

MARKETING OF POULTRY FARMING AND POULTRY FEEDING IN LAHAN, NEPAL

THESIS

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LETTER OF RECOMMENDATION

This is to certify that Mr. Pramodanand Jha has completed the research work entitled *Marketing of Poultry Farming and Poultry Feeding in Lahan, Nepal* under our supervision and guidance. We, therefore, recommend the thesis for final approval and acceptance.

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***“Marketing of Poultry Farming and Poultry Feeding in Lahan, Nepal”*. And found the thesis to the original work of the student written according to the prescribed format. We recommend the thesis to be accepted as partial fulfillment of the requirement for Master’s Degree in Business Studies (MBS).**

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CERTIFICATION OF AUTHORSHIP

I certify that the work in this thesis has not previously been submitted for a degree or has it been submitted as part of requirement for a degree except as fully acknowledge within the text.

I also certify that the thesis has been written by me and it is under received in my research of my supervisor **Mrs. Bijaya Laxmi Chaudhary** and head of department **Mr. Suman Sah** that have received my research work and the preparation of the thesis which has been acknowledges. In addition, I certify that all information sources and literature used are in the reference section of the thesis.

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LIST OF ABBREVIATIONS

A/c – Account

Eg – For example

GM – Global Market

HF – Hatchery Farm

HC – Hampshire Chicks

JT – Junior Technician

Kg – Kilogram

Pg – Page

NFI – Nepal Feed Industries

RD – Ranikhet Disease

FP – Foul Pox

TF – Tick Fever

VDC – Village Development Committee

HDI – Human Development Index

ADB – Agriculture Development Bank

NFIA – Nepal Feed Industry Association

CSF – Chick Starter Feed

PGF – Pullet Grower Feed

FS – Field Survey

FCR – Field Conversion Ratio

CM – Contribution Margin

g – Growth Rate

k – Market Rate

s – Sales

TC – Total Cost

VC – Variable Cost

CHAPTER- I

INTRODUCTION

1.1 General Background

As an agricultural country, the importance of poultry industry to national economy cannot be under estimated in Nepal. Commercial poultry farming become a popular business for income generation and poverty alleviation by reaching most disadvantaged socio-economic groups including marginal farmers and women in the country. About 50,000 Persons have received direct employment in various stages of commercial poultry production such as hatcheries, meat and egg production, marketing and feed production (poultry munch 2018). The poultry sector not only conserve the scarce national reserve of foreign currency through import substitution but also has high potential for export, particularly to the Tibet Autonomous Region of China, Bangladesh and even to some of Gulf countries.

Now a day the production and consumption of chicken meat is no more confined in certain ethnic group. Due to high population growth, urbanization, road access, transportation linkages, change in dietary habit of the people, increasing awareness on nutrition and growing demand of different meat products by the consumers, the poultry products(meat and egg) becomes a most important and valuable source of animal protein to nourish all aged group of the people.

The most of the commercial production was concentrated in central region of Nepal mainly due to high demand of poultry products in capital city Kathmandu, better transportation and communication facilities, and availability of chicks, formula feeds and technical assistance in this region (Bhattarai et al., 2018). There is more potentially to sell final product (meat and eggs) in large towns and cities like Kathmandu, Biratnagar, Pokhara, and other local markets of the country. In addition to domestic market there is high potentiality for export in Tibet of china, Bangladesh, India and even in some of gulf countries. Poultry market is not organized and there is lack of infrastructure for collection, transportation, and handling, processing and marketing of products. The major marketing activities involved are marketing of chicks from hatcheries,

marketing of feed and medicines and finally marketing of final products such as eggs and birds. Due to lack of a marketing infrastructure, the market prices of perishable poultry products are fluctuated heavily, which makes the profitability of poultry farming highly uncertain and often causes losses to the poultry producers.

Nepal is a predominantly agricultural country. Agriculture plays an important role in the Nepalese economy. About 60% of it's total population is engaged in the agriculture sector directly or indirectly. But the production from land has been decreasing every year because of traditional farming systems, poor irrigation and environmental deterioration. The main crops of Nepal are maize, wheat, mustard, millet, rice, barley, and potato.

In Nepal, farmers are busy in their fields for only few months. During the year, leaving periods of time when they don't have any work, poultry production programs will provide a substantial contribution to alleviation of poverty through income generation and employment promotion in rural areas.

Source: Nepal District Profile, 1998, HariBhakta Sharma, Tika Ram

Lahan is a large town and interested market for poultry feed and farming with high growing rate of customers, so it is selected for this thesis writing.

1.2 Statement of problem

The major problems in Marketing of poultry farming and poultry feeding in Lahan.

Nepal is located at the central part of Asia, where the numbers of feed industries are increasing every year. Because of sound transportation facilities, it is convenient to distribute products from Lahan and other places. The weather condition is mostly suitable for poultry farming, and farmers are practicing poultry farming on a small scale as well as a large scale. People are much interesting in poultry farming because it is more profitable than any other business.

The major problems are :-

- i) What is the present situation of feed industries in Lahan, Nepal?
- ii) What are their marketing practices such as pricing, distribution and promotional activities of feed industries?
- iii) What is the scope and problems of feed industries in Lahan?
- iv) What are the necessary policy and support measures should be perceived by the farmers themselves?
- v) What are the problems of poultry meat farming?
- vi) What is the situation of poultry meat production in Lahan?

1.3 Significance of the Study

Nepal is one of the most famous country for poultry farming and feed production. In this country more or less the same around 3, 00,000 persons are directly or indirectly engaged in these businesses. These industries are supplying their products to 75 districts. The present situation of feed industries in Nepal should be analyzed in order to extend these industries further.

Eggs and chicken are one of the best foods in Nepal because they contain proteins, vitamins and minerals which are necessary for human. Eggs and chicken meat are easily available too. Low quality of feed can not give poultry products such type of proteins and vitamins. Also, feed constitutes 60to70 percent of the poultry farming cost. Therefore, the feed owner should have knowledge about best quality of feed. This research will help feed industry owners by providing information and suggestions about poultry farming, feed and feed industry.

Poultry population in Nepal is about 16 million. Nepal contributes nearly 68% of the total poultry production of the country. Approximately, 10% of the broiler chicks are produced from Lahan (Dhakal, 2017). Acceptance of chicken into the diet of Nepalese households has significantly increased over the last four decades. Rearing and consumption of chicken and chicken products are no confined to certain ethnic group of the country. Lahan is central part of the country where the production of poultry eggs and meat is very high. Poultry products are exported in large scale from this district to valley and other places of Nepal. In different plan period, our government was set different poultry development programme in rural and urban areas of the country. Several research and studies have been made in the past for the development of poultry farming in Nepal from which a quantitative growth has been achieved compared to qualitative improvements.

1.4. Objectives of Study

The basic objective of the study is to analyze the production and marketing of Nepal. The specific objectives are following:

- i. To analyze the present situation of feed industries in Nepal.
- ii. To examine their marketing practices such as pricing, distribution and promotional activities of feed industries.
- iii. To study the scope and problems of feed industries in Nepal.
- iv. To suggest necessary policy and support measures perceived by the farmers themselves.
- v. To highlight the problems of poultry meat farming.
- vi. To measure the poultry meat production in the Lahan.

1.5. Limitation and Delimitation of the Study

- i. Field survey has been done at Lahan.
- ii. The study is confined to production and marketing aspects of the feed industry.
- iii. Time and resources constraints may limit, the areas covered by the study.
- iv. Political disturbance may bring unreliable fact for research work. But vision is clearly prescribed.
- v. Lastly, every statement of first chapter highlight the preview of poultry feed production and marketing in Lahan.

- vi. Field work is done in short period on the basis of sample size and analysis of Lahan market.

CHAPTER - II

REVIEW OF LITERATURE

2.1 Conceptual Framework

Concept of Poultry

Poultry are the birds that are bred to provide meat and eggs for the peoples. The common kinds of poultry raised domestically in the world are chicken, duck, turkey, geese, ostrich, quails, pheasants, Guinea fowls and pigeon. Chicken, Geese, Ducks and Quails are popular in Nepal (Ghimire, 2017).

“The term poultry applies to a rather wide variety of birds of several species and it refers to them whether they are alive or dressed (slaughtered and prepared for market). The term applies to chickens, turkeys, ducks, geese, swans, guinea fowl, pigeons, pea-fowl, ostriches, pheasants, quail and other game birds. The study of birds which are not classified as poultry is known as ornithology.”

Historical Background of Poultry Farming in Nepal

Poultry farming deals with the practice of scientific methods of poultry keeping, feeding, management and disease control for getting the best economic returns from them. Chicken is one of the most popular domesticated fowls of Nepal. The domesticated chicken originated from inter-mating between species of four wild fowls, including the Red Jungle Fowl (Arboleda, 1986; Morejihan, 1993). The Red Jungle Fowl inhabits Nepal from the Tarai foothill to up to 1,515 meters in the hills (**Hauser and Gustave F.**).

As the history of poultry farming in Nepal, it is better to say that there was no poultry farming at all before independence as she was closely confined for 104 years under the Tyranny regime of the Ranas. But there were poultry birds that were domesticated in backyards. In poultry birds too, the chickens are domesticated in the houses except in the houses of Brahmins, Kshetriyas and Buddhists. Nepal is best market destination in SAARC for India to sell and earn more profit from goods and services. (**Shrestha, Sanjeev Kumar and Amatya, KailashParindra, “Global Marketing”, 2015**). To identify market is a

challenge and opportunities for a marketing manager in recent period. (**Bhattarai, Manoj , “Marketing Management” 2067)**)

Traditionally, poultry’s keeping is predominantly conventional backyard farming; farmers keep a few birds in their backyard for home consumption. Some surplus chickens were sold within the village on personal contact basis or in the local market place. Though not very common, marketing of chicken through middlemen to larger towns and cities existed to a limited extent (Dhakal, 2017).

“It is said that, at the time of Rana Regime, in Singha Durbar the poultry fowls were domesticated there. They used to display it as their poultry farms. From the history, we found that poultry farming began to be commercialized from 2017B.S. and it has been providing nutritious food to people in the shape of eggs and meat.”

(Source: YagyaLalShrestha, Poultry Farming in Nepal Submitted, 1964,)

Historical Development of Poultry Feeding in Nepal

At present, Nepal is famous for its poultry farming and feed industry. Millions of rupees are invested in this sector. The poultry farming was started in 2014B.S. in Parwanipur, Nepal. The poultry enterprises were started by Singh Bahadur Joshi, and grew slowly since 2017B.S. (Pandey, 2017)

Both Nepalese poultry population and production were increasing at slow rate. It shows that up to 1980 the population was increasing very slowly, and there was almost no commercial production. So this stage is termed subsistence type of backyard poultry farming. The backyard poultry has very low productivity and were scattered in rural areas (Bhattarai, ET, al.1999).

As the commercial production started to expand only after 1980, then population of poultry birds started to increase rapidly. Feed companies and hatcheries were established early but up to 1990 more than 50% of the day- old chicks were imported from India. This transition period up to 1990 can be termed as the stage of commercialization. After 1990 the new hatcheries started to produce chicks and the self-sufficiency in day-old chicks was only from 1995. Due to availability of chicks and high demand for poultry products larger scale egg and meat production farms were established so this stage (From 1990 to date) can be termed as

the stage of commercial production, Evolution of high yielding breeds, advancement in management, nutrition and disease control measures have all made poultry large complex of agribusiness for income generation and poverty alleviation in Nepal **(Dhakal, 2017)**.

Poultry farming ensured regular supply of good quality animal protein to the consumers and hence stimulated the consumption of animal protein, Poultry production is seen as an alternative and potential source of income earner for low and middle class farmers. Low investment, relatively good market, and quick return and less labour intensive enterprise are considered major attracting force of investment in farming. It gives employment opportunity for unemployed peoples also. In addition, this business is popular in all classes of society, including women and marginal farmers and also becomes one of the government's strategic programmes for poverty alleviation by including the most disadvantaged socio-economic groups and women in the country.

Agriculture is the predominant sector of Nepalese economy where more than 60% populations are engaged in agriculture, It contributes about 30% GDP and serve as a major source of raw materials to most of the agro-based industries of the country. Poultry industry shares 3% of the total GDP and 8% of agriculture GDP of the country (Dhakal, 2017). The manure obtained from the poultry having most essential plant nutrients like nitrogen, phosphorus, potash etc. than other organic manures and it can supplement the synthetic fertilizers for producing agronomical and horticultural crops in the country. Poultry farming creates a greater demand for agro-industrial byproducts and wastes which are utilized and incorporated in the poultry feed.

The poultry sector received the fourth largest livestock commodity after cattle, buffalo and goat (Bhurtel and Shaha, 2000). The Agriculture Perspective Plan (APP, 1995) of Nepal showed that the commercial poultry has given the fourth priority with in livestock development and the livestock has top most priority in Agriculture. Poultry farming is a socio-agriculture culture in Nepal. Poultry population in Nepal is about 16 millions. During the last decade, the poultry industry have experienced massive growth and expansion over 10% and 18% per annum for eggs and chicken meat respectively **(Dhakal, 2017)**.

About 4 feed industries of Lahan supply its production to many parts of the country. They produce about 125 tones of poultry feed in total per day. They also produce cattle feed, pig feed, rabbit feed, horse feed, battai feed, etc. Most of the feed industries sell their feed in

other districts through local dealers and branch offices. Feed producers in Lahan supply their poultry feed to 35 other districts through branch offices.

Table No. 2.1
The Name of Districts where Supplying Feed

S. No	The Name of District
1	NawalParasi
2	Rupandehi
3	Palpa
4	Dang
5	Surkhet
6	Banke
7	Bardia
8	Rolpa
9	Kailali
10	Dhading
11	Kathmandu
12	Lalitpur
13	Bhaktapur
14	Kabhre
15	Dolakha
16	Tanahun
17	Lamjung
18	Gorkha
19	Kaski
20	Baglung
21	Myagdi
22	Parvat
23	Arghakhachi
24	Gulmi
25	Makvanpur
26	Bara
27	Parsa
28	Dhanusha
29	Sarlahi
30	Siraha(Lahan)
31	Saptari
32	Morangh
33	Sunsari
34	Jhapa
35	Sindhupalanchok

(Source: Field Survey, 2075, Asoj)

The table shows that Lahan is importing its poultry feed from districts spanning from the eastern to western Nepal. So, the private sector has played an important role in supplying poultry feed out of the district and in doing so, it has supported the economic growth of Lahan.

There are about 2000 poultry farms in Nepal having flocks size of and average of 200 birds. Along with the poultry farms various feed industries were also established in the country. “The two leading commercial farms are Ratnas Feed and Nepal Feed Products which cover 80% of the total sale of feed in the kingdom of Nepal”. Other feed products are Dakshya Feed, Dutta Feed, Agrovvet Feed Products, Government cattle feed plant etc. There is one central Veterinary Hospital which provides vaccines free to all farmers. Ratnas feed also provide such medical service to farmers at a very low cost.

The government is also giving due emphasis for the development of poultry farming and in the national plan also, funds are separated to be spent in this feeds, in the third five year plan there was target to produce 1200,000 chickens but only 1,93,577 chickens were produced which was 20%. In the fourth five year plan, the target was to establish one brooder unit in Pokhara, Nepalgunj and Bhairahawa respectively to meet and egg. In the period of this plan it was estimated that following number of chickens will be produced from the government and private sector.

Scope of Poultry Farming and Poultry Feed in Nepal

Poultry meat is the first source of meat in Nepal. At present, the rate of increasing demand for poultry meat is greater than buff, pork, mutton and fishes, etc. because the chicken meat is more easily available and tastier than other meats.

In the main poultry development areas, the socio-economic impact of poultry farming in the peasant society of the country was not studied clearly till now. So, the main purpose of this study is to find out the impact of various socio-economic aspects of poultry farming reference to poultry meat farming in the major production areas (inner Tarai region) of the country. This study may help to researchers, policy makers, farmers and other interested persons in their respective areas. In addition to this theoretical significance, the present study may also serve some practical utilities also. This study provides recent data on the actual scenario of poultry farming in Lahan condition, which may help to the policy maker for setting different

developmental programme of poultry farming in the country. All these, in a way, provide some basis for setting proper and effective production and marketing policy to promote poultry farming in the country.

The demand for poultry meat and eggs in Nepal were 29,510 tonnes and 5, 19,590 thousands respectively in Fiscal year 2075/76. The rates of increasing yearly demand for meat and eggs are 18% and 10% respectively. Chickens are totally dependent on poultry feed. Therefore, the extension and improvement of the poultry feed industry is essential in order to provide sufficient food for chickens.

The success of poultry farming has attracted the establishment of a feed industry, so the number of feed production plants/ factories is increasing every year. There are currently 204 feed industries in Nepal.

The table below shows the number of private sector feed industries per district in Nepal.

Table No. 2.2**Number of Feed Industries in Private Sector**

S.No.	Name of Districts	No. of Feed Industries
1	Kathmandu	50
2	Lalitpur	6
3	Bhaktapur	20
4	Morang	10
5	Sunsari	4
6	Saptari	2
7	Makwanpur	8
8	Chitwan	40
9	Dhading	8
10	Kabhre	10
11	Nuwakot	2
12	Gorkha	2
13	Tanahun	2
14	Kaski	16
15	Syangja	4
16	Parwat	2
17	Rupandehi	8
18	Nawalparashi	6
19	Banke	2
20	Siraha	2
	Total	204

Source: KukhuraPalan, 2075/76.

Agriculture Development Centre, Pg. No 17

The table No. 1.1 shows that there are 204 feed industries distributed across 19 districts. Lahan is the fifth largest feed producer in the country. “In FY 2075/076 the feed industry produced 1600 tones of poultry feed in total. That was a 15% increase from last fiscal year.”

(Source: Nepal Feed Industry Association Report, 1998.)

The government is not giving adequate attention to the poultry farming and feed industries even though it is very important for economic development. The service provided by the government is far below the need of the poultry sector.

Provision for Poultry Market Development in the ninth Plan (1997-2002).

“A national poultry production and marketing center will be established to support private sector development and management of commercial poultry farming and market promotion. This center will help the government sector in policy formulation in the fields of planning, Implementation, monitoring, market management and appropriate protection. The center will also participate in the poultry and hatchery industry for the development of poultry enterprise, and promote the enterprise through monitoring and evaluation.

A livestock market management programme will be initiated by establishing private slaughter house and cold storage facilities with the active role of municipalities and village development committees.”

Poultry farming have emerged as a major income generation enterprise in agriculture sector over the last three and half decades. In recent years, commercial poultry production has emerged as one of the attractive business in Nepal in generation and in Lahan in particular. Today, poultry production has become one of the most rapidly growing enterprises within the reach of the poor, women, marginal farmers, and entrepreneurs. Considering the trends of population growth, urbanization, road access, transportation linkages, change in the dietary habit of the people, increasing awareness on nutrition and growing demands for consumer products, it will be safe to assume that poultry sector will constantly grow in a foreseeable future. In addition, since poultry farming is within the reach of all classes of society, including women and marginal farmers (Bhurtel and Shaha, 2017).

The period of the rapid expansion of fowl keeping was in the first millennium B.C. from north-west India and evidently reached Persia at an early date. Whilst this is implied in the coin evidence from north-west India and its appearance on Assyrian Seals around the eighth century BC there is substantial literary evidence in addition. In the religion of Zoroaster the fowl plays an important role as guardian of the god against darkness and evil; with his walking crow the cock became the symbol of the dawn, and thus of the light in general. Hahn believes that the use of the cock as a “time piece” arose in Indo-Bactria.

Poultry industry shears 3% of the total GDP and 8% of the agriculture GDP of the country (Dhakal, 2017). The poultry industry has thus witnessed a considerable investment, which is reflected by the growing number of commercial poultry farms. The poultry sector not only conserves the scarce national reserve of foreign currency through import substitution but also has high potential for export, particularly to the Tibet Autonomous Region of China, Bangladesh even to some Gulf Countries (Bhurtel, 2017).

Domesticated fowl evolved from four wild species of the “genus Gallus”. The Red Jungle fowl, it is the chief ancestor, ranges geographically from Kashmir to Tonkin, and on the Peninsula South to the Godavari. The other three species are however, closely related and betray by their distribution that they are no more than somewhat divergent geographical races. They are known to interbreed with the red jungle fowl.

Archaeological evidence suggests that the Indus Valley Civilizations was familiar with the fowl. Among the seals from Mohenjo-Daro, Mackay(1938) recognized one with artistic depictions of two birds in the position of flight, which he thought were sonorous cocks, Gander however, (1953) regards them as red jungle fowl. They are also clay figurines from the same site, which are intended for fowl. Most are fragmentary, but the evidence is cumulative.

The total population of poultry was 15.9 millions producing 10962 tonnes meat and 421.4 millions of egg in the year 1996(Statistical Book, 1998). The backyard chickens comprise about 69% of the total population but the egg production was only 12% of the total production (Dhakal, 1996). The ducks (20.75%) and the rest of all other poultry birds (1.40%) were backyard type only. The percentages of households keeping such chickens in mountain, hills and Tarai region were 50.4, 67.6 and 32.4, respectively, in the year 1992(**APP, 2017**).

Poultry husbandry has been transformed into an industry in the past one decade. The agricultural census(CBS, 1994) estimated a two-third increase in poultry population over a ten year period, 1981-1991 from 7.4 million to 12.3 million(Bhurtel and Shaha, 2000). The total commercial feed production was about 149,920 tons and commercial poultry population was about 4226 thousand in 1996. The per capita consumption of poultry meat and egg was 1.33kg and 1.07kg in 2015(Lohani. et al., 2015).which was comparatively lower than the world average. But the demand of poultry meat and eggs was increasing at the annual rate of 25% and 10%, respectively in urban areas **(DLS, 1991).**

Poultry and Poultry feed Marketing in Nepal

“.....The marketing process establishes forward linkages for agricultural activities, that is, it provides economic rewards for the production process. It includes not only storage and transportation activities of the middleman but also encompasses all activities linking the consumer and the producer.”

(Source: Macmillan Dictionary of Modern Economics, 4th Edition, pg 117)

“Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of goods, services, and ideas to create exchanges with target groups that satisfy customer and organizational objectives.”

(Source: Philip Kotler- Marketing Management, 8th Edition)

A marketing programme plays a crucial role in the physical distribution of any product. Therefore, each and every firm should have marketing system for channel the product to the market to satisfy customer needs and wants. Sometimes they have to face the marketing problems of capturing the market and creating goodwill.

Nepalese poultry husbandry is basically characterized by backyard poultry keeping. As the history of poultry farming of our country is concerned it can be said that there was no poultry farming at all before 1951 or democracy. But there were poultry birds who are domesticated almost all the rural families and most of urban families except these families prohibited socio-religiously like Buddhists Brahmins and few groups of chhetries. Used to rear still now about 95%to 98%of Nepal’s estimated 18 million poultry population is of local native indigenous type (SkiniKukhura).

It is said that in Singh Durbar where now a days the chickens are displayed and the baby chicks are distributed, at the time of Rana regime too, the poultry fowls were domesticated there they used to display it as their poultry farms.

So we found that there was poultry farming in our country in past years too. But they were run neither commercially nor scientifically. Farm householder's generally used to keep 10 to 15 Birds of eggs and meat production for home consumption mainly. The regular consumption of eggs and poultry meat was very low even in rich people groups. But after independence i.e. from 2007 B.S. onwards poultry farming began to root up and the first poultry farm was opened in Singh Durbar in 2014 B.S. with 350 chicks. These chicks were imported from India. Compared to advanced countries (like U.S.A. and other developing countries like India,Ceylon , Japan ,Pakistan , Israel etc. where 1500, 2000 chicks were the one man's poultry farming) these were mere negligible.

From 2017 B.S. Poultry farming in our country began to flourish actively as she got technicians to some extendswith the help of U.S. Aid and the Department of Agriculture of Nepal.

The following are the poultry farming's run by the mutual help of the U.S. Aid and the H.M.G:

- a) The Singh Durbar Research Station is being carried on under the department of Agriculture. It was established in 2008 B.S. and sine then it had carried on pioneer research work on poultry farming. The experiments are carried on a small farm with about chickens. Six experts are carrying on this week. They were trained in foreign countries for the particular work; it has suggested of feed for the chickens which can be easily produced in the country also will be suitable for the chickens. Prevention of disease is also one of the work under them observation. The objective of this institution is to trial the feeds which are to be supplied to the poultry fowls as well as to the poultry birds. Its main function is to conduct a research on feeds. Which will help to a greater extent in the growth of the poultry fowls and poultry birds. It advises the poultry farmers to solve their difficulties and offer them good advises as to be free from the unknown diseases of the poultry It also gives its technicians to the private poultry farmer to inspect the poultry fowls. They suggested to the poultry farmers, how to design the feeders, what type of drinking water to be given to the chickens, the

economic type of brooding machines. Designing the incubators and other poultry equipments.

b) Jawalakhel Brooder Farm:

This station was started as a request of Parwanipur Hatchery Centre. This centre was mainly started to develop the poultry farming in Kathmandu Valley. Its main aim is to replace the country chickens that are generally found are not tendered enough yet the table as well as their reproductive capacity is low.

The chicks that are hatched in Parwanipur are sent to this farm for analytical brooding, and then these chicks are distributed to those who demand for them. They give some important instructions to the customers like how to brood the baby chickens. Because to have the baby, chickens brooding is very essential. If the proper brooding is not maintained the baby chicks can not survive. They need heat from 95 degree to 97 degree (It depends upon the behaviour the chickens and the environmental conditions). Hence the farm has been constructed with the object that they hatched chicks from Parwanipur and distributed to the demanded person. The farm gets one day old chicks from the Parwanipur Centre, and keeps them for seven days acclimatizing and sales it to the buyers who wanted to start poultry. The price that is charged for seven days old chicks is 1.25 paisa.

c) Central Hatchery Parwanipur:

This project has been established in the month of Magh 2018 B.S. with a view to hatch the good breeds after the donation of 1700 chicks from the HEIFIER Project of U.S.A. This project was running by the help of the combined aid of His Majesty's Government and US Aid. This centre gets the aid of Rs. 1.50 lacks approximately from the American aid. Its main object is to reproduce the chicks. By this way His Majesty's Government has planned to establish a brooder farm.

Contribution of Poultry Development By Government and Private Sector Livestock section of Department of Agriculture, Ministry of Food and Agriculture, His Majesty's Government of Nepal had introduced improved poultry breed called New

Hampshire. The first lot of 1700 New Hampshire chicks as a parental stock was brought from the

USA to Kathmandu Valley, which was later on transferred to the Parwanipur Central Hatchery farms. The first production of chicks during fiscal year 1961/62 was about 19,193 only. However, there was no significant production of eggs and chicks from these flocks until 1960. In 1963/64 fiscal year the maximum production of chicks was 78,496. Since then the production trend is almost fixed which is shown below:

Production of chicks in government central hatchery farms, Parwanipur and Jawalakhel Brooder Farms:

Fiscal Year	No.
1961/62	19,139
1962/63	54,000
1963/64	78,496
1964/65	78,187
1965/66	67,821
1966/67	70,428
1967/68	62,695
1968/69	67,231
1969/70	68,000
1970/71	68,000
1971/72	59,718
1972/73	66,700
1973/74	65,000
1974/75	63,000

During early period those chicks were supplied to Kathmandu Valley to the private farmers if a sublimity rate but now central Hatchery Farm itself distributes and sales these chicks to the private dealers of outside valley. In the early period agriculture extension workers like JTA and JT's provided technical services. Technical know-how. Knowledge about poultry rearing management, and veterinary care. Sporadic attempts have been made to improve the village bird by the introduction of white leghorn flocks in a few selected villages by US peace corps

volunteer's The practice of government helps are still continue now. From 1966, private sector came in front of start or to proved services to the farmers with reasonable charges. In 1966, Ratna Feed Industry was established on Registered who is one of pioneer in the development of poultry husbandry in Nepal. One of the biggest poultry farm is Joshi poultry Farm, Balaju, now a days there are many private hatchery farms and feed industries in the Kathmandu valley who supply almost all the chicks to the framers of the country.

