CHAPTER I
INTRODUCTION

India is basically an agricultural country. More than 70 per cent of population depend on agriculture and allied industries in India. The role of agriculture in our economy is highly significant as it is still an agrarian economy. However, agriculture output is not what it ought to be. There are more small and marginal farmers and landless agriculture labourers. Bulk of the farmers, despite more than two decades of planning, has been living below the poverty line. Poverty is more significant in rural areas than in urban. One of the indications of poverty is malnutrition, which is apparent in rural India. Some of the rural populations in India suffer from malnutrition. Poultry is one of the industries that caters to the needs of the urban as well as the rural masses in our country.

Food of adequate quality is to be provided in sufficient amount to meet the needs of the population, which is growing at a faster rate than food production. Animals also compete directly with man for their basic food supply. India’s animal wealth is huge in terms of its population of cattle (204.5 million), buffaloes (84.2 million), poultry (800 million), sheep (50.8 million), goats (115.3 million) and pigs (12.8 million). Compared with the rest of the livestock sector the poultry industry in India is more scientific; it is well organized and progressing towards modernization. The Indian poultry industry’s success story is uniquely exceptional. From a backyard venture, it has made a quantum leap to emerge as a dynamic industry.

Over the last three decades, there have been significant developments in the poultry industry with each decade focusing on different sectors. The seventies saw a spurt in egg production; the eighties an acceleration in broiler production; the nineties advances in poultry integration, automation and feed production. The present decade promises to exploit value added products and the global trade avenue. The growth of the poultry industry is so fast that authenticated statistics are irrelevant by the time they are published.

India has 150 million laying hens and 650 million broilers. It is the fifth largest producer of eggs (40 billion eggs/year) and ranks 18th in world broiler production (Directorate of Economics, 1992). The poultry industry is one of the fastest growing sectors
in the country. The overall growth rate of the poultry industry is 15-20 percent per annum. At present the total egg consumption is to increase from 34 billion in 2000 to 106 billion in 2020 and total poultry meat consumption from 687 million kilograms to 1,674 million kilograms during the same period.

The Government’s policy initiative under different five-year plans has generally helped this transformation in the poultry sector, but cannot claim to have propelled the poultry industry to its existing heights.

The government funds research activities related to the sector either through research organizations like Agricultural Universities/Indian Council of Agricultural Research or through trade regulatory bodies - the Agricultural and Processed Products Exports Development Authority (APEDA). The government also supports the industry by extending loans through nationalized banks especially the National Bank for Agriculture and Rural Development (NABARD) and through technical expertise. However, the Indian poultry industry is dominated by the private sector (World Bank, 1996). Despite the phenomenal expansion in commercial poultry farming, many rural households continue to raise indigenous breeds in their backyard. The backyard poultry units, though not the main income generator for rural producers, are called ‘walking banks’ because their products are sold to meet emergency expenses. Furthermore, they contribute substantially to the family’s food and nutrition. In urban areas the poultry products from ‘desi birds’ (indigenous birds) are sold at a premium rate for their unique flavour and taste. This uniqueness is due to the scavenging nature of the birds. In addition, chickens, ducks, quails, turkeys, geese and guinea fowl are only reared in a few pockets of the country. Eggs and poultry meat are typically marketed in fresh form. However, with the advent of cold storage facilities and the entry of branded food products, the consumption of processed and preserved products is gaining momentum. Further, with the urban family size getting smaller, homemakers are looking for chicken in small and convenient packs. In addition, the rapid mushrooming of fast food chains and growing dependence on convenience foods means the poultry sector is poised for a quantum jump.
MEANING AND DEFINITION OF POULTRY

Young student encyclopedia defines poultry as “birds raised for their meat and eggs are called poultry”. Chickens, ducks, turkeys, guinea fowl, pheasant and pigeons can be poultry birds. According to the illustrated encyclopedia, ‘poultry’ includes all domestic birds that are raised for food. Among these birds are chickens, ducks, turkeys, pigeons and different types of pheasant’s sons are raised for meat and others for eggs.

POULTRY DEVELOPMENT IN INDIA

In India, poultry production which has remained as a backyard venture till 1960 has emerged into an encouraging enterprise for rural folk especially for small farmers, landless labourers and educated unemployed and also for big entrepreneurs maintaining the birds on large scale in thousands. Poultry rearing is no more considered as a low prestigious occupation fit for only weaker sections of the society. It has become a full-time job for many and the size of flock maintained ranges from 100 to 50,000. After achieving self-sufficiency in cereal production, the attention has been diverted to plan and develop potential arena for better and protective foods such as eggs, poultry meat, milk and milk products. Poultry industry with about 139 million population producing 12,500 million eggs annually has been deemed to be a commercially viable enterprise contributing more than Rs 400 crores to the Gross National Product (GNP). India actually requires one lakh million eggs against the present availability of about 12,500 million a year. Thus it is warranted that the egg production should be increased by 10 times to reach the level of recommended requirements of half an egg per day per individual for half of the Indian population comprising non-vegetarian group.

Poultry production has an appreciable advantage of being relatively easy to raise and at the same time, the enterprise can be adopted under diversified agro-climatic conditions of our country. The initial requirements of land and capital required to initiate this enterprise on a moderate scale are within the limits of the rural sector of our country. The agricultural farmers who are generally not engaged throughout, will be occupied all the year round and the income derived from egg and meat production will be a continuous process throughout the year. The manure obtained from the poultry having more essential nutrients of Nitrogen, Phosphate and Potash (NPK) than the other organic manures, can
supplement the synthetic fertilizers which have become costlier due to hike in the price of petroleum products. The poultry farming finds a source for utilizing the surplus coarse grains for the bulk of the poultry mash. Utilizing these coarse cereals helps in stabilizing the prices of the coarse grains in the long run, which otherwise might net field decrease price to the agricultural producers. Poultry farming creates a greater demand for agro industrial by-products and wastes, which are utilized and incorporated in the poultry feed. Poultry industry helps in promoting ancillary industries and as on today, there are nearly 200 standard feed manufacturers all over the country producing 5 lakh tones annually. One of the salient features of the repaid progress of the poultry industry has been the remarkable growth in the production of egg and meat, which cannot be compared by any other sector of agriculture.

