ECONOMICS OF POULTRY FARMING IN NAMAKKAL DISTRICT

SUBMITTED BY

G.SINDHU

(12PEC012)

THESIS SUBMITTED TO THE AVINASHILINGAM INSTITUTE FOR HOME SCIENCE AND HIGHER EDUCATION FOR WOMEN, COIMBATORE- 641 043

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN ECONOMICS

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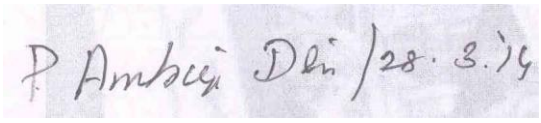
CERTIFIED AS BONAFIDE RESEARCH WORK



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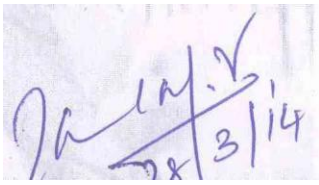

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The investigator Place her deepest sense of gratitude and indebtedness at the feet of **God Almighty.**

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CHAPTER – I

INTRODUCTION

The poultry industry in India has emerged as the most dynamic and rapidly expanding segment of livestock economy as evident from the production level touching about 40 billion eggs and 1 billion broilers with a compound annual growth rate of 8 percent and 15 percent respectively. What was once started as a novelty in the 1970's - egg and broiler production - has now turned out to be a highly organized agri-business. But in spite of all these developments and relatively competitive value of the Indian poultry products (especially egg), the relative position of India in the world trade of poultry products is not so encouraging. Indian poultry industry has been growing at annual varying rates of 8-15percent and this growth in the past few decades made India 4th largest producer of eggs and 5th largest producer of poultry broiler.

At present, the industry is estimated at over Rs 30,000 Crore and is expected to grow over Rs 60,000 Crores by 2010. India produces 1,400 million chickens a year, which is close to 27 million a week, of which 95percent is trade alive. According to a market report the poultry production and consumption in the domestic markets is slated to grow by 66percent to approximately 2.3 million tonnes by 2010. Poultry sector is one of the fastest growing industries of the Indian economy than any other sector contributing about $230 million to the Gross National Product. But in statistical terms the industry has reported a loss of over Rs 4,000 Crore as an aftermath effect of the bird flu crisis. The contribution of the small rural farmers points out the importance of integration of the poultry farming and the allied sector.

Suguna Poultry Farm is the pioneer in poultry integration and contract poultry farming in India, with presence in 9 states and membership of about 15,000 contract farmers. Suguna has set an example of integration and contract farming before the industry and has proved to be beneficial for the company. Integration could be the way forward for the entire industry towards expansion and success. Presently 100precent Foreign Direct Investment (FDI) is permitted in the food processing sector. Also FDI in food retailing, covering dairy, poultry, marine, vegetables and fruits might help the entire food processing industry grow. Poultry farming in India has transformed from a mere tool of supplementary income and nutritious food for the family to the major commercial activity generating the required revenue. The growth of the industry with

steady production of 1,800 million kg of poultry meat, 40 billion eggs per year and employment generation of about 3 million people indicates the future prospects for the industry. Changing food habits, rising income of the middle class people, presence of private players, rising market demand of the Indian poultry produce in the export market are some of the contributing factors to the growth of the industry.

Poultry occupies a unique position in the livestock economy of India. With a vibrant indigenous industry compared to other developing countries, it is the world's fastest growing poultry industry, and one of the fast-growing agri-business activities in India. India occupies 3rd place in the world egg production and is among the twenty top producers in the world in broilers. Indian poultry industry provides direct and indirect employment to over 4 million people, particularly in rural areas, and contributes about Rs.40, 000 Crore to the national GDP. Layers in India have registered an annual compounded growth rate of 7 percent to 8 percent for the past three decades. There are a number of small poultry dressing plants in the country producing dressed chicken. In addition to these plants, there are five modern integrated poultry processing plants producing dressed chicken, chicken cut parts and other chicken products. These plants also manufacture egg powder and frozen egg-yolk for export.

Structure of Poultry Production in India

Poultry farming involves breeding and raising chicks for various purposes. Breeding farms hatch and raise poultry for sale to other farms. Broiler farms rear chickens for their meat, procuring day-old chicks and keeping them for around six weeks. Layer farms keep hens to produce eggs. Integrators keep breeding stock and also operate hatcheries and commercial broiler farms. There are estimated to be around one lakh layer farmers in India and an equal number of broiler farmers. About 70 percent of these are small-scale farmers (3,000-10,000 birds) and medium scale farmers (10,000-50,000 birds). Only 10 percent are large scale farmers with units varying from 50,000 to 4 lakhs birds. Large farms are equipped with significant level of automation. Automation has been introduced in number of steps, such as hygiene and sanitation, disease prevention, and in the case of hatchery operations, to produce a greater number of chicks in a single hatch and to ensure better quality chicks. The whole organized poultry sector uses hybrid varieties of poultry and has adopted cages. The small and marginal

farmers generally operate on the deep litter system. Even though India is the world's fifth largest egg producer and the eighteenth largest producer of broilers, its per capita consumption of these products is poor - 37 eggs and 1 kg of poultry meat per capita per annum. Here, again, there is considerable variation in per capita consumption between rural and urban areas and also across the region. Per capita consumption of eggs is only 7.7 per annum in rural areas compared with 17.8 per annum in urban areas. In seven states, per capita consumption is less than 3.5 per annum. Similarly, per capita consumption of poultry meat is 0.24 kg in rural areas and 1.08 kg in urban areas.

Exports of poultry products from India comprise table eggs, meat, live birds and value-added products such as egg powder and frozen yolk. The value of aggregated exports was Rs. 1,683 million in 1996-97. Exports were expected to reach the level of Rs. 5 billion by the year 2000. Three decades ago, when egg and broiler production was 10 billion and 30 million, respectively, the total employment numbers in the poultry sector were not so encouraging. As income and employment in the crop sector started diminishing, the non-crop sector, which includes dairy and poultry, underwent a significant shift. With the demand for poultry increasing and production reaching 37 billion eggs and 1 billion broilers, this sector now employs around 1.6 million people. At least 80 percent of employment in the poultry sector is generated directly by these farmers, while 20 percent is engaged in feed, pharmaceuticals, equipment and other services required by the poultry sector. Additionally, there may be a similar number of people roughly 1.6 million who are engaged in marketing and other channels servicing the poultry sector.

The structure and costs of production in the Indian poultry meat industry vary from region to region. Production costs in the Southern, Western, and Eastern regions of India are very competitive with those in other countries, including the US. The technical efficiency in poultry in these Indian regions appears to be better than Brazil where the cost of production is the cheapest. Factors driving the industry’s expansion include quick growth in per capita income. The Southern region has the lowest total costs despite facing the highest feed prices (both corn and soybean meal generally must be shipped from greater distances than in the other regions). Day of Old Chick (DOC) costs are lowest in the South, and mortality costs are also lower compared to Eastern and Western regions. The greater cost efficiency in the South stems both from

favourable climate and better management by the integrated poultry operations. Relatively low energy costs for both heating and cooling, hold down other costs in the South. Most of the poultry meat in India is marketed to consumers in the form of live birds- termed as "wet-market", with only a small share of output now marketed as chilled, frozen, or further processed products. The costs of moving live birds, including transport, shrinkage, and mortality costs, severely limit inter-regional movements. As a result, Indian poultry markets are regional, rather than national in scope and there is limited potential for low-cost producers to market their product in higher cost regions. Low poultry prices in South India, largely due to the prevalence of poultry integrators in the region, are reported to have stimulated rapid growth in consumption. Several sources indicate that per capita poultry consumption in South India is about 4 kg, which is about four times the national average.

In South India, Tamil Nadu state is leading in broiler integration in the country which has Coimbatore as a major poultry pocket. The broiler prices in Coimbatore act as a reference price for others to fix the wholesale and retail prices in the neighbouring states. The farm price formation is facilitated by the Broiler Coordination Committee (BCC). The BCC has about 26 members, including integrators and large independent growers; these together account for about 95 per cent of Tamil Nadu's poultry output. Because of the cost and difficulty of assembling large numbers of live birds for auction, the BCC provides an institutional framework through which market forces can operate. Each member has an understanding of the demand conditions prevailing within its market area, its sales volume and the production costs. Based on this market information, members place their votes for a live-bird price by telephone or by FAX every Monday and Thursday. Under the BCC voting system, opinion of the majority rules the rate for the day. The BCC producer price then becomes the benchmark for setting producer, wholesale, and retail prices for markets in the Southern region, including Chennai, whole of Tamil Nadu and Kerala, and to a lesser extent Bangalore. For example, an operator in Coimbatore sets the wholesale price as the BCC price plus Rs 1 per kg and the local retail price are generally the BCC price plus Rs.8-9 per kg. This margin accounts for transport, shrinkage, and mortality costs, plus margins for the wholesaler and retailer. In the more distant Chennai market, the live-bird wholesale price is usually the Coimbatore price plus about Rs.12 per kg to cover these costs and margins.

The BCC also occasionally provides a mechanism for regulating supplies when the regional market faces oversupply conditions. In 2000, when excess supplies were pushing market prices below the cost of production, BCC members agreed to bring 10 per cent of their hatching eggs to a common location to be destroyed. A similar action was taken in the recent Avian Influenza (AI) outbreak in the year 2006 to stabilize chick replacement. However, this mechanism has only worked when prices actually crash. With generally poor market information, it has proved difficult to forecast market conditions, or to convince BCC members of an impending oversupply situation. There is no evidence that the BCC engages in monopoly pricing, judging from the relatively low live-bird prices, retail prices, and margins in Coimbatore compared with other regions. Monopoly pricing seems to be discouraged by the strong price sensitivity of demand for poultry.

In Namakkal district, while the demand for egg and chicken meat is increasingly commendably, poultry farmers here are forced to restrict their expansion processes owing to escalating land and construction costs over the last five years in Namakkal Zone. The Namakkal Zone comprises of nearly 699 poultry farmers who own the 4.01 lakh layer birds (egg laying birds) of which Namakkal district houses nearly 75 percent of the farmers and 81 percent of the total bird strength. But only 40 farmers – 38 in Namakkal and one each in Erode and Annur (Coimbatore) – are expanding this year despite the mounting investments. However of the nearly 30 NECC zones across India, Namakkal takes credit as one of the only two zones in the country – the only other zone is Barwala near Delhi. Farmers in the other zones have frozen their expansion processes owing to similar issues. According to a farmer would have to invest around Rs. 4.5 crore to expand his layer bird strength by one lakh birds, in addition to the investment for lands. Pointing out that the construction cost of sheds increased from Rs. 200 to Rs. 300 in nine years (2000-08) it rocketed from Rs. 300 to Rs. 450 between the years 2009-11. Since the year 2000 the Namakkal NECC zone's targeted annual expansion this year would be the second highest (by 50.82 lakh birds) compared to the average strength of the previous year. The best-ever expansion of the bird strength of this zone was in 2005-06 when the average strength increased to 307.34 lakh – that is 72.85 lakh more than the previous year's strength of 234.49 lakh. But it is said that the massive expansion was before escalation of land and construction costs. The physical performance of poultry farming in the study area shows below the table 1.1.

Table 1.1

Physical Performance of Poultry Farming in Namakkal District

S.No	Name of the Taluk	No. of Farms	No of Birds	Total No. of Eggs Produced by Day	No. of Persons Employed
1.	**Namakkal**	368	2,41,14,776	1,44,68,865	11,040
2.	**Rasipuram**	124	61,70,968	37,02,580	3,720
3.	**Paramithi-Velur**	54	30,21,608	18,12,964	1,620
4.	**Thiruchengode**	150	68,20,500	40,92,300	4,500
Total		**699**	**4,01,27,852**	**2,40,76,709**	**20,880**

Source: District Poultry Development Office

The table shows that, Namakkal district cover the four Taluk namely Namakkal, Rasipuram, Paramithi-Velur and Thiruchengode and the physical performance shows, the total number of farms is 699; the total number of birds 4, 01, 27,852; total number of eggs produced by day 2, 40, 76,709 and the total number of persons employed in poultry farming is 20,880. With this background, the economics of poultry farming in Namakkal district is undertaken to study about the reasons, motivating factors and problems faced by the farmers in the study. The outcome of this study will be immense use to improve the economics performance of poultry farming in Namakkal district.

Objectives

The specific objectives of the study are:

- To study the socio-economic background of the poultry farmers
- To analyze the investment, cost and profit of the farmers
- To find out the reasons for selecting poultry farming
- To examine the motivational factors to locate the poultry farming
- To identify the problems faced by the poultry farmers.

Hypothesis

- Investment is independent of the demographic profile of the poultry farmers
- Reasons for selecting the farming were family business, government encouragement, easy to start the business, necessity / compulsion, availability of raw materials and availability of human resources and demand for egg in the market.
- Motivating factors to adopt the poultry farming were climatic conditions, veterinary hospitals, and availability of raw materials, demand for eggs and cheap labour.
- The major problem faced by the farmers were high feed cost and low egg prices, labour problems, investment, feed and marketing, insufficient power supply.

The findings of the study will be of significance to officials and policy makers to devise strategies to improve the performance of poultry farming processes through getting better prices and market and thereby improving their economic conditions.

REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

Murthy and Bindu Madhuri (2013) observed that Contract Farming has become an increasingly important aspect of agri-business as well as poultry sector in recent years. Poultry farming could play an effective role in improving the economic status of the rural people by increasing their income besides providing nutritious food through meat and eggs. From the farmer's point of view, contractual arrangement can provide them with access to production services, credit as well as knowledge of new technology and moreover pricing arrangements can reduce the risk and uncertainty. Contract farming can act as an effective tool in mitigating risks faced by farmers while marketing broiler produce to final consumer. This paper throws light on how contract farming helps both the parties i.e., the producers and the companies, which are involved in contract farming system. The case study found that the major benefit of contract farming comes from reduction in transaction costs and assurance of regular income for broilers farmers.

Sridharan and Saravanan (2013) pointed out that traditionally an agrarian economy, India suffered hugely due to the ruling of foreign countries, which destroyed the very fabric of this great nation. Also, the truant monsoon did not help the matter and Indian farmers suffered heavily due to either more rain or no rain and were always in the clutches of moneylenders in Indian villages. In the event of rain failure or un-remunerative prices for agricultural produce, farmers had very little to do except borrow heavily, pledging their even marginal lands, thus remaining bonded labourers throughout their life time. Thus, the alternate livelihood, lesser dependence on monsoon, healthy and continuous working conditions made the Indian Poultry Industry a big success story. From a backyard venture, it has made a quantum leap to emerge as a dynamic industry. Over the last 3 decades, there have been significant developments in the poultry industry with each decade focusing on different sectors. The 70's saw a spurt in egg production; the 80's an acceleration of broiler production; the nineties advances in poultry integration, automation and feed production. In the current decade broiler industry is poised to exploit value added products and explore global trade. This research studies explores the various factors which enabled the farmers to enter into poultry farming.

Ohajianya et al., (2013) was carried out to estimate the technical and economic efficiencies of poultry farmers in Imo State, Nigeria. The data was collected with semi-structured questionnaire from 140 randomly selected poultry farmers. A stochastic frontier production function was estimated by using the maximum likelihood estimation technique to obtain the technical and economic efficiencies of poultry farmers. The mean technical efficiency of poultry farmers was 75 percent, while their mean economic efficiency was 21 percent. The generalized likelihood test indicated that, the poultry farmers are not fully technically and economically efficient in resource use. There is 79% allowance to increase economic efficiency of poultry farmers by improvement in technical efficiency.

Gangwar (2013) study has analyzed socio-economic impact of poultry based farming system on farmers for their livelihood security and women empowerment. The analysis was based on the data collected from 95 poultry farmers selected from three hill districts of Kumaon region for two production years, 2011–12 and 2012–13. It has been observed that the farmers' access to day-old chicks (DOCs)/fish seed/fingerlings plays the key role in popularization of integrated poultry-fish farming. The economics of prevailing poultry production systems has been worked out and it has been found that cost on rearing of chicks up to 3–5 weeks is nearly 46 per chick and a small unit of 10–15 birds in backyard poultry gives a net income of 11470/annum. The chicken broilers could be reared successfully by farmers in the remote hills villages. The feed cost has a lion's share (72%), followed by DOCs cost in the total cost. The study has revealed that poultry could be successfully reared in backyard as well as intensive broiler farming. The adoption of integrated poultry-fish farming provides fetch additional income of 4000–5000 and employment opportunities for 45–50 human days. Additionally, the consumption of eggs/fish and meat adds to food quality and livelihood security of the resource-poor family. High costs of feed and chicks have been identified as the major constraints of integrated poultry farming. The study has concluded that the integrated poultry-fish system could address issues of sustainability, women empowerment and livelihood security effectively. The government should offer subsidy on feed and other inputs as incentives to the BPL families for adoption of integrated poultry-cum-fish farming which would lead to women empowerment and livelihood security in the region.