The ecological distribution of Commercial broiler poultry farming in Nepal except Kathmandu valley is presented in given table

Ecological Distribution of Commercial Broiler Poultry Farming

Regions	Number of Broiler Chicks	Percentage
Mountains	74,500	4.96
Hills	508,000	33.82
Terai	919,500	61.22
Total	1,502,000	100.00

Source: Poultry Manch, 2075

The table shows that more broiler birds (61.22) are being farmed in Terai Region while 33.82 and 4.96 percent broiler birds are farmed in Hills and Mountains respectively.

Poultry production is rapidly increasing year after year. Galloping rise in the price of mutton has not only increased the demand of broilers but the broiler meat has come within the easy reach of the average citizen who has hitherto considered the meat as more a luxury than necessity. The increased availability of broiler meat may alleviate to a certain extend the protein hunger prevent in our rural masses.

In Asia Minor, the fowl became popular mainly during the Sixth Century AD, though it had been known earlier. It was the Persians themselves who spread it as they expanded their empire.

“Scientific poultry keeping in India was first advocated by Christian Missionaries towards the beginning of the 20th century AD. Their flocks of exotic breeds excelled in performance and were far superior to those of the indigenous fowls. The first mission poultry farm was established in Utah, Uttar Pradesh in 1912 and the first poultry exhibition was held at Lockhnow in December of same year.

Organized efforts to develop a poultry industry in India were initiated in 1957, when the second Five-year plan was launched. An All-India Poultry Development Project was initiated under it, regional poultry farms were set-up at Bangalore, Bombay, Bhubaneswar, Delhi, and Simla to acclimatize imported good quality stock under their respective agro-climate conditions to propagate them extensively in the regions, and to provide training facilities for the officers of neighbouring studies.”

(Source: G.C. Banerjee- Poultry- 2nd Edition-Pg-6)

“ In comparison with advanced countries like U.S.A. and other developing countries like India, Ceylon, Pakistan, Japan, Philippine, Israel etc. where 1500-2000 chicks are the one man’s poultry farming. Development of Poultry Industry in Nepal was not far advanced during this time. In 2017, seventeen hundred-day-old chicks of New Hampshire breed were donated by HEIFEIR Project of the U.S.A. With the help of these donated chicks from the U.S.A., the poultry farming began to flourish at a rapid speed, and the methods for brooding, housing, and feeding were also developed.”

(Source: YagyaLalShrestha, Poultry Farming In Nepal; Submitted 1964, pg-5)

“ To meet the demand for trained technicians in poultry husbandry and hatchery management one participant was sent to U.S. for one year in 1959-60, two were sent to the Philippines for one year in 1960-61, and one to Lebanon for one year in 1960-61 for training.”

(Source: Raymond E. Fort, The Role of USAID in Poultry Development in Nepal- 1971)

“Increasing human population and consequent shortage of food are considered to be major problems for the developing world. It is feared that if the existing trend in population growth rate continuous, the world’s population will reach 10.2 billion by the year 2050A.D. This will put a remarkable pressure on the world’s food resources and other areas also. Developing countries will suffer the most, where 95% of future population growth is expected to occur. A major increase is expected in Asia”(World Poultry Production- Processing and Marketing, Vol-10-1996, Pg. 42-43).

There is no updated or time series data for layers and broilers reared in commercial sector. However, 2.45 million layer and 11.26 million broilers chicks were estimated as being reared

in 1998 and considering the prevailing 12% mortality rates of layer and 9% of broiler birds, the number of layer and broiler birds were estimated to be 2.16million s and 10.3 millions, respectively (Poultry Munch, 1998). This study found 188,000 parent stock birds of layer and broiler being reared for chick production by 39 hatcheries of Nepal (Bhurtel and Shaha, 2017).

“Average global chicken meat produced was approximately 6.74 kg per capita in 1992, but Asia had a per capita consumption of just 1.4kg, which was expected to increase to 1.53 kg by the end of 1995. China and India had an average annual per capita consumption of 2.06 kgs and 0.43kg respectively.”(World Poultry Production- Processing and Marketing, Vol-10-2017, Pg. 42-43).

Changes in the poultry industries have a direct impact on the feed industry. Thus, feed production is increasing day by day to meet the increasing demands of a growing poultry industry. The table below shows feed production in world and Asia in the years 2017-2018.

Table No. 2.3

Share of Asia in Total Feed Production

Year	Total World Feed Production(in Millions MT)	Total Feed Production in Asia(In Millions MT)	Share of Asia in Total World Production (%)
2015	74.805	20.20	27.01
2016	76.458	20.796	27.20
2017	79.531	21.95	27.60

(Source: World Poultry, Vol. No. 10, 2018)

The above table shows Asia has covered about 27% of feed production in the world.

In Nepal, due to changes in the income and health awareness, the demand for eggs and meat are increasing. Both of these products are totally dependent on poultry feed. These table shows that previous, existing and situation of commercial poultry production in Nepal.

Table No.2.4**Situation of Poultry Production in Nepal**

Particular	2053/54	2054/55	2055/56	2056/57	2057/58	Growth Rate
Poultry meat(MT)	21,194	25009	29510	34821	41088	18%
Eggs (000)	429,414	472355	519590	571549	627704	10%
Broiler Chicks(000)	12,272	14481	17087	20162	23791	18%
Layer chicks(000)	1,716	1887	2075	2282	2510	10%
Feed(MT)	169,409	191432	216318	244439	276216	13%
No. of employees	36,220	39842	43826	48209	53030	10%

(Source: Nepal Feed Industry Association Report, 2018)

The table shows that production is increasing at the rate of 10 to 18 percent every year and the number of employees also increasing at the 10%. The feed organization has forecasted the same rate increasing in poultry Production in FY.2017/18. So the poultry farming is providing opportunities to previously unemployed people. “The scope of poultry farming is increasing. The reason of increasing rate is given below.

1. requires minimum investment to start with:

In comparison to other live-stock, it requires less investment to start a poultry farm. This means that persons from lower income brackets can also start small-scale business.

2. rapid return of profit:

Chickens start laying when they are about six months of age, and broilers are ready to be marketed for poultry meat between 8 to 10 weeks after they hatch.

3. Poultry convert feed to food protein efficiently:

Among all domesticated animals, broilers take only 1.9 kg of protein produce 1 kg of broiler protein.

4. poultry provides a continuous source of income:

Since they start laying at their age of six months, the farmer also starts getting return so early; broiler pays them within 2 to 2½ months. Poultry can reproduce year- round, which means a constant production, and therefore a continuous flow of income.

5. Farming require small space:

Poultry requires small space with modern confinement rearing and may be produced in the backyards of cities and small towns.

6. Stabilizes farm income:

Farmers occasionally experience crop failures due to unfavorable weather conditionals. When poultry rising mixed with other agricultural practices, farming tends to stabilize farm income.

7. Poultry feeds not commonly used for human consumption:

India possesses large quantities of agro-industrial by-products which are used as feed ingredients for transformation into eggs and meat.

8. Availability of superior stocks:

Some of the best breeding stock available anywhere in the world is now being multiplied in this country. Number one egg producing breed, White Leghorns, and cross-strains of other breeds have been imported and are well adapted to the Indian climate. Excellent White Rocks and White Cornish broiler meat strains are now available throughout the country.

9. Employment opportunities:

Poultry farming offers opportunities for full time or part time employment particularly for women, children or elderly people.

10. poultry manure used as fertilizer:

Poultry manure is an extremely rich source of nitrogen and organic material. Hence, it is highly regarded as a fertilizer.”

(G.C.Banerjeeop.cit, Footnote 5)

Some Problems of Broiler Poultry Farming Business.

The study has identified some major problems experienced by farmers involved in broiler poultry farming business which are divided into problems specific to study area and common problems.

Some of them are listed below:

- i) The in-depth interview with the farmers and interview with other agencies involved in this business such as veterinary doctors, feed manufactures, chicks producers and auditor of Poultry Munch Magazine indicated that generally farmers were having no technical knowledge about this business.
- ii) There is lack of efficient technician and quick veterinary services.
- iii) Due to lack of technical knowledge among farmers and lack of quick veterinary services, there is a high incidence of mortality of chicks in the study area.

Common Problems of Commercial Broiler Poultry Farming Business:

Common problems of commercial broiler poultry farming business are as follows.

- i) Farmers are not getting qualitative feed and healthy chicks and even they do not know way of getting qualitative feed and chicks.
- ii) Unstable market price of chicken is being serious problem because of no control on import of broiler chicken from India.
- iii) Increase in price of feed and substantial decrease in Available feed quality is leading higher cost of production.

- iv) In Nepal there is lack of standard laboratory to test feed quality and modern equipment for quick diagnosis of diseases.
- v) There is no provision of fine, punishment, penalty to discourage those groups who distribute and import low quality feed inputs, feed and chicks.
- vi) Government programmes is focused more towards other business like dairy development and bee keeping. Government effort to develop this business however is not satisfactory.

Type of Chickens:-

“Type of chickens can be classified in four classes.

1. American Class:

These chickens originally bred in America.

- a) Rhode Island Red
- b) Plymouth rock
- c) New Hampshire
- d) Wyandotte

2. Asiatic Class:

- a) Brahma:

This breed was developed in India and exported to America and England about one hundred years ago. The original birds were light in color. Brahmas are massive in appearance well feathered and well proportioned. They have pea combs. Mature birds weight from 4to 5 kg. Three varieties of Brahmas have been produced.

- b) Assel
- c) Karaknath
- d) Chittagong
- e) Cochin

3. English Class:

- a) Sussex- i. Light ii. Red
- b) Australorp
- c) Orpington

d) Cornish

4. Mediterranean Class:

a) Ancona

b) Minorca

c) Leghorn

Out of the important breeds classified as Mediterranean, the leghorn is by far the most popular. It is the world's number one egg producer. The breed originated in Italy and so far there are 12 varieties. Only three varieties, however, have become popular. They are:

- i. Single Comb White
- ii. Single Comb Buff,
- iii. Single Comb Light Brown.”

(G.C.Banerjeeop.cit, Footnote 5)

Poultry Disease:

“These diseases are caused by viruses and bacteria.

1. Ranikhet Disease:

The Ranikhet Disease, also known as Newcastle Disease, is a very dreadful infection and by far the most destructive of the poultry disease. It is caused by a filterable virus which can easily be isolated in the laboratory from the tissues of the infected birds.

2. fowl Pox:

Fowl pox is a highly contagious and infectious disease of chickens caused by a virus. It affects birds of all ages, but young chicks are more susceptible to it and succumb more rapidly.

3. tick Fever(Spirochaetosis):

Tick fever is a septicaemic condition caused by a corkscrew shaped organism known as *Borrelia Gallinarum*, which is present in the sick birds during fever. The disease is transmitted from the sick to the healthy birds by the common fowl tick. Tick fever is of no less importance than Ranikhet Disease.

4. infectious Carrizo:

This is very serious disease characterized by the inflammation of the sinuses and upper respiratory passages. Young chicks up to four months of age are usually affected and mortality is high among birds that contract the disease. Older birds may also be affected, and the rendered useless.

5. avian Leucosis:

Avian Leucosis, or fowl paralysis, is caused by a virus which afflicts different organs and tissues of the fowl.

6. fowl Cholera:

Fowl cholera is a septicaemic disease which may be suspected when birds are found dead in their coops without any previous signs of ill-health.

7. tuberculosis:

it is a highly infectious disease caused by the bacteria *mycobacterium tuberculosis* (Avian Strain).

(Source: P.M.N. Naidu, Poultry Keeping in India_1994, Page 178)

Nutrition

“Nutrition is the process of furnishing the cell inside the animal with that portion of the external chemical environment needed for optimum functioning of the many metabolic chemical reactions involved in growth, maintenance work, production and reproduction.

Nutrition encompasses the procurement ingestion, digestion and absorption of the chemical elements which serve as food. In addition it includes the transport of these chemical elements

to all cells within the animal organism in the physical and chemical form most suitable for assimilation and use by the cells.”

(Source: G.C. Banerjee- op.cit, Footnote 5, page 73)

“What should be the mandatory level of nutrient requirements of Poultry in Nepal?”

To prevent from this problem, farmers should provide adequate ventilation in broiler house to remove respiratory irritants like ammonia, carbon mono-oxide, bacterial, viral and fungal pathogens. Use low energy feeds through the entire life cycle of the broiler.

The mandatory level will have to be different from the ideal level. How much different should be determined by the quality and the price of available raw material, the price of finished product in the local market, the price of livestock and poultry products in the local market and the possible consequences of this decision of the country’s economy.

We are determining the minimum Nutrient requirement level and not the ideal nutrient level. The mandatory minimum level of nutrients and/ or maximum level of nutrients/anti-nutrient factors should be the level which, if not met and/or exceeded, will result in deficiency/ toxic symptoms in poultry. We might call it the “Critical Level”

While some control is necessary to improve standards and discourage inefficient operators from entry into the industry, it is important to consider that current legislation does not discourage development or impose costs on the industry and farmers. There are other methods to improve quality standards which should be implemented with priority.

Based on the above discussions, the adherence to quality standards for livestock and poultry feed should be mandatory by law. (Table 2.3 and 2.4).

This recommendation is based on the minimum level of nutrients recommended by the various poultry breeder companies, USNRC sub committee on animal nutrition, recommendation from international nutrition experts, as well as the local production systems, management conditions, environment and economy of the country.”

(Source: Nepal Feed Industry Association Report, 2018)

Table 2.5**Recommended Mandatory Feed Characteristics**

Character/Nutrients	Chick Starter(L ₁)	Pullet Grower(L ₂)	Layer Mash(L ₃)	Broiler Starter(B ₁)	Broiler Finisher(B ₂)	Cat Feed
Moisture,% max,	13	13	13	13	13	
Crude Protein, %min.	15	13	14.5	18	17	
Crude Fiber, % max	5	7	6	6	6	
Crude Fat, % min	3	3	3	4	4	
AIA, % max	4	4	8	3.5	3.5	
Ca, % min	0.7	0.6	3	0.8	0.75	
P.avail, %min	0.35	0.3	0.26	0.35	0.35	
NaCl, %max	0.5	0.5	0.5	0.5	0.5	
Vitamin A, IU/kg, min						5
Aflatoxin, ppb, max						

(Source: NFIA 2018)

Considering the variation on the quality of raw material available in the local market, B.S. copper of Tropical Products Institute ODA London, suggested that the following deviations may be allowed on the above characteristics before legal action is taken against the feed producers.

Table No: 2.6**Allowing Deviation in Mandatory Feed Characteristics**

Analysis	Permitted Deviation
Moisture	2.0
Protein	1.0
Ether Extract	0.5
Crude Fiber	2.0
Ash	1.0
Calcium	0.3
Phosphorus	0.1

(Source: NFIA-2018)**2.2 Poultry Feed****Evaluation of modern methods of Feed:**

Feed production is major component of poultry industry as it covers more than 60% of total cost required for poultry productions. About 45% of feed industries are of small unit producing less than 5 tons per day. About 35 percent are of medium size producing 5-10 tones per day and rest 20% are of large size producing more than 10 tons per day (Bhattaraia et al., 2001).

The first poultry feed mill was established in Kathmandu in early 1960s to fulfill the government sector's poultry feed requirement. Initially, the feed production initiatives were taken by the hatcheries themselves and later on feed mills expanded to meet the local requirements of poultry producers (Bhurtel and Shaha, 2017)

The demand for compounded feed is highly depended on the growth and expansion of commercial poultry industry. The commercial poultry sector utilizes about 95% of the total compounded feed produced in the country. As the data available from Nepal feed industries association, there are 149 feed industries located in 25 district of Nepal. (Bhattarai et al., 2001)

“Previously, only feeds grown on the farm itself were used. The ration was thus restricted to the grains produced and to any waste products or by-products from the farm or of the home. Now, we have developed a considerable number of specially prepared poultry feeds, which have no restrictions of ingredients, since modern transportation systems have linked all parts of the world and made practically any product available.

There has also been a development in methods of feeding and feeding practices. Originally, hens more or less fed themselves; very little attention was given to the birds. At first they were hand-fed almost entirely on grain. Then systems of hopper feeding developed in which the hens could help themselves.

The hopper itself has undergone considerable changes. In some developments it is always true that certain people go to extremes; the pendulum swings too far. That was true of the hopper system of feeding dry mash.

For instance, in some cases the hoppers were made large enough to hold supplies of mash for a month or more. It is doubtful whether that is the best practice since it discourages frequent observation of the birds and also increases the chance of spoilage of the feed. The present-

day tendencies are to practice a closer check-up on feeding both grain and mash. This practice has eliminated the very hoppers and substituted smaller ones of the open type.”

(G.F.Heuser-Feeding Poultry-1964)

BhurtelandShaha (2017) reported that in total 147 feed mills operate in Nepal. About 73% of these feed mills are located in KathmanduValley, Lahan, Pokhara and Kavre where most hatcheries have also been established. There are five large feeds mill, each producing 30-40tons of feed per day (e.g. Avinash, Ratna and Dangol feed Industries), and 15 feed mills with a capacity of 10-15 tons per day. The remaining feed mills are operated either by large poultry farmers by small feed millers (2-3 tons per day) to meet the local market demand in potential poultry and diary animal pocket areas. Their annual feed production capacity is estimated to be about600, 000 tons while the current demand for animal feed is estimated to be around 140,000 tons. Of this quantity, 95% was poultry feed, 4% cattle feed and remaining 1% includes pig feed, rabbit feed, horse feed and fish feed(Bhattarai et at., 2017)

Lahan is producing 125 tons of poultry feed per day, which is nearly 30% of the total feed production in Nepal. In some of the VDCs farmers prefer to prepare feed themselves rather than purchasing ready made feed in the market. (Dhakal, 2017)

The ingredients used for poultry consist of de-oiled soybean, sesame, sunflower and ground nut cake, maize, rice bran, fish meal, vitamins antibiotics, mineral mixtures and synthetic amino acid. All of these ingredients except the rice bran, maize and molasses, are imported either by middle man or directly by mill owners or suppliers. There is no system of monitoring the quality of feed ingredients, whether locally collected or imported from India. (Bhurtel and Shaha, 2017)

“When hoppers were introduced in poultry feeding they were used for grain as well as for mash. The hopper system of feeding grain was soon abandoned because it was believed that the hens did not get sufficient exercise. Grain, therefore, was instead fed in a litter of some kind, the depth of which has also gone through various evolutions.

Recently the trend has swung back in favour of hopper feeding chiefly due to the sanitary advantages that it offers. The ground feed is almost universally fed in hoppers. Hopper feeding of mash gives all the hens an equal chance to eat, allowing them the opportunity to

eat at any time, and preventing crowding incidental to feeding a wet mash to larger flocks.”
(G.F.Heuser-Feeding Poultry-1964)

Bhattarai et al., (2017) reported that Nepalese feed industry depends 46% on imported raw materials. The 95% of the feed ingredients are of agricultural products/ by-products. Nepal is an agricultural country even though the local supply of ingredients is only about 54%. They also reported that there is about 72% self-sufficiency in energy. The local supply of maize is only about 60% of the total demand. The situation is very different with protein ingredients. This dependency is about nearly 100% in soybean oil meal, sun-flower cake. Similarly the local supply meets only about 50% of the demand of bone meal. The dependency on oyster shell and vitamins/ minerals/ feed additives is nearly 100%. Most of the feed ingredients and feed additives are imported from India.

“Can a hen balance her own ration? Many theories and opinions have been offered regarding this. As a matter of fact, she comes very near to doing it when she is given a choice between grain and mash. The mash, if properly composed, is rich in protein, while the grain contains more of the energetic nutrients. Therefore, a hen eats from both the grain and mash as much as she wants of each and balances her own ration fairly satisfactorily. But the question has not yet been settled as to whether the hen should eat each of the different feeds separately. Feeding each separately has been tried, but in most cases has not proved satisfactory.”(G.F.Heuser-Feeding Poultry-1964)

Types of Poultry Feed:

There are two categories of poultry birds, broiler and layers. The main purpose of broilers is meat production. After one and half months, broilers are ready for selling. The main purpose of layers is for egg production. After five months layers are ready for egg production. Different type of feed are needed for different age of chickens. Generally in Nepal, feed industries produce five types of feed for layers and broilers. Feed ingredients are different for each type of feed.

1. chick starter(L₁)

It is for to build the basic body structure of the baby layer chicks. It has to be given for up week eight.

2. pullet Grower(L₂)

It is for growth of the chicks. It has to be given from week eight through week twenty.

3. layer Mash(L₃)

It is given after week twenty. It helps the chicken produce eggs until it dies.

4. broiler starter(B₁)

It is for baby broiler chicks to build their body rapidly. It should be given for up to thirty days.

5. broiler Finisher(B₂)

It should be given after thirty days. It is for making healthy meat.

“In formulating rations there are many factors which must be considered, and the final result must be the best balance of all these factors. The best results cannot be obtained unless the ration is complete. In order to make a ration complete, it must meet certain requirements. The results obtained will be in production to its completeness.

Protein:-

The ration must contain suitable amounts and quality of protein. It is essential that a certain minimum amount be present in the ration. Quantities can be larger without actual harm to the bird, but large quantities are not economical since the protein feeds are relatively expensive.

The requirement for protein varies for different purposes. The growing animal needs more than the mature bird. Also the egg producer requires more than the non-producer. The growing chick needs more protein in early life, when it is growing rapidly, than it does later or when relative growth slows down. There are also probably some differences in the amino acids required.

The various protein feeds must be balanced to prevent wasting them. The most efficient combinations are those that supplement each others deficiencies. This accounts for those results where a combination of two proteins is better than either one alone. When single

feeds, or a very limited number are relied upon. We shall not get efficient results, unless that choice happens what is known as a complete protein.

As our knowledge increases, we will undoubtedly consider the requirements of a ration in terms of amino acids, rather than more complex proteins, because it is really the deficiency or lack amino acid which limits results.

Energy:

We must also supply an abundance of energy to the chickens to keep body temperature up to fuel the body processes. This energy is often expressed as calories. It really is statement of total food consumption. It is an important factor, since very often results in production, even with a balanced ration are limited by a lack of food intake. The art of feeding consists of getting the birds to eat sufficient feed daily.

This energy is furnished usually in the form of carbohydrates and fat, which are considered as the energy portion of feeds, being most economical for that purpose. Protein can be used for this purpose when fed in excess, but it is too expensive to use for energy. Besides furnishing energy, some of the fatty acids are also essential as such.

Minerals:

The ration must contain a suitable mineral content. The practical poultry man must consider only the ones that might probably be deficient in his ration. When using a good ration, including natural feeding stuffs, the mineral deficiencies are few, the most common being sodium, chlorine, calcium and phosphorus.

The sodium and chlorine are furnished by common salt, usually $\frac{1}{2}$ to 1 % is included in the mash. Calcium for egg-shell formation is best supplied in the carbonate form. Oyster-shells and limestone grit will supply calcium. Wheat by-products, meat scrap, and milk usually provide enough phosphorus. When necessary to supply it, bone meal is usually fed.

Where minerals are necessary, they need to be added in only comparatively small quantities. It is possible to add too much of some.

Thus it is necessary to show proper judgment and take precaution in respect to minerals in keeping relative mineral concentrations at the correct levels. The attitude of some persons, namely, that the additional of minerals will do no harm, even if they do no good, is a small amount of minerals is good, a large amount should be better, is entirely unjustified.

Vitamins:

The ration must contain sufficient vitamins. The quantity of any of the different vitamins required by poultry varies with age and condition. Chicks and laying hens undoubtedly have a larger vitamin requirement than non-producers. In this instance, however molting hens should not be classified as non-producer. Renewal of feathers should be classified as production, in the same way as growth and the laying of eggs, and requires a liberal supply of vitamins.

Water, air, light and sunshine. The ration must contain an abundance of these factors.

Water:

Very often the water supply is neglected. Water is just as essential a feed. In fact, the animal can live for a long period without feed than it can without water. It is probably more necessary to keep in mind the importance of water for poultry than for other animals because of the drinking habits of poultry chickens need to have water available constantly, because they partake of only small amount at a time.

Water makes up a large portion of the body of the fowl itself. Probably around 55 to 60% or more of the fowl's body is made up of water. The egg also has a very large water content; roughly about 65% or two third of the egg. A dozen eggs contain over a pint of water. Our ordinary feeds such as grain and mash, which constitute the biggest part to the feed of the bird, are very low in water content, running usually somewhere around 10 to 15 %.

Water should be available at all times. The hen drinks little at a time but very frequently. It is necessary to have water available whenever there is feed available.

Fresh Air:

Sufficient fresh air must be supplied to furnish the oxygen for combustion or burning the feed and to carry off harmful waste products. The amounts of oxygen that are necessary depend upon the amount of food that needs to be broken down and metabolized, the amount of work that the individual does, and to some extent upon the temperature of the environment. The rate of metabolism determines the amount of oxygen that is required.

Light and Sun-Shine:

Light and sunshine are two nature's beneficial factors. These factors are not only the ultra-violet rays supplying vitamin D other frequencies as well, which are being shown at the present time to be necessary for the well-being of the animal."

(Source: IBID, Page 239)

Sources of Energy, Protein, Vitamins and Minerals Supplements:

1. energy Supplement:
 - a. Maize b. Sorghum c. Wheat bran
 - d. Barley e. Millets f. Rice
 - g. Oats h. Wheat
 - i. Rice bran and Rice polishing j. Damaged food grain
2. plant Protein Supplements:(Cereal)
 - a. Grounds-nut-Meal f. Coconut Meal
 - b. Cotton Seed Meal g. Sun-flower Meal
 - c. Sesame meal h. Mustard Meal
 - d. Soya-bean-Oil/meal i. Yeast
 - e. Maize-gluten meal or feed animal Protein Supplements:
 - a. Blood-Meal e. Meat and Bone Meal
 - b. Fish Meal f. Poultry By-products Meal

c. Liver-Residue Meal g. Milk Products

d. Silk worm-Pupae Meal

3. mineral Sources:

a. Table Salt e. Manganese Sulphate

b. Iron- Sulphate f. Potassium Iodine

c. Oyster Shell g. Copper Sulphate

d. Steam-boiled bone Powder

4. vitamin Supplements:

a. Leaf Meals b. Yeast

c. Fish Oils”

(Source: B. Panda, V.R. Reddy, V.R. Sadagopan, A.K. Shrivastav Feeding of Poultry-1984 Page 19)

Methods of Feed Formulation

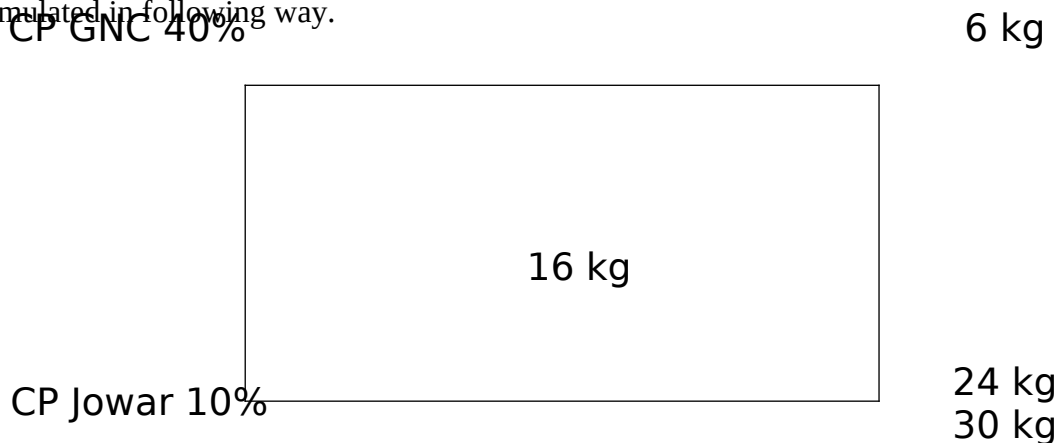
Education is an important identity of an individual and gives social status to the individuals. It is even more important in a traditional rural society, where educational opportunities are not accessible to all. Shah et.al. (1996) were studied the educational status of the farmers and its effects on broiler farming in Lahan. They reported that a significant number of broiler farmers of Lahan were high school graduates (45%) followed by the people with primary education (25%), illiterate (17.5%) and above (12.5%). They also reported that majority of the broiler producers of Lahan were adopting this farming without any training. Only 25% of the farmers had attended short course training on broiler production.

