CHAPTER - 1

INTRODUCTION

Vegetable is ‘Edible seeds or roots or stems or leaves or bulbs or tubers or no sweet fruits of any of numerous herbaceous plant’. They are very tasty. They are of different varieties. They contain vitamins, minerals, fructose and maltose, pectin, acids, aromatic oils and fiber. Consumption of them means make one healthy. Marketing is the process of interesting potential customers and clients in products and/or services. The key word in this marketing definition is "process"; marketing involves researching, promoting, selling, and distributing your products or services. The system of business activities designed to plan, price, promote and distribution a demanded and satisfying vegetable to target market is a vegetable marketing.

1.1 Background

Nepal is an agriculture based country. 65% of the total economically active population is engaged in this sector. For the balanced development of the country we have to give prime attention towards this sector. Nepal is a small Himalayan Kingdom and one of the world’s poorest nations. It is land locked between the China in the north and India in south, east and west. It is spread over an area of 147,181 sq. km. According to the population census 2001, the population of Nepal is about 23 Million.

Geographically, Nepal is located between 80°4’and 88°12’ east longitude and between 26°22, and 30°27’ north latitude. It is divided into three topological belts, the Terai (a plane that lies along the southern border of India between 75 meters and 300 meter above the sea level), the Hill (a wide band of hills between 300 meters to 3,000 meters) and the Mountain (a rugged surface rising 3,000 meters to 8,848 meters). In north, only 21% of the land is under cultivation which includes agriculture of vegetables. Agriculture is mainstay of the nation’s economy. It provides 75% of employment and accounts for about 42% of nation’s Gross Domestic Product (GDP) and two third of export earnings. But it is a matter of great irony that more than 40% people are below the poverty line.

In terms of development, Nepal is one of the least developed countries in the world with a per capita income of USD 260 (Economic Survey, 2003/04). With a population size if 25 million, (World Bank, 2005) more than 65 caste/ethnic groups are accommodated in the country. Nearly 38% if these people still subsist below poverty line according to the report of NPC, by the end of ninth plan, the total figure of employed manpower was estimated to reach 995,900, whereas the unemployed were estimated to be 5%. However, the percentage of underemployed labor will be 12.4% including the 5% of fully employed. The total unemployed figure is estimated to remain at 17.4% (Tenth Plan, 116-117). This shows a very serious problem in Nepal.

1.1.1 Vegetables

Vegetables are called Tarakari in Nepali. In dictionary terms, vegetable is 'Edible seeds or roots or stems or leaves or bulbs or tubers or no sweet fruits of any of numerous herbaceous plant'. They are very tasty. They are of different varieties. They contain vitamins, minerals, fructose and maltose, pectin, acids, aromatic oils and fiber. Consumption of them means make one healthy.

Different vegetables are cultivated in different areas of the nation depend upon the type of soil and climate. On the basis of vegetables cultivation, Nepal can be divided into the following four different zones:

A. Tropical Zones

It has high and hot temperature throughout the year except some periods in the winter. The annual temperature exceeds 24°C. There is no frost. The altitude ranges from less than 100m to 1,000m. The whole Tarai and the lower valleys in the hills fall in this zone.

B. Sub-Tropical Zone

This region is cooler than the tropical area but it has a distinct feature of summer and mild frost winter. Summer is long and humid. General, altitude range is 1,000m and 1,500m with an annual average temperature of 17°C to 24°C. Lower mid-hills and low hills fall in this zone.

C. Mid-Temperature Zone

In this zone, the climate is moderate throughout the year and winter is not very severe. Altitude ranges from 1500m to 2000m. During winter, the higher altitude may get snow. Mid-hills, base of the high hills and lower Mahabharata lekh fall in this zone. The annual average temperature is 10°C to 15°C.

D. Temperature Zone

This zone has a pronounced winter with frost. Snow occurs every year. It is cold throughout the year with an average annual temperature being less than 10°C. The temperature in winter is below 0°C. The altitude ranges from 2000m to 3000m. Mahabharata lekh and high hills fall in this zone.

Vegetables are one of the most nutritious and delicious food items. It can be defined as the matured ovary and other flower parts associated with it. It can be leaves, root or stems of the plants too. It contains good source of vitamins and minerals required for human growth and healthy health. Human beings have been consuming it from ancient times. Consumption is it increased with the development of human society. Due to the increasing health consciousness and income level of the people, consumption of vegetables has grown significantly.

1.1.2 Types of Vegetables

Vegetables form an important part of our daily diet; the market is crammed with varieties of vegetables. Veggies are naturally good and contain lots of minerals and vitamins. They help in protecting our body against cancers, diabetes and heart diseases.

Almost all the vegetables are low in fat and calories, none has cholesterol, and many of them are great sources of fiber. The high levels of fiber in vegetables keep the digestive system healthier; allowing you to avoid issues with constipation. Since veggies are low on calories, it enables us to eat lots of vegetables without consuming excess energy.

The presence of many vitamins and other substance in vegetables provide nutrients to the body. Vegetables provide essential amino acids that body needs to survive. A simple meal of spinach, beans, and whole grain rice is a great way to treat your body right. This give us a

natural feeling of liveliness and the energy to become more active helping to burn more energy each day. Vegetables also add wonderful flavors to your diet.

The availability of vegetables differs from season to season. Different types of vegetables have been categorized according to their type, and taste.

a) Bulb Vegetables

Bulb vegetables have relatively large, usually globe-shaped, underground buds, or bulbs, with overlapping leaves arising from a short stem. Common bulb vegetables include onions and garlic.

Garlic, chive, spring onion (known in Quebec as green onion or échalotte verte), water chestnut, grey shallot (échalotte française), and other varieties of onions and leeks are called bulb vegetables because it is not the leaves but the bulbs that are eaten.

Bulb vegetables are aromatic vegetables that are widely used to flavor casseroles, broths, courts-bouillons and soups. Some bulb vegetables, garlic for example, are also known for their medicinal virtues. Recent studies reveal that some foods help prevent cancer and even possess antineoplastic properties. Among these “functional foods” as researchers call them there are bulb vegetables such as garlic, shallots and onions.

Bulb vegetables can be stored for long periods of time and are not only delicious but very good for us. Here are some bulb vegetables listed below

- Elephant Garlic
- Garlic
- Chive
- Spring onion / green shallot / scallion
- Water chestnut
- Grey shallot
- Onion
- Leek

b) Fruit Vegetables

The term fruit has different meanings dependent on context, and the term is not synonymous in food preparation and biology. Fruits are the means by which flowering plants disseminate seeds, and the presence of seeds indicates that a structure is most likely a fruit, though not all seeds come from fruits.

No single terminology really fits the enormous variety that is found among plant fruits. The term 'false fruit' (pseudo carp, accessory fruit) is sometimes applied to a fruit like the fig (a multiple-accessory fruit; see below) or to a plant structure that resembles a fruit but is not derived from a flower or flowers. Some gymnosperms, such as yew, have fleshy arils that resemble fruits and some junipers have berry-like, fleshy cones. The term "fruit" has also been inaccurately applied to the seed-containing female cones of many conifers.
Here are some fruit vegetables listed below

- Avocados
- Chayote
- Cucumbers
- Eggplant
- Okra
- Olives
- Peppers
- Squash
- Tomatoes
- Tomatillos

c) Inflorescent Vegetables

Inflorescent vegetables are vegetables with an edible flower.
Some examples of inflorescent vegetables are

Artichoke: flower head of which the bottom (the receptacle) and le base fothe leaves are edible.
Cauliflower: hardy white vegetable with a fleshy inflorescence native to Europe.

Broccoli: unrounded green cauliflower, with a long green stem.

d) Leaf Vegetables

Leaf vegetables, such as spinach, are the most beneficial foods for your health. Recent studies have proved that some leaf vegetables can contribute to help in the prevention of cancer or have antineoplastic benefits. Cabbage, Brussels sprout, watercress and spinach are part of what scientists call “functional foods”.

A leaf vegetable is one that is grown for its edible leaves. Most leaf vegetables are a good source of potassium and vitamins A and C. They are very versatile and can be prepared raw or cooked, in salads, as vegetable side dishes or added to recipes.

When purchasing leaf vegetables, we shall always look for vegetables that are very fresh, have colourful and crunchy leaves, and show no sign of deterioration. Not only do they taste great, fresh leaf vegetables have very high nutritional value.

Some leaf vegetables are listed as follow

- Kohlrabi
- Bok Choy
- Kale (or borecole)
- Nasturtium
- Collard (Collard greens)
- Chicory / escarole
- Cabbage
- Brussels sprouts
- Nappa Cabbage
- Toy Choy
- Cress / Watercress
- Endive
- Spinach
- Lettuce

- Lambs' lettuce
- Sorrel
- Dandelion
- Radicchio

e) Root Vegetables

Root vegetables are plant roots used as vegetables. Here "root" means any underground part of a plant [1] (except that peanuts, which are underground seeds, are seldom called root vegetables).

Root vegetables are generally storage organs, enlarged to store energy in the form of carbohydrates. They differ in the concentration and the balance between sugars, starches, and other types of carbohydrate.

Of particular economic importance are those with a high carbohydrate concentration in the form of starch. These starchy root vegetables are important staple foods, particularly in tropical regions. They overshadow the cereals throughout much of West Africa, Central Africa, and Oceania, where they are used directly or mashed to make foufou or poi.

Some Jains are opposed to eating root vegetables for ethical reasons.

Botany distinguishes true roots such as tuberous roots and taproots from non-roots such as tubers, rhizomes, corms, and bulbs. (Several types contain both taproot and hypocotyls tissue, and it may be difficult to tell some types apart.) In ordinary, agricultural, and culinary use, "root vegetable" can apply to all these types. The following list classifies root vegetables according to anatomy.

- Beets
- Burdock
- Carrots
- Celeriac
- Malanga
- Parsnips

- Radishes
- Rutabaga
- Salsify
- Turnips

f) Stalk Vegetable

Stalk vegetables are vegetables with edible stalks. Asparagus, celery, fiddlehead ferns, rhubarb - are all part of this category. In certain cases, the leaves of stalk vegetables are also edible.

Certain stalk vegetables are familiar to us and the others deserve a closer look. Fennel and Swiss chard, for example, are gaining in popularity not only because of their great taste but also because of their high vitamin and mineral content.

Some stalk vegetables are listed below

- Asparagus
- Bamboo
- Cardoon
- Celery
- Chard
- Fiddlehead
- Fennel
- Kohlrabi
-

g) Tuber Vegetable

The tuber is the enlarged tip of an underground stem (rhizome). The plant uses this tip to store food.

Tuber vegetables, like the yam, the manioc, the sweet potato, the potato and the underestimated Jerusalem artichoke, have long served and still serve as a staple in many

regional cuisines. Indeed, they are generally very inexpensive and have that “stick to your ribs” quality about them. They are rich in carbohydrates, very versatile and serve to generously fill the plates of the most ravenous appetites.

Vegetables with large, edible, bulb-like roots that are high in nutrients but low in calories, and most do not contain fat. Tubers are capable of producing new plants. Store dry and unpeeled and they should keep for several weeks.

Examples of tubers listed below

- Cassava
- Crosne
- Jerusalem artichoke
- Jicama
- Potato
- Sweet potato
- Taro
- Yam

1.1.3 Organic Vegetables

Organic vegetables are made in a fashion that limits or excludes the use of synthetic materials during production. For the vast majority of human history, agriculture can be described as organic; only during the 20th century was a large supply of new synthetic chemicals introduced to the vegetable supply. This more recent style of production is referred to as "conventional." Under organic production, the use of conventional non-organic pesticides, insecticides and herbicides is greatly restricted and saved as a last resort. However, contrary to popular belief, certain non-organic fertilizers are still used. If livestock are involved, they must be reared without the routine use of antibiotics and without the use of growth hormones, and generally fed a healthy diet. In most countries, organic produce may not be genetically modified. It has been suggested that the application of nanotechnology to vegetable and agriculture is a further technology that needs to be excluded from certified organic vegetable.

Environmental pollution and vegetable safety due to chemical contamination become a great concern worldwide. Food and Agriculture Organization (FAO) proposed “The World Food Summit Plan of Action (1999)” in recognition with the importance of developing alternative sustainable agriculture such as organic farming. Organic farming is an integrated farming system which involved technical aspects (soil, agronomy, and weed and pest management) and economic aspects (input, output and marketing) as well as human health. Organic farming claims to have the potential to provide benefits in terms of environmental protection, conservation of non-renewable resources, improved food quality, reduction in output of surplus products and the reorientation of agriculture towards areas of market demand (Lampkin, 1990). Sharma (2001) makes a case for organicfarming as the most widely recognized alternative farming system for sustainable production without seriously harming the environment and ecology. Veeresh (1999) opines that both high technology and sustainable environment cannot go together.

Since consumption of organic food products is the best remedy to prevent the numerous health hazards caused by conventionally produced foods, the global market has experienced exceptionally high growth in organic foods in the United States, Europe, and in other countries, yet market shares remain quite small (Piyasiri and Ariyawardana, 2002). However, in developing countries, the growth of organic sector is quite slow and faces tremendous challenges. Nepal’s organic agricultural production has a relatively short history. Adoption of organic farming is quite slow, market for organic products is not well developed and no market statistics are available in Nepal (Bhatta et al., 2008a).

Nevertheless, there is a growing trend among urban consumers to consume organic products from places where they could get an assurance about the quality of the products. Market features of organic products in Nepal show that it is still in the "formative stage" of the product life cycle (Bhatta et al., 2008a). Despite these facts, there are some rays of hopes among the organic producers and traders in the country. Growth of organic agriculture requires producers’ and consumers’ awareness, availability of sound infrastructures and consumers’ willingness to pay for the organic products. Nepal, being a developing country, definitely majority of the consumers is not well off. However, a large chunk of consumers are clustered in and around urban areas of the country and they could pay for the organic products provided quality is assured. Market potentials are mainly determined by consumer expectations of the product attributes, which are attached to the product such as quality (Ramesh et al., 2005), price

(Roddy et al., 1996; Fotopoulos and Krystallis, 2002), certification (Kotler, 2001), price and quality (Boyle and Lathrop, 2009). Also consumers' awareness of health, food safety, environmental, and technology issues related to food products as well as the industrialization of agriculture and globalization, have been identified as diversification factors of food consumption (Senauer, 1994). Some empirical evidences regarding consumers' preference for differentiated quality attributes are given by Bhatta et al. (2008b), Bower and Baxter (2000), Elliott and Cameron (1994), Lans et al. (2001) and Okechuku (1994). There is the need to investigate wider perspective of organic farming through producers' and consumers' view point.

HELVETAS Nepal, World Vision International Nepal, USAID are giving their great effort to encourage the Nepali people in organic vegetable cultivation, marketing and good get good income to make their life better. As a result more Nepali farmers are satisfied with the result of their effort in organic vegetable agriculture.

1.1.4 Some Problems of Vegetable Cultivation

Vegetables pose immense values in Nepal and to its people but program on vegetable development in this country appear weak. The fact may be that vegetable contribute very little in the nation's GDP, i.e. 3.4% by the vegetables versus 58% by food grains in agriculture sector during 1995/96 (Shrestha, 1998). The government has initiated vegetable development programs and activities in different ecological zones. Some progress and achievements have been seen; but they are not to a satisfactory level. Some factors and condition that lead to cause one of more problems, which hindered vegetables development activates are generalized in this section.

The economic status of the rural mass is very low. They cannot go for planting of
Vegetables that require heavy initial investment as well as it require high level of care and management practices regularly and continuously at the initial stage.
This high initial cost has distracted farmers from vegetable plantation. In one hand, small farmers receive inadequate loans for farming while on the other hand, they are not sure of quality of the product and its marketing disposal. Above all, for them, food grains (cereals and millets) are more important than the fruits to sustain their existence.

Majority of Nepalese people have fragmented and scattered land. The increasing population growth and normal family separation further decrease the land size. In this country, over 50% if the farming household owns land less than one hectare. Vegetable farming needs a large spacing of land. The small land size undulated and steep topography have also under appropriated the value of it and hence, the production as well.

The vivid geography and topography available in this country are natural boon to create climatic diversities accommodating enormous biodiversities including vegetable species that require from a cool to hot and from dry to humid conditions. The side of mountain o high hills facing north has cooler weather than the slope facing south. Even the physical characteristics of soils of the valley and surrounding hills differ. These changes pose a great diversity in adaptation o vegetable plants. The factors are not considered properly and adequately in planning process; thus in many places where we visit, planting of vegetable plants in farmers field are defective. Also, there exist difficulties in transportation of inputs and farm product. Marketing of perishable product such as vegetable is a real concern. As a result, vegetable growing business has become difficult in this country.

Vegetable plants need adequate temperature, rainfall, wind, light and humidity for proper growth and development of it. Often times, frost, freeze, hailstorm, speedy winds and thunderstorms are seen in various parts of Nepal. They cause problems in its cultivation to a variable extent. Frost and freeze are so damaging to vegetable plants that hey may lead to death of these plants. Hails reduce imbalance sources and sink relationship by destroying leaf surface. Speedy winds are responsible for disturbing pollination particularly in the insect pollinated crops by distracting pollinators. Such high winds aggravate premature drops of flowers and fruits heavily and even uproot the whole plant.

Several types of soil are available in Nepal. Some are suitable for growing agriculture crops while others are not. For vegetable species; they need 2 to 3 m deep soils with sufficient available nutrients. But except in valleys, the hilly tracts

And undulating yet sloppy areas with marginal land types do not contain sufficient mineral nutrients to support tree growth. Vegetable plants are planted in these soils do not produce desirable harvest unless they are supplemented with adequate manure and fertilizers. In some areas where farming is done intensively with fertilizer application, such practices have resulted into poor soil conditions due to the unbalanced use of chemical fertilizers. Without proper amelioration of these soils vegetable plants will not produces satisfactory yields.

When the host, pathogen (pest) and a suitable environment coin together many pests and diseases damage vegetable crops with varying degree of yield loss. In Nepal, pests and diseases attack vegetable plants severally. Proper care and management procedures before or after the incident must be a regular schedule in orchards. Based on scientific procedures, proper plant protection techniques and methodology for controlling pest and disease of vegetable plants are not yet developed.

Without extension services agriculture activities and scientific technologies cannot be disseminated to the local farmers. The present extension activities and outreach programs are largely biased to cereals. Personnel who work for cereals cannot or will never be expert on vegetables.

Therefore, objective vegetable extension programs are not available. Although one Assistant Horticulturist is available at the District Agriculture Office, the officer is not an extension specialist trained on vegetable extension program, policies and activities; thus extension and expansion of vegetable cultivation are not to desirable level in Nepal.

In horticulture vegetable growing and production systems require appropriate technologies based on scientific details. But today, most farmers in Nepal use traditional ideas or concepts and adopt decades old methodologies. For example, vegetable plants are still grown in places where cereals cannot be grown. Farmers feel that vegetable plants do not require manure and fertilizer and irrigation is not essential for vegetable plants that once vegetable plants are planted they bear vegetables automatically without care etc. unless the farmers are convinced well and motivated for growing vegetable plants by using scientific techniques, vegetable plants growing as a business is unlikely to prosper.

Most horticultural produce inducing vegetables are perishable and fleshy vegetable lose their quality within a few days. In the market quality aspects are neglected. Consumers and buyers are not impressed with low quality vegetables. The control over both the quality and price of fruits should not be overlooked if vegetable plant growing is to be enhanced.

Tall and vigorous vegetable like fruit plants with long juvenility and irregular bearing behavior as well as plant protection complexities were perennial problems to get sound vegetable planting.

True to type vegetable varieties are difficult to find in Nepal. Improvements on vegetable varieties through proper selection, crossing, and mutation could be effective for solving many of the problems that exist with vegetable plants. But these varieties for permanent and healthy vegetable improvement program when proper evaluation and maintenance of these introduced genotypes are lacking.

Most of the technical people know how about plant vegetable plants manure fields, providing best cultural operations, control weeds, pests and diseases harvest vegetable from the plants, etc. are borrowed from the other counties. Most horticulture experts working on vegetable production technology do not have adequate in-country information. These experts cannot face farmers and stay much behind to answer questions pertinent to specific operation for a given variety at particular location.

The National Planning Commission has paid due respect to agriculture development. However, little attention is given to vegetable plants, its cultivation and marketing. While preparing short or long term programs different organizations/agencies must work, cooperate and coordinate with one another in formulating plans, making budgets and evaluation level in terms of supplying inputs, providing financial supports and sending technical experts. Sometimes recommendations of one organization become futile with programs and policies of other line agencies. Because of these situations, vegetable growers get frustrated.

1.1.5 Brief Introduction about Kathmandu

In the ancient period Kathmandu was called Nepal. People named this place as Pashupatinath region after the Pashupatinath temple was built. The stone carving of Lichhivi period proves this fact. The name Kathmandu was given by Sanskrit word Kasthamandap because a temple made from wood only is constructed this temple. This district is one of the districts among the eight district of central development region and is the capital of Bagmati Zone and Nepal.

King Guna Kamdav built the city of Kathmandu in 723 AD. It is widely believed that Kathmandu was a big lake was habitable when Manjushree cut the hill open at Chovar to drain out the water.

Kathmandu is named after “Kastha-Mandap” meaning the temple made of wood in Sanskrit, an imposing Pagoda near Hanuman Dhoka Palace. Kathmandu is the capital city of Nepal. The population of Kathmandu city is 1,081,845 according to the census 2058. In which males are 576,010 (53.17%) and females are 505,835 (46.83%). The higher population density is 1,800 persons/sq. ft. It is situated at an altitude of 1,350 meters.

Kathmandu, by virtue of being the capital city, is the nation’s first political, administrative, commercial, tourist, educational and cultural center. The city has rich cultural heritage. In the 17th century the valley consisted of the three city-states and they are Kathmandu, Patan and Bhaktapur. During this time the valley was an important link on the route between Tibet and Northern India. During the reign of the Malla the palaces and many of the temples were built in the 16th and 17th centuries.

When king Prithivi Narayan Shah united Nepal this was the end of the city-states in the Kathmandu valley. Kathmandu became the capital of Nepal. The language spoken by the Khas of western Nepal became the official language of Nepal replacing Newari. Because of the growing number of people and vehicles in the valley, especially in Kathmandu, air and water pollution are becoming a real problem.

The valley is fertile and rise, wheat, corn, vegetables and a variety of fruits (banana, orange) are grown. Several rivers flow to the center of the valley and meet the holy Bagmati River, which then flows to the south pass through the Chovar Gorge and eventually meets the Ganga in India.

a. Geographical Status

Kathmandu district lies in the 73rd position on the basis of area but lies in the first position on the basis of population density of Nepal. The total area of Kathmandu is 41,202 hectares. Geographically, eastern, northern and western side is covered by mountains regions. At the southern side, plain agriculture lands are found. This district is at an altitude of 1,262 m to 2,032 m from the sea level. The shape of this district seems to be ‘L’ since it expanded from east to west and turned towards south. The border of Kathmandu district touches seven districts. Bhaktapur, Lalitpur, Kavrepalanchowk and Shindhupalchowk lie in east. Nuwakot and Shinduplachowk lies in the north. And Bhaktapur, Lalitpur and Makawanpur lie in the south. The three high mountains, Chandragiri, Shivapuri and Nagarjun lie in this district.

The area of this district is spread over 27°27' to 20°49' northen longitude and 85°10' to 85°32' eastern latitude. Kathmandu district, the capital of the country has one Metropolitan City, one municipality and 57 Village Development Committees. This district is divided into 7 election sites and 17 sub zones for the election of district development committee.

Table 1.1 Use of Land in Kathmandu

Particular	Area (in hectare)	Percentage
Cultivated Land	24605	59.65
Agriculture Land	19205	46.65
Field	11523	
Slope Land	7682	
Forest	9648	23.41
Grass Land	4470	10.69
Other	2479	6.25

(*Source: Community Forest Development Program, 2060 latest figure*.)

Irrigated Area:

Irrigated during whole year: 5,012 hectare

Irrigated during rainy season: 6,511 hectare

b. Population Status

Since the people from other districts come to settle in this district racial and religious diversity is seen here. The main cast settling here is Newar, Gurung and many others. Most of the people are Hindu (75%) and Buddhist (23%). Other religious found here account for only (2%)

If the people growth rate goes on increasing in the same way then it will be doubled within coming 14 years. According to the data of 2038 average size of single family was 6.2 but now it has become 4.5. It proves that now days, mostly there are single families than the joint. Most of the people settle in the city area of the district. But in the present context, due to scarcity of drinking water, environmental pollution, dust garbage, etc., people are

migrating towards ‘Village Development Committees. Because of this reason, the cultivable land is changing into housing land.

The Newars are considered to be the original inhabitant of the valley. They speak a Tibetan-Burmese language but their physical feature are both similar to Mongolian, which indicated the original form the east and Indo-Aryan features, which indicates origin from India.

c. Climate

Kathmandu has a pleasant sub-tropical cool climate. Summer (June-August) is warm to hot (March-May) and autumn (September-November) is warm during the day and cool in the night. Winter (December-February) is cold with minimum temperature of about 0°C but mostly sunny during the days. The annual rainfall is about 1,300 mm.

