of plastics for several purposes.

At the same time the goodness of plastics have been completely forgotten by many of those criticising the use of plastics. Plastics have been saved our forests to a great extent and now become the material of the masses especially the poor and medium income people. The plastics have provided a bit of cleanness and beauty at their homes and made their lives colourful. We could not obtain products ranging from combs to automobiles at a price they are available now if plastics have not been used.

The only problem is that the plastics are bio-degradable. Still they themselves do not produce any nasty smell or become hazardous
or cause any contagious diseases. What make problem from plastics is the man's utilisation of that. Controlled use of plastics along with systematic methods for collection and recycling of waste will very much reduce the problem of bio-degradability. Methods like incineration again solves the waste problem as well as making new energy sources.

The trend of collection, separation and recycling of plastics in India presents an interesting picture both socially as well as technologically much in contrast with the developed countries in the west. In advanced countries the Government Departments, Plastic Industry and Municipalities are in the forefront of collection and separation schemes of plastic wastes. In India this part of waste disposal job is naturally west in a chain of self organised and enterprising rag pickers, Kabuliwalas and waste traders numbering over one million. Over 80 per cent of the plastic waste in India get collected through rag pickers and reached their proper destination.

The continuous and rapid research has succeeded in discovering decomposable or bio-degradable plastics during the last decades of 20th century. These plastics are produced from cellulose, starch, protein and sugar molasses and are degradable
via microorganisms into water and carbon dioxide. Bio plastics made out of cornstarch-polyester blends are already being commercialised in U.S. and Japan.

The research has resulted in the discovery of soybean plastics recently in the U.S. Petroleum is expensive and non-renewable resource whereas soybean is abundantly available. Biodegradable plastic film for use in applications like lawn and leaf bags, carry bags, trash bags and agricultural mulch offers a new market opportunity for soybeans also. These biodegradable plastics will open new avenues in the future to keep the environment cleaner and greener.

Findings and Conclusions

Major findings and conclusions of the study can be briefly stated as follows.

1. Plastics industry worldwide has grown at a fast pace and has replaced materials like metals, wood, glass, paper etc. in numerous applications.
2. The major advantage of using plastics is low cost and adaptability to mass production methods.

3. Indian plastics industry registered a growth rate of 18.8 per cent per annum, which is among the highest ones in Indian industries.

4. The per capita consumption of plastics in India is 1.7 kg while world average is 13 Kg and 60 Kg on developed countries.

5. Plastics served the needs of the common man at lowest cost with innumerable products to meet the daily life and convenience.

6. In Kerala the though industry has emerged only two and half centuries back, it is growing fast especially in small-scale sector.

7. Almost all the units in Kerala are in small-scale sector and are operating under profitable conditions.
8. Around 60 per cent of plastics products used in Kerala especially large size products like furniture and automotive parts were brought to the state from other states.

9. The industry provides enormous opportunities for the new and young entrepreneurs.

10. The industry needs less investment compared to many of the modern industries.

11. The plastic industry is capital intensive in nature. More labour saving technologies and machines are being imported in our country.

12. Even though capital intensive, plastics industry provides numerous indirect employment opportunities in distribution of the products, collection, separation and recycling of used goods.

13. Plastics industry provides increasing return on investment.

14. Capital labour ratio is increasing with increase in investment. This means that additional investment hardly generates more employment.
15. Major plastic items of consumption are footwear (24.20 per cent) and packaging (20.06 per cent).

16. It has been found that the location of the household and family size is positively influencing consumption of plastics.

17. About 60 per cent of the respondents believed that the plastics pollution is a major problem faced by our society.

18. More than 50 per cent of the people agreed to the opinion that plastics are inevitable in our life.

19. Most of the respondents (52.50 per cent) are of the opinion that plastic is convenient than glass, paper or other materials.

20. According to some of the respondents plastics also offer safety and purity.

21. Almost 30 per cent argued that it is the cheapness of plastics, which make them more preferable than any other material.
22. As far as the disposal of plastic waste is concerned the method adopted by most of the families (62.5 per cent) is to gather the plastic waste and later sell it or dispose it by other ways.

23. About 22 per cent of the people are burning plastic waste in air, which is not a good habit as plastics are concerned.

24. Plastics have created severe waste management problem especially in urban areas.

25. Plastics themselves do not produce any nasty smell or become hazardous or cause any contagious diseases. The only problem is that they are bio-degradable.

26. Even though the problem is not acute in India demands have been raised from several quarters for the ban on plastics.

27. The state and central governments have issued a series of notification, which are bound to control the use of plastics for several purposes. But they are not executed properly due to the negligence of the respective authorities.
28. Controlled use of plastics along with systematic methods for
collection and recycling or incineration of waste will very much
reduce the problem of bio-degradability as well as making new
energy sources.

29. Over 80 per cent of the plastic waste in India get collected
through rag pickers and send for recycling.

30. The biodegradable plastics will open new avenues in the
future to keep the environment cleaner and greener.