Navadkar et al., (2012) analysed the relative economics of contract and non-contract poultry farms and the problems faced by contract farmers and sponsors [Venkateshwara Hatcheries Group Ltd. (VHGL)]. The data used in the study pertained to the year 2006 and were updated to the current prices. The contracting firm generally preferred middle-aged, educated and experienced farmers having small and medium landholdings, with a fair number of family members from a cluster of villages. Assured price, market, technology and inputs provided by the sponsors are found to be the major motivating forces for adopting contract farming. The net-income per bird has been found to be almost double in contract farming. The resultant output-input ratio over the total cost has been found to be higher in contract farmers (1:18) than in non-contract farmers (1:11). The study has suggested that contract poultry farming should be made more popular by dissemination of its merits.

Mohan raj and Manivannan (2012) observed that Indian poultry industry has been on the continuous growth trajectory in the recent past aided by different contributing factors of national developmental regulations, emerging organized retail industry, government's including export supported by availability of funds for new projects as well as for easy financing for prospective poultry farmers. The industry seems to be breaking out of its conventional cyclical trends and of the different sizes of broilers and eggs. The broilers and eggs segment has exhibited robust growth in production and sales over the last few years. The poultry Industry in India has emerged as the most dynamic and rapidly expanding segment livestock economy as evident from the production level touching about 47 billion eggs and 850 million tons broilers with a compounded annual growth rate of 13% and 15% respectively. Today, India is the 3rd largest egg producer and 4th in broiler production in the world. The poultry industry is one of the fastest growing sectors in the country. Poultry industry has taken 50 years to reach its present status in India. There was no technical know -how available to start with. The poultry farmer and veterinarian have taken lot of strain to bring the poultry industries to the present status to produce cheap poultry meat and other product as a source of animal protein.

NurudeenAyoyinkaJatto (2012) analyzed the economics and social characteristics of registered poultry egg producers in Ilorin, Kwara State. Primary data was used for the study. The data was collected using structured questionnaires administered to 150 stratified sampled registered poultry egg producer. Both descriptive and gross margin analysis were employed to analyze the data. Socio-economic analyses revealed that 68.7% of the poultry egg farmers were males with a mean age of 40 years and 78% having tertiary education with a mean year of poultry experience of 7years. 76.7% were married with a mean family size of 4. Majority (53.3%) of the farmers were civil servant with a mean farm size of 334 number of birds and 50% of the farmers have been participating in cooperative society for over 6 to 10 years with majority (84.7%) having no extension contact. The gross margin calculated shows that the farms had an average margin of N 3,652 per bird per year and the net average revenue of N 3,024 per bird per year showing that poultry egg production is profitable. It was recommended that government should endeavour to subsidize inputs such as feed ingredients and this can be achieved through poultry farmer's participation in crop production.

Mohamed M. Sirdar et al., (2012) examined an initial census of layer farms in Khartoum State, Sudan, carried out in late 2007 and early 2008 and found that there were 252 layer farms with a total population of 2 221 800 birds. This paper reports the findings of the census. Based on this information, a structured questionnaire survey of 92 farms was then conducted in the state in April 2008 to collect data on antibiotic usage, demographic data and public health awareness. Ninety-eight per cent of participating farms comprised open-sided houses. It was found that 49% of the farms surveyed were on antibiotic treatment when the survey was conducted, whilst 59% of the farms had used antibiotics within the last 3 months. The study found that farmers and producers had lack of knowledge about antimicrobial residues, their withdrawal periods and the risk posed by the consumption of these residues. The study also concluded that traditional farming systems in Sudan relied heavily on antimicrobial medication to control disease and almost half of the farms surveyed were treating their flocks with antimicrobials. In addition to this, there was a lack of disease control programmes which probably resulted in a massive use of antibiotics to control endemic diseases. This was further compounded by the absence of governmental supervision and control on the use of drugs.

Shaikh and Y.C. Zala (2011) examined the production performance of different sizes of broiler farms by collecting data from 60 broiler producers in Anand district during 2005. To examine production performance, the average feed conversion ratio, liveability percentage, average body weight and age at marketing have been worked out. Though broiler production is capital-intensive, it was found to be profitable. The average cost of production per broiler has been found to be 64 and per kilogram live weight of broiler as 32. The variable cost and fixed cost constitute 84.5 per cent and 15.5 per cent of total cost, respectively. The major cost components have been found as feed cost (58.6%), chick cost (21.5%) and depreciation on buildings (10.7%). The net profit per broiler as well as per kilogram body weight has been found as 7.20 and 3.59, respectively for the sample as a whole. The benefit-cost ratio has worked out to be 1.11 for the sample as a whole and it increases with increase in farm-size, indicating that as farm-size increases, the net margin over the rupee invested on broilers also increases. The break-even analysis has revealed that the producers have to maintain minimum of 1531, 2611 and 10437 broilers, respectively on small, medium and large farms to meet the cost incurred in production of broilers.

C.F. Hamra (2010) observed that Poultry farms, mainly chicken farms producing meat or eggs, can be highly specialized operations. To maximize profits and plan future enterprise activities, a feasibility analysis prior to investment and proper management during the operation are required. Proper management ensures efficient production and good quality products (meat or eggs). This is accomplished by controlling diseases, maintaining feed efficiency, proper handling of wastes, and proper sanitizing of the poultry house. Due to short turnover rates of poultry flocks and strong market demand, the poultry business could potentially be a profitable enterprise. Their study details a profitability analysis on a flock of broilers raised for the purpose of meat production. A farm and its facilities were rented to grow and finish the flock for market delivery. The farm was located in South Lebanon, in the Marjoyoun Valley and was rented on a lump sum basis. Production (input) costs and sales (output) prices were used to determine the feasibility of growing broilers in the region. The flock was introduced into the poultry house on November 11th, 2009 and was managed until it reached the slaughtering phase, as per market requirements, on December 20th, 2009. The total production cost was $10,479 (including rental cost, labour salaries, electric cost, and other miscellaneous costs). Because the farm used in this

study was rented, depreciation expenses on the buildings and equipment were not considered in the feasibility analysis. The flock produced 4,428 kg of meat at a market selling price of $3.10/kg of meat. Thus, total sales were $13,726.80 (USD), resulting in a net profit of $3,247.80 (USD). Depending on the location of the poultry farm and the owner's experience and facilities, profitability may vary. Market prices of chicks, meat, and feed vary and these variations can affect enterprise profitability. Examining input and output price trends from 2007 through 2009 revealed the following insights. When the price per kg of meat goes down, feed costs tend to decrease (compensating for the low meat price). When the price per chick increases, the price per kg of meat also tends to increase, thus compensating for the increased cost per chick. Since price variations are critical factors in determining future profitability. Statistical forecasting techniques were used to set a range of price expectations for the year 2010 so that sensitivity analysis could be performed. Sensitivity analysis was used to test the robustness of this feasibility study under several different pricing scenarios. This analysis showed that the operation is predicted to be profitable, or at least break even, at all the forecasted extremes of input and output prices including low meat prices coupled with high feed and chick costs.

Varinder Pal Singh et al., (2010) analysed the cost and returns of different sizes of broiler farms in the Punjab state based on the primary data collected from 140 broiler farmers for the period March 2008 to February 2009 in three districts, viz. Ludhiana, Hoshiarpur and Muktsar. The study has shown that the total fixed investments per bird have been highest on small farms, followed by medium and large farms. The total variable cost per bird has been reported highest on small farms, followed by medium and large farms. The total cost of meat production per bird has been found highest on small broiler farms, followed by medium and large farms. The net returns per bird over the variable costs have been recorded highest on large farms as economics of scale prevails on these farms. The meat-feed price ratio and benefit-cost ratio have been found to increase with increase in farm-size of broiler farms, which indicates better utilization of inputs on large farms. On the basis of net present value, benefit-cost ratio and internal rate of return, investment in broiler farming has been found profitable in all farm-sizes. It being most profitable on large farms, followed by medium and small farms. The small broiler farms have been observed highly sensitive to increase in costs and decrease in net returns. The

study observed that broiler farming was profitable venture and has a bright future in the Punjab agriculture for improving economic status of the farming community

Gangwar et al., (2010) analysed the marketing of broilers/chicken meat in the National Capital Region (NCR) Delhi in two distinct kinds of markets, viz. organized (shopping malls, organized multi-product retailers) and unorganized or primarily wet markets (exclusive chicken dressers, poultry meat retailers, etc.). Data have been collected from various functionaries involved in marketing of broilers/poultry meat in the NCR Delhi during the year 2008–09 through primary survey. The most prominent channel in the unorganized broiler market has been found as: Producer-Wholesaler- Dresser-cum-Retailers –Consumer, whereas the same in the organized market as Producer - Commission agent- Supplier-Distributor- Shopping Malls/Hotels/Retailer-Consumer. The marketing cost, marketing margins, price spread and producers' share in consumers' rupee, in the most efficient unorganized marketing channel have been found as Rs 10480, Rs 30220, Rs 40700 per tonne (live wt. basis) and 62 per cent, respectively, whereas the corresponding figures in the most efficient organized marketing channel were Rs 12750, Rs 76350, Rs 88500 per tonne and 43 per cent. The wholesale regulated poultry market at Ghazipur was the key supply centre for chicken in the NCR Delhi. The average daily arrival in the poultry market has been found to be over one lakh broilers accounting for about 50 per cent sales in Delhi. Over 70 per cent of the broilers at Ghazipur Poultry Market are manually dressed. The manual poultry processing has provided direct employment to nearly 5000 workers. The manual dressing of broilers has resulted in value addition of about 50 per cent on live weight basis and production of over 20 chicken meat products/by-products. The study has also assessed the pros and cons of manual dressing of broilers vis-à-vis mechanical processing and has estimated the cost of processing in the two systems. It has been observed that manual dressing of broilers was not only cheaper but also provides employment and livelihood to a large number of illiterate and/or semi-skilled workers. Hence, the study suggested improving and organizing the manual dressing system so that the qualitative aspects and concerns about health and hygiene could also be addressed. Erratic power supply, long power cuts, lack of refrigerated transportation facility, poor monitoring of food safety and quality norms in manual processing, rampant corruption in transportation of live chickens, etc. have been identified as the major constraints in marketing of broilers/chicken meat in the NCR Delhi.

Kalamkar (2010) study has covered value chain, food security and poverty alleviation aspects of poultry which is one of the fastest growing segments of the agricultural sector in India. Poultry farming in India has changed dramatically over the past two decades. It has moved into a well-organized network of integrated farming also known as contract farming. However, in many parts of the country, poultry value chains are still not fully developed, leading to high costs and inefficiencies. There has been a significant change in the ownership and size of backyard poultry within the past decade and poultry distribution is more skewed towards small farm households. There has been a significant increase in the consumption of poultry products during past two decades; however, per capita consumption of poultry products is poor as compared to the recommended balanced diet. The growth of the poultry sector can contribute to enhanced nutrition and food security in India, particularly for the rural poor. The study observed that the promotion of backyard poultry farming is essential as it continues to remain important for rural households, ensuring a steady flow of quality food and cash income and reducing their vulnerability. The study observed that developing the entire poultry chain will require large investments in improving the yields of feed ingredients; building large scale feed mills; investing in breed and health care research; improving hatching facilities; and setting up better transport and storage infrastructure. It is also necessary to attract large and integrated players who, along with farmers would invest in building different elements of the value chain in poultry.

Reddy et al., (2010) estimated the increasing number of companies in contract farming, especially in the poultry sector and the awareness among the farming community about the contract production and marketing which was helping in improving the living standards of the farmers and their overall development by not remaining mainly dependent on agriculture. The study has explored the new institutional and innovation methods adopted by the producers involved in contract and non-contract farming and how these methods help in reducing the overall transaction and marketing costs for the producers and in turn, help in getting more profits by increasing the total body mass by increasing the FCR (feed conversion ratio). This case has tried to highlight the advantages (marketing of the produce, price incentives in case of fluctuations) a producer can get by entering into the contract with a major company. The case study has also highlighted the drawbacks and disadvantages it has in both contract and non-contract farming.

Bera et al., (2010) pointed out that Coccidiosis is an old parasitic disease, prevalent all over the country and has a significant impact on poultry production. In their paper, economic loss to poultry industry has been estimated considering the major economic parameters. The estimation has revealed that commercial broiler industry is a major sufferer due to Coccidiosis wherein 95.61 per cent of the total economic loss occurs due to the disease. The commercial layer industry shares 3.53 per cent economic loss, mainly due to cost of chemoprophylaxis and reduced egg production. A comparison across economic traits has revealed that loss is maximum due to reduced body weight gain, followed by increased FCR (23.74%) and chemoprophylaxis (2.83%) in the total loss due to Coccidiosis in broiler industry of India. The overall comparison of economic traits for all the types of poultry sector has shown that reduced body wt gain and increased FCR are the major parameters from which 68.08 per cent and 22.70 per cent annual loss has occurred in the total loss from Coccidiosis in India during the year 2003–04. The total loss due to Coccidiosis has been found to be of Rs 1.14 billion (approx) for the year 2003–04. The study has observed that generation of this data across different geographical regions will be helpful to conclude about the global economic loss due to Coccidiosis in the poultry industry.

Taru et al., (2010) examined the economics of broiler production in Meme Division of Cameroon. The specific objectives of the research were to determine the efficiency of resource use in broiler production. Primary data were collected from a sample of 116 broiler farmers using a multi-stage random sampling method. The data were analysed using regression model. Marginal analysis of input shows that the farmers were inefficient in their production practices as indicated by the ratio of marginal value product (MVP) and marginal factor cost (MFC). The ratio revealed the over utilization of chicks, feed and labour. Major problems facing broiler producers were low market prices, high cost of feed, veterinary services, transportation, lack of access to credit and extension services.

Pica-Ciamarra and J. Otte (2009) reviews the major pathways through which poultry sector growth can contribute to improved nutrition and poverty reduction in India, including direct benefits from poultry farming, employment generation along the poultry value chain, and consumption of poultry meat and eggs. Poultry farming and full (or part) time employment along the supply chain only represent a path out of poverty for a limited number of households, whereas increased availability and affordability of poultry meat and eggs for both rural and urban

poor, which are mostly net buyers of food, is the most effective way through which poultry sector development can contribute to improved nutrition (and poverty reduction). Public investments in support of backyard poultry farming development remain important for enhancing nutritional status and reducing vulnerability of many rural households. The promotion of selected small-scale market-oriented poultry units in rural areas is expected to contribute to improved nutrition and rural economic growth through increased supply and lower prices of animal proteins and second round productivity and employment effects. Large-scale commercial poultry integrators have comparative and competitive advantages in providing urban consumers, many of whom also live below the poverty line, with affordably-priced poultry meat and eggs.

Kiran and Atchyuta Rao (2009) studied Poultry industry is the fastest growing sector of India's agriculture. To get the full impact of its rapid escalation, it would be interesting to trace the evolution of poultry development in India. In the absence of any perceptible increase in labour absorption capacity by the industrial sector, the future remains bleak with regard to rural employment position. Poultry keeping, apart from providing subsidiary income and employment, can also contribute in mitigating the problem of malnutrition in the country.

Sarfraz Ahmad et al., (2008) their study based on primary data collected from 60 poultry farms in Mirpur district, Azad Jammu & Kashmir (AJK). Farms were categorized as: small farms having a population of 2000 birds; medium farms having a population of 2001 to 4000 birds; and, large farms with population of 4001 to 6000 birds. Results indicate that this business was adopted as major source of income; however, most of the commercial poultry farms have been closed due to lesser profits and even heavy losses during last few years. Majority of poultry farms (83 %) are small farms and the farmers are forced to rely on non-institutional source of credit. Seasonal and cyclical price fluctuations in input and output are found to be higher. Poultry producers are major stakeholders having no role in price fixation. The estimated input output ratio of poultry production is 1:1.12. The per rupee return does not look promising for investors of this sector especially in case of small farmers who are unable to reap the benefit of economy of scale.