“The proportion of feed stuffs to be included in feed formula is decided for quintal (100kg) or ton (1000kg). The nutrient calculation is done on percent basis. Feed formulation is easy and simple when nutrients specified and raw materials are smaller in number. As the number of nutrients and available ingredients increase, the formulation becomes more difficult and complex. Then time, it involves lot of calculations and mathematics to formulate correct nutritious and economical feed. The various methods of feed formulations are:

1. Pearson's square
2. simultaneous equation
3. trail and error
4. linear programming by computer

Pearson's Square:

This method is useful when two feed stuffs with different levels of one or two nutrients are to be mixed. The required nutrient level in finished feed should be in between the levels of the nutrient present in the feeds you are combining. For example, if the crude protein (CP) level of GNC is 40% and that of Jowar is 10%, then the diet desired containing 16% CP can be formulated in following way.



For determining the proportion of ingredients to be mixed. For obtaining 16% protein level feed, compare protein levels of ingredients on left side of square with desired level in the middle. Then write positive differences of nutrient levels diagonally on right side of square read them horizontally to find out quality for 100kg. Which is $6/30 \times 100 = 20$. Similarly, quantity of jowar for 100kg is $24/30 \times 100 = 80$. If more than one nutrient levels are to be adjusted, then use of three squares is needed, this method is useful for a farmer. It is more economical for him to purchase concentrated mixture form a feed manufacturer and dilute it with two or three ingredients available with him.

Simultaneous Equations:

This method is useful for consideration of limited number of nutrients and raw materials. The number of equations should be equal to or more than number of unknowns.

For example, maize containing 8% CP is to be mixed with Sunflower cake containing 30% of CP for a diet containing 18% protein; it can be done in following ways:

Let X is the quantity of maize to be mixed and Y the quantity of Sunflower to mix in 100kg of mixture.

1st equation: $X+Y=100$ (For total quantity of feed stuff)

2nd equation: $0.08x+0.3y=18$ (for protein percentage required)

Now nullify the unknown having lesser multiple. It can be done as follows.

$$0.08x+0.3y=18$$

$-0.08x+0.08y=8$ (obtaining by multiplication of 0.08 1st equation)

$$0+0.22y=10$$

$$Y=10/0.22=45.45\% \text{ (The quantity of Sunflower cake)}$$

$$\text{Now } X+Y=100$$

$$\text{Therefore } X+45.45=100$$

$$\text{Therefore } X=100-45.45=54.55\%$$

(The quantity maize to be mixed)

Trail and Error Method:

This involves the physical calculation of percent ingredients to be incorporated and percentage of nutrients available from them in finished feeds. The percentage of ingredients to be incorporated is decided as per the protein energy fiber and ash contents of ingredients and their requirement in final mashes. The maximum inclusion levels of raw materials are

given due weight age to avoid un-palatability and toxic effects of raw materials. The approximate proportion of ingredients is decided for 100kg of finished diet and with various permutations and combinations by calculations they are confirmed for desired nutrients levels. The method is easily applicable for incorporating 10-12 ingredients including minerals and vitamins. Sometimes vitamins and medicines can be added as extra on top of 100kg of other raw materials. The method is somewhat laborious but can be conveniently adopted by farmers without involving much expense.

Linear Programming:

This is the most modern method of feed formation, and requires the use of a computer, many numbers of ingredients can be considered at a time for formulating desired feed with least cost. The information on nutrient percentage required, cost and maximum level to be included for each raw material and total levels of each nutrient in finished feed are entered into the computer. The computer calculates the percentage of each ingredient to be included in 100kg or 1000kg of feed as per need.”

(Source: NV Jadhav and Siddiqui, Handbook of Poultry Production and Management, 1999)

Basic Information Required for Formulation of Feed

Dahiya and Agrawal (2014) conducted a research in Hariyana, India and reported that professionally trained young people were interested in government jobs where as short term poultry trainees found engaged in poultry business. About 20% of the poultry raiser started their business without any training on poultry and 70% of them were between 20-25 years of age had experience of training.

1. “The formulator must know the nutrient requirements of various species, types and category of poultry birds.
2. He should also know the nutrient contents (by analysis) of various poultry feed stuffs to be incorporated in feed manufacture.
3. Further, information regarding the palatability and toxic contents of ingredients and tolerable levels of toxins in the finished feed by various species of poultry at different stages plays a major role in formulation highly nutritional and acceptable poultry feeds.

4. Similarly, knowing minimum and maximum inclusion levels of ingredients as per kind of feed also helps in formulating quality feeds.
5. The information on availability and cost of feed stuffs is most important to formulate and manufacture poultry feed easily at lower costs.”

(Source: IBID-Page, 128)

The ideal ration is one that will maximize production at the lowest cost. A costly ration may make phenomenal gains in poultry quality, but the cost per unit of production may make the ration economically infeasible. Likewise, the cheapest ration is not always the best since it may not allow for maximum production of poultry.

“The following four steps should be taken in an orderly fashion in order to formulate an economical ration.

1. Find and list the nutrient requirements or allowances for the specific birds to be fed.
2. Determine what feeds are available and list their respective nutrient compositions.
3. Determine the cost of the feed ingredients under consideration.
4. Consider the limitations of the various feed ingredients and formulate the most economical ration.”

(Source: M.E. Ensminger-Poultry Science-1980,Page-1611)

Measures to Improve Feed Quality:

1. “Purchase small batches frequently to avoid storage, which reduces the quality of ingredients.
2. Practice wide choice of feed stuff while manufacturing feed.
3. Adopt dilution technique (mixing of same ingredient from different lots) to minimize toxic principle levels or to improve nutrient concern tritons.
4. The raw materials should be stored on wooden planks without touching walls to avoid dampness, weevil or termite attack Etc.
5. Allow sun drying of most of raw naturals for one or two days to reduce toxin level, to kill microbes and insects and to decrease moisture.

6. Make use of antioxidants, toxin binders preservatives and anti-cake forming agents when ever necessary.
7. Avoid use of fish-meal. Instead, use salt-free whole fish; it is safe and has guaranteed quality.
8. Use de-oiled cakes, meals or barns, as they have more shelf life due to less percentage of oil than expeller grades.”

(Source: N.V. Jadhav and Siddique, op.cit.-Footnote-27)

Importance of Marketing in Feed Industry:

“Market-oriented feed companies create products for specific groups of customers or even individual consumers. The manufacturer can use a number of instrument to attract and keep customers. It must be clear now that marketing cannot offer ready-made solutions to specific commercial programmes. As soon as we are sure that selected the largest group is suitable to be the basis of distinct and highly competitive company strategy.

Developing a market-oriented policy certainly is not the exclusive responsibility of the technically-oriented staff. With their participation, and creative ideas, however, the company can become more broadly based in the marketing strategy. Market oriented thinking and acting can become common place. The implication is that the application of marketing techniques is more an art than a science. For this reason company management supports the marketing concept with great enthusiasm. it is no use at all if an excellent marketing and sales plan is made and carried out.

To bridge the gap between supply and demand, between purchase and sales and between techniques and commerce one can build up a sustainable, profitable market position in the feed industry of the future.

The following marketing instruments have been used in many countries to promote feed sales.

- i. Product instruments
- ii. Distribution instruments
- iii. Sales promotion instruments
- iv. Price instrument.”

(Source: Feed International-A Watt Publication, June-1993)

Globalization and the Independent Feed Mill:

Owners and operators of independent feed mills need to understand the global forces that are changing the poultry industry because these forces may undermine the viability of their business. To survive in a rapidly integrating business environment means that independent feed mills must learn to think and act like integrated feed mills. A critical component in their survival strategy must be to establish and maintain global competitiveness in the world of poultry Industry.

Competitiveness:

An efficient, globally comparative poultry industry is likely to have the following advantages:

- ❖ Low cost of feed stuffs
- ❖ Low labour costs
- ❖ Good business climate
- ❖ Economics of scale, and
- ❖ Vertical integration

Feed and labour are the two most important and most obvious costs in poultry meat production. Of the two, feed is by far the most important and is the single most important factor in the competitiveness of a particular country or region. The poultry industry must be able to get grain to its feed mills. Oddly enough, the tariff barriers that hinder the movements of grain from country to country are common threaten the competitiveness of local chicken industries.

Labor and Business Climate:

After feed, labour cost is the next most important cost. However low labour costs may not help in situations where grain is expensive. Consider a hypothetical comparison of a high labour cost and low feed cost country, with a high feed cost and low labour cost country. The ideal competitor has both low feed and low labour costs.

Although difficult to quantify, a good business climate is essential for a competitive poultry industry. Some of the factors that lead to a good business climate are land ownership or clear title to land, a well designed and functioning infrastructure of communications and transportation, a healthy banking system, and a light tax and regulatory burden.

Economics of Scale:

Economics of scale are extremely important in the international broiler chicken industry. This means a broiler company must process enough broilers at its processing plant to get the lowest possible cost per kilo of production. At any given moment in history, there is a point at which there is no advantage to making a processing plant bigger.

Vertical Integration:

The global poultry industry has increasingly become vertically integrated to reduce costs. Integrated feed mills are displacing independent feed mills in many parts of the world. Nevertheless, there is room for the survival of independent feed mills in many areas-if the independent feed mills can make the necessary changes. To survive in a world that is increasingly integrated, independent feed mills must act like integrated feed mills. That means they must have to adopt new strategies to survive, such as the following:

- ❖ Maintain a high percentage of capacity utilization to lower production costs per ton of feed.
- ❖ Produce the kind of feeds with the appropriate additives that provide for the greatest return on invested dollar for the poultry company regardless of feed costs.
- ❖ Maintain strict control over quality.
- ❖ Stay on the cutting edge of nutrition technology, and
- ❖ Develop strategic alliances

Survival Maximizing Return:

Establishing and maintaining competitiveness is important for poultry feed companies increasingly exposed to the pressures of international trade and continuing globalisation. To lower costs and remain competitive, many poultry have co-coordinated their feed and broiler production through vertical integration.

However, such independent mills must be able to think and act like integrated feed mills to provide feed that maximizes returns to the poultry farm.”

Source: Feed International- A WATT publication- April 2018, page 12

2.3 Review of Empirical Studies

Mr. Mahabir Man Pradhan submitted his dissertation entitled “A study on the poultry feed industry in Kathmandu” 1978 for the partial fulfillment of master in business.

In his dissertation, he has compared “Ratna Feed Industry” and “Nepal Feed Products Pvt. Ltd.”. He has explained that the structure of the feed market is an oligopoly because of the small number of producers, which may affect market conduct. So, he recommends that this type of market structure should be affected.

Mr. Karna Das Mulmi submitted his M.A. dissertation to the Central Department of Economics T.U. 1982, entitled “Poultry Farming in Nepal”.

His study states that poultry industry plays an important role in increasing the income level of the farmers and it gives nutritious food to maintain good health of the people. His findings indicate good health of the people. His findings indicate that better feed and better management can increase the production of poultry industry. So, better feed is the key to further the development of poultry farming.

A dissertation entitled “Poultry Feed Industries in Kathmandu Valley” submitted by Mr. SurendraBahadurShakya to the Central Department of Economics T.U. 1987, He states that poultry farming plays a vital role in the maintenance of good health of the people.

He has concentrated his study to Kathmandu valley only. The demand of poultry farming is increasing every day because of increasing population levels and health awareness.

Increasing rate of poultry products depends upon nutritious feed, which is not adequately supplied. Therefore, he has suggested that the supply of nutritious feed in adequate quantity is essential for rapid development of poultry farming in Kathmandu valley.

A dissertation entitled “Distribution Channel of Feed Industry in Nepal” submitted by Govind Prasad Paudyal for M.B.A., 1995.

His main objective is to study the existing of various poultry feed industries and examine possibilities of reducing distribution cost.

He has said that ***Distribution Channels*** are usually considered as separate from organization. But in fact, this important link between the international organization and the economic environment is as logical and pertinent an extension of the production units as arms and legs of the human body. He states that the feed market is competitive. The level of competition can be increased with the entry of more feed industries.

None of the above studies has included a complete analysis of feed industry marketing. Therefore, this study hopes to fill in some of the missing gaps by examining the marketing activities of feed industries in Nepal.

Review of Methods of Research in Poultry Farming

Review of methods of research in poultry farming and feeding gives the details of the procedures of gives the details of the procedure adopted for the research study. To begin with this chapter points out the rationale for selecting a particular district as a case, describes the research design. Before pointing out the limitations of the study, details are also given on the nature of the data, universe, and sampling procedures, technique of data collection and analysis. Marketing of poultry farming and poultry feeding in Lahan is recent and important part of marketing to earn employment for society of Lahan and its periphery.

CHAPTER - III

RESEARCH METHODOLOGY

This chapter gives the details of the procedure adopted for the research study.

3.1 Research Design

The present study is a 'case study' of poultry farming in Nepal. The descriptive type of research Nepal in design was applied for the study where the issues related with the research objective were described. The various issues involved in describing the poultry farming were explained and then attempts were made to analyze the causes and effects of the issues. On the whole, present study is descriptive in nature.

To meet the objectives, three types of research designs are used in the study. They are:

Analytical Research Design: "Analytical research design is generally associated with the analysis of the content of speeches, text books, editorials, T.V. programmes or perhaps essay examination from standpoint of prejudice reliability, nature of the mental process involved and so on." This research design is used here to analyze facts and figures of the study.

Exploratory Research Design: This is used to find out some new ideas from the study. "The research design is oriented towards the discovery of basic relationship among phenomena as a means of predicting and eventually contributing their occurrence".

Survey Research Design: Survey designs means to explore cause and effects and relationships on the basis of gathering views from respondents. Views and reactions of poultry farmers were collected and analyzed.

Research design is the structure and strategy of investigation. The present used a survey research design. The study tries to collect the facts about feed industries of Nepal and describe them in systematic manner. This is the first dissertation about marketing aspect of feed industries in Nepal, so there is lack of comparison with previous study.

3.2. Sampling Unit

The universe of the present study comprised of all the poultry meat and feed of Nepal a total of **55000** broiler farms were identified as a broiler raiser from the selling list of hatchery, and supplier of the Nepal.

The poultry enterprise established before 2001 were purposively selectively selected for sampling. About 10% random sampling by lottery method (50 households) was taken from the universe (500 households). The detailed information was taken from the sampled farmers and their categorization was also taken as small, medium and large farm holders. These are categorized on the basis of poultry number raised just before last batch. Having below 500, 501-1000 and above 1000 poultry birds farms were small, medium and large farm, respectively. There were 13 small, 22 medium and 15 large farms were found in the sample, which were representative to the universe.

Nepal is famous for poultry farming and feed production, so the researchers choose the country for its sampling unit.

3.3. Sample Size

To collect the primary data, small farms have been surveyed for this study. These are the name of surveyed feed production sites given below:

1. Sanjiwani Poultry Feeds Pvt. Ltd.- Sangemroad
2. D.G. Poultry Farm- Bhattarai
3. Gurans Feed Ind. Pvt. Ltd.- Kalyanpur
4. Shakti Shiva Feed Industry- Paras Nagar
5. Suryamukhi Feeds Pvt. Ltd. – Sharadpur
6. Sunita Feed Industry- Rampur
7. Dallakoti Poultry Farm- Jyamire
8. Himalayan Feeds Pvt. Ltd.- Gaurigunj
9. K.K. Feed Industry- Krishnapur
10. Nawajyoti Feed Industry Pvt. Ltd.- Lanku
11. Kalyan Feed Industry- Kalyanpur
12. Jyoti Feeds Pvt. Ltd. – Bhojad
13. Everest Feed Industry Pvt. Ltd.- Narayangadh
14. PanchaRatna Feeds Pvt. Ltd.- Belchowk

15. K.C. Poultry Feeds- Tandi
16. Parwanipur Poultry Feed Industry Parwanipur.
17. Ratna Feed Industry
18. Nepal Feed Industry

3.4. Sampling Procedure

The respondents have been selected from the above industries for interview by random systematic method.

3.5. Sources of Data

In this study both primary and secondary data have been used. However, this study heavily depends upon the primary data for the fulfillment of the stated objectives. The interviewees were the feed industry's owner or managing director.

The questionnaire has been prepared and is presented in Appendix II. The data have been tabulated and presented along with data from official records. Secondary data has been taken from records of poultry feed firms, relating publications to feed industries and reports, journals, literatures on poultry feed and other books.

3.6. Data Collection:

In the present study, necessary primary data were collected from the study area. For this purpose a brief and intensive fieldwork was conducted in the months of Nov, Dec 2001 to Jan, Feb 2002. In the fieldwork, different methods and techniques were used to collect the information. A brief account of the collection of data is given below.

Interview

Most of the information on the households and poultry farms taken in the study was collected through a face-to-face interview and door-to-door survey of the sample population. Both structured and unstructured questions were used to conduct the interviews. Data were collected using a precisely developed and pre-tested interview schedule.

A semi interview schedule was prepared and then administered in the interview to collect information pertaining to the objectives of the study. The schedules had three sections. The

first section covered general information of the poultry farmers. The information to be collected was related to name and address of the poultry farmers. The second section of the schedule covered the socio-demographic aspects of the farmers. The second section of the schedule covered the socio-demographic aspects of the farmers. The information related was family size, age, sex, education, caste/ethnicity, religion etc. The third section of the schedule covered the information of economic activities of the poultry farmers. The fourth section of the schedule covered the items of poultry farm. The information related was number of chickens, breeds, area of the poultry shed, feeder and water etc.

The interview schedule was in Nepali and the interviews were conducted in Nepali also. The responses for the questions were recorded in Nepali. The households' interview lasted for about 30 to 50 minutes.

Observation

Besides collecting data with the help of scheduled questions, the observations and discussions on unscheduled questions became very much helpful to gather information. The data collected through observations and unscheduled questions have been used to support the description of scheduled data in relevant places in the text. During the fieldwork, non participant observation was used to gather some qualitative information. The information collected through observation was mainly on households' pattern, pattern of work, poultry and poultry house condition etc.

In addition to poultry farmers, other non-participant farmers, entrepreneurs, and local agents/suppliers from different hatcheries/feed mills were requested for information regarding the different aspect of poultry farming. Some key informants of the district such as Campus and school's teacher, political leader, and reputed persons were also incorporated for the information. Furthermore experience of author in relation to poultry farming was also included for description.

3.7. Data Processing

The collected data were processed manually. They were edited, coded, and tabulated manually. An attempt was made to keep all the data in master table. Unvaried table of almost all items was obtained to look in to the distributions. The Unvaried table was interpreted on the basis of percentage distribution.

In the process of economic analysis the cost and returns were analyzed in one complete cycle of broiler production by computation of per bird and per kg of live weight basis. Cost of production was based on variable cost (feed, labour, chicks and medicine cost) and fixed cost (interest on loan, electricity, maintenance, and depreciation cost). The return price was calculated adding the total price of manure and total price of meat (live weight) per bird. Net profit was calculated by subtracting total cost from total return per bird.

CHAPTER - IV

DATA PRESENTATION AND ANALYSIS

4.1. Background

Nepal has become popular for poultry and feed production because of the transportation access and the increasing demand of chicken, meat and eggs in the country. Most farmers are investing their money in poultry farming. Poultry farming totally depends on feed. If the poultry farming increases, feed production should increase as well. So, feed industries are giving opportunities to unemployed people in the state.

Loan Investment

In spite of the risk, professional people are investing nearly 50 million rupees in the poultry sectors. Agriculture Development Bank (ADB) is offering loan to the poultry farmers. The credit investment in the poultry sector is about 30% reported by ADB/N Bharatpur, Lahan (Dhakal, 2017) and other reputed Bank have been giving 40% loan service to the investors. According to the record of ADB/N Bharatpur, 30% of the investment is in the poultry sector.

In Nepal the loan investment in poultry farming is increasing every year, because the poultry farming is more profitable than other business and it is easy to start, returns can be received within a short period.

Table No. 4.1

Loan Investment in Poultry Farming

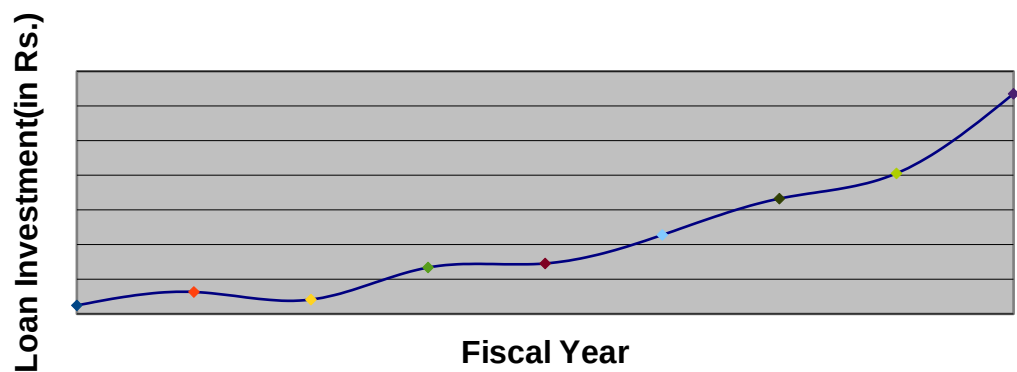
2046/047 to 2075/076

Fiscal Year	Investment (Rs.)	Annual Growth Rate (%)
2046/047	3,74,200	-
2047/048	48,52,000	29.66
2048/049	1,26,27,000	160.24
2049/050	82,21,000	-34.89
2050/051	2,67,42,000	225.28
2051/052	2,90,57,000	8.65
2052/053	4,55,18,000	56.65
2053/054	6,64,86,000	46.06
2054/055	8,10,57,000	29.91
2055/056	6,53,54,000	25.21
2056/057	7,48,00,000	27.12
2057/058	5,55,44,000	23.56
2075/76	12,70,00,000	56.26

Source: - Field Survey, 2075Asoj

The above table shows that loan investment has been increasing every year except FY. 2049/050. In FY 2046/047 loan investment in poultry farming was Rs. 3, 74,200. In the next two years investment were Rs. 48, 52,000 and 1, 26, 27,000 respectively. Then, in FY 2049/050 the investment decreased by 34.89 percent from the previous year. The following years the investment increased to Rs. 2, 67, 42,000 in FY 2050/51, Rs. 2, 90, 57,000 in FY 2051/052, Rs. 4,55, 18,000 in FY 2052/053, Rs. 6,64,86,000 in FY 2053/054 , Rs. 8,10, 57,000 in FY 2054/055,in FY 2055/56 Rs. 6,53,54,000, in FY 2056/57 Rs, 7,48,00,000 and in FY 2057/58 Rs. 5,55,44,000& 2074/075 – Rs 12,70,00,000 . This increasing trend shows the loan investment in poultry farming may be increase in future.

Figure No. 1



Source: - Field Survey, 2075Asadh

Figure 1 shows the line of investment is always going up except FY 2049/050 because the investment is always increasing on poultry farming. The Agriculture Development Bank is supporting poultry farming by giving start- up loans.

4.2. Present Situation of Feed Production and Poultry Farming

There are 4 Feed Industries in Lahan. Most of the feed Industries sell their product out of district. Most of the Feed Association in Bharatpur in 2049 B.S. But only 13 feed Industries have taken membership in Nepal Feed Industry Association (NFIA). NFIA has committee members from feed industries. The committee members fix the price of poultry feed for the district. Sometimes it gives training to farmers and feed owners.

The feed producer is giving market facilities to poultry farmers. If the farmers want to sell their chicken and eggs, feed producer takes responsibility for that. They look for market and sell the farmer's product. So, this type of market and sell the farmer's product. So these types of market facilities have increased investment in poultry farming. The table below shows commercial poultry farming in Lahan.

Table No.4.2

Commercial Poultry Farming in Lahan

Particular	Number
Layer Farming (per year)	6,00,0000
Broiler Farming (per year)	9,00,0000
Production of Layer Chicks (per week)	30,0000
Production of chicken meat (daily)	30 Tons
Production of eggs (daily)	20,00,000
Production of poultry feed (daily)	425 Tons

Source: - Field Survey, 2075, Asadh

The table No. 2 shows big amount of layer and broiler farming in Lahan. At present 60,00,000 layer farming and 90, 00,000 broiler farming is doing per year. The Hatchery companies produce 3,00,000 layer chicks and 8,00,000 broiler chicks per week. They sell their chicks to other districts too. Poultry farming produces 10 tons meat and 20,00,000 eggs daily. To meet the national demand for chicken meat and eggs, feed industries have to produce 425 tons of poultry feed per day. The poultry feed production of Lahan is 425 tons daily. It supplies feed to other districts too.

4.3. Pricing System

Price equals the cost of production plus the desired profit, but there are two types of price. One is the price which the customer will be prepared to pay in cash per unit if the firm would be willing to offer each of these units for sale. This latter price is supply where the costs of production and desired profit are included. Basically, price represents the amount of money that buyers, in the process of exchange will pay for goods and services that sellers are offering for sale.

Price is the only element in the marketing mix that produces revenue, the other elements produce costs. Price is also one of the most flexible elements of marketing mix, in that it can be changed quickly, unlike product features and channel commitments.

Companies handle pricing in a variety of ways. In small companies, prices are often set by top management rather than by marketing or sales people. In large companies, pricing is typically handled by division and product line managers.

Present Market Prices of Different Feeds

The price of poultry feed everywhere is somehow the same whether it comes from small or big feed industries, because the Feed Association fixes the price? The price totally depends on cost of production.

The table shows the current market prices of different feeds.

Table No. 4.3

Present Prices of Different Poultry Feeds (per k.g.)

Chick Starter (L ₁)	Pullet Grower (L ₂)	Layer Mash (L ₃)	Broiler Starter (B ₁)	Broiler Finisher (B ₂)
Rs.55	Rs.50	Rs.50	Rs.50	Rs.55

Source: - Field Survey, 2075 Asoj

The above table shows that layer feeds have a different price whereas broilers feeds have same prices. L₁ feed has a Rs.55 per k.g. price, L₂ has Rs.50 and L₃ has Rs.50 per k.g. L₁ feed is more costly than others because it includes more protein supplement than others. B₁ and B₂ both cost Rs.55 per k.g.

Previous Prices of Poultry Feeds

The prices of feed changes because when the cost of raw materials changes, because raw materials cover 60 percent of cost of production. The table below shows previous prices of different poultry feeds.

