VALUE CHAIN ANALYSIS OF VEGETABLES IN PALPA DISTRICT OF NEPAL

THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

Master of Science (Agriculture)

in

Agricultural Economics

Supervisor

Dr. O. P. Singh

Submitted by

Khim Raj Regmi

DEPARTMENT OF AGRICULTURAL ECONOMICS
INSTITUTE OF AGRICULTURAL SCIENCES
BANARAS HINDU UNIVERSITY
VARANASI-221 005
INDIA

I. D. No. E- 0928 May, 2011 Enrolment No. 318278
Dedicated
to
my beloved
parents,
wife and
daughters
To,
The Registrar (Academic)
Banaras Hindu University,
Varanasi- 221005.India.

Through: The Head, Department of Agricultural Economics

Dear Sir,

I have great pleasure in forwarding the thesis entitled “VALUE CHAIN ANALYSIS OF VEGETABLES IN PALPA DISTRICT OF NEPAL” submitted by Mr. Khim Raj Regmi, I.D. No. E-0928, in partial fulfillment of the requirements for the degree of Master of Science (Agriculture) in Agricultural Economics, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi.

I certify that the work presented herein was carried out solely by the candidate under my guidance and supervision. The data forming the basis of this thesis, to the best of my knowledge and belief are genuine and original.

Thanking you,

Forwarded by:

Yours faithfully,

(O. P. Singh)
Supervisor
VALUE CHAIN ANALYSIS OF VEGETABLES
IN PALPA DISTRICT OF NEPAL

By

Khim Raj Regmi

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AGRICULTURAL ECONOMICS

Department of Agricultural Economics
Institute of Agricultural Sciences
Banaras Hindu University
Varanasi–221 005

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Acknowledgement

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Date: 
Place: BHU, Varanasi

(Khim Raj Regmi)
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<td>ADB</td>
<td>Agriculture Development Bank</td>
</tr>
<tr>
<td>ADBL</td>
<td>Agriculture Development Bank Limited</td>
</tr>
<tr>
<td>AIC</td>
<td>Agriculture Input Corporation</td>
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<td>APP</td>
<td>Agriculture Perspective Plan</td>
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<tr>
<td>CC</td>
<td>Collection Centre</td>
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<td>DADO</td>
<td>District Agriculture Development Office</td>
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<td>FNCCI</td>
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<td>GMT</td>
<td>Green witch Mean Time</td>
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<tr>
<td>GNP</td>
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<td>GDP</td>
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<td>Hectare</td>
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1.0 Background of the study

Nepal is a developing country with a per capita income of around $427 per year in 2009. Based on national calorie/GNP criteria, an estimated 55 per cent of the population is below the poverty line earning of $1.25 per day. Agriculture remains Nepal's principal economic activity, employing over 73 per cent of the population and providing 34 per cent of GDP therefore unless the sustainable development of the agriculture, development of the country is not possible. Diversity in topography and climate in the hill of Nepal is the greatest opportunity to produce and export the varieties of the agricultural commodities and increase the income of the people. Out of total geographical area of the country, about 25 per cent is cultivable; another 33 per cent is under forested. Rest of the area is under mountainous. Rice and wheat are the main food crops grown in the country. The lowland terai region of Nepal is very fertile. It produces an agricultural surplus, part of which supplies to the food-deficient hill areas. Because of Nepal's dependence on agriculture, the magnitude of the annual monsoon rain strongly influences economic growth.

The present government has correctly depicted the overwhelmingly rural character for Nepal's massive poverty in its annual budget. Despite the priority given to agricultural sector and huge money doled out in the sector for the last many years, the country's rural poverty and backwardness have worsened. Continuation of conventional subsistence type of agriculture, big gap between haves and have-nots, poor rural infrastructures, inadequate technological extension and marketing support and services, lack of production inputs in terms of quantity, quality and timely, unorganized institutions of producers and other related stakeholders with weak linkage among them, land scarcity relative to population growth (per capita availability 0.6 ha in 1954, whereas it was 0.1 ha in 2005), all have played vital role to accentuate rural poverty continuously resulting in the problem of food security, under-employment, poverty and malnutrition. Now government has laid emphasis on making "New Nepal" through bringing revolution and radical change in agriculture sector. For this, the policy of transforming subsistence agriculture into commercial agriculture has been put forth as the fundamental basis for country's economic development. Commercialization,
modernization and mechanization of agriculture are understood to provide large number of farming community with a respectable occupation and dependable employment opportunities. The radically modified agriculture is supposed to bring felt positive change in the living standard of people and thus, the country will make economic development in a leaping-frog way.

The country’s economic growth rate during the fiscal year 2009/10 is estimated to be around 4.7 per cent, much lower than the projected target of 7.0 per cent. The Economic Survey of the fiscal year 2009/10 stated that growth in agriculture remained lower due to unfavorable weather conditions while long hours of power cuts combined with strikes and closures hit the industrial sector. According to the survey, the growth rate of agriculture and forest sector has been revised at 2.1 per cent while the industry and power sector recorded a negative growth. In the previous year, the agriculture and forest had grown by over 4.0 per cent and industrial sector by 0.2 per cent power sector by 3.7 per cent. In the fiscal year 2009/10, the savings/gross domestic product ratio came down to 8.0 per cent from 11.2 per cent in the previous fiscal year. (Gorkhapatra, Government’s daily news paper, Kathmandu, July 12, 2010)

The goal of the Asian Development Bank (ADB) is to make mountain agribusinesses more commercially viable and to take advantage of improving rural infrastructure, as well as rising private sector interest in their goods," said Hans Woldring, Agriculture and Natural Resources Economist with the ADB. Agriculture employs about two-thirds of Nepal’s population and contributes over a third of the country’s gross domestic product. Despite the sector’s importance, growth has been constrained by farmers’ limited access to services, marketing, and employment opportunities. The country is a net food importer. At the same time, there is rising private sector demand for many mountain products such as wool, seeds, off-season vegetables and medicinal plant products. By supporting activities such as improved processing, packaging, distribution and marketing, the project will help agribusinesses add quality and value to their goods, increase investment opportunities and links with the private sector, and boost off-farm employment. It will be especially beneficial for women as many farm households are headed by them, and they are heavily involved in small rural enterprises engaged in producing high-value items from local materials (Phillipines, 2011).
Fresh seasonal and off-seasonal vegetables have been categorized as high value crops and promotion of commercial production of fresh vegetables are essential for increasing the income of farmers, providing them with employment opportunities including the women farmers, and enhancing their accessibility to food security. Hence, in Nepal vegetables are specific agricultural commodity promotion of which could significantly drive rural growth in some market accessible areas. Twenty years Agriculture Perspective Plan (APP) has also designated vegetable crops as one of the priority crops for Nepal's agriculture development. Thus, efforts need be made to undertake all the necessary measures to develop the crop commercially benefiting the producers at large. The systematic identification of the constraints and obstacles as well as the opportunities faced by the vegetable producers in fully exploiting the crop is increasingly seen by related development personnel and technicians as an important component of any strategy for achieving the targeted growth. It is a well known fact that there exist a large number of actors who are involved from production to marketing to processing and to end users. The study, therefore, aims to obtain a more detailed understanding of the actors, activities, costs, processes and opportunities related to the flow of the studied product and associated services, starting with farmers and ending with the targeted buyers and/or consumers. These issues need to be understood to identify critical constraints.

Vegetable crops provide ample opportunities of income generation. Palpa is one of the major vegetable producing districts of Nepal, where 2019 hectare of land is under vegetable cultivation with annual production of 26247 metric tons. Productivity of the vegetable in the district is 13 mt. per hectare. Due to the problem of small farm size, less focus on market demanded production, low market linkage farmers are unable to have access to profitable markets for their produce. Most of the produce of vegetable is consumed without undergoing much value addition.

1.1 Introduction of vegetables
Vegetables are those annuals, biennials, and perennials of which different parts mature, immature, succulent roots, stems, immature flower parts, leaves, seeds or fruits are eaten. These are those herbaceous plants of which some plant portion is eaten either cooked or raw during the principal part of meal. The importance of vegetables in human diet is well known since time immemorial as they supply all main components of human diet. Vegetable contain carbohydrate, protein, minerals, and vitamins and
also possess medicinal properties. Thus, vegetables play a vital role in the balance diet
of human being. According to human dietitians about 300 gram vegetables per capita
per day are required.

1.2 Scope of vegetable cultivation
Nepal has tremendous potential of growing vegetables because;

i. Per capita consumption is less than the requirements (300 gram per capita per day);
ii. Vegetable crops gives 5-10 times more yield per unit area as compare to cereal crops
    and subsequently give high return;
iii. Comparatively vegetables are short duration, therefore, more number of crops can
    be taken from unit area in a year;
iv. All types of vegetables i.e. temperate, tropical and sub- tropical can be grown in the
country;
v. Most part of the Nepal is in hill therefore; the sloppy land of the hill is more suited
to cultivate the vegetables in rainy season which favors to get more comparative
advantage;
vi. Vegetables are well suited for different cropping systems viz., crop rotation,
    intercropping, multiple cropping, mixed and companion cropping;
vii. Vegetable cultivation is labour intensive therefore; it provides more farm
    employment to rural population, especially women and children;
viii. The enterprise also makes more effective use of land and labour.

1.3 Value chain
The Value chain approach was developed by Michael Porter in the 1980s in his book
“Competitive Advantage: Creating and Sustaining Superior Performance” (Porter,
1985).

A value chain (VC) is a chain of value-creating activities which are not isolated from
one another. Rather, one activity often affects the cost or performance of the others
(www.netmba.com). It is a sequence of productive processes from the provision of
specific inputs for a particular product to primary production, transformation, and
marketing and distribution, and final consumption. The products pass through all
activities of the chain in order, gaining value with each activity. The value chain
analysis (VCA) examines the full range of activities that are required to bring a product
in a particular enterprise from its conception to its end markets. A good VCA provides
a snapshot of an enterprise at a particular time, while VC mapping indicates the way a product flows from raw material to end markets (Amatya, 2009).

Agricultural commodities are produced by large numbers of farmers and consumed by large numbers of households. With the exception of foodstuffs consumed on-farm or sold locally, they are bought and sold a number of times between the farm gate and the final consumer. While moving between these two points, the commodity is loaded, off-loaded, transported, stored, cleaned, graded and processed. The conduit that runs from a farmer down to a final user, through which the commodity passes and which embodies these transactions and activities is conventionally referred to as a “marketing and processing chain”, a “supply chain”, or a “value chain” (FAO, 2005).

According to Miller and Jones (2010), the concept of agricultural value chain includes the full range of activities and participants involved in moving agricultural products from input suppliers to farmers’ fields and ultimately to consumers. Each stakeholder in the chain has a link to the next in order to form a viable chain.

**Figure: 1.1 Production and consumption flow**

By understanding the complete production to consumption system of vegetable, as given in Figure 1, it is possible to determine how the marketing activities take place and who shares how much benefit from such activities.

It has been argued that linking of farmers to the markets through efficient value chains would reduce the use of intermediaries in the chain, and strengthen the value adding activities by better technology and inputs, upgraded infrastructure and processing and exports (Miller and Jones, 2010; Pabuayon et al., 2009).

The concept of “agricultural value chain” covers the full range of activities and participants involved in moving agricultural products from farmers’ fields to consumers’ tables. Participants in this chain need money to carry out their activities. Although they often turn to traditional rural credit sources, rural producers, processors and retailers are receiving increasingly large injections of resources from other entities or actors with whom they trade. These flows of credit and financing among value chain actors comprise what is known as “value chain finance.” Although value chain finance is conceptually simple, it is more complicated in practice: financial linkages between different players within a given value chain are often difficult due to factors such as
longstanding familial and trading relationships; informal, culturally embedded factors; the presence of feudal landlords and their dominance in the value chain; a lack of formalized trade relations between different levels of the value chain; and, finally, knowledge and information asymmetries between different actors in the value chain. The concept of agriculture and value chain finance is therefore still relatively new for most developing countries, including Nepal.

In Nepal, most value chain projects implemented to date have focused on agricultural commodities or products, which is logical given that most of the country’s population depends on the agricultural sector, and given that the country’s two poorest occupational categories (agricultural wage labourers; and smallholder farmers) draw income from the sector.

Typically, the value chain analysis is important to understand all the major constraints to improve performance or competitiveness. The information gained through market chain analysis also helps in identifying the best market chain to work on a specific client and in locating key market chain actors who will buy produce. The knowledge obtained will play a critical role in designing, implementing, evaluating and scaling up enterprises. Nonetheless, the lack of market access that many rural farmers face is considered to be a major constraint to combating poverty. Thus, it is of paramount importance of facilitating market access to small scale producers as well as developing chain competitiveness and efficiency in order to improve rural livelihoods.

1.4 Defining the Value chain actors of the vegetables

**Input wholesaler**: Large traders engaged in importing inputs (seed, fertilizer, pesticides etc.) in bulk quantities.

**Input Retailers**: Generally the small traders particularly in the district towns or remote areas retailing inputs to the producers. They generally buy their inputs from the wholesalers.

**Producers**: Farmers engaged in production of vegetables.

**Marketing and Planning Committee (MPC)**: A committee developed participatory way by the farmers and traders in local level that provides vegetable production and marketing supports to the farmers. They use to aggregate the vegetable products in the collection centers and sell to the wholesaler or retailers.
Wholesaler: Wholesalers deal with large volume of products either through marketing and planning committee of collection centers or farmers. They invest and transact larger amount of money in their business and often control the market price.

Retailer: Comparatively small business trader and buy and sale vegetables in relatively smaller quantity and sells directly to the end user.

1.5 Government Initiatives
The development of the large production pockets as per the quality and quantity demanded by the market and giving emphasis on production of those agricultural commodity which has higher comparative advantage is the main Agricultural policy of Nepal Government. Promotion of the high value vegetable production pockets in the hills and link it to markets is the main strategy of the government. On the basis of this strategy programs are implemented in the districts like Palpa.

Agricultural Development Bank Limited (ADBL) is an autonomous organization owned by Government of Nepal. The bank has been working as a premier rural credit institution since the last three decades, contributing a more than 67 per cent of institutional credit supply in the country. So, rural finance is the principal operational area of ADBL. It has also been executing the Small Farmer Development Program (SFDP), a major poverty alleviation program launched in the country. Furthermore, the bank has been involved in commercial banking operations since 1984. The structure and its network enabled ADBL to cater to value chain actors at different levels.

1.6 Problem statement
Agriculture is the backbone of economic development of Nepal. The agricultural sector is encouraged to meet the national food and industrial raw material demand. Vegetable production has a significant role in reducing poverty through employment generation, improving the feeding behavior of the people and creating new opportunities for poor farmers. Cultivation of vegetable allows productive employment as the labour/land ratio is high. Depending on the crop, production of horticulture crops require at least twice the labour, and up to five times the labour days per hectare as compared to cereal.

Increasing horticultural productions thus contribute to commercialization of the rural economy and create many off-farm jobs (Lumpkin et al., 2005). Abundant intake of fruit and vegetables is clearly a positive solution for problems of poor diet quality in the developing world. Fruit and vegetables are relatively cheap sources of essential
micronutrients which can prevent from several micronutrient deficiency diseases. To improve the poor feeding behavior and benefit advantages from consumption of the crops problems associated with production, marketing and consumption has to be addressed. Value chain analysis is a better approach for studies of such type. Analysis of the system in terms of vegetable market structure, conduct and performance taking in to account product and location specificity identify the bottlenecks and come up with specific workable solutions.

Vegetable production in Palpa is subsistence to commercial type. Majority of the vegetables producers are in subsistence level of production. On the other hand proximity to regional market Butwal, is advantageous to produce vegetable in rainy season and supply to such plain areas market. However, studies conducted elsewhere in Nepal indicated that the product marketing is imperfect due to intermediaries’ malpractices, Poor marketing system, policies and other reasons. The situation in Palpa might be similar or different. The motive of the study was therefore to investigate the marketing system with a commodity approach, understand the system, and come up with recommendations.

1.7 Justification of the Study
Attempting to analyze the entire food system is an impossible action given the limited resources and human skill. Thus, the research was narrowed down to concentrate on the production area (Palpa). For specific analysis the types of crops was limited to tomato, green chilli and cauliflower ranked by the value chain player on the basis of market price and market demand. Moreover, these crops accounted for the major proportion of vegetable production and passed through a number of marketing stages. Different market levels, capacity of actors, market direction, price discovery and buying and selling strategies, and traders’ behavior in the whole marketing process were seen there.

1.8 Objectives of the Study
The study was conducted with the following objectives:
- To study the status of vegetable production and marketing;
- To map the value chain showing the trade link among the various actors;
- To examine the key constraints, opportunities of market oriented value chain; and
- To suggest suitable measures to enhance value chain and competitiveness in vegetable marketing.
1.9 **Significance of the Study**

The primary significance of the study is to all actors in the marketing system. Analysis of the whole system and identifying clearly the present situation constraints and opportunities will benefit policy makers, planners and implementers in indicating the area of advantage for what should be done to improve vegetable marketing. Apart from this, there are some studies on vegetable marketing system but limited to smaller part of the district with few objectives. Hence, this study was supposed to partially fill the gap. The other benefit that could be anticipated is its significance as a source for further studies.