The temperature and status of rainfall of any reason symbolize the condition of crop farming and its consciences. Kathmandu district lies in the central mountainous region, near the Himalayas. So, in the winter season the climate becomes very cold. In the summer season climate is warm but not too hot.

The maximum temperature is 32°C in the month of Ashad and minimum temperature is -2°C in Magh. The average rainfall is 1,764 ml.

d. Condition of Road

Roads of Kathmandu district touch most national roads. But in some of the Village Development Committee transportation facilities are available only in winter. However, most of the Village Development Committees of this district have graveled roads and concrete roads. Because of the transportation facility, the sector of agriculture is too developed, commercially. Total road length is 804 km (including concrete, graveled and non graveled road).

e. Major Irrigation Projects

Forty percent of the total agriculture land is irrigated in Kathmandu for the irrigation facility. District Irrigation Office and local people have joint effort. Some of the Irrigation projects are listed below:

Table 1.2 Major Irrigation Projects

S.N	Name of Project	Source of Water	Irrigated Area (In Hectare)
1	Hasantar Irrigation Project	Satamula Muhan	11 hectares
2	Mahankal Bhairab Irrigation Project	Manohara	25 hectares
3	Panchainyan Irrigation Project	Pump, Pipe	22 hectares
4	Mahankal Irrigation Project	Sundarijal	45 hectares
5	Chunikhel Irrigation Project	River	12 hectares
6	Puradol Irrigation Project	Kolmati	10 hectares
7	Indarani Irrigation Project	Molmati	12 hectares
8	Human Ghaire Irrigation Project	Hunamun River	11 hectares

(Source: District Agriculture Development Office, 2060/61)

1.1.6 The Pilot Study Area

The different vegetable markets inside Kathmandu are taken as the pilot study area. Most of the people from the peripheral village and almost all the people of the urban area buy and sell the vegetables within this area. It is the main market place for city dwellers, village and even for the jobholders of the other district than Kathmandu.

1.2 Statement of Problem

Since Kathmandu district is a rapidly urbanizing region of the country, its marketing problem is much more complicated than in other parts of the country. Thus, we can conclude that there is scarcity in seasonal production of vegetables that has resulted in artificial scarcity as well as excess during some seasons. The farmers do not get remunerative prices and the consumers do not get vegetables of their choice. The periling trend may lead to dissociation of the farmer and submission of local produce by imports. The prominent problem is therefore marketing of vegetables in a systematic manner.

Since, vegetables are produced in the different ecological centers of the country. Firstly, there are lacking the proper transportation facility. For examples the vegetables which are produced in the Himalayan reasons cannot transit easily. So we still are importing them from China and India. It is due to the problem of road and transportation.

Secondly, the purchase of highly nutrient vegetables is very low in context of Nepalese. This is due to low economic problem.

Thirdly, the supply of vegetables is irregular due to strikes in Nepal.

Fourthly, there is still lack of knowledge in certain vegetable production. They are not expert.

Fifthly, we have lack of new production technology.

At last, there is no systematic marketing strategies made and storage is poor too. Thus harvest losses are very high in our country. This study would concentrate around the problems as stated in the following points:

a. Is the quality and quantity of vegetables available in Kathmandu satisfactory?
b. Is the price of vegetables reasonable?
c. Are the consumers aware of vegetables consumption?
d. What is the trend of vegetables farming and marketing in Kathmandu?

e. Are the vegetables within the affordable price level of general consumer?

1.2 Objectives of the study

The study will proceed with the following major objectives:

a. To review the situation of production and consumption of vegetables in Kathmandu district.
b. To examine the demand for and supply of vegetables in Kathmandu district.
c. To analyze the problems and prospects of vegetable marketing in Kathmandu district.
d. To draw conclusions and recommend suggestions for the improvement of vegetables marketing in the Kathmandu district based on the finding of this study.

1.3 Significance of the study

In Nepal, a greater percentage of population is under nourishment. They are suffering from various diseases and such problems can be removed by consumption of more and more vegetables in daily diet. Since Kathmandu district is rapidly urbanizing, its marketing problem is more complicated than in the country as a whole. The vegetable market in the valley is suffering from various marketing problems due to which a significant level of vegetable goes waste. Appropriate provision marketing facilities help to minimize the imbalance between season and off-season. It helps to smooth supply of vegetables throughout the year and help to establish fixed price. Hence, some concrete steps have to be taken to improve production, distribution and marketing of vegetable.

1.4 Limitations of the Study

Every study has to be conducted taking certain constraints into consideration. The study will have following limitations:

a. The study will be based on the secondary as well as primary data.
b. The study will be based on the annual publication of vegetables

c. The study will be mainly focused on the problem on marketing in theoretical way and the analysis of price of vegetables in statistical method.
d. This study will be limited only within Kathmandu district.

CHAPTER - 2

REVIEW OF LITERATURE

Review of literature means reviewing research studies or other relevant proposition in past studies. This provides insights into past studies and progress on similar fields. This review can be categorized into two major parts. One is conceptual/ Theoretical review and another is review of related studies. Conceptual review is concerning into the subject matter that are written in related studies, magazines and concerned books by experts in related field. The review of related studies includes reviews of the previous studies which are related to the subject matter of this study. It further divided into theme paper and review of previous studies.

2.1 Conceptual Review

2.1.1 Marketing Concept

According to Phillip Kotler, “Marketing is typically seen as the task of creating, promotion, delivering goods and services to consumers and business. In fact, marketing people are involved in marketing type of entitles, goods, services, experiences, events, persons, places, properties, organizations, information and ideas” (Kotler, 1997)

The numerous definitions offered for marketing we can distinguish between a social and managerial definition. A social definition shows the roles of marketing plays in society. One marketer said that marketing’s role is to “deliver a higher standard of living” social definition that serves our purposes as follows:

“Marketing is societal process by which individuals and groups obtain what they need and what though creating, offering and freely exhausting products and services of value with others”(Kotler, 1997:8)

For a managerial definition, “Marketing has often been described as “the art of selling products” but people are surprised when they hear that the most important part of marketing is not selling! Selling is only the tip of the marketing iceberg” (Kotler, 1997:8)

According to American Marketing Association, “Marketing is the process of planning and executing the conception, pricing, promotion and distribution of ideas, goods and services to create exchange that satisfy individual and organizational goals” (Kotler, 1997:8)

Another definition given by William M. pride and O.C. Farewell attempts at viewing marketing as a set of diverse marketing group of activities performed by diverse group of activities as “Marketing consist of individual and organizational activities that facilitate and expedite the glow of goods and services from producers to consumers satisfying exchange relationship in a dynamic environment through the creation, distribution, promotion and pricing of goods, services and ideas”

“Marketing has been developing together with development in human civilization. If we trace three-four hundred years back to the history for human civilization, we find marketing of that time, by modern standard was relatively uncultured. They did not read mechanism or tools or techniques of marketing as used today. But now all the situations have changed the needs and what have changed. Human aspirations for excellent and better status have given birth to thousand of discoveries, inventions and innovations and established thousands of units of different types of industry to fulfill that aspiration. These changes in turn not only interested for successful marketing but also made the marketing a most competitive field” (Kotler, 1997:8)

There are five competing concepts under which organizations can choose to conduct their business. They are the production concept, the product concept, he selling concept, the marketing concept and the social marketing concept. The first three concepts are of limited usefulness today. The marketing concepts holds that the key to achieving organizational goals consist of determining the needs and wants of targets markets and delivering the designed satisfactions more effectively and efficiently than competitors. It starts with a well defined market, focuses on customer needs, co-ordinates all the activities that will affects customers, and produces profits by satisfying customers. (Kotler, 1997:29)

In recent years, some have questioned whether the marketing concept is an appropriate philosophy in a world faced with major demographics and environment challenges. The social marketing concept holds that the organization’s task is to determine the needs, wants the interests of target markets and to deliver the desired satisfaction more effectively than

competitors in a way that preserve or enhances the consumer's and the society's well beings. The concept calls upon marketers to balance three considerations. (Kotler, 1997:29)

- Company profit
- Consumer satisfaction and
- Public interest

Marketing is as critical to better performance in agriculture as farming itself. Therefore, market reform ought to be an integral part of any policy for agricultural development (Acharya and Agrawal, 1999).

Agriculture marketing can be defined as comprising of all activities involved in supply of farm inputs to the farmers and movements of agricultural products from the farmers to the consumer. Agricultural marketing system includes the assessment of demand for farm-inputs and their supply, post-harvest handling of farm products, performances of various activities required in transferring farm products form farm gate to processing industries and/or ultimate consumers, assessment of demand for farm products and public policies and programs relating to the pricing, handling, and purchase and sale of farm inputs and agricultural products.

Conventionally, agriculture marketing starts when the crop is harvested. Nevertheless, in the commercial age, marketing starts with the decision to plant. 'What', 'When', 'How much', 'Where' are the basic questions involved in the decision making process that characterizes where really marketing starts. Thus, agriculture marketing is conceived as a process which starts from farmer's decision to produce a saleable farm commodity and it involves all aspects of the marketing structures or systems, both functional and institutional with technical and economic considerations including products assembling, preparation for market, distribution and use by final consumer (Kaini and Singh, 1998). This is relevant in marketing of fruits as well. So, fruit marketing can be considered as a complex activity involving diverse problems from different aspects, although there has been no any systematic economic study on the viability of fruits industry in Nepal.

2.1.2 Evolution of Marketing

The evolution of marketing has been analyzed in similar way by various authors in their independent works. Some of the authors are William J. Stanton, Philip Kotler, Gary Armstrong, etc. The different stages in the process of evolution of marketing areas are as follows:

a) Production Oriented Stage

The production concept lies in the philosophy that consumers will favor products that are available and highly affordable and that management should therefore focus on improving production and distribution efficiency (Kotler, 1997:17).

According to Kotler and Armstrong that it is still a useful philosophy in two types of situations:

- When the demand of a product exceeds the supply, management should look for ways to increase production.
- When cost of production is high and is required to decrease to expand market (Kotler, and Armstrong, 1997:14).

b) The Product Oriented Stage

The ideas that the consumer will favor products that after the most quality, performance and features and that the organization should therefore, devote its energy to making continuous products improvements (Kotler, 1997:18).

c) The Sales Oriented Stage

The stage emerged with the philosophy that consumers would not buy enough of the organization's products unless the organization undertakes a large scale selling and promotion effort (Ibid: 18).

d) Marketing Oriented Stage

The basic target of this stage is that the achievements of organization's goals depend on determining the needs and wants to target markets and delivering the desired satisfaction more effectively and efficiently than do competitors (Ibid: 19).

e) Societal-Marketing Oriented Stage

This is the latest development in the field of marketing. The stage is based upon the fact that the organization should determine the needs/wants and interest of the target markets and deliver the desired satisfaction more effectively and efficiently than do competitors in a way that maintain or improve the consumer's and society's well being (Ibid: 27).

Table 2.1 Comparative Features of Marketing Concepts

Concept	Starting Point	Focus	Means	End Objectives
1) Production concepts (Aims at selling what can be produced)	Factory	Production orientation	⎫ Mass production ⎫ Low Price ⎫ Wide availability	Profit through production efficiency

2) Product concept (Aims at improving the product)	Factory	Product quality orientation	⟩ High quality ⟩ Innovation ⟩ Performance ⟩ Guarantee	Profit through well-made products
3) Selling concept	Markets	Sellers needs orientation	⟩ Aggressive selling ⟩ Heavy promotion	Profit through high sales volume
4) Marketing concept	Markets	Customer needs orientation	⟩ Integrate marketing	Profit through customer satisfaction
5) Societal Marketing concepts (Aims at promoting social welfare)	Marketing	Social responsibility orientation	⟩ Integrate marketing ⟩ Concern for social welfare	Profit through customer and social well being

(Source: Dr. Agrawal, G.R., Marketing Management in Nepal: 17)

2.1.3 Importance of Marketing

Marketing plays a very significant role in accelerating the pace of industrialization which, in turn, aims at making the economy developed and strong. In this connection, it is significant to note that marketing is the most important multiplier of economics integration and the fullest utilization of assets and production capacity an economic already possesses. It is mobilizes latent economic energy and finally contributes to the greatest needs for the rapid development of entrepreneurs and mangers. Ultimately, the development of entrepreneurs and managers help in managing industrial activities in a country. It is evident that the industrially developed countries are developed in the area of marketing too.

Marketing plays an important role in the process of industrialization. The proceeds of industrial activity are passed on to the society through the process of marketing. Hence, the success or failure of business largely hinges upon the art and science of marketing which is composed of explorative knowledge, tact and talent of veteran practitioners. In the global market, the multinational companies like Sony, Hitachi, Philips, Procter and Gamble, Johnson and

Nicholson and many others have been permeating throughout the world with the help of modern marketing practice and method, such as Tatas, the Birlas, Bajaj India and STC, Thai Food (Rara Noodles) and Pancha Kanya Iron in Nepal. Marketing in this sense has made the producers as well as the customers more conscious towards comparative services, values, safety, satisfaction and convenience (Sharma, 1999:4).

Marketing is instrumental for industrial development. He also observes that marketing problems could be more obtrusive that many other deterrents to the process of industrialization. The growth of marketing attributes to disseminate new ideas favorable to economic growth (Sherbini, 1955). Growth in marketing could help disseminate new ideas favorable to economic growth, new pattern of consumption, possible new techniques and new ideas of social relations (Hirch, 1969), while discussing the need for broadening the social role marketing argues that it can help reduce and eliminate poverty, preserve, and natural resources and stimulate economic growth. Slater (1976) mentions that it has become an article of faith among preachers of the 'gospel' that marketing has something vital and constructive enhances potential aggregate demand, which further aids to enlarge market, and accelerate economic development. (Rao, 1982:60) opines that it plays the role of an educator, it cultivates changes in public attitude, it brings about changes in the 'quality of life', it encourages a modern way of living, it increases the standards of living; it strives to build efficient economic and social institution; it strives to secure the satisfaction of the public which is the primary recipient of national development. Marketing has a cost reducing dimensions. Effective marketing not only create new and bigger markets, thereby helping to activate production, it enables industries to reduce cost, create further demand and ensure further production increase (Anthoney, 1984).

Marketing irony of cultural values is the next pivotal element to an industry's survival prosperity or quite from a particular market. Campbell soup withdrew few markets in Brazil because housewives believed they weren't fulfilling homemaker's role if they served canned soups. Even in the countries like Japan, Australia, Singapore and many European countries, consumers seem to put their money where their mouth is regarding the purchase of environmentally sensitive products, in spite of being environmentalism political factors. However, this factor of marketing may be underestimated in the countries like Nepal, Bangladesh, Pakistan, and India and so on where there is a crying need of clothes, food and shelter, and lower purchasing capacity; and irregular buying habit as compared to marketing countries.

Marketing threats or opportunities for industries also differ in their countries to a great extent, differing in product, distribution, pricing, promotion, and control strategies.

2.1.4 Marketing Concepts in Nepal (Agrawal, 2003)

a. The economy of Nepal is characterized by excessive dependence on agriculture. The industrial sector is in a developing stage. The role of services has been growing in recent years. Dei to the topographic diversity of the country coupled with poor transport and communication facilities, marketing has remained fragmented.

b. The public sector remains dominant in the Nepalese economy. The private sector is developing dominant in the Nepalese economy. The private sector is developing and dominated by the family owned and managed businesses. The advent of global companies, especially in tourism and finances sectors, has resulted in the transfer of new marketing skills along with capital and technology.

c. Marketing has traditionally remained a neglected aspect in Nepal. Enterprises tend to concentrate on production and selling rather than marketing. The selling concept has been serving as the marketing philosophy of Nepalese mangers. The public sector has generally remained indifferent to the marketing concept.

d. The marketing concept has not been embraced by most Nepalese organizations. This is clear from the following points:

    i. Management philosophy's most organization of Nepal does not emphasize customer orientation.
    ii. Target markets have not been clearly defined by most Nepalese organizations.
    iii. Marketing information system has remained very weak in most organizations.
    iv. Marketing activities have remained fragmented in the organization structures. They have not been organizationally coordinated. Marketing department has not become a part of the top management team.
    v. Organizations tend to be more interested in producing products and marketing profit through selling and production. This indicates the least concerned about satisfying the needs of the customers.

e. Prospects for the marketing competition: Nepal has experienced significant socio-economic changes over the last 25 years. The supply-driven marketing changes over the last 25 years. The supply-driven marketing where organizations could sell everything produced, is increasingly giving way to demand driven marketing. The realization is gradually comes that customer and their needs are important in marketing. The increasing intensity of competition in the Nepalese market has also helped in this regards.

2.1.5 History of Production of Vegetables in Nepal

Growing of vegetables in Nepal is not of a recent origin. There are indigenous, yet wild and cultivated vegetables in this country; they are reported to be observed from almost two centuries. More specially, some of the important vegetables species like fruits mango, litchi, papaya, guava, mandarin etc were introduced and planted in orchards prior to the Rana Regime. During the Rana period, many vegetables orchards were established and vegetables varieties introduced. Nepal Government initiated activities on vegetables crop development in a few districts during the 1950s. However, country-wise vegetable and fruit development activities, including research, training, sapling production and distribution took a rapid momentum form the 1960s after the establishment of 14 horticultural farms/stations at various districts with the support of Indian Aid. Many agricultural and horticultural projects started in Nepal after 1970 with the financial and technical assistance of donor agencies and of different countries made vegetables development programs even stronger, need-based and extensive.

Major development in vegetables production and marketing was started especially after the end of Rana Regime, i.e. after 1950. Department of agriculture was created in 1950.51 which initiated vegetables development activities in Nepal by establishing trial vegetables orchards at Godavari and Kakani. Horticulture section was established in 1956 under the Department of Agriculture and a horticulture unit was established at Parawanipur in 1959 where several vegetables and fruits varieties were introduced into the farm from India. Another milestone was achieved when Indian Cooperative Mission studied feasibility for horticulture development in Nepal and submitted its report in 1960. Based on the recommendations in the report, some were established all over the country with assistance of India aid.

In the fruit development programs, HMG/N has emphasized to grow more tree fruits in the areas where the climatic conditions favor their growth for optimum production so that farmers get

maximum benefit from their produce. Considering such a perspective for improving vegetables and fruits production in the country, many districts have been identified as suitable area for specific vegetables and fruits production.

In 1991-92, average per capita food consumption in Nepal was about 1.03 kg/day of which cereals constituted 50%, non-cereal plant food 15%, fruits and vegetables 21%, and livestock products 14% [Department of Agricultural Development (DoAD 1992c)]. The diet of the people is heavily dominated by rice.

Rice is the major crop, occupying about 37% of the total cropped area, followed by wheat with 16% of the cropped area. Other crops grown in the country are maize, millet, barley, potato, cash crops, and a variety of fruits and vegetables. Total area under vegetables in 1995 was estimated to be about 144,000 ha, only about 4% of the total cropped area. In the Tarai, the important vegetables grown are tomato, eggplant, chili, cucurbits, okra, onion, cauliflower, cabbage, and potato. The most important subtropical and temperate vegetables grown in the Hills include cauliflower, tomato, potato, radish, cabbage, carrot, peas, cucurbits, beans, and celery. Temperate vegetables, such as radish, turnip, broad-leaf mustard, etc., which require a short growing season during the warm season, are produced in the Himalayan region. Production of vegetable seed is most suited to the trans-Himalayan region, which has arid conditions and good irrigation facilities.

In 1995, total vegetable production, excluding potato, was estimated to be 1.33 million t, at an average yield of roughly 9.2 t/ha. With an estimated population of 22 million in 1995, annual per capita vegetable availability at the farm level is estimated to be about 60 kg.

2.1.6 Present Status of Vegetable Cultivation

Physiographic Regions

As mentioned earlier, Nepal can be divided into three physiographic regions (Hills, Mountains, and Tarai). The Mountain region of Nepal is divided into High Mountain and high Himal; and valleys between mid Mountains and Tarai are classified as Siwaliks. Together with the Hills and Tarai, there are therefore five physiographic regions in the country (Fig. 1). The following is a brief description of each region.

The Tarai region covers an area of about 2.1 million ha; elevation ranges from 60 to 330 m above mean sea level (amsl) (PACMAR and EC 1991); soils are deep and well-suited to crop production. This region has a high potential for increasing crop production through irrigation development, construction of roads, and improvement in the supply of agricultural inputs. The potential for increased production of winter vegetables is very high.

The Siwalik region covers 1.9 million ha. Although the hills in this region are extremely rugged, the distance from valley bottom to ridge top is usually less than 700 m. Most of the cultivable land in this region is in the Dun Valleys, which have some potential for vegetable production. Extreme variation in altitude provides wide range of climatic conditions, i.e. tropical, sub-tropical, temperate, alpine, and tundra in this country.

With an area of 4.4million ha, Mid Mountains or Hills region consists of low to moderately high mountains and deeply incised river valleys. Elevation in this region ranges from 500 to 3000 m. Most farming is done on terraces built on slopes of less than 30°. In order to overcome land degradation problems, the government has emphasized horticulture development in this region.

High Mountains region has an area of about 2.9million ha and elevation ranges from 3000 to 5000 m. More than 90% of the total cultivated land in this region is on terraced sloping land. A wide range of warm temperate and cool temperate vegetable crops can be grown, but lack of roads is a bottleneck to the marketing of surpluses.

High Himal region covers 3.4 million ha and elevation ranges from 2500 to 8848 m. Total cultivated area is less than 0.2% of the whole region. Expansion of cultivated area is limited by lack of arable land and irrigation. Although access to this region is extremely difficult, trekkers in some areas of this region are generating a small but steadily growing demand for vegetables.

Agro ecological Zones

Based on physiographic, delineation of presently cultivated area, and altitude, for district agro ecological zones can be identified with different potentials for vegetable production (PACMAR and EC 1991).

Tropical Zone

The tropical zone runs east-west along the southern part of Nepal, with elevation ranging from 60 to 1000 m. The temperature fluctuates between 7" and 24°C in December January and between 24" and 41°C in June-July, with the mean temperatures around 20-24°C. Annual rainfall varies from 1300 mm in the east to 600 mm in the west. This climate is found in some parts of the mid Hills and Siwaliks and all parts of the Tarai. This zone has good road access and accounts for about 60% of the total cultivated land in the country. Seasonal variation in temperature and rainfall in this zone permits the cultivation of vegetables in different seasons of the year. Potato and other temperate crops are grown in the cool dry season, but other crops grow best in the monsoon season.

Subtropical Zone

The subtropical zone also runs east-west almost along the middle part of the country with elevation between 1000 and 1500 m. Summer are long, humid, and warm, with temperatures of 13-27°C in June-July and 2-17°C in December-January. Annual rainfall varies between 2800 mm in the east and 1000 mm in the west. This climate is found in some parts of the high Hills and most parts of the middle Hills and Siwaliks, and covers about 20% of the cultivated land. As in the tropical zone, most vegetables, including potato, can be grown here. Road access is limited to some interior valleys of the Mid Mountain Region or Hills.

Warm Temperate Zone

The warm temperate zone is restricted to hill slopes in the mid and high Mountain physiographic regions and has elevation ranging from 1500 to 2000 m. The zone is neither very cold during winter nor very hot during summer, but there is occasionally snow in the higher areas. The average winter daily temperatures fluctuate between 9" and 10°C in December-January and between 12" and 21°C in June - July.

Annual mean temperatures range from 15° to 17°C, while annual rainfall varies from 900 mm in the east to 140 mm in the west. This type of climate can be found in many parts of the high Hills and covers about 12% of the cultivated land. The most commonly grown vegetables in this zone include cauliflower, cabbage, radish, broad-leaf mustard, and potato. Road access is even more

limited in this zone than in the tropical and subtropical zones, which means there are fewer accessible commercial production pockets.

2.1.7 Area and Production of Vegetables

As stated above, diverse topographic features and climatic conditions in Nepal permit the successful production of a large number of vegetables. About 250 vegetable crops are grown in Nepal, of which more than 50 are common (Pun 1987).

In terms of area, production, and value of production, cauliflower is the most important vegetable in the country, followed by cabbage. Other important vegetables in terms of area include tomato, eggplant, and chili. Onion is the fourth most important vegetable based on volume and value of production.

Major vegetable production pockets are shown in Fig. 2. They are mainly along the major highways and close to urban centers. Major areas of vegetable production and periods of supply to urban centers are presented in Table 2.

Fig. 2 Important vegetable production pockets and major urban centers in Nepal

Between 1980-8 1 and 1989-90, the government implemented vegetable production programs by categorizing the total vegetable area into three types of programs based on production and marketing potential. The Special Program was launched in irrigated areas with transportable roads and easy access to markets. In such areas, technology, inputs, credit, and other support were intensively provided to commercial vegetable growers by the government. In 1990, 3 1 districts of the country, out of a total 75, were covered by this program. The General Program was implemented in other accessible areas.