Considering the large number of unemployed (of more than ten million), if not more, may be unemployed in rural areas who may not come in the register of Live Employment Register, it is essential to find out suitable occupation for the poor rural sector. With the advent of 6th Five-Year plan, it is being proposed to create 50 million jobs during the period with great priority to be bestowed on the removal of unemployment and significant underemployment. With greater attention towards rural sector than urban sector the Government now stresses more towards generating employment in the rural area which is the nerve centre of Indian Economic Progress and Prosperity, where most of the people comprise of mostly small and marginal farmers with small holdings and landless labourers depending on manual labour for their livelihood. Therefore, it becomes imperative to improve the lots of small farmers, marginal farmers, landless labourers, artisans, and tables, backward and depressed classes who form a large segment of rural population. The small fragmented holdings possessed by the small and marginal farmers do not bring forth enough remuneration to meet their family requirements. Lack of funds at appropriate times for implementing improved methods of agriculture, besides the limitation in the productive capacity of the land render the pattern of generating employment in rural area to remain static. Bearing this in mind, the National Commission of Agriculture-e has suggested poultry programmes on massive scale, which can generate employment and improve the income of the rural poor through production of eggs and meat on smallholdings.
Poultry farming fits in squarely with the primary objective envisaged in the integrated rural development programmes. The main objective of sixth plan of eliminating unemployment and significant underemployment can be attained to a large extent by means of poultry farming, which, by virtue of its employment potential may become the most popular medium of self-employment among the rural masses.

Over 80 percent of the production of egg and broiler comes from just four of our 28 states. They are Andhra Pradesh, Maharashtra, Panjab and Tamil Nadu. India is one of the top poultry and egg production countries, ranking third in egg production and fifth in chicken production. India has a poultry population of 489 million and it is estimated that India produces more than 532 billion eggs among the top three egg producing countries in the world production of egg and poultry meat is exhibited in table 1.3. It is seen from the table that the value of poultry production has increased from million in 2000 to 2001, 36632 to 58763 million in 2009 to 2010. This increase is due to inflation. The contribution of chicken meat to the total poultry value has been raising from eggs. From almost equal in 2000-2001, the poultry meat sector value had doubled in the year 2009-2010, with the annual production of eggs at 58763 millions.
<table>
<thead>
<tr>
<th>Year</th>
<th>Eggs (Million Nos)</th>
<th>Meat (Million Tones)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-2001</td>
<td>36632</td>
<td>1.9</td>
</tr>
<tr>
<td>2001-2002</td>
<td>38729</td>
<td>1.9</td>
</tr>
<tr>
<td>2002-2003</td>
<td>39823</td>
<td>2.1</td>
</tr>
<tr>
<td>2003-2004</td>
<td>40403</td>
<td>2.1</td>
</tr>
<tr>
<td>2004-2005</td>
<td>45201</td>
<td>2.2</td>
</tr>
<tr>
<td>2005-2006</td>
<td>46166</td>
<td>2.3</td>
</tr>
<tr>
<td>2006-2007</td>
<td>50663</td>
<td>2.3</td>
</tr>
<tr>
<td>2007-2008</td>
<td>53532</td>
<td>3.7</td>
</tr>
<tr>
<td>2008-2009</td>
<td>55638</td>
<td>3.8</td>
</tr>
<tr>
<td>2009-2010</td>
<td>58763</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Source: Department of Animal Husbandry and Dairying, New Delhi, Annual Report 2009-10.

Although India is the world’s third largest egg producer, its per capita consumption is poor i.e. less than 3 per year. The situation is worse still in the case of poultry meat since consumption of eggs and meat is low in terms of their price and high value of their nutritional contents. Another aspect of this picture is that almost 75 percent of eggs and chicken meat consumed in urban and semi urban areas account for about 25 per cent of the population.
CHART 1.1
EGG AND POULTRY MEAT PRODUCTION IN INDIA

EGG PRODUCTION IN LEADING STATES OF INDIA

The table given below shows the egg production in leading states of India. It is observed from the table that the production of eggs is increasing year by year considerably. Andhra Pradesh tops the list in the production of eggs. Tamil Nadu, Punjab, Maharashtra and west Bengal occupy the second, third and fourth place respectively. No doubt, this increase in production of eggs shows nothing but the highest commercial growth of this industry in the states.
# TABLE 1.2

**EGG PRODUCTION IN LEADING STATES OF INDIA**

(In Lakhs)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>68004</td>
<td>133151</td>
<td>148622</td>
<td>49928</td>
<td>154040</td>
<td>164534</td>
<td>159411</td>
<td>163241</td>
<td>169965</td>
<td>170924</td>
</tr>
<tr>
<td>2</td>
<td>Tamil Nadu</td>
<td>39294</td>
<td>42242</td>
<td>36222</td>
<td>7836</td>
<td>63948</td>
<td>62225</td>
<td>80435</td>
<td>92225</td>
<td>98363</td>
<td>102211</td>
</tr>
<tr>
<td>3</td>
<td>Punjab</td>
<td>29640</td>
<td>29613</td>
<td>31306</td>
<td>30681</td>
<td>36800</td>
<td>35200</td>
<td>37740</td>
<td>40863</td>
<td>41123</td>
<td>42122</td>
</tr>
<tr>
<td>4</td>
<td>Maharashtra</td>
<td>37122</td>
<td>30966</td>
<td>31942</td>
<td>32950</td>
<td>33755</td>
<td>34362</td>
<td>35227</td>
<td>33950</td>
<td>35850</td>
<td>36143</td>
</tr>
<tr>
<td>5</td>
<td>West Bengal</td>
<td>26821</td>
<td>27101</td>
<td>27490</td>
<td>28204</td>
<td>28877</td>
<td>29637</td>
<td>30386</td>
<td>31343</td>
<td>31963</td>
<td>33107</td>
</tr>
</tbody>
</table>

Source: Department of Animal Husbandry and Dairying, Ministry of Agriculture, New Delhi 2009-10
POULTRY DEVELOPMENT IN TAMIL NADU

Poultry industry in Tamil Nadu has shown rapid development during the last few years. Tamil Nadu ranks fourth in egg production in India. Such a growth is due to various schemes of the Tamil Nadu Government, Planning for poultry development started in 1960. But the expected success was not brought about in poultry keeping which was brought with considerable difficulties. In this situation, TAPCO was established in July 1972 to give fillip to poultry development. Its role in poultry development has assumed significance with its manifold functions, services and expanded operation some of its important functions are marketing of eggs and culled birds and supply of quality feed for birds at comparatively cheap price, Reading the importance of supplying quality chick in time to the farmers, TAPCO has started hatchery units. Arasur in Coimbatore and Kappalur in Madurai District have Government hatcheries.
“Feed manufacturing units are at Nandanam in Madras, Thirupur in Coimbatore and Kappalur in Madurai Districts. With a view to ensure reasonable revenue to marginal and small poultry farmers, TAPCO operates marketing centers in Madras, Vellore, Coimbatore, Madurai, Chengalput, Namakkal, Trichy, Tirunelveli etc. Apart of from TAPCO, with the institution of National Egg Co-ordination Committee (NECC) in 1982, price fixation is done twice a week considering market conditions. The poultry development council has been constituted to review the progress of poultry development in the context of targets laid down and to recommend measures for accelerating the tempo of poultry development in the state”.