1.10 **Limitations of the Study**

Present study being the first in the district lack many detail investigations could have reinforced understanding of the whole system especially in relation to production and consumption studies. The time limit as a factor squeezed the chance to exclude other areas of vegetable production and marketing away from Palpa. Most of the farmers and institutionalized organizations do not used to keep up data systematically so they provided it extracting from the records and memorizing by their own mind.

1.11 **Organization of the Study**

With the above brief introduction of the research, the remaining part of the thesis is organized. The next main section reviews detailed literature on relevant topics on the study of value chain analysis of vegetables. The successor deals with the research methodology starting with description of the study of Palpa. The second from the last section explains results and discussions, including data presentation on respondents’ socio-economic characteristics, and econometric analysis of different variables. Obviously, the final section summarizes the findings of the study with some recommendations.
Chapter-II

REVIEW OF LITERATURE

2.0 Background

Previous research on agricultural marketing in Palpa, particularly in vegetable sub-sector of agriculture, was limited on few part of the district. However, few attempts have been recently made to analyze the efficiency and performance of vegetable marketing in district. No remarkable research has been noticed so far that addresses sufficiently the issues faced by this important economic sub-sector. For assessment of the present status of research at national and international level, in the areas of value chain of vegetable from production to consumption, the review of related literature is presented in this chapter.

This chapter is divided in six parts. The first part includes the definitions. The second part focuses on analysis of vegetable production and marketing situation. Third part includes the value chain mapping of vegetables showing the trade link among the various actors. It also includes the value share of different value chain players of agricultural markets, marketing cost, marketing margins and marketing efficiency of agricultural products including vegetables. The fourth part covers value addition and competitive advantage of vegetables followed by the fifth part including literature in assessment of constraints-opportunities of agricultural marketing and the measures for further improvement.

2.1 Definitions

2.1.1 Value chain

The concept of value added, in the form of the value chain, can be utilised to develop an organisation’s sustainable competitive advantage in the business arena of the 21st C. All organisations consist of activities that link together to develop the value of the business, and together these activities form the organisation’s value chain. Such activities may include purchasing activities, manufacturing the products, distribution and marketing of the company’s products and activities (Lynch, 2003). The value chain framework has been used as a powerful analysis tool for the strategic planning of an organisation for nearly two decades. The aim of the value chain framework is to maximise value creation while minimising costs (www.wikipedia.org).
A value chain (VC) is a chain of value-creating activities which are not isolated from one another. Rather, one activity often affects the cost or performance of the others (www.netmba.com). It is a sequence of productive processes from the provision of specific inputs for a particular product to primary production, transformation, marketing and distribution, and final consumption (Amatya, 2009).

The value chain is the chain of all actors from the supplier of materials to the growers, on to wholesalers and retailers and finally to the consumer, including all transporting and logistics companies on the way (Ekelund and Axelson, 2009).

Miller and Jones (2010) explained that the concept of agricultural value chain includes the full range of activities and participants involved in moving agricultural products from input suppliers to farmers’ fields and ultimately to consumers. Each stakeholder in the chain has a link to the next in order to form a viable chain.

It has been argued that linking of farmers to the markets through efficient value chains would reduce the use of intermediaries in the chain and strengthen the value adding activities by better technology and inputs, upgraded infrastructure, processing and exports (Miller and Jones, 2010; Pabuayon et al., 2009).

Increasing horticultural productions thus contribute to commercialization of the rural economy and create many off-farm jobs (Lumpkin et al., 2005)

2.1.2 Agricultural marketing
Agricultural Marketing is defined as agriculturally oriented marketing. It embraces all operations and institutions involved in moving farm products from farm to consumers (Pritchard, 1969).

It is both a physical distribution and an economic bridge designed to facilitate the movement and exchange of commodities from farm to fork. Food marketing (of branded foods) tends to be inter-disciplinary, combining psychology and sociology with economics, whereas agricultural marketing (of unbranded products) is more mono-disciplinary, using economics almost exhaustively (Kohl and Uhl, 1985).

2.1.3 Marketing chain
A marketing chain is used to describe the numerous links that connect all actors and transactions involved in the movement of agricultural products from the farm to the consumer (Lunndy et al., 2004). It is the path one good follow from their source of
original production to ultimate destination for final use. Functions conducted in a marketing chain have three things in common; they use up scarce resources, they can be performed better through specialization, and they can be shifted among channel members (FAO, 2005).

2.1.4 Supply chain
Kotler (2003) defined supply chain as a longer channel stretching from raw materials to final products that are carried to final buyers. He shortly put as value-delivery network. He also separated supply chain from demand chain in that the later starts from thinking first the target market and move back words from that point, as a backward orientation.

2.1.5 Marketing Margin
It, in its simplest form, can be defined as the difference between prices paid for a commodity (e.g. bread) by consumers at a retail level, and prices received by farmers when they sell their commodity (e.g. wheat) to assemblers or other first handlers. Measured in this form, the margins reflect the amount of services added to a commodity once it leaves the farm and sits on a shelf in a retail outlet in a form that is acceptable, useful, and appealing to consumers (Goetz and Weber, 1986).

2.1.6 Marketed surplus
Marketed surplus is defined as the proportion of output that is marketed (Harris, 1982). In the case of crops that are wholly or almost wholly marketed, the output and marketed surplus will be the same (Reddy et al., 1995).

Marketed surplus may be equal to marketable surplus, it may be less if the entire marketable surplus is not sold out and the farmers retain some stock and if losses are incurred at the farm or during the transit (Thakur et al., 1997).

2.1.7 Marketing Efficiency
Marketing efficiency has the following two major components: (i) effectiveness with which a marketing service would be performed and (ii) the effect on the costs and the method of performing the service on production and consumption. These are most important because the satisfaction of the consumer at the lowest possible cost must go hand in hand with maintenance of a high volume of farm output (Ramakumar, 2001).

Marketing efficiency is the ratio of market output (satisfaction to the consumer) to market input (cost resources used in marketing). A higher value of this ratio indicates improved marketing efficiency. If the change in the marketing function takes place with
the reduction in the marketing cost without reducing consumer’s satisfaction indicates improvement in the marketing efficiency (Acharya et al., 2010)

2.2 Vegetable Production and marketing situation analysis

The fruit and vegetable sector is seen to have developed remarkably in the last two decades. It has undergone technological changes that have resulted in an upward trend in cultivated areas, yields and total production. Furthermore the sector has moved from subsistence status to a more market-oriented system. The author found for all of Oman's fruit and vegetable production, the domestic market is by far the most important outlet. The development of the sector faces serious market constraints. The pricing mechanisms are tilted to the advantage of merchants and market dealers. Author concluded that the marketing of fresh produce can be improved by the enhancement of facilitating functions (Omezzine, 1997).

All the vegetables production level significantly influenced the marketed surplus. To give boost to the vegetable development in Uttaranchal, proper input delivery system, infrastructural facilities and marketing arrangements for vegetables need to be strengthened by the planner and policy maker (Kumar and Arora, 2003).

Kumar (2003) reported that the increase in the consumption of vegetable was higher in rural households (62%) than in the urban households. In the long run the country would have substantial export surplus for both vegetables and fruits. The policy makers should promote processing of vegetables and fruits for value addition and also should explore other export avenues.

Singh et al. (2005) suggested an appropriate policy framework for increasing the production of off-season vegetables. They added, “It is imperative to take steps in augmenting irrigation potential through the implementation of different water harvesting and water conservation projects. It is also imperative to ascertain and maintain the quality of various inputs used in off-season vegetable cultivation, particularly that of seed. Standardization of the grades and packing materials and timely availability of transport to distant markets are suggested. There is need for strict implementation of market regulations which is expected for the improvement of producers' share by curbing the tendency of various market intermediaries in resorting to different malpractices.
Kaur and Gupta (2008) focused with the emerging scenario of fruits and vegetables, seasonal variability, pre- and post-harvest losses, and market infrastructure to improve the marketing and production process of fruit and vegetable. They concluded that in the market infrastructure, low capacity utilization is due to the fact that majority of the fruits and vegetable units are in home and cottage sectors which are plagued by the technological backwardness and lack of adequate funds for modernization.

Mangan et al. (2008) explained that to successful introduce the crops like jilo, maxixe, taioba, abobora and okra into the marketplace, it is critical to devote resources to promotion and marketing. In spite of their popularity among Brazilians, these vegetable crops are not normally found in the market so it is necessary to let the community know that they are available and in what locations. The opportunity to export agricultural products to the USA is a growing opportunity for farmers in Brazil. To gain access to this market (big market); it is important to understand the distribution system used for fresh produce in those markets.

2.3 Mapping the value chain of vegetables showing the trade link among the various actors

Adeyokumnu (1973) suggested that high marketing margins are sometimes regarded as evidence of inefficiency and the middlemen are often blamed for earning excessive profits. This is not always so. However, an increase in absolute margin is not clearly an indicator of efficiency or inefficiency of the marketing system. It may mean that returns to factor inputs have increased rather than that the inputs are being wastefully utilized. Then again, the increase in margins may be due to an improvement in the services performed or the utilities created for the consumers.

Toaha (1974) in a study on marketing efficiency of vegetables in Pakistan concluded that there is a low producer’s share in the consumer’s rupee, high price fluctuation and extensive malpractice due to lack of effective market legislation and non-regulated markets that largely favored the traders. The gross margins were estimated only by taking the differences between prices paid by consumers and price paid to producers by the primary traders. Such analysis does not reveal the net margins obtained by the different market intermediaries.

In the estimation and utilization of marketing margins possible problems that can arise are because of non-homogeneity of commodity with resulting variation in quality for a
particular commodity and non-standardization of quantity measure, the lag in time between the different processes involved in marketing between wholesale and retail, during which effective price changes could have taken place; the price used for estimating the margins may also contain elements of trend, cycle, and seasonal and irregular variations, so that correct estimates of value (form, time, place and possession utilities) added to commodities during marketing may be difficult to estimate (Adekanye, 1982).

Deconstructing market margins is a more time consuming exercise when compared to the analysis of marketing margins (Holtzman, 1986). The data on marketing costs are needed to disaggregate the gross marketing margin of an enterprise at different marketing stages. This provides us information on the costs of particular marketing functions, which can be compared with costs incurred by other enterprises to assess the operational efficiency (Scarborough and Kydd, 1992).

Devaraid (1998) concluded that the potato producers got the net price of 48.57, 51.15 and 52.32 per cent of the consumers’ rupees in channel I, II and III respectively. In channel III representing distant market (Banglore), the producer’s share in the consumer’s rupees was the highest. Hence selling of produce at the distant market was found to be more profitable to the farmers. The producers’ net price could be further increased by taking suitable measures by the government, viz. a) providing cold storage; b) present system of commission charges being collected from producers should be stopped; and c) providing support price facilities.

Bokelmann and Lentz (2000) study relevant theoretical approaches and the results of an explorative investigation to find out conditions for cooperative coordination of the supply chain for vegetables. Two fundamental directions that fresh vegetable suppliers can go in order to stay competitive are: offering products which fulfil special requirements of consumers or consumer segments; and gaining an advantage by means of better supply performance compared to competitors.

Adhikari (2003) analyzed the marketing system of cauliflower and cabbage in Madanpokhara, Pokharathok and Chidipani Village Development Committee, Palpa. It is found that in the marketing system of cauliflower and cabbage, channel of producer-retailer-consumer was most common. The marketing margin was higher in Madanpokhara as compared to Pokharathok and Chidipani. Similarly, the producer's
share was lower (41.80 per cent) in Madanpokhara and higher in Pokharathok (81.24 per cent) and Chidipani (81.54 per cent).

Sediman et al. (2004) presented an overview of the vegetable marketing system in Kendari, Sulawesi. They found that the substantial profits are earned by intermediaries and farmers' share is generally low.

Zaibet et al. (2005) aimed to develop a methodology to categorize and measure transactions costs by analyzing traders’ perceptions and attitude toward regulatory measures, and other market activities. Results showed that the changing nature of import calendar as well as the import license procedure represents significant elements of uncertainty that rise the importers' search and monitoring costs. It is suggested that the conversion of these non-tariff barriers into tariffs along World Trade Organization rules would reduce market uncertainty and increase market efficiency.

Zulfiqar et al. (2005) revealed from the data analysis that the producer gets only up to 37, 45 and 40 per cent, on average, of the consumers’ rupee for tomato, potato and onion, respectively. In the case of tomatoes, the margin acquired by the wholesaler and retailer was 23 and 18 per cent, respectively. In the case of potatoes, the margin shared by the aforementioned intermediaries was 19 and 18 per cent, respectively. In the case of onions, the margin shared by the same intermediaries was 21 and 20 per cent respectively. The average physical losses of the vegetable crops reported as 22, 12 and 9 per cent for tomato, potato and onion respectively. It is difficult to assess whether the large marketing mark-ups reported for the different vegetable crops are necessarily exploitative. The intermediaries are providing additional services at each stage and carrying significant risks particularly in the case of tomato. They recommended for improving the functioning of vegetable markets in terms of improved marketing margins for growers and reduced physical losses. These include: proper physical marketing facilities; adequate storage facilities; strictly enforced grading and standardization; availability of processing facilities; marketing credit and free flow of market information.

Khan et al. (2005) found that the difference in marketing margins for various vegetables is due to high marketing and picking costs. They also observed that the vegetable having highest marketing margins have lowest net margin of wholesalers and retailers.
Chakraborty (2005) concluded that the rice farmers get comparatively better margins (80 per cent of the consumer's rupee) than vegetable and fruit growers (50 per cent and 34.62 per cent respectively).

Lundy et al. (2007) reported that growth of supermarkets in the developing world has attracted the attention of social science researchers over the last few years. Evidences suggests that while some smallholders are able to organize themselves and access the relatively more lucrative supermarket channels, the majority of smallholder farmers in the developing world faced significant barriers in this regard. Paper suggests strategies for chain development focused on collaborative actions between chain actors.

Ekelund et al. (2008) focused with the concept of quality as defined by market actors in the value chain. They found retailers ranked quality and price first, followed by demand, quantity and product origin. Wholesalers' defined quality in terms of the buyers wants. In their ranking of the importance of different purchasing criteria, quality came second after demand followed by quantity and price. Consumers want quality products with a connection to freshness and origin. Retailers follow the marketing strategy of the chain and promote private label products. The wholesale levels acquire products in an over-supplied market and follow the demand from retailers. Producers must meet their terms or seek other paths to market.

Sikka et al. (2008) reported that the Indian horti-commodities are facing tough competition in the international market when it comes to quality, pesticide residues, varieties with more shelf life, packaging, value addition etc. It has been observed that 30-40 per cent of fruits and vegetables are wasted due to post harvest losses. The precision farming technology can bring quick improvement in value chain in different agro-climatic regions. Further, refinement in supply chain, adoption of new technologies and their transfer will bring perceptible improvement. Therefore, by providing this relevant trade-enabling knowledge and access to information, market research, planning and development for export promotion through capacity building, trainings and trade fairs etc. will play a significant role to reap the benefits of precision agriculture.

Supermarket chains, with continuously fewer and bigger units, dominate the European food marketing system. Consumers want variety and service. Wholesalers and producer organizations become more of logistics and transport companies than innovative
product developers. Supermarkets pass on responsibility and costs of quality control to their suppliers and are not engaged in product development. Innovative growers interested in meeting the demands of the consumers face problems with a value chain focused on technology rather than product development (Ekelund and Axelsson, 2009).

Mahyao and et al. (2009) found that the market supply chains are dominated by women (100% in Yamoussoukro and 97.5% in Abidjan). Principal actors in the chains are the producer-retailers, the wholesaler-retailers, and the retailers.

Saha et al. (2010) has examined various supply chains used by the farmers of six villages from two blocks of Ranchi district in selling of important vegetables, namely potato, okra, cauliflower, onion and tomato. The study has revealed that level of production, consumption; marketed surplus at farm level is directly associated with area under cultivation. It has been found that the choice of a supply chain depends on the keeping quality of produce and the volume of output. A shorter chain of marketing is preferred for perishable commodities in comparison to that of onion and potato. Similarly, small farmer prefer to sale immediately and go to a larger merchant, where as marginal farmers prefer to sale their produce to the consumer directly.

Reddy et al. (2010) described that the farmers ranked first, middlemen and wholesaler ranked second in approaching value shares in the traditional chain. The relative distribution is very different in the modern value chain. Integrated farmers are likely to face less price fluctuations and lower transaction costs compared to their traditional counterparts.

Ramakumar (2001) identified the different marketing channels based on different performance indicators from which rank was computed. The indicators included were producer’s share in the consumer’s money, marketing cost of intermediaries, marketing margin of intermediaries and returns per unit money of investment. In this study, producer’s share, marketing margin of intermediaries and rate of return were taken to evaluate the efficiency.