Government support was limited to input supply and farmer training. The main objective of this program was to increase vegetable production for local consumption. A sizable vegetable area came under the Least Priority Program, in which the government provided limited extension support. This area benefited indirectly from technology dissemination in adjoining special and general program areas.

Table 2 Major vegetable production areas and periods of supply to urban centers

Crop	% of total veg. area	Period of supply	Production districts	Varieties grown*
Broad leaf mustard	5.3	Nov-Feb	Kathmandu Valley	Khumal Broad Leaf,
		May-Jul	Mustang, Dhankuta, Terhathum	Marpha Broad Leaf
		Nov-Jan	Chitwan, Dang	
Cabbage	11.0	Jun-Jul	Makwanpur, Dhankuta, Ilam Terhathum, Palpa	Golden Acre, Pride of India
		Dec-Mar	Bara, Parsa, Chitwan	Late Large
		Apr-Jun	Kathmandu Valley	Drumhead, Copenhagen
Cauliflower	13.7	Nov-Dec, Feb-Mar	Kathmandu Valley, Palpa	Kathmandu Local
		Sep-Jan	Bara, Rautahat, Sarlahi	Snowball 16
			Banke	Dipali, Kibo Giant
		Oct-Dec		Nuwakot
		May-Oct	Makwanpur, Dhankuta, Terhathum	
Chili	6.8	Aug-Sep	Kathmandu Valley, Kavre, Dhading	Jwala, Yatsufusa, Nepali Local
		Jun-Jul	Bara, Sarlahi, Dhanusha	
Eggplant	6.6	Sep-Dec	Sarlahi, Dhanusa, Bara, Saptari	Kranti, Noorki, Birgunj White,
		Jan-Feb	Siraha	Sarlahi Green,
		Mar-May	Dhading	Purple Long
		Jun-Aug	Kath. Valley, Nuwakot	
Fresh beans	4.3	Apr-Jul	Kathmandu Valley	Kentucky Wonder,
		Oct-Dec, Mar-May	Dhading	Contender Giant, Stringless
Market tomato	7.5	Oct-Feb	Sarlahi, Dhanusha, Bara Siraha, Banke	Pusa Ruby, Pusa Early Dwarf
		Mar-May	Dhading, Nuwakot	Roma, CL 1131
		Jun-Sep	Kavre, Kathmandu Valley, Dhading	
Okra	5.1	May-Jul	Bara	Pusa Sawani, Local
		Aug-Sep	Kath. Valley	Parwani Kranti
Onion	5.7	Apr-Jun	Bara, Saptari	Red Creole, Kath.
			Kathmandu Valley	Local, Nasik Red
Peas	4.8	Aug-Oct	Makwanpur	New Line Perfection,
		Oct-Dec	Bara	Bonne Ville
		Jan-Feb	Dhankuta	
		Mar-Apr	Kath. Valley	
Radish	5.2	May-Oct	Makwanpur, Nuwakot Palpa	White Neck, Minoo Early, Pyuthane Red,
		Nov-Feb	Kath. Valley, Rautahat	Chalis Dine
Others**	24.0			

* Most varieties are widely adapted and so can be grown in different production areas during different seasons.

** Others include several vegetables, such as carrot, sweet pepper, cucumber, sponge gourd, bitter gourd, bottle gourd, pointed gourd, snake gourd, spinach, celery, squash, turnip, broccoli, green garlic and Swiss chard.

Source: Rekhi et al. (1990) and VDD (1991).

The total vegetable area in Nepal increased steadily from 82,000 ha in 1974 to about 140,000 ha in1988, but has stayed more or less constant since. Over the 21-year period, vegetable area and yield both grew at an annual rate of about 3.0%, so total vegetable production in Nepal increased by 5.9%per year.

However, the improvements did not follow a consistent pattern. In the first decade, vegetable area expanded rapidly, but yields increased only marginally. During the following decade, there was little increase in vegetable area, but yields increased significantly, due mainly to the spread of improved varieties and increase in the use of other complementary inputs in irrigated areas.

The potato area more than doubled from 48,000 ha in 1974 to 106,000 ha in 1995 (3.6% annual growth), while its production increased more than three times from 285,000 to 898,350 t (6.3% per annum). The yield increase in the period was also impressive, from about 6 t to 8.5 t (2.7% per annum) (Table 3). However, most of this increase took place in the last decade.

2.1.8 Vegetable Generic Resources

There are many cultivated and wild types of vegetables crops in Nepal. In fact, Nepal is rich in bio-diversity of plant resources. About 6500 species of flowering plants exists in this country (Chalise et al. 1993). In spite of many vegetables species such as Aanona, Phyllanthus, Aegele, Phoenix, Castanopsis, Morus, Pyrus, Prunus, Myrica, Berberis, Vitis, Rubus, Fragaria, Actinidia, etc. which are growing wild in forest areas there is a little documentation described about these vegetables (Kaini, 1995). Notwithstanding, many vegetables species and their varieties of cultivated types have been introduced to Nepal from other countries during the Rana Regime as well as in later years when vegetables development activities began from last three and a half decades.

2.1.9 Members in Distribution Channel of Vegetables in Kathmandu

Distribution is concerned with the physical distribution of goods and services to market and transfer of ownership from marketer to buyers. Distribution can be done either directly or through the independent middlemen or agencies, who have significant role in distribution system. The general principle is that a right product having right price should be distributed to the right place through appropriate distribution system.

The distribution channel refers to the institute who are involved in the process of supplying the goods from the producers to the consumers. Channels of distribution don't contain only producers and customers but also include others like agent, contractors, etc. the channel of distribution consists of different marketing institution. Some of the marketing institutions in case of vegetable marketing are as follows:

1. **Producers**: A producers is case of vegetable marketing means the farmers. They produce different types of vegetables. They may involve themselves in selling the vegetables directly to the market or sell them to the retailers, wholesalers or commission agents, etc.

2. **Wholesalers**: This institution does not have the role in production of vegetables but has a great role in the supply of them in the market. They buy them from the farmers or through the commission agent and sell to the retailers. Most of them in Kathmandu buy them from out of the valley. They fix the profit margin.

3. **Pre-harvest Contractor:** Pre-harvest contractors are those people who make arrangement to buy the vegetable before harvesting it. Wholesalers and the retailers also act as pre-harvest contractor. Now a days, the pre-harvest contractor are increasing and the farmers who do not have means of transport of whose farm is really at a far distance from the market prefer to sell their products to them. In the study area only few of them are found.

4. **Retailer:** Retailer is the parts of the trails marketing through which most of the consumers get the vegetables. They buy vegetables from the farmers, wholesalers, commission agents or pre-harvest contractors and fix some margin and sell it to the market. In case of the city like Kathmandu retailers are of two types. They are shopkeepers and hawkers.

    a. **Shopkeeper:** Shopkeeper is those types of the retailer who have their own fix shop and sell vegetables there. Here some shopkeepers have got permanent shop but some of them sell on the side of the road. Most of them have their own price, which

is generally, fixed for a day but they may change the price seeing their neighbor shopkeepers.

b. Hawkers: They are the sellers of vegetables who sell it from place to place. In the beginning most of the hawkers were from Terai region but nowadays the people of the valley and other places are also working as hawkers. They do not have fixed price. They change the price from place and fixed the price according to their convenience.

2.1.10 Existing Distribution Channel of Vegetables

Marketing system has got great role for the consumption of the vegetables produced by the farmers. If there are good marketing systems all the farmers and the consumers along with the other parts of the markets are benefited. The marketing system of Kathmandu is not well organized and it needs improvement. The main ways of vegetables distribution in Kathmandu are as follows:

1. Producer-Wholesaler-Retailer - Consumer
2. Producer - Consumer
3. Producer-Retailer - Consumer
4. Producer-Wholesaler-Hawkers - Consumer

1. Producer-Wholesaler-Retailer - Consumer

In this type of marketing system the time taken by the vegetables to reach the consumers is long and the profit margin shared is also less as it is shared in between the distribution channel. The producers produce vegetables and sell it to the wholesalers take some profit and sell it to the retailers. Retailers take some profit and sell them to consumers. Generally fruit vegetable such as banana and orange are sold in this way.

2. Producer - Consumer

In this type of marketing system the producer (farmers) himself or herself are involved in selling the vegetables in the market. Generally the producers of the leafy vegetables sell their products directly to the market. In this case the selling is as mentioned below:

I. The producers themselves send sales force to the market and sell it to the consumers.

II. Vegetables producers sell them on the road side market or stated wholesale or retail market directly to consumers/customers.
III. They may sell it as a vendor.
IV. The consumers also go to the producers to buy the vegetables.

3. Producer-Retailer - Consumer

In this system the producers sell their products to the retailer and the retailers sell these to the consumers taking some profit. The producers of banana, orange, etc are involved in this system.

4. Producer-Wholesaler-Hawkers - Consumer

In this system the farmers sell their products to the wholesaler. Wholesalers take some profit and sell to Hawker. Hawker takes some profit and sells to consumer. In this system the time taken by the vegetables to reach the consumer is long and consumer pay high price for vegetables as hawkers provide door to door service to consumers in Kathmandu. Different types of vegetables are sold in this way like potato, onion, tomatoes, apples etc.

2.1.11 Facilities Available for Vegetable Marketing

Kathmandu does not have good production of vegetables and due to lack of knowledge and many more other available circumstances people do not have knowledge about the vegetables marketing. As a result, the managed vegetables market has yet been well established and developed properly. Farmers are bound to sell their products in lower prices whereas the middlemen make more profit. On the other hand the customers are more also not getting the good vegetable though they pay good sum of money for that purpose. There are many reasons responsible for that. Some of them are lack of proper storage, lack of good seeds, lack of right information, lack of capital, lack of cultivation, caring, harvesting, storing, grading technology and technique, etc (Shrestha, G.K, 1999)

The farmers and the customers have got only little facilities. The main facilities available for the farmers are storage facilities and seed selling shop.

Storage Facility

Good and quality seeds can only yield good promotion but the availability of good seed is the great anxiety for the farmers. In Kathmandu there are two cold stores established for the storage facility where the farmers can store the fruit vegetables mainly banana and orange. The two cold stores are: Dugad Cold Store and Budathoki Cold Store. Now Himshekhar Cold Store is on construction process.

a. Dugad Cold Store

The oldest cold store in Kathmandu is Dugad Cold Store. This cold store lies at Balaju Industries are. This cold store has a storage capacity of 1200 Metric tons. Here different types of food, vegetables and fruit are stored.

b. Budhathoki Cold Store

This cold store lies in the Sitapaila VDC. This cold store has a storage capacity of 3,000 Metric tons. Here different types of food and fruit and vegetable are stored.

2.1.12 Government, Support for Vegetables Promotion

There are different local and government agencies, which are involved in the promotion of the vegetables production and marketing, but their effort has been given the good and significant result yet. District Agriculture Office has contributed to increase the production of vegetables. Nepal Agriculture Research Council (NARC) is also conducting research in different vegetables like citrus and other fruit vegetables.

2.1.13 Promotion of the Vegetables Marketing

The improvement in marketing is beneficial to the producer and the consumers both, the vegetables in Kathmandu are not well managed so not only the consumers but also producers are affected. Due to the lack of proper market some of the farmers even take their products to neighboring districts Lalitpur and Bhaktapur early in the morning. Following arrangement is regarded necessary for the promotions are regarded necessary for the promotion of the vegetables marketing.

1. Proper Management of Marketing

For easy accessibility to consumers, most of the vegetables markets are kept in the open place or on the side of roads. Hence, when it rains or due to any adverse climate condition, both the seller and consumer are affected. Proper Market Information System facilities of shed and protection of vegetables is lacking in marketing. Retailers just think of making quick money whatever the quality of the goods they sell and their effects on the consumers. The consumers themselves are not aware of the adverse effects.

2. Proper Market Information System

For the benefits of the producers, retailers and consumers marketing information system may be implemented so that they will get all information including price. If the producers, retailers and consumers have proper marketing information they should know about demand and supply of market it helps to them for making further strategy.

Agro Enterprise Center (AEC) has setup a website www.agripricenepal.com. It is a joint effort of Agriculture Promotion Programme, FNCCI, Village-Town Cooperative Development Programme and the development programs of UN under joint coordination with the Market Development Division. This is the developed form of the market information service started by AEC-FNCCI in the year 2055. The objective of the web site is to provide as many information as possible about market information of agriculture to the general public. As per AEC, market information is collected from following centers:

a. Birtamode Bazaar- Agriculture Produce Market Collection Board, Birtamode.
b. Dharan Bazaar- Agriculture Produce Market Collection Board, Dharan.
c. Kathmandu Bazaar- Kalimati Fruits and Vegetable Market Development Board, Kalimati.
d. Narayangadh Bazaar- Chamber of Commerce, Narayangadh.
e. Butwal Bazaar- Butwal Chamber of Commerce.
f. Pokhara Bazaar- Pokhara Chamber of Commerce.
g. Nepalgunj Bazaar- Nepalgunj Chamber of Commerce.
h. Surkhet Bazaar- Surkhet Chamber of Commerce.
i. Mahendranagar Bazaar- Kanchanpur Chamber of Commerce.
j. Palpa Bazaar- Palpa Chamber of Commerce.

k. Hetauda Bazaar- Hetauda Munucipalty, Village Town Cooperative Development Program.

Following information is available in the website:

i. Daily transaction detail- free of cost
ii. Daily news- free of cost
iii. List traders- free of cost
iv. Weekly and monthly details-chargeable
v. Monthly and annual details- chargeable
vi. Tread of market prices- chargeable

(Last three information can be available after paying an annual service charge of NPR 3,000.00)

3. Proper Transportation

The farmers also face problem due to the lack of proper system. Vegetables are perishable items and will eventually rot if not delivered on time. Proper facilities of buses or other vehicles can be arranged. In Kathmandu most of the places have transportation facility and some places have to improve.

2.1.14 Marketing System of Vegetables

In agriculture- based development countries like Nepal, agriculture product marketing services play a private role in fostering and sustaining agriculture and rural development. This ideal marketing system is one that maximized the long run welfare of the society and that should operate with maximum physical and locative efficiency.

Marketing is the most important function for assembling, processing and distribution of marketing surplus. An efficient marketing system is essential for timely delivery and reduced market costs. The efficiency of market is influenced by a number of external factors, such as policy, regulatory frameworks and infrastructure. A well developed and efficient marketing system fosters and provides leverage in the overall growth and development of an economy by facilitating optimal product mix and planning, and its efficient distribution (Gurung, 1996).

Long marketing channels are one of the reasons for increasing marketing costs and inefficiency in marketing. This results in loss of consumers' welfare and producers share. Presence of intermediaries makes the marketing system inefficient in the channels as compared to the shorter ones.

2.2 Review of Related Studies

The attention of GON to the development of fruits cultivation was given from 1959/60 AD (2016 B.S) when the Indian Aid Mission submitted a preliminary report for horticulture development in Nepal. Following the recommended of the report, 14 horticultural farms were established throughout the country. The main objectives of these farms were to demonstrate the use of scientific practices of cultivation to produce vegetables.

Research on vegetables is conducted with a view of providing information on vegetable that have suitability and scope of cultivation in a particular area. Research and development work in horticulture is being carried out by Nepal Agriculture Research Council (NARC) and Ministry of Agriculture and Cooperative (MOA) through Department of Agriculture (DOA). NARC is solely responsible for conducting the need based research which is directly related to farmer's problem and creation of new intervention by which poverty could be reduced by the production of hybrid crops, seeds, animal products and others. NARC has following organization setup for horticulture research and technology generation. At present Horticulture Research division is the apex body under NARC system to formulate policy and strategies in horticulture research. There are three commodities program- citrus and ginger in vegetable sector. Similarly, there are 3 horticulture researches stations located at Jumla, Dailekh, and Pokhara. Likewise ARS (Agriculture Research Station) Jarahara, RARS Parwanipur, RARS Lumle, ARS Nepalgunj, Surkhet and Doti has horticulture unit each. At yearly workshops with different stakeholders are held and announcements and sharing of outcomes of horticulture research are done.

The thesis on the "A Study on Marketing of Vegetables in Kathmandu" is prepared with the time bound of nine months. The research based on a study on the marketing of vegetables in Kathmandu is very rare. As, it encompasses in the basic problem like supply, lack of storage structures, lack of habit to buy vegetables, lack of knowledge to consume it from health point of view.

Similarly, the marketing prospective is widening day to day. As the health consciousness is increasing nowadays, marketing not only covers the whole chapter so the questionnaire for shopkeeper as well as consumer is distributed. As compared to other survey it is more scientific, analytical and valid. It has no false and imaginary data. The study is purely fielded oriented and reliable of proof. Thus, it is really helpful for the problem solving in the sector of marketing.

While studying the vegetables marketing, it is felt necessary to review the research studies conducted in this filed therefore, in this chapter an attempt is made to review the research works on marketing of vegetables.

a. The overall situation of vegetable marketing in Kathmandu valley is still under developed and inefficient. Moreover there is in adequate information relating to area, production, prices marketing facilities movement of vegetables within the country. The study is also in limited scale for the adequate supply of vegetables there will be the proper technology, pricing supply and research will be needed (Bhattarai, 1985).

b. A study on 'Marketing Management of Floriculture Producer' published in 1991 by Keshav Sharma reveals the use of eight main marketing channels in the marketing of apples in J and K. these are:

(i) Producer- Consumer.
(ii) Producer- forwarding agent- commission agent- wholesaler- consumer.
(iii) Producer- producer's co-operative marketing society/NAFED- retailer- consumer.
(iv) Producer- pre- harvest contractor- commission agent/wholesaler- retailer- consumer
(v) Producer- commission agent- wholesaler (self as forwarding agent)- retailer- consumer.
(vi) Producer- JKHPMC Ltd. - wholesaler- retailer- consumer.
(vii) Producer- retailer- consumer
(viii) Producer- Processing unit- consumer.

The study also makes a number of recommendations to improve physical distribution, product management, pricing, regarding marketing organizations, improving economics of fresh vegetables in J and K, and improving marketing effectiveness for the development of vegetables production (Sharma, 1991).

c. A thesis on 'A study of floriculture enterprises in Kathmandu Valley' is published in 1998 the main finding of this study is less production of florid product. Similarly, there is more demand increasing day to day similarly, there is lack of study, research and proper systematic marketing of florid product.

d. The common difficulties facing marginal farmers are the low value of their assets, exposure to natural hazards (particularly in highlands), few opportunities to diversity in agriculture and other businesses (or profit from existing diversification), and poor clout in the mainstream politics (Tiwari, 1993).

e. "A study on Production and Marketing Practices in Kathmandu Valley" is the survey study conducted by the Food and Agriculture Marketing Service Department in 1972. The survey was conducted with the objective of analyzing the problems related to vegetable production, marketing and institutional reforms. To know the existing cost of production of different types of vegetables in the Valley was another objective of the survey.

f. The second survey report on "Vegetable and Fruit Market Survey in Kathmandu Area" was published in 1978. The study shows the monthly mean prices, availability and the places of origin of different types of vegetable in Kathmandu Valley. The report indicates that the quality and quantity of vegetables and fruits available in the market has improved considerably for the last few years. Popular vegetables such as tomato, carrot, brinjal, cabbage, etc. are available regularly throughout the year. However, there were no remarkable price changes during the surveyed period.

g. The third survey "Vegetable Marketing in Kathmandu Valley" report was published in January 1981. The price levels of three markets, namely, Mangal Bazaar of Patan District and Asan and Purano Baneshwor (Both in Kathmandu District) were compared on the basis of monthly average prices per product per market. The report reveals that Mangal Bazaar is the dearest market for vegetables.

h. Another survey on "Vegetable Market Survey at Kathmandu and Pokhara" was conducted by Mr. Junji Takahashi in 1982. The objective of the survey was to study the prices of vegetables in Pokhara and two markets of Kathmandu. The report reveals that

there are no significant differences between the prices of almost all vegetables are higher in Pokhara. However, the number of vegetable crops and quantity of vegetables found in Pokhara market are far less than in Kathmandu. More than 50 kinds of vegetables are found in Ranamukteshwor throughout the year while it is less than 50 in Asan.

i. "A study on vegetable Production and Marketing (with special reference to the winter vegetable production in Kathmandu Valley)" is dissertation paper prepared by Mr. Y. R. Joshi in 1977. The objective of the study was to analyze the existing problems relating to vegetable production and marketing. Accounting to him, area under vegetable cultivation in the valley is decreasing. As a result, there has been significant rise in the prices of vegetables. Cost-benefit analysis reveals that cauliflower requires highest cost i.e. Rs 5,270 per hectare followed by onion, radish, spinach, garlic and carrot. While highest revenue comes from onion amounting Rs. 8,042 per hectare. It also provides the highest profit of Rs. 3,858 per hectare.

j. The study of vegetable marketing in Bhaktapur District is conducted in 2006 by Mohan Krishna Shrestha it conducts to find out real condition of vegetable market as the demand of vegetable is higher than production but there is lack storage structure as well as not proper organization support by municipality and the main problem in towards farmers by untimely price fluctuation.

k. The report on vegetable was published by Agriculture Projects Service Center in 1978. The report reveals that vegetable farming on a commercial scale, which is only a recent development, is confined largely to the Terai region. In general, kitchen garden accounts for most of the vegetable output in Nepal. The report reveals that reliable data regarding vegetable production, consumption and imports are not available.

l. Seminar on fruit development in Nepal (2051) pointed out the crop improvements. In fruit crops, varieties improvements and cultivar generation is either lacking or they are not being considered important at present. The fruit crops improvement program should be developed so that fruit varieties can be generated to suit local environment conditions. Several basic and applied research awaited on these crops in Nepal includes:

- Germplasm collection from within and outside the country for quantity characteristics, pest and diseases resistance.

- Genotype conservation and maintenance programs.
- Studies on floral biology and pollination behavior.
- Appropriate methods and technique on fruit improvements, such as selection, hybridization, and mutation.
- Varietal development through gene pooling, biotechnology and tissue culture techniques.

m. "Dynamics of Vegetable" is another strong research report submitted by Thapa Ganesh B. (2007), which focuses on the dynamics of vegetables. It covers the major vegetable species and production areas in Nepal. It describes about the different "Vegetable development programmes and its constraints".

   According to them cropping patterns, Adoption of Vegetable Material, Soil Preparation, Planting and Nursery Management, Irrigation, Weeding and Other Cultural Practices, Harvesting, Soil Fertility Management, Plant Protection, Moisture Conservation and Management, Labor, Fertilizer, Pesticide are important factors in development of different vegetables in different tropical zones. In conclusion they added Lack of Credit, Poor Irrigation Facilities, Shortage of Good Quality Seeds, Support for the Cold Storage Industry, Trade Restrictions, Pesticide Regulations, Exchange Rate Policy, Inadequate Marketing Support System and Inadequate Marketing Support System are major constraints in vegetable production and marketing in Nepal including Kathmandu valley.

n. "Consumers' willingness and preference towards organic vegetables", Krishna Bahadur KC in 2009 is another strong research in organic vegetables. The research is done to investigate the following questions.
   What factors make consumption appealing to consumers?
   What is the extent of value of such priority in reference to other? And what is the preferential differentiation with respect to socio-demographic profile of the consumers?

   The conclusion of the research is as follows:

   - Most of the consumers with better income, higher education and small family size are willing to pay more for organic vegetables; however, there is the need for certification and labeling to give credence to the organic products.

- Grouping of consumers into homogeneous groups show that there is the need for development of niche organic market focusing particular segment of the consumers in the market.
- This is the first attempt in market penetration using CA. Further studies are needed with more sample size and some quantitative price information focusing different products.

o. Trade Competitiveness of Off-season Vegetables and Ginger In Selected Districts in Western Development Region of Nepal is conducted by Agri-Business and Trade Promotion Multipurpose Cooperative Limited
(ABTRACO) in 2005 is another strong research in vegetables.

Normally, the vegetables are produced according to the season. But the research describes, all kinds of vegetables can be successfully produced during rainy/summer conditions utilizing the mild and cool environments prevailing in the mid hills and mountains of these districts. In Bhairavsthan area of Palpa, unlike the old system the new system of grading ginger as whole ginger and piece-ginger was developed by majority of farmers to cater the demand of India's markets.

In conclusion, Off-season vegetables such as tomato, cucumber, cauliflower and cabbage produced in selected districts of Western Development Region have potentials for production and meeting the demand of Tarai areas of Nepal and northern border markets of India from summer to the early winter months. Ginger, likewise, has especial quality to satisfy the consumers of some parts of northern India and Nepal. Ginger has high prospects of production in hill areas to meet the potential demand of both domestic and export markets. To fully exploit the opportunities and potentials, the farmers and even the extension agents are yet to be well aware about the appropriate production technologies and the marketing prospects. The critical issues that are hindering the production, marketing and trade of these commodities need to be addressed and constraints removed/ reduced to make these products competitive.