James M. MacDonald (2008) found that broiler production in the United States was coordinated almost entirely through systems of production contracts, in which a grower's compensation was based, in part, on how the grower's performance compares with that of other growers. The industry is undergoing a gradual structural change as production shifts to larger broiler enterprises that provide larger shares of an operator's household income. Larger enterprises require substantially larger investments in broiler housing, and new or retrofitted houses are also an important source of productivity growth in the industry. This report, based on a large and representative survey of broiler operations, describes the industry's organization, housing features, contract design, fees and enterprise cost structures, and farm and household finances.

Olasunkanmi Bamiro (2008), focuses on the economic performance of the commercial poultry farms in some selected Local Government areas of Oyo State, Nigeria. Data was collected from 71 farmers using purposive sampling technique. The result of the study shows that the profitability of poultry enterprise is a function of enterprise combination as well as scale of production. The budgetary analysis shows that in all enterprise combinations, farmers that operate on large scale have highest gross margins. On the basis of enterprise combinations, the egg production enterprise records the highest gross margin while the broiler production enterprise records the lowest gross margin. The regression analysis shows that flock size, feed, and labour have significant positive effects on the value of output while interaction between layers and broilers has negative impact on the value of output. In the allocation of all the variable inputs the poultry farmers are not efficient.

Nasurudeen P et al., (2007) assessed the performance and prospects of poultry sector in India. The share of four southern states, viz. Andhra Pradesh, Tamil Nadu, Karnataka and Kerala, which was about 37 per cent of production in 1992, has increased to about 46 per cent in 2003. Poultry meat has shown an increasing rate in production of about 10.11 percent, though with high instability. The rural-urban differential in expenditure on meat, fish and eggs has been found to narrow down. Maize alone has accounted for about 50 per cent of the feed rations and the important issue is low productivity. With the exception of live poultry, all other categories of exports have witnessed a reasonable growth in the post-WTO period. One inherent characteristic of poultry exports is the high instability in all the periods, though it declined during the 1990s

and the post-WTO period. The development of poultry value chain through investments, starting from production of maize and soybean to distribution and retailing of poultry products in national and international markets need to be initiated for the sustainable growth of this sector.

Abedullah et al., (2007) pointed out that the major contribution of poultry consumption in improving per capita nutrients level is well documented. Further improvement would be possible by lowering the prices at the consumer level and by improving the profitability of producers. First the study highlighted the major problems in poultry production and then focused to estimate the percentage share of different stake holders in total profitability from poultry industry because inequitable distribution of profit share was assumed to be one of the major obstacle in the expansion of poultry industry. Our results demonstrated that commission agents were earning 47% of the total profit in poultry industry, followed by retailers (28%) and producers (25%). This indicates that it would be impossible to improve the contribution of poultry in total nutrients uptake of human beings in the country without reversing the trends in profit share.

Kumar B. Ganesh and Rai (2006) analyzed resource investment pattern and cost and returns structure of poultry farms and various performance efficiency measures have been outlined in commercial poultry farming in the Andaman and Nicobar Islands for the year 2003–04. The study is based on data obtained from about 60 broiler farms and two commercial layer farms on their inputs used and outputs, investment required for purchasing of land, construction of poultry sheds, procuring of equipment and fencing. The overall total fixed costs have been was found to be 5.49 per cent, 7.38 per cent and 4.15 per cent of the total cost for small, medium and large farms, respectively, while the total variable costs have accounted for 95.51 per cent, 92.62 per cent and 95.85 per cent, respectively. The costs on feed and chick have been the main components of variable cost. The cost of production of broilers has been found as Rs 68.84, Rs 65.85 and Rs 63.07 and the net return per bird as Rs 8.36, Rs 11.35 and Rs 14.13 for small, medium and large farms, respectively. The feed conversion ratio decreased with increase in batch size, while the meat-feed price ratio and the benefit cost ratio increased with increase in batch size, indicating the operation of economies of scale in the broiler farming. In layer farming, 89.11 per cent of the total investment is incurred on construction of buildings, cages, plumbing, feeding system etc. The fixed cost has been observed as 15.05 per cent and the variable cost as

84.95 per cent of the total cost. The cost of production of the egg has been found to be Rs. 1.86. The overall feed conversion ratio decreased, while egg-feed price ratio and benefit cost ratio increased with increase in batch size, indicating economies of scale in layer farming.

Apantaku (2006) study was to analyze participation of farmers in participatory poultry research (PPR) in Lagos State, Nigeria. The sample selected through a combination of purposive and random sampling, included 20 poultry researchers and 100 poultry farmers. Data were collected through a structured interview schedule and questionnaire, and analyzed by descriptive statistics and chi-square. The study concluded that there are too few elements of farmer-researcher participatory poultry research (PPR) in Lagos State, farmers are more involved in contract and consultative participation than collaborative and collegiate, even though farmers' participation in all of them is very low and the level of use of PPR by researchers is very low. However, both farmers and researchers are highly willing to participate in and use PPR if the enabling environment and conditions are right. The constraints that militate against the use of PPR by researchers are inadequate motivation of researchers to use PPR by their organizations, the need for extra fund to execute PPR and inadequate skills and knowledge of researchers in using PPR. It is recommended that research institutes and universities should design and implement policies and programmes aimed at encouraging and motivating researchers in using PPR. Research institutes in collaboration with extension agencies should conduct training and workshops for farmers to build and increase their capacities, skills and knowledge to actively participate in PPR.

Czech Conroy (2005) investigated the production problems facing backyard poultry-keepers in two locations in rural India, Udaipur District in Rajasthan and Trichy District in Tamil Nadu, and seeking to work with poultry-keepers to address some of them. Backyard poultry-keeping is a significant livelihood activity for many poor rural families in India and for women in particular. A baseline survey of 90 backyard poultry-keepers provided a general overview of socio-economic factors, practices and constraints. Serious problems were identified in both locations, and particularly in the Udaipur villages, with high mortality rates in chickens and poor hatchability rates. In both locations the project found that for the period under investigation predation was a more important cause of mortality than disease. On-farm trials to improve hatchability rates found technologies based on locally available materials to be effective. A

survey of the poultry-keepers' agricultural knowledge and information systems identified their main sources of information and the most useful media for reaching them.

Prabhu et al., (2005) studied the broad changes taking place in agri-food systems worldwide. The paper examined the comparative profitability of poultry production in vertically integrated contract and independent farming systems in Bangladesh. With effective management, vertically integrated CF system was a means to develop markets and to bring about the transfer of technical skill in a way of increasing productivity that was profitable for both integrators and farmers. The primary data were collected from 50 sample farms of Aftab Bahumukhi Farm Ltd (ABFL) Kishorganj, the pioneer vertically integrated farm, and 25 independent sample farms from Gajipur. Although the independent farmer was able to take advantage of the increase in the price of broilers in the market resulting in a higher price per bird as compared with the contract farmers, the latter were still better off in their net return or profit.

Maurice Landes et al., (2004) analysed poultry meat is the fastest growing component of global meet demand. India, the world's second largest developing country, is contributing to the expansion through the rapid growth of its poultry sector. In India, poultry sector growth is being driven by rising incomes, together with the emergence of vertically integrated poultry producers that have reduced consumer prices by lowering production and marketing costs. Integrated production, a market transition from live birds to chilled and frozen products, and policies that help ensure supplies of competitively priced domestic or imported corn and soybeans are keys to future poultry industry growth in India and in other developing countries.

Samarendu Mohanty and K. Rajendran (2003) conducted to estimate the demand for egg and poultry meat for India in 2020. Income elasticities were calculated separately for urban and rural areas using National Sample Survey (NSS) data and were used to project demand for each of the five income groups within urban and rural areas. The results revealed a relatively strong growth for egg and poultry meat both in the urban and rural areas in the next two decades. Egg consumption was found to grow at a much faster pace than poultry meat with the rise in income and nearly tripling by 2020. Similarly, average per capita poultry meat consumption was found to increase from 0.69 to 1.28 kilograms during the same period. Overall, the study reports the total egg consumption to increase from 34 billion in 2000 to

106 billion in 2020 and total poultry meat consumption to increase from 687 million kilograms to 1,674 million kilograms during the same time period.

Costales et al., (2003) observed that contracts somewhat differed across countries and commodities. Forward-price contracts for Indian broilers were more informal than in Philippines, who were in turn more informal than in Brazil. Nevertheless, contracting addressed the same general issues in each country; but is useful for understanding the institutions of the other countries studied. They observed that there were two main types of contracts: fee (or wage) contracts (by animal or by weight) and forward-price contracts (guaranteed or/and with profit-sharing). These contracts were mostly issued by the large multi-national or national integrators; the scale of these contracts was generally around a commercial scale of operations (10,000 birds or more for broilers; 200 heads of fatteners or more for hogs). There were, however, fee contracts that covered as low as 6,000 birds in the Philippines and 4,000 in Southern India. For veterinary services, while qualitative choice models were better suited to the analysis of determinants behind the choices of farmers, the authors concluded that an urgent need existed for empirical research in this area.

Taha (2003) reported that the per capita poultry meat consumption during 1961-2000 in middle-income group countries grew by 635 per cent compared with 370 per cent in high-income countries and 201 per cent in low-income countries. The high share of chicken meat was attributed to its relatively low cost compared to other meat and wider acceptance by consumers without any religious stigma and perceived health benefits.

Rick (2002) while studying the strategies to manage expensive feed on farm reported that in order to measure broiler performance the returns (profits) ought to be used rather than performance or costs. The author suggested alternative way of measuring profits in terms of margin over total costs. Further, he demonstrated that the length of grow-out period and down time significantly influenced the number of broiler cycles per year. A 38-day cycle length with an 11 day clean out would lead to an extra crop per year. The alternative to commonly used profitability (per kg body weight) was to calculate unit profitability by using the formula [(Income from bird-All costs)/m2]/cycle length. He demonstrated the application of this concept in measuring broiler performance. The paper has illustrated the effect of changes in broilers on-

farm performance and the producer strategies to continue to be in profitable business in times of falling feed price ratio.

Iqbal Uddin (1996) opined that in most of the poultry pockets in India, the marketing is still in the control of private traders. Fluctuation in the prices of poultry products is one of the main constraints for attracting investment in the sector. Market Intervention Scheme (MIS) for procurement of eggs in Andhra Pradesh, Tamil Nadu, Punjab, Haryana, Madhya Pradesh and Rajasthan by NAFED has shown encouraging results though the magnitude of operation was very small.

Seetharaman (1996) studied the pattern of poultry development. He observed that out of 9 states with well-developed poultry industry, only in two states, i.e., in Gujarat and Maharashtra, the poultry cooperatives were doing well. He recommended that poultry cooperatives have to be extended in all the poultry producing states.

Bhardwaj et al. (1995) in the study of cost behaviour and marketing margins of broilers observed that cost of raising broilers varies according to the size of poultry farms. In marketing broilers, the retailers earn maximum profits whereas the producers could earn profit only half of that of retailer. Bhardwaj et al. (1996), in the study of broilers in Haryana, concluded that the supply of broiler was affected by the mortality and culling rates of broilers, which are governed by age of birds and size of poultry farms. The depletion rate decreases as the size of poultry farm increases. The study further showed that the marketing practices were influenced by the size of farms and seasons.

Goodwin et al., (2005) studied 16 poultry production complexes; comprised of 150 to 200 family farms each, in Arkansas, Missouri, and Oklahoma states. The data on costs and returns were obtained for these complexes for three different periods, viz., 1979, 1989, and 1999. The housing and equipment costs per square foot had increased from $3.40 in 1979 to $6.25 in 1999. Contract payments to contract growers in the 16 complexes had increased from $0.0320/lb in 1979 to an average of $0.0465/lb in 1999. The gross revenue per square foot figures in real terms (adjusted for inflation over the period) and expressed in 1999-dollar equivalents were $1.69 in 1979 and $1.62 in 1999. Normally, birds weighing 5.03lb were

grown with an average density of 0.765 ft2/ bird (4 flocks at 0.75 ft2/bird and 2 summer flocks at 0.8 ft2/bird). The broiler contract production with and without family labour was profitable as revealed by the net cash flow. Regarding efficiency, the net farm income ratio was calculated as net farm income before income taxes divided by gross revenue. Net farm income ratios for the 2 scenarios were 0.07 and 0.16, 0.23 and 0.34, and 0.32 and 0.44 in years 1, 11, and 21. Based upon past performance, the existence of green contracts assuring purchase of broilers by the contract integrator and the collateral provided by land and associated assets, most lending institutions view contract broiler production loans favorably as a good investment opportunity for their particular institution.

Headley (1964) estimated the production functions for egg laying flocks of hybrid and leghorn hens, raised at Iowa state farms. The regression analysis indicated that flock size, housing area, corn equivalent labour and protein equivalents were significantly contributing the gross returns. Hunter (1981) studied the economic aspects of egg production on Australian poultry farms. The study revealed that feed costs occupy a major share of total cost of production of eggs, followed by cost of chicks and labour.

Pandey et al. (1996a) studied the status of poultry production in India and also analysed the behaviour of production cost of poultry products in the selected areas. This study shows that Poultry had become a vital component of the farm economy as it generates additional income and employment in the rural area. The cost estimates revealed that feed alone accounts for about two-thirds of the total cost. The study concluded that availability of feed at reasonable prices would provide an incentive to the producers for more poultry production.

Pandey et al. (1996b) examined that development of poultry was adversely affected by wide fluctuations in the demand. The study showed that rise in price of eggs was comparatively lower than the rise in prices of milk, food article and all commodities during the period of 1982-94. The production and disposal of eggs at poultry farms revealed that more than 98 percent of eggs are sold for profit. The main marketing agents were identified as wholesale dealer and contractors in the study.

Begum (2005a) evaluated the comparative per bird profitability of vertically integrated contract and independent poultry farming systems in Bangladesh. A sample size of 50 farms was randomly chosen out of 560 contract-growing farmers. The farmers were categorized according to their poultry farm sizes as Small farmers (average flock size of 1200 birds), Medium farmers (average flock size ranging from 1201 up to 2000 birds), and Large farmers (average flock size of more than 2001 birds). Thus a total of 18 small, 25 medium and 7 large farms were selected. The per bird net return of the CF was more than 1.7 times that of the independent farm. Rate of return also indicated that the contract farm was more profitable than the independent farm. The higher productivity of CF system may be due to transfer of know-how from integrators to growers. The profitability of CF for a vertically integrated firm depended, to a large extent, on the firm's pre-fixed contract price and its contract enforcement costs.

CHAPTER III

METHODOLOGY

The methodology adopted in the current study is discussed under the following heads:-

3.1 Locale of the study

3.2 Selection of sample

3.3 Data base of the study

3.4 Techniques of analysis

3.5 Limitations of the study

3.1 Locale of the study

Namakkal District is an administrative district in the state of Tamil Nadu, India. The district was bifurcated from Salem District with Namakkal town as Head Quarters on 25-07-1996 and started to function independently from 01-01-1997. The district has 4 Taluks (subdivisions);Tiruchengode, Namakkal, Rasipuram, Velur and Kolli Hills(in descending order of population) and has two Revenue Divisions; Namakkal and Thiruchengode. It was ranked second in a comprehensive Economic Environment index ranking of districts in Tamil Nadu not including Chennai prepared by Institute for Financial Management and Research in August 2009. It was major source of Tamil Nadu Economy

Namakkal district is bounded by Salem district on the north; on the east by Attur Taluk of Salem district, Perambalur and Tiruchirapalli District's; by Paramathi velur on the south and on the west by Erode district Namakkal District comes under the North Western Agro climatic zone of Tamil Nadu. It is situated in the dividing portion of two watersheds between Cauvery and the Vellar System with the Taluks of Attur, Rasipuram and Namakkal on the East and Salem, Omalur and Mettur on the West. Thiruchengode Taluk alone is placed under Western Agro-climatic zone. Besides the above two zones, Kolli and a few isolated hills and ridges are scattered over Namakkal, Rasipuram and Thiruchengode and along with the valleys and rolling hills, make up the characteristic topography of the district. According to the 2011 census Namakkal district has a population of 1,721,179 roughly equal to the nation of The Gambia or the US state of Nebraska. This gives it a ranking of 282nd in India (out of a total

of 640). The district has a population density of 506 inhabitants per square kilometer (1,310 /sq. mi). Its population growth rate over the decade 2001-2011 was 15.25%. Namakkal has a sex ratio of 986 females for every 1000 males and a literacy rate of 74.92%. It is 36.51% urbanised as per Census 2001. The literacy level of Namakkal district according to figures available for the year 1996 is 48.97% with male literacy level being more than the female literacy level. It is also observed while the male literacy level has grown steadily from 51.85% in 1981 to 57.61% in 1996, there has been a significant increase of female literacy level from 27.51% in 1981 to 39.89% in 1996. The main occupation in the district is agriculture. The cultivation generally depends on monsoon rains, wells and tanks. Nearly 90 percent of the cultivated area is under food crops.