2.4 Value addition and competitive advantage of vegetables
Junqueira et al. (2000) reported that poor profits and even complete production loss can be caused by insufficient market understanding. Authors also suggested some ways to add convenience and service are discussed with the aim of creating opportunities to increase profitability to the Brazilian horticultural industry, which is responding to
changing consumer preferences with an increasing level of dietary health awareness. Non-traditional vegetables, frozen vegetables, fresh-cut vegetables, canned vegetables and organic vegetables are considered.

Riedel (2009) reported that European producers of fresh vegetables are under pressure to improve their performance and increase their competitiveness. Competitive advantage can be gained through innovation and by using unique resources stemming from cooperation between producers and complementary actors in local clusters. However, locally clustered producers do not sell to open markets but need access to value chains governed by lead firms, the large European retail chains, which set the rules and conditions of participation.

2.5 Assessment of constraints and opportunities of agricultural marketing and the suitable measures for further improvement

Adhikari (2003) analysed vegetable marketing practices in Palpa district Nepal’ noted some genuine constraints of value chain players of research site. The most common production constraints faced by farmers in the study area were disease problem, lack of irrigation facilities, insect-pest problem, unavailability of pure and improved seeds, and unavailability of necessary inputs. Among several constraints, only lack of irrigation facility was significantly associated with location. Likewise, farmers were facing marketing constraints such as low price of the product, fluctuation in market price of the product, lack of organized market, lack of transportation facility etc. Among these several constraints, lack of transportation facilities was significantly associated with location.

Hyma et al. (2003) observed that most of the exporters expressed phytosanitary problems, lack of demand from importing countries, lack of export promotional measures and lack of infrastructural facilities as major obstacles which impede the export of vegetables.

Meixner et al. (2009) analysed the data and found that the product related elements are the most important factors in explaining trust creation in business relationships, whereas relationship aspects and the market environment are of less importance.
Chapter III

METHODOLOGY

3.0 Background

Present chapter deals with research methodology. It includes selection of study area, selection of respondents, sampling technique used for the collection of primary and secondary data and statistical tools used for analysing data with respect of objectives of the study. These aspects have along with the relevant details under the following sections:

Section-A  
   i) Locale of study  
   ii) Methods of data collection

Section-B  
Statistical and econometrics methods used

3.1 Locale of study

3.1.1 Selection of country

Nepal was selected purposively which constitutes 75 districts. Agriculture is the primary source of livelihood in the country. Although priority has given to the agricultural sector, the country's rural poverty and backwardness have worsened over the years. The Agriculture Perspective Plan (APP) has also designated vegetable crops as one of the priority crops for Nepal's agriculture development.

3.1.2 Selection of district

The Palpa district of Nepal was selected purposively. It is a hilly district, located in the western region of Nepal. It has sixty-five Village Development Committees and one Municipality. The distinguished feature of varied topography and diversified agroclimate permits for the off season crop production. Regional market Butwal is only forty-five kilometre away from the district headquarter.

3.1.3 Selection of Vegetable pockets

District was divided into three pockets (A, B and C) and sampled purposively. These pockets represent the vegetable production catchments of three market centres Rampur, Aryabhanjyang and Tansen respectively. In these three pockets all type of farmers and vegetable marketing channels can be observed. Rampur is the market centre for the vegetable growers of VDCs of pocket A viz. Rampur, Darchha, Gadakot, Gejha, Mityal, Dhunganabeshi, Jalpa, Galdha and Jhirubas.
Photo: 3.1 Farmer, in the middle, in his off-season cauliflower field, Jhadewa

Photo: 3.2 Farmer, second from right side, in his off-season tomato field, Jhadewa
Methodology

Aryabhanjyang is the market centre for the vegetable growers of VDCs of pocket B viz. Chidipani, Pokharathok, Peepaldanda, Tahu, Humin, Foksingkot, Darlamdanda, Khanichhap, Nayarnamtalesh and Chappani.

Tansen is the market centre for the vegetable growers of Municipality and VDCs of pocket C viz. Tansen Municipality; Madanpokhara, Kaseni, Rupse, Jhadewa, Baughapokharathok, Khasouli, Bhairabsthan, Deurali, Argali, Palung Mainadi, Thimure, Masyam and Dovan.

3.1.4 Selection of village Development Committee

Among the three pockets Mityal, Darchha, Rampur, Gadakot and Galdha from Pocket A; Chidipani, Nayarnamtalesh and Foksingko from Pocket B and Madanpokhara, Baughapokharathok, Khasouli, Kaseni and Jhadewa from Pocket C were selected purposively. As per the interest of study farmers of these VDCs were appropriate. They are more accessible to vegetable markets centres.

3.1.5 Selection of vegetable producers’ group and Respondent farmers

Five producers groups were selected randomly from the each pockets with the probability proportional to size (PPS) method, size being the number of vegetable producer groups’ registered in the District Agriculture Development Office. Then five farmers/producers from each group were selected randomly. Therefore, total farmers’ sample size was seventy-five.

3.1.6 Selection of output suppliers

3.1.6.1 Selection of business type

Different business type of the output suppliers viz. Marketing and Planning Committee, Wholesaler and Retailer were selected purposively.

3.1.6.2 Selection of respondent traders

Seven collection centres, seven wholesalers (1 district and 6 regional levels) and twenty retailers were selected randomly as respondent.

3.1.7 Selection of Input Suppliers

There are only two large scale wholesalers in the district so they were selected purposively. Ten retailers and five vegetable nurserymen were selected randomly.

3.1.8 Selection of consumers

Total thirty consumers were selected randomly as respondent.
3.2 Methods of data collection
The present study was based on both primary and secondary sources.

3.2.1 Method of primary data collection
3.2.1.1 Interviewing with value chain actors (Input suppliers, Farmers, Traders and Consumers)
Seventy-five farmers, thirty-four output suppliers, seventeen input suppliers and thirty consumers were interviewed using structured format.

Photo: 3.3 interviewing with farmer in Gadakot, Palpa
3.2.1.2 Farmers Group Discussion

A discussion meeting with Kamana vegetable producers’ group was held on 7 June in Gandakot-3, Khayarbot. Sixteen participants were involved in the meeting.

3.2.1.3 Meeting with value chain actors and service providers

Before final setting of the interview schedule and determining the sample, a value chain actors’ meeting at Tansen, Palpa was held in April, 2010. Ten participants were involved in the meeting.

Following agenda were set for the meeting:

i) Identification of most attractive vegetables through attractive matrix method;

ii) Identification of the different marketing channels of vegetables; and

iii) Discussion on constraints, Opportunities and possible solutions services concerning with value chain player.
3.2.1.4 Vegetable Marketing and Planning Committee meeting

Meeting with Rampur Marketing and Planning Committee, Bejhad, Rampur was attended on 7 June, 2010. Total 16 participants were involved in discussion. Following Agenda were set for the meeting:

- Current vegetable marketing mechanism
- Trade linkage among different vegetable value chain actors.
- Strategy for the sustainable development of vegetable value chain

3.2.1.5 Discussion with Government and Non government Organizations

During the study period different district and regional level governmental and nongovernmental offices were visited and discussed with fifteen responsible people.

3.2.2 Secondary data collection

3.2.2.1 During the study period reports of Government and Nongovernment Organizations, Annual reports of District Agriculture Development Office, reports of IDE Nepal were reviewed. Palpa district profile developed by the District Development Committee was another key source of information.

3.2.2.2 Reviewing the records of Farmers groups, Vegetable collection centres or Marketing committee, Apex body, Cooperatives and records of Butwal Hatbazaar.

3.2.2.3 Case studies: Success case of the farmers Khima Nanda Pokharel of Deurali Village Development Committee and Deu Bahadur Kanwar of Chidipani Village Development Committee were studied for extracting some information.

3.2.2.4 Reviewing news papers, journals, books and any other publications.

- Reviewed news paper-Kantipur daily news paper of Nepal
- Reviewed books and booklets concerned with the topics.
- Journals-Indian Journals of Agricultural Economics
  - Indian Journals of Agricultural Economics
  - Agricultural Economics Research Review etc.

3.2.2.5 Searching the Internet web sites.

- Different web sites were searched for different documents.
- Indian Market Information: dacnet.noc.in, agrimarket.nic.in, agmarket.nic.in
- Federation of Nepal Chamber of Commerce- fncci.org
- Wholesale Market Price- agripricenepal.com

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3.3 Statistical and econometrics methods

3.3.1 Statistical methods
Frequency, mean and percentage are used for analysing the data. Friedman’s chi-square test by statistical program for social studies (SPSS) software was used for analysing the tabulated data.
Friedman’s test statistic is mainly used for ranking the variables. The Friedman test ranks the scores in each row of the data file independently of every other row.

3.3.2 Different actor’s share in consumers’ price was calculated by the following formula:

- Farmer’s share in consumer’s price = \( \frac{\text{Farmer’s selling price}}{\text{Consumer’s purchasing price}} \)

- Wholesaler’s share in consumer’s price = \( \frac{\text{Total market margin of wholesalers}}{\text{Consumer’s purchasing price}} \)

- Retailer’s share in Consumer’s price = \( \frac{\text{Total market margin of retailers}}{\text{Consumer’s purchasing price}} \)

3.3.3 Marketing Efficiency
Following formula was used to know the marketing efficiency of different marketing channels.

\[
\text{Marketing Efficiency} = \frac{FP}{MC + MM}
\]

Here,  
FP=Farmer’s selling price  
MC= Total Marketing cost  
MM=Total Marketing Margin

3.3.4 Ranking the Marketing channel
Ramakumar (2001) identified the different marketing channels based on different performance indicators from which rank was computed. The indicators included were producer’s share in the consumer’s money, marketing cost of intermediaries, marketing margin of intermediaries and returns per unit money of investment. In this study,
producer’s share, marketing margin of intermediaries and rate of return were taken to evaluate the efficiency.

\[ R = \frac{Ni}{Ri} \]

R- An overall rank of a channel (all performance indicators)
Ri- Rank of a channel per a single indicator
Ni- Number of performance indicators and
i- Performance indicators (Rate of return, producers’ share, and marketing margin).

3.3.5 Estimation of District vegetable Requirement

Total district’s annual vegetable requirement is calculated by the multiplication of per head annual requirement by total district population (District Agriculture statistical report, 2010).

\[
\text{District vegetable requirement (Tons/year)} = \left( \frac{\text{Per head annual requirement (Kg.)}}{1000} \times \frac{\text{Total district population}}{1000} \right)
\]

3.4 Graphs, charts and photos

Simple graphs, Pie-chart, line graphs, bar diagram, flow chart, maps and photos were used to present and analyse the data or any information.
4.1 Brief information of country

Nepal is located between India and China, two big countries of Asia. It is brick shaped country with the total geographical area of 147,181 Sq. kilometres with 885 Km length from east to west. The country is well known in the world as country of Mt. Everest. The birth place of Lord Buddha is another identity of the country. Its north latitude is between 26° 12' and 30° 27' north latitude while 80° 04' to 88° 12' is its east longitude. Kathmandu is a capital of the country which is famous as a city of the Temples. Nepali is the national language and it has more than 61 ethnic groups and 90 spoken languages. Nepal's standard time is 5 hours and 45 minutes ahead of Greenwich Mean Time (GMT) and 15 minutes ahead of Indian Standard Time. Within this narrow stretch of land there is incredible diversity in topography ranging from a sub-tropical climate in the terai (plains) to Alpine conditions in the Himalayan regions. Mountains, mid hills, valleys, lakes and plains dominate the landscape of this landlocked country. 

Climatic conditions within Nepal vary from one place to another in accordance with the geographical features. In the north, summers are cool and winters severe, while in the south summers are sub-tropical and winters mild. The monsoon that brings rain from June through September affects most of the country except those that lie in the rain-shadow areas like Mustang.

In the map the number 1 to 75 denotes the number of different districts. There is china in the northern border and Indian in east, west and south. Country is decentralized in different administrative divisions-Developmental region, Zone, District, Village Development Committee/ Municipality and Ward (Map 4.1)
Description of study area

Map: 4.1 Nepal showing administrative distributions

Source: www.planetware.com
Fig: 4.1 Administrative divisions (top to bottom decentralization)

Table: 4.1 Administrative division of Nepal

<table>
<thead>
<tr>
<th>Topographical region</th>
<th>3 topographical regions- Terai, Hill and Mountain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developmental region</td>
<td>5 developmental regions -Eastern, Mid, Western, Mid-western and Far-western</td>
</tr>
<tr>
<td>Zone</td>
<td>14 different zones</td>
</tr>
<tr>
<td>District</td>
<td>75 different districts</td>
</tr>
</tbody>
</table>
More than 50 per cent area of Nepal is hill and mountain. Country is divided into 5 different developmental regions like eastern developmental region, mid developmental region, western developmental region, mid-western developmental region and far-western developmental region. Whole district are again divided into 14 zones. The name of the zone is as per the name of River, Himalaya and religious place. The country is further divided into 75 districts. The number of the district in each zone is not equal.

4.2 Description of Palpa district

4.2.1 Topography and boundary:
Palpa is one of the hills district, situated at the western developmental region, Lumbini zone of Nepal. Its latitude is 27° 34’ N to 27° 57’ N and longitude 83°15’ E to 84° 22’ E. Tanahun, Arghakhanchi, Gulmi, Syangaja, Rupandehi and Nawalparasi are the surrounding districts (Map 4.2). There is large range of altitude from 157-1936 metres above from sea level. Palpa district is located in mid-western region and Lumbini zone.

Map: 4.2 Palpa district
Description of study area

Photo: 4.1 View of Telgha, Mashyam and Dovan Village Development Committees to the south direction of Tansen Municipality

Photo: 4.2 View of Chirtungdhar, Pokharathok and Madanpokhara Village Development Committees to the south direction of Tansen Municipality
4.2.2 Land Use

The geographical area of the district is 1366 square kilometre which covers 136595 hectare. Only 41.85 per cent (57172 hectare) land is under cultivable. All the cultivable land is not used in cultivation; only 63.95 per cent of the cultivable land is used (Table 4.2).

Table: 4.2 Land use details of Palpa

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Details</th>
<th>Area(Hectare)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total area</td>
<td>136595</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cultivable land (Except pasture land)</td>
<td>57172</td>
<td>41.85</td>
</tr>
<tr>
<td>2.1</td>
<td>Cultivated land</td>
<td>36567</td>
<td>63.95</td>
</tr>
<tr>
<td>2.1.1</td>
<td>Low land</td>
<td>8750</td>
<td>23.92</td>
</tr>
<tr>
<td>2.1.2</td>
<td>Up land</td>
<td>27817</td>
<td>76.08</td>
</tr>
<tr>
<td>3</td>
<td>Forest land</td>
<td>53908</td>
<td>39.47</td>
</tr>
<tr>
<td>4</td>
<td>Shrub and bushy land</td>
<td>17264</td>
<td>12.64</td>
</tr>
<tr>
<td>5</td>
<td>Pasture land</td>
<td>6998</td>
<td>5.12</td>
</tr>
<tr>
<td>6</td>
<td>Others</td>
<td>1253</td>
<td>0.92</td>
</tr>
</tbody>
</table>


Table: 4.3 Farm size of Palpa

<table>
<thead>
<tr>
<th>Farm size(Hectare)</th>
<th>Family number</th>
<th>Farm size(Hectare)</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landless</td>
<td>26</td>
<td>3-4</td>
<td>157</td>
</tr>
<tr>
<td>&lt;0.1</td>
<td>1233</td>
<td>4-5</td>
<td>26</td>
</tr>
<tr>
<td>0.1-0.2</td>
<td>3868</td>
<td>5-10</td>
<td>52</td>
</tr>
<tr>
<td>0.2-0.5</td>
<td>14067</td>
<td>&gt;10</td>
<td>0</td>
</tr>
<tr>
<td>0.5-1</td>
<td>15301</td>
<td>Total</td>
<td>44406</td>
</tr>
<tr>
<td>1-2</td>
<td>8136</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td>1548</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: National sample census of Agriculture, Nepal 2001/02
Above table revealed that there are 44406 households in the Palpa district among which 26 are landless. Majority of the family have the land ranging from 0.5-1 hectare (Table 4.3).

4.2.3 Climate
Altitude of the district ranges from 157-1936 metres above sea level. So there is varying types of climate. Mainly the climate is divided in to two types; tropical and subtropical. Average annual rainfall of the district is 1903 millimetre. About 80 per cent of the total annual rain fall happens during June to September.

4.2.4 Soil type
There is less variation in soil type. Mostly sandy loam to sandy clay loam type of the soil found in the district. But, in some low land areas there is clay type of soil.

4.2.5 Irrigation
Out of total 36567 hectare cultivated land only 8750 hectare (23.90 per cent) has irrigation facility. In 3912 hectare land is covered by whole year irrigation, whereas remaining 4838 hectare is seasonal irrigated land.