Table No 4.4**Previous prices of poultry Feeds (per K.G. in Rs.)**

Date Types Of Feed	052/11/ 3	052/7/1 5	055/10/2 0	056/1/6	056/10/ 7	057/2/2 0	075/08/0 5
L ₁	11.80	13.50	14	14	14	15	40
L ₂	10.40	12	12.50	12.40	12.40	14	35
L ₃	10.60	12.50	13	13.65	13.65	14.50	35
B ₁	12.50	14.40	15	15	15	16	40
B ₂	12.35	14.30	14.80	15	15	16	45

Source:- Field Survey, 2075Asoj

Table No. 4.4 shows that every year the price of feed has increased or remained the same. In 2052 B.S., L₁ was Rs.11.80 per K.G. and in 2055/10/20; the price was Rs.14 per k.g. In three years (2052-2055) L₁ increased by Rs.2.20. L₂ increased by Rs.2.10, L₃ is increased by Rs.2.40. From 2055 to the present, L₁ has increased by Rs.1, L₂ has increased by Rs.1.60, and L₃ has increased by Rs.1.50

The table shows B₁ maintained the same price for three times. (2055/10/20, 2056/1/6 and 2056/10/7) and then increased by Rs.2.50 between 2052 and 2055. B₂ have same price for last three times (2056/1/6, 2056/10/7 and 2057/2/20) and respectively 2075 is given in column.

The following figures 4.2 and 4.3 show different price of feeds more effectively.

Here,

L₁= Chick Starter

B₁= Broiler Starter

L₂= Pullet Grower

B₂= Broiler Finisher

L₃= Layer Mash

Figure No. 2

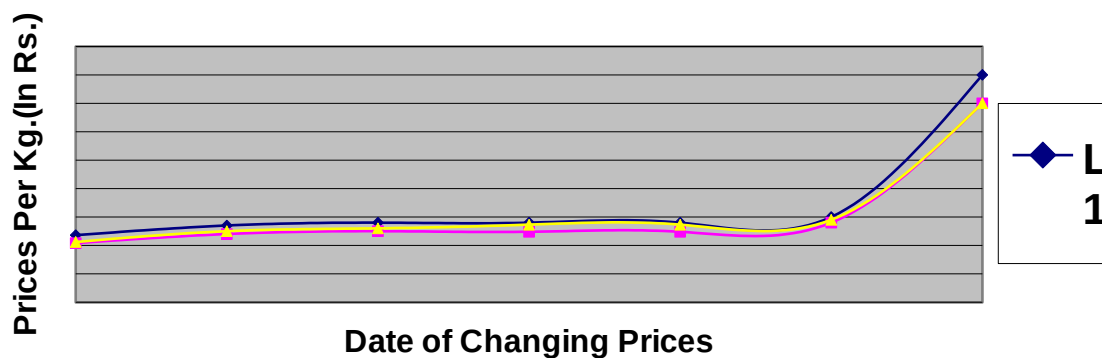


Figure-4.2 shows the price of L_1 is always high and L_2 is always low. L_1 , L_2 and L_3 have same gap in 2057/02/20. But the gap between L_1 and L_2 is larger than L_3 and L_2 in 2052/11/03. The gap between L_2 and L_3 is larger than L_1 and L_3 in 2056/10/17.

Figure No. 3

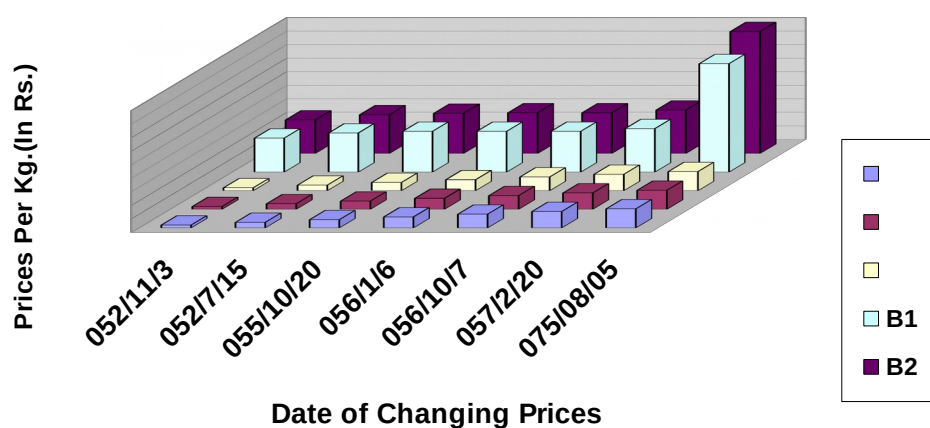


Figure-4.3 shows that B_1 has a higher price than B_2 , and that have same price for 3 times. The price line is always going up. The B_2 line is below than B_1 line sometimes. Diagram 4.1 shows the table No. 4.4 effectively.

Figure No. 4

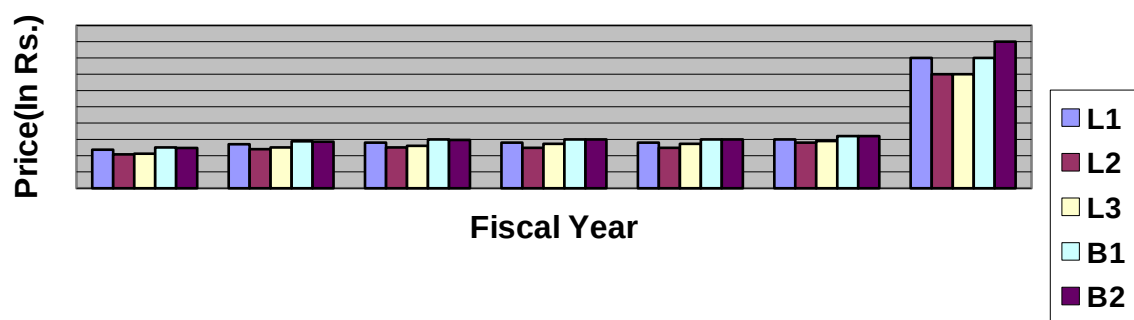


Diagram-4.1 shows the prices are always going up. B_1 and B_2 don't seem very different.

Price Increased of Feeds During Five Years:

Every year the prices of feeds are equal or increasing because of the increasing price of raw materials. The table below will show how much feed price increased in five years of and by what percentages.

Table No. 4.5**Price or Percentage Increased of Feeds in Five Years**

Types of Feed	Price per Kg(In Rs.)		Increases in Price(Rs)	Changes by Percentage (%)
	2070B.S.	2075B.S.		
L	25.80	35	9.20	35.65
L	25.40	34	8.6	33.86
L	24.60	34.50	9.86	40.00
B	24.50	36	11.5	46.93
B	24.35	36	11.75	48.25

(Source: Field Survey, 2075Jestha)

Reasons of Price Fluctuation:

In Nepal, the price of feed fluctuates every 4 to 6 months on average. The price depends on raw materials. If the price of raw materials increases, the price of feed also increases. So the feed prices fluctuation is directly linked to the price fluctuation of raw materials.

Sometime price fluctuation depends on competition too. This table will show the reasons of price fluctuation.

Table No. 4.6**Reasons of Price Fluctuation**

S.No.	Reasons of change in price	No. of Respondent	%
1.	Changes in Price of Raw Materials	60	100
2.	Market Competition	8	13.33
3.	Seasonal Demand	None	-

Base: - 68 Respondent

(Sources: Field Survey, 2075, Asoj)

Table No. 4.6 shows 100% respondent agreed for the price fluctuation depends on changes in price of raw materials. And 13.33 percent respondent said it depends on market

competition too. Seasonal demand, of feed, however does not cause fluctuation in the price of feeds.

The Prices of Chicken Meat and Eggs:

Feed prices change every 4 to 6 months on average, because they depend on the cost and availability of raw materials. The price fluctuation of feed affects the price of eggs and chicken meat. The price of eggs and meat are also always increasing because of the increases in the feed prices. The table below shows price fluctuation of meat and eggs in ten years (2045B.S.-2076B.S)

Table No. 4.7

The Prices of Chicken Meat and Eggs

Year	Broiler per Kg. (Average in Rs.)	Price per one Egg (Average in Rs.)
2045	51.79	1.42
2046	54.95	1.95
2047	57.55	2.51
2048	60.80	2.38
2049	46.00	1.67
2050	48.50	2.18
2051	49.00	2.26
2052	54.00	2.50
2053	57.00	3.10
2054	56.00	2.63
2055	57.50	2.96
2056	57.00	2.67
2057	56.5	2.00
2076	270	12.0

(Source: Field Survey, 2076 Asoj)

According to Table No. 4.7 every year the price of eggs and meat increased except in 2049 B.S. the price of meat and eggs began at Rs. 51.79 and Rs. 1.42 respectively gradually increased until 2049 B.S., when the prices of eggs and meat suddenly dropped by Rs. 0.71(29%) and Rs. 14.80 (24%) respectively.

From then on, the prices increased every year. In ten years (2045B.S-2055B.S) the price of chicken meat increased by Rs. 5.71(11%), and the price of eggs increased by Rs. 1.54(108%). The price of eggs is increased by a larger percentage than that of chicken meat.

Daily Expenses Requirement for Ration and Yearly Expenses Requirement for Diseases:

The increasing and decreasing price of meat and eggs depends on daily expenses. The below table is compared the daily expenditures of poultry with those for other livestock.

Table No. 4.8
Daily Average Feed and Fodder Fed to Livestock

S.No	Particular	Concentrate		Fodder				Per Livestock Expenses(Rs.)
		Feed(Kg)	Rs.	Green(Kg)	Rs	Dry(Kg)	Rs	
1.	Milking Cow	1.00	10.00	7.5	7.50	3.00	3.00	20.50
2.	Milking Buffalo	1.00	10.00	10	10.00	3.50	3.50	23.5010.00
3.	Calve, Cow, Bull, Buffalo	0.50	5.00	5	5.00	-	-	10.00
4.	Pig	0.50	5.00	5	5.00	-	-	10.00
5.	Sheep	0.25	2.50	5	5.00	-	-	7.50
6.	Goat	0.25	2.50	5	5.00	-	-	7.50
7.	Ox	2.00	20.00	10	10.00	5.00	5.00	35.00
8.	Poultry	0.05	0.75	-	-	-	-	0.75

(Source: “Future of Nepalese Farmers” 1999 Annex- 4, Khatry Feeds)

Table No 4.8 shows that ox farming entails the highest daily expenses, at Rs. 35 per day. Pig farming requires Rs 10 per day, and poultry only Rs 0.75 per day. Poultry farming has the lowest expenses of all livestock.

Poultry farmers spend an average of Rs 4.50 per chicken per year on parasite treatment, and Rs 3.00 per chicken per year to treat infectious diseases.

4.4. Feed Ingredients

Feed ingredients are the unit of basic input (raw materials) for making feed.

The ingredients used for poultry feed consist of de-oiled soybean, sesame, sunflower and groundnut cake , maize, rice barn, fish meal, vitamins, antibiotics, mineral mixtures and synthetic aminoacids. All these ingredients imported from India either by middleman or directly by mill owners or suppliers. About 15-20% maize and rice bran are used as feed ingredients from local collection in Lahan.

A few business houses present in Narayanghadh, RatnanagarTandi, dominate the supply of feed ingredients in Lahan. The suppliers admit the poor quality of ingredients but argue that they do so in order to keep the price of feed low. Some feed millers reported that the export quality feed ingredients could not be imported because it would increase the cost of feed tremendously. There is no system of monitoring and quality feed ingredients, whether locally collected or imported from India.

Basic Input for the Poultry Feeds

Poultry feed is the mix of proteins, vitamins, carbohydrates, and minerals supplements. All of the supplements make a balanced diet for the chickens. These are the basic input requirements for the poultry feeds.

Table No. 4.9

Basic Input for Poultry Feeds

S.No	Particular
1.	Maize
2.	Soya bean
3.	Barleys
4.	Oats
5.	Rice bran
6.	Wheat grit/ bran
7.	Sunflower cake
8.	Sesame cake
9.	Groundnut cake
10.	Mustard Cake (Roasted)
11.	De-oiled cake (D.O.C)
12.	Fish meal
13.	Bone meal
14.	Oyster Shell
15.	Marble Grit/ Lime stone
16.	Salt
17.	Molasses

(Source: Field Survey, 2076 Asoj)

Table 4.9 shows that there are 17 basic inputs in poultry feeds. But type of feed ingredients needs different input in different percentages. The above inputs provide proteins, vitamins, carbohydrates, and minerals to chickens.

Different Poultry Feed Ingredients

Poultry farming needs different types of feed like L₁, L₂, L₃ B₁, and B for different age and different group. Different feed needs different ingredients. These tables will show different ingredients for different feeds and different samples of each feed.

a. Chick Starter Feed(L₁)

This type of feed is for layer baby chicks. It has to given from one day to eight old. This feed needs 20to 22% protein.

Table No-4.10

Different Sample of Starter Feed

Sample No. 1		Sample No. 2		Sample No. 3	
Basic input	Qty. (%)	Basic Input	Qty. (%)	Basic Input	Qty. (%)
Maize	16.0	Maize	21.5	Maize	25.0
Rice Bran	40.0	Rice Bran	40.0	Rice Bran	25.0
Wheat Grit	10.0	Soya Bean	30.0	Wheat Grit	5.0
Groundnut Cake	20.0	Mustard Cake	5.0	Wheat Bran	5.0
Fish Meal	10.0	Bone Meal	1.0	Fish Meal	7.0
Lime Stone	1.5	Salt	0.5	Groundnut Cake	12.0
Bone Meal	1.0	Lime Stone	2.0	Sesame Cake	15.0
Salt	0.5	Total	100%	Bone Meal	1.0
Minerals	1.0			Molasses	3.0
Total	100%			Lime Stone	1.5
				Salt	0.5
				Total	100%

(Source: Field Survey, 2076 Asoj)

Different Sample of L₁ feed need different inputs in different quantities. Sample-1 needs maize 16%, Sample-2 needs 21.5% and Sample-3 needs 25%. Sample-2 needs Soya bean but

it doesn't need wheat grit. All samples need salt by 0.5%. Sample-1 and 3 need groundnut cake but sample-2 needs mustard cake.

b. **Pullet Grower Feed(L₂)**

This feed is for growing layer chicks. It has to be given from 8 to 20 weeks. It requires 17 to 18% protein.

Table No. 4.11

Different Samples of Pullet Grower Feed

Sample No. 1		Sample No. 2		Sample No. 3	
Basic input	Qty. (%)	Basic input	Qty. (%)	Basic input	Qty. (%)
Rice bran	40.0	Rice bran	40.0	Rice bran	25
Maize	25.0	Maize	25.0	Wheat bran	15.0
Wheat bran	15.0	Wheat bran	15.0	Maize	40.0
Fried Soya bean	16.0	Fried Soya bean	5.0	Mustard cake	6.5
Bone meal	1.5	Sesame cake	11.5	Fish meal	10.0
Lime stone	2.0	Bone meal	1.0	Minerals	1.0
Salt	0.5	Lime stone	2.0	Bone meal	2.0
Total	100%	Salt	0.5	Salt	0.5
		Total	100%	Total	100%

(Source: Field Survey, 2076 Asoj)

Table No. 4.11 shows L₂ has 3 types of sample. Samples 1 and 2 need 40% rice bran but sample 3 needs only 25%. All samples need the same ratio of wheat bran (15%) sample 1 and 2 need 15% maize, but sample 3 needs 40%. Sample 1 and 2 have same input for feed expect sesame cake. All samples need 0.5% salt.

vii. Layer Mash Feed(L₃)

This feed has to be given after 20 weeks when chickens start to lay eggs. It requires 15 to 17% proteins.

Table No.4.12

Different Samples of Layer Mash Feed

Sample No. 1		Sample No. 2		Sample No. 3	
Basic Input	Qty. (%)	Basic Input	Qty. (%)	Basic Input	Qty. (%)
Rice bran	45.0	Rice bran	40.0	Rice bran	30.0
Maize	35.0	Maize	30.0	Maize	40.0
Mustard cake	10.0	Wheat bran	15.0	Wheat bran	10.0
Sesame cake	6.5	Soya bean	5.0	Fried Soya bean	6.5
Lime stone	1.0	Fish meal	6.5	Fish meal	10.0
Bone meal	2.0	Bone meal	2.0	Bone meal	2.0
Salt	0.5	Minerals	1.0	Minerals	1.0
total	100	Salt	0.5	Salt	0.5
		Total	100%	Total	100%

(Source: Field Survey, 2076 Asoj)

Table No. 4.12 shows that sample 2 and 3 have same basic input items, but sample 1 is different. Sample 1 need 45% rice bran, sample 2 needs 40% and sample 3 needs 30%. Sample 1 needs 35% maize, sample 2 needs 30% and sample 3 needs 40%.

Sample 2 and 3 need 15 and % wheat bran respectively, but sample 1 doesn't need wheat bran at all. All samples need 2 and 0.5% respectively of bone meal and salt.

Sample 1 needs mustard cake and sesame cake but sample 2 and 3 don't need either.

viii. Broiler Starter Feed(B₁)

This feed is for broiler baby chicks. It needs 22 to 24% proteins. It has to be given up to 30 days. Table No. 4.13 shows the ingredients of broiler starter feed.

Table No. 4.13

Sample of Broiler Starter Feed

Basic input	Qty.(%)
Maize	16.5
Rice bran	40.0
Wheat bran	5.0
Fried Soya bean	15.0
Fish meal	10.0
Sesame cake	10.0

Bone meal	1.0
Salt	0.5
Lime stone	2.0
Total	100%

(Source: Field Survey 2076 Asoj)

B₁ has one of sample. It needs 16.5 % maize, 40% rice bran, 5% wheat bran, 15% fried Soya bean, 1%, 0.5% and 2% Bone meal, Salt and Lime stone respectively. Rice bran makes up the greatest percentage of feed.

ix. Broiler Finisher Feed(B₂)

This feed is for young broilers after 30 days. It needs to be 19% proteins.

Table No. 4.14

Sample of Broiler Finisher Feed

Basic input	Qty.(%)
Maize	26.5
Rice bran	35.0
Fried soya bean	20.0
Sesame cake	15.0
Bone meal	1.0
Lime stone	2.0
Salt	0.5
Total	100%

(Source: Field Survey 2076Asoj)

table No. 4.14 shows B₂ feed needs to be 35% rice bran, 26.5 maize, 20% fried soybean, 15% sesame cake, 1,2 and 0.5% bone meal, lime stone and salt respectively.

The poultry farming in commercial scale was initiated since 1982. The size of enterprises according to poultry number (small, medium and large) at different stage i.e., initiation stage, maximum raising stage and present situation was studied to find out the actual scenario of the size of poultry enterprise. The result indicates that maximum numbers of enterprises were initiated by raising less than 500 birds followed by 500to 1000 and above 1000 birds (Table 5.12). The size of the enterprise at initial stage was smaller which might be due to less risk bearing ability of the producers. At initial stage, they had no any experience about care and

management of poultry enterprise and after experience they increased their poultry enterprise size.

Table 5.14

Distribution of Sample Farms by their Size in Different Stages of the Farms

Size of enterprise (chicken No.)	At initial stage		At maximum raising stage		At present stage	
	No. of Farms	%	No. of Farms	%	No. of Farms	%
Below 500	39	78	9	18	13	26
501-1000	10	20	16	32	22	44
Above 1000	1	2	25	50	15	30
Total	50	100	50	100	50	100

(Source: Field Survey, Nov 2017-Jan 2018)

At maximum production period of different rearing cycle, about 50% of the poultry farmers raised more than 1000 chickens followed by 501-1000 and below 500 chickens in their farm. The chicken number were increased above 1000 in maximum producing period by more than 50% poultry farmers might be due to taking some experience, formal and informal training in this enterprise. At present about 44% broiler farmers have been raising 500-1000 chickens followed by above 1000(30%) and below 500(26%) chickens in their farms. Result indicates that the medium size poultry enterprise is higher as compared to small and large size poultry farm.

Different samples of feed s need different types of input in different quantities. There is lack of raw feed materials in Nepal. The country can not fulfill the current demand for raw materials for feed industries, so the feed producer has to bring raw materials from India. The distribution agent, or middleman, is playing a vital role in importing raw material from India.

Table No. 4.15

Name of Raw Materials which is not Available

S.No.	Name of Raw Materials
1.	Sunflower Cake
2.	Groundnut Cake
3.	Soya Bean Cake
4.	Oyster Shell

(Source: Field Survey 2076 Asoj)

These four raw materials are not available in Nepal. Oyster shells do not exist here, and other raw materials are not produced in Nepal. 70 %(Average) of these raw materials is imported from India. Because Nepal doesn't have enough food for country like maize, rice, wheat, Soya bean etc.

Depending on the feed type and season, medicines are added to the feed to prevent disease.

4.5. Distribution Channel

A channel of distribution is a more specific term representing the route taken by the title of a product as it moves from a producer to an industrial or final purchaser. Each product has a channel of distribution which may be visualized as a sequence of marketing institutions through which its title flows. Also included in this channel are institutions that directly affect this title flow.

So the distribution channel is the bridge between producer and consumers, linked by one or more other steps along the way.

Different Types of Distribution Channels:

There are different types of intermediaries which help in distribution channel directly or indirectly.

i. Retailer:

A retailer is the member of the channel who services the ultimate consumer; although in some cases the retailer may deal with another intermediary or may profess to sell wholesale or at wholesale prices. The test of whether he is in fact a retailer is whether he makes at least half of his sales to final consumers.

ii. Merchant Wholesaler:

Wholesalers are intermediaries that service retailers, other wholesalers, government agencies, and producers. They do not service ultimate consumer, merchant wholesalers take title to goods and provide either all of the marketing functions required in which case they are called full service wholesalers or a limited number of these function (in which case they are known as limited function wholesalers).

iii. Merchandise Agents and Brokers:

Although merchandise agents and brokers are considered to be wholesalers, they are differentiated from merchant wholesalers in that they do not take title to the goods handled and normally provide but a specialized few of marketing functions. Agents and brokers are generally concerned with information gathering and communications functions. These intermediaries, who greatly affect the transfer of title between other channel members, often operate on a commission, or retainer plus commission basis, and are found dealing in specialized product lines. Table No. 4.16 shows the different distribution channel.

Table No. 4.16

Distribution of Marketing Channel in Lahan

Zero Level

Channel(M-C)

One Level

Channel(M-R-C)

Two Levels

Channel (M-W-R-C)

Three Levels

Channel (M-W-J-R-C)

Marketing channels can be characterized by the number of channel levels.

- A zero-level channel (Direct marketing channel) consists of manufacturer selling directly to the final customer.
- A one-level channel contains one selling intermediary, such as a retailer.

- A two-level channel contains two intermediaries. In consumer markets, they are typically a wholesaler and a retailer.
- A three level channel contains three intermediaries. For example, in the meat packing industry, wholesalers sell to jobbers, who sell to small retailers.

Distribution Channel of Feed Industries:

The feed industries are adopting mixed channels for distributing their products. They distribute their product directly to customers as well as others.

The table shows the channels used by the feed industries in Lahan only.

Table No. 4.16

Channel Using by Feed Industries in Lahan

Types of channels	No. of feed industries	%
By Direct Consumer	7	46
By Direct Customer+ wholesaler	1	7
By Wholesaler+ Branch offices	1	7
By Direct Customer+ Wholesaler+ Branch offices	6	40
Total	15	

(Source: Field Survey, 2076 Asoj)

Table 4.17 shows that 46% are using only the direct to customer channel, without, dealers or branch offices. 40% of the feed industries are using mixed channels. 7% are using direct to customer+ wholesaler channels. They don't have branch offices. 7% are using direct to customer+ branch office for selling feed. They don't have dealers. This chart shows the names of district, where Lahan is supplying poultry feed through branch offices.



(Poultry Feed Supplier)

Branch Offices

Kathmandu, Lalitpur, Banepa, Dharke,
Ramnagar, Dimmer, Damauli, BesiShahar,
SundarBazzar, Pokhara, Baglung, Myagdi,
Butwal, Tamghas, Libang, Bardia, Tulsipur,
Nepalgunj, Dhangadi, Surkhet

Districts

Nawalparasi, Rupandehi, Palpa, Dang, Banke,
Bardiya, Rolpa, Kailali, Dhading, Kathmandu, Lalitpur,
Bhaktapur, Kabhre, Dolakha, Tanahun, Lamjung,
Gorkha, Kaski, Baglung, Mygdi, Parvat, Argakhachi,
Gulmi, Makwanpur, Bara, Parsa, Dhanusha, Sarlahi,
Siraha, Saptari, Morang, Sunsari, Jhapa, Surkhet,
Sindhupalanchok

(Source: Field Survey, 2076 Asoj)

The chart above shows Lahan is supplying poultry feed to 35 districts through 20 branch offices. The feed industries are experiencing strong competition in Lahan with local producers. The quality and the discount are main areas of competition. The farmers want more commission from feed producers. Feed industry gives 2 to 7 percent commission on feed. It seems that if feed industries have healthy competition, the future will be bright.

None of the industry export their poultry feed to other countries but most of them distributes their feed to other districts.

Poultry enterprise in Lahan is increased very fast as compared to other neighbouring districts. But the situation has been changing day by day. A study was taken to find the poultry enterprise extension situation in the future of the participant poultry farmers. The research result showed that the future position of broiler enterprises in Lahan is better. About 84% of broiler farmers reported that they would extend their enterprises in the future however, some farmers were also interested to replace broiler chicken by layers (Table 5.14). They reported that their only one problem for replacement of broiler by layers is due to maximum fluctuation of marketed price of broiler birds.

Table 4.17

Distribution of Sample Respondents by their Opinion on the Expansion of their Farms in Future

Opinion	No. Farms	Percentage
Positive	42	84
Negative	8	16
Total	50	100

(Source: Field Survey, Nov 2016 Feb 2017)

Some farmers also reported that they were started broiler farming by taking bank loan and due to lower market price of birds; farmers were suffered from higher loss. The problem was also due to high mortality rate of broiler chickens (>50%) by different epidemic disease. Due to these reasons, they were unable to paid bank loan. Some farmers sold their land to paid

bank loan also and they are very frustrated from this issue. But the case was not similar to all the broiler farmers of Lahan.

4.6. Promotional Activities of Feed Industry

Promotion consists of communications that inform potential consumers of the existence of products and persuade them that those products have need-satisfying capabilities.

Promotional activities, including advertising, personal selling and other methods are often thought to be the major, if not the total, thrust of marketing in any organization.

The objective of promotional activities is to compare one product favourably over the others. There are different types of promotional activities can be found in the market.

Personal Selling:

Oral presentation is a conversation with one or more prospective purchasers for the purpose of making sales. Most of the feed industries are using personal selling in Lahan, because they have direct contact with customers.

Sales Promotion:

Marketing activities are other than personal selling, advertising and publicity that stimulate consumer spending and dealer effectiveness. These include displays, shows and exhibitions, demonstrations, and special deals.

Feed industries are having this type of sales promotion activities. They participate in exhibitions sometimes.

4.7. Publicity and Advertisement

Non-personal stimulation of demand for a product, service, or business unit by “planning commercially significant news about it in a published medium” or obtaining favourable presentation of it on radio, television or stage, non paid for by the sponsor.

Advertisement is one of the major tools, where companies use to direct persuasive communications to target public buyers. Advertisement is a cost-effective way to disseminate messages.

Advertisement is particularly useful in attracting the attention and interest of the consumer. As individuals enter the desire and action stages, advertising becomes a more difficult communication too because of its mass appeal. Once adoption has occurred, mass selling once again becomes important for its reinforcement effects. For these reasons, advertisement commonly promotes mass produced, widely distributed convenience and specialty goods. It is possible for an advertiser to encourage direct action by informing consumers of the need for urgency. A primary limitation of advertisement is its cost.