The principal cereal crops of this district are paddy, cholam, cumbu and ragi. Panivaragu, Kuthianally, SamaiVaragu and Thinai are some of the millets cultivated. Among pulses, the major crops are redgram, blackgram, greengram and horsegram. Among oil seeds groundnut, castor and gingelly (sesame) occupy important places. Of the commercial crops, sugarcane, cotton and tapioca are some of the important crops. Tapioca is used for the manufacture of sago. Namakkal district is noted for Truck and Lorry external body building which dates back to 1956. Throughout India Thiruchengode is known for its Body Building industry for Trucks, Trailers, Tankers and Rig Unit. Finished trucks and Rig Units are even exported to foreign countries from Namakkal. Nearly 25000 people are employed both directly and indirectly in truck body building activity and about 300 units in Namakkal and 100 Units in Thiruchengode are engaged in this activity.

Poultry development has been rather phenomenal in the district of Namakkal. The district is also well known for its poultry and dairy industries, accounting for a bulk of supply of poultry products to neighbouring industries. In fact, Namakkal produces about 65% of the egg output of Tamil Nadu.

Transport is the major field of work in Namakkal; large number of bulk carriers and Lorries run through all over India from Namakkal. In south India 80% bulk carriers operatedfromhere,Itcovers TamilNadu, Puducherry, AndhraPradesh, Karnataka, Goa, Kerala, Ma harashtra and other states. A lot of lorry (truck) body building workshops are located in

Namakkal. Egg production in this district is large, so transport facilities are good. It is the main Centre for linking other districts via bus routes especially to the North side (Salem, Villupuram, Dharmapuri, Krishnagiri, Bangalore), East side (Tiruchirapalli, Thanjavur), South side (Karur, Dindugal, Madurai, Tiunelveli, Kanyakumari) and the West side (Erode, Coimbatore, Tirupur, Udhagamandalam (Ooty)).

India carves a niche in the poultry industry of the world by securing third and fifth place in global chicken egg and broiler production respectively. Among its states, Tamilnadu holds the lion share by being second in the country's egg production and fourth in broiler production. India produces 11680 million eggs and 250 million broilers per annum. Namakkal the egg town has an area around 200 sq.km glisten well by contributing 80 percent to the egg production and also to a cognizable level in broiler production. Less seen birds like quail, emu and turkey are reared more in number in farms in this area. Thus, this area alone has an overall daily turnover of Rs. 170 to Rs. 200 million (US$ 3.4 to 4.0 million) from poultry industry. In this context, a micro level study assumes immense significance to assess the economic conditions of poultry farmers in Namakkal district.

3.2 Selection of sample

The sample for the current study was collected from Namakkal district. Among the poultry farming community 120 samples were selected by adopting purposive sampling since all the farmers were not mentally prepared to respond to the questionnaires.

3.3 Data base of the study

A well-structured questionnaire was prepared and to check for internal consistency and adequacy of information pre-tested. After incorporating the necessary changes in the pre-tested questionnaire, it was administered to the selected respondents and required information was collected from the respondents during November 2013 to the January 2014. The finalized questionnaire used in the study is given in Annexure-I.

3.4 Techniques of analysis

Besides averages, percentages and graphs, the following techniques were applied

3.4.1 Chi-square test

The χ^2 test is one of the simplest and most widely used non-parametric tests in statistics. The quantity χ^2 describes the magnitude of the discrepancy between theory and observation and is symbolized as:

$$\chi^2 = \frac{\Sigma (O-E)^2}{E}$$

Where O refers to observed frequency and E refers to expected frequency.

In the present study, Chi-square test was applied to find the association between the level of investment with demographic factors like age, education, household, experience, occupation and monthly income.

3.4.2 Discriminant Analysis

Discriminant analysis involves deriving a variate. The discriminant variate is the linear combination of the two (or more) independent variables that will discriminate best between the objects (persons, firms, etc.) in the groups defined a priori. Discrimination is achieved by calculating the variate's weights for each independent variable to maximize the differences between the groups (i.e., the between group variance relative to the within group variance). The variate for a discriminant analysis, also known as the discriminant function, is derived from an equation much like that seen in multiple regressions. It takes the following form:

$Z_{jk} = a + W_1X_{1k} + W_2X_{2k} + \ldots + W_nX_{ik}$

Z_{jk} = discriminant Z score of discriminant function j for object k

a = intercept

W_i= discriminant coefficient for independent variable i (i = 1, 2…n)

X_{ik} = independent variable i for object k

Discriminant analysis was used to identify the variables that distinguish the low profit farming from that of high profit farming. The first group consisted of those respondents who were having low level of profit while the second group consisted of those having high level of profit. The economic conditions of poultry farming were hypothesized to be a function of investment, age, experience, educational status, cost, occupation and monthly income. The analysis was done at the macro level (i.e.) for all the respondents irrespective of farming.

3.4.3 Garrett's Rating Scale

To find out the strength of factors ranked by the selected sample groups in relation to poultry farming, Garrett's rating scale technique was used. From the ranks given for each factor, percent positions were calculated by using the formula.

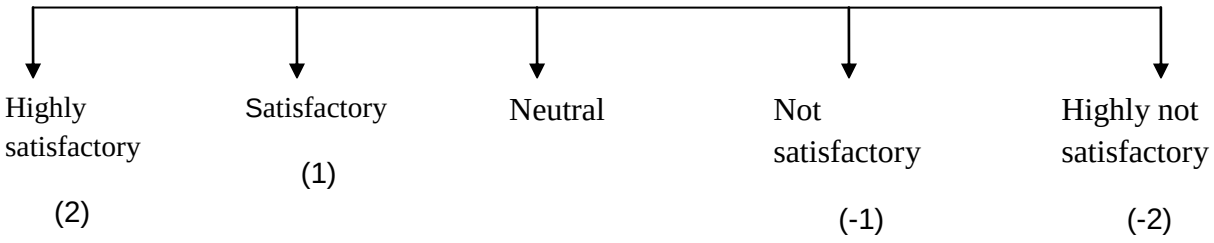
Percent position = 100 *(R-0.5)/N

Where R is the rank assigned and N is the number of items ranked.

The percent position was then converted into scores using Garrett's scores table (Garrett H, 2005).Garret ranking scale technique was used in ranking the motivational factors to locate the poultry forming and the reasons to select the poultry farming.

3.4.4 Likerts' Summated Scale

The Likert summated scaling technique was used to scale the reasons and motivational factors to locate the poultry farming. In the Likert scale, the respondent was asked to respond to each of the statements in terms of several degrees, usually five degrees of agreement or disagreement.



Each point on the scale carries a score. Response indicating the least favourable degree of satisfaction is given the least score (say 1) and the most favourable is given the highest score (say 5). These score values are normally not printed on the instrument but are shown here just to indicate the scoring pattern. The Likert scaling technique, thus, assigns a scale value to each of the five responses. The same procedure is repeated for each and every statement in the instrument. This way the instrument yields a total score for each respondent, which would then measure the respondent's favourableness toward the given point of view.

3.4.5 Factor Analysis

Factor analysis is a generic name given to a class of multivariate technique whose primary purpose is to define the underlying structure in a data matrix. Broadly speaking, it addresses the problem of analysing the structure of the interrelationships (correlations) among a large number of variables by defining a set of common underlying dimensions, known as factors. With factor analysis, the researcher can first identify the separate dimensions of the structure and then determine the extent to which each variable is explained by each dimension. Once these dimensions and the explanation of each variable are determined, the two primary uses for factor analysis, namely summarization and data reduction can be achieved. In summarizing the data, factor analysis derives underlying dimensions that, when interpreted and understood, describe the data in a much smaller number of concepts than the original individual variables.

Factor analysis was used in the present study to identify the underlying pattern of relationship between the various dimensions of motivational factor for locating the poultry farming and identifying the reasons for selecting the poultry farming.

3.4.6 Cronbach's Alpha

Cronbach's alpha evaluates the unidimensionality of a set of scale items. It's a measure of the extent to which all the variables in a scale are positively related to each other. In fact, it is really just an adjustment to the average correlation between every variable and every other. The formula for alpha is

$$\alpha_{standardized} = \frac{K.\bar{r}}{(1+(K-1).\bar{r})}$$

Where k is the number of variables and $\bar{r}$ is the average correlation among all pairs of variables. Cronbach's alpha values ranges from 0 to 1. The higher the score, the more reliable the generated scale is Nunnally (1978) has indicated 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature. In the study, the reliability testing was done for motivational factors to locate the poultry farming and the reasons to select the poultry farming.

3.5 Limitations of the study

The present study is based essentially on primary data. It is a known fact that primary data has its own limitations. To have accuracy in the data collected, cross checking was carried out. In this way, though inaccuracy in the given data was minimized, the data could not be considered as 100 percent correct. The present study relies only on the information gathered through surveys, observations and personal interviews, which are subject to bias. As with most empirical studies, the sample size and spectrum of respondents is a limitation. Even though a concerted effort was made to include a range of different individual representing different types of farming, the sample was limited to large farming. A statistically random sample would have increased the confidence in the results. Moreover the survey is not representative of the whole Namakkal district. Therefore, caution needs to be taken when generalizing these research results to large farming type in other geographical areas and environment. Further, the findings and conclusion could only be applicable to similar set of socio-economic situation. These limitations in no way negate the findings of the study and offer scope for further research in future.

RESULTS AND DISCUSSION

CHAPTER IV

RESULTS AND DISCUSSION

The findings of the current study are presented and discussed under the following heads:

4.1 Socio-Economic Profile of the Poultry Farmers

4.2 Investment, Cost and Profit of the Poultry Farmers

4.3 Motivational Factors to Locate the Poultry Farming

4.4 Reasons for Selecting the Poultry Farming

4.5 Problems faced by the Poultry Farmers

4.1 SOCIO-ECONOMIC PROFILE OF THE POULTRY FARMERS

Among the agriculture allied industries poultry industry is the fastest growing sector of India's Agriculture. To get the full impact of its rapid escalation, it would be interesting to trace the evolution of poultry development in India. More than 50 billion chickens are reared annually as a source of food for both their meat and their eggs. The rest majority of the poultry are raised using intensive farming techniques. According to the world watel institute, 74 percent of the world's poultry meat and 68 percent of eggs are produced this way. In 2000 there were 50.4 million tons of eggs produced in the world (executive guide to world poultry trends, 2001) and an estimated 53.4 million tons of table eggs were produced doing 2002. In 2009, an estimated 62.1 million metric tons of eggs were produced worldwide from a total laying flock of approximately 6.4 billion hens. Hence an attempt was made in this section to explore the socio-economic profile of the poultry farmers so as to identify important parameters crucial for improving their farming system. A total of 120 farmers were surveyed, which as shown in table 4.1.

Table 4.1

Socio-Economic Profile of the Respondents

Socio-Economic Status	Characteristics	Frequency	Percent
Age	Below – 35 Years	11	9.2
	36 Years – 45 Years	46	38.3
	Above – 46 Years	63	52.5
Educational Qualification	Secondary	23	19.2
	Higher Secondary	43	35.8
	Graduate	53	44.2
	Post Graduate	1	.8
Occupation	Businessmen	58	48.3
	Agriculturist	51	42.5
	Government	3	2.5
	Private	6	5.0
	Professionals	2	1.7
Monthly Income	Rs.1000 – Rs.50,000	72	60.0
	Rs.50,001 – Rs.1,00,000	36	30.0
	Rs.1,0,001 – Rs.1,50,000	7	5.8
	Rs.1,50,001 – Rs.2,00,000	5	4.2
Household Size	2- 4 Persons	55	45.8
	5-7 Persons	50	41.7
	8-10 Persons	15	12.5
Experience	Less than 5 years	1	.8
	5-10 years	18	15.0
	10-15 years	74	61.7
	15-20 years	20	16.7
	Above 20 years	7	5.8
Extension Contact	0-5 Visits in a day	13	10.8
	6-10 Visits in a Week	45	37.5
	11-15 Visits in a Month	57	47.5
	16- Above Visits in a Year	5	4.2
Total		**120**	**100.0**