The research recommended as follows:

Off-season Vegetables

To improve competitiveness of off-season vegetables, following suggestions are recommended:

- prepare a detail situational information about vegetable pockets,
- explore demand of domestic and potential export markets,
- standardize production techniques and quality of the product,
- introduce technological norms for producing standard product,
- introduce plastic crates for packaging,
- develop marketing information system at pocket sites/ level,
- operate transport vans through cooperatives and market committees wherever felt necessary,
- strengthen cooperative capacity in marketing vegetables at domestic and export markets,
- introduce tomato processing technology to the potential entrepreneurs,
- accord high priority in constructing rural agricultural/rural roads by DDC, DOA, and Department of Rural Infrastructure and Rural Roads,
- familiarize farmers in commercial production pockets about export potentials,
- organize vegetable collection centers by involving farmers groups, local government, DOA and private sector with public private partnership approach,
- introduce three grades in tomatoes into small, medium and big sizes,
- introduce Marketing and Contract Act,
- educate farmers and traders about the quality and procedural requirements in SAFTA and WTO,
- remove local taxes on vegetables
- avoid harassments during transport and export for all the primary products in general and more importantly for quickly perishable nature commodities in specific.

Ginger

To improve competitiveness of ginger following suggestions are recommended:

- organize collection centers by involving farmers groups, local government, DOA and private sector along the line of public private partnership approach,
- conduct business meetings of potential entrepreneurs, investors, farmers and technicians to explore various aspects of production and trade related matters,
- review pricing structures and management practices of cooperative society,

- develop marketing information system at production pocket level by involving cooperative societies, market committees, local government units and CCI,
- arrange special transport vans/trucks services for agro-products by involving cooperative societies and market committees,
- develop cooperative societies for marketing ginger,
- conduct demand assessment in northern markets of India
- disseminate market/price information to farmers and agro-entrepreneurs,
- sensitize farmers and agro-traders about the improvements required in raw ginger and dry ginger in the context of SAFTA and WTO requirements,
- remove local taxes,
- remove the harassments during transport and in the check points and custom points.

p. “Impact of RCIW Programme in Rural Food Security: A Case Study Dailekh District, Nepal" is conducted by Bhandari T. (2006) where RCIW stands for Rural Community Infrastructure Works Programme. RCIW Programme is priority based pro-poor focused food security programme. Food security impact of this programme in beneficiaries’ level was not assessed before this study.

This study focused to fulfill the objectives; to assess the change in vegetable availability by the support of project activities, to assess the people’s participation in different activities of the programme, to find out the major changes in vegetable and market access realized by the people, to assess intra-household vegetable distribution, to determine the major changes of RCIW programme and to examine the sustainability of programme.

Major recommendations to achieve food and nutrition security significantly were: increasing women’s participation, intensive support at short duration on-farm and off-farm enterprises focusing one village one product, implementation of production supportive, food utilization, and marketing activities, increase rice and cash support for at least one hundred days of minimum guaranteed employment days, and prolong at least two additional phases to complete all the dimensions of food security.

2.2.1 Review of Journals

Haque, M.A.et.al., 1996; 195-204, reported that sharp fluctuation in prices and spared between farmer's price and consumer's price for perishable agricultural commodities are frequently observed in Bangladesh market. They also reported that market imperfections and inefficient marketing system might be the prime factor responsible for this fluctuation and higher price speed.

Shrivastava, G.C., 1992:229-233, has high-lightened that the producer's share was inversely related to the consumer's process. He also pointed out that the shares of the producers and retailers were directly affected by the consumer's prices.

Verma, A.R. 1989 noted that an efficient marketing would guarantee a greater share to the producers in the price paid by the consumers on one hand and greater satisfaction to the consumer on the other.

Kulkarni, K.R., 1989 and Hussain et al. 1996 indicated that long marketing channels are one of the reasons for increased marketing costs and inefficiency in marketing.

Kahlon A.S. and George M.V. 1985 mentioned that marketing cost and margins would vary depending upon the nature of the commodity, services rendered that type of market channels, the structure of the market and the level of its infrastructure development. They observed that the farmer's share of the consumer's price was the highest (76.78 percent) for wheat and the lowest for fruits (33.98 percent).

A rise in marketing cost is not sufficient reason to conclude that the marketing system is inefficient. Efficiency can be determined only if consumer satisfaction is measured and considered (Snodgrass M.M. and Wallace L.T., 1977). From farmer's point of view, a marketing system that can entice consumers to buy more is a good one. To make goods continuously available to consumers at prices that allow the consumer to raise his standard of living and increasing his satisfaction is good.

The recommendations of Shrestha G.K., (1999) can be summarized as follows:

- Vegetables are very important in human nutrition as well as for improving the rural economy.
- Vegetable tree plantation help in the preservation of the ecology of fragile hills and mountains provided the trees are planted scientifically. Lately, more and more emphasis on improving vegetable tree culture and care has emerged in government and private sectors to narrow the gap between demand and supply.
- Different agricultural agency/institutions or organizations have specific plans, programs and targets to support necessary technology for horticulture and development in the nation. Achievements on vegetable development programs however are unsatisfactory.
- Problems associated with the under achievement are lack of dedication in farmers, technicians, researchers, extension agencies, etc., ineffective planning, as well as uncoordinated policy and program implementation among different institutions/agencies. NARC research stations, government horticulture centers/farms have developmental and research objectives but their responsibilities are not well defined.
- Vegetable trees by their nature require long term investments. Sufficient resources, skilled manpower, financial commitments, adequate yet appropriate land availability, and infrastructure facilities are either lacking of if available they are not being properly used a present.
- A rewarding work in vegetable growing business and its development is only possible if proper strategic planning could be developed and exercised immediately so as to meet vegetable requirements in years to come.
- Among major constraints to vegetable development are production constraints, socio-economic constraints, infrastructure constraints, institutional constraints, policy constraints, and human resources constraints.
- Research reorganization of NARC is needed to prepare vegetable research strategies to develop production technologies and packages for commercial vegetable species.
- NARC should have research attitudes for even directing its research funds to other institutions or private research centers or individuals to promote vegetable research.
- Production inputs should be made available in the production areas at times when they are needed. Post- harvest handling, proper packaging, and timely marketing, etc. are problems of vegetables after they are harvesting and these will remain as barrier if adequate infrastructure facilities are not built.

A case study of vegetables done by Thapa, Sarf and Gaire in 2005 has compiled data from MDD, JICA, ASD and MPHD to find out the status of demand for and supply of apples and mandarin oranges in Nepal. As per their observation, the demand for both fruit in Nepal is estimated to be just less than 4,000 tons per month or about 47,000 tons per annum. Total annual demand for apple is about 1.8 times the domestic supply, or an aggregate annual deficit of about 20,000 tons. By contrast, Nepal is surplus in orange production, with net surplus of about 18,000 tons, about 1.4 times the annual domestic demand. The study further indicates that productivity in Nepal is 50% lower than in India. Hence there is immense potential of increasing productivity in the country. Even with low productivity, when all current planted areas come to production, total production is projected to almost double in a decade's time. Vegetables demand responds strongly to income (MDD, 2000).

Vegetables are both imported from and exported to India, in different seasons. This could also signify Nepal's comparative advantage. Irrespective of this pattern, there is a need for and considerable scope for important substitution and export promotion.

Table 2.3 shows huge deficits in the vegetable trade with India. Exports of all vegetable averaged Rs 3 million during 1997-1998 while Nepal imported vegetables worth Rs 163.50 million in the same period, for a deficit of Rs 160.50 million. There are no good statistic and studies that explain that trends in this trade. It seems that the sharp rise in imports after 1992/93 is associated with the liberal import regime with India following the bilateral trade treaty of 1991/92. The slowdown in imports and the corresponding improvements in trade balance can only be obtained after increasing domestic production from newly development orchards. All in all, the prospects for import substitution and export growth are good.

Table 2.3 Total vegetable trade with India (in million Rs)

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04
Export	3.0	3.2	14.2	4.6	6.1	2.4	0.7
Import	163.5	135.7	179.2	175.0	216.2	284.5	241.5
Trade Balance	-160.5	-132.5	-165	-170.4	-210.1	-282.1	-240.8

(Source: MDD. 2005)

Many of the problems facing the vegetable sector in Nepal are internal in nature, which follows from the fact the vegetable are not much traded products. Some of them are listed below:

- Low productivity (about 50% if that in India)
- Lack of competitiveness in both import and export markets for a variety of reasons.
- Small, scattered production structure means that the government needs to take initiatives and encourage appropriate institutional innovation (e.g. contract farming, group approaches).
- The commodities are characterized by seasonal problems and issues, thus requiring solutions through storage, processing and trade.
- Research efforts appear to be weak, both in productivity, variety and quality.
- External trade with India suffers from some significant non-tariff barriers.

They further add that Octroi charges in Nepal disrupt transportation. Traditional complain all the time about octroi charges, which can be as high as Rs 4,00 per truck when bananas, pineapples and so forth are transported from the Terai to Kathmandu. Even vegetables transported on the roof long distance public buses are charged octroi fees in the range of Rs 1,000-2,000.

These charges not only involve payments, but also other costs, both “unbilled” and transaction costs of doing business. It is indeed an irony that the octroi system and misuses in the levy of charges by local bodies’ countries to day despite the consensus that this is not good for trade. Traders say they do not mind paying the charges, but resent very much the harassment.

2.2.2 Organizations Promoting the Vegetable Development in Nepal

There are numerous organizations established in Nepal to help in development of vegetable from producing the seeds to arrange the market. They conduct different profitable projects in rural as well as urban areas of Nepal. With the help of these projects, these organizations directly or indirectly help the farmers to consumers for betterment in their life. Some of them with their projects are listed as below:

1. Government of Nepal, Ministry of Agriculture and Co-operatives, Department of Agriculture
   - Commercial Agriculture Development Project

The overall objective of the Commercial Agriculture Development Project is to reduce poverty amongst poor rural people through gender and socially inclusive development by equitable and sustainable commercialization in agriculture especially in vegetable agriculture and promote the marketing. It functions on the principles of market demand led approach, gender main streaming, public/private partnership arrangement, flexible project management, local body capacity enhancement and environment preparation.

Many stakeholder including farmers were highly profitable by this project in the enhancement of capacity and more generation of income through vegetable cultivation and marketing.

2. Agro Enterprise Centre/FNCCI

   Several researches are conducted by Agro Enterprise Centre/FNCCI in different subjects of vegetable. They includes from vegetable seeds, off-season vegetables, organic vegetables etc. Some examples of the researches for Agro Enterprise Centre/FNCCI are as follows:

   - Trade Competitiveness of Off-season Vegetables and Ginger In Selected Districts in Western Development Region of Nepal
   - Vegetable Seeds Development Project
   - Price of Vegetables in Nepali Market
   - Administrative and Policy Constraints Faced by Small Farmers Producing Vegetables Seeds in Dang and Vegetables in Banke Districts

3. Helvetas Nepal

   Helvetas came to Nepal in 1956. The design of the current Country Programme follows the general principles of Helvetas as an international organization. These principles are shortly described in the Helvetas Cube.

   Helvetas has four Working Areas of expertise. In Nepal, Helvetas is working in all four of these with the major efforts as follows:

Infrastructure in Rural Areas	Pedestrian bridges; drinking water; rural roads; small-scale irrigation; community-based infrastructures
Sustainable Management of Natural Resources	Rural community support on local initiatives; community organization; food security; cash cropping and marketing; small livestock management; non-timber forest products; sustainable soil management; coffee promotion; biological control
Education and Culture	Vocational skill development; micro-enterprise promotion; rural-urban linkages; non-farm sector development; reflections on heritage and cultural change
Civil Society and the State	Decentralization and local governance strengthening; demand-responsive service providers; coherent local planning, monitoring and evaluation; local fund management

In Nepal, Helvetas is working in all four of these with the major investment in Infrastructure in Rural Areas. The increasing focus on supporting decentralized systems of governance has greatly increased resource investments into the area of Civil Society and the State.

Major projects conducted to meet the objective of the Helvetas are as follows:

- Informal sector enterprise development and employment generation programme (ELAM)
- Income, employment and enterprise programme (ELAM-PLUS)
- Franchising-skill (F-SKILL)
- Linking local initiatives to new know-how (LLINK)
- Local initiatives support programme, Palpa (LISP)
- Local infrastructure for livelihood improvement (LILI)
- Rural access programme (RAP)
- Skill and know-how imparted at local level (SKILL)
- Sustainable soil management programme (SSM-P)
- Trail bridge sub-sector project (TBSSP)

- Water resources management programme (WRMP)

4. United States Agency for International Development /USAID
   - Nepalese Farmers Expand Marketing Reach

   USAID taught Nepalese farmers how to make better use of labor, seeds, marketing, and production technology in order to stimulate the production and trade of high-value commodities such as vegetables, fruits, seeds, and honey. This $3.6 million project focused on four areas: promoting market growth, improving technology and agricultural extension services, building capacity for agricultural planning and policy reform, and enhancing the nutritional value of rural diets to combat a high incidence of night blindness among pregnant women.

   The program also helped farmers establish rural markets and forge agreements with traders for seed production and marketing. The farmers were taught how to expand and reinforce market linkages to help ensure sustainability. As production increased, families learned how to incorporate nutrient-rich foods into their diets, especially foods rich in vitamin A, and to observe better sanitation and hygiene practices.

   New technologies and hands-on training improved the output and marketing capabilities of farmers as well as their post-harvest handling and processing skills. Nearly 40,000 farm families produced high-value agricultural products in the targeted zones. Several new local marketing centers were established to sell high value agricultural products in conflict-prone Western and Mid-Western Nepal.

   In the areas where the project worked, the incomes of farmers increased 10 to 20 fold. The total sale of vegetable crops increased from $0.63 million in 1998 to $2.99 million in 2002. In addition, during this period, the level of nutrition knowledge increased from 23% to 80.6%, and the incidence of night blindness decreased from 14.7% to 5.1%.

5. SDC Swiss Agency for Development and Cooperation – South Asia Division
   - Vegetable seed to improve livelihood in rural Nepal

Vegetable seed production, as a low volume - high value commodity, offers a promising strategy to reduce poverty and the increasing food insecurity in remote areas of Nepal. Switzerland helps to promote the vegetable seed production in Nepal. In 2008, private cooperatives with Swiss support provided more than 20% of the domestic seed supply. Vegetable seed enterprises have contributed to increasing production by 20-30%, and generate 2-3 times more income than traditional cereal crops from the same piece of land.

Switzerland already recognized the importance of producing high quality vegetable seed during the 1980s. Together with the Government of Nepal, the concept of private-public partnership in the seed sector was introduced. Since then over 160 seed producing cooperatives have been established. As a result, while in 1975, 9 mt (metric tone = 1,000 kilograms) vegetable seed were produced exclusively by state-owned farms, in 2008 over 900 mt were produced by farmers and private firms, representing more than 50% of the domestic requirement. The annual value of sale of domestic seed has risen to 131.5 Million Nepalese Rupees (Nrs.; approx. CHF 2.2 million.).

Since 2004, Switzerland has been supporting the promotion of vegetable seed production through a specialized Nepalese Non-Governmental Organization1. In 2007, CEAPRED contributed nearly 22% to domestic vegetable seed production. Since the beginning of Swiss support, more than 6200 farm families have become engaged in seed production. Seed of 52 varieties of 27 vegetable crops is being produced, among them pea, broad bean, radish, cress cucurbits and common beans. In average, each participating household annually earns an additional 6445 Nrs. (CHF 110). This might not seem to be very significant with a Swiss salary level in mind, but in a country with an average national per-capita income equivalent to CHF 400, this income increase for poor farmers might make the difference between food security and famine, between children going to school or staying at home, between developing villages or migration.

Switzerland also contributed to improving the policy framework for private vegetable seed production. In 2007, the mandate for source seed production, until then limited to public farms, was opened to private firms. Likewise, private firms and NGOs are now accredited for both field and quality inspection.

2.2.3 Case Studies of Vegetable Development in Nepal, Thailand, Vietnam and Bhutan

With a view to study the how our neighboring countries have been handling vegetable production, several literatures were reviewed for cased in Nepal, Thailand, Vietnam and Bhutan.

2.2.2.1 Deciduous Vegetable Production in Nepal (Devkota, 2006)

Deciduous vegetable are considered as the most important vegetable crops of Nepal. The country was importing deciduous vegetable plants from India until the mid 80's.

a. Production of Planning Material

Due to the encouragement from the Government several private nurseries have been established in different in different regions, and now the country is self-sufficient in the production of planting material of these crops. Even then the government farms have not been able to cater to the increasing demand of planting materials. As a result, nearly 100 nurseries have so far been established by the private sector.

b. Establishment of orchards and its management

In Nepal, more than 80% of cultivated land is in high and mid mountain regions is on sloping mountainous terrain. In this hilly terrain the contour system of planting is followed. All trees are planted on the contour. The distance between the rows depends on the slope, being closer on steeper slopes and wider spaced otherwise.

Proper training of young plants and pruning of older trees are not strictly followed by farmers in many areas of Nepal. Farmer's negligence of these very important operations has created a big problem in quality production. However, the most common system of training of temperate vegetables practiced in the country is the modified leader system followed by the open center system.

Soil fertility in the mid mountain regions are extremely low, and crops are mainly dependent upon farm-yard manures and compost, and vegetable crops hardly receive fertilizers.

The writer has failed to highlight the marketing aspect of vegetables in the country

2.2.2.2 Deciduous Vegetable Production in Thailand (Subhadrabhandu, 2006)

Delicious vegetables are in high demand in tropical countries. The interest in these crops is on the rise. Shortages in hard currency in most tropical countries reduce their import and encourage attempts at local production.

In Thailand, deciduous vegetable production has been focused in the Northern region which represents on the most important areas of the country from the standpoint of socio-economic, agro-ecological and political considerations. The region accounts for one-quarter of the country's forest are and majority of the hill tribes live in this region. The increasing population in the area and shifting cultivation of the opium and poppy in the region has caused damage to the natural resources in the form of soil deterioration, flooding in wet periods and critical water shortages in the summer months (Subhadrabandhu, S. and Punsri, P, 1987). In an effort to improve the highlands, deciduous vegetable crops were introduced as substitution crops and are expected to serve as the main source of income for the hills tribes. Perennial vegetable trees are believed to have great potential in the highland areas of Northern Thailand, both commercially and socially, as they can provide a steady and reliable income to the hill tribe farmers. If successfully cultivation by encouraging more permanent settlement of hill tribe people and may curtail the growing opium poppy.

Due to the long storage ability of high quality apple from the high chilling cultivars grown in U.S.A, Australia, New Zealand and China, imported apple fruits are commonly sold in local markets of Thailand at rather low prices. This makes the production of apple in the highland areas not so attractive to hill tribe growers as they can only sell their fruits at rather low prices in order to compete with imports, whereas the cost of production is almost the same as the other deciduous fruits. Because of this reason, extension of apple cultivation by the hill tribe growers has ended, and research work on apple has been suspended.

a. Production of Planting Material

Under Thai law, the lands in any watershed areas are preserved and protected from any private ownership. The hill tribes, having lived in the areas for centuries, are allowed to stay on but, legally, they have no ownership or rights to the land, and the government wants them to practice settled agriculture without moving around.

For these reasons, there are no private nurseries producing planting materials of deciduous vegetable crops in these areas. Also, due to the tight governmental budget, there are no governmental organizations responsible for producing these plants. The planting materials are produced by the Royal Project Stations scattered among the villages in these areas. At the beginning, budded and grafted plants were planted in the stations in the experimental plots. Their yield performances and the income from selling the vegetables were recorded. The better cultivars were then made ready for distribution to hill tribe growers.

b. Establishment of orchards and its management

Generally, the deciduous vegetables are planted in the lands that used to grow opium poppy or field crops like maize and beans, where there is little land preparation needed. Clearing the forest to plant the deciduous vegetable trees in forbidden as it is against the law, which is one of the reasons for the low hectare of deciduous vegetable trees grown in the area of Northern Thailand.

The majority of deciduous vegetable orchards are grown under rain fed conditions. Biological together with presentation orchard management techniques are two key measures adopted in Thailand.

c. Marketing

In Thailand, all that is produced is locally consumed, and there is no problem in marketing of fresh vegetables as there is a ready demand for them. The Royal Project Foundation has established the Marketing Section, which takes the responsibility of selling the vegetables fir hill tribe growers who derive high returns. These deciduous vegetables are sold under the brand name of “Doi Kam” in the market. At present, about 60 percent of the vegetables produced in these areas are sold through this channel. The balance 40 percent is sold directly by growers, mostly to tourists visiting the villages. There is potential for deciduous vegetable growing in the highlands of Thailand.

Constraints in its development are, scarcity of land at the high altitudes, difficulties in educating hill tribe growers, people from lowland are prohibited to venture into the hilly areas and cultivate the land there, insufficient water resources to irrigate the deciduous vegetable orchards.

2.2.2.3 Deciduous Vegetable Production in Vietnam (Cao-Van, 2006)

Many deciduous vegetables originated from South-East Asia and for this reason vegetables are still being cultivated in the highlands of Vietnam. In Vietnam deciduous vegetables are cultivated today by the ethnic minorities who inhabit the mountainous areas. Large areas are in production but traditional practices have prevented any improvement in yield and quality.

a. Production of Planting Material

Only a few ethnic communities have mastered the technique of grafting in some private nurseries. Lack of good planting material is the main limiting factor to expansion of deciduous vegetable production in Vietnam.

b. Establishment of orchards and its management

There is no significant preparatory work in the establishment of orchards. Very little effort is made in Vietnam for the management of orchards.

c. Marketing

Vegetables are harvested in their immature state as harvest is determined only by the arrival of prospective buyer. Further the country lacks facilities for handling, temporary storage facilities and equipment for packing and temperature control. The vegetable farms are inaccessible to roads and communications, etc. all this has resulted in huge losses. Under these conditions of low quality, rich consumers resort to purchase of imported vegetable.

The study has advised introduced and testing followed by training in nursery techniques and orchard management with assistance from countries with better resources and technique in growing deciduous vegetables in tropical highlights.

It states that the demand for deciduous vegetables already exists and the domestic market should be supplied with new and better produce at reasonable prices.

2.2.2.4 Deciduous Vegetable Production in Bhutan. (Dorji, 2006)

Bhutan is a small extremely mountainous country with a surface area of 46,000 sq. km, located in the eastern Himalayas. More than 90% of the population lives in rural communities. Vegetables in the country were grown in the past for domestic consumption only due to the absence of means of transport. But now, with the construction of roads, surplus vegetables are exported to neighboring parts of India, which has a tropical climate but an insatiable market for temperate vegetables. Vegetable cultivation has been identified as a potential source of cash income for the farmers. As a result, commercial plantations have also been established. Commercial farming grew to its height due to the improved road network and development of Bangladesh as an export market.

a. Production of Planting Material

Bhutan has been producing its own requirement of vegetable plants from its government nursery under the umbrella of the National Seed and Plant Production Program (BASEPP). Initially this nursery used to produce and distribution its own plants but new it has limited its role to selling plants produced by its registered private growers.

b. Establishment of orchards and its management

Commercial deciduous vegetable orchards are established in highlands which are not suitable for paddy cultivation. Orchards have been established located *mostly on mountain slopes in between the cultivated fields and the forest cover. They are also found in the dry lands in the valley bottoms. Orchards on the steep mountain slopes are terraced while the gentle slopes are planted with deciduous vegetables along the contour.

Scientific management of orchards in Bhutan has led to increase in productivity. At present, apple dominants deciduous vegetable production in Bhutan, followed by peach. The advantage associated with the Bhutanese apple, however, is the low usage of pesticides compared to the world's major apple growing countries.

c. Marketing

The production of apple on a commercial scale is a relatively recent development, primarily due to the development of roads and the export market. The export market is the single most important factor that resulted in the recent dramatic increasing in the number of plantation; and it could absorb almost % of the apple produced. Of the total annual

production, about 30% of the produce does not meet the export requirement and hence is sold in the local market.

The Food Corporation of Bhutan (FCB) operates auction yards in three border towns close to the border with India, where the farmers take their horticulture produce including vegetable, and get good prices. The Agro-Food Processing Factory in Thimpu, established with the help of DANIDA, and located within the apple growing areas, constitutes a major local outlet not only for apples but also for other deciduous vegetables. The regular Sunday market is the only form of wholesale market which is also a good retail outlet. At the moment, there are very few retail shops selling vegetables primarily because of lack of good storage and packaging facilities.

2.2.2.5 Present Prospects of Horticulture Produce in China

Policy changes and economic factors have played a remarkable role in triggering China's move into the horticultural market. As demand has risen, a more market-oriented policy has allowed China's farmers to respond and supply massive quantities of vegetables, fruits, and nuts. Small farmers and poor farmers who sell to poor traders have supplied most of the production. Tens of millions of individuals are involved in the sector. The shift into horticulture crops has had many consequences, most of them positive. Incomes have risen, farm output had diversified, the quality of vegetables and fruits have risen, and China's production for its domestic market has expanded into the international arena. In fact, China's horticulture sector has far outperformed the predictions most of the production. Tens of millions of individuals are involved in the sector. The shift into horticulture crops has had many consequences, most of them positive. Incomes have risen, farm output had diversified, the quality of vegetables and fruits have risen, and China's production for its domestic market has expanded into the international arena. In fact, China's horticulture sector has far outperformed the predictions that anyone could have made just ten years ago.