The vast numbers and kinds of media available provide advertising with a wide degree of flexibility. Some of the more common media include:-

- i. Newspapers
- ii. Magazines
- iii. Radio
- iv. Televisions
- v. Billboards
- vi. Car cards(Taxi cabs, subways, busses)
- vii. Direct mail
- viii. Directories
- ix. Distribution channel

Advertisement used in Lahan by Feed Industries:

In Lahan most of the feed industries are using advertisement to promote their product. The table below shows the percentage of using and non using advertisement by feed industry.

Table No. 4.18

Advertisement user and non- user Feed Industries

Particular	No. of feed industries	%
Advertisement user	24	80
Advertisement Non-user	6	20

Base: 30 Feed Industries

(Source: Field Survey 2076 Asoj)

Table No 4.18 shows that 80% feed industries have been using advertisement. 20% of feed industries are aware of advertisement, but are not interested. Table No. 4.18 can see in diagram effectively.

Figure No. 5

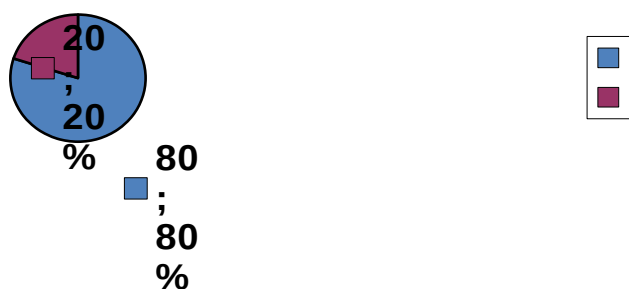


Diagram 4.2 shows that the majority or 80% are advertisement users. Only 20% do not use advertising to promote their products.

There are different types of advertisement. Feed industries are using some of them. Table No. 4.19 shows the different advertisement media used by the feed industries.

Table No. 4.19

Advertisement Media Used by the Feed Industries

S. No	Advertisement media	No. of Feed Industries	%
1.	Local Newspapers	20	84
2.	Newspapers+ Billboards	2	8
3.	Newspapers+ Distribution Channel	2	8

(Source: Field Survey, 2076 Asoj)

Table No. 4.19 shows that local magazines are the most used media source for advertisements. All of them are using local newspapers for advertisement. So local magazines play an important role in promoting feed industries. 84% are using just local newspapers. 8% are using Billboards and local newspapers, and 8% are using distribution channel and local newspapers. In total, Rs 2 lakhs is spent each year for advertisement.

The lack of proper management in poultry farming sometimes leads to complaints about the quality of feed. Sometime feed is of a different quality because of changes in the seasons. In rainy season dry maize and other dry raw materials are unavailable, which affects the quality of feed. There is no “quality control lab”. The government hasn’t provided lab facilities for some of feed industries. But Himalayan Feeds Pvt. Ltd. is the only feed industry in Lahan that has a “quality control lab” for feed. All of the industries however have their own veterinary doctors, who give advice for feed formulation.

4.8. Preparation Cost of Poultry House and Other Technical Parameters

Preparation Cost of Shed

All the broiler farmers of Nepal were reared their birds in deep litter system. Majority (52%) of the farmers made their shed below 50 thousand rupees followed by 51-75 thousand (20%), 75-100 thousand (16%) and above 100 thousand (12%) (Table 5.16)

Table 4.20

Distribution of Broiler Farms by the Cost of Shed Preparation

Preparation cost of shed	No of Farms	%
Below 50000	26	52
51000-75000	10	20
75000-100000	8	16
Above-100000	6	12
Total	50	100

(Source: Field Survey, Nov 2017- Feb 2018)

i. Technical Parameters

About 62 of the prepared sheds were thatched by grasses (khar) and 38% by aluminum sheet. of the whole shed, 94% were paved floor or pakka and 6% were unpaved or kachcha. Farmers reported that deep litter system is more economical, hygienic, comfortable and safe to the birds. The single litter material rice husk (Dadalno) was used in all broiler farms of Lahan. To keep the shed always dry, litter material (Dadalno) was stirred or applied below 5 times by 14%, 6-10 times by 60% and more than 11times by 26% farmers.

Table 4.21

Distribution of Sample Farms by their Technical Parameters

Parameters	No. of farms	Percentage
Types of shed:		
Paved	47	94
Unpaved	3	6
Roof of shed		
Grasses(Khar)	31	62
Aluminum sheet	19	38
Times of litter apply		
Times,5	7	14
Times6-10	30	60
Times.11	13	26

(Source: Field Survey, Nov2017-Feb 2018)

4.9. Benefit Analysis

Initial Chicks Number and Mortality

The number of day-old chicks at initial stage and their mortality percent was also studied. The data showed that the average number of day-old chicks taken at initial stage was 429, 873, 1814 in small, medium and large farm, respectively. The mean mortality percentage was 6.15 for small 7.59 for medium and 6.0 for large size broiler farm. The result of mortality percentage was much higher than for an efficiently run broiler farm, which should be only 2 to 3 per cent. This result indicates that there is an urgent need for proper health management within each farm size.

Meat Production

Meat production is the main goal of broiler production. If the growth of poultry bird is not found satisfactory then the farmers will be automatically taken higher loss. So the research finding data showed that the live weight per bird in case of small farm was 2.2kg where medium and size farms was 2.29 kg each. The production cost per kg live weight of bird was Rs 57.72 for small, Rs 49.25 for medium and 49.72 for large size farm. On the order hand, the selling price of per kg live weight was 64.46, 58.45 and 61.14 rupees for small, medium and large size farm respectively. The cost of production was higher in case of small farm,

which may be due to maximum involvement of family and waged labour in their farm, which was lesser in case of medium and large farm. The selling price per kg live weight of bird in small size farm was more than other farm, which might be due to selling poultry birds to local meat seller (Butcher) in higher rate. But medium and large size farm generally sold their poultry birds to large businessman or wholesaler in nominal price rate. The poultry farmers reported that the rate of price increased in winter season as compared to summer, which might be due to more meat consuming habit of Nepalese people in cold season. The farmers were able to get better price of their product in the survey period (autumn/ winter season) as compared to other season.

Manure Production

Poultry manure is also the source of income to the farmers. Generally it is used by the farmers themselves or sold to other farmers. The situation of poultry manure data showed that the average production of manure per bird or per square feet floor space with litter material was 4.20, 4.28 and 4.29 kg in small, medium and large farm, respectively. The selling price of manure per kg was Rs 1.37 by small size farm and 1.40 rupees each by medium and large size farm. It was observed that small size farm were used more litter materials(Dadalnu) in their shed as compared to medium and large farms it may be due to more unpaved floor of their shed. The quality of manure was better in medium and large farm as compared to small farm, so the price of manure was more which was determined due to the quality of manure. Most of the farmers, which have cultivated land, used manure themselves and improve the fertility status of the soil. The average cost of manure at the time of survey was Rs 45 per bag (45kg).

Total Income

Total income per bird was calculated by adding total selling price of per bird and its manure. The result showed that the average income per bird was 151.75, 139.83 and 145.58 rupees for small, medium and large farm, respectively. This result indicates that medium farm get less income as compared to other sized farm but to less investment (fixed and variable cost) they were taken reasonable profit as compared to small and large farm.

Net Profit

Net profit was calculated by reducing total cost from total income per bird basis. The data (Table 5.20) showed that average net profit per bird was Rs 31.98 for large and Rs 27.05 for medium while the small farm it was low (Rs 24.76) which was mainly due to more investment per bird. The income share of meat in cases was more than 95%. Relatively high share farm (4.11%) as compared to small farm (3.79%). This may be due to highly mechanized and scientific system of farming in the case of medium and large farms as compared to small farm.

4.10. Feed Conversation Ratio

Feed conversion ratio (FCR) is the important parameter to determine the actual growth of poultry bird. The FCR is the ratio of per kg feed consumption to per kg meat production. The quantity of feed consumed by a broiler of 1 kg live weight was in the range of 2.2 to 2.4kg. Farm size had very little influence on the feed conversion ratio (FCR). Bhurtel and Shaha (2000) also find similar type of result. They reported that in different sized farm of different sites of Nepal, the FCR was in the range of 2.3 to 2.5kg. The result showed that the small farm had comparatively higher feed wastage than medium and large sized farms.

Socio-economic Impact of Broiler Farming

In recent years, commercial poultry production has emerged as one of the attractive business in Nepal. Among 75 districts of Nepal, Lahan is a most important district for commercial poultry production. Mostly the commercial farming was initiated since last decades. This business played important role to change socio-economic status of the peoples of Lahan. These major changes described as below;

Socio-cultural Change Traditionally, poultry's keeping is predominantly conventional backward farming and kept only for home consumption in the houses excepts the houses of Brahmin and Kshetriyas. Generally the lower caste were kept and sold surplus chickens within the village in personal contact basis Peoples were totally bound with their custom and religions. Brahmin and Kshetriyas had no any permission to keep poultry in their home because of lower grade of this bird.

Lahan valley had become a valuable place for living after the initiation of malaria eradication programmer in 1956. After malaria control the area is gradually become popular as a favorite place for residence. People from surrounding district had come through migration various types of ethno cultural groups from all over the county inhabit Lahan. Tharu, Darai and Kumal are the native people of this district and they were raised poultry only for home consumption. The higher caste groups were started for poultry farming since 1972 by importing exotic birds where commercial farms were initiated since 1982. Due to availability of east-west high way, land, water, electricity, good transportation facility, large number of veterinarians produced from IAAS, this business has been adopted by a number of peoples without considering any caste and religion.

These study results also showed that more than 60% poultry producer of Lahan are Brahmin and Kshetriyas. Due to the adoption of this business a large number of socio-economic changes are found in this district. The agricultural farmers, who are generally not engaged throughout, can be occupied all the year round and the income derived from egg and meat could be a continuous process throughout the years. The manure obtained from the poultry having more essential nutrients of nitrogen, phosphate and potash (NPK) than the other organic manure, could supplement the synthetic fertilizers which has become costlier due to high in the price of petroleum products. Poultry farming creates a greater demand for agro-industrial by-products and wastes which are utilized and incorporated in the poultry feed. Poultry industry helps in promoting ancillary industries and today there are more than 150 ton poultry feed and more than 10 tons poultry meat produced per day in Lahan (Dhakal, 200). With greater attention towards rural sector than urban sector the government now stress towards generating employment in the rural area in 10th five year plan which is the nerve centre of Nepalese economic progress and prosperity. Therefore it becomes imperative to improve the lots of small farmers, marginal farmers, landless labourers, and artisans, tribal, backward and depressed classes who form large segment of rural population.

Impact on Food and Nutrition

Due to poor economic status of the Nepalese people the feeding habit and the health status is very poor. Malnutrition is a serious problem of peoples especially for rural areas. Children are sufferers from different disease caused by malnutrition. Protein is most important nutrition element for growth and development of our body. For proper growth and

development of children, pregnant women, and youth should be consumed more protein containing food.

In the surveying programme a question was asked to the poultry farmers about the quality of broiler meat consumption in their home per month and its nutritive effect in family health. The result indicates that about 6% broiler raisers were not consumed broiler meat. They were consumed mutton and were economically very strong farmers. About 56% farmers consumed 2-4kg and 38% consumed more than 5 kg broiler meats per month. They were reported that there is no significant influence in family health by the use of broiler meat. The economically poor farmers reported that the broiler which is used for consumption was unmarketable type i.e. weak, unhealthy, deformed size, and abnormal type which may be due to poor economic status and lack of awareness about health.

Table 4.22

Distribution of Sample Households by Meat Consumption per Month

S.No.	Meat (kg/month)	Consumption No. of Households	Percentage
1.	Not consumed	3	6
2.	2-4	28	56
3.	>4	19	38
Total		50	100

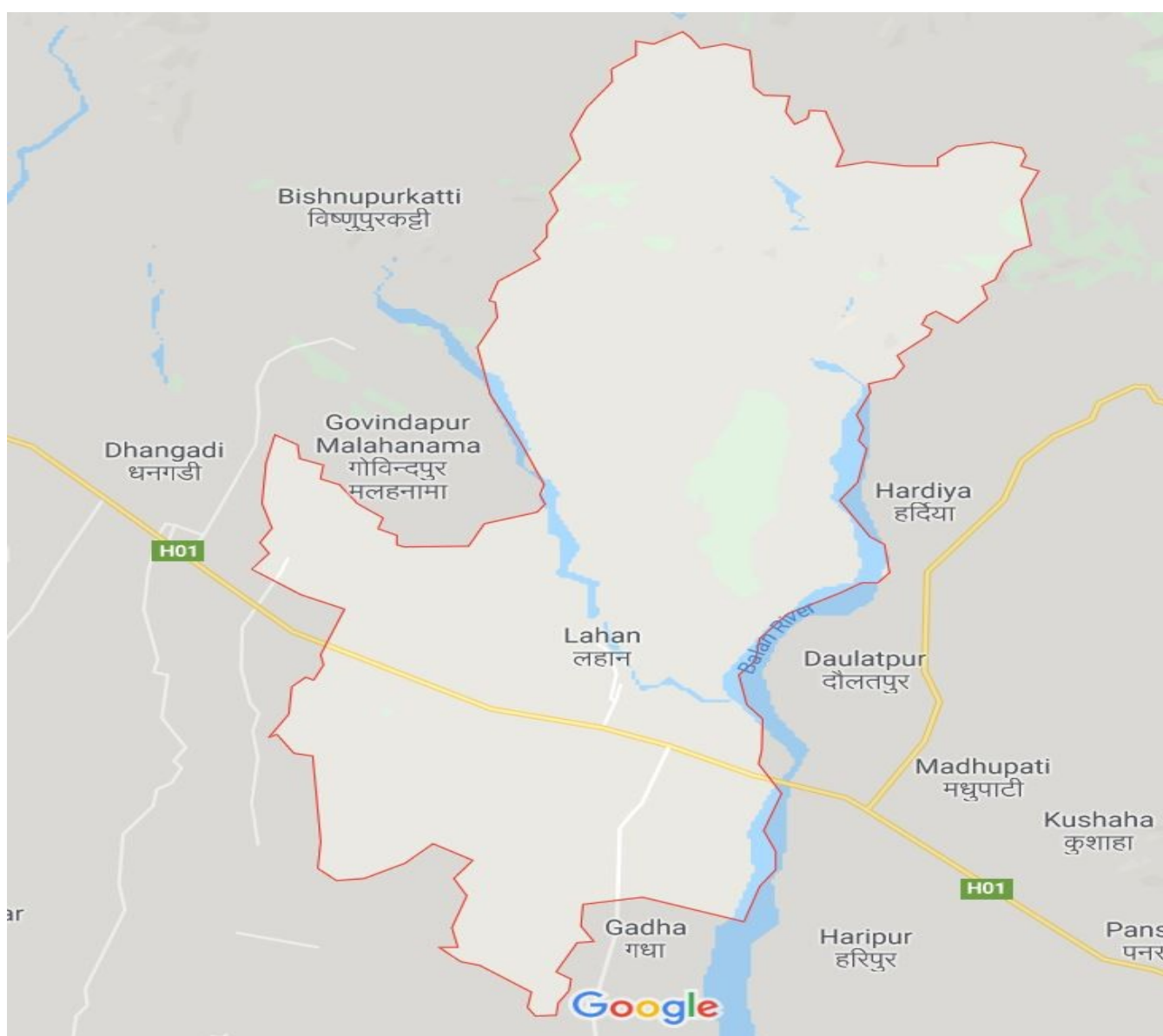
(Source: Field Survey, Nov 2016-Feb 2017)

The people of Lahan, Nawalparasi and some other districts also face the nutrient deficiency problem. By the adoption of poultry business, the feeding habit has been changed by the peoples. The meat consumption is increased now a day due to which the animal protein supplement in their diet is also increased in some extent as compared to last decades.

Chapter - V

MARKETING OF POULTRY FARMING AND POULTRY FEEDING IN LAHAN, NEPAL

5.1 Introduction:



(Lahan Market, source: Google Maps 2019)

Lahan is a town and municipality in Siraha District in the Sagarmatha Zone of south-eastern Nepal. It is connected with Mahendra Highway, which is also called the east-west highway. It is located nearly 350 kilometers or 99.3 miles east of the capital, Kathmandu.

5.2 Data Presentation and analysis of poultry farming and poultry feeding in Lahan:

Poultry meat is cheap, tasty and best for health.

5.2.1 Poultry meat business:

Table No. 5.1

Total number of poultry shops	75
Annual poultry meat sales (tons)	1643
Average cost price per kg	Rs. 160
Average selling price per kg	Rs. 260
Average profit per day	Rs. 2100
Employment Labours	3
Total Employment Labours	225

Union = Not effective

Cold Store = None

Other poultry meats be sold:

Duck, Pegion, Turkey, Local Hen and Cock, etc.

A lot of indirect employment are also engaged.

Broilers are also imported from other districts to be sold in Lahan.

(Source : Field survey, 2076 Asoj)

5.2.2 Eggs Business :-

Table No. 5.2

Total number of push-carts (<i>thela</i>)	30
Number of eggs to be sold per day	150 – 250
Cost Price per egg	Rs. 13
Selling Price per egg	Rs. 15
Selling Price boiled egg	Rs. 20
Selling Price fried egg (omlette)	Rs. 25 to Rs. 45
Average profit per day per cart	Rs. 1200
Total employment	60 labours and its family members

Loss :- Some eggs may be broken and rotten.

This business runs more in winter season

(Source : Field survey, 2076 Asoj)

5.2.3 Poultry Feed dealers in Lahan:

Table No. 5.3

Types of feed:

B0	0 to 14 days chicks
B1	14 to 28 days chicks

B2	28 to 42 days chicks
B3	more than 42 days chicks

Average life of chick is 45 days.

Poultry Dealer's Statement

Table No. 5.4

Chick Investment per chick(at hatchery industry)	Rs. 25
Selling Price per chick	Rs. 70
Monthly fees sales by dealer	25 tons
Total feed sales by dealers monthly	175 tons
Selling Price of feed per kg	Rs. 60
Average employment per poultry farm(Labours)	4
Total Employment (Labours)	800
Total number of feed dealers	7
Numbers of farms	200
Average broilers per farm	500 – 15000
Total employment per feed dealer (Labours)	6
Overall total employment in this business(Labours)	60 + 800 + 42 + 225 = 1127

Main epidemic diseases to be controlled:

1. Ranikhet
2. Kambaro
3. CRP

Poultry feed dealers helps to the poultry farm farmers for feed, loan, training, medicine, etc.

Feed is imported from Sunsari, Lahan, Kathmandu, Saptari, etc locations in Lahan. Indian markets influences and disturbs the poultry business time to time. This happens when chicks and broilers are sold at lower cost than Lahan market. Therefore poultry businessman of Lahandoesn'tcompete with Indian market. No any cold store is available for poultry in Lahan. CTEVT at Graminchowk provides three years diploma in veterinary education, but doesn't have an appropriate poultry lab of its own.

5.3 Summary, conclusion and recommendations:-

At the sound condition and honest market poultry business is very profitable and provides more employment, exports poultry goods and services to other markets but due to corruption,

loan problem, dishonesty and market strike, this business is unsafe and not so profitable. Promotion is needed in the poultry farming and poultry feeding in Lahan by Nepal government. Due to lack of poor management it suffering from a lot of problems, it is suffering from a lot of problems. Nepal-India open border problem, illegal and black marketing influences negatively. Due to which it bears loss-gains. Poultry manure is one of the best organic fertilizer and provides additional profit to the poultry farmers. It supplies to the farm for more crops production, although all the poultry farmers pays taxes to the Nepal government but government has doesn't have proper planning , organizing, decision making and controlling to Lahan poultry business.

(Source : Field survey, 2076 Asoj)

CHAPTER – VI

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1. Summary

The economy of Nepal is highly dominated by the agricultural sector. For the purpose of national development through industrial development, due emphasis should be given to poultry farming and development of feed industries. These types of industries serve the nation by utilizing indigenous resources, creating employment opportunities, mobilizing surplus and using technical know-how.

The poultry farming has become popular in Lahan, Kathmandu, Kaski, Nepalgunj, Parsa, Bara, Siraha(Lahan), etc. of Nepal because of suitable weather, highly profit margin and good transportation facilities. Poultry farming could provide useful options to farmers. Poultry farming has received increasing impetus in the total economic and productive sector of the country. For development of poultry farming, feed industry plays important role by giving qualitative feed.

The number of feed industries has increased every year in Lahan and other district of Nepal. Most of the feed producers use a direct distribution channel, and they use mixed channel too. Feed producers are having competition with local magazines. They want to help farmers by giving training, suggestions, market facilities, including profit.

A social survey research entitled “socio-economic Aspects of poultry farming; a case study of Broiler farming in Nepal” was conducted in during autumn to winter season of 2001/2002. The general objective of the study was to analyze the socio-economic aspects of the poultry farming with special reference to the broiler farming in Nepal. There were a total of 503 broiler farms in Lahan only, out of them about 10% samples (50 farms) were selected by random sampling with lottery. The descriptive research design was followed in the study. The search findings showed that the higher castes Brahmin were adopted this enterprise more (46%) followed by Kshetriyas (18%), Newar and Gurung (6% each) and other caste, where more than 90% were Hindus. The mid aged farmers group (30-40 years) were adopted more (40%) than other aged group, where maximum number of farmers were illiterate and have very less (6%) training in poultry husbandry. Maximum number of labour used were family labour(68%) where most of the waged labour were child labour (below 12years) and have got

very less amount of wages. Most of the family head and poultry owner was male (92%) and maximum family number was 5-8 per household (76%). The family head and his wife were involved maximum (54%) compared to other members. The percentages of medium sized farm (500-1000 chickens) were maximum (44) followed by small (<500 chickens) and large farm (>1000 chickens) where the ownership was 94% single and 6% only in partnership. Most of the day-old chickens were taken from Sangam hatchery (38%). The feed prepared by the farmers themselves was 26% and rest (74%) feed was purchased from different feed industries. Only 38% farmers were taken loan from bank where 50% farmers paid electric charge below 1000 per month and about 2% farmers were used hook system. The initiation of the poultry enterprise was found maximum (56%) in between 2051 to 2050BS. The 84% farmers were interested to expand this business in future. About 96% farmers were used vaccine to prevent from different diseases. Poultry meat consumption result showed that about 56% farmers consumed 2-4kg meat/month followed by more than 4 kg(38%) and non-eater(6%). The economic analyzed result showed that 93.47% and 6.53% cost was shared by variable and fixed cost respectively, where average chicken number rose were 423,873 and 1814 by small, medium and large farm, respectively with average mortality 6.58%. The total income per bird was Rs 24.76, 27.05 and 31.98 of small, medium and large farm, respectively. Lahan district is the poultry pocket of the country and it is self sufficient in chickens and poultry feed. But there were some problems reported by the farmers for successful poultry farming which was policy, technical and management level problems.

There is an insufficient supply of raw materials available in the district, necessitating the use of imported materials from India. The price of these materials fluctuate frequently, ultimately influencing the price of poultry feed. The NFIA fixes the price of feed in Lahan district. So the price is same everywhere in district but the discount might be different. The price of feed depends on cost of production.

The feed industries are doing good business in different districts even they have problems like the lack of quality control Lab, cost fluctuation of raw material, less support from government. However there are very few sufficient studies which focus feed industries as well as marketing aspects of feed industries in Nepal.

In this context, an attempt is made to access Poultry Feed Production and it's marketing in Nepal. For the study a sample survey was conducted with random systematic method in Nepal in 2057 Jesth/Ashadh. Necessary data were collected through questionnaire method.

6.2. Major Findings

Nepal has been developed as a poultry pocket in Lahan, Kathmandu, Biratnagar and other districts. It has become one of the most rapidly growing enterprises within the reach of poor, women, marginal farmers, and entrepreneurs. This is self sufficient for the production and distribution of the chicks and feeds.

In relation to adoption of poultry farming by caste, the Brahmin and Kshetriyas are adopting this enterprise more compared to other casts where more than 90% broiler farmers have been Hindus. The mid aged farmers group(30-40 years) are adopting more compared to other aged group where maximum number of farmers are illiterate to simple literate and have no any training was taken in poultry husbandry. Maximum number of poultry owners used labour by their own family member for all activities. The outer labours were generally child labour and got very less amount as a labour wages. Mainly enterprise head and his wife were found more responsible for all activities and they worked more than 4-6 hours per day.

Poultry farmers of the districts are expanding more than 93% in variable cost. The mean mortality percentage of chicken was around 7% which may be due to different epidemic disease and poor management. The industry on an average enjoyed a net return of Rs 27.93 per bird of broiler and feed conversion ratio is 2.34%. However, about one third of the producers reported losses in their business. The variations in the management practice of individual farm and their management performance could be the major reason for this. Other factors, which kept the net return of the overall industry at low level, were the failure among farmers to exploit the technical expertise, to internalize the dynamic of market functioning in their production and marketing strategy, and use of treatment recommendations without assessing their economic rationale.

From the above analysis and presentation, the following major findings and recommendations have been formulated.

Nepal is known as a qualitative poultry feed country. The numbers of feed industries are increasing every year. Along with feed industry, poultry farming is increasing too and the loan investment on poultry farming is increasing every year.

1. The prices of feed are not stable. It fluctuates every time because the cost fluctuation of raw materials. NFIA fixes the price of feed in Lahan based on cost of production.
2. The prices of feed are increasing every year. They have so far increased by 27-37%.
3. Poultry feed needs different types of raw materials but some raw materials are not available in Nepal, and must be imported from India.
4. There are different types of distribution channels but most of the feed industries use direct- to- customer channel. They use mixed channel to a lesser extent.
5. Different types of competition plays significant role in any business,(quality, discount, advertising etc.). In Lahan, feed industries are competing through price levels with local producers.
6. In Lahan, none of the feed industries export their poultry feed to other countries.
7. Advertisement is an effective way to promote any business. Feed industries are using only local magazines to advertise their product.
8. The government has not responded positively to the feed industry.
9. Every feed industry wants restrictions on import of poultry product, as well as other raw material available in Nepal.
10. Poultry product depends on quality feed but there is no “quality control lab” in Lahan.
11. Feed producers are not satisfied with the interest rates on loans provided by the Agricultural Development Bank.
12. There is an Agricultural and Animal Science Campus in Lahan and Lahan, so the veterinary doctor is easily available.

6.3 Conclusion

Some of the districts have been developed as a poultry pocket of the country. They have become one of the most rapidly growing enterprises within the reach of poor, women, marginal farmers, and entrepreneurs. These are self sufficient for the production and distribution of the chicks and feeds.

In relation to adoption of poultry farming by caste, the Brahmin and Chhetry are adopting this enterprise more compared to other caste where more than 90% broiler farmers have been Hindus. The mid aged farmers group (30-40 Years) are adopting more compare to other aged group where maximum number of farmers are illiterate to simple literate and have no any training was taken in poultry husbandry. Maximum number of poultry owners used labor by their own family member for all activities. The outer labors were generally child labour and got very less amount as alabour wages, mainly enterprise head and his wife were found more responsible for all activities and they worked more than 4-6 hours per day.

Poultry farmers are expanding more than 93% in variable cost .The mean mortality percentage of chicken was around 7% which may be due to different epidemic disease and poor management .The industry of average³ enjoyed a net return of Rs.27.93 per bird of broiler and feed conversion ratio is 2.34%. However, about one third of t6he producers reported losses in their business. The variations in the management practice of individual farm and their manageme³nt performance could be the major reason for this. Other factors, which kept the net return of the overall industry at low level, were the failure among farmers to exploit the technical expertise to internalize the dynamic of market functioning in their production and marketing strategy, and use of treatment recommendations without assessing their economic rationale.