The Government of Tamil Nadu has taken interest in developing the poultry industry “Namakkal District stands first in the state. The Namakkal zone is producing more then 2,66,62,000 eggs per day and yearly 4,43,98,000 eggs are exported to the gulf countries”.

A PRELUDE ON POULTRY FARMING IN NAMAKKAL

Poultry farms were started on a commercial angle in 1976. Namakkal is considered the pioneer of commercial poultry farming. Initially there was a search for high yielding egg birds and since a hatchery has been started in Coimbatore. There is no difficulty in getting the day old chick.

The few farmers who started small poultry units were practically convinced of the profitability of this occupation. Bold steps were taken by these farmers who went in for bigger units of 1,000 birds and very soon setback in the lorry business was converted as capital for starting poultry farms during the early 1990’s.

The success achieved by the pioneer farmers acted as an impetus to poultry farming. Seeing the development of these farms, many others wanted to follow suit. Poultry became the talk of the town and efforts were taken to approach the banks, which came out to finance poultry after seeing the profitability. Many farms sprang up in a short period in this area. The farmers started exploring the possibilities of getting alternate

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3 A Record of National Egg Co-ordination Committee, Namakkal Zone, 2011-12.
breeds and poultry feed from hatcheries in neighboring states. Karnataka and Andhra Pradesh were connected as the only hatchery in Tamil Nadu could not cater to the biggest single pocket in South India as regards population. The poultry population in Namakkal District began to increase day by day.

**TABLE 1.3**

**AVERAGE STRENGTH OF LAYER BIRDS IN NAMAKKAL ZONE**

<table>
<thead>
<tr>
<th>Year</th>
<th>Birds (In lakhs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000-01</td>
<td>171.18</td>
</tr>
<tr>
<td>2001-02</td>
<td>212.71</td>
</tr>
<tr>
<td>2002-03</td>
<td>225.42</td>
</tr>
<tr>
<td>2003-04</td>
<td>219.19</td>
</tr>
<tr>
<td>2004-05</td>
<td>234.49</td>
</tr>
<tr>
<td>2005-06</td>
<td>307.34</td>
</tr>
<tr>
<td>2006-07</td>
<td>339.79</td>
</tr>
<tr>
<td>2007-08</td>
<td>367.35</td>
</tr>
<tr>
<td>2008-09</td>
<td>398.62</td>
</tr>
<tr>
<td>2009-10</td>
<td>407.34</td>
</tr>
<tr>
<td>2010-11</td>
<td>447.19</td>
</tr>
</tbody>
</table>

Source: A Record of National Egg Co-ordination Committee, Namakkal Zone, 2011.

Table 1.3 above shows the average strength of layer birds in Namakkal zone from 2000-2011. In the year 2000-2001, there were 171.18 lakhs of birds; in 2001-2002 there were 212.711 lakhs; in 2002-2003 there were 225.42 lakhs of birds; in 2003-2004 there were 219.19 lakhs of birds; In 2004-2005 there were 234.49 lakhs of birds; In 2005-2006 there were 307.34 lakhs of birds; In 2006-2007 there were 339.79 lakhs of birds; In 2007-2008 there were 367.35 lakhs of birds; In 2008-2009 there were 398.62 lakhs of birds, In 2009-2010 there were 407.34 lakhs of birds and in 2010-2011 there were 447.19 lakhs of birds. There had been a consistent growth every year.
The day old chicks are transported from Pongalure to Namakkal within 5 hours. The day old chicks can withstand for 36 hours without food and water. Within the stipulated time, the birds must be transported and properly fed by giving all the necessary vitamins and glucose. The demand for the day old chicks was so much that the poultry breeders had, sometimes, to wait for 2 to 3 months for the delivery to Namakkal. This itself is being contemplated and if it is materialised, that will add in future to the development of the industry in this area and even nearby towns.

The availability of poultry feed at a competitive rate is a very important contributing factor for the rapid growth of the industry. Just as the hatcheries have their agents, feed manufacturers have their own agents stationed at various centres. The above manufacturers prepare their own poultry feed. There are some feed manufacturing plants in Namakkal, owned by big cultivator-cum-poultry breeders having about 50,000 birds. They sell the excess feed to the needy poultry owners.
STATUS OF POULTRY INDUSTRY

Poultry is one of the fastest growing sectors in the country with an annual growth rate of 15-18 percent broilers and 7 percent of egg production. But per capital consumption of eggs (36 eggs per year) and broiler meat (1 kg per year) of the country is one of the lowest in the world. India has adequate parent stock, hatcheries, equipment manufacturers, etc., required for our poultry industry. The cost of egg production is very low which gives a competitive edge for the country in international market. Six eggs processing plants with a capacity of 15,000 tones have been established in the country for production and export of egg products like albumin, whole egg powder, yolk powder and Lysozyme.

WEATHER CONDITIONS OF POULTRY INDUSTRY

The optimum temperature is between 18°c and 24°c, as at this temperature range, normal metabolic heat production balances the heat loss thereby providing for efficient use of feed. At temperature above 30°c, the birds are not able to dissipate surplus heat and problems occur in the houses.

Most houses are provided with cooling system using water and, therefore, it is possible to rear pullets at proper temperatures. Many farmers have reared good pullets with in house temperatures varying between 22°c and 27°c. As long as the air change is frequent and temperature does not exceed 30°c, it is possible to rear good quality uniform pullets.