2.2.2.6 Recommendation for Vegetable Development in Nepal

A paper by Gautam J.C. in the year 1995 at a National Seminar on Fruit Development in Nepal has made following recommendations:

- The productivity of the cereals has been stagnated in the sense that output has not been able to keep the pace with increasing populations. Thus these hill areas should be gradually replaced by high value crops like fruits.
- The crops diversification for market led production program according to suitability for fruits should be adopted. These programs should go into the concentrate product areas as directed by 8th Five year plan.
- The horticulture roads should be constructed to facilitate the transport of produces and inputs to production area.
- The perennial crops have long gestation so farmers must be provided with opportunities to earn regular income for transitional period.
- The power supply and other infrastructure developed is a must for fruit developed as cold storage facilities are necessary for storing the fruits in the production areas. The power supply can be used for irrigation in high hills.
- The research system in fruit sector is very poor. Research need to be directed in generating the technologies on reducing the cost of production, improving marketing system and post harvest management. Coordinated programs and divisions should coordinate the research and government farms/station should also be allowed to conduct researches.
- There is a wide controversy on the fruit statistics available. A systematic survey has to be conducted to standardize the government statistics.
- The necessary inputs like quality saplings, fertilizers, pesticides should be made available easily and timely in the production pocket area.
- High interest rate of agriculture credit is one of the limitations to fruit development. The interest rate should be reduced and credit should be provided in a timely manner to the farmers. The long gestation of the fruit has negative impact on the farmers. Thus the farmers should be provided opportunities to earn regularly in the transitional period.

CHAPTER - 3

RESEARCH METHODOLOGY

Introduction

Research Methodology is a systematic way to solve the research problems. It describes the methods and process applied in the overall presentation of the study. This research design is based on scientific method and efforts have been made to present and explain the specific research design for the sake of attaining the research objective. It includes research design, source of data, population and sample data gathering procedure and data processing procedures.

3.1 Research Design

This dissertation is concerned in the vegetables marketing in Kathmandu district. This research design consists of combination of structure and unstructured interview, schedule for primary data and a wide research for secondary sources which help to analyze the relationship between selected variables. The present study is based upon descriptive research design to find out actual condition of vegetables marketing and to provide necessary possible suggestion for it.

3.2 Population and Sample

For the detailed study of the vegetables marketing the vegetables markets in the municipality were taken as sample. All together 250 questions are distributed to opinion survey for consumers of vegetables where as 202 retail and wholesale businessmen have been asked questionnaire.

3.3 Sources of Data

Both types of primary and secondary data have been used for the present study. The primary data and information were collected through field survey; primary data is collected from different sources. Such a different sample respondents of the shopkeeper, producer and consumers were collected from the study area. Different caste sample, respondents and Kalimati fruits and vegetables market data were selected for collecting the primary data and secondary data were collected from AEC, DOA, booklets, unpublished dissertations, published articles and internet. Main focus is given to primary data. Both quantitative and qualitative data have been used.

3.1.1 Primary data

Primary data are collected through survey of Kuleshwor fruit and vegetable market, from the interview with consumers, retailers and farmers of different age, caste and with different social status.

3.1.2 Secondary data

Secondary data are collected from the different sources. The sources include different types of magazine, different bulletin, AEC (reports), Kalimati fruits and vegetables market data, Kuleshwor fruits and vegetable wholesaler market, District Agriculture Office data and various official websites of Agricultural organizations.

3.1.3 Questionnaire

Structured and unstructured questionnaire were prepared for the collection of data. Different sets of questionnaire where specially prepared for retailers and consumers.

3.1.4 Observation

While collecting data and studying the vegetables market, direct observation was done. Direct observation was specially made in the different vegetables market, the behavior of both the consumers and retailers were also noticed.

3.1.5 Interview

At the market place consumers were interviewed. Selection of the consumers was random. Similarly the farmers were interviewed in their filed while some were on the way to the market. On the other hand the cold store and seed shopkeepers were also interviewed.

3.4 Data Collection Techniques

This study, both structured and unstructured questionnaires as well as interview methods were used for quantitative and qualitative data. Structured questionnaires were used to collect the basic information about the production and marketing of vegetables. Both types of data were collected with help of the methods like direct observation method, interview, schedule were used to study.

The stated objectives of this study have been achieved by collecting data and information primarily from the secondary sources. Then data has been collected from published as well as unpublished reports, research studies and other publications. The data which is not available in the reports and publications were gathered by the personal contacts with the respective authorities. In addition, information has also been collected from the primary sources through the use of information interview, observation and questionnaire methods. The following secondary sources have been tapped for the collection of the required data and information.

1. Vegetable Development Division, Khumaltar
2. Kalimati Vegetable and Fruit Market Development Board, Kalimati
3. National Fruit Development Programme, Khumaltar
4. Food and Agriculture Marketing Services Department
5. Statistics Division of Customs Department
6. Other sources including the books, articles, reports, research studies, and publications published by the various authorities

3.5 Data Analysis Tools

After collection of primary and secondary data, coding, entry, tabulation, calculation and analysis were performed to fulfill the objectives of the study. Analysis of data has been done both descriptively and statistically in textual and tabular/graphical form. The quantitative data were categorized, tabulated and analyzed using appropriate statistical tools like null hypothesis tests, Chi square test, least square method, weighted average mean.

The data has been collected from different castes and society, using various instruments and data has been analyzed. Each part of the information classified, analyzed and described mathematically and statistically classifying with tabulating them in different categories into sub headings. The data have been analyzed using a various statistical and mathematical tools and techniques such as percentage, graph, bar diagram, pie chart, and maps etc. different charts have been used to classify the quantitative as well as qualitative data.

3.6 Limitations of the Methodology

The methodology has following limitations:

a. The research design may not comprise of all the facets of its area.
b. The sample size is too small. It is selected by researcher's judgment; there is a risk of not representing the whole characteristic of its population.
c. Questionnaire and interview procedure may not be sufficient for the relevant data collection.
d. Data analysis tools may not be enough to describe the data because of limited scope.
e. The research has been completed during a limited time period of six months with very limited resources.
f. The amount of investment required for such a challenging subject has not been adequate from the researchers' side.

CHAPTER - 4

DATA PRESENTATION AND ANALYSIS

This chapter focuses on the presentation and analysis of data obtained from research interviews. A description of the respondent who took part in the study will be given. The researcher will present the data from the different interview schedules. Data analysis will also be

discussed. According to De VOs (1998:334) "Data analysis in qualitative research is a challenging and highly creative process. It starts with data collection. The researcher is intimately involved with the respondents and the data that are generated."

4.1 Data Presentation and Analysis

Main sources of secondary data are District Agriculture Office, Kathmandu (DAOK), Agro Enterprise Center (AEC), Kalimati/Kuleshwor fruits and vegetables wholesaler markets, Market Information Service (MIS), Nepal etc.

Kalimati Fruits and Vegetable Market is the pioneer organized terminal wholesale market where retailer, institutional consumers and other bulk consumer procure their supplies of commodities. For giving an organized shape of the marketing of agriculture produce specially fruits and vegetable products in Kathmandu valley. Food and Agriculture marketing department under the Ministry of Agriculture in 1987 set up Kalimati Fruits and Vegetable market.

Bara, Bhaktapur, Chitwan, Dhadin, Gorkha, Jhapa, Kavre, Lalitpur, Makawanpur, Morang, Nuwakot, Parsha, Rautahat, Sarlahi, Sunasari, Tanahu are the major vegetable, fruits and spices suppling source in Kalimati Market. Beside that some vegetable and fruits are being supplied from India and Tibbat but compared to the other sources the share of India and Tibet are seen very nominal.

As per the record of Kalimati Market, the annual turnover of vegetable, fruits and spices in the year 2054 through Kalimati market is 203511.562 MT.

Figure-4.1

Marketing of some major Vegetables:

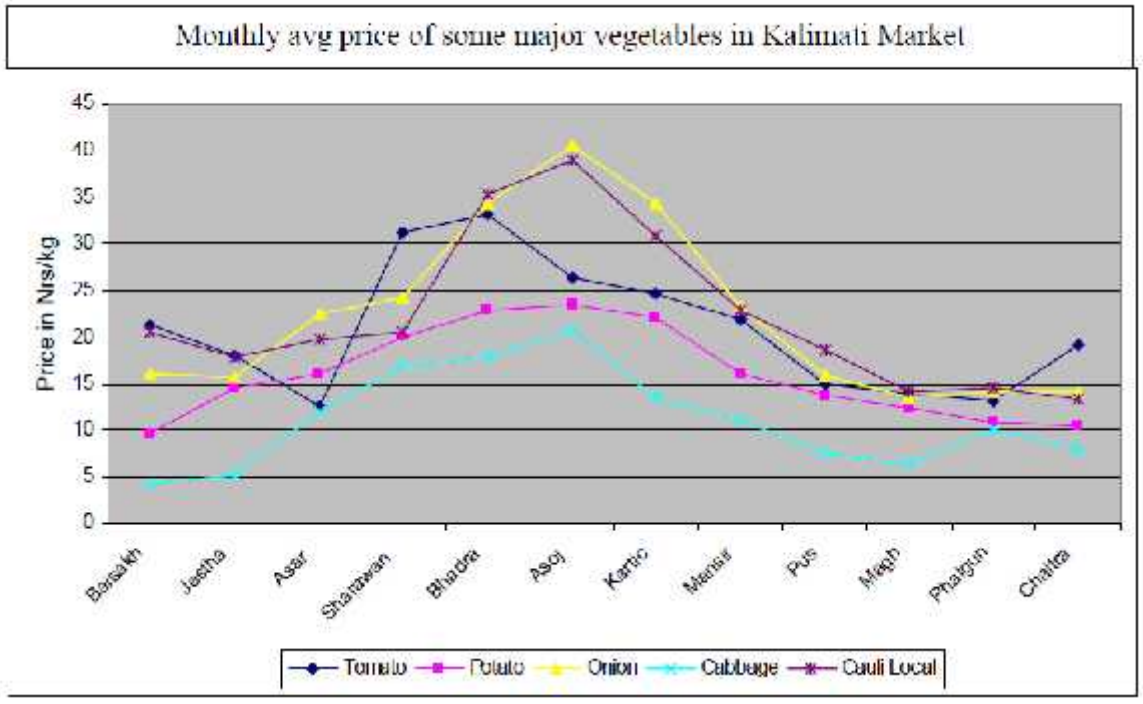
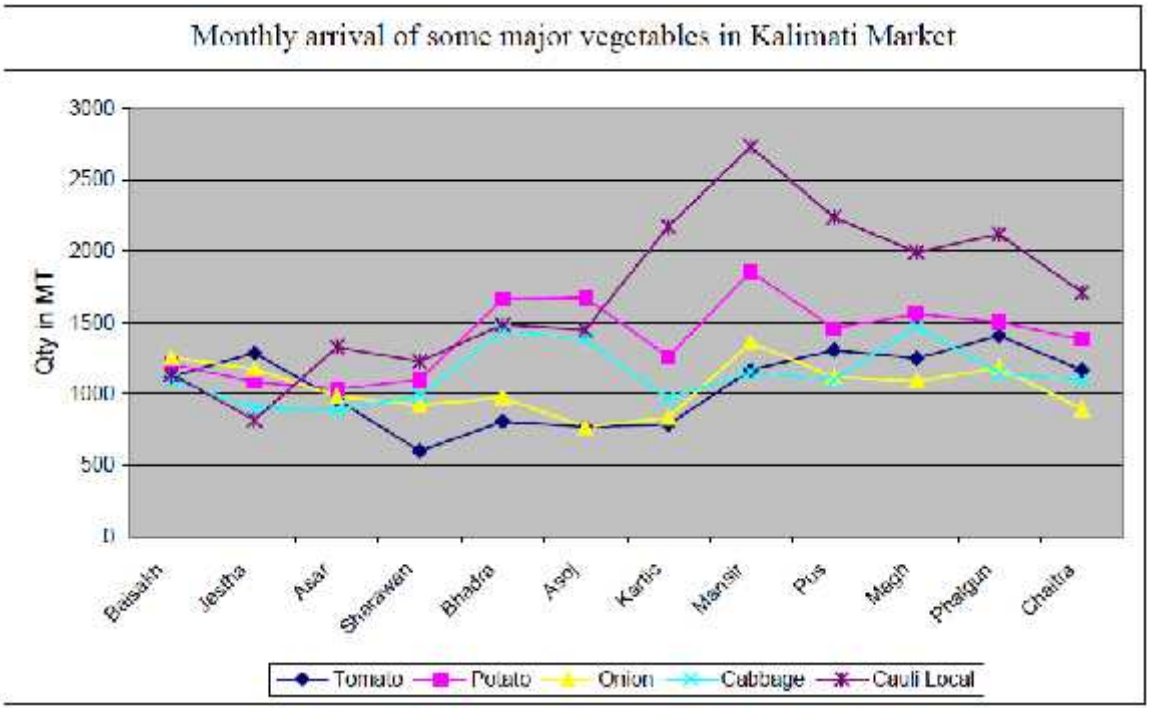


Figure-4.2



The total vegetable transacted inside Kalimati Market in the year 2064 is recorded as 162774.743 MT. Potato red stood first in the trading of vegetables in terms of volume of transaction. Potatoes are being supplied in Kalimati Market from Parsha, Nuwakot, Kavre, Jhapa, Makawanpur, Nuwakot, Sarlahi etc. The price variation within the year is ranged from Rs. 9 to 28 per kg. The highest price was recorded during Asar to Aswin. The lowest price was recorded in Chaitra. The price in rest of the months has been found in avg. i.e. in the range of 11 to 17 per kg. Some portion of demand of potatoes are being met by the potato comes from India as well. This year, 1352 MT of Potatoes (red) are being imported to Kalimati Market from India.

Tomatoes are available in Kalimati Market throughout the year. The total tomato inflows to Kalimati Market are 25271 MT. In this year, the average price of the table tomato is recorded as Rs 22.69 per kg and the average price of local tomato is recorded as Rs. 19 per kg. The demand of tomato are met from Kavre, Dhading, Chitwan Bhaktapur, Makawanpur, Rautahat, Sarlahi etc and partially importing from India as well. Market price of Tomato was lower during Pus-Chaitra and was higher during Shawan-Bhadra.

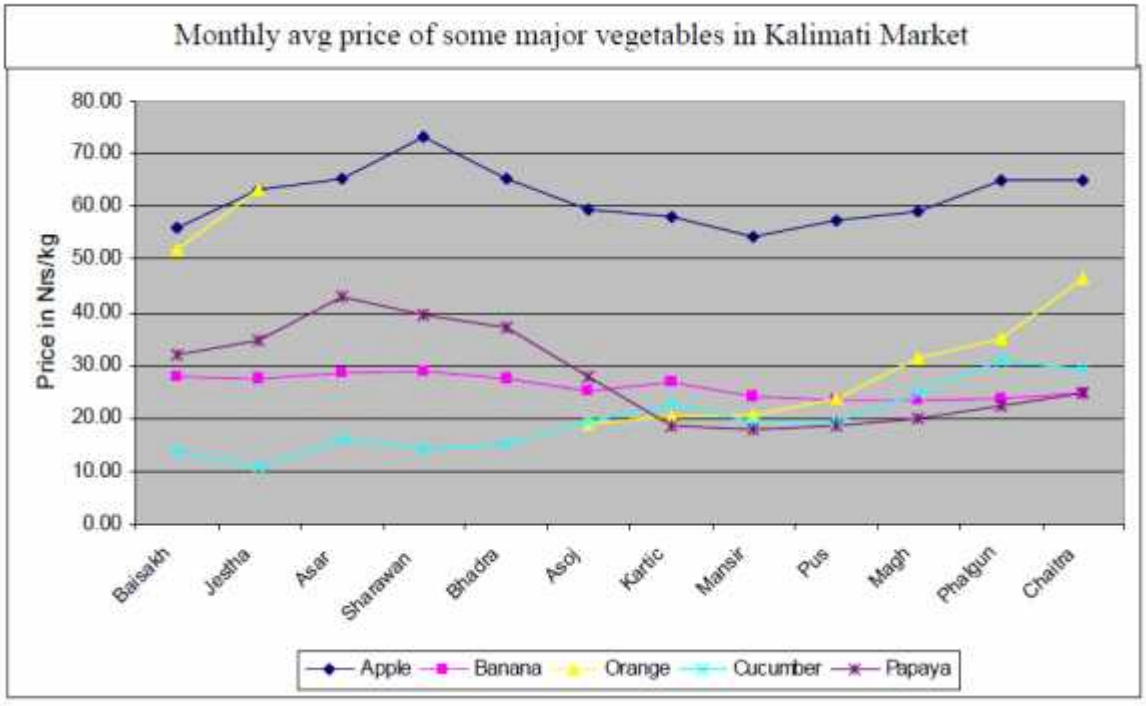
Dhading, Chitwan, Kavre, Parsha are the major suppliers of onion but the domestic production of onion are not enough to meet the demand. Hence the onion importing from India fulfills the major portion of market demand. Small amount of onion are imported from China as well. In this year, the variation of price is ranged between Rs 12-52 per kg. The transacted volume of onion is 12559 MT in this year.

Cauli Flower is another vegetable remarkable traded in Kalimati Market. Cauli Flower is available in the market throughout the year. The demand of Cauli in the Kalimati Market in this year is 28221.7 MT. The demand of Cauli Flower is being met by the sources like Dhading, Makawanpur, Kavre, Bhaktapur, Chitwan etc. This year the price remains Rs 17.46 per kg in the Kalimati Market.

Cabbage is available in the market throughout the year. Chitwan, Dhading, Makawanpur are the major source of Cabbage supply to Kalimati Market. The demand of Cabbage during this year is 13632.4 MT.

Figure-4.3

Marketing of Some major fruits:



Different types of fruits are traded in Kalimati Market. Apple, Orange, Papaya, Cucumber, Banana are the major fruits traded in the year 2064 in terms of volume and value transaction. The Total volume of transaction of fruits in the year in that particular period is 22,444.18 MT.

Apple was available throughout the year. The major source supply source of Apple was India. The price variation within the year is ranged from Rs.45 to 95 per kg. The volume of Apple traded is 10,9 09 MT.

Orange was available for 10 months only (Bhadra– Jestha) in Kalimati Market that supplied from Dhading, Gorkha, Kavre, Tanahu and partly imported from India as well. The total volume of sales is reported to be 6,270.66 MT. The price of Orange is recorded in the particular year is Rs. 34.56 per kg.

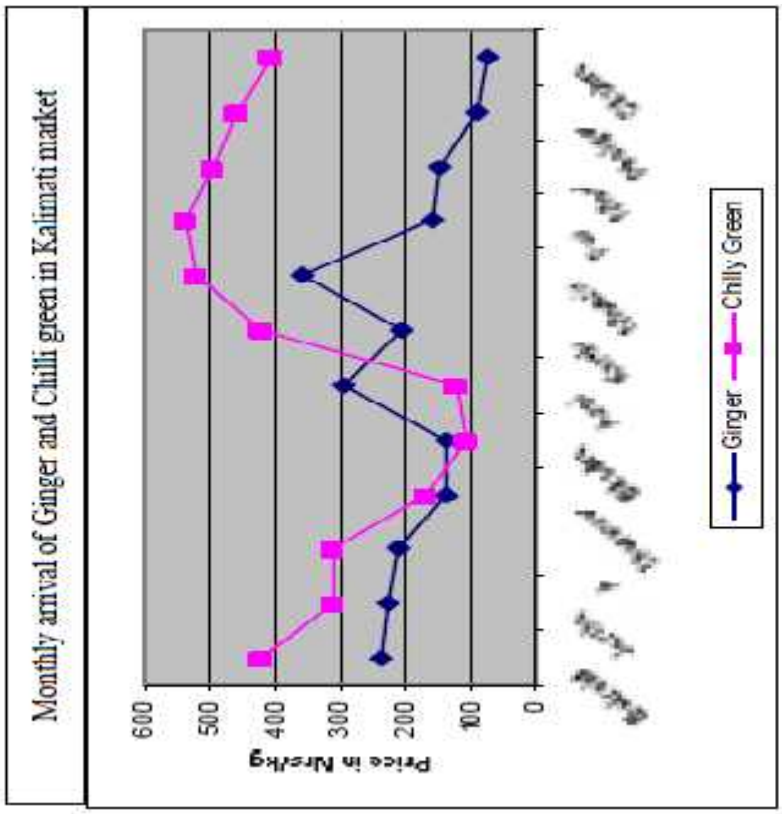
Papaya is available in the market throughout the year. The major supply source of Papaya is Chitwan and Nawalparasi but the bulk quantity was imported from India at that particular period. The price of papaya in that particular year is in the range of Rs. 10-60 per kg. The highest price is seen in Asar. At that time the quantity supplied was comparatively very lower.

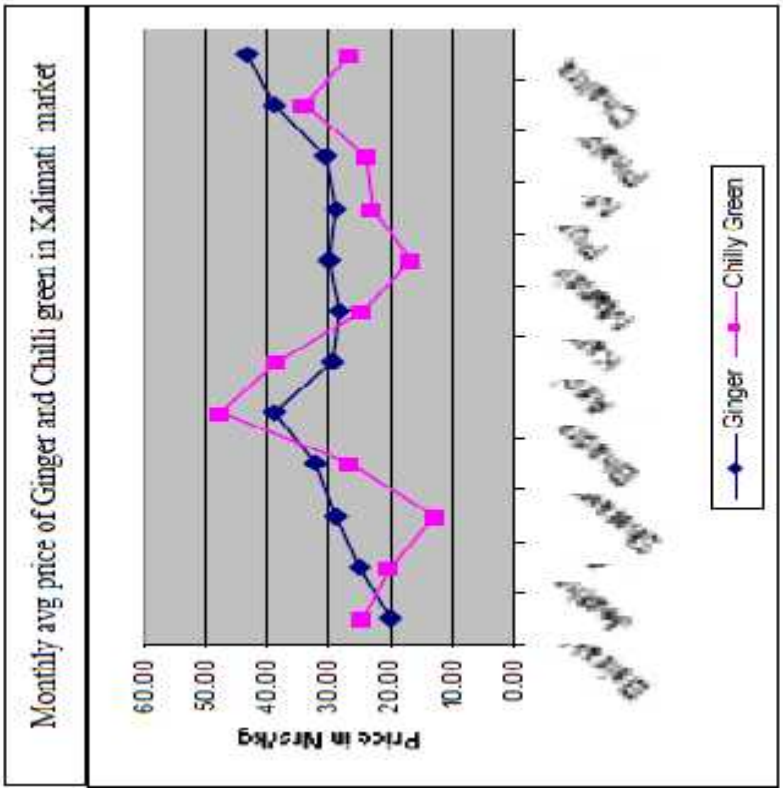
Cucumber is the most traded fruit in the year 2064. The major supply source of Cucumber is Chitwan, Dhading, Kavre, Lalitpur, Nuwakot, The demand of cucumber is fulfilled by the locally produce once as well. Cucumber is available throughout the year. The price of Cucumber is higher in the month of Mansir that is Rs 31.2 per kg. And lower in the month of Jestha that is Rs 10.68 per kg. The total sale of Cucumber in that year is 8,641.4 MT.

Bananas are available all around the year. The price variation is recorded in that particular year is Rs. 20-65 per doz. Price is relatively higher during Asar –Bhadra and lower during Pus-Phalgun. The total traded volume of Bananas in this year is 623 MT.

Marketing of Ginger and Chilly Green:

Figure-4.4





The total volume of Gin he price of ginger in that particular year is in the range of Rs.14-50 per kg. The highest price is seen in

Bhadra and in the month of Chaitra. The price of Ginger in Bhadra was Rs. 32-35 per kg and in the month of Chaitra, the price was Rs. 32-50 per kg. The major supply source of Ginger is Dhading, Kavre, Makawanpur, Nuwakot.

Chilly green is the spice traded almost year round in Kalimati Market. The total Chilly green transaction this year is 4,281.8 MT. Chitwan, Dhading, Jhapa, Kavre and Prasha are the major supply source of Chilly green but bulk quantity of Chilly green is imported from India as well. The price is ranged of Rs 8 -100 per kg. The highest price is recorded in Bhadra. In that month the price has raised up to 100 per kg. And lowest price is recorded in Asar. In that month the price has fallen up to Rs 8 per kg. There is a scope of increasing tomato production in Nepal during Shrawan to Aswin that helps substitute the import from India in that particular time.

Primary Data

Before entering to the survey field i.e. in Kathmandu district two types of questionnaire were prepared for primary data collection from the respondents. During the period of distribution of the questionnaire were randomly distributed in age, sex and education as well as social status and religious aspects, and were the representative sample of different kinds of population of the area. Some of the questionnaire were distributed and collected by personal contact and some were visited in Kalimati and Kuleshwor wholesale markets. The only 202 responded. Similarly, in case of sellers out of the 100 questionnaires 94 replies were found.