Poultry industry is expanding high rate of price in feed annually but the quality of feed is not significantly improving. Small scale of production, low quality of raw materials, poor formulation techniques and poor technical know-how are responsible for this situation. Another area that has to be considered seriously is the quality control of materials that support the poultry enterprise such as medicines, additives, feds, and day-old chicks, Due to lack of well-equipped disease and fee⁴d ingredients farmers faced different problems. There is lack of coordination among feed industries, hatcheries, poultry entrepreneurs' forum, and farmers also.

Overall from the findings, it can be inferred that the poultry producers have been unable to reap the potential gain from the poultry enterprises due to uncontrolled marketing of chicks, which leads to over production, Unexpected import of chicks and some times chicken meat from India is also negatively influencing the chicken producers in Nepal. As a consequence, intermediaries have been benefiting from the industry by exploiting the situation in favor of them. This strongly suggests that for the role of public sector in narrowing down the gap

through research based information and appropriate policies geared towards organized marketing of poultry products. However the role of private sector in this regard cannot be ignored.

6.4. Recommendations

The following are recommendations for the improvement and development of feed marketing.

- i. For the purpose of improving the quality of feed, the government should be establish a feed quality control lab in convenient part of Nepal.
- ii. Government should initiate a search for new markets for feed, eggs and chickens.
- iii. To increase investment in poultry farming and feed industries, bank interest rates should be lowered.
- iv. Imported eggs, meat and low quality feeds should be banned or restricted.
- v. Government should control market price of feed and raw materials.
- vi. Government should give technical assistance and advice to feed producers to produce higher quality feed.
- vii. Quarantine inspection of raw materials should be done correctly before they enter the country.
- viii. The Feed Producers should be united and discount competition should stop.
- ix. Feed producer should use a variety of advertisement media like radio, television. It will increase their business.
- x. The policy should be made under national priority on commercial poultry development.
- xi. Subsidy should be given from the government on electricity, poultry appliance, feed supplement, vaccines, parent stocks etc.
- xii. The government, in consultation with the stakeholders-both government organs and various poultry associations, should reform the existing tax system on poultry.

The rapid growth of commercial poultry is likely to continue in Nepal.

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APPENDIX-I

Description of 16 Feed Industries in Chitwan and Lahan

Name of Feed Industry	Address	Date of establishment	Daily Production		Types of feed	Employees
			Capacity(Ton)	Production(Ton)		
Himalayan Feeds Pvt. Ltd.	B.N.P. 8, Gaurigunj	2046B.S.	40 ton.	25 ton.	Cattle, Poultry, Fish, Horse, Pig, Elephant and Battai Feed	60
Om Prakash Feeds Pvt. Ltd.	Lahan, Gramin Chowk	2055 B.S.	30 ton.	20 ton.		40
Everest Feed Industry Pvt. Ltd.	B.N.P.4, AnandaMarg	2044B.S.	15	5	Broiler and Layers Feeds	20
Sanjivani Poultry Feeds Pvt. Ltd.	B.N.P.4, Narayangagh	2053B.S.	8	8	Broilers, Layers and Battai Feeds	20
Nava Jyoti Feed Industry Pvt. Ltd.	B.N.P.5, Lanku	2052B.S.	15	6	Broilers, Layers and Pig Feeds	15
PanchaRatna Feeds Pvt. Ltd.	B.N.P.13, Anandapur	2050B.S.	25	20	Broilers, Layers, Cattle and Pig Feed	20
Seema Feed Product	B.N.P.4, Bahraghare	2054 B.S.	10	5	Broilers, Layers, Cattle and Pig Feed	10
Nava Durga Poultry Feeds	B.N.P.4, Narayangadh	2049B.S.	20	11	Broiler and Layers Feeds	25
Sabin Feed Industry	B.N.P.	2056B.S.	15	3	Broilers, Layers, Cattle and Pig Feed	14
K.K. Feed Industry	B.N.P.	2052B.S.	1	0.2	Broiler and Layers Feeds	2
K.C.Poultry Feeds		2052B.S.	8	2	Broiler and Layers Feeds	7
Kailash Feed Industry	B.N.P.	2052B.S.	-	1	Broiler and Layers Feeds	2
Kalyan Feed Industry	B.N.P.	2050B.S.	5	1	Broiler and Layers Feeds	6
Jyoti Feeds Pvt. Ltd.	B.N.P.	2056B.S.	5	2	Broiler and Layers Feeds	5

Abinash Feed Industry Pvt. Ltd.		2056B.S.	25	6	Broilers, Layers, Cattle and Pig Feed	6
Gurans Feed Industries Pvt. Ltd.	B.N.P.	2054B.S.	20	2	Broilers, Layers and Cattle Feed	15
Himal Feed Industry		2056B.S.	5	3	Broiler and Layers Feeds	5

(Source: Nepal Feed Industry Association, Lahan -2075.)

APPENDIX - II

QUESTIONNAIRE

You are requested to reply to the following questions. This questionnaire intends to get answers about the production and marketing practices of feed industries in Lahan. Please tick as () on the one or more bracket and fill in the blanks as per the requirement.

Name of respondent:-

Post:-

- a) Name of the feed industry:-
- b) Address:-
- c) Date of Establishment:-
- d) Initial Investment:-
- e) Production Capacity:-
- f) Numbers of Employees:-
- g) Number of Branch Offices:-

1. What kinds of feed you are you producing?

- a. Poultry Feed
- b. Pig Feed
- c. Cattle Feed
- d. Duck Feed
- e. Rabbit Feed
- f. Others

2. What type of poultry feed do you produce?

- a. Chick Starter
- b. Pullet Grower
- c. Layer Mash
- d. Broiler Starter
- e. Broiler Finisher
- f. Others

3. How much quantity do you produce poultry feed in a day?

4. How much poultry feed do you sell in a day?

5. Where are you supplying your poultry feed through branches as well as other distribution channel? Please specify the districts name only.

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

i. _____

6. Where is your branch offices situated?

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

g. _____

h. _____

i. _____

7. Do you export your feed to foreign country?

Yes { } No { }

If yes, Please specify the name of the countries.

a. _____

b. _____

- c. _____
- d. _____
- e. _____
- f. _____

8. The present market price of poultry feed.(per kg)

9. Give the average annual price of poultry feed for the last 5 yrs.

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

10. The price fluctuation of poultry feed is:

- a. Weekly []
- b. Monthly []
- c. Quarterly []
- d. Yearly []
- e. Half Yearly []
- f. Seasonally []
- g. Others _____

11. Reasons of price fluctuation of your product.

- a. changes of price of raw materials []
- b. market competition []
- c. seasonal demand []
- d. others: _____

12. What are the basic input requirements for preparation of chicken feed?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____

- f. _____
- g. _____
- h. _____
- i. _____

13. Where do you get those input or raw materials?

- a. From local market []
- b. from other districts []
- c. from other countries []
- d. all of them []

14. Which raw materials are not available easily?

- a. _____
- b. _____
- c. _____
- d. _____
- e. _____
- f. _____
- g. _____
- h. _____
- i. _____

Which method do you adopt for pricing?

- j. Cost-plus pricing []
- k. mark-up pricing []
- l. target- return pricing []
- m. going- rate price []
- n. marginal cost pricing []
- o. others: _____

15. Which types of distribution channel are you practicing?

- a. Direct to customer []
- b. by dealers []
- c. by branch offices []
- d. all the above []
- e. others: _____

16. Which types of distribution channel are other feed industries practicing?

- a. Direct to customer []
- b. by dealers []
- c. by branch offices []
- d. all the above []
- e. others: _____

17. What is your plan about distribution?

- a. Same as now []
- b. by increasing branch offices []
- c. by improving administration []
- d. others: _____

18. Who are your competitors?

- a. Local producers. []
- b. producers of other districts []
- c. producers of other country []

19. In which area the competition takes place?

- a. Pricing []
- b. advertisement []
- c. quality []
- d. distribution channel []
- e. others: _____

20. Are you advertising your product?

Yes [] No []

If yes, which king of media are you using?

- a. Radio []
- b. Magazine []
- c. Television []
- d. Postering []
- e. Bill board []
- f. Distribution channel []

21. How much money are you spending on advertisement per year?

22. Do the customers complain about quality to the feed?

Yes [] No []

23. How do you maintain the quality of your products?

- a. By own industry lab []
- b. by outsider's technician []
- c. others: _____

What are reasons of increasing number of feed industries in Lahan, Lahan, etc?

- d. Lahan is the centre for many districts []
- e. easily available of raw materials []
- f. increasing number of poultry farming []
- g. others: _____

24. Enumerate the various problems which have to face by your industry.

- a. Shortage of raw materials []
- b. price fluctuation of raw materials []
- c. close competition []
- d. lack of quality control lab []
- e. less support from government []
- f. lack of efficient personnel's []
- g. storage problem product []
- h. others: _____

25. What do you think about future of feed industries?

26. Please give your suggestions to improve feed industries?

27. How is Nepal government promoting poultry farming in Lahan?

28. What are the main problems in poultry farming and feeding in Lahan market?

owers

Thank you for your co-operation.

(Source: Field Survey, 2075 - 2076 Asoj)

MARKETING OF POULTRY FARMING AND POULTRY FEEDING IN LAHAN, NEPAL

PROPOSAL

SUBMITTED TO

Office of the Dean

The Faculty of Management

Tribhuvan University

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CHAPTER- I

INTRODUCTION

1.1 General Background

As an agricultural country, the importance of poultry industry to national economy cannot be under estimated in Nepal. Commercial poultry farming become a popular business for income generation and poverty alleviation by reaching most disadvantaged socio-economic groups including marginal farmers and women in the country. About 50,000 Persons have received direct employment in various stages of commercial poultry production such as hatcheries, meat and egg production, marketing and feed production (poultry munch 2018). The poultry sector not only conserve the scarce national reserve of foreign currency through import substitution but also has high potential for export, particularly to the Tibet Autonomous Region of China, Bangladesh and even to some of Gulf countries.

Now a day the production and consumption of chicken meat is no more confined in certain ethnic group. Due to high population growth, urbanization, road access, transportation linkages, change in dietary habit of the people, increasing awareness on nutrition and growing demand of different meat products by the consumers, the poultry products(meat and egg) becomes a most important and valuable source of animal protein to nourish all aged group of the people.

The most of the commercial production was concentrated in central region of Nepal mainly due to high demand of poultry products in capital city Kathmandu, better transportation and communication facilities, and availability of chicks, formula feeds and technical assistance in this region (Bhattarai et al., 2018). There is more potentially to sell final product (meat and eggs) in large towns and cities like Kathmandu, Biratnagar, Pokhara, and other local markets of the country. In addition to domestic market there is high potentiality for export in Tibet of china, Bangladesh, India and even in some of gulf countries. Poultry market is not organized and there is lack of infrastructure for collection, transportation, and handling, processing and

marketing of products. The major marketing activities involved are marketing of chicks from hatcheries,

marketing of feed and medicines and finally marketing of final products such as eggs and birds. Due to lack of a marketing infrastructure, the market prices of perishable poultry products are fluctuated heavily, which makes the profitability of poultry farming highly uncertain and often causes losses to the poultry producers.

Nepal is a predominantly agricultural country. Agriculture plays an important role in the Nepalese economy. About 60% of it's total population is engaged in the agriculture sector directly or indirectly. But the production from land has been decreasing every year because of traditional farming systems, poor irrigation and environmental deterioration. The main crops of Nepal are maize, wheat, mustard, millet, rice, barley, and potato.

In Nepal, farmers are busy in their fields for only few months. During the year, leaving periods of time when they don't have any work, poultry production programs will provide a substantial contribution to alleviation of poverty through income generation and employment promotion in rural areas.

Source: Nepal District Profile, 1998, HariBhakta Sharma, Tika Ram

Lahan is a large town and interested market for poultry feed and farming with high growing rate of customers, so it is selected for this thesis writing.

1.2 Statement of problem

The major problems in Marketing of poultry farming and poultry feeding in Lahan.

Nepal is located at the central part of Asia, where the numbers of feed industries are increasing every year. Because of sound transportation facilities, it is convenient to distribute products from Lahan and other places. The weather condition is mostly suitable for poultry farming, and farmers are practicing poultry farming on a small scale as well as a large scale. People are much interesting in poultry farming because it is more profitable than any other business.

The major problems are :-

- ❖ What is the present situation of feed industries in Lahan, Nepal?
- ❖ What are their marketing practices such as pricing, distribution and promotional activities of feed industries?
- ❖ What is the scope and problems of feed industries in Lahan?
- ❖ What are the necessary policy and support measures should be perceived by the farmers themselves?
- ❖ What are the problems of poultry meat farming?
- ❖ What is the situation of poultry meat production in Lahan?

1.3 Significance of the Study

Nepal is one of the most famous country for poultry farming and feed production. In this country more or less the same around 3, 00,000 persons are directly or indirectly engaged in these businesses. These industries are supplying their products to 75 districts. The present situation of feed industries in Nepal should be analyzed in order to extend these industries further.

Eggs and chicken are one of the best foods in Nepal because they contain proteins, vitamins and minerals which are necessary for human. Eggs and chicken meat are easily available too. Low quality of feed can not give poultry products such type of proteins and vitamins. Also, feed constitutes 60to70 percent of the poultry farming cost. Therefore, the feed owner should

have knowledge about best quality of feed. This research will help feed industry owners by providing information and suggestions about poultry farming, feed and feed industry.

Poultry population in Nepal is about 16 million. Nepal contributes nearly 68% of the total poultry production of the country. Approximately, 10% of the broiler chicks are produced from Lahan (Dhakal, 2017). Acceptance of chicken into the diet of Nepalese households has significantly increased over the last four decades. Rearing and consumption of chicken and chicken products are no confined to certain ethnic group of the country. Lahan is central part of the country where the production of poultry eggs and meat is very high. Poultry products are exported in large scale from this district to valley and other places of Nepal. In different plan period, our government was set different poultry development programme in rural and urban areas of the country. Several research and studies have been made in the past for the development of poultry farming in Nepal from which a quantitative growth has been achieved compared to qualitative improvements.

1.4. Objectives of Study

The basic objective of the study is to analyze the production and marketing of Nepal. The specific objectives are following:

- vii. To analyze the present situation of feed industries in Nepal.
- viii. To examine their marketing practices such as pricing, distribution and promotional activities of feed industries.
- ix. To study the scope and problems of feed industries in Nepal.
- x. To suggest necessary policy and support measures perceived by the farmers themselves.
- xi. To highlight the problems of poultry meat farming.
- xii. To measure the poultry meat production in the Lahan.

1.5. Limitation and Delimitation of the Study

- 1. Field survey has been done at Lahan.
- 2. The study is confined to production and marketing aspects of the feed industry.
- 3. Time and resources constraints may limit, the areas covered by the study.
- 4. Political disturbance may bring unreliable fact for research work. But vision is clearly prescribed.

5. Lastly, every statement of first chapter highlight the preview of poultry feed production and marketing in Lahan.
6. Field work is done in short period on the basis of sample size and analysis of Lahan market.

CHAPTER - II

REVIEW OF LITERATURE

2.1 Conceptual Framework

Concept of Poultry

Poultry are the birds that are bred to provide meat and eggs for the peoples. The common kinds of poultry raised domestically in the world are chicken, duck, turkey, geese, ostrich, quails, pheasants, Guinea fowls and pigeon. Chicken, Geese, Ducks and Quails are popular in Nepal (Ghimire, 2017).

“The term poultry applies to a rather wide variety of birds of several species and it refers to them whether they are alive or dressed (slaughtered and prepared for market). The term applies to chickens, turkeys, ducks, geese, swans, guinea fowl, pigeons, pea-fowl, ostriches, pheasants, quail and other game birds. The study of birds which are not classified as poultry is known as ornithology.”

Historical Background of Poultry Farming in Nepal

Poultry farming deals with the practice of scientific methods of poultry keeping, feeding, management and disease control for getting the best economic returns from them. Chicken is one of the most popular domesticated fowls of Nepal. The domesticated chicken originated from inter-mating between species of four wild fowls, including the Red Jungle Fowl (Arboleda, 1986; Morejihan, 1993). The Red Jungle Fowl inhabits Nepal from the Tarai foothill to up to 1,515 meters in the hills (**Hauser and Gustave F.**).

As the history of poultry farming in Nepal, it is better to say that there was no poultry farming at all before independence as she was closely confined for 104 years under the Tyranny regime of the Ranas. But there were poultry birds that were domesticated in backyards. In poultry birds too, the chickens are domesticated in the houses except in the houses of Brahmins, Kshetriyas and Buddhists. Nepal is best market destination in SAARC for India to sell and earn more profit from goods and services. (**Shrestha, Sanjeev Kumar**

and Amatya, KailashParindra, *“Global Marketing”*, 2015). To identify market is a challenge and opportunities for a marketing manager in recent period. (Bhattarai, Manoj , *“Marketing Management”* 2067)

Traditionally, poultry’s keeping is predominantly conventional backyard farming; farmers keep a few birds in their backyard for home consumption. Some surplus chickens were sold within the village on personal contact basis or in the local market place. Though not very common, marketing of chicken through middlemen to larger towns and cities existed to a limited extent (Dhakal, 2017).

“It is said that, at the time of Rana Regime, in Singha Durbar the poultry fowls were domesticated there. They used to display it as their poultry farms. From the history, we found that poultry farming began to be commercialized from 2017B.S. and it has been providing nutritious food to people in the shape of eggs and meat.”

(Source: YagyaLalShrestha, *Poultry Farming in Nepal Submitted, 1964,*)

Historical Development of Poultry Feeding in Nepal

At present, Nepal is famous for its poultry farming and feed industry. Millions of rupees are invested in this sector. The poultry farming was started in 2014B.S. in Parwanipur, Nepal. The poultry enterprises were started by Singh Bahadur Joshi, and grew slowly since 2017B.S. (Pandey, 2017)

Both Nepalese poultry population and production were increasing at slow rate. It shows that up to 1980 the population was increasing very slowly, and there was almost no commercial production. So this stage is termed subsistence type of backyard poultry farming. The backyard poultry has very low productivity and were scattered in rural areas (Bhattarai, ET, al.1999).

As the commercial production started to expand only after 1980, then population of poultry birds started to increase rapidly. Feed companies and hatcheries were established early but up to 1990 more than 50% of the day- old chicks were imported from India. This transition period up to 1990 can be termed as the stage of commercialization. After 1990 the new hatcheries started to produce chicks and the self-sufficiency in day-old chicks was only from 1995. Due to availability of chicks and high demand for poultry products larger scale egg and

meat production farms were established so this stage (From 1990 to date) can be termed as the stage of commercial production, Evolution of high yielding breeds, advancement in management, nutrition and disease control measures have all made poultry large complex of agribusiness for income generation and poverty alleviation in Nepal **(Dhakal, 2017)**.

Poultry farming ensured regular supply of good quality animal protein to the consumers and hence stimulated the consumption of animal protein, Poultry production is seen as an alternative and potential source of income earner for low and middle class farmers. Low investment, relatively good market, and quick return and less labour intensive enterprise are considered major attracting force of investment in farming. It gives employment opportunity for unemployed peoples also. In addition, this business is popular in all classes of society, including women and marginal farmers and also becomes one of the government's strategic programmes for poverty alleviation by including the most disadvantaged socio-economic groups and women in the country.

Agriculture is the predominant sector of Nepalese economy where more than 60% populations are engaged in agriculture, It contributes about 30% GDP and serve as a major source of raw materials to most of the agro-based industries of the country. Poultry industry shares 3% of the total GDP and 8% of agriculture GDP of the country (Dhakal, 2017). The manure obtained from the poultry having most essential plant nutrients like nitrogen, phosphorus, potash etc. than other organic manures and it can supplement the synthetic fertilizers for producing agronomical and horticultural crops in the country. Poultry farming creates a greater demand for agro-industrial byproducts and wastes which are utilized and incorporated in the poultry feed.

The poultry sector received the fourth largest livestock commodity after cattle, buffalo and goat (Bhurtel and Shaha, 2000). The Agriculture Perspective Plan (APP, 1995) of Nepal showed that the commercial poultry has given the fourth priority with in livestock development and the livestock has top most priority in Agriculture. Poultry farming is a socio-agriculture culture in Nepal. Poultry population in Nepal is about 16 millions. During the last decade, the poultry industry have experienced massive growth and expansion over 10% and 18% per annum for eggs and chicken meat respectively **(Dhakal, 2017)**.

About 4 feed industries of Lahan supply its production to many parts of the country. They produce about 125 tones of poultry feed in total per day. They also produce cattle feed, pig feed, rabbit feed, horse feed, battai feed, etc. Most of the feed industries sell their feed in

other districts through local dealers and branch offices. Feed producers in Lahan supply their poultry feed to 35 other districts through branch offices.

Table No. 2.1
The Name of Districts where Supplying Feed

S. No	The Name of District
1	NawalParasi
2	Rupandehi
3	Palpa
4	Dang
5	Surkhet
6	Banke
7	Bardia
8	Rolpa
9	Kailali
10	Dhading
11	Kathmandu
12	Lalitpur
13	Bhaktapur
14	Kabhre
15	Dolakha
16	Tanahun
17	Lamjung
18	Gorkha
19	Kaski
20	Baglung
21	Myagdi
22	Parvat
23	Arghakhachi
24	Gulmi
25	Makvanpur
26	Bara
27	Parsa
28	Dhanusha
29	Sarlahi
30	Siraha(Lahan)
31	Saptari
32	Morangh
33	Sunsari
34	Jhapa
35	Sindhupalanchok

(Source: Field Survey, 2075, Asoj)

The table shows that Lahan is importing its poultry feed from districts spanning from the eastern to western Nepal. So, the private sector has played an important role in supplying poultry feed out of the district and in doing so, it has supported the economic growth of Lahan.

There are about 2000 poultry farms in Nepal having flocks size of and average of 200 birds. Along with the poultry farms various feed industries were also established in the country. “The two leading commercial farms are Ratnas Feed and Nepal Feed Products which cover 80% of the total sale of feed in the kingdom of Nepal”. Other feed products are Dakshya Feed, Dutta Feed, Agrovat Feed Products, Government cattle feed plant etc. There is one central Veterinary Hospital which provides vaccines free to all farmers. Ratnas feed also provide such medical service to farmers at a very low cost.

The government is also giving due emphasis for the development of poultry farming and in the national plan also, funds are separated to be spent in this feeds, in the third five year plan there was target to produce 1200,000 chickens but only 1,93,577 chickens were produced which was 20%. In the fourth five year plan, the target was to establish one brooder unit in Pokhara, Nepalgunj and Bhairahawa respectively to meet and egg. In the period of this plan it was estimated that following number of chickens will be produced from the government and private sector.

Scope of Poultry Farming and Poultry Feed in Nepal

Poultry meat is the first source of meat in Nepal. At present, the rate of increasing demand for poultry meat is greater than buff, pork, mutton and fishes, etc. because the chicken meat is more easily available and tastier than other meats.

In the main poultry development areas, the socio-economic impact of poultry farming in the peasant society of the country was not studied clearly till now. So, the main purpose of this study is to find out the impact of various socio-economic aspects of poultry farming reference to poultry meat farming in the major production areas (inner Tarai region) of the country. This study may help to researchers, policy makers, farmers and other interested persons in their respective areas. In addition to this theoretical significance, the present study may also serve some practical utilities also. This study provides recent data on the actual scenario of poultry farming in Lahan condition, which may help to the policy maker for setting different developmental programme of poultry farming in the country. All these, in a way, provide

some basis for setting proper and effective production and marketing policy to promote poultry farming in the country.

The demand for poultry meat and eggs in Nepal were 29,510 tonnes and 5, 19,590 thousands respectively in Fiscal year 2075/76. The rates of increasing yearly demand for meat and eggs are 18% and 10% respectively. Chickens are totally dependent on poultry feed. Therefore, the extension and improvement of the poultry feed industry is essential in order to provide sufficient food for chickens.

The success of poultry farming has attracted the establishment of a feed industry, so the number of feed production plants/ factories is increasing every year. There are currently 204 feed industries in Nepal.

The table below shows the number of private sector feed industries per district in Nepal.

Table No. 2.2

Number of Feed Industries in Private Sector

S.No.	Name of Districts	No. of Feed Industries
1	Kathmandu	50
2	Lalitpur	6
3	Bhaktapur	20
4	Morang	10
5	Sunsari	4
6	Saptari	2
7	Makwanpur	8
8	Chitwan	40
9	Dhading	8
10	Kabhre	10
11	Nuwakot	2
12	Gorkha	2
13	Tanahun	2
14	Kaski	16
15	Syangja	4
16	Parwat	2
17	Rupandehi	8
18	Nawalparashi	6
19	Banke	2
20	Siraha	2
	Total	204

Source: KukhuraPalan, 2075/76.

Agriculture Development Centre, Pg. No 17

The table No. 1.1 shows that there are 204 feed industries distributed across 19 districts. Lahan is the fifth largest feed producer in the country. “In FY 2075/076 the feed industry produced 1600 tones of poultry feed in total. That was a 15% increase from last fiscal year.”

(Source: Nepal Feed Industry Association Report, 1998.)

The government is not giving adequate attention to the poultry farming and feed industries even though it is very important for economic development. The service provided by the government is far below the need of the poultry sector.

Provision for Poultry Market Development in the ninth Plan (1997-2002).

“A national poultry production and marketing center will be established to support private sector development and management of commercial poultry farming and market promotion. This center will help the government sector in policy formulation in the fields of planning, Implementation, monitoring, market management and appropriate protection. The center will also participate in the poultry and hatchery industry for the development of poultry enterprise, and promote the enterprise through monitoring and evaluation.

A livestock market management programme will be initiated by establishing private slaughter house and cold storage facilities with the active role of municipalities and village development committees.”

Poultry farming have emerged as a major income generation enterprise in agriculture sector over the last three and half decades. In recent years, commercial poultry production has emerged as one of the attractive business in Nepal in generation and in Lahan in particular. Today, poultry production has become one of the most rapidly growing enterprises within the reach of the poor, women, marginal farmers, and entrepreneurs. Considering the trends of population growth, urbanization, road access, transportation linkages, change in the dietary habit of the people, increasing awareness on nutrition and growing demands for consumer products, it will be safe to assume that poultry sector will constantly grow in a foreseeable future. In addition, since poultry farming is within the reach of all classes of society, including women and marginal farmers (Bhurtel and Shaha, 2017).

The period of the rapid expansion of fowl keeping was in the first millennium B.C. from north-west India and evidently reached Persia at an early date. Whilst this is implied in the coin evidence from north-west India and its appearance on Assyrian Seals around the eighth century BC there is substantial literary evidence in addition. In the religion of Zoroaster the fowl plays an important role as guardian of the god against darkness and evil; with his walking crow the cock became the symbol of the dawn, and thus of the light in general. Hahn believes that the use of the cock as a “time piece” arose in Indo-Bactria.

Poultry industry shears 3% of the total GDP and 8% of the agriculture GDP of the country (Dhakal, 2017). The poultry industry has thus witnessed a considerable investment, which is reflected by the growing number of commercial poultry farms. The poultry sector not only conserves the scarce national reserve of foreign currency through import substitution but also has high potential for export, particularly to the Tibet Autonomous Region of China, Bangladesh even to some Gulf Countries (Bhurtel, 2017).

Domesticated fowl evolved from four wild species of the “genus Gallus”. The Red Jungle fowl, it is the chief ancestor, ranges geographically from Kashmir to Tonkin, and on the Peninsula South to the Godavari. The other three species are however, closely related and betray by their distribution that they are no more than somewhat divergent geographical races. They are known to interbreed with the red jungle fowl.