4.2.6 Population
Table: 4.4  Population distribution of Palpa district

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Details</th>
<th>Unit</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Total population</td>
<td>No</td>
<td>297246</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>No</td>
<td>141346</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>No</td>
<td>155900</td>
</tr>
<tr>
<td>4</td>
<td>Percentage in country’s population</td>
<td>Per cent</td>
<td>1.16</td>
</tr>
<tr>
<td>5</td>
<td>Household</td>
<td>No</td>
<td>49942</td>
</tr>
<tr>
<td>6</td>
<td>Population growth rate</td>
<td>Per cent/year</td>
<td>1.28</td>
</tr>
<tr>
<td>7</td>
<td>Average family size</td>
<td>No</td>
<td>5.38</td>
</tr>
<tr>
<td>8</td>
<td>Population density</td>
<td>No/m²</td>
<td>196</td>
</tr>
<tr>
<td>9</td>
<td>Agriculture dependent population</td>
<td>Per cent</td>
<td>63.17</td>
</tr>
<tr>
<td>10</td>
<td>Agriculture dependent households</td>
<td>No</td>
<td>44406</td>
</tr>
</tbody>
</table>

Source: Department of Statistics, Central office, Kathmandu 2005
As per the national census report 2002/3 total population of the district was 297246. Female population was more than the male. Majority (63.17 per cent) of the people of the district depends on agriculture (Table 4.4).

4.2.7 Literacy
As per the population census literacy rate of the district was 56.56 per cent.

4.2.8 Decentralization of the Government’s developmental program
Administratively the district divided in to 65 Village Development Committee and one Municipality. District developmental programme used to decentralize to the village level through District Development Committee, Village Development Committee or Municipality and Ward. Each Developmental organization has their district offices and they use to launch their programme through the respective local level offices. District Agriculture Development Offices have agriculture service centre in local level. There are six agriculture service centres in the district.

4.2.9 Non Government Organizations
There are 15 International-Non Governmental Organizations and 422 local Non-Governmental Organizations. Out of these 15 are implementing agriculture development programme. International Development Enterprises Nepal (IDE/Nepal-INGO), Rural Economic Development Association (REDA-NGO), and Social Resource Development Centre (SRDC-NGO) are providing support to the farmers in vegetable sub-sector of the agriculture.
RESULT AND DISCUSSION

5.0 General Background

Growth:

Most of the vegetable growers in Palpa district were organized in groups. There were 1500 active vegetable growers unified in 89 groups (Table 5.1).

Table: 5.1 Active vegetable producing groups and members in Palpa district

<table>
<thead>
<tr>
<th>Group type</th>
<th>Group no.</th>
<th>Members</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>28</td>
<td>461</td>
<td>0</td>
<td>461</td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
<td>136</td>
<td>136</td>
<td>0</td>
</tr>
<tr>
<td>Mix</td>
<td>51</td>
<td>903</td>
<td>523</td>
<td>380</td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>1500</td>
<td>659</td>
<td>841</td>
</tr>
</tbody>
</table>

Out of the total vegetable growing household 56 per cent were female. Observations showed that majority of the female farmers were encouraging in the vegetable farming.

It was observed that there were solely female, male and mix type of groups. There were more number of the mix groups then female and male groups were lesser in number.

Area, production and productivity of vegetables in Palpa district

Table: 5.2 Year wise area under vegetables, production and productivity in Palpa district.

<table>
<thead>
<tr>
<th>Year</th>
<th>Area (Ha)</th>
<th>Production (Mt.)</th>
<th>Productivity (Mt./Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>1952</td>
<td>23583</td>
<td>12.08</td>
</tr>
<tr>
<td>2006</td>
<td>1960</td>
<td>24166</td>
<td>12.33</td>
</tr>
<tr>
<td>2007</td>
<td>1965</td>
<td>24785</td>
<td>12.61</td>
</tr>
<tr>
<td>2008</td>
<td>1986</td>
<td>25651</td>
<td>12.92</td>
</tr>
<tr>
<td>2009</td>
<td>1995</td>
<td>25935</td>
<td>13.00</td>
</tr>
<tr>
<td>2010</td>
<td>2019</td>
<td>26247</td>
<td>13.00</td>
</tr>
<tr>
<td>Total</td>
<td>11877</td>
<td>150367</td>
<td>75.94</td>
</tr>
</tbody>
</table>

Area
Total land of the Palpa district was found 136595 hectare. Out of which 57172 ha was cultivable land (41.8 per cent). About 63 per cent of the cultivable land was put under the crop production.

Figure: 5.1 Area under vegetable production, Palpa district (2005-10)

Out of total agricultural land, 2019 hectare land was covered by the vegetables excluding 705 ha of potato (Table 5.2).

In last five years duration cultivated area of vegetable was increased in subsequent year. From 2005 to 2007 and 2008 to 2009 increment was lower while it was higher from 2007 to 2008 and 2009 to 2010 (Figure 5.1).

Production
Annual vegetable production was 26247 metric tons (except 6627 metric tons potato) and the productivity was 13 metric tons per hectare (table 5.2).
It was observed that the vegetable production was in higher rate during 2005 to 2008 while it was lower from 2008 to 2010 (Figure 5.2).

Yield

Productivity of the vegetables was in increasing order. The rate of increment was higher during the year 2005 to 2008 while it was lower rate from 2008 to 2009 and stable from 2009 to 2010 (Figure 5.3).

5.1 Status of vegetable production and transaction in the district

5.1.1 Vegetable Demand-Surplus situation in the district

Annual production of green vegetable and potato in the Palpa district was 32874 metric tons, whereas total vegetable requirement of the district was estimated to be 32814 metric tons.
It was estimated that there were 60 metric tons vegetables including potato was annual surplus in the district (Annual Agriculture Development Programme and Statistical book, Palpa, 2010).

As mentioned by Kumar and Aurora (2003) on study of the Uttaranchal there was need of strengthening the proper input delivery system, infrastructural facilities and marketing arrangements for vegetables by the planner and policy maker to give boost to vegetable production and increase marketed volume in Palpa district too.

5.1.2 Green vegetable market equilibrium in Palpa district

Table: 5.3 Green vegetable import, export and sales in the district (2010)

<table>
<thead>
<tr>
<th>Supplier</th>
<th>Unit avg. qnt (mt.)</th>
<th>No</th>
<th>Tot. qnt. (mt.)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marketed volume of the district</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madanpokhara Krishi Bahu</td>
<td>730</td>
<td>4</td>
<td>2920</td>
</tr>
<tr>
<td>Udesiye Sahakari Sanstha(Big MPC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small MPCs</td>
<td>195</td>
<td>15</td>
<td>2922</td>
</tr>
<tr>
<td><strong>Sub Total</strong></td>
<td></td>
<td></td>
<td>5842</td>
</tr>
<tr>
<td>Others (P-W/S-R-C=5%, P-R-C=5%, P-C=10%)</td>
<td></td>
<td></td>
<td>1168</td>
</tr>
<tr>
<td><strong>Total Marketed volume</strong></td>
<td></td>
<td></td>
<td>7010</td>
</tr>
<tr>
<td>Export from district</td>
<td></td>
<td></td>
<td>2555</td>
</tr>
<tr>
<td><strong>Total sale in district</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retailer</td>
<td>37.30</td>
<td>175</td>
<td>6528</td>
</tr>
<tr>
<td>Direct sale</td>
<td></td>
<td></td>
<td>584</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td>7112</td>
</tr>
<tr>
<td>Import from outside district</td>
<td>37%</td>
<td></td>
<td>2657</td>
</tr>
</tbody>
</table>
Source: Primary- interview with wholesaler & Apex body; Secondary-Annual report of DADO.

Annual marketed volume of vegetables in the district was 7010 mt (Table 5.3). Out of this 2920 metric tonnes was through big collection centers, 2922 metric tons through smaller collection centers and remaining 1168 metric tons through others than the collection centers.

**Figure: 5.4 District’s vegetable supply through different channels**

Others:

P-W/S-R-C= Producers➡️Wholesalers➡️Retailers➡️Consumers

P-R-C= Producers➡️Retailers➡️Consumers

P-C= Producers➡️Consumers

Marketed volume share of big MPCs was 41 per cent, small MPCs 42 per cent and others 17 per cent. The higher percentage of vegetable was sold through big MPCs or collection centers (Figure 5.4). Out of total vegetable marketed in the district 2555 mt. was exported from other districts of the country annually.
Total annual green vegetable sales in the district was 7112 mt. Out of this 6528 metric tons (92 per cent) was sold by retailers while 584 metric tons (8 per cent) was sold directly by farmers to the consumers (Figure 5.5).

Total 2657 mt. was imported from out of the district annually. Table 5.3 revealed that Palpa district imported 102 mt. more green vegetables than the quantity imported annually.

5.1.3 Vegetables having highest price in the market:
From the survey it was found that tomato, cauliflower, cucumber, green chilli and capsicum was sold in highest price in local market.

5.1.4 Competition for the district vegetable

Table: 5.4 Competition for the district vegetables

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Vegetable</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tomato</td>
<td>Kapurkot, Dhading, Nasik (India), India, Syangja, Chitawan</td>
</tr>
<tr>
<td>2</td>
<td>Chilli</td>
<td>India, Chitawan, Parasi</td>
</tr>
<tr>
<td>3</td>
<td>Cauliflower</td>
<td>Terai and Chitawan (seasonal), Palung Daman (Off-season)</td>
</tr>
<tr>
<td>4</td>
<td>Cabbage</td>
<td>Terai and Chitawan (seasonal), Palung Daman (Off-season)</td>
</tr>
<tr>
<td>5</td>
<td>Bean</td>
<td>Dang, Syangja, Dhading</td>
</tr>
</tbody>
</table>

Table 5.4 revealed that Palpa district had competed with the vegetables of Salyan (Kapurkot), Dhading, Chitawan, Nawalparasi, Makawanpur (Palung), Shyangja
(Terayasi) and India (Nasik). Off-season cauliflower and cabbage was competed with Palung-Daman but seasonal competed with Chitawan and other terai districts. Likewise for tomato competition was with Kapurkot, Dhading, Nasik (India), India, Syangja, Chitawan; for chilli with India, Chitawan and Parasi; and for bean with Dang, Syangja, Dhading.

5.2 Value chain mapping and analysis

5.2.1 Mapping the value chain of vegetable

5.2.1.1 Identification and mapping the main factors involved in the processes.

Table: 5.5 Actors and enablers of vegetable value chain in the district.

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Functions</th>
<th>Actors</th>
<th>No.</th>
<th>Enablers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Input supply</td>
<td>Agro-vet holders</td>
<td>58</td>
<td>DADO, NGO, AIC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MLFs</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nurserymen</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Production</td>
<td>Farmers</td>
<td>1500</td>
<td>DADO, NGO, Cooperatives, AIC</td>
</tr>
<tr>
<td>3</td>
<td>Marketing</td>
<td>MPCs of Local level smaller CC</td>
<td>19</td>
<td>Agricultural production and Marketing Cooperatives</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apex body of district Collection centre</td>
<td>1</td>
<td>District Cooperative PCCI, I/N/GOs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wholesaler(Regional)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wholesaler(District)</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Retailer</td>
<td>175</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Consumption</td>
<td>Consumers</td>
<td>297246</td>
<td></td>
</tr>
</tbody>
</table>

Source: Annual statistical report, DADO/Palpa, 2010; Reports of IDE Nepal; and District Vegetable collection centre (Apex body)

Input supply, production, marketing and consumption were the functions of the vegetable value chain of Palpa district (Table 5.5). Different types of actors were observed there like Agro-vets, master leader farmers (MLFs), nursery growers, farmers/producers, marketing and planning committees of local level/smaller collection centres; apex body of district collection centres, wholesaler (regional), wholesaler (district), retailer etc. There were some enablers to facilitate the actors for smooth
functioning. Those enablers were district agriculture development office, non-government organizations, agriculture input corporation, agricultural production and marketing cooperatives, district cooperative, Palpa chamber of Commerce and Industry etc.

5.2.1.2 Mapping the flow of Input

Figure: 5.6 Flow of inputs in Palpa district

Agricultural inputs to the farmers in Palpa district were flowed through two main dealers of the districts. There were 56 active Agro-Vets which purchased the inputs from district dealers or from Butwal based dealers. There were 12 active local resource persons named Master Leader Farmers (MLFs) were developed within the farmers’ community (Figure 5.6). They used to provide both the agricultural inputs and technical know-how to the farmers.
Those farmers who were less skilled in growing the seedlings used to purchase from vegetable nursery growers. There were 13 active farmers who used to supply seedlings regularly as their business. Similarly, there were 1500 active farmers who used to produce vegetable regularly.
Pesticide consumption in the Palpa district in a year
Total liquid (Lit.) = 908  
Total granule (Kg.) = 130  
Total Dust (Kg.) = 3070  
Total fumigant (Tin) = 3

**Source:** Annual statistical report of DADO, Palpa, 2010

Basically commercial farmers were mostly using pesticides in Palpa district. Farmers used to apply urea more than the others. As per observed data application of solid pesticide was higher than the liquid.

### 5.2.1.3 Mapping the flow of products

As per the record of district agriculture development office annual district vegetable production was 26247 metric tons. It’s 26.7 per cent was marketed. Total imported vegetable from out districts was 2657 metric tons (Table 5.3). Similarly export to out districts was 2555 metric tons. Export to India, mainly in rainy season, was about 146 metric tons.

All the vegetable marketed in the district flows through different channels. Following channels were observed there.

**Figure: 5.7 Vegetable marketing channels in the district**
Result and Discussion

Channel-I = Farmers → Consumers (F-C)

Channel-II = Farmers → Retailers → Consumers (F-R-C)

Channel-III = Farmers → Collection Center → Wholesalers (Butwal) → Retailers → Consumers (F-C-Wb-R-C)

Channel-IV = Farmers → Collection Center → Wholesalers (Butwal) → Retailers (India) → Consumers (F-C-Wb-Ri-C)

Channel-V = Farmers → Collection Center → Wholesalers (East Palpa) → Retailers → Consumers (F-C-We-R-C)

Channel-VI = Farmers → Collection Center → Apex body → Retailers → Consumers (F-C-A-R-C)

Channel-VII = Farmers → Wholesalers (Aryabhanjyang) → Retailers → Consumers (F-C-Wa-R-C)

Saha et al., 2010 had examined various supply chains of vegetable producing farmers of Ranchi district and found that a shorter chain of marketing was preferred for relatively highly perishable commodities in comparison relatively less perishable vegetables i.e. onion and potato. Similarly, small farmer preferred to sale immediately and go to a larger merchant, where as marginal farmers preferred to sale their produce to the consumer directly. Same event was observed in Palpa district too. Those farmers who cultivated vegetables in a small piece of land used to sale directly or immediately to the consumer, or the retailer of nearest market mostly highly perishable vegetables like leafy vegetables. But, those farmers who cultivated in larger area and produced larger amount used to sell in farther and bigger market like Butwal regional market.
Photo: 5.3 Farmers collecting and selling vegetables in collection centre, chandibhanjyang, Palpa.
5.2.1.4 Mapping the flow of volume of vegetable products

**Figure: 5.8 Flow of volume of vegetables in Palpa**

Vegetable sold (of district production) = 7010 mt. i.e. 26.7 per cent of total production 26247 mt.
5.2.1.5 Mapping the knowledge and flows of information among value chain players

**Input supply**

Input suppliers → MLFs → Producers

**Type of information flow:** Farmers demand of seed, tools; Availability of new vegetable variety in market.

**Enablers:** DADO, NGO, AIC

**Production**

Producers → Input suppliers → Vegetable traders

**Type of information flow:** Production techniques, Crop damage forecast information, High demand crop selection.

**Enablers:** DADO, NGO, Cooperatives, AIC

**Marketing**

Vegetable traders → MPCs/CC → Producers

**Type of information flow:** Production site, marketing cost, Marketing margin, Product quality, Price information

**Enablers:** MPC, Apex body, Cooperative, PCCI, I/N/GOs

**Consumption**

Consumer ↔ Trader ↔ Producers

**Type of information flow:** Consumers preference (Taste, price and quality focused), availability of the product by quality, price and type.

**Enablers:** PCCI, F.M. radio
Flow of Technical Information:
Agricultural Development Offices, NGOs, Local Resource Person were major source of technical information for the farmers. Beside these farmers used to get the knowledge from Agro-vets, Collection Centre etc.

Flow of Market Information:
Basically, farmers used to get vegetable market information through direct contact with the traders. They used to contact through landline telephone and mobile phone. There were four local F.M. radio stations. They used to broadcast market price of the vegetables. Farmers were also getting benefit also from it.

Flow of information related to business skill
Agricultural development offices, NGOs, partners of supply chain, local resource person, books and publications were the main sources of business idea and skill for the supply chain actors. Among these DADO and NGO were major sources.

As mentioned by the Omezzine (1997) on Oman’s study, enablers of the value chain were playing facilitation role to improve the trade network among the producers and traders in Palpa district too. Therefore, by the enhancement of facilitating functions the marketing of fresh produce could be improved.
5.2.1.6 Mapping of the geographical flow of the product or services.