1.1.1 Consumer's Respondent

Among the distributed 300 questionnaire only 202 were returned back from the consumers, so the respondents were 96%. Their responses are presented in the table below:

Table-4.1

Frequency of vegetables purchased by the consumers

Particulars	Respondents	Percentages
Once in a week	85	42
Daily	79	39

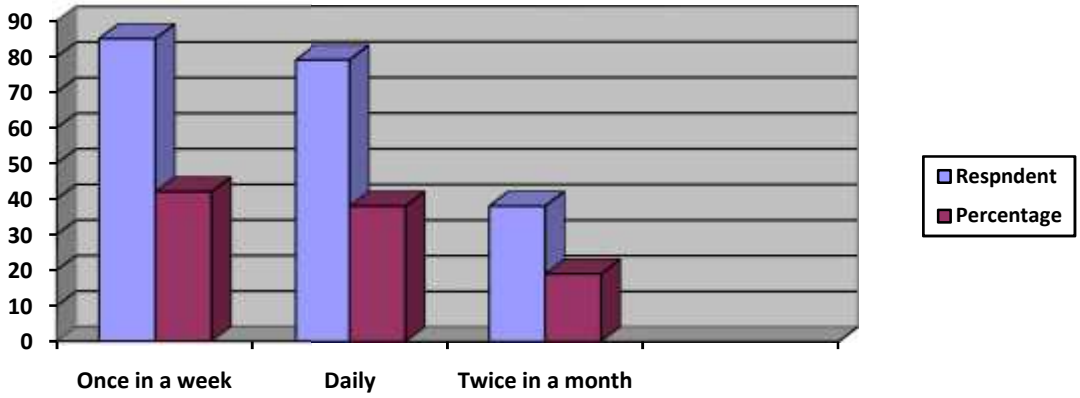
Twice in a month	38	19
Total	202	100

(Source: Field Survey)

Hence, it is clear that 85 respondents or 42% said they buy vegetables once a week whereas 79 respondents or 39% said they buy vegetables daily and 38 respondents or 19% said that buy vegetables only twice in a month. The highest percentages of people (consumers) buy vegetables once in a week in Kathmandu district.

Figure-4.5

Frequency of vegetables purchased by the consumers



by analyzing figure 4.5, it is found that most of the consumers buy vegetables on a weekly basis.

Table-4.2

Quality of vegetables purchased by consumers

Particulars	**Respondents**	**Percentages**
One kg	91	45

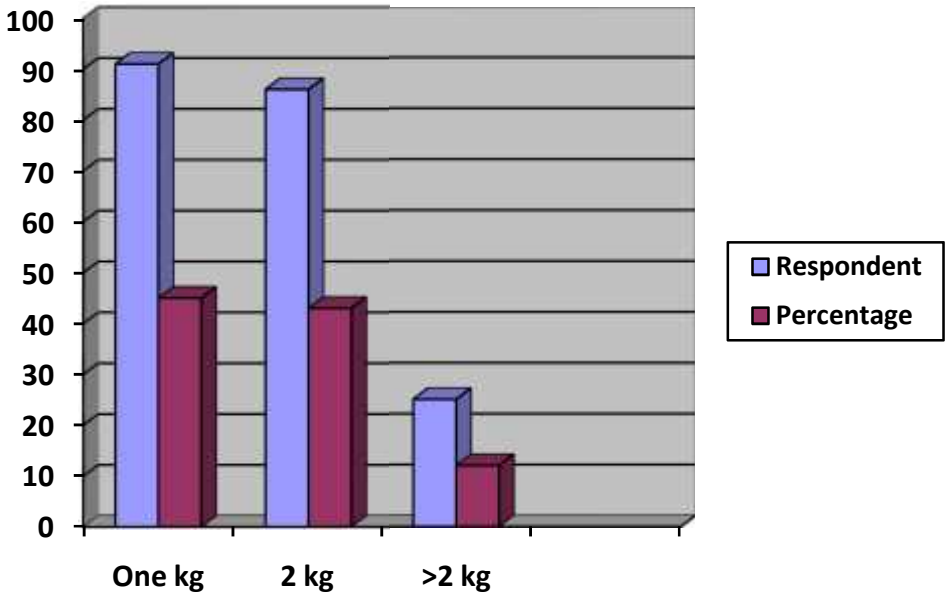
2 kg	86	43
>2 kg	25	12
Total	202	100

(Source: Field Survey)

According to the above table, it can be noticed that 91 respondents i.e. 45% buy 2 kg vegetables and 86 respondents, i.e. 43% buy 1 kg at last more than 2 kg buy by 25 respondents i.e. 12%.

Figure-4.6

Quality of vegetables purchased by consumers



If we study above figure, we can see that a majority of consumers buy 2 kg of vegetables at a time.

Table-4.3

Place of vegetables purchased by consumers

Particulars	**Respondents**	**Percentages**

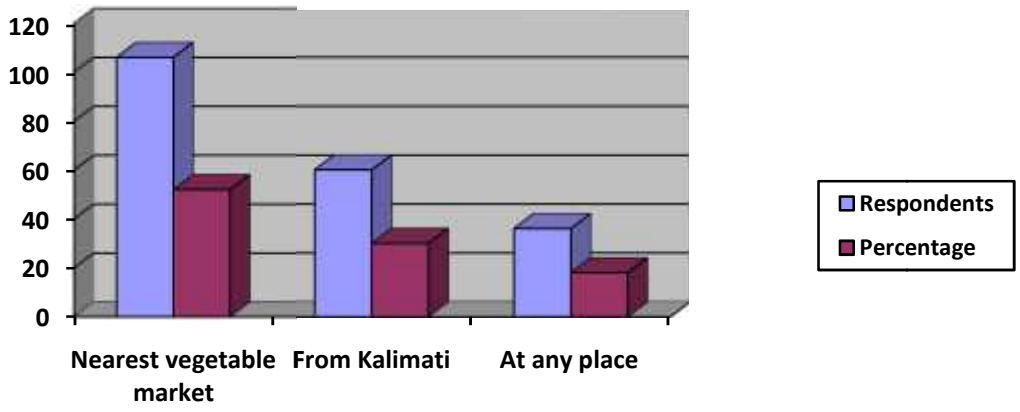
Nearest vegetable market	106	52
From Kalimati	60	30
At any place	36	18
Total	202	100

(Source: Field Survey)

According to the above table, it can be noticed that 106 respondents i.e. 52% buy vegetables from the nearest vegetable market and 60 respondents, i.e. 30% buy from Kalimati, and 36 respondent, i.e. 18% buy at any place. Thus, it can be concluded that 102 respondents buy from the nearest vegetable market.

Figure-4.7

Place of vegetables purchased by consumers



If we study above table we can see that a majority of consumers purchase from the nearest vegetable shop.

Table-4.4

Time of vegetables purchased by consumers

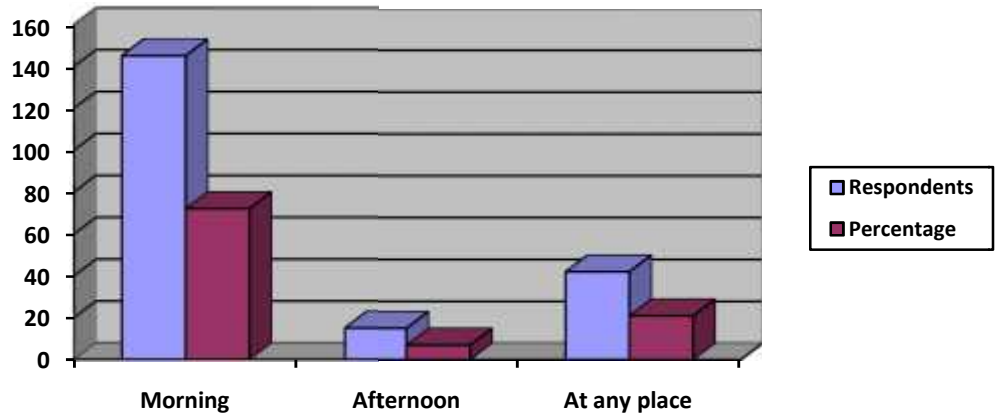
Particulars	Respondents	Percentages
Morning	145	72
Afternoon	15	7
Evening	42	21
Total	202	100

(Source: Field Survey)

According to the above table, it can be noticed that 145 respondents i.e. 72% buy vegetables in the morning and 42 respondents, i.e. 21% buy in the evening, and 15 respondent, i.e. 7% respondents buy in the afternoon.

Figure-4.8

Time of vegetables purchased by consumers



If we study above figure, we can see that a majority of consumers purchase vegetables early in the morning.

Table-4.5

Percentage of income spent on vegetables purchased by consumers

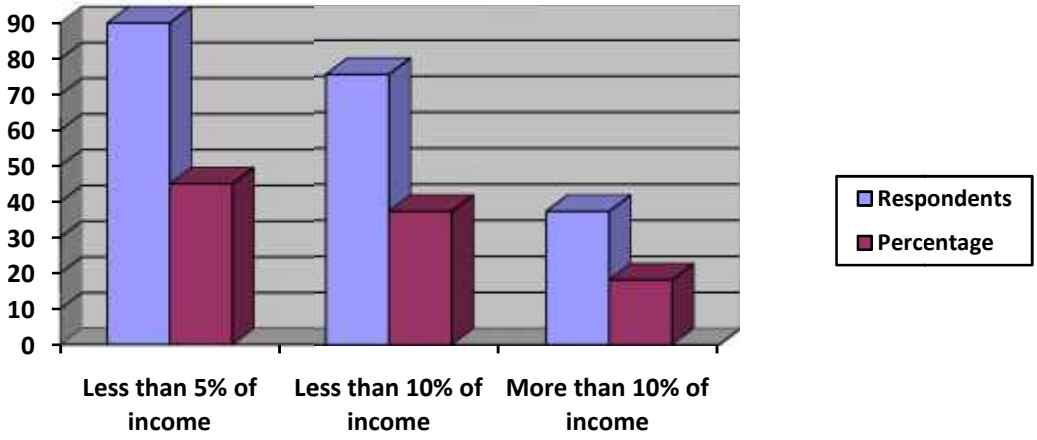
Particulars	Respondents	Percentages
Less than 5% if income	90	45
Less than 10% of income	75	37
More than 10% if income	37	18
Total	202	100

(Source: Field Survey)

According to the above table, it can be noticed that most of the consumers spend less than 5% of their income in vegetables purchasing whereas 90 respondents i.e. 45% said that they spend less than 5% in vegetables buying. Similarly, 75 or 37% respondents spend less than 10% of income and at last more than 10% by 37 or 18% of the respondents. Thus, it can be concluded that 45% respondent spend less than 5% of their income in vegetables buying. The data can be presented in the following graph.

Figure-4.9

Percentage of income spent on vegetables purchased by consumers



If we study above figure, we can see that a majority of consumers who spend less than 5% of income in purchasing vegetables.

Table-4.6

Basic reason to consume vegetables

Particulars	Respondents	Percentages
To become healthy	85	43
To meet hunger	82	40
To show others as rich	35	17
Total	202	100

(Source: Field Survey)

By analyzing of the table above, 85 respondents or 43% said that reason for consuming vegetables is to become healthy, secondly 82 respondents i.e. 40% said to meet hunger and least 25% respondents i.e. 17% to show others as rich. It can be notified that 43% or 85 respondents feel that to consume vegetables is to become healthy. The above data is presented in the following pie chart that clearly differentiates the percentage of reasons of consuming vegetables.

Figure-4.10

Basic reason to consume vegetables

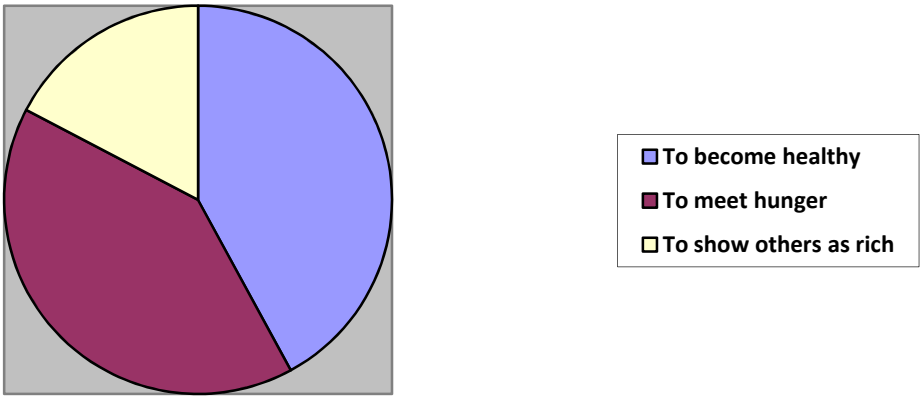


Table-4.7

Main problem of not getting the desired type of vegetables

Particulars	Respondents	Percentages
Price factor	95	47
Quality factor	81	40
Time factor	26	13
Total	202	100

(Source: Field Survey)

From the table above, the respondents i.e. 47% said that their main problem of not getting the desired types of vegetables is by price factor. Similarly, 81 respondents of 40% said quality and at last 16 respondents or 13% by the time factor. Thus, it can be concluded that more respondents feel price is the limiting factor. The above table can be shown in the following graph.

Figure-4.11

Main problem of not getting the desired type of vegetables

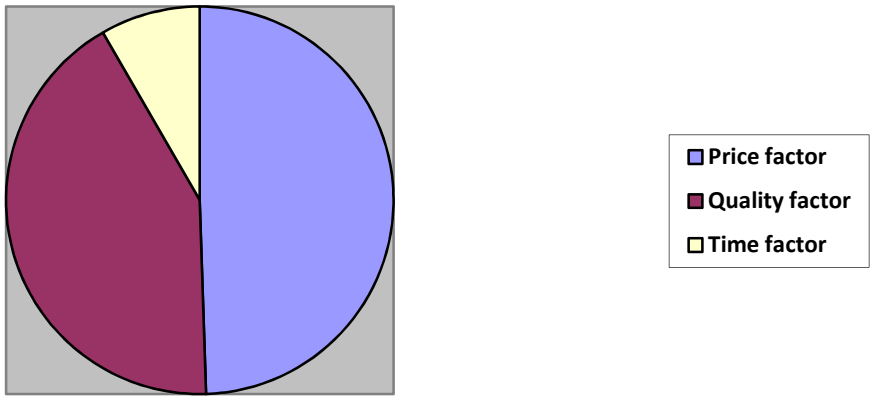


Table-4.8

Distance of nearest vegetable shop

Particulars	Respondents	Percentages
5 minutes walk	75	37
15 minutes walk	90	45
More than 15 minutes walk	37	18
Total	202	100

(Source: Field Survey)

According to the table above, among the vegetables consumers 75 or 37% of the respondents said the distance of nearest vegetable market is 5 minutes away from their residence. 90 respondents or 45% said the distance of nearest vegetable market is 15 minutes away from their residence. Similarly, 37 or 18% of the respondents said that distance of their nearest vegetable market is more than 15 minutes walk from their residence. Thus, it can be said that the respondents do not prefer shopping vegetables in a location which is far from their residence. The above table can be shown in the following graph.

Figure-4.12

Distance of nearest vegetable shop

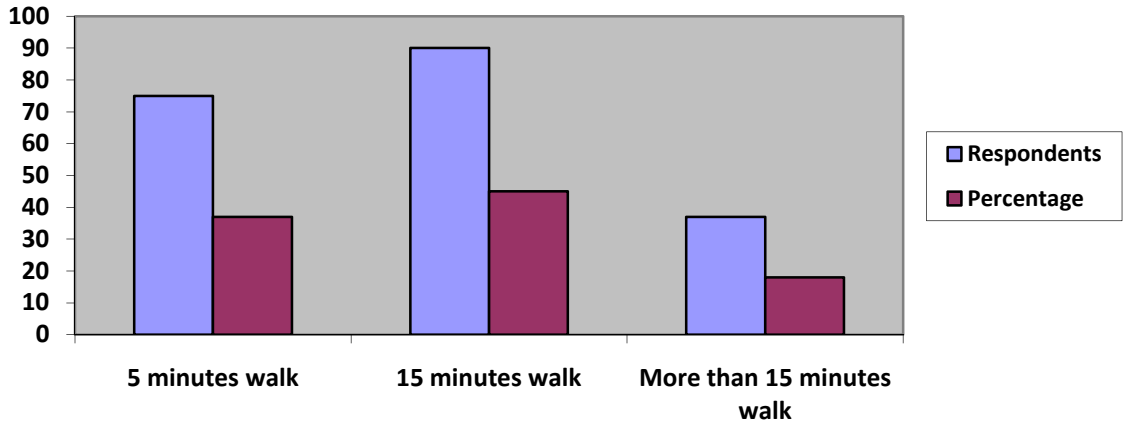


Table-4.9

Preference of vegetables among the consumers

Particulars	Respondents	Percentages
Potato	115	57
Onion	30	15
Tomato	20	10
Leafy vegetable	37	18
Total	202	100

(Source: Field Survey)

According to the above table, among the vegetables consumers 115 or 57% of the respondents prefer potato. 37 respondents or 18% prefer leafy vegetables. 30 respondents or 15% prefer onion. Similarly, 20 or 10% prefer tomato. Thus, it can be said that the potato is the most prefer vegetables. The above table can be shown in the following graph.

Figure-4.13

Preference of vegetables among the consumers

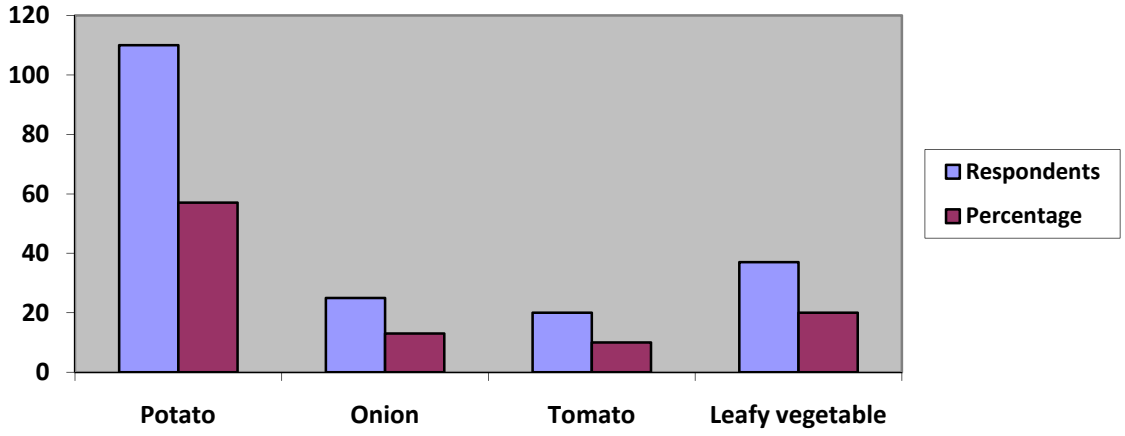


Table-4.10

Vegetable buying member in the family

Particulars	Respondents	Percentages
Father	117	58
Mother	62	31
Others	23	11
Total	202	100

(Source: Field Survey)

According to the above table, among the vegetables consumers 117 or 58% of the respondents said the father purchases vegetables in their family, 62 or 31% said the mother purchases vegetables in their family and 23 or 11% said the other purchases vegetables in their family. Thus, it can be said that father plays a very important role in shopping for vegetables in the family.

Figure-4.14

Vegetable buying member in the family

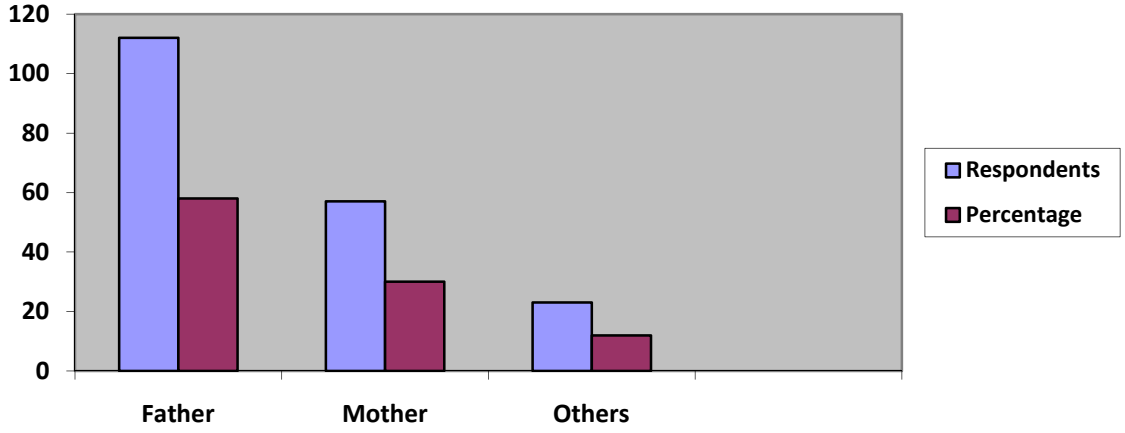


Table-4.11

Reasons for consumers buying vegetables from hawkers

Particulars	Respondents	Percentages
When there is no time to go to the market	82	41
Market is far away	40	20
Cheaper than in the market	80	39
Total	202	100

(Source: Field Survey)

According to the above table, among the vegetables consumers 82 or 41% of the respondents said they purchase vegetables from the hawkers when they don't have time to go to the market. 40 or 20% of the respondents said they purchase vegetables from the hawkers because the market is far away. Similarly, 80 or 39% of the respondents said they purchase vegetables from the hawkers as they sell vegetables at cheaper price than the market. Thus, it can be said that the hawkers also sell a considerable amount of vegetables in the market. The above table can be shown in the following graph.

Figure-4.15

Reasons for consumers buying vegetables from hawkers

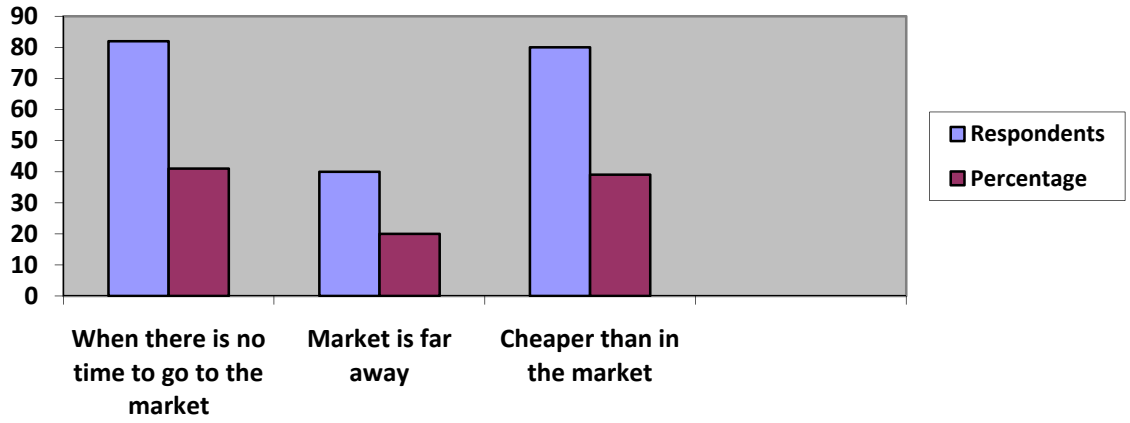


Table-4.12

Vegetables buying behavior of consumers

Particulars	Respondents	Percentages

Buy from same shop	18	9
Choose cheapest shop	59	29
Shop around and return to the same shop	125	62
Total	202	100

(Source: Field Survey)

According to the above table, among the vegetables consumers 18 or 9% of the respondents said they purchase vegetables from the same shop, 59 or 29% of the respondents said they look around and choose the cheapest shop to purchase vegetables and 125 or 62% of the respondents said they look around and return to the same shop to purchase vegetables. This shows that consumers shop around many shops before purchasing the vegetables.

Table-4.13

Type of vegetable preferred according to season by consumers

Particulars	**Respondents**	**Percentages**
Seasonal	162	80
Non-seasonal	40	20
Total	202	100

(Source: Field Survey)

According to the above table, among the vegetables consumers 162 or 80% of the respondents said they prefer seasonal vegetables and 40 or 20% of the respondents said they prefer non-seasonal vegetables. This shows that consumers are guided by the availability of vegetables in the market while purchasing.

Table-4.14

Bargaining between sellers and consumers

Particulars	**Respondents**	**Percentages**

Yes	185	91
No	17	9
Total	202	100

(Source: Field Survey)

According to the above table, among the vegetables consumers 185 or 91% of the respondents said they bargain while buying vegetables, 17 or 9% of the respondents said they don't bargain while buying vegetables. This shows that consumers are very sensitive when it comes to price and most of them make it a point to bargain in order to reduce the price while buying vegetables.

Table-4.15

Satisfaction of consumers in terms of quality of vegetables

Particulars	**Respondents**	**Percentages**
Yes	15	8
No	187	92
Total	202	100

(Source: Field Survey)

According to the above table, among the vegetables consumers 15 or 8% of the respondents said they are satisfied with the quality of vegetables available in the market while a majority, i.e. 187 or 92% of the respondents said they are not satisfied with the quality. This shows that consumers are not all satisfied with the quality of vegetables that are available in the market.