Special additives, like electrolytes and vitamins, may have to be given with water when the birds are under stress. Therefore, a good supply of these items has to be kept on the farm at all times. The birds often go off the feed, or the feed consumption drops when under stress, but they will drink water. These vital nutrients must therefore be supplied with the water. Supply of fresh, cool water to the birds is necessary, especially under hot weather conditions. All pipes must be buried deep in the ground, or be insulated. It is useful to have a tank within the house, which supplies water to the birds. Water consumption increases with increase in ambient temperature. This weather condition is suitable in Namakkal district. So the poultry farming is popular in Namakkal district.
The effect of temperature on the performance of laying hens is more important. Numerous experimental data indicate that, at least in the range of 15 to $20^0\text{C}$ change temperature, results in less feed intake at the rate of 1.5 percent on an average per one degree centigrade. At higher temperatures, the decrease in feed consumption will be greater.

A reduction in feed intake as a consequence of high environmental temperatures may not, however, necessarily cause reduction in the number of egg produced because the birds need less energy for their maintenance. If any reduction in egg production occurs, it could be attributed to reduction in the intake of nutrients other than energy.

According to this view, lower egg production in hot climate is, in most cases, caused by an inadequate supply of protein, minerals and vitamins. A decrease in egg production can therefore be considered as an indirect effect of high ambient temperatures. If this is true, it leads to the conclusion that under high temperature conditions, a well-balanced diet can make well the production losses with in a temperature range of up to $30^0\text{C}$, at least as far as the number of eggs in concerned.

Egg weight is however affected at lower temperatures i.e. from $25^0\text{C}$ or less, depending on the breed involved and on the prevailing climatic and other environmental conditions. Generally the reduction in egg weight amounts to 0.2 to 0.4 g per $0^0\text{C}$ in temperature change. Again, it must not be thought that such effects always occur, and that the level of degree of responses will be always the same lower egg weight (without affecting the number of eggs produced) is the result of less energy being available for production. All factors effecting energy intake will therefore have an effect on egg weight.

Generally, egg weight is, to a great extent related to body weight. This correlation is always noticeable within breeds, and in not climatic conditions as well. Besides body weight is equally influenced by the energy metabolism as egg weight is lack of energy therefore also results in a lower body weight. It is also considered to be a result of high ambient temperatures.

Prolonged exposure to high temperatures starting from $27^0\text{C}$ will cause a deteriorating I in the egg shells. Reduction of egg shell strength is in must cases not consequence of calcium deficiency brought about by a reduction of feed intake, but a result of a disturbed carbon dioxide metabolism to at least as long as the dietary calcium level
meets the birds requirements. The high frequency of respiration, or hyperactive-ventilation results in low levels of carbon dioxide and calcium in the blood. A large number of scientists believe that this is the reason for production of eggs with soft shells, when ambient temperatures remain high and no corrective measures are taken, the number of egg produced will eventually decrease.

**DEFINITION OF EGG**

Aliyah Defined Egg as “The oval or roundish body laid by domestic poultry and other birds, tortoises, etc. It consists of a yolk, usually surrounded by the "white" or albumen, and inclosed in a shell or strong membrane”.

“A simple cell, from the development of which the young of animals are formed; ovum; germ cell. Anything resembling an egg in form”.

The chickens and geese were raised more than 3000 years ago. The first poultry bird that became popular in United States was light Brahma chicken. At present, most poultry is raised on poultry farms. On these farms, the diet of the birds and the temperature are carefully controlled. The term poultry applies to a rather wide variety of birds of several species and it refers to them whether they are alive or dressed (slaughtered and prepared for market). The term applies to chickens, turkeys, ducks, geese, swans, guinea fowl, pigeons, pea fowl, ostriches pheasants, quail and other game birds.

The poultry refers to domesticated birds, which are reared for their flash eggs and feathers, and it includes a number of avian species such as chicken, duck, turkey, geese, swan guinea- fowl, pea fowl, pigeons, pheasants, quail etc, but it is very often used synonymously to chicken.

India is one of the countries where the jungle fowl has been domesticated as poultry bird. For centuries, the rural population of our country has been keeping these birds as a backyard venture. The women folk are being mainly engaged in this only for domestic consumption with little business motive. Social and religious leaders are against the consumption of meat and so there is a limited development to a certain extent due to fear of contagious diseases.
NUTRITIVE VALUE OF EGG

“Protein is essential for human life. There are two kinds of proteins, namely, vegetable protein and animal protein. Balanced diet requires 90 per cent of vegetable protein and 10 per cent of animal protein. Among the different kinds of animal protein, we have fish, sheep and goat meat, pig meat, beef, poultry egg and milk. Of all these, eggs are the cheapest source of animal protein.”

"An egg a day keeps the doctor away" is an old saying, as egg contains vitamins and a number of mineral elements. It is a rich source of proteins. The nutritive value of eggs is shown in the Table 1.4

TABLE 1.4
NUTRITIVE VALUE OF EGGS

<table>
<thead>
<tr>
<th>Recommended daily allowance for an active man</th>
<th>Quantity in one egg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy (calories)</td>
<td>3,000.00</td>
</tr>
<tr>
<td>Proteins (g)</td>
<td>70.00</td>
</tr>
<tr>
<td>Fat (g)</td>
<td>50.00</td>
</tr>
<tr>
<td>Carbohydrate (g)</td>
<td>570.00</td>
</tr>
<tr>
<td>Calcium (g)</td>
<td>0.80</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>0.90</td>
</tr>
<tr>
<td>Iron (mg)</td>
<td>12.00</td>
</tr>
<tr>
<td>Vitamin A (I.U)</td>
<td>5,000.00</td>
</tr>
<tr>
<td>Vitamin D (I.U)</td>
<td>400.00</td>
</tr>
<tr>
<td>Vitamin B1 (mg)</td>
<td>1.50</td>
</tr>
<tr>
<td>Vitamin C (mg)</td>
<td>75.00</td>
</tr>
<tr>
<td>Riboflavin (mg)</td>
<td>2.00</td>
</tr>
<tr>
<td>Nicotinic Acid (mg)</td>
<td>18.00</td>
</tr>
</tbody>
</table>


Eggs are moderate from the standpoint of calorie content, a medium size egg supplies about 80 calories of energy to our body. The egg contains a large number of minerals as well. The mineral elements present are phospho-proteins, phospholipids and inorganic phosphorus. Iron content is also there with a small fat content. The chemical components of the egg is shown in Table 1.5

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### TABLE 1.5
CHEMICAL COMPONENTS OF THE EGG