Map- 3 Geographical flow of the product or services

![Map of Palpa District showing geographical flow of the product or services]

- Vegetable collection Centre (CC)
- District Vegetable marketing/Collection Centre (Apex body)
- District Agriculture Development Office (DADO)

5.2.1.7 Mapping the relationships and linkages between value chain actors.

The relationship between and among the different actors of value chain is denoted by arrow. In the map functions are placed at left side and the enablers at right side. Enablers played facilitation role to perform different functions by the actors.
Figure: 5.9 Mapping the relationships and linkages between value chain actors

- **Consumption**
  - Consumers-District
  - Consumers-Out District
  - Retail shop-District, 175 no.
  - Retail shop-Out district

- **Retailing**
  - 584 Mt./yr
  - 3871 Mt./yr
  - 2409 Mt./yr
  - 146 Mt./yr

- **Wholesaling**
  - District level wholesalers, 7 no.
  - Small CC, 15 no.
  - 292 Mt./yr
  - 292.1 Mt./yr
  - 292.2 Mt./yr
  - 2657 Mt./yr

- **Collection**
  - 3214 Mt./yr
  - 365 Mt./yr
  - 365 Mt./yr
  - 365 Mt./yr
  - 365 Mt./yr

- **Production**
  - 2409 Mt./yr
  - Active Farmers, 1500 no, 7010 Mt.
  - 2922 Mt./yr

- **Input supply**
  - Agro-vets (58 no.), Nursery-men (13 no), MLFs (12 no)
  - 2409 Mt./yr
  - 2657 Mt./yr
  - 2920 Mt./yr

ACTORS

- FNCCI
- Agriculture Development Bank
- Hort.Farm
- DADO
- Farmers group
- Cooperatives
- Micro credit
- Micro credit
5.2.2 Analysis of Value chain of Major vegetables

5.2.2.1. Identification of major vegetables through attractive matrix method.

Service providers meeting was held in the Tansen, Palpa in which attractive vegetables in the district were identified through attractive matrix method. The indicators of the judgement of attractiveness were market price and market demand. In figure the shaded zone is the most attractive zone and the vegetables placed at this zone were attractive vegetables or major vegetables. Vegetable value chain players and enabling organization judged it. Tomato, green chilli and cauliflower were marked as more attractive vegetables (Figure 5.10).

**Figure: 5.10 Attractive matrixes to select major vegetables in the district**

<table>
<thead>
<tr>
<th>Higher Market price</th>
<th>High</th>
<th>Medium</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green chilli</td>
<td>Tomato</td>
<td>Bean</td>
<td>Cabbage</td>
</tr>
<tr>
<td>Tomato</td>
<td></td>
<td>Cauliflower</td>
<td>Cowpea</td>
</tr>
<tr>
<td>Low</td>
<td>Medium</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>

Tomato = High price – High demand
Green chilli = High price- Medium demand
Cauliflower = Medium price- Medium demand
5.2.2.2 Product value share of different market players on consumer’s price in different marketing channel

Figure: 5.11 Farmers share on consumers’ price

Sindh Toaha (1974) in a study on marketing efficiency of vegetables in Pakistan concluded that there was a low producer’s share in the consumer’s rupee and high price fluctuation. But in this study farmers share was found higher and somewhat price variation in eastern Palpa and south Palpa.

In first channel farmers used to sell vegetable directly to the consumers so their share on consumers’ price was hundred per cent. Farmers then shared higher percentage in channel six from the selling of three major vegetables tomato, green chilli and cauliflower.

Singh et al. (2005) suggested an appropriate policy framework for increasing the production of off-season vegetables. According to the authors standardization of the grades and packing materials and timely availability of transport to distant markets were suggested; strict implementation of market regulations were expected for the improvement of producers' share by curbing the tendency of various market intermediaries in resorting to different malpractices. Similarly in Palpa this suggestion was applicable basically in the marketing channel III (distant market).

Devaraid (1998) concluded that in channel III representing distant Market (Banglore), the producer’s share in the consumer’s rupees was the highest. Hence selling of produce at the distant market was found to be more profitable to the farmers. But in this
study it was found that producers share was higher in local market and district level market facilitated by Marketing and Planning Committee.

Adhikari (2003) analyzed that marketing channel producer-retailer- consumer of cauliflower was most common in Madanpokhara, Pokharathok and Chidipani Village Development Committee, Palpa. In this study it was found that cauliflower was supplied through all type of marketing channel. But it's supply was lower in channel Farmers- Collection Center- Wholesalers (Butwal)- Retailers (India) –Consumers. In the same study investigator found that the marketing margin was higher in Madanpokhara as compare to Pokharathok and Chidipani. Similarly, the producer's share was lower in Madanpokhara and higher in Pokharathok. This study also observed the same result.

**Figure: 5.12 Wholesalers’ share on consumers’ price**

When we observe the players of channel in figure 5.12, whole sellers were only participated in channel 3, 5 and 7. In these three channels they shared highest per cent in channel 7 by the sale of tomato. In the sales of green chilli, the whole sellers of all three channel shared same percentage.
In the case of retailers’ share, in the channel 4 they shared highest percentage by the sales of cauliflower (Figure 5.13).

5.2.2.3 Marketing efficiency different marketing channels of major vegetables

Table: 5.6 Marketing cost, marketing margins, marketing loss, value addition and the marketing efficiency of different marketing channels of major vegetables

Tomato:

<table>
<thead>
<tr>
<th>S.N</th>
<th>Particulars</th>
<th>Unit</th>
<th>C-I</th>
<th>C-II</th>
<th>C-III</th>
<th>C-IV</th>
<th>C-V</th>
<th>C-VI</th>
<th>C-VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Retailer’s sale price or Consumer's Purchase price</td>
<td>Rs./ Kg</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>80</td>
<td>50</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>2</td>
<td>Total Marketing cost(MC)</td>
<td>Rs./ Kg</td>
<td>0.5</td>
<td>1.5</td>
<td>5</td>
<td>1.25</td>
<td>0.5</td>
<td>1.75</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Loss</td>
<td>Rs./ Kg</td>
<td>1.24</td>
<td>1.9</td>
<td>3</td>
<td>2.85</td>
<td>1.2</td>
<td>1.58</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Total net Marketing Margins (MM)</td>
<td>Rs./ Kg</td>
<td>6.26</td>
<td>6.6</td>
<td>47.5</td>
<td>5.9</td>
<td>2.3</td>
<td>6.68</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Net price received by farmers(FP): 1-2-3-4</td>
<td>Rs./ Kg</td>
<td>35</td>
<td>27</td>
<td>25</td>
<td>24.5</td>
<td>40</td>
<td>31</td>
<td>25</td>
</tr>
<tr>
<td>6</td>
<td>Value added: (1-5)</td>
<td>Rs./ Kg</td>
<td>8</td>
<td>10</td>
<td>55.5</td>
<td>10</td>
<td>4</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Marketing Efficiency (MME): 5÷(2+4)</td>
<td>Ratio</td>
<td>3.99</td>
<td>3.09</td>
<td>0.47</td>
<td>5.59</td>
<td>11.2</td>
<td>2.96</td>
<td></td>
</tr>
</tbody>
</table>
Result and Discussion

Green chilli:

<table>
<thead>
<tr>
<th>S.N</th>
<th>Particulars</th>
<th>Unit</th>
<th>C-I</th>
<th>C-II</th>
<th>C-III</th>
<th>C-IV</th>
<th>C-V</th>
<th>C-VI</th>
<th>C-VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Retailer's sale price or Consumer's Purchase price</td>
<td>Rs./ Kg</td>
<td>75</td>
<td>75</td>
<td>75</td>
<td>110</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>2</td>
<td>Total Marketing cost(MC)</td>
<td>Rs./ Kg</td>
<td>0.5</td>
<td>1.75</td>
<td>5</td>
<td>1.75</td>
<td>0.5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Loss</td>
<td>Rs./ Kg</td>
<td>3.6</td>
<td>5.25</td>
<td>3.8</td>
<td>5.7</td>
<td>3.6</td>
<td>5.7</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Total net Marketing Margins(MM)</td>
<td>Rs./ Kg</td>
<td>10.9</td>
<td>13</td>
<td>46.2</td>
<td>7.55</td>
<td>10.9</td>
<td>7.3</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Net price received by farmers(FP): 1-2-3-4</td>
<td>Rs./ Kg</td>
<td>75</td>
<td>60</td>
<td>55</td>
<td>55</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>6</td>
<td>Value added: (1-5)</td>
<td>Rs./ Kg</td>
<td>15</td>
<td>20</td>
<td>55</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Marketing Efficiency(MME): 5÷(2+4)</td>
<td>Ratio</td>
<td>5.26</td>
<td>3.73</td>
<td>1.07</td>
<td>6.45</td>
<td>5.26</td>
<td>6.45</td>
<td></td>
</tr>
</tbody>
</table>

Cauliflower:

<table>
<thead>
<tr>
<th>S.N</th>
<th>Particulars</th>
<th>Unit</th>
<th>C-I</th>
<th>C-II</th>
<th>C-III</th>
<th>C-IV</th>
<th>C-V</th>
<th>C-VI</th>
<th>C-VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Retailer's sale price or Consumer's Purchase price</td>
<td>Rs./ Kg</td>
<td>55</td>
<td>55</td>
<td>65</td>
<td>95</td>
<td>65</td>
<td>60</td>
<td>62</td>
</tr>
<tr>
<td>2</td>
<td>Total Marketing cost(MC)</td>
<td>Rs./ Kg</td>
<td>0.5</td>
<td>2</td>
<td>5</td>
<td>1.75</td>
<td>0.5</td>
<td>2.25</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Loss</td>
<td>Rs./ Kg</td>
<td>2.2</td>
<td>2.95</td>
<td>3</td>
<td>3.18</td>
<td>2.2</td>
<td>2.98</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Total net Marketing Margins(MM)</td>
<td>Rs./ Kg</td>
<td>2.3</td>
<td>10.05</td>
<td>37</td>
<td>8.07</td>
<td>2.3</td>
<td>4.77</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Net price received by farmers(FP): 1-2-3-4</td>
<td>Rs./ Kg</td>
<td>55</td>
<td>50</td>
<td>50</td>
<td>52</td>
<td>55</td>
<td>52</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Value added: (1-5)</td>
<td>Rs./ Kg</td>
<td>5</td>
<td>15</td>
<td>45</td>
<td>13</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Marketing Efficiency(MME): 5÷(2+4)</td>
<td>Ratio</td>
<td>17.8</td>
<td>4.15</td>
<td>1.19</td>
<td>5.30</td>
<td>19.6</td>
<td>7.41</td>
<td></td>
</tr>
</tbody>
</table>

**Consumer’s purchase price:** All three product purchase price of consumer was highest in channel -IV but farmers selling price of tomato was highest in channel five, green chilli in channel first, Cauliflower in channel first and sixth (Table 5.6).

**Farmer’s price:** As mentioned in the table 10, price paid to the farmers was not so vast different among the channels. However, it was higher in channel V for tomato; in channel II, V, VI and VII for green chilli; and in channel VI for cauliflower (Table 5.6).

**Marketing cost:** Table 5.6 revealed that the marketing cost was highest and equal for all three items in channel fourth.
Marketing margin: As per the table 5.6 the net marketing margin of all three vegetables was highest in channel fourth. It was lowest in channel sixth (Tomato and cauliflower), in channel seventh (green chilli).

Market loss: The table 5.6 indicates that the loss of chilli was highest among the all three vegetables.

Producer’s share on consumer’s price: Producer’s share on consumer’s price was highest in channel I and VI for tomato; in channel I, II, V, VI and VII for green chilli; and I and VI for cauliflower (figure 5.11).

Rate of return: As given below table 5.7 rate of return was highest in channel VI of tomato; channel III of green chilli and channel VII of cauliflower.

According to Acharya (2010) marketing efficiency of the different marketing channel can be measured by using three different factors; price paid to farmers, marketing cost and marketing margins. Higher farmer’s price, lower marketing cost and lower margin result higher marketing efficiency.

Table: 5.7 Rank of the marketing channel

<table>
<thead>
<tr>
<th>Indicators\Channels</th>
<th>C-II</th>
<th>C-III</th>
<th>C-IV</th>
<th>C-V</th>
<th>C-VI</th>
<th>C-VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of Return</td>
<td>4</td>
<td>3</td>
<td>2.2</td>
<td>3.2</td>
<td>5.5</td>
<td>4</td>
</tr>
<tr>
<td>Rank</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Producer’s share</td>
<td>77</td>
<td>71</td>
<td>31</td>
<td>80</td>
<td>89</td>
<td>71</td>
</tr>
<tr>
<td>Rank</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Marketing Margin</td>
<td>6.26</td>
<td>47.5</td>
<td>5.9</td>
<td>2.26</td>
<td>10.9</td>
<td>2.3</td>
</tr>
<tr>
<td>Rank</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>6</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Average of all ranks</td>
<td>2.66</td>
<td>3</td>
<td>4.66</td>
<td>3.66</td>
<td>1.33</td>
<td>3.66</td>
</tr>
<tr>
<td>Overall rank</td>
<td>2</td>
<td>3</td>
<td>5</td>
<td>4</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Green chilli:

<table>
<thead>
<tr>
<th>Indicators\Channels</th>
<th>C-II</th>
<th>C-III</th>
<th>C-IV</th>
<th>C-V</th>
<th>C-VI</th>
<th>C-VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of Return</td>
<td>7.6</td>
<td>13.1</td>
<td>6.2</td>
<td>4.7</td>
<td>6.6</td>
<td>7.9</td>
</tr>
<tr>
<td>Rank</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Producer’s share</td>
<td>80</td>
<td>73</td>
<td>50</td>
<td>80</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>Rank</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Marketing Margin</td>
<td>10.9</td>
<td>13</td>
<td>46.2</td>
<td>7.55</td>
<td>10.9</td>
<td>7.3</td>
</tr>
<tr>
<td>Rank</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Average of all ranks</td>
<td>2.33</td>
<td>1.67</td>
<td>3</td>
<td>3.67</td>
<td>2.67</td>
<td>2.67</td>
</tr>
<tr>
<td>Overall rank</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
Cauliflower:

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Channels</th>
<th>C-II</th>
<th>C-III</th>
<th>C-IV</th>
<th>C-V</th>
<th>C-VI</th>
<th>C-VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of Return</td>
<td></td>
<td>3.6</td>
<td>3.7</td>
<td>3.2</td>
<td>2.5</td>
<td>3.6</td>
<td>3.8</td>
</tr>
<tr>
<td>Rank</td>
<td></td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Producer’s share</td>
<td></td>
<td>91</td>
<td>77</td>
<td>53</td>
<td>80</td>
<td>92</td>
<td>84</td>
</tr>
<tr>
<td>Rank</td>
<td></td>
<td>2</td>
<td>5</td>
<td>6</td>
<td>4</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Marketing Margin</td>
<td></td>
<td>2.3</td>
<td>10.05</td>
<td>37</td>
<td>8.07</td>
<td>2.3</td>
<td>4.77</td>
</tr>
<tr>
<td>Rank</td>
<td></td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Average of all ranks</td>
<td></td>
<td>3.33</td>
<td>3</td>
<td>3.67</td>
<td>4</td>
<td>3</td>
<td>2.67</td>
</tr>
<tr>
<td>Overall rank</td>
<td></td>
<td>3</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

In the calculation, R = Ni/Ri

R- An overall rank of a channel (all performance indicators)

Ri- Rank of a channel per a single indicator

Ni- Number of performance indicators and

i- Performance indicators (Rate of return, producers’ share, and marketing margin).

Table: 5.8 Rank of the marketing channels of major vegetables

<table>
<thead>
<tr>
<th>Rank</th>
<th>Vegetable</th>
<th>Tomato</th>
<th>Green chilli</th>
<th>Cauliflower</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C-VI</td>
<td>C-III</td>
<td>C-VII</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>C-II</td>
<td>C-II</td>
<td>C-III and C-VI</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>C-III</td>
<td>C-VI and C-VII</td>
<td>C-II</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>C-V and C-VII</td>
<td>C-IV</td>
<td>C-IV</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>C-IV</td>
<td>C-V</td>
<td>C-V</td>
<td></td>
</tr>
</tbody>
</table>

As mentioned by Adeyokumnu (1973) the analysis of this survey supported on fact that high marketing margins are sometimes regarded as evidence of inefficiency (Table 5.6) and the middlemen are often blamed for earning excessive profits. This was not always so. However, an increase in absolute margin is not clearly an indicator of efficiency or inefficiency of the marketing system. To be the efficient marketing system producers share on consumer’s price and the returns to the investment need to be higher (Table 5.7).
Ramakumar (2001) identified the different marketing channels based on different performance indicators from which their rank was computed. The indicators included were producer’s share in the consumer’s money, marketing cost of intermediaries, marketing margin of intermediaries and returns per unit money of investment. In this study, producer’s share, marketing margin of intermediaries and rate of return were taken to evaluate the efficiency.

Table 5.8 revealed that channel VI (Farmers ➔ Collection Center ➔ Apex body ➔ Retailers ➔ Consumers) for tomato, channel III (Farmers ➔ Collection center ➔ Wholesalers (Butwal) ➔ Retailers ➔ Consumers) for green chilli and channel VII (Farmers ➔ Wholesalers (Aryabhanjyang) ➔ Retailers ➔ Consumers) were found best channels of marketing in Palpa.