Table-4.16

Reasons for dissatisfaction of consumers in terms of quality of vegetables

Particulars	**Respondents**	**Percentages**

Inconsistent size and taste	60	29
Does not look good	50	25
Both	92	46
Total	202	100

(Source: Field Survey)

According to the above table, among the vegetables consumers 60 or 29% of the respondents were not satisfied with the quality of vegetables due to inconsistent size and taste of vegetables, 50 or 25% of the respondents said they are not satisfied with the quality due to the look of the vegetables and 92 or 46% of the respondents said they are not satisfied with the quality due to the look of the vegetables size, taste and look of the vegetables. This shows that size, taste and appearance must be appealing to the consumers.

Table-4.17

Value for money from vegetables purchased by consumers

Particulars	**Respondents**	**Percentages**
Yes	15	7
No	187	93
Total	202	100

(Source: Field Survey)

According to the above table, out of total 202 respondents, only 15 or 7% of the respondents said they do get value for money spent on vegetables, 187 or 93% of the respondents said they do not get value for money spent on vegetables. This shows that consumers are not satisfied with the amount of money and quality of vegetables available in the market.

Table-4.18

Important factor for consumers in a vegetable market

Particulars	**Respondents**	**Percentages**
Parking facility	41	20

Cleanliness	36	18
Market has to be near to home	125	62
Total	202	100

(Source: Field Survey)

According to the above table, out of total 202 respondents, 41 or 20% of the respondents said they think parking facility is the most important factor in vegetable market, 36 or 18% of the respondents said they think cleanliness is the most important factor in the vegetable market and 125 or 62% of the respondents said they think distance from home is the most important factor in the vegetable market. This shows that consumers prefer vegetable markets to be near to their home.

1.1.2 Retailers Responses

Among the 100 questionnaire distributed, only 94 answers were obtained, so the respondent percentage is 94%.

Table-4.19

Time of vegetables selling in the market by the vegetables retailers

Particulars	**Respondents**	**Percentages**
Day	8	8
Morning	58	62
Evening	28	30
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, 58 or 62% of the respondents sells vegetables in the morning, 28 or 30% of the respondents sells vegetables in the evening and 8 or 8% of the respondents sells vegetables in the day. The above table can be shown in the following graph

Figure-4.16

Time of vegetables selling in the market by the vegetables retailers

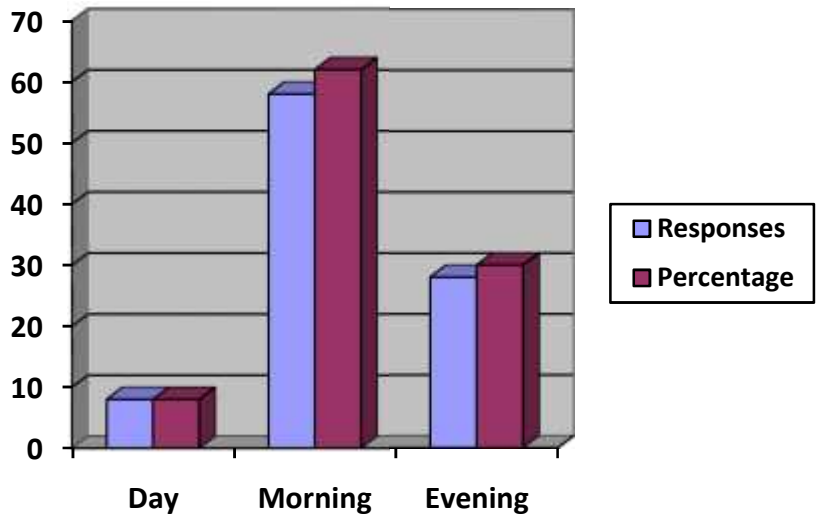


Table-4.20

Quantity of vegetables sold at a time by the retailers

Particulars	Respondents	Percentages
Less than 5 kg	71	76
15 kg	19	20
More than 15 kg	4	4
Total	94	100

(Source: Field Survey)

According to the above table, 71 or 76% of the respondents said they sell less than 5 kg of vegetables at a time, 19 or 20% of the respondents said they sell 15 kg of it at a time and 4 or 4% of the respondents said that they sell more than 15 kg of it at a time. The above table can be shown in the following graph

Figure-4.17

Quantity of vegetables sold at a time by the retailers

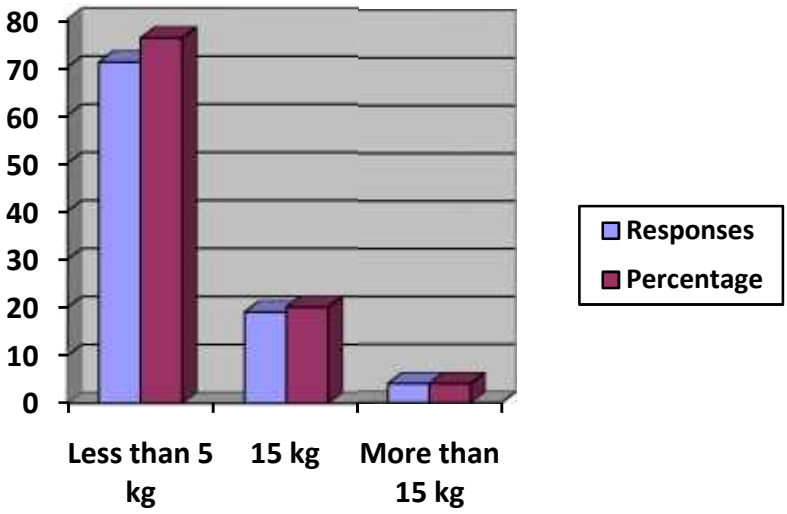


Table-4.21

Source of vegetables for retailers

Particulars	Respondents	Percentages
Kuleshwor wholesale vegetable market	53	56
From farmer	18	20
From own farm	23	24
Total	94	100

(Source: Field Survey)

According to the above table, 53 or 56% of the respondents said they buy vegetables from Kuleshwor wholesale vegetable market, 23 or 24% of the respondents said the source of them is their own farm and 18 or 20% said they get them from farmer. The above table can be shown in the following graph

Figure-4.18

Source of vegetables for retailers

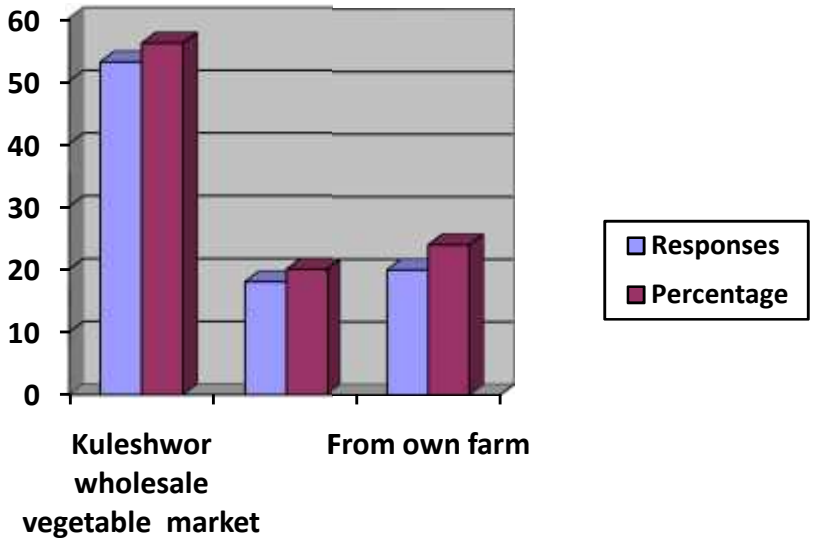


Table-4.22

Competition among the retailers by different factors

Particulars	**Respondents**	**Percentages**
Price factor	66	70
Quality factor	26	28
Both	2	2
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, 66 or 70% of the respondents said Price factor is the main factor in competition among the retailers, 26 or 28% of the respondents said quality factor is the main and 2 or 2% of the respondents said both factors are equally important factors in competition among the retailers. The above table can be expressed in the following graph

Figure-4.19

Competition among the retailers by different factors

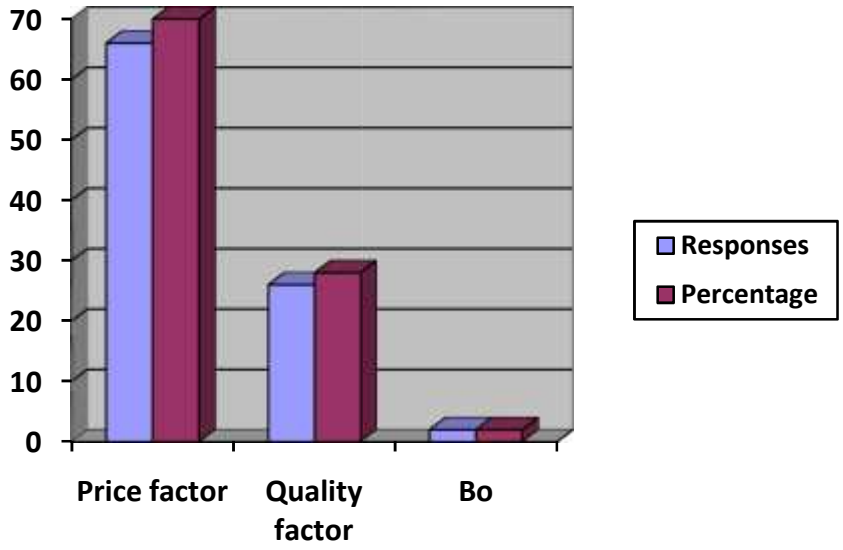


Table-4.23

Loss due to transportation of vegetables

Particulars	**Respondents**	**Percentages**
Negligible	41	44
Up to 10%	32	34
More than 10%	21	22
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, only 41 or 44% of the respondents said the loss due to transportation of vegetable is negligible, 32 or 34% of the them said it is up to 10% and 21 or 22% of them said it is more than 10%. This shows that the loss due to transportation of vegetable is negligible.

Table-4.24

Size of family of Retailers

Particulars	Respondents	Percentages
2-4	20	21
4-6	43	46
6 and above	31	33
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, 43 or 46% of the respondents said the size of family is from 4-6, 31 or 33% of the respondents said their size of the family is 6 or above and 20 or 21% of them said they have the size of family is from 2-4. This shows that there is the majority of size from 4-6 in a retailer's family.

Table-4.25

Secondary income of the retailers

Particulars	Respondents	Percentages
Yes	76	80
No	18	20
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, 76 or 80% of the respondents said they have other ancillary profession and 18 or 20% of the respondents said they do not have other profession. This shows that most of the retailers also have a secondary source of income besides selling vegetables. The above table can be shown in the following figure.

Figure-4.20

Secondary income of the retailers

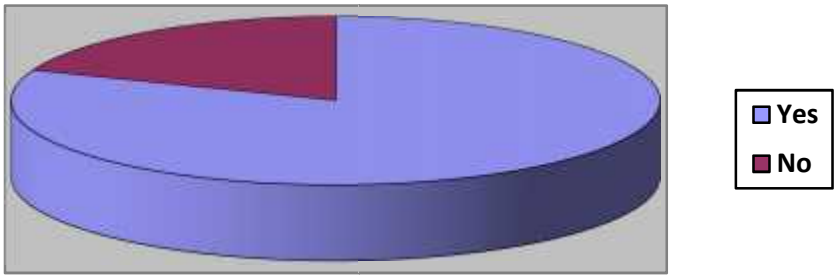


Table-4.26

Basic problems of retailers

Particulars	Respondents	Percentages
Lack of regular supply of vegetables	11	12
Vegetables destruction	52	55
Problem of cold store	31	33
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, 11 or 12% of the respondents said the basic problem was lack of regular supply of vegetables, 52 or 55% of the respondents said that their basic problem was vegetables during destruction during transportation and storage. 31 or 33% of the respondents said that their basic problem was problem of cold storage. The above table can be shown in the following graph.

Figure-4.21

Basic problems of retailers

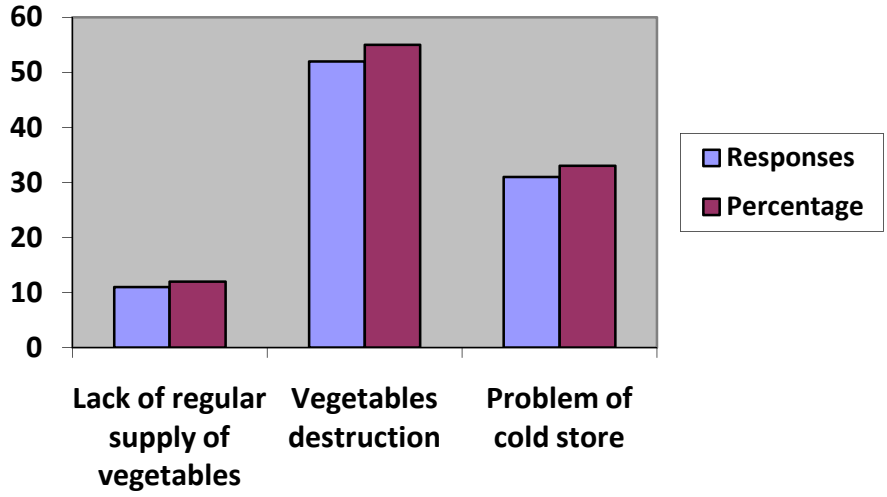


Table-4.27

Prospects of vegetables market in future

Particulars	Respondents	Percentages
Less investment more profit	66	70
More investment less profit	12	13
Less investment less profit	16	17
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, 66 or 70% of sellers said that in vegetables business it has less investment and more profit similarly 12 or 13% of them said more investment less profit and at last 16 or 17% of them said that if has less investment and less profit. Thus, it can be concluded that business of vegetables is bright. The above table 4.27 can be shown in the following graph.

Figure-4.22

Prospects of vegetables market in future

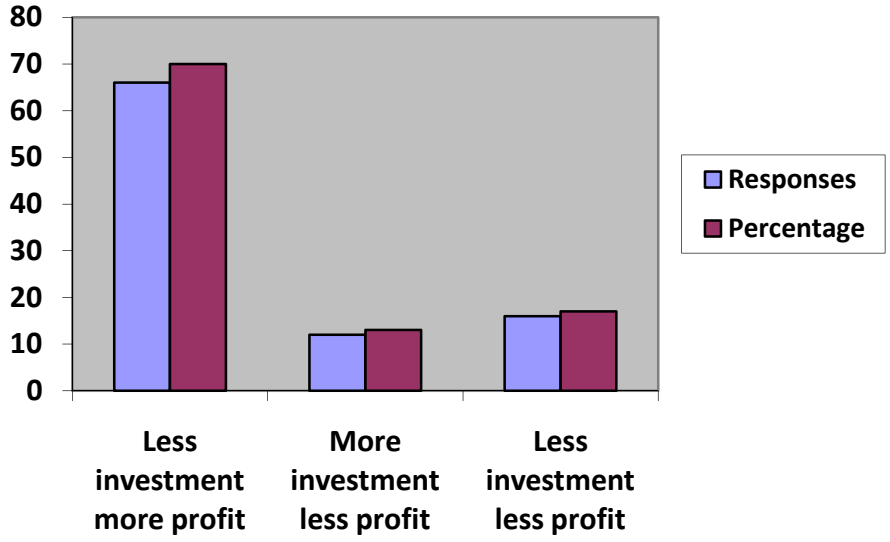


Table-4.28

Selling pattern of vegetables

Particulars	Respondents	Percentages
Consumers	57	60
Bulk buyers	31	33
Hawkers	16	17
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, 57 or 60% of the respondents said they sell more to consumers, 31 or 33% of them said that they sell more to bulk buyers and 16 or 17% of them said that they sell more to hawkers. The above data shows that consumers, bulk buyers and hawkers play equally important roles for sellers.

Table-4.29

Data showing what vegetable sellers did before doing the profession

Particulars	Respondents	Percentages
Jobless	9	10
Working for another field	24	25
Was working in related field	61	65
Total	94	100

(Source: Field Survey)

According to the above table, out of total 94 respondents, 9 or 10% of the respondents said they did not have any job before involved with the vegetable selling business, 24 or 25% of them said that they worked for another field and 61 or 65% of them said that they worked in related field. Thus, it is clearly shown that most of the vegetable sellers worked in related field before they work as vegetable seller.

Table-4.30

Data showing how the vegetables entered into the business

Particulars	Respondents	Percentages
Family members in the same business	61	65
Were producers of vegetables	27	29
Due to others doing the same business	6	6
Total	94	100

(Source: Field Survey)

By above facts it was found that 61 or 65% of the retailers said that their forefathers were in the same business, 27 or 29% of them said that they were producers of vegetables and 6 or 6% of them said that they joined the business due to others doing the same kind of business. The above data shows that families of most of the retailers were already into vegetable business.

Table-4.31

Data to show whether vegetables would change their profession

Particulars	Respondents	Percentages
Yes	74	79
No	20	21
Total	94	100

(Source: Field Survey)

By above facts it was found that 74 or 79% of the retailers said that would change their profession if given a choice, 20 or 21% of them said they would not change their profession if given a choice. The above data shows that majority of the vegetable sellers do not want to change their profession.

Table-4.32

Data showing whether children of vegetable sellers help in the business

Particulars	Respondents	Percentages
Yes	61	65
No	33	35
Total	94	100

(Source: Field Survey)

By above facts it was found that 61 or 65% of the sellers said that their children help in the business while 33 or 35% of the sellers said that their children do not help them in the business. The above data shows there is also a great numbers of sellers who have said their children do not help them in the business.

Table-4.33

Reason for children not helping in the business

Particulars	Respondents	Percentages
Due to hassles in the business	6	6
Due to lack of recognition	51	54
Young generation does not like nature of work	37	40
Total	94	100

(Source: Field Survey)

By above facts it was found that 6 or 6% of the retailers said that their children are hesitant to join the business due to hassles in the business, 51 or 54% of them said that their children are hesitant to join it due to lack of recognition from the business and 37 or 40% of them said that their children are hesitant to join the business as the young generation does not like the nature of the business. The above data shows that the business needs to adapt to the likings of the young generation in order to attract young people in the business.

Table-4.34

Satisfaction with the profession

Particulars	Respondents	Percentages
Yes	65	69
No	29	31
Total	94	100

(Source: Field Survey)

By above facts it was found that 65 or 69% of the sellers said that they were satisfied with their profession, 29 or 31% of them said they were not satisfied with their profession. The above data shows that most of the sellers were satisfied with the profession.

Table-4.35

Ability to sell all vegetables

Particulars	Respondents	Percentages
Yes	70	74
No	24	26
Total	94	100

(Source: Field Survey)

By the above facts it was found that 70 or 74% of the sellers said that they are able to sell all vegetables and 24 or 26% of them said they are not able to sell all of them. The above data shows that although majority of the sellers are able to sell the vegetables in their shop, there is still a large number of sellers who are not able to sell all their vegetables from the shop.

Table-4.36

Necessity of storage facilities

Particulars	Respondents	Percentages
Yes	64	68
No	30	32
Total	94	100

(Source: Field Survey)

By the above facts it was found that 64 or 68% of the retailers said that they needed storage facilities whereas 30 or 32% of them said they didn't need it. The above data shows that the opinion of retailers for the need for storage facilities is divided.

Table-4.37

Devotion of full time in the shop

Particulars	Respondents	Percentages
Yes	67	71
No	27	29
Total	94	100

(Source: Field Survey)

By the above facts it was found that 67 or 71% of the retailers said that they devote their full time in business whereas 27 or 29% of the respondents said they don't devote their full time in business. So it shows majority of people involved in vegetable business devote their full time in business.

Table-4.38

Important role in the sector of vegetables in the view of retailers

Particulars	Respondents	Percentages
Producers	57	60
Retailers	28	30
Consumers	9	10
Total	94	100

(Source: Field Survey)

By the above facts it was found that 57 or 60% of the sellers said that producers play the most important role in the business whereas 28 or 30% of them said retailers play the most important role in the business and 9 or 10% of them said the consumers play the most important role in the business. The above data shows that the role of producers played in the vegetables business is very important in the view of vegetable sellers.

1.1.3 Test of Hypothesis

Hypothesis 1:

Time of vegetables sold in the market by vegetable sellers

Particulars

Morning : 58

Day : 8

Evening : 28

(Source: Field Survey)

Null Hypothesis H_0 : There is no significant difference between observed frequency and expected frequency.

Or

There is no significant difference in sales during the shift.

Alternative Hypothesis H_1: There is significant difference between observed frequency and expected frequency.

Or

There is significant difference in sales during the shift.

Under H_0, the test statistics is

$X^2 = \sum (O-E)^2 / E$

Where;
O= Observed frequency
E= Expected frequency $= \sum O/n$
$= 94/3$
$= 34.666$

Calculation of X^2

Shift	O	E	(O-E)	$(O-E)^2$	$(O-E)^2/E$
Morning	58	34.67	23.33	544.289	15.70
Day	8	34.67	-26.67	712.289	20.545
Evening	28	34.67	-6.67	44.489	1.283
					$=\sum (O-E)^2/E$ $=37.53$

Calculated $X^2 = \sum (O-E)^2 / E = 37.53$

d.f.= n-1=3-1=2
Tabulated value of X^2 at 0.05 level of significance with 2d.f=5.991.
Conclusion:
Since the calculated X^2 is greater than tabulated X^2 at 0.05 level of significance, the null hypothesis H^0 is rejected or alternative hypothesis H^1 is accepted. Therefore, we conclude that there is significant difference in sales during the shifts.

Hypothesis 2

Fruits	Relative Income		
	Per unit area	Per worker day	Total
Potato	9.8	5.6	15.4
Leafy Vegetable	4.2	9.6	13.8
Onion	8.0	4.4	12.4
Total	22	19.6	41.6

(Source: Shrestha G.K. 1998)

Null Hypothesis (H^0): There is no significant difference in farm family incomes from three major vegetable crops.

Alternative Hypothesis (H^1): There is significant difference in farm family incomes from three major vegetable crops.

Test Statistics:
Under H_0, the test statistics is

$X^2=\sum (O-E)^2/E$

Where;
E= Expected frequency in a cell= (RT x CT)/ N

			RT
	9.8	5.6	15.4
	4.2	9.6	13.8
	8	4.4	12.4
CT	22	19.6	N=41.6

Calculation of X^2

(Row, Column)	O	E= (RT x CT)/N	(O-E)	$(O-E)^2$	$(O-E)^2/E$
(1,1)	9.8	=(15.4x22)/41.6 =8.144	1.656	2.742	0.337
(1,2)	5.6	=(15.4x19.6)/41.6 =7.256	-1.656	2.742	0.378
(2,1)	4.2	=(13.8x22)/41.6 =7.30	-3.1	9.610	1.316
(2,2)	9.6	=(13.8x19.6)/41.6 =6.501	3.1	9.610	1.478
(3,1)	8	=(12.4x22)/41.6 =6.558	1.442	2.079	0.317
(3,2)	4.4	=(12.4x19.6)/41.6 =5.842	-1.442	2.079	0.359
					$=\sum (O-E)^2/E$ =4.182

Calculated $X^2 = \sum (O-E)^2/ E$
= 4.182

Degree of freedom=(r-1) (c-1)
= (3-1) (2-1)

= 2x1
= 2
= 5%

Tabulated value of X^2 at 5% level of significance for 2d.f is 5.991.

Calculation:

Since the calculated X^2 < tabulated $X^{2,}$ it is not significant and H^0 is accepted which means that there is no significant difference in farm family incomes from their major vegetable crops.

1.1.4 Weighted Average Mean to rank Preference of vegetables among the consumers

With a view of find out the preference of consumers, respondents were given four choices to choose from, Potato, Onion, Tomato, Leafy vegetable. All of the above vegetables are both locally produced and improved from third countries. All vegetables are considered important for the role they play to the farmers and businessmen. Each vegetable has been given a relative weight to identify the most popular one. The choices to be made according to first preference have been given in the below table.