Source: Estimation based on Field survey

Figure.4.1.1

AGE OF THE RESPONTENTS

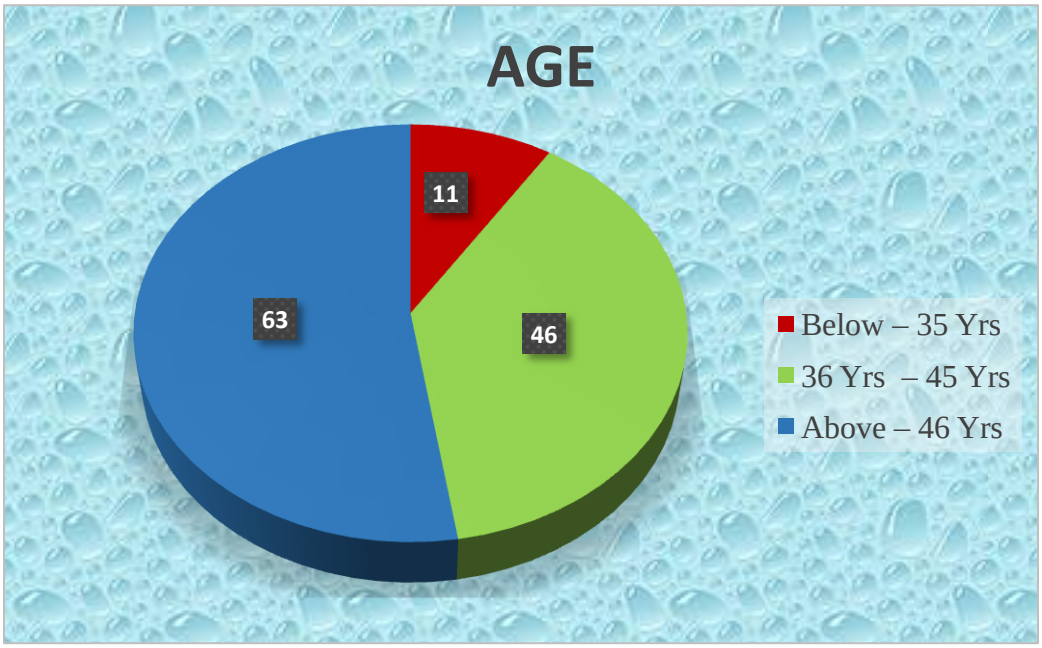


Figure.4.1.2

EDUCATION QUALIFICATION OF THE RESPONDENTS

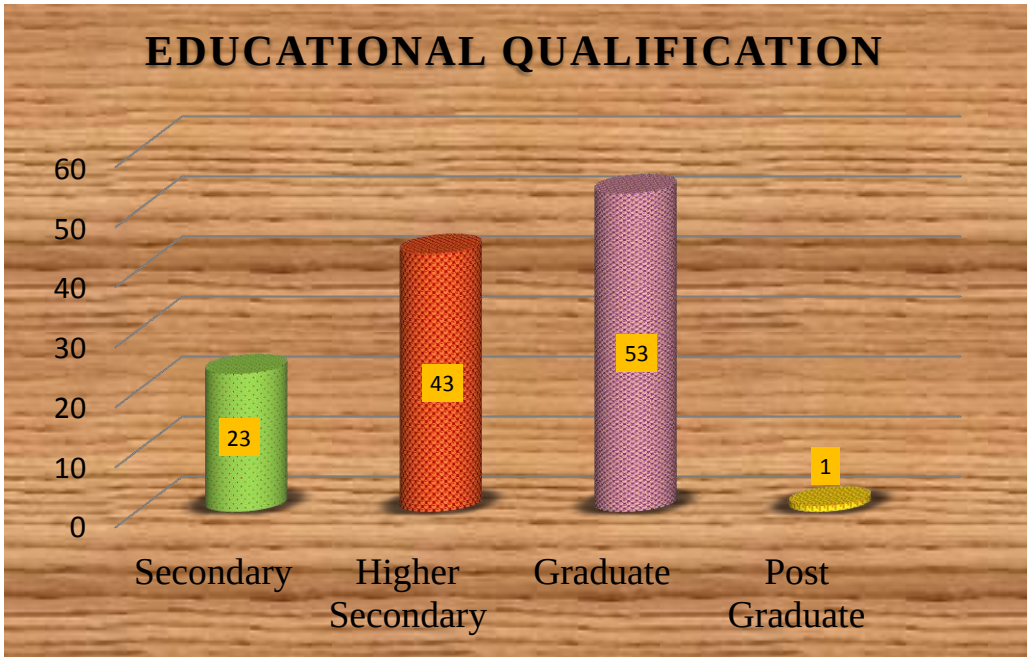


Figure.4.1.3

OCCUPATION OF THE RESPONDENTS

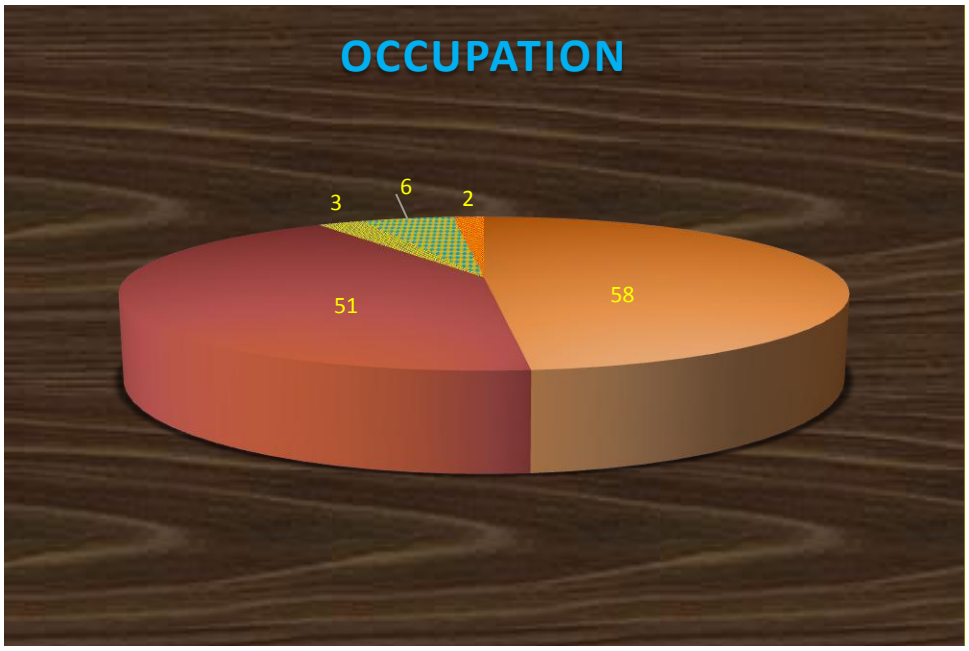


Figure.4.1.4

MONTHLY INCOME OF THE RESPONDENTS

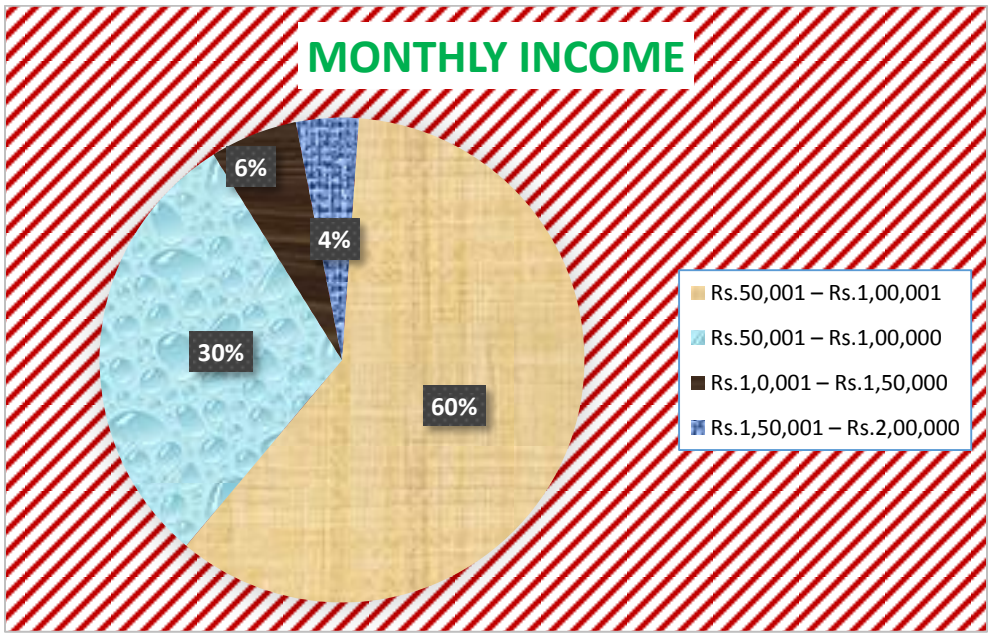


Figure.4.1.5

HOUSEHOLD SIZE OF THE RESPONDENTS

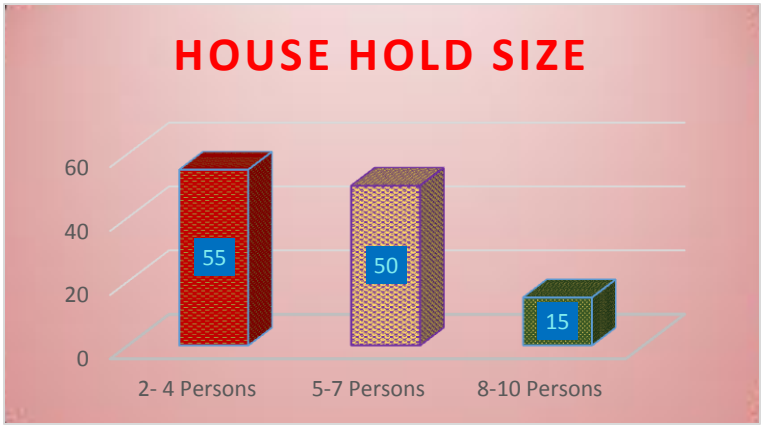
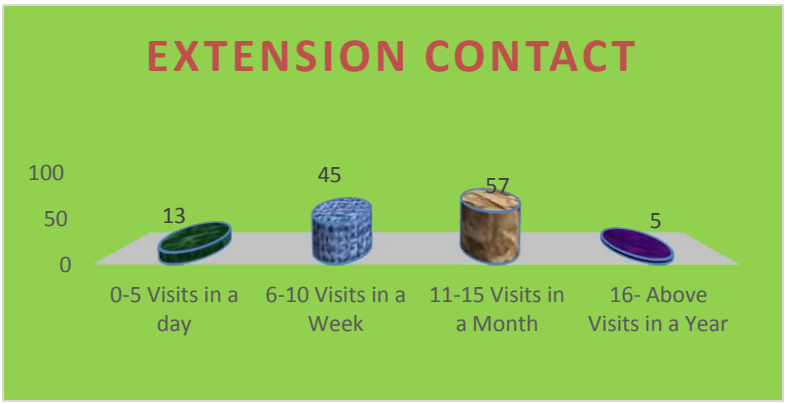


Figure.4.1.6

EXPERIENCE OF THE RESPONDENTS

Figure.4.1.7

EXTENSION CONTACT



AGE

The study showed that the majority nearly 91 percent of the farmers were young age group (i.e.) 36 year- above 46 year; followed by 9 percent of them were below 35 years. The result shows every farmer in this study area was young and is still in their active age. The implication is that younger farmers are likely to adopt modern techniques factor. The findings is in agreed with sane et al., (2007) that majority of farmers were within the age group of between 36 years to above 46 years are still in this active age and more adoptive to new techniques.

EDUCATIONAL QUALIFICATION

Information about educational qualification of selected poultry farmers were analysed and found that all (100 percent) the farmers were educated. 44 percent have graduated nearly 36 percent of them were studied higher secondary level and 19 percent of them were secondary education. It is evident that the level of education will contribute significantly to decision making capacity of a farmer. This findings support Obinne, (1991); Alabi and Aruna (2006) and Ndlahitsa (2008) that the level of education determines the quality of skills of farmers, their abilities and low well they adopt innovations and technologies around them. Also support the result of Oladipo and Adekunle (2010) that individuals with educational attainment are usually being the faster adopters of are usually being the faster adopters of to modern technologies.

OCCUPATION

The study found that majority 48 percent of the farmers were doing business and nearly 43 percent were agriculturalist and rest of them was government servants, private and professionals respectively. This indicates that the poultry farming is a part time job and most of the farmers do not depend on the business and agriculture as the sole mean of their livelihood. This may be due to the fact that farmers usually want to add to their farm income. These findings agreed with the findings of amaze (2000). That it is common for some farm household to fulfil their earnings from farming occupation for their livelihood.

MONTHLY INCOME

The monthly income level of the poultry farmers were classified into 4 categories (i.e.) Rs.10,000 - Rs.50,000/-, Rs.50,001 - Rs.1,00,000/-, Rs.1,00,001- Rs.1,50,000/- and Rs.1,50,001- Rs.2,00,000/-. Majority 90 percent of the respondents were earning from Rs. 10,000 to Rs.1, 00,000/-. Nearly 6 percent of them were earning from Rs.1, 00,000 to Rs.1, 50,000/- and 4 percent of them were earning Rs.1, 50,000 to Rs.2, 00,000/-. The findings of the study revealed that majority of them were good earners from poultry farming.

HOUSEHOLD SIZE

The study shows that most of the farmers have household size range from 2 to 4 reasons (i.e.) nearly 46 percent, nearly 42 percent of the farmers have household size range from 5to 7 and nearly 13 percent of them have 8 to 10 persons in their family. The findings of the study are that the farmers will spend less on food, education and other living expenses on the dependents. These expenses may account for high savings and they can spend for farming. The finding back up the result of Igodan et.al (1988) that more educated farmers tends to have smaller families and Arther (2006)observed that small family size enjoy better economic and social lives which have greater influence on better understanding of environmental conditions.

EXPERIENCE

Poultry farming experience of selected farmers that nearly 62 percent of them having 10-15 years' experience followed by 15-20 years (i.e.) nearly 17 percent; fifteen percent of them having 5-10 years' experience and nearly 6 percent of them having 20 years and above. The findings support Oluwatayo et.al (2008) that farmers with were experience would be more efficient, better knowledge of climatic conditions and market situation and then expected to run a more efficient and profitable experience.

EXTENSION CONTACTS

The study found that nearly 48 percent of the farmers have visited the farms 11-15 times in a month; nearly 38 percent of them have visited 6-10 times in a week; nearly 11 percent of them visited 0-5 times in a day and 4 percent of the farmers visited their farms 16 and above in a

year. The findings of the study shows that extension contact which is channel through which agricultural innovations and information are passed to farmers for improvement in their standard of living, production and productivity of the farms.

DISCRIMINANT ANALYSIS

Discriminant analysis was used to identify the variables that distinguish the low return farming from high return farming. The classification of the respondents was done on the basis of the returns on the poultry farming. The first group consisted of those respondents who were getting low returns while the second group consisted of all those who were getting higher returns. The poultry farming was hypothesized to be function of the age of the respondents (A), Investment (I), and Cost (C), Monthly income (MI), Experience (EX) and Education (E).

Table 4.2 shows the group means, Wilk's Lambda and univariate F ratio for each independent variable. The group means besides profiting the two groups, also identifies the variables with largest differences in the group means. The Wilk's Lambda and univariate ANOVA is used to identify the variables with the largest differences in the group means.

Table 4.2

Group Descriptive Statistics and Test of Equality of Group Means

Group / Variable	Investment	Cost	Age	Education	Monthly income	Experience
Low Returns	3.4697	7.4510	44.2564	4.2436	4.5688E4	3.0513
High Returns	7.5293	19.7345	45.9524	4.3095	7.5786E4	3.2381
All	4.8906	11.7503	44.8500	4.2667	5.6222E4	3.1167
Wilk's Lambda	.630	.408	.988	.998	.896	.986
F	69.276	171.041	1.435	.198	13.709	1.668
Significance	.000	.000	.233	.659	.000	.199

Source: Estimation Based on Field Survey

From the table it is evident that of the six variables introduced to distinguish low return and high return poultry farming, only three variables namely investment, cost and monthly income showed significant Univariate differences between two groups. The remaining variables age, education and experience did not emerge as significant factors.

Based on the above group means and standard deviation, the standardized canonical discriminant function which represents a linear composite of the original data variability within group's variability has estimated as follows:

Z=-60.739+0.299(I)-0.366(C) +1.092(Age) +12.163(E)-0.00005(MI)

Wilk's Lambda=.395

Chi-square Value=106.871

Eigen Value=1.553

Canonical Correlation=.778

(Significant at 1 percent level)

In the above function the variables investment, experience, age and education had positive sign indicating that these variables had higher discriminating powers between groups. The variable cost and monthly income had negative sign implying that this variable acted as a suppressor variable. The Wilk's lambda and chi-square value indicator that the function has a significant at 1 percent level. The canonical correlation associated with discriminant function was 0.778 implying that nearly 78 percent of the variation in dependent variable was explained by the model.

The relative importance of each independent variable in discriminating between the groups was assessed in terms of their factor loadings and is shown in table 4.3.

Table 4.3

Discriminant Loadings and Potency Index for the Selected Variables

Independent Variables	Factor Loading	Potency Index	Rank
Investment	.972	.945	**1**
Cost	.619	.383	**2**
Monthly income	.275	.0756	**3**
Experience	.096	.009	**4**
Age	.089	.007	**5**
Education	.033	.001	**6**

Source: Estimation based on Field Survey

While evaluating the variables on the basis of their factor loadings, any factor is considered to be a substantive discriminator of the factor loading is either equal to or greater than 0.30. Evaluating the factor loadings on the basis of the above criterion, the variables that distinguish low return from that of high return poultry farming were investment and cost of these variables investment accounted for nearly 95 percent of the variation in profit followed by cost (38 percent). Thus higher returns in poultry farming depend on investment and cost efficiency.

The validity of the above discriminating function was evaluated ay group centroids (group means) and the results are shown in table 4.4.

Table 4.4

Classification Results

Groups	Predicted Group Membership		Total
	Low return	High return	
Low return	98.7	1.3	**100.0**
High returns	23.8	76.2	**100.0**

Source: Estimation based on Field Survey.

The classification accuracy percentage of the discriminant function for the sample group was (91 percent). Thus the discriminant function was quite efficient in classifying respondents into low return and high return poultry farmers.

PERIOD SINCE POULTRY FARMING STARTED

The experience regarding the poultry farming for selected farmers as given below the table 4.5.

Table 4.5

Period since Poultry Farming Started

Duration	Frequency	Percent
Less than 15 Years	21	17.5
16 - 30 Years	68	56.7
31 - Above Years	31	25.8
Total	**120**	**100**

Source: Based on Field Survey

The study found that majority nearly 57 percent of the farmers have started their farming or venture before 16-30 years back; nearly 26 percent of their have started their venture around 31 and above years and nearly 18 percent of their have started their venture less than 15 years. The implication of the study found that majority of the poultry farmers in Namakkal district have were than 30 years of experience in their field. It helps to adopt new innovation to develop their farming.

Type of Farm

The development of poultry farming in India and all over the world has transformed this venture from subsistence farming to commercialization farming. The farmers have adopted this venture as farming source of their income.

Table- 4.6

Type of Farming

Farm Type	Frequency	Percent
Full Time	112	93.3
Part Time	8	6.7
Total	**120**	**100**

Source: Based on Field Survey

The findings of the revealed that 93 percent of the farmers have adopted this farming as their main profession as primary source of income while 7 percent of their have adopted it as secondary source of their income.