Zulfiqar et al. (2005) revealed from the data analysis on his study that the producer got only up to 37 per cent, on average, of the consumer rupee for tomato. Margin acquired by the wholesaler and retailer was 23 and 18 per cent, respectively. But in case of Palpa district it was found that the producer got 31 to 89 per cent in different channel. Similarly wholesaler’s margin was ranging between 9 to 14 per cent and retailer’s margin was between 11 to 23 per cent of consumer’s price.

Khan et al. (2005) found that the difference in marketing margins for various vegetables was due to high marketing and picking costs. They also observed that the vegetable having highest marketing margins had lowest net margin of wholesalers and retailers. In case of Palpa higher marketing margin had higher net margins of wholesalers and consumers.

5.3 Examination of constraints, opportunities of market oriented value chain

5.3.1 Consumers:

Thirty respondents were asked about the knowledge on nutritive value of the vegetable but sixty-seven per cent said yes. It means that majority of the people in the district were familiar on nutritional importance of the vegetable. On pre-test interview some major constraints and opportunities of the consumers were listed. Later these were ranked and tested by statistical tool.
Constraints
1. Insufficient availability in the local retail market
2. Not availability of vegetables as much amount as need
3. Not availability of the vegetables as per consumers demand
4. Not availability of fresh vegetable
5. Higher price

The respondent ranked the constraints giving the value 1 to 5 where 1 was given for top most constraint and 5 for least important constraints. The total value and the grade of each constraint were given below:

<table>
<thead>
<tr>
<th>Constraints</th>
<th>C-1</th>
<th>C-2</th>
<th>C-3</th>
<th>C-4</th>
<th>C-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total value</td>
<td>46</td>
<td>107</td>
<td>86</td>
<td>101</td>
<td>111</td>
</tr>
<tr>
<td>Grade</td>
<td>I</td>
<td>IV</td>
<td>II</td>
<td>III</td>
<td>V</td>
</tr>
</tbody>
</table>

Ci= ith constraints i= 1 to 5

Table: 5.9 Ranks of the constraints of consumers

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraint-1</td>
<td>1.53</td>
</tr>
<tr>
<td>Constraint-2</td>
<td>3.55</td>
</tr>
<tr>
<td>Constraint-3</td>
<td>2.87</td>
</tr>
<tr>
<td>Constraint-4</td>
<td>3.37</td>
</tr>
<tr>
<td>Constraint-5</td>
<td>3.68</td>
</tr>
</tbody>
</table>

Table: 5.10 Friedman test for the constraints rank of consumers

<table>
<thead>
<tr>
<th>N</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>36.935</td>
</tr>
<tr>
<td>d.f.</td>
<td>4</td>
</tr>
</tbody>
</table>

Table value of chi-square at 4 d.f. at 5% level of significance was 9.488. The calculated value of chi-square (36.935) is greater than the table value. It is concluded that all the respondent consumers were agreement in ranking of constraints of consumer. Low (insufficient) availability of vegetables in the local retail markets and unavailability of the items as per consumers’ demand were the major obstacles.
Opportunities

1. Nearer to regional market (Butwal)
2. Can buy vegetables all over the year
3. If chain is improved can get varieties of local vegetable
4. Due to cool climate, people can get fresh vegetable if supply chain is improved.
5. Price information is available through the different communication media

The respondents ranked the opportunities giving the value 1 to 5 where 1 was given for best opportunity and 5 for least important opportunity. The total value and the grade of each opportunity was as below-

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>O-1</th>
<th>O-2</th>
<th>O-3</th>
<th>O-4</th>
<th>O-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total value</td>
<td>111</td>
<td>96</td>
<td>81</td>
<td>46</td>
<td>116</td>
</tr>
<tr>
<td>Grade</td>
<td>IV</td>
<td>III</td>
<td>II</td>
<td>I</td>
<td>V</td>
</tr>
</tbody>
</table>

Oi= ith opportunities  i= 1 to 5

Table: 5.11 Ranks of the Opportunities of consumers

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity-1</td>
<td>3.70</td>
</tr>
<tr>
<td>Opportunity-2</td>
<td>3.20</td>
</tr>
<tr>
<td>Opportunity-3</td>
<td>2.70</td>
</tr>
<tr>
<td>Opportunity-4</td>
<td>1.53</td>
</tr>
<tr>
<td>Opportunity-5</td>
<td>3.87</td>
</tr>
</tbody>
</table>

Table: 5.12 Friedman test for the opportunities ranking of of consumers

| Chi-Square | 42.267 |
| d.f.       | 4      |

Table value of chi-square at 4 d.f. and 5% level of significance is 9.488. The calculated value of chi-square (42.267) is greater than the table value. It is concluded that all the respondent consumers were agreement in ranking of opportunities of consumer. It was also observed that there was greatest opportunity to make availability of various items of locally produced fresh vegetables in market if the supply chain was improved.
5.3.2 Input Supplier
First of all some major constraints were collected from pre-test interview and later ranked and tested by statistical tool.

Constraints
1. Low knowledge about the source of loan for business
2. Less knowledge about the process for bank loan
3. Difficult and lengthy process for getting loan in bank
4. Problem of showing pledge in the bank
5. High interest rate for village loan
6. Less availability of training for skill
7. Not equal opportunity for getting services related to business
8. Service providers were Centralized in headquarter
9. Poor market linkage
10. Difficult to build thrust in business

Total number of respondent were 17. They ranked the constraints giving the value 1 to 10 where 1 was given for top most constraint and 10 for least important constraints.
The total value and the grade of each constraint were as below:

<table>
<thead>
<tr>
<th>Constraints</th>
<th>C-1</th>
<th>C-2</th>
<th>C-3</th>
<th>C-4</th>
<th>C-5</th>
<th>C-6</th>
<th>C-7</th>
<th>C-8</th>
<th>C-9</th>
<th>C-10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total value</td>
<td>82</td>
<td>76</td>
<td>60</td>
<td>95</td>
<td>97</td>
<td>88</td>
<td>125</td>
<td>83</td>
<td>113</td>
<td>116</td>
</tr>
<tr>
<td>Grade</td>
<td>III</td>
<td>II</td>
<td>I</td>
<td>VI</td>
<td>VII</td>
<td>V</td>
<td>X</td>
<td>IV</td>
<td>VIII</td>
<td>IX</td>
</tr>
</tbody>
</table>

Ci= ith constraints  i= 1 to 10

Table: 5.13 Ranks of the Constraints of input suppliers

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraint -1</td>
<td>4.82</td>
</tr>
<tr>
<td>Constraint -2</td>
<td>4.47</td>
</tr>
<tr>
<td>Constraint -3</td>
<td>3.53</td>
</tr>
<tr>
<td>Constraint -4</td>
<td>5.59</td>
</tr>
<tr>
<td>Constraint -5</td>
<td>5.71</td>
</tr>
<tr>
<td>Constraint -6</td>
<td>5.18</td>
</tr>
<tr>
<td>Constraint -7</td>
<td>7.35</td>
</tr>
<tr>
<td>Constraint -8</td>
<td>4.88</td>
</tr>
<tr>
<td>Constraint 9</td>
<td>6.65</td>
</tr>
<tr>
<td>Constraint -10</td>
<td>6.82</td>
</tr>
</tbody>
</table>
Table: 5.14 Friedman’s test for the constraints ranking of input suppliers

<table>
<thead>
<tr>
<th>O</th>
<th>N</th>
<th>Chi-Square</th>
<th>d.f.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>17</td>
<td>23.066</td>
<td>9</td>
</tr>
</tbody>
</table>

Table value of chi-square at 4 d.f. at 5% level of significance is 16.919. The calculated value of chi-square (23.066) is greater than the table value. We can conclude that all the respondent Input suppliers were agreement in ranking of constraints of consumer. It was also observed that most of the input suppliers expressed that difficult and lengthy process for getting loan in bank; less knowledge about the process for bank loan and Low knowledge about the source of loan for business was the major obstacles.

Opportunities
1. There were many sources for financial support
2. There were skill providing service providers in the district
3. Different distributer companies were attracting
4. Farming scale as well as demand for the input was increasing
5. Supply chain was improving as compare to surrounding district

Total number of respondent were 17. They ranked the opportunities giving the value 1 to 5 where 1 was given for best opportunity and 5 for least important opportunity. The total value and the grade of each opportunity was as below-

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>O-1</th>
<th>O-2</th>
<th>O-3</th>
<th>O-4</th>
<th>O-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total value</td>
<td>63</td>
<td>50</td>
<td>74</td>
<td>24</td>
<td>44</td>
</tr>
<tr>
<td>Grade</td>
<td>IV</td>
<td>III</td>
<td>V</td>
<td>I</td>
<td>II</td>
</tr>
</tbody>
</table>

\[ O_i = \text{ith opportunities} \quad \text{i= 1 to 5} \]

Table: 5.15 Ranks of the Opportunities of input suppliers

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity-1</td>
<td>3.71</td>
</tr>
<tr>
<td>Opportunity-2</td>
<td>2.94</td>
</tr>
<tr>
<td>Opportunity-3</td>
<td>4.35</td>
</tr>
<tr>
<td>Opportunity-4</td>
<td>1.41</td>
</tr>
<tr>
<td>Opportunity-5</td>
<td>2.59</td>
</tr>
</tbody>
</table>
Table: 5.16 Friedman’s test for opportunities ranking of input suppliers

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong></td>
<td>17</td>
</tr>
<tr>
<td><strong>Chi-Square</strong></td>
<td>34.165</td>
</tr>
<tr>
<td><strong>d.f.</strong></td>
<td>4</td>
</tr>
</tbody>
</table>

Table value of chi-square at 4 d.f. at 5% level of significance is 9.488. The calculated value of chi-square (34.165) is greater than the table value. We can conclude that all the respondent input suppliers were agreement in ranking of opportunities of Input suppliers. It was also observed that most of the input suppliers expressed the points- Farming scale as well as demand for the input was increasing; Supply chain was improving as compare to surrounding district and there were skill providing service providers in the district, as higher opportunity points.

5.3.3 Farmers

Farmers’ constraints and opportunities were basically collected from the secondary information of DADO and NGOs. It updated by adding the views of farmers in the group discussion meeting at eastern palpa (Galdha Village Development Committee). The whole list of the constraints was ranked and verified by applying statistical test.

Constraints

1. Low availability of quality seed locally.
2. Very high cost of inputs (fertilizer, plant protection chemicals, seed, labor)
3. Lack of irrigation leads to mostly rain-fed cultivation
4. Inadequate knowledge about new technologies.
5. Low knowledge about the production calendar.
6. Loss of crop or product due to improper handling practices.
7. Difficulties to get loan from banks.
8. Limited access in vegetable market price information system.
9. Insufficient knowledge about Post harvest technology like Grading, Packaging, and Sorting.
10. Distance from farm to main market was longer.
11. In rural villages of hill area, there was a difficulty to transport the vegetable. (Seasonal transportation facility only)
12. Low confidence on business of vegetable.
Total number of participant were 13. They ranked the constraints giving the value 1 to 12 where 1 was given for top most constraint and 12 for least important constraints. The total value and the grade of each constraints was as below-

<table>
<thead>
<tr>
<th>Constraints</th>
<th>C-1</th>
<th>C-2</th>
<th>C-3</th>
<th>C-4</th>
<th>C-5</th>
<th>C-6</th>
<th>C-7</th>
<th>C-8</th>
<th>C-9</th>
<th>C-10</th>
<th>C-11</th>
<th>C-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total value</td>
<td>40</td>
<td>61</td>
<td>30</td>
<td>97</td>
<td>79</td>
<td>118</td>
<td>106</td>
<td>70</td>
<td>53</td>
<td>80</td>
<td>139</td>
<td>141</td>
</tr>
<tr>
<td>Grade</td>
<td>II</td>
<td>IV</td>
<td>I</td>
<td>VIII</td>
<td>VI</td>
<td>X</td>
<td>IX</td>
<td>V</td>
<td>III</td>
<td>VII</td>
<td>XI</td>
<td>XII</td>
</tr>
</tbody>
</table>

Ci= ith constraints i= 1 to 12

Table: 5.17 Ranks of the Constraints of farmers

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraint -1</td>
<td>3.08</td>
</tr>
<tr>
<td>Constraint -2</td>
<td>4.54</td>
</tr>
<tr>
<td>Constraint -3</td>
<td>2.15</td>
</tr>
<tr>
<td>Constraint -4</td>
<td>7.65</td>
</tr>
<tr>
<td>Constraint -5</td>
<td>6.19</td>
</tr>
<tr>
<td>Constraint -6</td>
<td>9.04</td>
</tr>
<tr>
<td>Constraint -7</td>
<td>8.23</td>
</tr>
<tr>
<td>Constraint -8</td>
<td>5.23</td>
</tr>
<tr>
<td>Constraint 9</td>
<td>4.00</td>
</tr>
<tr>
<td>Constraint -10</td>
<td>6.15</td>
</tr>
<tr>
<td>Constraint -11</td>
<td>10.69</td>
</tr>
<tr>
<td>Constraint -12</td>
<td>11.04</td>
</tr>
</tbody>
</table>

Table: 5.18 Friedman’s test for constraints ranking of farmers

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>13</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>91.770</td>
</tr>
<tr>
<td>df</td>
<td>11</td>
</tr>
</tbody>
</table>

Table value of chi-square at 11 degree of freedom and 5% level of significance is 19.675. The calculated value of chi-square (91.77) is greater than the table value. It is concluded that all the participants were agreement in ranking of constraints of farmers.

It was also observed that the high ranked constraints of the farmers were lack of
irrigation leading to mostly rain-fed cultivation, locally low availability of quality seed; and insufficient knowledge about post harvest technology like grading, packaging, sorting etc.

Adhikari (2003) noted some genuine constraints of value chain players of middle Palpa. The most common production constraints faced by farmers were disease problem, lack of irrigation facilities, insect-pest problem, unavailability of pure and improved seeds, and unavailability of necessary inputs, lack of irrigation facility. Likewise, farmers were facing marketing constraints such as low price of the product, fluctuation in market price of the product, lack of organized market, lack of transportation facility etc. In similar line this survey found the constraints like lack of irrigation leads to mostly rain-fed cultivation, Low availability of quality seed locally and Insufficient knowledge about Post harvest technology (grading, packaging, sorting) as the major constraints of the farmers of Palpa district.

Opportunities

1. There were many potential microclimatic pockets suitable for commercial scale quality vegetable production.
2. Can get comparative advantage over commodity like cereals and cash crops as well as over plain areas at rainy season.
3. High demand in Domestic, Regional and India-Nepal boarder market.
4. No. of Micro financial institutions were emerging and may provide loans.
5. Local F.M. radio use to broadcast the market information regularly.
6. Collection centres were developed in different 16 locations.
7. Existence of some established farmers’ organization, cooperative societies, an Marketing-Planning Committee for marketing
8. MPCs, Master Leader Farmers also provide support to farmers by providing inputs and technical know-how.
9. Vegetable price was increasing every year.

Total number of participant were 13. They ranked the opportunities giving the value 1 to 9 where 1 was given for best opportunity and 9 for least important opportunity. The total value and the grade of each opportunity was as below-
**Result and Discussion**

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>O-1</th>
<th>O-2</th>
<th>O-3</th>
<th>O-4</th>
<th>O-5</th>
<th>O-6</th>
<th>O-7</th>
<th>O-8</th>
<th>O-9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>95</td>
<td>41</td>
<td>63</td>
<td>97</td>
<td>85</td>
<td>34</td>
<td>56</td>
<td>80</td>
<td>34</td>
</tr>
<tr>
<td><strong>Grade</strong></td>
<td>VII</td>
<td>II</td>
<td>IV</td>
<td>VIII</td>
<td>VI</td>
<td>I</td>
<td>III</td>
<td>V</td>
<td>I</td>
</tr>
</tbody>
</table>

Oi= ith opportunities i= 1 to 9

**Table: 5.19 Ranks of the Opportunities of farmers**

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity-1</td>
<td>7.46</td>
</tr>
<tr>
<td>Opportunity-2</td>
<td>3.08</td>
</tr>
<tr>
<td>Opportunity-3</td>
<td>4.81</td>
</tr>
<tr>
<td>Opportunity-4</td>
<td>7.50</td>
</tr>
<tr>
<td>Opportunity-5</td>
<td>6.58</td>
</tr>
<tr>
<td>Opportunity-6</td>
<td>2.46</td>
</tr>
<tr>
<td>Opportunity-7</td>
<td>4.31</td>
</tr>
<tr>
<td>Opportunity-8</td>
<td>6.23</td>
</tr>
<tr>
<td>Opportunity-9</td>
<td>2.58</td>
</tr>
</tbody>
</table>

**Table: 5.20 Friedman’s test for opportunities ranking of farmers**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>13</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>57.216</td>
</tr>
<tr>
<td>df</td>
<td>8</td>
</tr>
</tbody>
</table>

Table value of chi-square at 8 d.f. at 5% level of significance is 15.507. The calculated value of chi-square (57.216) is greater than the table value. We can conclude that all the participants were agreement in ranking of opportunities of farmers. Higher ranked opportunities for farmers were increasing vegetable price in every year; opportunity for getting comparative advantage over commodity like cereals and cash crops as well as over plain areas at rainy season; Existence of some established farmers organization, cooperative societies, and Marketing-Planning Committee for marketing.