<table>
<thead>
<tr>
<th></th>
<th>Whole Egg</th>
<th>White</th>
<th>Yolk</th>
<th>Shell</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>58</td>
<td>31</td>
<td>11</td>
</tr>
<tr>
<td>Water</td>
<td>65.5</td>
<td>88.0</td>
<td>48.0</td>
<td>-</td>
</tr>
<tr>
<td>Protein</td>
<td>11.8</td>
<td>11.0</td>
<td>17.5</td>
<td>-</td>
</tr>
<tr>
<td>Fat</td>
<td>11.0</td>
<td>0.2</td>
<td>32.5</td>
<td>-</td>
</tr>
<tr>
<td>Ash</td>
<td>11.7</td>
<td>0.8</td>
<td>2.0</td>
<td>96.0</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>96.0</td>
</tr>
</tbody>
</table>

Source: Production and Marketing of Poultry Products in India - A Case Study, by V.K. Agarwal 1994, p. 18

It is clear from the above table that in a whole egg, water is 65.5 per cent, protein 11.8 per cent, fat 11.0 per cent and ash 11.7 per cent. In an egg, 58 per cent is white, 31 per cent yolk and 11 per cent shell. When white is compared with yolk, water content is more in white and protein; fat and ash contents are more in yolk.

### OPINION ON CHOLESTEROL AND HEART ATTACK

"There is a belief that frequent intake of eggs would increase the cholesterol in the blood stream of the body and thereby causes heart failure for some people. An egg contains approximately 0.2 to 0.3 grams of cholesterol, which does not significantly influence the level of cholesterol in the blood. This temporary increase of blood cholesterol after eating a few eggs will be normal after a few hours". "This fact has been justified by a research study conducted by Margaret Flynn, nutrition teacher from the University of Missouri. This study shows that the consumption of eggs does not increase variations in the average level of cholesterol in the blood of an average healthy man.

---

MEDICAL VALUE OF EGG

"Egg is not only used as an item of food but also used as one of the ingredients for the preparation of medicines. It has various medicine values. It has been proved in Canada that the yolk in egg alone with vitamin A controls cancer. Thirty-six men and women who have chances of cancer attacks were selected and fed with egg yolk with vitamin A twice a week. It was found that they were saved from cancer attack".7

"Ulcer can be cured by consuming a well shaken mixture of one egg white in 20 oz of boiled and cooled water in small quantities at regular intervals within twelve hours of preparation of mixture."8

EGG AND ITS USES

1. Egg is mainly used as human food. It is used in the preparation of food products such as biscuits, cakes, pudding, custard, noodles, jam, infant food, sausage and candies.

2. In the pre-industrial era eggs were used in painting. The properties of egg used in painting are
   a) stickiness of the albumen
   b) the emulsifying power of the yolk
   c) The ability of yolk lipids to set hard as a result of oxidation and drying in air.

3. Eggs are used in traditional leather manufacture. Eggs play two functions namely
   a) Preparing the surface of the tanned skin.
   b) Helping the penetration of lipids

4. Eggs have been used in cosmetics. Yolks are added to shampoos, skin creams and lotions. Yolks are used as an ingredient of expensive soap.

5. Eggs are often used in the treatment of diseases such as rickets, anaemia and various other deficiency diseases.

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7 Dinamani, Madurai, 7th January, 1985, P.9.
6. Egg albumen is useful for controlling the effect of irritant poisons on the mucous membrane of digestive tract. It forms protective coating over the mucous membrane and prevents the absorption of poison into the system.

7. Eggs are used in the production of technical albumen which is used as adhesive for cementing cork gasket to the crown of soft drink bottle caps.

8. Egg serves as source of antibodies. It has some advantages including accessibility, over the use of animals for the production of large amount of particular polyclonal antibodies.

9. Egg yolk acts as good medium for the growth of variety of micro-organisms

10. Egg yolk is used as a preservative for spermatozoa. Yolk has two effects when sperms are stored at freezing temperatures
    i) It preserves from cold temperature shock.
    ii) It helps their survival

11. Egg yolk phospholipids, especially lecithin, are standard research chemicals.

12. Egg yolk contains avidin and is becoming useful for research purposes. Incubated fertile eggs are used in medical and veterinary research for the diagnosis of diseases.

13. The lysozyme of the egg is used in eye drops (artificial tears).
    i) It is used for the inhibition of bacteria during cheese making; and
    ii) as a part of a spray to prevent growth of bacteria on vegetables.

14. Boiled egg membrane can be used for covering wounds and ulcers.

15. Egg shells are used as fertilizer for lining soil. Thus egg has many uses.
EGG IN NOON MEAL SCHEMES

“In primary schools the dropout rate in 2002-03 was 12 per cent. This came down to 2 per cent in 2006-07. One of the main reasons for this was the introduction of the scheme to give three eggs a week to the students. From July 15, 2006, two boiled eggs were provided every week to the children. From July 15, 2007, this was increased to three eggs a week and given on every Monday, Wednesday and Friday. As many as 2.11 crore eggs are procured and distributed across the state. The three eggs a week scheme cost the government Rs.177 crore in 2008-09. The Puratchi Thalaivar MGR nutritious noon meal programme cost the government Rs.781.44 crore in 2007-08. The allocation for 2008-09 was Rs.820 crore.”

POULTRY MANURE

In India, there is a vast scope to use poultry manure in crop production. Poultry waste has traditionally been used as an organic manure to enrich the soil with nitrogen, phosphorous and potassium content, the elements most deficient in Indian soil. Similarly, the nutritive value of poultry manure depends on the type of breed, feed and its storage. Waste from poultry farms and poultry processing plants has to be disposed of regularly and efficiently so that the premises are kept clean and the birds are protected from infections. Waste from poultry farms consists mostly of the droppings of birds and used litter, besides, dead birds. Poultry slaughter houses and hatcheries have additional types of waste like effort-feed, head, feathers, intestines, broken eggshells etc. Management of this variety of waste is a demanding job for the poultry farmer and professional.