Figure.4.2

PERIOD SINCE POULTRY FARMING STARTED

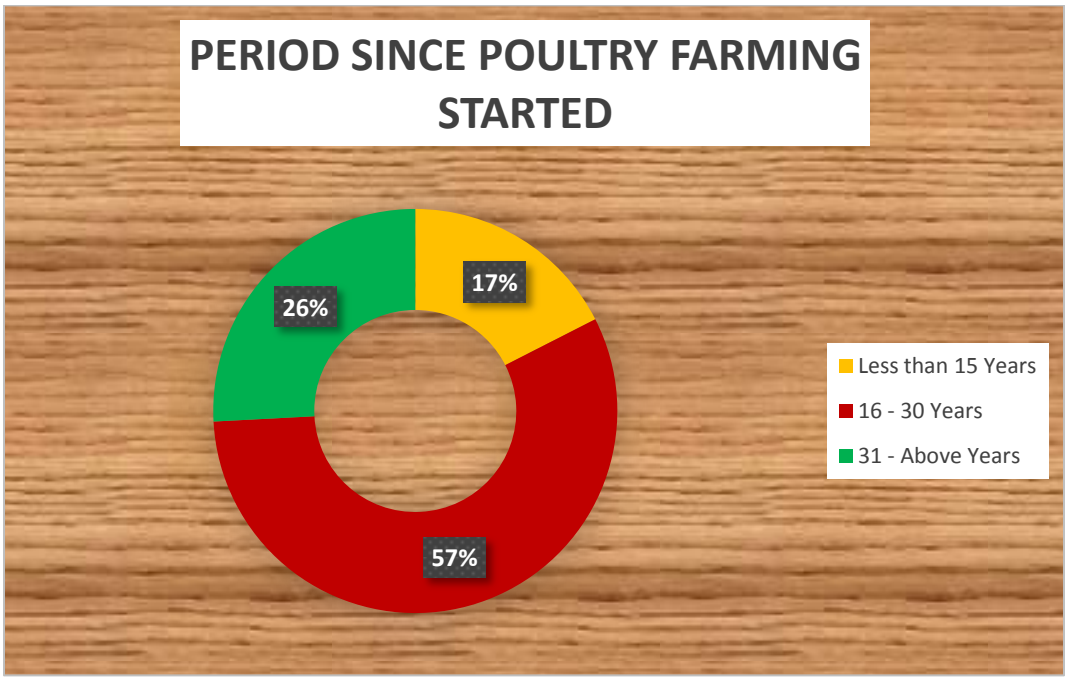
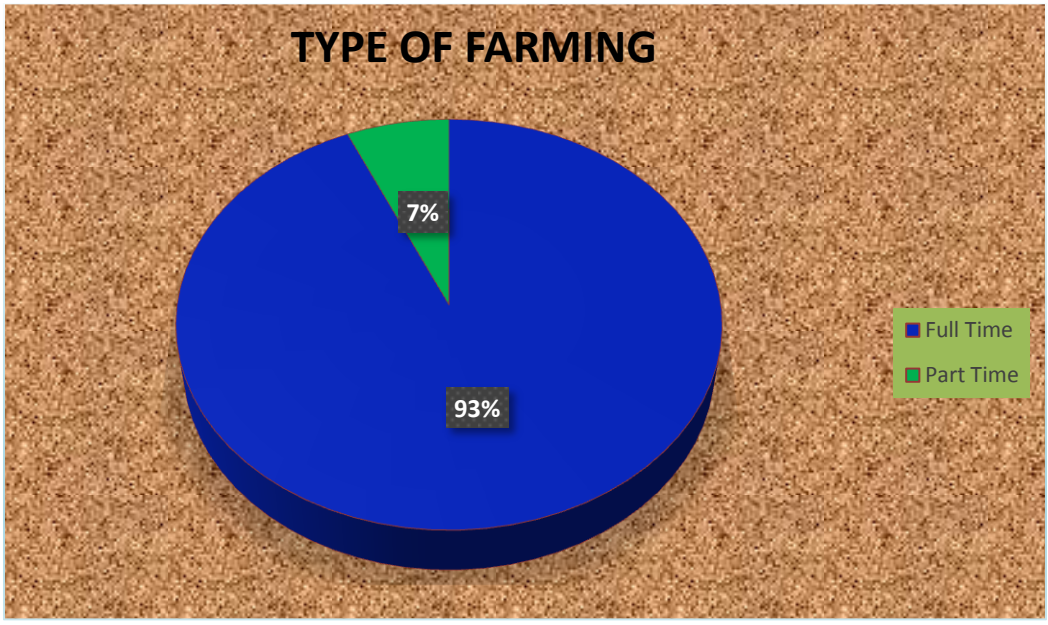


Figure.4.3

TYPES OF FARMING



SOURCES OF FINANCIAL ASSISTANCE

Sources of financial assistance are an important instrument that enables farmers to acquire command over the use of working capital and proper inputs for a better yield. It is commonly believed that credit availability for agricultural farmers is one of the main indicators of rural development. But in case of poultry farming, it was found that nearly 6 percent poultry farmers availed the institutional credit from nationalized banks, while 94 percent did not borrow the loan from any banks.

Table 4.7

Sources of Financial Assistance

Source of Financial Assistance	Frequency	Percent
Own	85	70.8
Relatives and Friends	28	23.3
Nationalized Banks	7	5.8
Total	**120**	**100**

Source: Field Survey

It was also found that that nearly 71 percent farmers used their own financial assistance and 23 percent of them borrowed financial assistance from friends and relatives. The findings of the study revealed that poultry farmers in the study area, they didn't borrow financial assistance from any private banks and just few of them borrowed from nationalized.

MEMBERSHIP IN FARMERS ASSOCIATION

Membership in farmers association is important for all agricultural farmers. It helps the farmers while if they face some uncertainty circumstances during their farming.

Table 4.8

Membership in Farmers Association

Farmers Association	Frequency	Percent
Member	98	81.7
Non-Member	22	18.3
Total	**120**	**100**

Source: Field Survey

The table shows that majority nearly 82 percent of the farmers has registered their name in farmers association and 18 percent of them did not registered in farmers association. The findings revealed that most of the farmers felt that they should be in a safer side to get help from association if they face uncertainty in the future.

Figure.4.4

SOURCES OF FINANCIAL ASSISTANCE

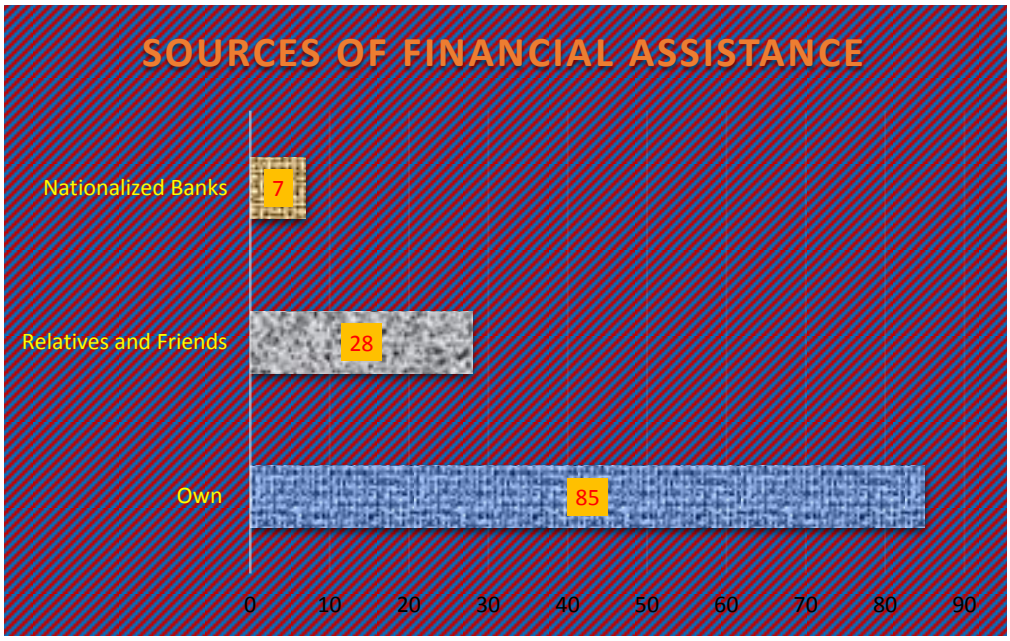


Figure.4.5

MEMBERSHIP IN FARMERS ASSOCIATION

CHI-SQUARE ANALYSIS

In order to investigate the relationship between investment and demographic profile of the poultry farmers, Pearson's chi-square test was done. The null hypothesis framed was;

Ho: Investment is the independent of the demographic profile of the poultry farmers

Ha: Investment is the not independent of demographic profile of the poultry farmers

The calculated chi-square values are shown in table 4.9.

Table 4.9

Relationship between Investment and Demographic Profile

Variable	Chi-Square	Degrees of Freedom	Significance	Inferences
Age	6.408	2	.041	**Reject Ho**
Experience	1.733	4	.785	**Accept Ho**
Education	2.584	3	0.46	**Accept Ho**
Monthly Income	12.424	3	.008	**Reject Ho**
Occupation	4.164	4	.384	**Accept Ho**
Household Size	1.994	2	0.369	**Accept Ho**

Source: Estimation based on field survey

The study found no significant association between the investment and experience, education, occupation and household size of the poultry farming. However, age and monthly income were found to have significant association with the level of investment. This implies that the level of investment depended on age and monthly income of the poultry farmers. As income and maturity level of the farmers increases the level of investment also increases.

COST & PROFIT ASSESSMENT OF POULTRY FARMING

Table 4.10 shows the gross margin analysis of poultry farmers per bird. The fixed cost item section showed that permanent labour has the highest contribution to the cost of production with 15.69%. The Table also revealed that variable cost items like cost of feeding is contributing second highest with 15.53% and vaccination/ meditation which is the most important cost of production is contributing third highest with 14.56%. This is followed by interest on investment on bird, interest on working capital, cost of electricity/diesel, price of day old chicks, and cost of water and health coverage contributing 13.79%, 12.49%12.21%, 12%, 1.74% and

0.96%respectively. Marketing cost are the expenses required in bringing the goods and services from farm to market. This term frequently used to estimate the expenditure incurred on movement of commodity from farm gate to the ultimate consumer. The marketing cost like transportation and advertisement cost contributing 0.87% and 0.16% respectively. The revenue items also revealed that egg is contributing higher at 90.19% while the sale of culled birds contributing 7.36%, sale of manure contributing 1.82% and sale gunny bags 0.62%. The findings showed that the total variable cost constitute the highest proportion (519.36) of the total cost of production. Permanent labour and Cost of feeding accounted for highest in the total cost of production. This agrees with Intisar (1995); Sharabeen (1996); Yusuf and Malomo (2007) and Adepoju (2008) that feed cost comprises the highest share in the total cost of poultry production.

Table 4.10

Average Cost and Revenue of Poultry Farmers per Bird

Cost items	Average	Percent
Fixed Cost (1)		
Labour	**97.81**	**15.69**
Total Fixed Cost	**97.81**	**15.69**
Variable Cost (2)		
Price of day old chicks	**74.87**	**12**
Cost of feed	**96.83**	**15.53**
Cost of Electricity/ Diesel	**76.15**	**12.21**
Cost of Vaccination / Medicines	**90.78**	**14.56**
Interest on Working Capital	**77.88**	**12.49**
Interest on Investment on Birds	**86**	**13.79**
Cost of Water	**10.85**	**1.74**
Health Cover	**6**	**0.96**
Total Variable Cost	**519.36**	**-**
Marketing cost (3)		
Transportation Cost	**5.42**	**0.87**
Advertisement Cost	**1**	**0.16**
Total Marketing Cost	**6.42**	**-**
Total Cost (1+2+3)	**623.59**	**100**
Revenue items		
Sale of Egg	**794.09**	**90.19**
Sale of Gunny Bags	**5.5**	**0.62**
Sale of Manure	**16.06**	**1.82**
Sale of culled Birds	**64.77**	**7.36**
Total Revenue	**880.42**	**99.9**
Gross Margin	**361.06**	**-**
Net Revenue	**256.83**	**-**

Source: Field Survey

The result also showed that majority of the revenue is generated through the sale of eggs. The findings also support the result of Intisar (1995); Sharabeen (1996); Yusuf and Malomo (2007) and Adepoju (2008) that sale of egg contributed highest share to total revenue. The result further showed that the average gross margin per bird was 361.06 and net revenue was 256.83. The result agrees with the findings of Reddi (1986) and Rajendran and Samarendu (2003) who found that gross margins and net returns increases with increase in farm size and was profitable.

REASONS FOR SELECTING POULTRY FARMING

Factor Analysis

Factor analysis was used in the present study to identify the underlying pattern of relationship between various reasons for selecting the poultry farming and whether these reasons can be grouped in terms of a composite variable. To determine the appropriateness of applying factor analysis, the KMO and Bartlett's test measures were computed and the results are presented in table 4.11.

Table 4.11

KMO and Bartlett's Test Measures

Test Measure	Poultry Farming
Kaiser – Meyer - Oklin and Measure of Sampling Adequacy	**.768**
Bartlett's Test of Sphericity Approx. Chi- Square	**327.417**
Degrees of Freedom	**55**
Significance	**.000**

Source: Field Survey

KMO statistics for poultry farmers were .768 signifying higher than acceptable adequacy of sampling. The Bartlett's test of Sphercity was also found to be significant at one percent level providing evidence of the presence of relationship between variables to apply factor analysis.

The communalities for each variable were computed to determine the amount of variance accounted by the variables to be included in the factor rotations and the results.

All the variables had values greater than 0.50 signifying substantial portion of the variance accounted by the factors. The table presents the Eigen values their relative explaining powers and factor loadings for 11 linear components identified within the date set. The Eigen value greater than one alone was considered for inclusion in the analysis.

The results indicates that for the sample data, Eigen value of the first three factors alone was greater than one indicating that these factors alone were appropriate for inclusion in the analysis. For poultry farming three factors together accounted for nearly 56 percent of the variations in the factors.

Table 4.12

Rotated Component Matrix

Reasons	Component		
	1	2	3
Family Business	.665		
Government Encouragement	.854		
Easy to Start the Business	.799		
Necessity / Compulsion	.646		
Small in Size		.717	
Availability of Raw Materials			.795
Demand for the Egg in Market			.800
Availability of Human Resources		.631	
Eigen Value	3.500	1.376	1.284
Percentage of Variance	31.815	12.512	11.670
Cumulative Percentage	31.815	44.327	55.996

Extraction method: principal component analysis

Rotation method: variance with Kaiser Normalization

For poultry farming factor 1 has significant loadings for four dimensions namely “Family Business”, “Government Encouragement”, “Easy to Start the Business”, and “Necessity/ Compulsion”. These four dimensions together explained nearly 32 percent of the variance. Factors 2 have significant loadings for dimensions namely “Small in Size” and “Availability of Human Resources”. These two dimensions together explained nearly 13 percent of the variance. Factor 3 had significant loadings for two dimensions namely “Availability of Raw Materials” and “Demand for Egg in the Market”. There two dimensions together explained nearly 12 percent of the variance.

From the above dimensions it can be inferred that the main reasons cited by the poultry farmers were “Family Business”, “Government Encouragement” , and “Easy to Start the Business”, “Necessity/Compulsion”, “Availability of Raw Materials” and “Availability of Human Resources” and “Demand for Egg in the Market”.

MOTIVATIONAL FACTORS TO LOCATE THE POULTRY FARMING

Factors Analysis

Factors analysis was used to identify the underlying pattern of relationship between the various dimensions of motivational factors to locate the poultry farming and whether there factors can be grouped in terms of a composite variable Cronbach’s alpha test conducted for the constructs for a groups was found to be .605 (Nunnally, 1978) indicating good reliability of all items. To determine the appropriateness of applying factor analysis, the KMO and Bartlett’s test measures were computed and the results are presented in the table 4.13.

Table 4-13

KMO and Bartlett’s Test Measures

Test Measure	Poultry Farming
Kaiser–Meyer-Oklin and Measure of Sampling Adequacy	**.709**
Bartlett’s Test of Sphericity Approx. chi –Square	**105.888**
Degrees of Freedom	**36**
Significance	**.000**

Source: Estimation based on Field Survey

KMO statistics for poultry farmers were .709 signifying higher than acceptable adequacy of sampling. The Bartlett’s test of Sphericity was also found to be significant at one percent level providing evidence of the presence of relationship between variables to apply factor analysis.

The communalities for each variable were assessed to determine the amount of variance accounted by the variable to be included in the factor rotations and the results revealed that the communalities for all variables were above the prescribed level 0.5.

The present table Eigen values, there relative explanting powers and factor loadings for a linear component identified within the data set.

Table 4.14

Rotated Component Matrix

Motivational Factors	Components		
	1	2	3
Availability of Raw Materials		.685	
Climatic Conditions	.760		
Veterinary Hospital	.625		
Demand on Eggs		.706	
Cheap Labour			.817
Eigen Values	2.373	1.202	1.087
Percentage Variance	26.365	13.356	12.073
Cumulative Percentage	26.365	39.721	51.794

Extraction method: principal component analysis

Rotation method: variance with Kaiser Normalization

The Eigen value of the first 3 factors alone was greater than one indicating that these factors together accounted for nearly 52 percent of the variations in the motivational factors to locate the poultry farming.