Table 4.39 Ranking of preference of vegetables among the consumers

Vegetable/ Rank	I	II	III	IV	Total	W.M	Rank
Tomato	30	30	37	105	202	62.10	I
Potato	110	40	22	30	202	37.6	II
Onion	25	52	103	22	202	52.6	III
Leafy Vegetable	37	80	40	45	202	49.7	IV
Total	202	202	202	202	202		

(Source: Field Survey)

Calculation of Weighted Average Mean

Weighted Average Mean = $(X_1W_1+X_2W_2+ X_3W_3+ X_4W_4)/(W_1+W_2+W_3+W_4)$

$=\sum WX/\sum W$

Tomato = (30x1+30x2+37x3+105x4)/ (1+2+3+4)

	=62.10
Potato	= (110x1+40x2+22x3+30x4)/ (1+2+3+4)
	=37.6
Onion	= (25x1+52x2+103x3+22x4)/ (1+2+3+4)
	= 52.6
Leafy vegetable	= (37x1+80x2+40x3+45x4)/ (1+2+3+4)
	= 49.7

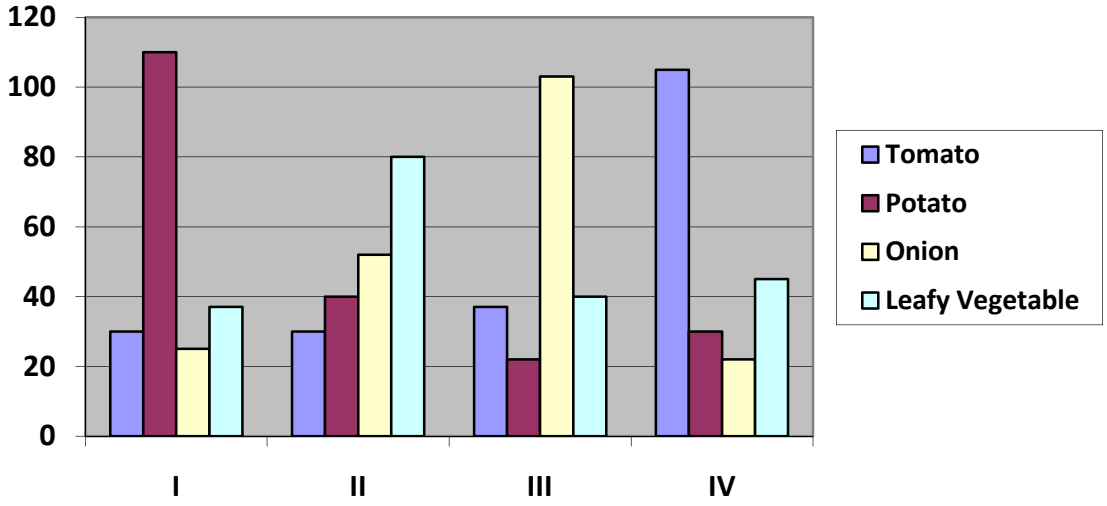
The table shows that among 202 respondents, 110 respondents' first choice was Potato. Similarly, 37 said leafy vegetables, 30 said onion and 30 said tomato.

Again, among the same 202 respondents, for the second important category, 80 respondents' choice was leafy vegetables followed by 52 respondents whose choice as onions and 30 respondent's choice was potatoes and 40 respondents have a choice as tomatoes.

Again, for the third most important choice among the 202 respondents, the first choice of 103 respondents was onions followed by 50 leafy vegetables, 37 tomatoes and 22 potatoes.

For the fourth most important choice among the 202 respondents, 105 respondents said they preferred tomatoes, followed by 45 leafy vegetable, 30 potatoes and 22 onions. The data is presented in the chart below.

Figure No. 4.23 Preference of Vegetables



the weighted average mean has also been calculated from the data collected. The calculation shows that potato has a weighted average mean of 35.60, leafy vegetable has 45.70, onion has 49.60 and tomato has 61.10.

The analysis of above data and calculation of weighted average mean clarifies that potato was the most popular vegetable followed by leafy vegetable, onion and tomato. The reason behind potato being most popular is due to easy availability during all reasons, easy storage and availability of wide variety of apples. In the same way, leafy vegetables are also widely available during season time and are the second most preferred vegetable. Onion and tomato are also very popular.

Table 4.40 Ranking of purchasing sources of vegetables

	Ranking

Purchasing sources	I	II	III	IV	V	Total	W.M	Rank
Wholesaler	61	72	45	12	12	202	29.87	II
Retailer	60	74	35	28	5	202	30	I
Producer	40	22	61	44	35	202	41.2	III
Pre-harvest Contractor	11	20	22	63	86	202	53.27	V
Commission Agent	30	14	39	55	64	202	47.67	IV
Total	202	202	202	202	202	202		

(Source: Field Survey)

Calculation of Weighted Average Mean

Weighted Average Mean = $(X_1W_1+ X_2W_2+\ldots\ldots+X_nW_n)/ (W_1+ W_2+\ldots\ldots+W_n)$

Wholesaler = (61x1+72x2+45x3+12x4+12x5)/ (1+2+3+4+5)
= 29.87

Retailer = (60x1+74x2+35x3+28x4+5x5)/ (1+2+3+4+5)
= 30

Producer = (40x1+22x2+61x3+44x4+35x5)/ (1+2+3+4+5)
= 41.2

Pre-harvest Contractor = (11x1+20x2+22x3+63x4+86x5)/ (1+2+3+4+5)
= 53.27

Commission Agent = (30x1+14x2+39x3+55x4+64x5)/ (1+2+3+4+5)
= 47.67

The table 4.40 presents information and the ranking according to the source from respondents they buy their vegetables. The definitions of the purchasing source have been provided in earlier chapters. It provides information useful in finding out the purchasing behavior of consumers and the reasons behind such behavior.

It shows that among 202 respondents, 60 respondents' purchased vegetables from retailers. Similarly, 61 purchase from wholesalers, 40 purchases from producers, 30 from commission agents and 11 purchases from pre-harvest contractors.

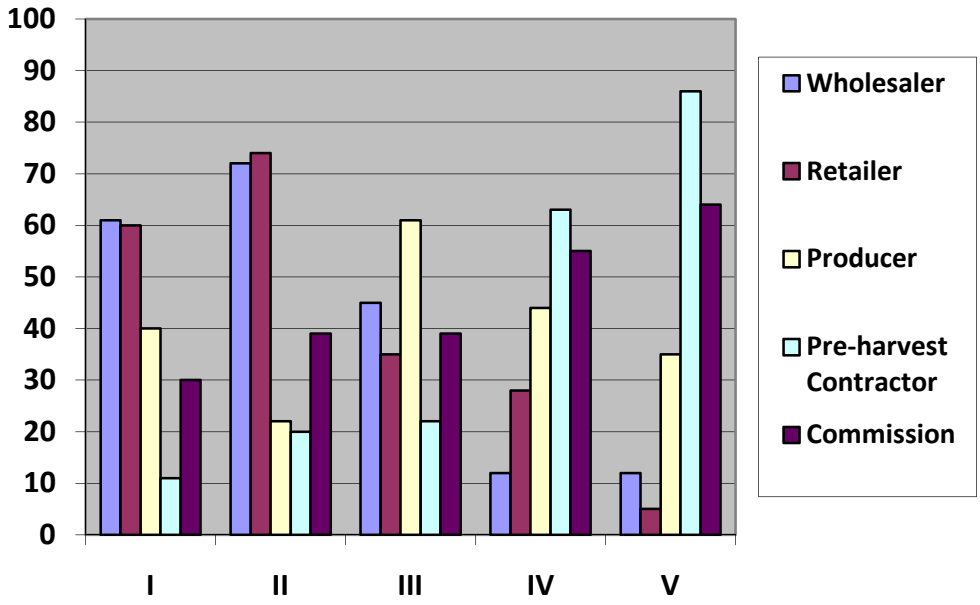
Again, the second most popular purchasing source from amongst the same 202 respondents show that 72 consumers purchasing from wholesalers followed by 74 from retailers, 22 from producers, 20 from pre-harvest contractors and 14 from commission agents.

For the third most popular purchasing source among the 202 respondents, majority of the consumers purchasing from producers 61 followed by 45 from wholesalers, 39 from commission agents, 35 from retailers and 22 from pre-harvest contractors.

For the fourth most popular purchasing source, 55 purchasing from commission agents, 63 from pre-harvest contractors, 44 from producers, 28 from retailers and 12 from wholesalers.

Lastly for the fifth most popular purchasing source, data show that of the 202 respondents, 86 purchase from pre-harvest contractors, 64 from commission agents, 35 from producers, 12 from wholesalers and 5 from retailers.

Figure No. 4.24 Ranking of purchasing source of vegetable



(Source: Field Survey)

Weighted average mean has also been calculated from the data collected. On the basis of priority, retailer has the lowest mean of 28.67, wholesaler 29.20, producer 39.20, commission agent 44.33 and pre-harvest contractor 50.60.

The analysis of above data shows that consumers purchase vegetables the most from retailers. They find retailers the most convenient source to purchase from due to their easy reach. Similarly, wholesalers are given the second most important priority for purchase as shown by the weighted average mean. The role of producer for purchases is not considered as important as retailers and wholesalers. Similarly, pre-harvest contractors and commission agents are considered less important than producers.

The respondents who did not prefer retailers said that purchasing from retailers was more expensive. The respondents who did not prefer commission agents said that their unavailability. For them easy availability from the local market was easier. Hence it can be concluded that people prefer purchasing from a cheaper source given the sources are accessible easily. Purchasing behavior hence changes according to need.

1.1.5 Computation of the Trend Values

Table 4.41 Computation of the Trent Values of the Prices of Potato in Kathmandu by Least Square Method of Time Series

Years	Average price	x=t-4121	x^2	xY	Ye=15.5 + (4.39905) x
2063	15	-3	9	-45	15.5-4.39905= 11.10095=11.1010
2064	14	-1	1	-14	15.5-1.46635=14.03365=14.0667
2065	11	1	1	11	15.5+1.46635= 16.96635=16.9664
2066	22	3	9	66	15.5+4.39905= 19.89905=19.8991
N=4	∑Y=62	∑x=0	$\sum x^2=20$	∑xY= 29.327	

(Source: DOA, 2066)

Solution,

Here n=4, i.e. even. Hence we shift the origin to the average of the middle years, viz. 2064, i.e.

x = [t-1/2(2064)] / [1/2(1)]

= 2t-4121

Where x values are in the units of six months.

Now to get the trend values, let the straight line trend equation x and Y be given by

Y= a+bx

The normal equation to calculate a and b are

$\sum Y= na + b\sum x$ (i)

$\sum xY= a\sum x + b\sum x^2$ (ii)

By substituting the values we have

$\sum Y=na + b\sum x$ (i) Where $\sum x=0$, n=4 $\sum Y=62$ 62=4xa+bx0 a=62/4 =15.5	$\sum xY=a\sum x + b\sum x^2$ (ii) Where $\sum x=0$, $\sum x^2=20$ $\sum xY=29.327$ 29.327=ax0+bx20 b=29.327/20 =1.46635

By substituting the values we have of b and a in the trend line equation,
i.e. Y=a+bx, we get the trend line equation as;
Ye=15.5 + (1.46635) x

Now substituting the values of x which are -3,-1,1,3 in the aforesaid equation, we get the trend value as 11.1010, 14.0667, 16.9664 and 19.8991.

Forecasting for 2067
Here x= 5
Year 2067
= 15.5 + (1.46635) x
= 15.5+7.33175
= 22.83175

Forecasting for 2068
Here x= 6
Year 2067
= 15.5 + (1.46635) x
= 15.5+8.7981
= 24.2981

If we are to draw a trend line for the average of potato up to the forecasted year 2068, we will see that the price is in increasing trend. The increasing trend mainly happens due to the following reasons:

- Less supply than demand in the Kathmandu valley

- Less storage space
- Inferior packaging
- Inefficient transportation network

Although the increase in retail prices of potato cannot be totally accepted in Kathmandu, the rate is seen to fluctuate with each passing season. Data from DOA shows that the average rate decreased during 2064 and decreases more in 2065. Again it increased unexpectedly at 2066. The above least square method of time shows that the average price of potato will increase continuously at years 2067 and 2068. These potatoes are manufactured in Nepal and some are imported from India and china. Quality of potato produced in Nepal is high enough in comparison to imported potatoes. Even then, due to the high transportation cost, the imported apples become cheaper in Kathmandu. This is one example which shows that transportation plays a very important role for the distribution of vegetables in Kathmandu.

4.2 Major Findings of the Study

On the basis of the comprehensive analysis of the data, the study has following findings:

- As per DAO, Kathmandu, the production of different vegetables in the country that include onion, tomato, potato, leafy vegetables, etc is 5,021 metric tons and productive area is 560 hectares.
- APP, NARC vision 2021, and Tenth Plan/PRSP have all outlined the importance of reducing poverty though increase in agricultural products more competitive in the regional and world markets through commercialization and competitiveness, and protection, promoting and properly utilizing natural and environmental resources, and biological diversity.
- Nepal has the potential of producing wide varieties of vegetables. Although the challenges from import substitution and quality of vegetables are ever existing problems.
- The buying behavior of consumers is mostly once in a week. This is shown by 48% of the respondents choosing to do so.

- General buying trend of the consumers is more during the mornings than in the evenings as indicated by70% of the respondents during morning and 22% buying in the evening.
- Similarly, the quantity of vegetables purchase by the consume is 2kg at a time by 47%, followed by 1kg by 42%, and more than 2kg by 11%.
- The field survey also shows that people prefer to buy from the nearest organized vegetables shop rather than any place. This is shown by 53% of the respondents.
- Respondents invest less than 5 percentage of income by 44 percent similarly 10 percent invest by 37 percent and 19 percent invest more than 10 percent in vegetables buying.
- The study shows that the main reason for consuming vegetables is for health reasons. Problems is not finding the desired vegetables of choice however, is attributed to the price factor. The tentative distance of the vegetables shop however is at least 15 minutes walk from the respondent's home.
- Potato happened to be most favorite vegetables followed by leafy vegetables, onion and tomato and the buyer in the family is the father.
- Consumers buy the most from retailers although they buy from hawkers also when they have no time to go to the market. The shop they buy from is mostly the same but consumers are becoming more price conscious. The level of dissatisfaction of the consumers from the vegetables available is huge due to inconsistency in size, shape and the taste and value for money.
- The quantity of vegetables sold by the sellers at a time is 5kg average and then followed by 15kg and more than 15kg.
- The supply of vegetables is from mainly the Kuleshwor vegetables wholesale market followed by farmers and the farms.
- The competition among the vegetables sellers is by the factor of price followed by quantity.
- Basic problems of retailers are destruction of vegetables due to its perishable nature.
- Prospects of the vegetables markets is increasing day by day as it has low investment more profit and can take care of whole family, the average size of their family being 4-6. Even then, the retailers are found involved in other profession as an alternative source of income.

- Retailers sell mostly to consumers rather than in to bulk buyers. Bulk buyers are found to buy from the wholesale market as it tends to be cheaper there.
- Most of the retailers were involved in the related business before becoming vegetables retailers i.e., some of their family members had already been associated with this business. However, despite being satisfied with the profession, most of them showed willingness to change their profession if given a choice. This is perhaps why the young generation is not much willing to join their parents' profession. Reason being hassles from the business and lack of recognition from the job. This is also been due to the full time requirement in the shop.
- Vegetables retailers are able to sale most of the vegetables at varied prices depending upon the quality. Storage facility would have added value to their product as most retailers feel the necessity for storage facilities.
- The most important role in the vegetables business despite the important role of consumers and retailers in marketing of vegetables is the producer.

CHAPTER - 5
SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Vegetables are one of the important food items in our daily diet. Due to the consciousness in the health now-a- days everybody consumes vegetables. So, there is mere prospect and need of the vegetables marketing.

This research has been conducted on the topic “Marketing of vegetables in Kathmandu District”. In course of research, different people and places inside Kathmandu were visited for the purpose of asking question and also for making personal observations. Before entering to the field, two specific types of questionnaires were prepared. For consumers, 200 questionnaires were circulated out of which a total of 96% responded. Similarly, in case sellers out of 100 questionnaires, 94 responses were found.

The main objective of the study is to find out production, consumption, problems, prospects, demand and supply of vegetables. Useful suggestions have also been given.
The main outcome of the study is as follows:

- The production of vegetables in Kathmandu district is 5,021 mt. and has an increasing trend.
- The consumers invest less than 5% in vegetables in vegetables buying. Consumers need to be made aware of the advantage of consuming vegetables.
- Vegetables are mostly imported from other countries due to less domestic production.
- The sellers have problems in selling vegetables as it perishes due to lack of proper cold storage, lack of export in production, lack of proper marketing channels, lack of proper infrastructure for market.
- The low income level and less purchasing power of consumers effect the vegetables consumption. There is competition among the sellers in price and quality.
- The increasing population and increasing demand for vegetables clearly indicate the potential market and prospects of vegetables market Kathmandu district.

5.2 Conclusion

Vegetables constitute an essential and important supplement to the human body. Due to the consciousness in the health, the demand of vegetables is increasing day by day. It helps to overcome the nutritional needs of Nepalese. With their low income, as it is the rich source of different vitamins and minerals.

Nepal is an agricultural based country as its economy is based on agriculture. Vegetables cultivation is a part of agriculture. The production of vegetables can contribute a great in national economy and people's health. But the production of vegetables is not in sufficient quantity as well as quality. Similarly there are many more problems in the proper distribution, storage, production and quality aspects.
The Government also needs to subsidize the agricultural sector and provide incentives to the farmers. Research in the field of vegetables need to be intensified rapidly in order to stop imports and encourage exports.

There are different types of problems regarding the vegetables marketing within the both sides i.e. within consumers as well as retailers. In case of consumers they do not have sufficient ability to buy vegetables so price is the factor. Quality and timely availability of the products is the other problems. Similarly, on the part of retailers, there is lack of investment capacity. Competition is very high among retailers. There is more post harvest loss in vegetables due to its perishable nature and lack of proper cold storage facilities. Market as such is not a problem and the consumption of vegetables in Kathmandu is found to be increasing every day.

We come to conclude on the basis of this study that there remain many problems but the prospects of the fruits marketing is increasing on other hand day by day. This study shows that there are great prospects in vegetables marketing particularly in Kathmandu district. But there are so many problems that need to be addressed properly and timely. Thus, the future marketing prospects is very bright.

5.3 Recommendation

Vegetables marketing are one of the needs for the needs of the management urbanization and for the managed urbanization and for the betterment of the health condition of the people following are the recommendation:

1) Some aspects of the labor contract law are relevant to vegetables processing industry in view of the short season for production, as well as for processing. This means that processing industries need to have the flexibility to hire workers on a seasonal basis without facing labor-related disruptions.

2) Appropriate research is the key to upgrading quality. Both farmers and traders complain that suitable varieties of vegetables for processing are not available in Nepal. There is little research work on introduction, testing and release to process able varieties by public or private institutions. This requires inter alia a critical mass of highly trained horticulturalists in NARC. A strong public research programme is needed on efficient methods of extracting and preserving vegetables locally.

3) Since the production of the vegetables is highly seasonal, cold storage plays a very important role. The experience with the cold storage has not been good so far. There is a lack of analysis on what would make these units feasible in Nepal, compared to for e.g. those in the Indian border towns, which requires a separate study on the economics of investing in cold storage.

4) Exports need to be encouraged. Potato and leafy vegetables are two major exportable vegetables of Nepal. Though onion orchards are nearer to road head as compared with potato, orchards in both cases are not planted from commercial point of view. Hence, some support in facilitating collection, grading, wrapping and packaging vegetables would enhance export.

5) In the Nepalese context, authorized agents for vegetables are lacking. So, there is more flexibility in vegetables pricing. Due to the presence of the middle agents, producers have to share lesser profits. Authorized agents must be available so that the farmers, consumers and the sellers are benefited.

6) Government should make the proper policy for promotion of vegetables market. Lack of government rules and regulation in one hand and flexible rules are seen in practice. So, government policy should be stable and practical.

7) The younger generation of vegetables businessmen should be encouraged to join their family business. It is found that the number of businessmen involved in this profession is not growing at the same rate other businesses are growing.

8) Percentage of expenditure of the general consumers in vegetables purchase is insignificant. Consumers should be encouraged to spend more in purchase of vegetables through the different advertising media. Local produce could also be encouraged from this. Instead of focusing more on imports, local produce should be marketed and made available in the cities.

Recommendation for Further Research

Following areas need further research

a. Research into problems in production of vegetables.
b. Separate marketing mix strategy (i.e. product, price, place and promotion) should be done.
c. Determination of competitive advantage of Nepalese vegetables.
d. Effects of Government policy towards vegetables.
e. An in-depth research into potato production and marketing vegetables.
f. Comparative analysis of vegetables market in the neighboring countries and how we can learn from their success.

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APPENDIX-I

QUESTIONNARIRE FOR CONSUMERS

Dear Sir/Madam,

I would like to bring to your kind notice that I am writing a thesis entitled, “A Study on the Vegetable Market in Kathmandu”, for the partial fulfillment of the Masters of Business Studies (MBS) under Tribhuvan University, Nepal. Your information and response based on following questionnaire would be very valuable. This information would be used for research purpose only and would be kept confidential.

Name:
Address:

Please Tick (√) in the appropriate options for the following questions:

1. When do you buy vegetables?
   a. Once a week
   b. Daily
   c. Twice a month

2. How many vegetables do you buy at a time?
   a. 1 kg
   b. 2 kg
   c. 3 kg

3. From where do you buy vegetables?
   a. Nearby home
   b. From Kalimati
   c. At any place

4. At what time do you buy vegetables?
   a. Morning
   b. Afternoon
   c. Evening

5. How much of your earnings do you spend in vegetables?
   a. Below 5%
   b. About 10%
   c. More than 10%

6. Why do you eat vegetables?
   a. For better health
   b. To show others as rich
   c. To satisfy hunger

7. What problems do you see in finding vegetables of your choice?
    a. Time factor
    b. Quality factor
    c. Lack of regular supply

8. What is the tentative distance of the nearest vegetables shop from your residence?
    a. 5 minutes walk
    b. 15 minutes walk
    c. More than 15 minutes walk

9. Which vegetable do you prefer the most?
    a. Potato
    b. Onion
    c. Tomato
    d. Leafy Vegetable

10. Which of your family members purchase vegetables?
    a. Father
    b. Mother
    c. Others

11. How frequently do you buy vegetables?
    a. Once a week
    b. Daily
    c. Twice a week

12. From whom you purchase the vegetables from?
    a. Wholesalers
    b. Retailers
    c. Hawkers

13. Why do you buy from Hawkers?
    a. When I don't have time to go to the market
    b. The market is far away
    c. Cheaper than the market

14. How do you define your vegetable buying behavior?
    a. I buy from the shop
    b. I look around many shops and choose the cheapest shop
    c. I look around many shops and go to my regular shop

15. Do you buy seasonal vegetables or other non-seasonal vegetables?
    a. Yes
    b. No

16. Do you bargain while buying vegetables?
    a. Yes
    b. No

17. Are you satisfied with the quality of vegetables available in the market?
    a. Yes
    b. No

18. If you are not satisfied with the quality of vegetables available in the market, why?
    a. Inconsistent size and taste
    b. Does not look good
    c. Both of a and b

19. Do you think you get value for the money you spend on vegetables?
    a. Yes
    b. No

20. What do you think is the most important factor for a vegetable market?
    a. Parking facility
    b. Cleanliness
    c. Market has to be near to home

21. How do you rank your preference of the following vegetables?

Vegetables/Rank	I	II	III
Potato			
Onion			
Tomato			
Leafy Vegetable			

22. How would you rank your preference of vegetable purchasing source?

Purchasing Sources/Rank	I	II	III
Wholesalers			
Retailers			
Pre-harvest Contractor			
Commission Agent			

APPENDIX-II

QUESTIONNARIRE FOR RETAILERS

1. When do you sell vegetables more?
   a. Day time
   b. Morning
   c. Evening

2. How much do you sell in a day?
   a. 5 kg
   b. 15 kg
   c. More than 15 kg

3. Where do you buy vegetables?
   a. Kalimati wholesale shops
   b. Small shopkeeper
   c. General consumers

4. What is the basis of competition among the shopkeeper?
   a. Price
   b. Quality
   c. Both

5. How is the loss due to transportation and quality reduction?
   a. Negligible
   b. Up to 10%
   c. More than 10%

6. What is the size of your family?
   a. 2-4
   b. 4-6
   c. 6 and above

7. Do you have any secondary sources of income?
   a. Yes
   b. No

8. What problem do you get see in this occupation?
   a. Lack of regular supply of vegetables
   b. Vegetables destruction
   c. Problem of cold store
   d. Others

9. What prospectus do you see in this profession?
    a. Less investment and high profit margin
    b. High investment and less profit margin
    c. Less investment and less profit margin

10. Who do you sell the vegetables to?
    a. Consumers
    b. Bulk buyers
    c. Hawkers

11. What did you do before joining this profession?
    a. Was jobless
    b. Was working for another field
    c. Was working in related field

12. How did you enter into this profession?
    a. Forefathers were also in the same business
    b. Were producers of vegetables
    c. Due to others doing the business

13. Given a choice would you change your profession?
    a. Yes
    b. No

14. Are your children willing to help you in your business?
    a. Yes
    b. No

15. If no, why do they not want to join their parents business?
    a. Due to hassles in the business
    b. Due to lack of recognition
    c. Young generation doesn't like the nature of work

16. Are you satisfied with your profession?
    a. Yes
    b. No

17. Are you able to sell all the vegetables you buy?
    a. Yes
    b. No

18. Do you need storage facilities for your vegetables?
    a. Yes
    b. No

19. Do you devote your full time in the shop?
    a. Yes
    b. No

20. Who do you think plays the most important role in the sector of vegetables?
    a. Producers
    b. Retailers
    c. Consumers
    d. Others