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9 The Hindu, Tamil Nadu News, April, 23, 2008.
DAILY EGG PRODUCTION IN NAMAKKAL ZONE

TABLE NO –1.6

DAILY EGG PRODUCTION IN NAMAKKAL ZONE

<table>
<thead>
<tr>
<th>Year</th>
<th>Yearly Average Figure in Lakhs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-2002</td>
<td>125.26</td>
</tr>
<tr>
<td>2002-2003</td>
<td>135.28</td>
</tr>
<tr>
<td>2003-2004</td>
<td>134.37</td>
</tr>
<tr>
<td>2004-2005</td>
<td>134.89</td>
</tr>
<tr>
<td>2005-2006</td>
<td>175.72</td>
</tr>
<tr>
<td>2006-2007</td>
<td>207.05</td>
</tr>
<tr>
<td>2007-2008</td>
<td>214.15</td>
</tr>
<tr>
<td>2008-2009</td>
<td>243.64</td>
</tr>
<tr>
<td>2009-2010</td>
<td>240.43</td>
</tr>
<tr>
<td>2010-2011</td>
<td>266.62</td>
</tr>
</tbody>
</table>

Source: A Record of National Egg Co-ordination Committee, Namakkal 2010-11

The above table shows the egg production in Namakkal zone from the financial year 2001-02 to 2010-11. It is observed from the table that the production of eggs has increased considerably year by year. Namakkal zone is the hub of the egg production in Tamil Nadu from 2001-02 onwards year by year increasing the egg production. In 2010-11, 266.62 (in lakhs) was the highest egg production in yearly average daily egg production.
A prospective poultry breeder must first build a house for poultry accounting to the number of birds he wishes to have. He doesn’t have to run about for his other requirements. The agents supply the day old chicks at the prevailing market rates at his door. The agents also supply feed, medicines and even send a veterinary doctor for injections, debeaking, etc. The agents do not collect money up to six months, i.e. till the birds start laying eggs. After that they collect eggs weekly or twice a week and adjust the money towards the services they have rendered in kind. Within a short period, the entire amount is adjusted, but the agents continue to receive the eggs regularly until the 72nd week. After adjusting the amount, the poultry owners are paid at the prevailing market rate for eggs. The only condition is that the agents take a commission of five paise per egg as margin. The poultry breeder has no complaints because the agent charges no interest from him. This system works very satisfactorily in and around Namakkal.
The assistance offered by the egg collecting agents is added to the enthusiasm of the breeders. There are about 145 agents in Namakkal who have contributed to a great extent for the development of poultry farming in Namakkal. Table 1.7 gives the quantity of exported eggs to gulf countries.

**TABLE 1.7**

**EXPORTS OF EGGS IN NAMAKKAL ZONE**

<table>
<thead>
<tr>
<th>Accounting Year</th>
<th>Yearly Average Figure in Lakhs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-2002</td>
<td>121.21</td>
</tr>
<tr>
<td>2002-2003</td>
<td>238.13</td>
</tr>
<tr>
<td>2003-2004</td>
<td>384.94</td>
</tr>
<tr>
<td>2004-2005</td>
<td>558.91</td>
</tr>
<tr>
<td>2005-2006</td>
<td>586.07</td>
</tr>
<tr>
<td>2006-2007</td>
<td>466.81</td>
</tr>
<tr>
<td>2007-2008</td>
<td>1019.03</td>
</tr>
<tr>
<td>2008-2009</td>
<td>915.51</td>
</tr>
<tr>
<td>2009-2010</td>
<td>873.79</td>
</tr>
<tr>
<td>2010-2011</td>
<td>446.34</td>
</tr>
</tbody>
</table>

Source: A Record of National Egg Co-ordination Committee, Namakkal 2010-11

It is observed from the above table that the export quantity of hen eggs is not a steady one. However from the financial year 2001-2002 to 2010-2011, the highest number 1019.03 in lakhs yearly average eggs exported was in the year 2007-2008. The main reason for this unsteady position of export of hen eggs is that they depend on the production of eggs.
There are other factors, which have been still responsible for the rapid increase in the number of poultry farms compared to the other districts. The Namakkal zone has around 447.19 Crores birds which include chicks, grower and layer in their farms. Even though this is a dry region, the climatic conditions are suitable for poultry rearing.

SIGNIFICANCE OF THE STUDY

Poultry provides eggs and meat. Eggs are a highly nutritive supplementary food. Economic improvement of rural can be substantially achieved with introduction of scientific poultry farming. Poultry farming as a tool of socio economic transformation of rural poor has immense potential in country like the people who live below the poverty line. Poultry farming requires less investment to start the enterprise. Eggs and table birds can be sold for cash as the pullet starts layering at about five months of age. As a result quick return can be expected from the investment. Poultry farming also provides
continuous source of income. Poultry farming in rural area has become a large industry. Poultry and poultry products provide protein rich food at low cost. Mixed farming with poultry provides opportunity for additional income during dull season of crop cultivation. Poultry farming provides employment opportunity directly or indirectly.

IMPORTANCE OF THE STUDY

The rural scenario in India is undergoing a rapid change, from the traditional concept of farming as a subsistence activity into a vibrant, commercial, economic venture enabling the farmers to live in dignity and prosperity. During the past three decades, the annual output of egg has gone up by over eight times, making poultry the fast growing industry. Poultry farming has been identified as one of the thrust areas in the eighth five-year plan in India. The plan envisages an annual growth rate of seven per cent in egg production. The development of farming has been given priority to help small rural farmers in the unorganized sector. It is also planned to ensure easy access to all necessary facilities including inputs, credit and marketing. Hence, a study of poultry industry on commercial viability is of special importance.

Poultry farming is undertaken by thousands of rural semi-urban as well as urban masses. Poultry farming with medium capital investment generates employment opportunity for rural and semi urban people with the new occupation and employment generation, the standard of living has come up considerably creating social impact.

Poultry has also helped in developing many ancillary industries such as hatchery operation, poultry equipment and processing of poultry products. More than a million people in our country are dependent directly or indirectly on poultry farming for their livelihood. There are about half a million people engaged in allied operations like feed mills, vaccine, and medicine, transportation and retailing of eggs.

Egg is also used for preparation of a variety of products such as medicines, paint, varnishes printer ink, adhesives, soaps, shampooos etc. poultry manure is an extremely rich source of nitrogen and organic material is in demand as agricultural input. The rural poultry unit, with the locational advantages differs in cost of production. The present study focuses its attention on the production efficiency and marketing potentialities of the poultry units and their related problems, with a futuristic manifestation and visualization.
Poultry has a major place in the economy of developing countries. It produces meat and eggs that constitute an important part of the diet of most of the people. Egg is a cheap source of protein, which is sufficiently available for removing malnutrition or under nutrition. The poultry industry gives an opportunity for earning additional income, employment opportunities in rural as well as urban areas and also creates trade in allied activities like manufacturing, selling of food, equipments, medicines and other products necessary for establishing poultry farms. By-products of poultry are used for many purposes. One among them is poultry waste, which is used as manure for the maintenance of soil fertility. Since it is an agro-based industry as stated earlier, it gains more importance among the rural than the urban. It has become a commercial industry due to additional source of income, supplementary occupation, and generation of employment and also as a main source for livelihood.