Archaeological evidence suggests that the Indus Valley Civilizations was familiar with the fowl. Among the seals from Mohenjo-Daro, Mackay(1938) recognized one with artistic depictions of two birds in the position of flight, which he thought were sonorous cocks, Gander however, (1953) regards them as red jungle fowl. They are also clay figurines from the same site, which are intended for fowl. Most are fragmentary, but the evidence is cumulative.

The total population of poultry was 15.9 millions producing 10962 tonnes meat and 421.4 millions of egg in the year 1996(Statistical Book, 1998). The backyard chickens comprise about 69% of the total population but the egg production was only 12% of the total production (Dhakal, 1996). The ducks (20.75%) and the rest of all other poultry birds (1.40%) were backyard type only. The percentages of households keeping such chickens in mountain, hills and Tarai region were 50.4, 67.6 and 32.4, respectively, in the year 1992(**APP, 2017**).

Poultry husbandry has been transformed into an industry in the past one decade. The agricultural census(CBS, 1994) estimated a two-third increase in poultry population over a ten year period, 1981-1991 from 7.4 million to 12.3 million(Bhurtel and Shaha, 2000). The total commercial feed production was about 149,920 tons and commercial poultry population was about 4226 thousand in 1996. The per capita consumption of poultry meat and egg was 1.33kg and 1.07kg in 2015(Lohani. et al., 2015).which was comparatively lower than the world average. But the demand of poultry meat and eggs was increasing at the annual rate of 25% and 10%, respectively in urban areas **(DLS, 1991).**

Poultry and Poultry feed Marketing in Nepal

“.....The marketing process establishes forward linkages for agricultural activities, that is, it provides economic rewards for the production process. It includes not only storage and transportation activities of the middleman but also encompasses all activities linking the consumer and the producer.”

(Source: Macmillan Dictionary of Modern Economics, 4th Edition, pg 117)

“Marketing is the process of planning and executing the conception, pricing, promotion, and distribution of goods, services, and ideas to create exchanges with target groups that satisfy customer and organizational objectives.”

(Source: Philip Kotler- Marketing Management, 8th Edition)

A marketing programme plays a crucial role in the physical distribution of any product. Therefore, each and every firm should have marketing system for channel the product to the market to satisfy customer needs and wants. Sometimes they have to face the marketing problems of capturing the market and creating goodwill.

Nepalese poultry husbandry is basically characterized by backyard poultry keeping. As the history of poultry farming of our country is concerned it can be said that there was no poultry farming at all before 1951 or democracy. But there were poultry birds who are domesticated almost all the rural families and most of urban families except these families prohibited socio-religiously like Buddhists Brahmins and few groups of chhetries. Used to rear still now about 95%to 98%of Nepal’s estimated 18 million poultry population is of local native indigenous type (SkiniKukhura).

It is said that in Singh Durbar where now a days the chickens are displayed and the baby chicks are distributed, at the time of Rana regime too, the poultry fowls were domesticated there they used to display it as their poultry farms.

So we found that there was poultry farming in our country in past years too. But they were run neither commercially nor scientifically. Farm householder's generally used to keep 10 to 15 Birds of eggs and meat production for home consumption mainly. The regular consumption of eggs and poultry meat was very low even in rich people groups. But after independence i.e. from 2007 B.S. onwards poultry farming began to root up and the first poultry farm was opened in Singh Durbar in 2014 B.S. with 350 chicks. These chicks were imported from India. Compared to advanced countries (like U.S.A. and other developing countries like India,Ceylon , Japan ,Pakistan , Israel etc. where 1500, 2000 chicks were the one man's poultry farming) these were mere negligible.

From 2017 B.S. Poultry farming in our country began to flourish actively as she got technicians to some extend with the help of U.S. Aid and the Department of Agriculture of Nepal.

The following are the poultry farming's run by the mutual help of the U.S. Aid and the H.M.G:

- v. The Singh Durbar Research Station is being carried on under the department of Agriculture. It was established in 2008 B.S. and since then it had carried on pioneer research work on poultry farming. The experiments are carried on a small farm with about chickens. Six experts are carrying on this work. They were trained in foreign countries for the particular work; it has suggested of feed for the chickens which can be easily produced in the country also will be suitable for the chickens. Prevention of disease is also one of the work under their observation. The objective of this institution is to trial the feeds which are to be supplied to the poultry fowls as well as to the poultry birds. Its main function is to conduct a research on feeds. Which will help to a greater extent in the growth of the poultry fowls and poultry birds. It advises the poultry farmers to solve their difficulties and offer them good advises as to be free from the unknown diseases of the poultry It also gives its technicians to the private

poultry farmer to inspect the poultry fowls. They suggested to the poultry farmers, how to design the feeders, what type of drinking water to be given to the chickens, the economic type of brooding machines. Designing the incubators and other poultry equipments.

vi. Jawalakhel Brooder Farm:

This station was started as a request of Parwanipur Hatchery Centre. This centre was mainly started to develop the poultry farming in Kathmandu Valley. Its main aim is to replace the country chickens that are generally found are not tendered enough yet the table as well as their reproductive capacity is low.

The chicks that are hatched in Parwanipur are sent to this farm for analytical brooding, and then these chicks are distributed to those who demand for them. They give some important instructions to the customers like how to brood the baby chickens. Because to have the baby, chickens brooding is very essential. If the proper brooding is not maintained the baby chicks can not survive. They need heat from 95 degree to 97 degree (It depends upon the behaviour the chickens and the environmental conditions). Hence the farm has been constructed with the object that they hatched chicks from Parwanipur and distributed to the demanded person. The farm gets one day old chicks from the Parwanipur Centre, and keeps them for seven days acclimatizing and sales it to the buyers who wanted to start poultry. The price that is charged for seven days old chicks is 1.25 paisa.

c) Central Hatchery Parwanipur:

This project has been established in the month of Magh 2018 B.S. with a view to hatch the good breeds after the donation of 1700 chicks from the HEIFIER Project of U.S.A. This project was running by the help of the combined aid of His Majesty's Government and US Aid. This centre gets the aid of Rs. 1.50 lacks approximately from the American aid. Its main object is to reproduce the chicks. By this way His Majesty's Government has planned to establish a brooder farm.

Contribution of Poultry Development By Government and Private Sector Livestock section of Department of Agriculture, Ministry of Food and Agriculture, His

Majesty's Government of Nepal had introduced improved poultry breed called New Hampshire. The first lot of 1700 New Hampshire chicks as a parental stock was brought from the

USA to Kathmandu Valley, which was later on transferred to the Parwanipur Central Hatchery farms. The first production of chicks during fiscal year 1961/62 was about 19,193 only. However, there was no significant production of eggs and chicks from these flocks until 1960. In 1963/64 fiscal year the maximum production of chicks was 78,496. Since then the production trend is almost fixed which is shown below:

Production of chicks in government central hatchery farms, Parwanipur and Jawalakhel Brooder Farms:

Fiscal Year	No.
1961/62	19,139
1962/63	54,000
1963/64	78,496
1964/65	78,187
1965/66	67,821
1966/67	70,428
1967/68	62,695
1968/69	67,231
1969/70	68,000
1970/71	68,000
1971/72	59,718
1972/73	66,700
1973/74	65,000
1974/75	63,000

During early period those chicks were supplied to Kathmandu Valley to the private farmers if a sublimity rate but now central Hatchery Farm itself distributes and sales these chicks to the private dealers of outside valley. In the early period agriculture extension workers like JTA and JT's provided technical services. Technical know-how. Knowledge about poultry rearing management, and veterinary care. Sporadic attempts have been made to improve the village

bird by the introduction of white leghorn flocks in a few selected villages by US peace corps volunteer's. The practice of government helps are still continue now. From 1966, private sector came in front of start or to proved services to the farmers with reasonable charges. In 1966, Ratna Feed Industry was established on Registered who is one of pioneer in the development of poultry husbandry in Nepal. One of the biggest poultry farm is Joshi poultry Farm, Balaju, now a days there are many private hatchery farms and feed industries in the Kathmandu valley who supply almost all the chicks to the framers of the country.

The ecological distribution of Commercial broiler poultry farming in Nepal except Kathmandu valley is presented in given table

Ecological Distribution of Commercial Broiler Poultry Farming

Regions	Number of Broiler Chicks	Percentage
Mountains	74,500	4.96
Hills	508,000	33.82
Terai	919,500	61.22
Total	1,502,000	100.00

Source: Poultry Manch, 2075

The table shows that more broiler birds (61.22) are being farmed in Terai Region while 33.82 and 4.96 percent broiler birds are farmed in Hills and Mountains respectively.

Poultry production is rapidly increasing year after year. Galloping rise in the price of mutton has not only increased the demand of broilers but the broiler meat has come within the easy reach of the average citizen who has hitherto considered the meat as more a luxury than necessity. The increased availability of broiler meat may alleviate to a certain extend the protein hunger prevent in our rural masses.

In Asia Minor, the fowl became popular mainly during the Sixth Century AD, though it had been known earlier. It was the Persians themselves who spread it as they expanded their empire.

“Scientific poultry keeping in India was first advocated by Christian Missionaries towards the beginning of the 20th century AD. Their flocks of exotic breeds excelled in performance and were far superior to those of the indigenous fowls. The first mission poultry farm was

established in Utah, Uttar Pradesh in 1912 and the first poultry exhibition was held at Lockhnow in December of same year.

Organized efforts to develop a poultry industry in India were initiated in 1957, when the second Five-year plan was launched. An All-India Poultry Development Project was initiated under it, regional poultry farms were set-up at Bangalore, Bombay, Bhubaneshwar, Delhi, and Simla to acclimatize imported good quality stock under their respective agro-climate conditions to propagate them extensively in the regions, and to provide training facilities for the officers of neighbouring studies.”

(Source: G.C. Banerjee- Poultry- 2nd Edition-Pg-6)

“ In comparison with advanced countries like U.S.A. and other developing countries like India, Ceylon, Pakistan, Japan, Philippine, Israel etc. where 1500-2000 chicks are the one man’s poultry farming. Development of Poultry Industry in Nepal was not far advanced during this time. In 2017, seventeen hundred-day-old chicks of New Hampshire breed were donated by HEIFEIR Project of the U.S.A. With the help of these donated chicks from the U.S.A., the poultry farming began to flourish at a rapid speed, and the methods for brooding, housing, and feeling were also developed.”

(Source: YagyaLalShrestha, Poultry Farming In Nepal; Submitted 1964, pg-5)

“ To meet the demand for trained technicians in poultry husbandry and hatchery management one participant was sent to U.S. for one year in 1959-60, two were sent to the Philippines for one year in 1960-61, and one to Lebanon for one year in 1960-61 for training.”

(Source: Raymond E. Fort, The Role of USAID in Poultry Development in Nepal- 1971)

“Increasing human population and consequent shortage of food are considered to be major problems for the developing world. It is feared that if the existing trend in population growth rate continuous, the world’s population will reach 10.2 billion by the year 2050A.D. This will put a remarkable pressure on the world’s food resources and other areas also. Developing countries will suffer the most, where 95% of future population growth is expected to occur. A major increase is expected in Asia”(World Poultry Production- Processing and Marketing, Vol-10-1996, Pg. 42-43).

There is no updated or time series data for layers and broilers reared in commercial sector. However, 2.45 million layer and 11.26 million broilers chicks were estimated as being reared in 1998 and considering the prevailing 12% mortality rates of layer and 9% of broiler birds, the number of layer and broiler birds were estimated to be 2.16million s and 10.3 millions, respectively (Poultry Munch, 1998). This study found 188,000 parent stock birds of layer and broiler being reared for chick production by 39 hatcheries of Nepal (Bhurtel and Shaha, 2017).

“Average global chicken meat produced was approximately 6.74 kg per capita in 1992, but Asia had a per capita consumption of just 1.4kg, which was expected to increase to 1.53 kg by the end of 1995. China and India had an average annual per capita consumption of 2.06 kgs and 0.43kg respectively.”(World Poultry Production- Processing and Marketing, Vol-10-2017, Pg. 42-43).

Changes in the poultry industries have a direct impact on the feed industry. Thus, feed production is increasing day by day to meet the increasing demands of a growing poultry industry. The table below shows feed production in world and Asia in the years 2017-2018.

Table No. 2.3

Share of Asia in Total Feed Production

Year	Total World Feed Production(in Millions MT)	Total Feed Production in Asia(In Millions MT)	Share of Asia in Total World Production (%)
2015	74.805	20.20	27.01
2016	76.458	20.796	27.20
2017	79.531	21.95	27.60

(Source: World Poultry, Vol. No. 10, 2018)

The above table shows Asia has covered about 27% of feed production in the world.

In Nepal, due to changes in the income and health awareness, the demand for eggs and meat are increasing. Both of these products are totally dependent on poultry feed. These table shows that previous, existing and situation of commercial poultry production in Nepal.

Table No.2.4**Situation of Poultry Production in Nepal**

Particular	2053/54	2054/55	2055/56	2056/57	2057/58	Growth Rate
Poultry meat(MT)	21,194	25009	29510	34821	41088	18%
Eggs (000)	429,414	472355	519590	571549	627704	10%
Broiler Chicks(000)	12,272	14481	17087	20162	23791	18%
Layer chicks(000)	1,716	1887	2075	2282	2510	10%
Feed(MT)	169,409	191432	216318	244439	276216	13%
No. of employees	36,220	39842	43826	48209	53030	10%

(Source: Nepal Feed Industry Association Report, 2018)

The table shows that production is increasing at the rate of 10 to 18 percent every year and the number of employees also increasing at the 10%. The feed organization has forecasted the same rate increasing in poultry Production in FY.2017/18. So the poultry farming is providing opportunities to previously unemployed people. “The scope of poultry farming is increasing. The reason of increasing rate is given below.

1. requires minimum investment to start with:

In comparison to other live-stock, it requires less investment to start a poultry farm. This means that persons from lower income brackets can also start small-scale business.

2. rapid return of profit:

Chickens start laying when they are about six months of age, and broilers are ready to be marketed for poultry meat between 8 to 10 weeks after they hatch.

3. Poultry convert feed to food protein efficiently:

Among all domesticated animals, broilers take only 1.9 kg of protein produce 1 kg of broiler protein.

4. poultry provides a continuous source of income:

Since they start laying at their age of six months, the farmer also starts getting return so early; broiler pays them within 2 to 2½ months. Poultry can reproduce year- round, which means a constant production, and therefore a continuous flow of income.

5. Farming require small space:

Poultry requires small space with modern confinement rearing and may be produced in the backyards of cities and small towns.

6. Stabilizes farm income:

Farmers occasionally experience crop failures due to unfavorable weather conditionals. When poultry rising mixed with other agricultural practices, farming tends to stabilize farm income.

7. Poultry feeds not commonly used for human consumption:

India possesses large quantities of agro-industrial by-products which are used as feed ingredients for transformation into eggs and meat.

8. Availability of superior stocks:

Some of the best breeding stock available anywhere in the world is now being multiplied in this country. Number one egg producing breed, White Leghorns, and cross-strains of other breeds have been imported and are well adapted to the Indian climate. Excellent White Rocks and White Cornish broiler meat strains are now available throughout the country.

9. Employment opportunities:

Poultry farming offers opportunities for full time or part time employment particularly for women, children or elderly people.

10. poultry manure used as fertilizer:

Poultry manure is an extremely rich source of nitrogen and organic material. Hence, it is highly regarded as a fertilizer.”

(G.C.Banerjeeop.cit, Footnote 5)

Some Problems of Broiler Poultry Farming Business.

The study has identified some major problems experienced by farmers involved in broiler poultry farming business which are divided into problems specific to study area and common problems.

Some of them are listed below:

- i) The in-depth interview with the farmers and interview and interview with other agencies involved in this business such as veterinary doctors, feed manufactures, chicks producers and auditor of Poultry Munch Magazine indicated that generally farmers were having no technical knowledge about this business.
- ii) There is lack of efficient technician and quick veterinary services.
- iii) Due to lack of technical knowledge among farmers and lack of quick veterinary services, there is a high incidence of mortality of chicks in the study area.

Common Problems of Commercial Broiler Poultry Farming Business:

Common problems of commercial broiler poultry farming business are as follows.

- a. Farmers are not getting qualitative feed and healthy chicks and even they do not know way of getting qualitative feed and chicks.
- b. Unstable market price of chicken is being serious problem because of no control on import of broiler chicken from India.
- c. Increase in price of feed and substantial decrease in Available feed quality is leading higher cost of production.
- d. In Nepal there is lack of standard laboratory to test feed quality and modern equipment for quick diagnosis of diseases.
- e. There is no provision of fine, punishment, penalty to discourage those groups who distribute and import low quality feed inputs, feed and chicks.

- f. Government programmes is focused more towards other business like dairy development and bee keeping. Government effort to develop this business however is not satisfactory.

Type of Chickens:-

“Type of chickens can be classified in four classes.

1. American Class:

These chickens originally bred in America.

1.1. Rhode Island Red

1.2. Plymouth rock

1.3. New Hampshire

1.4. Wyandotte

2. Asiatic Class:

2.1. Brahma:

This breed was developed in India and exported to America and England about one hundred years ago. The original birds were light in color. Brahmas are massive in appearance well feathered and well proportioned. They have pea combs. Mature birds weight from 4 to 5 kg. Three varieties of Brahmas have been produced.

2.2. Assel

2.3. Karaknath

2.4. Chittagong

2.5. Cochin

3. English Class:

3.1. Sussex- i. Light ii. Red

3.2. Australorp

3.3. Orpington

3.4. Cornish

4. Mediterranean Class:

4.1. Ancona

4.2. Minorca

4.3. Leghorn

Out of the important breeds classified as Mediterranean, the leghorn is by far the most popular. It is the world's number one egg producer. The breed originated in Italy and so far there are 12 varieties. Only three varieties, however, have become popular. They are:

- 11. Single Comb White
- 12. Single Comb Buff,
- 13. Single Comb Light Brown.”

(G.C.Banerjeeop.cit, Footnote 5)

Poultry Disease:

“These diseases are caused by viruses and bacteria.

5. Ranikhet Disease:

The Ranikhet Disease, also known as Newcastle Disease, is a very dreadful infection and by far the most destructive of the poultry disease. It is caused by a filterable virus which can easily be isolated in the laboratory from the tissues of the infected birds.

6. fowl Pox:

Fowl pox is a highly contagious and infectious disease of chickens caused by a virus. It affects birds of all ages, but young chicks are more susceptible to it and succumb more rapidly.

7. tick Fever(Spirochaetosis):

Tick fever is a septicaemic condition caused by a corkscrew shaped organism known as *Borrelia Gallinarum*, which is present in the sick birds during fever. The disease is transmitted from the sick to the healthy birds by the common fowl tick. Tick fever is of no less importance than Ranikhet Disease.

8. infectious Carrizo:

This is very serious disease characterized by the inflammation of the sinuses and upper respiratory passages. Young chicks up to four months of age are usually affected and mortality is high among birds that contract the disease. Older birds may also be affected, and the rendered useless.

9. avian Leucosis:

Avian Leucosis, or fowl paralysis, is caused by a virus which afflicts different organs and tissues of the fowl.

10.fowl Cholera:

Fowl cholera is a septicaemic disease which may be suspected when birds are found dead in their coops without any previous signs of ill-health.

11.tuberculosis:

it is a highly infectious disease caused by the bacteria mycobacterium tuberculosis(Avian Strain).

(Source: P.M.N. Naidu, Poultry Keeping in India_1994, Page 178)

Nutrition

“Nutrition is the process of furnishing the cell inside the animal with that portion of the external chemical environment needed for optimum functioning of the many metabolic chemical reactions involved in growth, maintenance work, production and reproduction.

Nutrition encompasses the procurement ingestion, digestion and absorption of the chemical elements which serve as food. In addition it includes the transport of these chemical elements to all cells within the animal organism in the physical and chemical form most suitable for assimilation and use by the cells.”

(Source: G.C. Banerjee- op.cit, Footnote 5, page 73)

“What should be the mandatory level of nutrient requirements of Poultry in Nepal?

To prevent from this problem, farmers should provide adequate ventilation in broiler house to remove respiratory irritants like ammonia, carbon mono-oxide, bacterial, viral and fungal pathogens. Use low energy feeds through the entire life cycle of the broiler.

The mandatory level will have to be different from the ideal level. How much different should be determined by the quality and the price of available raw material, the price of finished product in the local market, the price of livestock and poultry products in the local market and the possible consequences of this decision of the country's economy.

We are determining the minimum Nutrient requirement level and not the ideal nutrient level. The mandatory minimum level of nutrients and/ or maximum level of nutrients/anti-nutrient factors should be the level which, if not met and/or exceeded, will result in deficiency/ toxic symptoms in poultry. We might call it the "Critical Level"

While some control is necessary to improve standards and discourage inefficient operators from entry into the industry, it is important to consider that current legislation does not discourage development or impose costs on the industry and farmers. There are other methods to improve quality standards which should be implemented with priority.

Based on the above discussions, the adherence to quality standards for livestock and poultry feed should be mandatory by law. (Table 2.3 and 2.4).

This recommendation is based on the minimum level of nutrients recommended by the various poultry breeder companies, USNRC sub committee on animal nutrition, recommendation from international nutrition experts, as well as the local production systems, management conditions, environment and economy of the country."

(Source: Nepal Feed Industry Association Report, 2018)

Table 2.5

Recommended Mandatory Feed Characteristics

Character/Nutrients	Chick Starter(L ₁)	Pullet Grower(L ₂)	Layer Mash(L ₃)	Broiler Starter(B ₁)	Broiler Finisher(B ₂)	Cat Feed
Moisture,% max,	13	13	13	13	13	
Crude Protein, %min.	15	13	14.5	18	17	
Crude Fiber, % max	5	7	6	6	6	

Crude Fat, % min	3	3	3	4	4	
AIA, % max	4	4	8	3.5	3.5	
Ca, % min	0.7	0.6	3	0.8	0.75	
P.avail, %min	0.35	0.3	0.26	0.35	0.35	
NaCl, %max	0.5	0.5	0.5	0.5	0.5	
Vitamin A, IU/kg, min						5
Aflatoxin, ppb, max						

(Source: NFIA 2018)

Considering the variation on the quality of raw material available in the local market, B.S. copper of Tropical Products Institute ODA London, suggested that the following deviations may be allowed on the above characteristics before legal action is taken against the feed producers.

Table No: 2.6

Allowing Deviation in Mandatory Feed Characteristics

Analysis	Permitted Deviation
Moisture	2.0
Protein	1.0
Ether Extract	0.5
Crude Fiber	2.0
Ash	1.0
Calcium	0.3
Phosphorus	0.1

(Source: NFIA-2018)

2.2 Poultry Feed

Evaluation of modern methods of Feed:

Feed production is major component of poultry industry as it covers more than 60% of total cost required for poultry productions. About 45% of feed industries are of small unit producing less than 5 tons per day. About 35 percent are of medium size producing 5-10 tones per day and rest 20% are of large size producing more than 10 tons per day (Bhattaraiet at., 2001).

The first poultry feed mill was established in Kathmandu in early 1960s to fulfill the government sector's poultry feed requirement. Initially, the feed production initiatives were taken by the hatcheries themselves and later on feed mills expanded to meet the local requirements of poultry producers (Bhurtel and Shaha, 2017)

The demand for compounded feed is highly depended on the growth and expansion of commercial poultry industry. The commercial poultry sector utilizes about 95% of the total compounded feed produced in the country. As the data available from Nepal feed industries association, there are 149 feed industries located in 25 district of Nepal. (Bhattarai et al., 2001)

“Previously, only feeds grown on the farm itself were used. The ration was thus restricted to the grains produced and to any waste products or by-products from the farm or of the home. Now, we have developed a considerable number of specially prepared poultry feeds, which have no restrictions of ingredients, since modern transportation systems have linked all parts of the world and made practically any product available.

There has also been a development in methods of feeding and feeding practices. Originally, hens more or less fed themselves; very little attention was given to the birds. At first they were hand-fed almost entirely on grain. Then systems of hopper feeding developed in which the hens could help themselves.

The hopper itself has undergone considerable changes. In some developments it is always true that certain people go to extremes; the pendulum swings too far. That was true of the hopper system of feeding dry mash.

For instance, in some cases the hoppers were made large enough to hold supplies of mash for a month or more. It is doubtful whether that is the best practice since it discourages frequent observation of the birds and also increases the chance of spoilage of the feed. The present-day tendencies are to practice a closer check-up on feeding both grain and mash. This practice has eliminated the very hoppers and substituted smaller ones of the open type.”
(G.F.Heuser-Feeding Poultry-1964)

BhurtelandShaha (2017) reported that in total 147 feed mills operate in Nepal. About 73% of these feed mills are located in KathmanduValley, Lahan, Pokhara and Kavre where most hatcheries have also been established. There are five large feeds mill, each producing 30-40tons of feed per day (e.g. Avinash, Ratna and Dangol feed Industries), and 15 feed mills with a capacity of 10-15 tons per day. The remaining feed mills are operated either by large poultry farmers by small feed millers (2-3 tons per day) to meet the local market demand in potential poultry and diary animal pocket areas. Their annual feed production capacity is estimated to be about600, 000 tons while the current demand for animal feed is estimated to be around 140,000 tons. Of this quantity, 95% was poultry feed, 4% cattle feed and remaining 1% includes pig feed, rabbit feed, horse feed and fish feed(Bhattarai et al., 2017)

Lahan is producing 125 tons of poultry feed per day, which is nearly 30% of the total feed production in Nepal. In some of the VDCs farmers prefer to prepare feed themselves rather than purchasing ready made feed in the market. (Dhakal, 2017)

The ingredients used for poultry consist of de-oiled soybean, sesame, sunflower and ground nut cake, maize, rice bran, fish meal, vitamins antibiotics, mineral mixtures and synthetic amino acid. All of these ingredients except the rice bran, maize and molasses, are imported either by middle man or directly by mill owners or suppliers. There is no system of monitoring the quality of feed ingredients, whether locally collected or imported from India. (Bhurtel and Shaha, 2017)

“When hoppers were introduced in poultry feeding they were used for grain as well as for mash. The hopper system of feeding grain was soon abandoned because it was believed that the hens did not get sufficient exercise. Grain, therefore, was instead fed in a litter of some kind, the depth of which has also gone through various evolutions.

Recently the trend has swung back in favour of hopper feeding chiefly due to the sanitary advantages that it offers. The ground feed is almost universally fed in hoppers. Hopper

feeding of mash gives all the hens an equal chance to eat, allowing them the opportunity to eat at any time, and preventing crowding incidental to feeding a wet mash to larger flocks.”

(G.F.Heuser-Feeding Poultry-1964)

Bhattarai et al., (2017) reported that Nepalese feed industry depends 46% on imported raw materials. The 95% of the feed ingredients are of agricultural products/ by-products. Nepal is an agricultural country even though the local supply of ingredients is only about 54%. They also reported that there is about 72% self-sufficiency in energy. The local supply of maize is only about 60% of the total demand. The situation is very different with protein ingredients. This dependency is about nearly 100% in soybean oil meal, sun-flower cake. Similarly the local supply meets only about 50% of the demand of bone meal. The dependency on oyster shell and vitamins/ minerals/ feed additives is nearly 100%. Most of the feed ingredients and feed additives are imported from India.