In poultry farming factor 1 had significant loadings on two dimensions namely “climatic conditions” and “veterinary hospitals”. Factors 1 were very powerful explaining 26 percent of variance. Factor 2 had significant loadings on two dimensions namely “availability of raw materials” and “demands on eggs” and explains only 13 percent of the variance. Factors 3 had significant loadings on only one dimensions namely “cheap labour” and explains only 12 percent of the variance. To sum up, the factors which motivated to adopt the poultry farming were climatic conditions, veterinary hospitals, and availability of raw materials, demand on eggs and cheap labour.

PROBLEMS FACED BY THE POULTRY FARMERS

Poultry Farmers were asked to rank the problems faced by them while doing their farming. The problems were listed and the farmers were asked to rank these problems in their order of priority. The ranks were then converted into percent position and from the percent position the individual scores were determined on a scale of 100 points by using Garrett's Rating Scale. The average scores and the ranks corresponding to each problem are presented in table 4.15.

Table 4.15

Problems of the Poultry Farmers

S.No	Problems	Mean	Rank
1.	**Availability of Raw Materials**	38.3083	**11**
2.	**Improved Technology**	32.3583	**13**
3.	**Control Measures**	48.025	**7**
4.	**High Feed Cost and Low Egg Prices**	73.775	**1**
5.	**Lack of Transport/Storage Facilities**	47.8333	**9**
6.	**Investment**	60.9417	**3**
7.	**Labour Problem**	61.5915	**2**
8.	**Power Supply**	53.2667	**5**
9.	**Feed and Marketing**	57.9	**4**
10.	**Export Facilities**	48.0167	**8**
11.	**Health Coverage**	43.625	**10**
12.	**Managerial Problems**	48.125	**6**
13.	**Extension and Training Facilities**	35.5833	**12**

Source: Based on Field Survey

The major problem faced by the farmers were 'High Feed Cost and Low Egg Prices' (1st rank), followed by 'Labour Problems' (2nd rank), 'Investment' (3rd rank) 'Feed and Marketing' (4th rank), insufficient 'Power Supply', (5th rank), 'Managerial Problems',(6th rank), 'Control Measures', (7th rank), lack of 'Export Facilities', (8th rank), 'Lack of Transport/Storage Facilities', (9th rank), 'Health Coverage', (10th rank), 'Availability of Raw Materials', (11th rank), 'Extension and Training Facilities' (12th rank) and cannot utilize 'Improved Technology', (13th rank). In short the poultry farmers wanted to get high price for eggs, solution for labour problems, to encourage investment and continuous power supply for their industry production.

SUMMARY AND CONCLUSION

CHAPTER V

SUMMARY AND CONCLUSION

Poultry sector is one of the fastest growing industries of the Indian economy than any other sector contributing about $230 million to the Gross National Product. But in statistical terms the industry has reported a loss of over Rs 4,000 crore as an aftermath effect of the bird flu crisis. The contribution of the small rural farmers points out the importance of integration of the poultry farming and the allied sector. Suguna Poultry Farm is the pioneer in poultry integration and contract poultry farming in India, with presence in 9 states and membership of about 15,000 contract farmers. Suguna has set an example of integration and contract farming before the industry and has proved to be beneficial for the company. Integration could be the way forward for the entire industry towards expansion and success.

Presently 100% Foreign Direct Investment (FDI) is permitted in the food processing sector. Also FDI in food retailing, covering dairy, poultry, marine, vegetables and fruits might help the entire food processing industry grow. Poultry farming in India has transformed from a mere tool of supplementary income and nutritious food for the family to the major commercial activity generating the required revenue. The growth of the industry with steady production of 1,800 million kg of poultry meat, 40 billion eggs per year and employment generation of about 3 million people indicates the future prospects for the industry. Changing food habits, rising income of the middle class Indian, presence of private players, rising market demand of the Indian poultry produce in the export market are some of the contributing factors to the growth of the industry. Therefore, the present study intends to examine the factors motivating the poultry farmers to locate the farming and also to identify the problems faced by the poultry farmers.

Objectives

The specific objectives of the study are

- To study the socio-economic background of the poultry farming
- To analyze the investment, cost and Profit of the farmers
- To find out the reasons for select the farming
- To examine the motivational factors to locate the farming
- To identify the problems faced by the farmers

Hypothesis

- Investment is independent of the demographic profile of the poultry farmers
- Reasons for selecting the farming were family business, government encouragement, easy to start the business, necessity / compulsion, availability of raw materials and availability of human resources and demand for egg in the market.
- Motivating factors to adopt the poultry farming were climatic conditions, veterinary hospitals, and availability of raw materials, demand for eggs and cheap labour.
- The major problem faced by the farmers were high feed cost and low egg prices, labour problems, investment, feed and marketing, insufficient power supply.

Methodology

The present study based on primary data and secondary data collected from 120 poultry farmers by adopting purposive sampling since all the farmers were not mentally prepared to respond to the questionnaires. A well-structured questionnaire was prepared and was pre-tested. After incorporating the necessary changes in the pre-tested questionnaire, it was administered and required information about the framing was collected from the respondents during November 2013 to the January 2014. Besides averages, percentages and graphs, techniques like Chi-square test, discriminant analysis, Garrett's rating scale, Likert's summated scale were used.

Empirical Findings

The major findings of the study are summarized below:

Socio-economic Background

- Majority of the farmers were within the age group of between 36 years to above 46 years are still in the active age and more adoptive to new techniques.
- All (100 percent) the farmers were educated. 44 percent have graduated nearly 36 percent of them were studied higher secondary level and 19 percent of them were secondary education. It is evident that the level of education will contribute significantly to decision making capacity of a farmer.
- Majority 48 percent of the farmers were doing business and nearly 43 percent were agriculturalist and rest of them was government servants, private and professionals respectively.

- ☞ The findings of the study revealed that majority of them were good earners from poultry farming. Most of the farmers have household size range from 2 to 4 reasons (i.e.) nearly 46 percent, nearly 42 percent of the farmers have household size range from 5to 7 and nearly 13 percent of them have 8 to 10 persons in their family.
- ☞ Poultry farming experience of selected farmers that nearly 62 percent of them having 10-15 years' experience followed by 15-20 years (i.e.) nearly 17 percent; fifteen percent of them having 5-10 years' experience and nearly 6 percent of them having 20 years and above.
- ☞ Extension contact which is channel through which agricultural innovations and information are passed to farmers for improvement in their standard of living, production and productivity of the farms.
- ☞ Majority of the poultry farmers in Namakkal district have been than 30 years of experience in their field. It helps to adopt new innovation to develop their farming.
- ☞ 93 percent of the farmers have adopted poultry farming as their main profession as primary source of income while 7 percent of their have adopted it as secondary source of their income.
- ☞ Nearly 71 percent farmers used their own financial assistance and 23 percent of them borrowed financial assistance from friends and relatives.
- ☞ Majority nearly 82 percent of the farmers has registered their name in farmers association and 18 percent of them did not registered in farmers association.

Discriminant Analysis

- ☞ Discriminant analysis was used to identify the variables that distinguish low return from that of high return poultry farming were investment and cost of these variables investment accounted for nearly 95 percent of the variation in profit followed by cost (38 percent). Thus higher returns in poultry farming depend on investment and cost efficiency.

Chi-Square Analysis

- ☞ The chi-square analysis found no significant association between the investment and experience, education, occupation and household size of the poultry farming. However, age and monthly income were found to have significant association with the level of investment. This implies that the level of investment depended on age and monthly

income of the poultry farmers. As income and maturity level of the farmers increases the level of investment also increases.

Cost & Profit Assessment of Poultry Farming

- Permanent labour and Cost of feeding accounted for highest in the total cost of production. This agrees with Intisar (1995); Sharabeen (1996); Yusuf and Malomo (2007) and Adepoju (2008) that feed cost comprises the highest share in the total cost of poultry production. Majority of the revenue is generated through the sale of eggs. The result further showed that the average gross margin per bird was 361.06 and net revenue was 256.83. The result agrees with the findings of Reddi (1986) and Rajendran and Samarendu (2003) who found that gross margins and net returns increases with increase in farm size and was profitable.

Reasons for Selecting Poultry Farming

Factor Analysis

- Factor analysis was used to identify the underlying pattern of relationship between various reasons for selecting the poultry farming and whether these reasons can be grouped in terms of a composite variable. The main reasons cited by the poultry farmers were family business, government encouragement, easy to start the business, necessity / compulsion, availability of raw materials, availability of human resources and demand for egg in the market.

Motivational factors to locate the poultry farming

Factors Analysis

- Factors analysis was used to identify the underlying pattern of relationship between the various dimensions of motivational factors to locate the poultry farming and whether there factors can be grouped in terms of a composite variable. The factors which motivated to adopt the poultry farming were climatic conditions, veterinary hospitals, and availability of raw materials, demand on eggs and cheap labour.

Problems faced by the Poultry Farmers

- Poultry Farmers were asked to rank the problems faced by them while doing their farming. The problems were listed and the farmers were asked to rank these problems in their order of priority. The major problem faced by the farmers were high feed cost and low egg prices followed by labour problems, investment, feed and marketing and insufficient power supply.

CONCLUSIONS

The economic analysis of poultry has been carried out on the basis of primary data collected from Namakkal district. It was found that majority poultry farmers have adopted this business as a primary source of their income and fall in the category of large group (1lakh to 4 lakhs birds). Moreover, they are financially sound and few of them forced to rely on institutional and non-institutional source of credit due to the limited credit facility extended by the financial institutions. Cost of feeding constitutes a major problem to most of the poultry farmers as it accounts for a larger percentage of total cost of production, since poultry birds cannot do without food. Majority of the poultry egg farmers identified high cost of production especially cost of feed ingredients as their major constrain. Therefore, government should endeavour to subsidize inputs such as feed ingredients and this can be achieved through poultry farmer's participation in crop production. The study **recommends** the following:

- Poultry farmers in the study area could form cooperatives. Agricultural cooperatives play an important role in marketing agricultural products. They could also serve to provide broiler producers the opportunity to process and market their products in a joint business venture with other poultry producers. Producer cooperatives provide uniformity in quality by inspection during production, at culling (harvesting) and upon delivery.
- Poultry producers generally should have access to credit facilities especially soft loans. This will help them to increase their stock size, slaughterhouses, and transportation facilities and feed processing. At present the employees are suffering with poor wages and working more than 12 hours per day. Hence, it is suggest that the NECC and association should involve directly regularizing the wages and working hours of labours.
- The poultry sector also brought under the agriculture sector, hence, adequate loans and government subsidies may be granted.
- The majority of the poultry farmers prefer the poultry business as their family business but they were not having adequate experience. Hence, it is suggested that they may be given adequate information, education, communication and orientation training programmes.
- The government, Non-Governmental Organizations (NGOs) and Non Profit Organizations (NPOs) should ensure that extension messages are well disseminated to farmers to improve their productivity.

- ☞ The major problem faced by the poultry farm owners is power cut during summer season and irregular power supply, which very much affect the poultry production. Hence, it is suggested that the poultry farm owners may avoid the power problems through an alternative energy sources like bio-gas with the help of government.

BIBLIOGRAPH

BIBILOGRAPHY

BOOKS

- Executive Guide to World Poultry Trent's (2001), Watt Publishing Company, Mt. Morris, Illinois, Pp.62.
- Garrett Henry, E (2005), "Statistics in Psychology and Education", New Delhi, Paragon International Publishing.
- Nunnally, J.C., (1978), "Psychometric Theory", New York, McGraw-Hill.

JOURNALS

- Abedullah, Maqbool and Bukhsh (2007), Issues and Economics of Poultry Production: A Case Study of Faisalabad-Pakistan", Pakistan Vet. Journal, Vol.27, No.1, Pp. 25-28.
- Adepoju, A. A. (2008), "Technical efficiency of Egg Production in Osun state", International journal of Agricultural Economics and Rural Development, No1, Pp.7-14.
- Adepoju, A. A. (2008), "Technical efficiency of Egg Production in Osun state", International journal of Agricultural Economics and Rural Development, No1, Pp.7-14.
- Alabi, R.A. and M.B. Aruna (2006), "Technical Efficiency of Family Poultry Production in Niger Delta - Nigeria", Journal Central European Agriculture, Vol. 6, No.4, Pp. 531-538.
- Alabi, R.A. and M.B. Aruna (2006), "Technical Efficiency of Family Poultry Production in Niger Delta - Nigeria", Journal Central European Agriculture, Vol. 6, No.4, Pp. 531-538.
- Begum, I.A., (2005a), "Vertically Integrated Contract and Independent Poultry Farming System in Bangladesh: A Profitability Analysis", Livestock Research for Rural Development, Vol.17, No.8, Pp.110-118.
- BeraA.K, Bhattacharya D, DharaA A, Kumar S and Das S.K (2010), "Evaluation of Economic Losses due to Coccidiosis in Poultry Industry in India", Agricultural Economics Research Review, Vol.23, No.1, Pp.91-96.
- Cited in Rajendran, K. and M. Samarendu (2003), "Comparative Economic Analysis and Constraints in Egg Production under Cage vs. Deep Litter Systems of Rearing in India", International Journal of Poultry Science, Vol. 2, No. 2, Pp.153-158.
- Cited in Rajendran, K. and M. Samarendu (2003), "Comparative Economic Analysis and Constraints in Egg Production under Cage vs. Deep Litter Systems of Rearing in India", International Journal of Poultry Science, Vol. 2, No. 2, Pp.153-158.

- Gangwar L. S., Saran Sandeep, Kumar Sarvesh (2010), "Broilers' Supply Value Chain in the National Capital Region Delhi: A Case Study of Ghazipur Poultry Market", Agricultural Economics Research Review, Vol. 23, Pp. 461- 468.
- Gangwar L.S., Saran Sandeep and Kumar Sarvesh (2013), "Integrated Poultry-Fish Farming Systems for Sustainable Rural Livelihood Security in Kumaon Hills of Uttarakhand", Agricultural Economics Research Review, Vol 26, Pp. 181-188.
- Goodwin, Jr. H.L., Ahrendsen, B.L., Barton, T.L., and. Denton, J.H, (2005), "Estimated Returns for Contract Broiler Production in Arkansas", Missouri, and Oklahoma: Historical and Future Perspectives", Journal of Applier Poultry Research Vol.14, Pp.106–110.
- Intisar, Y.A. (1995), "The economics of poultry production in Khartoum State", M.Sc. Thesis University of Khartoum Faculty of Agriculture, Department of Agriculture Economics, Cited in Emam, A.A. and A.M. Hassan (2010), " Economics of egg poultry production in Khartoum State with emphasis on the open-system- Sudan:, African Journal of Agricultural Research, Vol. 5, No.18, Pp. 2491-2496.
- Intisar, Y.A. (1995), "The economics of poultry production in Khartoum State", M.Sc. Thesis University of Khartoum Faculty of Agriculture, Department of Agriculture Economics, Cited in Emam, A.A. and A.M. Hassan (2010), " Economics of egg poultry production in Khartoum State with emphasis on the open-system- Sudan:, African Journal of Agricultural Research, Vol. 5, No.18, Pp. 2491-2496.
- KalamkarS.S. (2010), Poultry Value Chain, Food Security and Poverty in India", Agricultural Economics Research Review, Vol.23, Pp.560.
- Kiran and K. Atchyuta Rao (2009), "Production and Marketing of Poultry Farm Products, National Monthly Refereed Journal of Research in Arts and Education, Vol .2, No.9, Pp. 9-15.
- Kumar B.Ganesh (2006), "Economic Status of Poultry Farming Enterprises in Andaman and Nicobar Islands", Journal of Agricultural Economics Research Review, Vol.19, No.2, Pp.377-386.
- Mohan Raj and L. Manivannan (2012), "A study on Economic Profile and Financial Decision of Poultry Farm Owner's with Reference to Namakkal District, Tamilnadu", International Journal of Marketing and Technology, Vol. 2, No.5, Pp.106-124.
- Murthy, S. and Bindu Madhuri (2013), "A Case Study on Suguna Poultry Production through Contract Farming in Andhra Pradesh", Asia Pacific Journal of Marketing & Management Review, Vol.2, Pp. 1-11.
- NasurudeenP, KuruvilaAnil, and SendhilR. (2007), "Performance and Prospects of Indian Poultry Sector", Agricultural Economics Research Review, Vol.20, Pp.603.