**STATEMENT OF THE PROBLEM**

The purpose of the study is to evaluate production and marketing practices of poultry products in Namakkal District. In the case of broilers as soon as the eggs are laid and the chicks attain sufficient growth in beginning the marketing activities. Thus poultry farming is a peculiar sector in which production and marketing decision have to be taken simultaneously the time factor in production, marketing and consumption would play a great role in taking decisions.

The poultry industry becomes one of the commercial occupations with the introduction of scientific method and the principles of modern poultry management. But practical knowledge of this art is not within the reach of all. Hence an attempt is made to study these aspects in details. As already mentioned, the analysis mainly centers on the production and marketing of poultry products in Namakkal District. Which leading district in poultry production.

The study area, Namakkal District is one of the most concentric areas in poultry farming in Tamil Nadu. There has been a tremendous growth in the size of farms and the poultry farming has become a part of life for many people in this district. Inspite of its
astonishing and abundant growth, the egg industry has to face stress in recent years. “In 2010 – 11, there are 615 farms in Namakkal District.  

Egg being highly perishable and fragile by nature needs special care during transportation from producers to consumers. The major problem faced by these engaged in marketing of eggs is that of maintaining the quality during the process of distribution. Some producers are expending their farming activities in anticipation of long run opportunities. With an influence of decision to leave or to stay on; the future structure of egg industry depends on incorporation of well balanced plan for marketing and production. The problems are the structure of cost of its orientation towards price. There is an overall increase in the field cost and the birds are also affected by diseases and parasites that generate during various seasons. Air pollution and water pollution also create different types of contingencies diseases. Further the middlemen engaged in this industry take away a lion’s share of profit of the egg producers. Fluctuations in egg prices also cause a reasonable return to the producer. The egg prices fall in summer and go up in winter due to the main problem of preservation. Further employment opportunities increase during winter season. So people get more income during this period. Sentimental value also affects the consumption of egg during festival months.

During the last two years the consumption of eggs has not increased while production has been increasing at a higher rate. The price of egg has registered a rise of ten to fifteen percent, but in real terms, it has not shown any increase. On the other hand, farmers are bowed down by soaring prices of feed, making many units uneconomical to operate combined with diversion of feed to exports. Further for the poultry farmers a viable marketing structure means the choice of appropriate marketing channel. There are three prominent marketing channels. First channel is poultry owner, wholesalers, retailers and consumers. The second channel is poultry owners, retailers and consumers. Third channel is directly from owners to consumers and also price takers fixed by the consortium of the group in Namakkal Egg Co-ordination Committee and have to adjust the market structure. So, the marketing problem further aggravates according to the size of the farms. Inspite of

10 A Record of Tamil Nadu Poultry Farmers Association, Namakkal, 2010-11.
the fact that poultry farming becoming a good subsidiary occupation for many farmers and improves their conditions, there are problems creeping in the production and marketing side of industry.

**OBJECTIVES OF THE STUDY**

The following are the objectives of the study

1) To study the production and marketing process of eggs.

2) To analyze the socio economic aspects of the poultry farmers.

3) To evaluate the various channels of distribution of eggs and visualize appropriate channel in marketing the eggs.

4) To examine the present marketing practices followed by farmers and middlemen

5) To analyze the cost structure of various sizes of farms and identify the cost effectiveness

6) To suggest measures to get rid of the problems in production and marketing aspects in poultry farming.

**HYPOTHESES**

a) Gender of sample farmers does not significantly differ in relation to the size of the farm.

b) Age of sample farmers does not significantly differ in relation to the size of the farm.

c) Educational qualification of sample farmers does not significantly differ in relation to the size of the farm.

d) Main occupation of sample farmers does not significantly differ in relation to the size of the farm.

e) Distance from home to farm of sample farmers does not significantly differ in relation to the size of the farm.

f) Method of chick rearing by sample farmers does not significantly differ in relation to the size of the farm.

g) Age of sample wholesalers does not significantly differ in relation to the size of the farm.
h) Annual income of sample wholesalers does not significantly differ in relation to the size of the farm.

i) Annual Income of sample retailers does not significantly differ in relation to the area of business.

j) Introducer to retailing for sample retailers does not significantly differ in relation to the area of business.

k) Expenses of sample farmers for first 20 weeks for 10000 chicks does not significantly differ in relation to the size of the farm.

**METHODOLOGY**

The study comprises of both primary and secondary data. The mass data collected from various handbooks, year books, records of poultry farms, poultry journals, poultry international books and research publications are used to present a clear picture of poultry industry at present. The secondary data like cost and financial information are collected from the owners of the sample farmers through a structure schedule. A pilot study is conducted before framing the interview schedule.

**PRIMARY DATA**

The pre-tested and well designed interview schedule is used to collect primary data of sample respondents for identifying the changes in socio economic aspects. The data relating to the capital invested in various fixed assets are collected from the records of farms. The expenses incurred for rearing the chicks up to the point of lay are noted the records maintained by the sample farms. The expenditure during the period of lay and the number of eggs produced, cost price as well as the sales price during the entire period are collected from the records. The primary data relating to the sample farmers of poultry industry are either of the owners or the partners of the farms. Their status prior to the starting of the poultry units and their present conditions are elucidated through cordial conversation with the head of the families. Their responses are collected in the interview schedule and opinions are also classified and also codified for the purpose of analysis. For collection of primary data. Interview schedules and questionnaire have been prepared.
SECONDARY DATA

Secondary data have been collected from prominent text books on poultry farming, poultry industry year book and poultry magazines, such as poultry guide, poultry adviser, poultry punch, poultry reporter, other trade journals, internet and newspapers like economic times. The data relating to the capital invested in various fixed assets are collected from the records of farms. The expenses incurred for rearing the chicks up to the point of lay are noted from the records maintained by the sample farms. The expenditure during the period of lay and the number of eggs produced, cost price as well as the sales prices are in the record.