“Can a hen balance her own ration? Many theories and opinions have been offered regarding this. As a matter of fact, she comes very near to doing it when she is given a choice between grain and mash. The mash, if properly composed, is rich in protein, while the grain contains more of the energetic nutrients. Therefore, a hen eats from both the grain and mash as much as she wants of each and balances her own ration fairly satisfactorily. But the question has not yet been settled as to whether the hen should eat each of the different feeds separately. Feeding each separately has been tried, but in most cases has not proved satisfactory.”(G.F.Heuser-Feeding Poultry-1964)

Types of Poultry Feed:

There are two categories of poultry birds, broiler and layers. The main purpose of broilers is meat production. After one and half months, broilers are ready for selling. The main purpose of layers is for egg production. After five months layers are ready for egg production. Different type of feed are needed for different age of chickens. Generally in Nepal, feed industries produce five types of feed for layers and broilers. Feed ingredients are different for each type of feed.

iv. chick starter(L₁)

It is for to build the basic body structure of the baby layer chicks. It has to be given for up week eight.

v. pullet Grower(L₂)

It is for growth of the chicks. It has to be given from week eight through week twenty.

vi. layer Mash(L₃)

It is given after week twenty. It helps the chicken produce eggs until it dies.

vii. broiler starter(B₁)

It is for baby broiler chicks to build their body rapidly. It should be given for up to thirty days.

viii. broiler Finisher(B₂)

It should be given after thirty days. It is for making healthy meat.

“In formulating rations there are many factors which must be considered, and the final result must be the best balance of all these factors. The best results cannot be obtained unless the ration is complete. In order to make a ration complete, it must meet certain requirements. The results obtained will be in production to its completeness.

Protein:-

The ration must contain suitable amounts and quality of protein. It is essential that a certain minimum amount be present in the ration. Quantities can be larger without actual harm to the bird, but large quantities are not economical since the protein feeds are relatively expensive.

The requirement for protein varies for different purposes. The growing animal needs more than the mature bird. Also the egg producer requires more than the non-producer. The growing chick needs more protein in early life, when it is growing rapidly, than it does later or when relative growth slows down. There are also probably some differences in the amino acids required.

The various protein feeds must be balanced to prevent wasting them. The most efficient combinations are those that supplement each others deficiencies. This accounts for those results where a combination of two proteins is better than either one alone. When single

feeds, or a very limited number are relied upon. We shall not get efficient results, unless that choice happens what is known as a complete protein.

As our knowledge increases, we will undoubtedly consider the requirements of a ration in terms of amino acids, rather than more complex proteins, because it is really the deficiency or lack amino acid which limits results.

Energy:

We must also supply an abundance of energy to the chickens to keep body temperature up to fuel the body processes. This energy is often expressed as calories. It really is statement of total food consumption. It is an important factor, since very often results in production, even with a balanced ration are limited by a lack of food intake. The art of feeding consists of getting the birds to eat sufficient feed daily.

This energy is furnished usually in the form of carbohydrates and fat, which are considered as the energy portion of feeds, being most economical for that purpose. Protein can be used for this purpose when fed in excess, but it is too expensive to use for energy. Besides furnishing energy, some of the fatty acids are also essential as such.

Minerals:

The ration must contain a suitable mineral content. The practical poultry man must consider only the ones that might probably be deficient in his ration. When using a good ration, including natural feeding stuffs, the mineral deficiencies are few, the most common being sodium, chlorine, calcium and phosphorus.

The sodium and chlorine are furnished by common salt, usually $\frac{1}{2}$ to 1 % is included in the mash. Calcium for egg-shell formation is best supplied in the carbonate form. Oyster-shells and limestone grit will supply calcium. Wheat by-products, meat scrap, and milk usually provide enough phosphorus. When necessary to supply it, bone meal is usually fed.

Where minerals are necessary, they need to be added in only comparatively small quantities. It is possible to add too much of some.

Thus it is necessary to show proper judgment and take precaution in respect to minerals in keeping relative mineral concentrations at the correct levels. The attitude of some persons,

namely, that the additional of minerals will do no harm, even if they do no good, is a small amount of minerals is good, a large amount should be better, is entirely unjustified.

Vitamins:

The ration must contain sufficient vitamins. The quantity of any of the different vitamins required by poultry varies with age and condition. Chicks and laying hens undoubtedly have a larger vitamin requirement than non-producers. In this instance, however molting hens should not be classified as non-producer. Renewal of feathers should be classified as production, in the same way as growth and the laying of eggs, and requires a liberal supply of vitamins.

Water, air, light and sunshine. The ration must contain an abundance of these factors.

Water:

Very often the water supply is neglected. Water is just as essential a feed. In fact, the animal can live for a long period without feed than it can without water. It is probably more necessary to keep in mind the importance of water for poultry than for other animals because of the drinking habits of poultry chickens need to have water available constantly, because they partake of only small amount at a time.

Water makes up a large portion of the body of the fowl itself. Probably around 55 to 60% or more of the fowl's body is made up of water. The egg also has a very large water content; roughly about 65% or two third of the egg. A dozen eggs contain over a pint of water. Our ordinary feeds such as grain and mash, which constitute the biggest part to the feed of the bird, are very low in water content, running usually somewhere around 10 to 15 %.

Water should be available at all times. The hen drinks little at a time but very frequently. It is necessary to have water available when ever there is feed available.

Fresh Air:

Sufficient fresh air must be supplied to furnish the oxygen for combustion or burning the feed and to carry off harmful waste products. The amounts of oxygen that are necessary depend upon the amount of food that needs to be broken down and metabolized, the amount of work

that the individual does, and to some extent upon the temperature of the environment. The rate of metabolism determines the amount of oxygen that is required.

Light and Sun-Shine:

Light and sunshine are two nature's beneficial factors. These factors are not only the ultra-violet rays supplying vitamin D other frequencies as well, which are being shown at the present time to be necessary for the well-being of the animal."

(Source: IBID, Page 239)

Sources of Energy, Protein, Vitamins and Minerals Supplements:

8. energy Supplement:

- a. Maize b. Sorghum c. Wheat bran
- d. Barley e. Millets f. Rice
- g. Oats h. Wheat
- i. Rice bran and Rice polishing j. Damaged food grain

9. plant Protein Supplements:(Cereal)

- a. Grounds-nut-Meal f. Coconut Meal
- b. Cotton Seed Meal g. Sun-flower Meal
- c. Sesame meal h. Mustard Meal
- d. Soya-bean-Oil/meal i. Yeast

e. Maize-gluten meal or feed animal Protein Supplements:

- a. Blood-Meal e. Meat and Bone Meal
- b. Fish Meal f. Poultry By-products Meal
- c. Liver-Residue Meal g. Milk Products
- d. Silk worm-Pupae Meal

10. mineral Sources:

- a. Table Salt e. Manganese Sulphate
- b. Iron- Sulphate f. Potassium Iodine
- c. Oyster Shell g. Copper Sulphate
- d. Steam-boiled bone Powder

11. vitamin Supplements:

- a. Leaf Meals b. Yeast
- c. Fish Oils”

(Source: B. Panda, V.R. Reddy, V.R. Sadagopan, A.K. Shrivastav Feeding of Poultry-1984 Page 19)

Methods of Feed Formulation

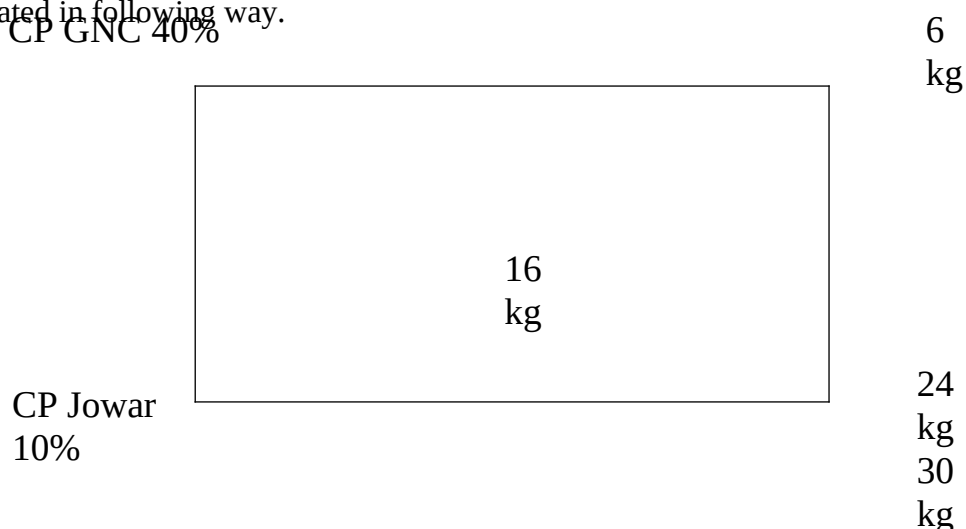
Education is an important identity of an individual and gives social status to the individuals. It is even more important in a traditional rural society, where educational opportunities are not accessible to all. Shah et.al. (1996) were studied the educational status of the farmers and its effects on broiler farming in Lahan. They reported that a significant number of broiler farmers of Lahan were high school graduates (45%) followed by the people with primary education (25%), illiterate (17.5%) and above (12.5%). They also reported that majority of the broiler producers of Lahan were adopting this farming without any training. Only 25% of the farmers had attended short course training on broiler production.

“The proportion of feed stuffs to be included in feed formula is decided for quintal (100kg) or ton (1000kg). The nutrient calculation is done on percent basis. Feed formulation is easy and simple when nutrients specified and raw materials are smaller in number. As the number of nutrients and available ingredients increase, the formulation becomes more difficult and complex. Then time, it involves lot of calculations and mathematics to formulate correct nutritious and economical feed. The various methods of feed formulations are:

- 6. Pearson’s square
- 7. simultaneous equation
- 8. trail and error
- 9. linear programming by computer

Pearson's Square:

This method is useful when two feed stuffs with different levels of one or two nutrients are to be mixed. The required nutrient level in finished feed should be in between the levels of the nutrient present in the feeds you are combining. For example, if the crude protein (CP) level of GNC is 40% and that of Jowar is 10%, then the diet desired containing 16% CP can be formulated in following way.



For determining the proportion of ingredients to be mixed. For obtaining 16% protein level feed, compare protein levels of ingredients on left side of square with desired level in the middle. Then write positive differences of nutrient levels diagonally on right side of square read them horizontally to find out quantity for 100kg. Which is $6/30 \times 100 = 20$. Similarly, quantity of jowar for 100kg is $24/30 \times 100 = 80$. If more than one nutrient levels are to be adjusted, then use of three squares is needed, this method is useful for a farmer. It is more economical for him to purchase concentrated mixture from a feed manufacturer and dilute it with two or three ingredients available with him.

Simultaneous Equations:

This method is useful for consideration of limited number of nutrients and raw materials. The number of equations should be equal to or more than number of unknowns.

For example, maize containing 8% CP is to be mixed with Sunflower cake containing 30% of CP for a diet containing 18% protein; it can be done in following ways:

Let X is the quality of maize to be mixed and Y the quantity of Sunflower to mix in 100kg of mixture.

1st equation: $X+Y=100$ (For total quantity of feed stuff)

2nd equation: $0.08x+0.3y=18$ (for protein percentage required)

Now nullify the unknown having lesser multiple. It can be done as follows.

$$0.08x+0.3y=18$$

$$-0.08x+0.08y=8(\text{obtaining by multiplication of } 0.08 \text{ 1}^{\text{st}} \text{ equation})$$

$$0+0.22y=10$$

$$Y=10/0.22=45.45 \% \text{ (The quantity of Sunflower cake)}$$

$$\text{Now } X+Y=100$$

$$\text{Therefore } X+45.45=100$$

$$\text{Therefore } X=100-45.45=54.55\%$$

(The quantity maize to be mixed)

Trail and Error Method:

This involves the physical calculation of percent ingredients to be incorporated and percentage of nutrients available from them in finished feeds. The percentage of ingredients to be incorporated is decided as per the protein energy fiber and ash contents of ingredients and their requirement in final mashes. The maximum inclusion levels of raw materials are given due weight age to avoid un-palatability and toxic effects of raw materials. The approximate proportion of ingredients is decided for 100kg of finished diet and with various permutations and combinations by calculations they are confirmed for desired nutrients levels. The method is easily applicable for incorporating 10-12 ingredients including minerals and vitamins. Sometimes vitamins and medicines can be added as extra on top of 100kg of other raw materials. The method is somewhat laborious but can be conveniently adopted by farmers without involving much expense.

Linear Programming:

This is the most modern method of feed formation, and requires the use of a computer, many numbers of ingredients can be considered at a time for formulating desired feed with least cost. The information on nutrient percentage required, cost and maximum level to be included for each raw material and total levels of each nutrient in finished feed are entered into the computer. The computer calculates the percentage of each ingredient to be included in 100kg or 1000kg of feed as per need.”

(Source: NV Jadhav and Siddiqui, Handbook of Poultry Production and Management, 1999)

Basic Information Required for Formulation of Feed

Dahiya and Agrawal (2014) conducted a research in Hariyana, India and reported that professionally trained young people were interested in government jobs where as short term poultry trainees found engaged in poultry business. About 20% of the poultry raiser started their business without any training on poultry and 70% of them were between 20-25 years of age had experience of training.

5. “The formulator must know the nutrient requirements of various species, types and category of poultry birds.
6. He should also know the nutrient contents (by analysis) of various poultry feed stuffs to be incorporated in feed manufacture.
7. Further, information regarding the palatability and toxic contents of ingredients and tolerable levels of toxins in the finished feed by various species of poultry at different stages plays a major role in formulation highly nutritional and acceptable poultry feeds.
8. Similarly, knowing minimum and maximum inclusion levels of ingredients as per kind of feed also helps in formulating quality feeds.
9. The information on availability and cost of feed stuffs is most important to formulate and manufacture poultry feed easily at lower costs.”

(Source: IBID-Page, 128)

The ideal ration is one that will maximize production at the lowest cost. A costly ration may make phenomenal gains in poultry quality, but the cost per unit of production may make the

ration economically infeasible. Likewise, the cheapest ration is not always the best since it may not allow for maximum production of poultry.

“The following four steps should be taken in an orderly fashion in order to formulate an economical ration.

5. Find and list the nutrient requirements or allowances for the specific birds to be fed.
6. Determine what feeds are available and list their respective nutrient compositions.
7. Determine the cost of the feed ingredients under consideration.
8. Consider the limitations of the various feed ingredients and formulate the most economical ration.”

(Source: M.E. Ensminger-Poultry Science-1980,Page-1611)

Measures to Improve Feed Quality:

6. “Purchase small batches frequently to avoid storage, which reduces the quality of ingredients.
7. Practice wide choice of feed stuff while manufacturing feed.
8. Adopt dilution technique (mixing of same ingredient from different lots) to minimize toxic principle levels or to improve nutrient concentration.
9. The raw materials should be stored on wooden planks without touching walls to avoid dampness, weevil or termite attack Etc.
10. Allow sun drying of most of raw materials for one or two days to reduce toxin level, to kill microbes and insects and to decrease moisture.
11. Make use of antioxidants, toxin binders preservatives and anti-cake forming agents when ever necessary.
12. Avoid use of fish-meal. Instead, use salt-free whole fish; it is safe and has guaranteed quality.
13. Use de-oiled cakes, meals or meals, as they have more shelf life due to less percentage of oil than expeller grades.”

(Source: N.V. Jadhav and Siddique, op.cit.-Footnote-27)

Importance of Marketing in Feed Industry:

“Market-oriented feed companies create products for specific groups of customers or even individual consumers. The manufacturer can use a number of instruments to attract and keep customers. It must be clear now that marketing cannot offer ready-made solutions to specific commercial programmes. As soon as we are sure that selected the largest group is suitable to be the basis of distinct and highly competitive company strategy.

Developing a market-oriented policy certainly is not the exclusive responsibility of the technically-oriented staff. With their participation, and creative ideas, however, the company can become more broadly based in the marketing strategy. Market oriented thinking and acting can become common place. The implication is that the application of marketing techniques is more an art than a science. For this reason company management supports the marketing concept with great enthusiasm. It is no use at all if an excellent marketing and sales plan is made and carried out.

To bridge the gap between supply and demand, between purchase and sales and between techniques and commerce one can build up a sustainable, profitable market position in the feed industry of the future.

The following marketing instruments have been used in many countries to promote feed sales.

5. Product instruments
6. Distribution instruments
7. Sales promotion instruments
8. Price instrument.”

(Source: Feed International-A Watt Publication, June-1993)

Globalization and the Independent Feed Mill:

Owners and operators of independent feed mills need to understand the global forces that are changing the poultry industry because these forces may undermine the viability of their business. To survive in a rapidly integrating business environment means that independent feed mills must learn to think and act like integrated feed mills. A critical component in their survival strategy must be to establish and maintain global competitiveness in the world of poultry Industry.

Competitiveness:

An efficient, globally comparative poultry industry is likely to have the following advantages:

9. Low cost of feed stuffs
10. Low labour costs
11. Good business climate
12. Economics of scale, and
13. Vertical integration

Feed and labour are the two most important and most obvious costs in poultry meat production. Of the two, feed is by far the most important and is the single most important factor in the competitiveness of a particular country or region. The poultry industry must be able to get grain to its feed mills. Oddly enough, the tariff barriers that hinder the movements of grain from country to country are common threaten the competitiveness of local chicken industries.

Labor and Business Climate:

After feed, labour cost is the next most important cost. However low labour costs may not help in situations where grain is expensive. Consider a hypothetical comparison of a high labour cost and low feed cost country, with a high feed cost and low labour cost country. The ideal competitor has both low feed and low labour costs.

Although difficult to quantify, a good business climate is essential for a competitive poultry industry. Some of the factors that lead to a good business climate are land ownership or clear title to land, a well designed and functioning infrastructure of communications and transportation, a healthy banking system, and a light tax and regulatory burden.

Economics of Scale:

Economics of scale are extremely important in the international broiler chicken industry. This means a broiler company must process enough broilers at its processing plant to get the lowest possible cost per kilo of production. At any given moment in history, there is a point at which there is no advantage to making a processing plant bigger.

Vertical Integration:

The global poultry industry has increasingly become vertically integrated to reduce costs. Integrated feed mills are displacing independent feed mills in many parts of the world. Nevertheless, there is room for the survival of independent feed mills in many areas-if the independent feed mills can make the necessary changes. To survive in a world that is increasingly integrated, independent feed mills must act like integrated feed mills. That means they must have to adopt new strategies to survive, such as the following:

14. Maintain a high percentage of capacity utilization to lower production costs per ton of feed.
15. Produce the kind of feeds with the appropriate additives that provide for the greatest return on invested dollar for the poultry company regardless of feed costs.
16. Maintain strict control over quality.
17. Stay on the cutting edge of nutrition technology, and
18. Develop strategic alliances

Survival Maximizing Return:

Establishing and maintaining competitiveness is important for poultry feed companies increasingly exposed to the pressures of international trade and continuing globalisation. To lower costs and remain competitive, many poultry have co-coordinated their feeds and broiler production through vertical integration.

However, such independent mills must be able to think and act like integrated feed mills to provide feed that maximizes returns to the poultry farm.”

Source: Feed International- A WATT publication- April 2018, page 12

2.3 Review of Empirical Studies

Mr. Mahabir Man Pradhan submitted his dissertation entitled “A study on the poultry feed industry in Kathmandu” 1978 for the partial fulfillment of master in business.

In his dissertation, he has compared “Ratna Feed Industry” and “Nepal Feed Products Pvt. Ltd.”. He has explained that the structure of the feed market is an oligopoly because of the small number of producers, which may affect market conduct. So, he recommends that this type of market structure should be affected.

Mr. Karna Das Mulmi submitted his M.A. dissertation to the Central Department of Economics T.U. 1982, entitled “Poultry Farming in Nepal”.

His study states that poultry industry plays an important role in increasing the income level of the farmers and it gives nutritious food to maintain good health of the people. His findings indicate good health of the people. His findings indicate that better feed and better management can increase the production of poultry industry. So, better feed is the key to further the development of poultry farming.

A dissertation entitled “Poultry Feed Industries in Kathmandu Valley” submitted by Mr. SurendraBahadurShakya to the Central Department of Economics T.U. 1987, He states that poultry farming plays a vital role in the maintenance of good health of the people.

He has concentrated his study to Kathmandu valley only. The demand of poultry farming is increasing every day because of increasing population levels and health awareness.

Increasing rate of poultry products depends upon nutritious feed, which is not adequately supplied. Therefore, he has suggested that the supply of nutritious feed in adequate quantity is essential for rapid development of poultry farming in Kathmandu valley.

A dissertation entitled “Distribution Channel of Feed Industry in Nepal” submitted by Govind Prasad Paudyal for M.B.A., 1995.

His main objective is to study the existing of various poultry feed industries and examine possibilities of reducing distribution cost.

He has said that ***Distribution Channels*** are usually considered as separate from organization. But in fact, this important link between the international organization and the economic environment is as logical and pertinent an extension of the production units as arms and legs of the human body. He states that the feed market is competitive. The level of competition can be increased with the entry of more feed industries.

None of the above studies has included a complete analysis of feed industry marketing. Therefore, this study hopes to fill in some of the missing gaps by examining the marketing activities of feed industries in Nepal.

Review of Methods of Research in Poultry Farming

Review of methods of research in poultry farming and feeding gives the details of the procedures of gives the details of the procedure adopted for the research study. To begin with this chapter points out the rationale for selecting a particular district as a case, describes the research design. Before pointing out the limitations of the study, details are also given on the nature of the data, universe, and sampling procedures, technique of data collection and analysis. Marketing of poultry farming and poultry feeding in Lahan is recent and important part of marketing to earn employment for society of Lahan and its periphery.

CHAPTER - III

RESEARCH METHODOLOGY

This chapter gives the details of the procedure adopted for the research study.

3.1 Research Design

The present study is a ‘case study’ of poultry farming in Nepal. The descriptive type of research Nepal in design was applied for the study where the issues related with the research objective were described. The various issues involved in describing the poultry farming were explained and then attempts were made to analyze the causes and effects of the issues. On the whole, present study is descriptive in nature.

To meet the objectives, three types of research designs are used in the study. They are:

Analytical Research Design: “Analytical research design is generally associated with the analysis of the content of speeches, text books, editorials, T.V. programmes or perhaps essay examination from standpoint of prejudice reliability, nature of the mental process involved and so on.” This research design is used here to analyze facts and figures of the study.

Exploratory Research Design: This is used to find out some new ideas from the study. “The research design is oriented towards the discovery of basic relationship among phenomena as a means of predicting and eventually contributing their occurrence”.

Survey Research Design: Survey designs means to explore cause and effects and relationships on the basis of gathering views from respondents. Views and reactions of poultry farmers were collected and analyzed.

Research design is the structure and strategy of investigation. The present used a survey research design. The study tries to collect the facts about feed industries of Nepal and describe them in systematic manner. This is the first dissertation about marketing aspect of feed industries in Nepal, so there is lack of comparison with previous study.

3.2. Sampling Unit

The universe of the present study comprised of all the poultry meat and feed of Nepal a total of **55000** broiler farms were identified as a broiler raiser from the selling list of hatchery, and supplier of the Nepal.

The poultry enterprise established before 2001 were purposively selectively selected for sampling. About 10% random sampling by lottery method (50 households) was taken from the universe (500 households). The detailed information was taken from the sampled farmers and their categorization was also taken as small, medium and large farm holders. These are categorized on the basis of poultry number raised just before last batch. Having below 500, 501-1000 and above 1000 poultry birds farms were small, medium and large farm, respectively. There were 13 small, 22 medium and 15 large farms were found in the sample, which were representative to the universe.

Nepal is famous for poultry farming and feed production, so the researchers choose the country for its sampling unit.

3.3. Sample Size

To collect the primary data, small farms have been surveyed for this study. These are the name of surveyed feed production sites given below:

- 8.7. Sanjiwani Poultry Feeds Pvt. Ltd.- Sangemroad
- 8.8. D.G. Poultry Farm- Bhattarai
- 8.9. Gurans Feed Ind. Pvt. Ltd.- Kalyanpur
- 8.10. Shakti Shiva Feed Industry- Paras Nagar
- 8.11. Suryamukhi Feeds Pvt. Ltd. – Sharadpur
- 8.12. Sunita Feed Industry- Rampur
- 8.13. Dallakoti Poultry Farm- Jyamire
- 8.14. Himalayan Feeds Pvt. Ltd.- Gaurigunj
- 8.15. K.K. Feed Industry- Krishnapur
- 8.16. Nawajyoti Feed Industry Pvt. Ltd.- Lanku
- 8.17. Kalyan Feed Industry- Kalyanpur
- 8.18. Jyoti Feeds Pvt. Ltd. – Bhojad
- 8.19. Everest Feed Industry Pvt. Ltd.- Narayangadh
- 8.20. PanchaRatna Feeds Pvt. Ltd.- Belchowk
- 8.21. K.C. Poultry Feeds- Tandi

8.22. Parwanipur Poultry Feed Industry Parwanipur.

8.23. Ratna Feed Industry

8.24. Nepal Feed Industry

3.4. Sampling Procedure

The respondents have been selected from the above industries for interview by random systematic method.

3.5. Sources of Data

In this study both primary and secondary data have been used. However, this study heavily depends upon the primary data for the fulfillment of the stated objectives. The interviewees were the feed industry's owner or managing director.

The questionnaire has been prepared and is presented in Appendix II. The data have been tabulated and presented along with data from official records. Secondary data has been taken from records of poultry feed firms, relating publications to feed industries and reports, journals, literatures on poultry feed and other books.

3.6. Data Collection:

In the present study, necessary primary data were collected from the study area. For this purpose a brief and intensive fieldwork was conducted in the months of Nov, Dec 2001 to Jan, Feb 2002. In the fieldwork, different methods and techniques were used to collect the information. A brief account of the collection of data is given below.

Interview

Most of the information on the households and poultry farms taken in the study was collected through a face-to-face interview and door-to-door survey of the sample population. Both structured and unstructured questions were used to conduct the interviews. Data were collected using a precisely developed and pre-tested interview schedule.

A semi interview schedule was prepared and then administered in the interview to collected information pertaining to the objectives of the study. The schedules had three sections. The first section covered general information of the poultry farmers. The information to be

collected was related to name and address of the poultry farmers. The second section of the schedule covered the socio-demographic aspects of the farmers. The second section of the schedule covered the socio-demographic aspects of the farmers. The information related was family size, age, sex, education, caste/ethnicity, religion etc. The third section of the schedule covered the information of economic activities of the poultry farmers. The fourth section of the schedule covered the items of poultry farm. The information related was number of chickens, breeds, area of the poultry shed, feeder and water etc.

The interview schedule was in Nepali and the interviews were conducted in Nepali also. The responses for the questions were recorded in Nepali. The households' interview lasted for about 30 to 50 minutes.

Observation

Besides collecting data with the help of scheduled questions, the observations and discussions on unscheduled questions became very much helpful to gather information. The data collected through observations and unscheduled questions have been used to support the description of scheduled data in relevant places in the text. During the fieldwork, non participant observation was used to gather some qualitative information. The information collected through observation was mainly on households' pattern, pattern of work, poultry and poultry house condition etc.

In addition to poultry farmers, other non-participant farmers, entrepreneurs, and local agents/suppliers from different hatcheries/feed mills were requested for information regarding the different aspect of poultry farming. Some key informants of the district such as Campus and school's teacher, political leader, and reputed persons were also incorporated for the information. Furthermore experience of author in relation to poultry farming was also included for description.

3.7. Data Processing

The collected data were processed manually. They were edited, coded, and tabulated manually. An attempt was made to keep all the data in master table. Unvaried table of almost all items was obtained to look in to the distributions. The Unvaried table was interpreted on the basis of percentage distribution.

In the process of economic analysis the cost and returns were analyzed in one complete cycle of broiler production by computation of per bird and per kg of live weight basis. Cost of production was based on variable cost (feed, labour, chicks and medicine cost) and fixed cost (interest on loan, electricity, maintenance, and depreciation cost). The return price was calculated adding the total price of manure and total price of meat (live weight) per bird. Net profit was calculated by subtracting total cost from total return per bird.

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