**5.3.4 Retailers-Wholesalers**

Traders’ and MPCs’ constraints and opportunities were basically collected by informal discussion with DADO, NGOs and Traders. It was updated by adding the views of
service providers and MPC members in the meeting held at the head quarter of the
district, Tansen; and east Palpa, Rampur subsequently. The collected information were
ranked and verified by applying statistical test.

Constraints
1. Sometime the Indian fruit and vegetable imported with poor quality. No proper
   action taken from concerned authority (quarantine).
2. Lack of price information system.
3. Retail market and marketing system was not well managed.
4. Supply was less than demand.
5. Insufficient knowledge about entrepreneurship among traders.
6. Problems on assessing of vegetable price information.
7. High variation of product price (not uniform) among traders which was leading to
   unhealthy competition among them.
8. Economically poor and no appropriate financial institutions to invest on business
9. Traders were still not much trained on post harvest technology.
10. Lack of knowledge about particular Trade policies.
11. High competition in markets, no unity among traders.
12. Not supplied the varieties of vegetable product as per consumers demand.

Total number of participant were 9. They ranked the constraints giving the value 1 to 12
where 1 was given for top most constraint and 12 for least important constraints. The
total value and the grade of each constraints was as below-

<table>
<thead>
<tr>
<th>Constraints</th>
<th>C-1</th>
<th>C-2</th>
<th>C-3</th>
<th>C-4</th>
<th>C-5</th>
<th>C-6</th>
<th>C-7</th>
<th>C-8</th>
<th>C-9</th>
<th>C-10</th>
<th>C-11</th>
<th>C-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>79</td>
<td>23</td>
<td>22</td>
<td>77</td>
<td>81</td>
<td>29</td>
<td>34</td>
<td>90</td>
<td>91</td>
<td>39</td>
<td>45</td>
<td>92</td>
</tr>
<tr>
<td>Grade</td>
<td>VIII</td>
<td>II</td>
<td>I</td>
<td>VII</td>
<td>III</td>
<td>IV</td>
<td>IX</td>
<td>X</td>
<td>V</td>
<td>VI</td>
<td>XI</td>
<td></td>
</tr>
<tr>
<td>Ci= ith constraints</td>
<td>i= 1 to 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table: 5.21 Ranks of the Constraints of vegetable retailers and wholesalers

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraint -1</td>
<td>8.78</td>
</tr>
<tr>
<td>Constraint -2</td>
<td>2.56</td>
</tr>
<tr>
<td>Constraint -3</td>
<td>2.44</td>
</tr>
<tr>
<td>Constraint -4</td>
<td>8.56</td>
</tr>
<tr>
<td>Constraint -5</td>
<td>9.00</td>
</tr>
<tr>
<td>Constraint -6</td>
<td>3.22</td>
</tr>
</tbody>
</table>
Table 5.22 Friedman’s test for constraints ranking of vegetable retailers and wholesalers

<table>
<thead>
<tr>
<th>Constraint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraint -7</td>
<td>3.78</td>
</tr>
<tr>
<td>Constraint -8</td>
<td>10.00</td>
</tr>
<tr>
<td>Constraint 9</td>
<td>10.11</td>
</tr>
<tr>
<td>Constraint -10</td>
<td>4.33</td>
</tr>
<tr>
<td>Constraint -11</td>
<td>5.00</td>
</tr>
<tr>
<td>Constraint -12</td>
<td>10.22</td>
</tr>
</tbody>
</table>

Table: 5.22 Friedman’s test for constraints ranking of vegetable retailers and wholesalers

<table>
<thead>
<tr>
<th>N</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>d.f.</td>
<td>11</td>
</tr>
<tr>
<td>Chi-Square</td>
<td>77.479</td>
</tr>
</tbody>
</table>

Table value of chi-square at 11 d.f. at 5% level of significance is 19.675. The calculated value of chi-square (77.479) is greater than the table value. We can conclude that all the participants were agreement in ranking of constraints of retailers and wholesalers. Lack of well managed retail market and marketing system; Lack of price information system; Problems on assessing of vegetable price information were the higher ranked constraints.

Opportunities

1. Well road facility increases the number of new market centres as feeder market for the wholesaler.
2. High potentiality for the promotion of agro based micro-enterprises industry.
3. The number of vegetable producers and area of cultivation was increasing.
4. Accessibility to India border market was increasing.
5. Transportation loss can be minimized by collecting vegetables at a place and linking them with wholesalers.
6. High demand of vegetables all over the year.
7. It was low invest and immediate income enterprise/business.
8. Availability of market information through Local F.M. radio and publications.

Total number of participant were 9. They ranked the opportunities giving the value 1 to 8 where 1 was given for best opportunity and 8 for least important opportunity. The total value and the grade of each opportunity was as below-

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>O-1</th>
<th>O-2</th>
<th>O-3</th>
<th>O-4</th>
<th>O-5</th>
<th>O-6</th>
<th>O-7</th>
<th>O-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>50</td>
<td>60</td>
<td>21</td>
<td>50</td>
<td>35</td>
<td>35</td>
<td>38</td>
<td>35</td>
</tr>
<tr>
<td>Grade</td>
<td>IV</td>
<td>V</td>
<td>I</td>
<td>IV</td>
<td>II</td>
<td>II</td>
<td>III</td>
<td>II</td>
</tr>
</tbody>
</table>
Oi = ith opportunities $i = 1$ to $8$

Table: 5.23 Ranks of the Opportunities of vegetable retailers and wholesalers

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity-1</td>
<td>5.56</td>
</tr>
<tr>
<td>Opportunity-2</td>
<td>6.67</td>
</tr>
<tr>
<td>Opportunity-3</td>
<td>2.33</td>
</tr>
<tr>
<td>Opportunity-4</td>
<td>5.56</td>
</tr>
<tr>
<td>Opportunity-5</td>
<td>3.89</td>
</tr>
<tr>
<td>Opportunity-6</td>
<td>3.89</td>
</tr>
<tr>
<td>Opportunity-7</td>
<td>4.22</td>
</tr>
<tr>
<td>Opportunity-8</td>
<td>3.89</td>
</tr>
</tbody>
</table>

Table: 5.24 Friedman’s test for opportunities ranking of vegetable retailers and wholesalers

<table>
<thead>
<tr>
<th>N</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>19.222</td>
</tr>
<tr>
<td>d.f.</td>
<td>7</td>
</tr>
</tbody>
</table>

Table value of chi-square at 7 d.f. at 5% level of significance is 14.067. The calculated value of chi-square (19.222) is greater than the table value. We can conclude that all the participants were agreement in ranking of constraints of Retailers and Wholesalers. Increased number of farmers and area of production; loss minimization by collecting one place and linking with wholesalers; high demand of vegetables all over the year; and availability of market information through local F.M. radio and publications were the higher ranked opportunities of wholesalers and retailers.

5.3.5 Marketing and Planning Committee (MPC)

Constraints
1. Poor trust and commitment among committee members.
2. Inadequate financial institution for investment.
3. There was problem of trust between farmers and MPC.
4. Lack of proper operation guidelines of the MPCs.
5. Inadequate knowledge on accounting and management part.
7. Poor linkage and coordination among Value chain actors (farmer, whole sellers, retailers etc.)

Total number of participant were 12. They ranked the constraints giving the value 1 to 7 where 1 was given for top most constraint and 7 for least important constraints. The total value and the grade of each constraints was as below-

<table>
<thead>
<tr>
<th>Constraints</th>
<th>C-1</th>
<th>C-2</th>
<th>C-3</th>
<th>C-4</th>
<th>C-5</th>
<th>C-6</th>
<th>C-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>75</td>
<td>73</td>
<td>25</td>
<td>27</td>
<td>57</td>
<td>56</td>
<td>23</td>
</tr>
<tr>
<td>Grade</td>
<td>VII</td>
<td>VI</td>
<td>II</td>
<td>III</td>
<td>V</td>
<td>IV</td>
<td>I</td>
</tr>
</tbody>
</table>

Ci= ith constraints i= 1 to 7

Table: 5.25 Ranks of the Constraints of MPCs

<table>
<thead>
<tr>
<th>Constraints</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constraint -1</td>
<td>6.25</td>
</tr>
<tr>
<td>Constraint -2</td>
<td>6.08</td>
</tr>
<tr>
<td>Constraint -3</td>
<td>2.08</td>
</tr>
<tr>
<td>Constraint -4</td>
<td>2.25</td>
</tr>
<tr>
<td>Constraint -5</td>
<td>4.75</td>
</tr>
<tr>
<td>Constraint -6</td>
<td>4.67</td>
</tr>
<tr>
<td>Constraint -7</td>
<td>1.92</td>
</tr>
</tbody>
</table>

Table: 5.26 Friedman’s test for constraints ranking of MPCs

<table>
<thead>
<tr>
<th>Chi-Square</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12</td>
</tr>
<tr>
<td>55.250</td>
<td></td>
</tr>
<tr>
<td>d.f.</td>
<td>6</td>
</tr>
</tbody>
</table>

Table value of chi-square at 6 d.f. at 5% level of significance is 12.592. The calculated value of chi-square (55.250) is greater than the table value. We can conclude that all the participants were agreement in ranking of constraints of MPCs. Poor linkage and coordination among value chain actors (farmer, whole sellers, retailers etc.); problem of trust between farmers and MPC and Lack of proper operation guidelines were the higher ranked constraints of marketing and planning committee.

Opportunities of MPC
1. Establishing as local community based organization for the development of agriculture.
2. In higher production area farmers were attracting to the MPCs.
3. MPCs can lobby with Line agencies and support organizations
4. MPCs can be the first source of farmers’ information to the traders.
5. Bottom up planning support of MPCs to the farmers group may foster market led production.

Total number of participants were 12. They ranked the opportunities giving the value 1 to 5 where 1 was given for best opportunity and 5 for least important opportunity. The total value and the grade of each opportunity was as below-

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>O-1</th>
<th>O-2</th>
<th>O-3</th>
<th>O-4</th>
<th>O-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>27</td>
<td>44</td>
<td>29</td>
<td>35</td>
<td>45</td>
</tr>
<tr>
<td>Grade</td>
<td>I</td>
<td>IV</td>
<td>II</td>
<td>III</td>
<td>V</td>
</tr>
</tbody>
</table>

Oi= ith opportunities i= 1 to 5

Table: 5.27 Ranks of the Opportunities of MPCs

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Mean Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opportunity-1</td>
<td>1.83</td>
</tr>
<tr>
<td>Opportunity-2</td>
<td>3.67</td>
</tr>
<tr>
<td>Opportunity-3</td>
<td>2.42</td>
</tr>
<tr>
<td>Opportunity-4</td>
<td>3.33</td>
</tr>
<tr>
<td>Opportunity-5</td>
<td>3.75</td>
</tr>
</tbody>
</table>

Table: 5.28 Friedman’s test for the ranking of opportunities of MPCs

<table>
<thead>
<tr>
<th>N</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>13.533</td>
</tr>
<tr>
<td>d.f.</td>
<td>4</td>
</tr>
</tbody>
</table>

Table value of chi-square at 4 d.f. at 5% level of significance is 9.345. The calculated value of chi-square (13.533) is greater than the table value. We can conclude that all the participants were agreement in ranking of constraints of MPCs. To be a community based organization for the development of agriculture; to play as strong body for lobbying with Line agencies and support organizations and to be the first source of farmers’ information to the traders are the higher ranked opportunities of the marketing and planning committee.
SUMMARY AND CONCLUSION

6.1 Summary
Cultivation of vegetable in Palpa district is a growing in terms of development of marketing system and market expansion. The market size has also expanded substantially over the last couple of years. There is higher scope in cultivating the vegetable in the hill areas of Nepal. The sloppy land of the Palpa district of Nepal is more suited to cultivate the vegetables in rainy season which favors to get more comparative advantage. However, studies conducted elsewhere in Nepal indicated that the product marketing is imperfect due to intermediaries’ malpractices, Poor marketing system, policies and other reasons. The situation in Palpa district might be similar or different. The motive of the study was therefore to investigate the marketing system with a commodity approach, understand the system, and come up with recommendations.

The main objective of present research was to analyze the value chain of vegetables in Palpa District of Nepal with a specific focus on major crops tomato, green chilli and cauliflower. The ranking of the crop was based on their relative market value and market demand. The specific objectives included studying the status of vegetable production and marketing; mapping the value chain showing the trade link among the various actors; detecting the key constraints, opportunities of market oriented value chain; and suggesting suitable measures to enhance value chain and competitiveness in vegetable marketing.

A very wide number of respondents at all stages of the market channel were interviewed. The analysis was made with the help of econometric and statistical tools. A total of 75 farmers, 17 input suppliers, 38 vegetable traders, 30 consumers were interviewed. Rapid market appraisal with focus group discussion, value chain actors meeting, marketing planning committee meeting and discussion with key informant was conducted. Secondary data on basis of production and marketing was also collected.

Cultivation of vegetable in Palpa district appears to have great potential and is a growing subsector in terms of development of value addition and market expansion.
The market size has also expanded substantially over the last couple of years. Despite these encouragements the market is experiencing typical constraints of a growing and immature market. There is higher scope in cultivating the vegetable in the hill areas of Nepal.

In Palpa there are 1500 active vegetable growers and were unified in 89 groups. Out of total members 56 per cent were female. It denotes that majority of the female farmers are encouraging in the vegetable farming. The data of District Agriculture Development Office, Palpa showed that 2019 hectare land was being covered by the vegetables (excluding 705 ha potato). Annual vegetable production is 26247 Metric ton (Except 6627 mt. potato) and productivity of vegetables in the district was 13 mt/ha. The vegetable production in the district is augmenting over the year.

Annual statistical report of the District Development Office Palpa shows that there was 60 mt green vegetable and potato was surplus in the district. Marketed volume of vegetable in the district was 7010 mt. Out of this 41.65 per cent was through big collection centers, 41.68 per cent through smaller collection centers and rest 16.66 per cent through others than the collection centers. Out of total vegetable marketed in the district nearly 2555 mt. was exported to other district during the year. Similarly, Total annual vegetable sales in the district was 7112 mt., out of this 91.79 per cent was being sold by retailers while 8.21 per cent was directly by farmers to the consumers. Out of total sales in the district, 2657 mt. was being imported from out of the district annually.

From the study it was found that tomato, cauliflower, cucumber, green chilli and capsicum were sold in higher price in local markets. District’s tomato had to compete with the tomato of Kapurkot, Dhading, Nasik (India), Syangja, Chitawan. Green chilli had to compete with the chilli imported from India, and local producing area i.e. Chitawan, Parasi. Similarly Cauliflower had to compete with the seasonal cauliflower of Terai and Chitawan; and with off-seasonal cauliflower of Palung-Daman.

Input supply, production, marketing and consumption were the functions of the vegetable value chain of palpa district. Different value chain actors were observed in the district viz. agro-vets, master leader farmers (MLFs), vegetable nursery growers, farmers/ producers, marketing and planning committees of local level/smaller collection centres; apex body of district collection centre, wholesaler (regional), wholesaler
There was a great role of enablers to play the value chain effectively. District Agriculture Development Office, Non Government Organizations, Agriculture Input Corporation, Agricultural Production and Marketing Cooperatives, District Cooperative, Palpa Chamber of Commerce and Industry were playing enabling role.

The agricultural input to the farmers in Palpa district was flowed through two main dealers of the districts. There were 56 active agro-vets which used to purchase the inputs from district dealer or from Butwal based dealers. Similarly 12 active local resource persons namely master leader farmers were available within farmers’ community. They used to provide both the agricultural inputs and technical know-how to the farmers. Mainly the small farmers and less skilled farmers used to purchase vegetable seedlings. There are 13 active farmers who used to supply vegetable seedlings regularly as their permanent business. There were 1500 active farmers who used to produce vegetable regularly.

The marketing channels of the vegetables flow from producers the consumers in the district are:

Channel-I = Farmers ➔Consumers (F-C)
Channel-II = Farmers ➔Retailers ➔Consumers (F-R-C)
Channel-III = Farmers ➔Collection Center ➔Wholesalers (Butwal) ➔Retailers ➔Consumers (F-C-Wb-R-C)
Channel-IV = Farmers ➔Collection Center ➔Wholesalers (Butwal) ➔Retailers (India) ➔Consumers (F-C-Wb-Ri-C)
Channel-V = Farmers ➔Collection Center ➔Wholesalers (East Palpa) ➔Retailers ➔Consumers (F-C-We-R-C)
Channel-VI = Farmers ➔Collection Center ➔Apex body ➔Retailers ➔Consumers (F-C-A-R-C)
Channel-VII = Farmers ➔Wholesalers (Aryabhanjyang) ➔Retailers ➔Consumers (F-C-Wa-R-C)

Agricultural development offices, NGOs, local resource person were the major sources of technical information for the farmers. Beside these farmers used to get the knowledge from agro-vets, collection centre etc. Basically, farmers used to get vegetable market information through direct contact with the traders. They used to contact using landline telephone and mobile phone. There were four local F.M. they
used to broadcast market price of the vegetables regularly. Farmers were getting benefit also from such information. Agricultural development offices, NGOs, partners of supply chain, local resource person, books and publications were the main source of business idea and skill for the supply chain actors. Among those sources DADO and NGO were major.