- NavadkarD.S, KadamS.A. and GulveC.M (2012), "Input and Service Delivering Systems through Contract Poultry Farming in Pune District", Agricultural Economics Research Review, Vol.25, Pp.558.
- NurudeenAyoyinkaJatto (2012), "Economics and Social Characteristics of Registered Poultry Egg Producers in Ilorin, Kwara State", Russian Journal of Agriculture and Socio Sciences, Vol.11, No.11, Pp.18-23.
- Obinne, C.P.O. (1991), "Adoption of Improved Cassava Production Technologies by Small Farmers in Bendel State", African journal of Biotechnology, Vol. 7, No.9, Pp. 1227-1286.
- Obinne, C.P.O. (1991), "Adoption of Improved Cassava Production Technologies by Small Farmers in Bendel State", African journal of Biotechnology, Vol. 7, No.9, Pp. 1227-1286.
- Ohajianya, Mgbada, P.N.Onu, C.O.Enyia, A.Henri-Ukoha, N.G.Ben-Chendoand C.C.Godson-Ibeji (2013), "Technical and Economic Efficiencies in Poultry Production in Imo State- Nigeria", American Journal of Experimental Agriculture, Vol.3, No.4, Pp.927-938.
- Oladipo, F and O. Adekunle (2010), "Empirical Determination of Socio-economic Status and its Relationship with Selected Characteristics of Rural Male Farmers in Kwara state- Nigeria", A Research Journal of Agriculture and Biological Sciences, Vol.6, No.1, Pp.64-76.
- Oladipo, F and O. Adekunle (2010), "Empirical Determination of Socio-economic Status and its Relationship with Selected Characteristics of Rural Male Farmers in Kwara state- Nigeria", A Research Journal of Agriculture and Biological Sciences, Vol.6, No.1, Pp.64-76.
- OlasunkanmiM.Bamiro (2008), "Economic Performance of Commercial Poultry Farms in Oyo State Nigeria", International Journal of Poultry Science, Vol.7, No.11, Pp. 1117-1121.
- Oluwatayo, I.B., A.B. Sekumade and S.A. Adesoji (2008), "Resource use Efficiency of Maize Farmers in Rural Nigeria- Evidence from Ekiti State", World journal of agricultural science, Vol. 4, No.1, Pp.91-99.
- Oluwatayo, I.B., A.B. Sekumade and S.A. Adesoji (2008), "Resource use Efficiency of Maize Farmers in Rural Nigeria- Evidence from Ekiti State", World journal of agricultural science, Vol. 4, No.1, Pp.91-99.
- Pandey R.K., Bhardwaj S.P., Nirman K.P.S. and Mahajan V.K. (1996 b), "Economic Analysis of Price Behaviour and Marketing of Eggs", Indian Journal of Agricultural Marketing, Vol.3, Pp. 343-357.
- Rajendran, K. and M. Samarendu (2003), "Comparative Economic Analysis and Constraints in Egg Production under Cage vs. Deep Litter Systems of Rearing in India", International Journal of Poultry Science, Vol. 2, No.2, Pp.153-158.

- Rajendran, K. and M. Samarendu (2003), "Comparative Economic Analysis and Constraints in Egg Production under Cage vs. Deep Litter Systems of Rearing in India", International Journal of Poultry Science, Vol. 2, No.2, Pp.153-158.
- Reddi, R. P. (1986), "Studies on the Performance of Different Commercial Strains, (Layer) Under Field Condition, (Unpublished Ph.D. Thesis, Department of Poultry Science, Madras Veterinary College, Chennai), Pp.75.
- Reddi, R. P. (1986), "Studies on the Performance of Different Commercial Strains, (Layer) Under Field Condition, (Unpublished Ph.D. Thesis, Department of Poultry Science, Madras Veterinary College, Chennai), Pp.75,
- Reddy G.P, MeenaP.C, Kumar Ranjit and VyshanaviP.V (2010), "Institutional Innovations for Contract Poultry Farming in Andhra Pradesh – A Case Study of Suguna Foods", Agricultural Economics Research Review,Vol.23, Pp.562.
- Samarendu Mohanty and K.Rajendran (2003), "2020 Vision for Indian Poultry Industry", International Journal of Poultry Science, Vol. 2, No.2, Pp.139-143.
- Sani, R.M., S.A., Musa, M.I. Daneji, M.T. Yakasai and O. Ayodele (2007), "Cost and Returns Analysis in Poultry Production in Bauchi and Gombe metropolis area", Continental Journal of Agricultural Economics, Vol.1, Pp.14-19.
- Sani, R.M., S.A., Musa, M.I. Daneji, M.T. Yakasai and O. Ayodele (2007), "Cost and Returns Analysis in Poultry Production in Bauchi and Gombe metropolis area", Continental Journal of Agricultural Economics, Vol.1, Pp.14-19.
- SarfrazAhmad, TahirZahoorChohanandIkramAli (2008), "Economic Analysis of Poultry (Broiler) Production in Mirpur, Azad Jammu Kashmir", Pakistan journal of life and Social Science, Vol.6, No.1, Pp.4-9.
- Shaikh and Zala. (2011), "Production Performance and Economic Appraisal of Broiler Farms in Anand District of Gujarat", Agricultural Economics Research Review, Vol.24, Pp.317-323.
- Sharabeen, I.E. (1996), "Economics of poultry industry in Khartoum State: M.Sc. Thesis University of Khartoum Faculty of Agriculture, Department of Agriculture Economics. Cited in Emam, A.A. and A.M. Hassan (2010), "Economics of egg poultry production in Khartoum State with emphasis on the open-system- Sudan", African Journal of Agricultural Research, Vol. 5, No.18, Pp. 2491- 2496.

- Sharabeen, I.E. (1996), "Economics of poultry industry in Khartoum State: M.Sc. Thesis University of Khartoum Faculty of Agriculture, Department of Agriculture Economics. Cited in Emam, A.A. and A.M. Hassan (2010), "Economics of egg poultry production in Khartoum State

with emphasis on the open-system- Sudan", African Journal of Agricultural Research, Vol. 5, No.18, Pp. 2491- 2496.

- Sirdar, M.M., Picard, J., Bisschop, S., Gummow, B., (2012), "A questionnaire Survey of Poultry Layer Farmers in Khartoum State- Sudan: To Study their Anti-Microbial Awareness and Usage Patterns", Onderstepoort Journal of Veterinary Research, Vol.79, No.1, Pp.1-8.
- Sridharan. A, Dr. R.saravanan, (2013), "A Study on Motivating Factors to Enter into Poultry Farming with Special Reference to Suguna Broiler Contract Farms in Coimbatore District", International Journal of Marketing, Financial Services & Management Research,Vol.2, No. 4, Pp.1-9.
- Taru, G.E.Nkwi, A.I.Medugu and Reuben (2010), "Economics of Broiler Production in Meme Division of Cameroon", Journal of Agriculture Science, Vol.1, No.2, Pp.83-87.
- Varinder Pal Singh, V. K. Sharma, M.S. Sidhu and H.S. Kingra (2010), "Broiler Production in Punjab — an Economic Analysis", Agricultural Economics Research Review, Vol. 23, Pp.315-324.
- Yusuf, S.A. and O. Malomo (2007), "Technical Efficiency of Poultry Egg Production in Ogun State: A Data Envelopment Analysis (DEA) approach", International journal of poultry science, Vol.6, No.9, Pp.627-629.
- Yusuf, S.A. and O. Malomo (2007), "Technical Efficiency of Poultry Egg Production in Ogun State: A Data Envelopment Analysis (DEA) approach", International journal of poultry science, Vol.6, No.9, Pp.627-629.

WORKING PAPERS

- Czech Conroy (2005), "Improving Backyard Poultry-Keeping: A Case Study from India Agricultural Research & Extension Network", Network Paper No. 146, Pp. 1-16.
- Prabhu P., Khwaja, Y. and Meijer, M., (2005), "Commercializing Small Farms: Reducing Transaction Costs", ESA Working Paper, No. 05-08.

REPORTS

- Costales, A.C., Delgado, C., Catelo, M.A., Tiongco, M., Chatterjee, A., Reyes, D. A. and Narrod, C., (2003), "Policy, Technical, and Environmental Determinants and Implications of the Scaling-up of Broiler and Swine Production in the Philippines", Annex-I, Final Report of IFPRI-FAO

Livestock Industrialization Project: Phase II, Washington, D.C., and International Food Policy Research Institute.

- Igodan, C.O., P.E. Ohaji and J.A. Ekpere (1988), "Factors Associated with the Adoption of Recommended Practices for Maize Production in Kainji Lake Basin of Nigeria, Agricultural Administration and Extension, Vol.29, Pp.149-156.
- James M. MacDonald (2008), "The Economic Organization of U.S. Broiler Production, Economic Information Bulletin, No. 38.
- Maurice Landes, Suresh Persaud and John Dyck (2004), "India's Poultry Sector: Development and Prospects", Market and Trade Economics Division, Economic Research Service, U.S. Department of Agriculture, Agriculture and Trade Report.
- Pica.U -Ciamarra and J. Otte., February (2009), "Poultry, Food Security and Poverty in India: Looking Beyond the Farm-Gate", Pro-Poor Livestock Policy Initiative, a Living from Livestock Research Report.
- Taha, F.A., (2003), "The Poultry Sector in Middle Income Countries and its Feed Requirements: The Case of Egypt", Outlook report No.503-02, Economic Research Service, USDA.www.ers.usda.gov/publications/WR 503/Dec 03.

PROCEEDINGS

- Headley, J.C. (1964), "Economics of Scale and Size in Floor Managed Laying Flocks", World Agricultural Economics and Rural Sociology Abstract, No.6, Pp. 3.
- Pandey, R.K., Bhardwaj, S.P., Mahajan V.K. and Nirman, K.P.S., (1996 a), "Economic Study of Poultry Production in India", XX World Poultry Congress Proceedings, Vol.3, Pp. 527-34.

CONFERENCES

- Arthur, J. (2006), "Family Size and Quality of Life Nexus: A Case of the Sunyani Municipality-Ghana**",** Paper Presented at the 5th African Population Conference, Arusha, Tanzania 10th-14th December, 2007.
- Bhardwaj S.P., Mahajan V.K. and Pandey R.K. (1995), "Study of Cost Behaviour and Marketing Margins in Poultry Production - A Case Study of Broilers", Indian Journal of Agricultural Marketing Conference Special, Pp.72-73.
- Iqbal Uddin (1996), "Poultry Development Policies and Planning for Higher Production Environmental Production Income and Employment", XX World Poultry Congress, 25th Sept., New Delhi, Vol.3, Pp.333-342.

- Ndahitsa, M.A. (2008), "Impact of Small Scale Irrigation Technologies on Crop Production by Fadama users in Niger state", 10th national Annual Conference of National Association of Agricultural Economics (NAAEC), Held at university of Abuja main campus, Pp.195.
- Seetharaman (1996), "The Role of Poultry Co-operation in India, XX World Poultry Congress, Vol.3, Pp. 343-357

THESIS

- Amaza, P.S. (2000), "Resource Use Efficiency in Food Crop Production in Gombe State", - A PhD Thesis (unpublished), cited in Abdul
- Hamra C.F, (2010), "An Assessment of the Potential Profitability of Poultry Farms: A Broiler Farm Feasibility Case Study", P.G Thesis.
- Salam R.Y. (2010). Economics of Smallholder Irrigated Farming System in the Hadejia Nguru Wetlands of North Eastern Nigeria. M.sc dissertation (unpublished), Department of Agricultural Economics and Extension, Faculty of Agriculture, Usmanu Danfodiyo University Sokoto.

WEBSITE

- Rick K., (2002), "Strategies for Managing Expensive Feed on Farm", SPESFEED Animal Nutrition Consultants, www.spesfeed.co.za/strategies.

ANNEXURE-I

QUESTIONNAIRE

ON

ECONOMICS OF POULTRY FARMING IN NAMAKKAL DISTRICT

1. Name:

2. Address:

3. Age:

4. Sex: a). Male b). Female

5. Educational Qualification
   a). Illiterate
   b). Primary
   c). Secondary
   d). Higher Secondary
   e). Graduate
   f). Post Graduate
   g). Diploma

6. Other Occupation:
   a). Businessmen
   b). Agriculturist
   c). Government Employee
   d). Private Sector Employee
   e). Professionals

7. Monthly Income from other Occupation (Rs):

8. Marital Status:

   a). Married
   b). Unmarried
   c). Widow/Separated

9. Size of the Family:

   a). Nuclear Family
   b). Joint Family

10. House hold Size (No. of. Persons)

a). 2- 4 Persons
b). 5 – 7 Persons
c). 8 – 10 Persons
d). 11 – Above

11. Experience of Poultry Farming

a). Less than five years
b). 5- 10 years
c). 10- 15 years
d). 15- 20 years

12. When did you start Poultry Farming?

13. Type of Farming

a). Full Time
b). Part Time

14. Farm Size (No. of Birds)

a). Small (Less than 3000)
b). Medium (3001 – 6000)
c). Large (6001 – Above)

15. Extension Contact (No. of Visits)

a). 0 – 5 Visits in a Day
b). 6 – 10 Visits in a Week
c). 11 – 15 Visits in a Month
d). 16 – Above Visits in a Year

16. Sources of Financial Assistance and amount invested/ borrowed

Source		Amount (in Rs)
a). Own	:	
b). Friends and Relatives	:	
c). Loan in Nationalized Banks	:	
d). Loan in Private Banks	:	
e). Loan in Co-operative Banks	:	
f). Loan in Non - Banking Financial Institutions	:	

17. Do you have Membership in Farmers Associations

a). Members
b). Non- Members

18. Which Type of Organization do you have

a). Individual / family Proprietorship
b). Legal Partnership
c). Family Corporation
d). Non-family Corporation
e). Estates/ Trusts/ Co-operatives

19. Fixed Capital Investment Pattern on Farm

S.No	Investment Item	Farm Category		
		Small	Medium	Large
1.	**Buildings** i).Broiler shed ii). Feed store iii). Office &Labourer room			
Sub-Total (1)				
2.	**Equipment's** i). Feeders &water ii). Feed grinder & Mixer iii). Miscellaneous			
Sub-Total (2)				
Total fixed investment				

20. Cost of Production of Per Bird

S.No	Cost Items	Cost (Rs)	Farm Category		
			Small	**Medium**	**Large**
1.	**Fixed Cost** a). Cost of Permanent labour b). Rent of Shed				
	Total Fixed Cost				
2.	**Variable Cost** a). Price of day Old Chicks b). Cost of Feed c). Cost of Wood/Flocks d). Cost of Electricity/ Diesel e). Cost of Vaccination/ Medicines f). Cost of Lime g). Cost of Litter/ Saw Dust h). Interest on Working Capital i).Interest on Investment on Birds j). Cost of Water k). Health Cover				
	Total Variable Cost				
3.	**Marketing Cost** a). Transportation Cost b). Advertisement Cost				
	Total Marketing Cost				
	Total (1+2+3)				

21. Gross Returns from different sources per Broiler

Source of Income	**Farm Category**		
	Small	**Medium**	**Large**
Sale of Broiler			
Sale of Gunny Bags			
Sale of Manure			
Sale of Culled Birds			
Total			

22. Reasons for selecting the poultry farming

S. No	Reasons	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Self-Employment					
2.	Family Business					
3.	Government Encouragement					
4.	Easy to Start the Business					
5.	Enjoy the Fringe Benefits given by Government.					
6.	Necessity/ Compulsion					
7.	Small in Size					
8.	Low Investment					
9.	Availability of Raw Materials					
10.	Demand for the Broiler in Market					
11.	Availability of Human Resources					

23. Motivational Factors Locating the Poultry Farming in Namakkal District

S. No	Factors	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1.	Availability of Raw Materials					
2.	Climatic Conditions					
3.	Availability of Marketing Facilities					
4.	Nearby Veterinary Hospital					
5.	Easy Transport Facility					
6.	Low Investment					
7.	More Demand on Broiler Chicks					
8.	Cheap Labour					
9.	More Marketing Facilities					

24. Problems Faced by the Poultry Farmers (Please rank them)

i). Lack of Availability of Raw Materials

ii). Lack of Knowledge about Improved Technology

iii). Lack of Disease Control Measures

iv). Higher Feed Cost and Low Egg Prices

v). Lack of transport/ Storage Facilities for Eggs

vi). Inadequate Investment

vii). Labour Problem

viii). Inadequate Power Supply

ix). Dependent on Middlemen to get Feed & Marketing their Eggs

x). Lack of Export Facilities

xi). Inadequate Health Coverage

xii). Managerial Problems

xiii). Inadequate Extension & Training Facilities