SAMPLING

As per the record of Tamil Nadu poultry farmers association, there are 615 farms in Namakkal district. The Namakkal Districts has four Taluks, They are Namakkal, Paramathivelur, Rasipuram and Tiruchengode. For the purpose of classification, the farms with bird strength between 5,000 to 25,000 are taken as small farms: Farms with bird strength above 25,000 are treated as large farms, as per the records of the population of the study area comprises (1) 198 wholesalers (2) 360 retailers and (3) 615 farmers who have been officially visited by the Tamil Nadu poultry farmers association. The farms, wholesalers and retailers are post stratified according to their size. Samples of around 15 percent from each size are selected at random. Thus 59 small farms, 33 large farms, 30 wholesalers and 54 retailers are taken as sample for the present study under stratified random sampling basis.
### TABLE 1.8
SAMPLE SELECTION

<table>
<thead>
<tr>
<th>Population – Stratified</th>
<th>Type</th>
<th>Total</th>
<th>Percentage</th>
<th>Sample taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers (on the basis of fowls)</td>
<td>Small farmers</td>
<td>392</td>
<td>15%</td>
<td>59</td>
</tr>
<tr>
<td></td>
<td>Large farmers</td>
<td>223</td>
<td>15%</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td><strong>Total farmers</strong></td>
<td><strong>615</strong></td>
<td><strong>15%</strong></td>
<td><strong>92</strong></td>
</tr>
<tr>
<td>Wholesalers (on the basis of procurement)</td>
<td>Small wholesalers</td>
<td>110</td>
<td>15%</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Large wholesalers</td>
<td>88</td>
<td>15%</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>198</strong></td>
<td><strong>15%</strong></td>
<td><strong>30</strong></td>
</tr>
<tr>
<td>Retailers (on the basis of area)</td>
<td>Semi urban</td>
<td>140</td>
<td>15%</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>220</td>
<td>15%</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>360</strong></td>
<td><strong>15%</strong></td>
<td><strong>54</strong></td>
</tr>
<tr>
<td><strong>Overall Total</strong></td>
<td></td>
<td><strong>1173</strong></td>
<td><strong>15%</strong></td>
<td><strong>176</strong></td>
</tr>
</tbody>
</table>

Source: Tamil Nadu Poultry Farmers Association, Namakkal.

Sample size determination

The sample size is determined based on the formula given below.

\[
N = \frac{Z^2 P (1-p)}{E^2}
\]

where \( Z = 1.96 \) ‘Z’ value 95% confidence level.

\( P = 50 \% \) in case of unknown SD

\( E = \) Percentage of errors i.e 0.28

\[
\Box \text{Sample size } n = \frac{1.96^2 (0.5) (1-0.5)}{(0.28) (0.28)} = \frac{0.9604}{0.0784} = 12.25
\]

\[
= 12.25
\]
Hence, a sample of 13 or more than 13 is a good sample for the minimum population large wholesalers 88 x 15 per cent amounts to 13.2 and hence a sample of 14 is considered for large wholesalers. To provide uniformity in sample selection 15 per cent is considered for all types of population.

It is to be noted that in the process of selection almost all types of location, that in rural, semi-urban and urban farms are included in the sample. The data that are primary in nature have been collected from the respondents of the sample farms.

**STATISTICAL TOOLS USED**

The data collected for this study are analyzed with the help of various statistical tools. Simple ratios and percentages are commonly used for clarity of expression. Tools such as co-efficient of variation, ‘T’ test and ‘Z’ Test for testing the sample suitability, weighted rank scales for analyzing socio-economical impacts, compounded growth rate small and large model of prediction trends in poultry industry, reliability analysis and chi-square test for opinion analysis, ANOVAs table, Factor analysis and Break even analysis for ensuring profitability. Charts and diagrams are given to have clarity in the findings. The problem and prospects as stated by the respondents are analyzed with advanced tools such as Discriminant Function analysis and Factor Analysis.

**PERIOD OF THE STUDY**

Though the study is on production and marketing of poultry products in Namakkal District, the researcher has concentrated mainly on production and marketing of eggs as the scope for other poultry products is very negligible in the study area. The period of study taken for this research is ten years from 2001 to 2010. The primary data was collected during the year 2010-2011.

**LIMITATIONS OF THE STUDY**

The area of the study is limited to the Namakkal District of Tamil Nadu. The researcher is native of Namakkal District and he has an opportunity to understand the problem very well. Being a semi urban and rural area, most of the small farms do not maintain proper accounting records. Many do not follow the system of double entry system of accounting. The data are the figures shown in their account books. poultry products for
the present study include eggs, culled birds and poultry manure. But the main concentration is being made on eggs. Their marketing practices, cost and margin have been studied in detail as culled birds and poultry manure are insignificant in this area and are sold in local and other state market. Another important aspect is the limitation of the price level fluctuations. There are high fluctuations in the price of eggs, feed and medicines. They are highly sensitive. Hence for the purpose of analyzing the cost of production, cost during the selling period, marketing cost etc. the amount as shown in the books of the respondents is considered reliable. The researcher divided the wholesaler in two types, those who are selling weekly below 1 lakhs eggs are treated as small and above 1 lakhs eggs are treated as large. The researcher divided the retailers in two types urban and semi-urban.

**CHAPTER SCHEME**

This study is divided into seven chapters.

The introductory chapter shows the importance of the poultry industry, the nutritive value of eggs, egg and its uses, weather conditions of poultry industry, statement of the problem, objectives of the study, research methodology, limitations of the study and chapter scheme.

The second chapter deals with the review of literature in the previous study.

The third chapter deals with the production and marketing practice of eggs for poultry products such as, chick stage, grower stage, laying stage, assembling, grading, packing, storing, transportation, and channels of distribution are briefly discussed in this chapter.

The fourth chapter deals with the socio economic and production process analysis of poultry farmers, gender, age, educational qualification, annual income, type of organization, location of farm, training undergone, reason for selecting particular breed, problem in chick supply, total workers employed and problem analysis.

The fifth chapter deals with role of wholesalers and retailers in poultry industry, major customer of wholesaler, method of collecting eggs, method of procuring eggs, egg rate fixation, distribution of eggs, sources of loan, pricing methods and problem of wholesalers.
The sixth chapter deals with income and expenditure analysis and profitability in poultry farming, value of building, loan amount, value of equipment, cost per chick, expenses for first 20 weeks, expenses 21st week to 72nd week, medicine per bird, electricity cost per bird, income per sale of eggs, income from culled birds, income from manure, income from gunny bags and marginal cost statement.

The last and the seventh chapter deals with summary of findings, suggestions and conclusion.