Farmers’ share in consumer’s price was found different in different marketing channels. In first channel (farmers-consumers), the share of farmers to consumers’ price was hundred per cent. Farmers then shared higher percentage in channel-VI from the selling of three major vegetables. Wholesalers of channel -VII (farmers-collection center-apex body- retailers- consumers) shared highest per cent by the sale of tomato. But, in the sales of green chilli, the whole sellers of all three channel shared same percentage. Retailer’s margin had also various level of share. Highest percentage share was in the channel - IV [farmers-collection center-wholesalers (Butwal) – retailers (India)-consumers] by the sales of cauliflower.

All three product purchase price of consumer was highest in channel -IV [farmers-collection center- wholesalers (Butwal) – retailers (India) - consumers]. But, farmer’s selling price of tomato was highest in channel-V [farmers- collection center-wholesalers (east Palpa)-retailers- consumers], to green chilli it was highest in channel-I (farmers-consumers), to cauliflower it was highest in channel-I (farmers- consumers) and channel-VI (farmers- collection center- apex body- retailers- consumers).

The marketing cost was observed highest and equal for all three items in channel-IV [farmers-collection center-wholesalers (Butwal)- retailers(India)-consumers]. Farmers had been getting highest margin by the sales of green chilli in all channels and lowest of cauliflower. The highest percentage of loss was found in green chilli among the all three products.

The net marketing margin of all three products was highest in channel-IV [farmers-collection center-wholesalers (Butwal) – retailers (India)- consumers]. It was lowest in channel sixth (farmers-collection center-apex body- retailers- consumers) for marketing of tomato and cauliflower. Similarly it was lowest in channel-VII [farmers-wholesalers (Aryabhanjyang) - retailers- consumers] for marketing green chilli.

On pre-test interview some major constraints and opportunities of the consumers were collected and listed. Later this list was ranked by 30 consumers and tested by statistical
tool. Low (insufficient) availability of vegetables in the local retail markets and unavailability of the items as per consumers’ demand were the major obstacles of the consumers. Similarly, there was greatest opportunity for them to make locally produced fresh vegetables available in local market by improving supply chain.

Seventeen input suppliers ranked the listed constraints and opportunities and then it was tested by statistical tool. Most of the input suppliers expressed some major constraints viz. difficult and lengthy process for getting loan in bank; less knowledge about the process for bank loan and low knowledge about the source of loan for business. Similarly, there were some important opportunities for them viz. increasing farming scale as well as demand for the input; improving supply chain as compare to surrounding districts and availability of skill providing service providers in the district.

Farmers’ constraints and opportunities were basically collected from the secondary information of DADO and NGOs. It updated by adding the views of farmers in the group discussion meeting at eastern palpa (Galdha Village Development Committee). The whole list of the constraints was ranked and verified by applying statistical test. Lack of irrigation leading to mostly rain-fed cultivation, low availability of quality seed in local areas; and insufficient knowledge about post harvest technology viz. grading, packaging, sorting etc., were the high ranked constraints of the farmers.

Similarly, there were some important opportunities to them viz. increasing vegetable price in every year; opportunity for getting comparative advantage over commodity like cereals and cash crops as well as over plain areas at rainy season; existence of some established farmers organization, cooperative societies, and marketing-Planning committee for marketing.

Traders’ and MPCs’ constraints and opportunities were basically collected by informal discussion with DADO, NGOs and Traders. It was updated by adding the views of service providers and MPC members in the meeting held at the head quarter of the district, Tansen; and east Palpa, Rampur subsequently. The collected information were ranked and verified by applying statistical test. Lack of well managed retail market and marketing system was not well managed; Lack of price information system; Problems on assessing of vegetable price information were the higher ranked constraints of retailers and wholesalers. Similarly, there were some important opportunities too viz. Increasing number of farmers and area of production; loss minimization by collecting
one place and linking with wholesalers; high demand of vegetables all over the year; and availability of market information through local F.M. radio and publications.

Poor linkage and coordination among value chain actors (farmer, whole sellers, retailers etc.); problem of trust between farmers and MPC and Lack of proper operation guidelines were the higher ranked constraints of marketing and planning committee. They had also important opportunities for the better improvement viz. they may be a community based organization for the development of agriculture, can play as strong body for lobbying with line agencies and support organizations; and may be the first source of farmers’ information to the traders.

6.2 Conclusion

The study has revealed that tomato, green chilli and the cauliflower are the high value and high market demanded commodity in palpa so there is higher scope for the cultivation of these crops mainly in rainy season. Vegetable land share in total agricultural land is only 7.45 per cent (including potato) which is very low. District vegetable products are to be competing with the other products of Nepal and India. It is basically due to low volume of production, inferior channelling of district product. In the observed seven channels more than fifty percent vegetable flows through the third channel [Farmers-Collection Center- Wholesalers (Butwal) -Retailers- Consumers]. Highly commercial farmers who are accessible with regional market follows this channel. There is not easy for cross boarder transaction due to policy constraints. That is why, the volume of transaction is low although there is highest marketing margin in channel fourth [Farmers-Collection Center-Wholesalers (Butwal) – Retailers (India)-Consumers].

In the comparison of all seven channels channel VI (Farmers- Collection Center- Apex body - Retailers- Consumers) for tomato, channel III (Farmers- Collection center- Wholesalers (Butwal) - Retailers- Consumers) for green chilli and channel VII (Farmers- Wholesalers (Aryabhanjyang) - Retailers- Consumers) are found best channels of marketing in Palpa. There is higher share of farmers, higher rate of returns to the farmers and lower market margins as compare to other channels.

Marketing Planning Committee in local level and apex body in district level facilitate for linking the retailers and farmers with getting nominal weighing charge. They facilitate balancing the value shares and margin addition in the vegetable products. It
can be predicted that, marketing channels associated with such actors may develop more sustainable and commercially viable value chain in the vegetable marketing in the Palpa district.

Even though, some genuine constraints and valuable opportunities were found within value chain actors in the districts. Such constraints can be managed through the improvement of production technology, management, extending linkage improving networking between service receiver and providers. There are also some opportunities for the improvement of the marketing system which can be trapped by the development organization in market development program.

6.3 Suitable measures suggested for enhancing value chain and competitiveness in vegetable marketing

6.2.1 Related to Input supply and production
- Provision of linking the local agro-vets to the reliable companies and dealers may be the better option for sufficient quality of input supply in the district.
- Big markets in Nepal also demanding qualitative harmless vegetables. By producing high quality vegetables without use of harmful pesticides the vegetable product of palpa may compete in big markets (e.g. Butwal)
- By increasing the volume of production farmers can be exposed with distant traders. Their inter-relationship and intra-relationship can be improved. Their competitiveness for Salyani (Dang) Tomato, Triyashi (Syanga) tomato, Indian cucurbitaceous vegetables would be increased.
- Input suppliers and farmers may be interested for investing in agriculture, if there is provision of providing key information related to the loan requesting process, payment process and amount; guideline for effective use.

6.2.2 Related to the Organization for production and marketing
To bring the trust and solidarity, to make access to the technical support, to access the finance and to extend market networking, to reduce market malpractices and loss;
- Farmers should organize in groups, Groups in cooperatives and then cooperatives on commercialization networks.
- Traders jointly with farmers should organize in marketing committee, associate with district level marketing association and link with distant traders and traders’ associations.
6.2.3 Related to Creation of Linkages

- Linking farmers to new buyers through training, market information.
- Farmers need to extend linkage with input suppliers.
- Need to increase farmers trust towards the collection centres that will increase business relationship between and among them.
- Provision of empowerment training to MPCs and leader farmers focused on advocacy and negotiation with supporting organization, basically government agencies.

6.2.4 Related to Addition of values

- Not only in Butwal, even in India there is popularity of palpali vegetable. To keep on this identity and add more value on it there is further need of quality accreditation.
- Value can be added directly approaching directly to major markets where its value is high (e.g. Indian market or Butwal hatbazaar.)
- Most of the farmers in palpa are not conscious in quality aspect and are not giving importance on it. Some of them are using only bamboo basket or jute racks to pack all the vegetables. There is not proper grading, cleaning, storing practices. By improving the post harvest techniques or practices, amount of damaged vegetable can be minimized and more value can be added.

6.2.5 Related to market development

- To increase farmers’ share in consumers price total market margin should be minimized, farmers price should be increased by lowering the cost and increasing quality.
- To increase marketing efficiency better channel should be recommended.
- Local institutions like different marketing committees have great role in increasing the marketing efficiency so its multiplication and capacity enhancement would be more effective.


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Department of Agricultural Economics
Institute of Agricultural Sciences
Banaras Hindu University, Varanasi

Value chain analysis of vegetables in Palpa district of Nepal

1. Interview schedule

Advisor: Dr. O. P. Singh
Investigator: Khim Raj Regmi

1.1 Interview schedule for input suppliers

Name and Address:
Recording Date:

1) What agricultural inputs are you selling now?
   a) Seeds [ ] b) Fertilizers [ ] c) Organic manures [ ]
   d) Pesticides [ ] e) Veterinary medicines [ ]
   f) Agricultural Equipment [ ] g) All of the above [ ]

2) What are the sources of finance for your business?
   Bank loan [ ] Own Income [ ] Borrowing in the village [ ]

3) What are the sources of business skill?
   Agriculture Development offices [ ] NGOs [ ] Books and publications [ ]
   Linked supply chain player [ ] Local Resource person [ ]

4) What are the constraints for your business (Rank 1-8 where 1 is top most constraint)?
   Low knowledge about the source of loan for business [ ]
   Less knowledge about the process for bank loan [ ]
   Difficult and lengthy process for getting loan in bank [ ]
   Problem of showing pledge in the bank [ ]
   High interest rate for village loan [ ]
Less availability of training for skill
Not equal opportunity for getting services related to business
Service providers are Centralized in headquarter
Poor market linkage
Difficult to build trust in business

5) What are the opportunities for you?
   There are many sources for financial support
   There are skill providing service providers in the district
   Different distributor companies are attracting
   Farming scale as well as demand for the input is increasing
   Supply chain is improving as compared to surrounding district

6) What do you do for the addition of value on selling product in your shop or agro vet?
   Small packaging
   Well labeling
   Embedding technical support
1.2 Interview schedule for Output trader

Name and address:

Type of business: 

Recording Date:

1) Which vegetables are you selling now?

2) What is your per day selling capacity (Kg.)?

3) With which vegetable, the district vegetable have to compete and from where those vegetables are imported?

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Imported area</th>
<th>Vegetable</th>
<th>Imported area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

4) Which vegetables in which month bears highest price in the market?

<table>
<thead>
<tr>
<th>Month</th>
<th>Vegetable</th>
<th>Month</th>
<th>Vegetable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-Feb</td>
<td></td>
<td>Jul-Aug</td>
<td></td>
</tr>
<tr>
<td>Feb-Mar</td>
<td></td>
<td>Aug-Sep</td>
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<tr>
<td>Mar-Apr</td>
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<td>Sep-Oct</td>
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<tr>
<td>Apr-May</td>
<td></td>
<td>Oct-Nov</td>
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</tr>
<tr>
<td>May-June</td>
<td></td>
<td>Nov-Dec</td>
<td></td>
</tr>
<tr>
<td>June-July</td>
<td></td>
<td>Dec-Jan</td>
<td></td>
</tr>
</tbody>
</table>

5) What do you do for the addition of value on selling product in your shop?

Cleaning [ ]  Grading [ ]  Packaging [ ]  Processing [ ]  Non of above [ ]
6) Which market channel do you follow?

Farmers-Collection centers-Wholesellers(But.)-Retailers-Consumers

Farmers-Collection centers-Wholesellers(But.)-Retailers(Indian)-Consumers

Farmers-Collection centers-Apex body-Retailers-Consumers

Farmers-Collection centers- Wholesalers (east palpa.)-Retailers-Consumers

Farmers-Wholesalers (Aryabhanjyang)-Retailers-Consumers

Farmers-Retailers-Consumers

Farmers-Consumers

7) What is marketing cost of one-kilogram product of major vegetables?

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>weighing</th>
<th>Transportation and management</th>
<th>Packaging</th>
<th>Load-unload</th>
<th>Tax and others</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Green chilli</td>
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<tr>
<td>Cauliflower</td>
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</tr>
</tbody>
</table>

8) What is buying price, Loss, margin and selling price of one-kilogram product of major vegetables?

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>Buying price</th>
<th>Loss</th>
<th>Margin</th>
<th>Selling price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Green chilli</td>
<td></td>
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<tr>
<td>Cauliflower</td>
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</tr>
</tbody>
</table>
9) What are the sources of market information?

- Landline phone □
- Mobile phone □
- F.M. Radio □
- Newspaper □
- Direct contact □
- Websites □

10) What are the sources of business skill?

- Agriculture Development offices □
- Own experience □
- NGOs □
- FNCCI □
- District cooperative □
- Linked supply chain player □
- Local Resource person □

11) What are the sources of finance for your business?

- Bank loan □
- Own Income □
- Borrowing in the village □
- Group/cooperative saving □
- Subsidy □
1.3 Interview schedule for vegetable producers

Name and address:

Recording Date:

1) What are the sources of Income?

- [ ] Vegetable
- [ ] Livestock
- [ ] Employment
- [ ] Skill selling
- [ ] Foreign employment
- [ ] Business
- [ ] Wages
- [ ] Agri-product selling (Except vegetable)
- [ ] House rent and others

2) What is overall Average annual income and Expenditure status?

<table>
<thead>
<tr>
<th>Sources of Income</th>
<th>Amount (Rs.)</th>
<th>Expenditure heading</th>
<th>Amount (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

3) What vegetables you use to grow?

4) What is per ropani (500 m²) production cost of major vegetables?

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>Seed</th>
<th>Chemicals</th>
<th>Labor</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato</td>
<td></td>
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<td></td>
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<tr>
<td>Green chilli</td>
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<tr>
<td>Cauliflower</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
5) What is per ropani (500 m²) postproduction cost of major vegetables?

<table>
<thead>
<tr>
<th>Vegetables</th>
<th>Grading/Sorting</th>
<th>Packaging</th>
<th>Transportation</th>
<th>Tax and other charge</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Green chilli</td>
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<tr>
<td>Cauliflower</td>
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</tr>
</tbody>
</table>

6) What is the average annual production & loss status of major vegetables?

<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Loss (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato</td>
<td></td>
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<tr>
<td>Green chilli</td>
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<tr>
<td>Cauliflower</td>
<td></td>
</tr>
</tbody>
</table>

7) What are the sources of finance for your business?

- Bank loan [ ]
- Own Income [ ]
- Borrowing in the village [ ]

8) What are the sources of technical information?

- Agricultural development offices [ ]
- NGOs [ ]
- Local resource person [ ]
- Radio [ ]
- Books and news paper [ ]
- None of the above [ ]

9) What are the sources of market information?

- Landline phone [ ]
- Mobile phone [ ]
- F.M. Radio [ ]
- News paper [ ]
- Direct contact [ ]
- Websites [ ]
- None of the above [ ]
10) What are the existing practices to add value on vegetables?

- Diversification in production
- Offseason production
- Cleaning
- Moisture keeping
- Packaging
- Grading
- Processing
- None of the above

11) Which market channel do you follow?

- Farmers-Collection centers-Wholesellers(But.)-Retailers-Consumers
- Farmers-Collection centers-Wholesellers(But.)-Retailers(Indian)-Consumers
- Farmers-Collection centers-Apex body-Retailers-Consumers
- Farmers-Collection centers-Wholesalers (east palpa.)-Retailers-Consumers
- Farmers-Wholesalers (Aryabhanjyang)-Retailers-Consumers
- Farmers-Retailers-Consumers
- Farmers-Consumers
1.4 Interview schedule for vegetable consumer

Name and address of the Interviewee:

Recording Date:

1) Do you know about the nutritive value of the vegetables?

   Yes  [ ]  No  [ ]

2) If vegetable quality is improved, how much extra money you will pay in existing per kg price (%)?

<table>
<thead>
<tr>
<th>Major Vegetable</th>
<th>Extra money (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato</td>
<td></td>
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<tr>
<td>Green chilli</td>
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<tr>
<td>Cauliflower</td>
<td></td>
</tr>
</tbody>
</table>

3) How can increase demand of local vegetable product?

   Organic production  [ ]

   Increasing awareness about the nutritive value of vegetables  [ ]

   Diversified production  [ ]

4) What are the constraints of the consumers (Rank 1-5 where 1 is top most constraints)?

   Insufficient availability in the local retail market  [ ]

   Not availability as much amount as need  [ ]

   Not availability of the items as per consumers demand  [ ]

   Not availability of fresh vegetable  [ ]

   Higher price  [ ]
5) What are the opportunities?

Regional market is nearer □

Can buy vegetables all over the year □

If chain is improved can get varieties of local vegetable □

Due to cool climate, we can get fresh vegetable if supply chain is improved □

We can get price information through the communication media □

6) What would be the strategy to fulfill the consumers’ expectations/to solve the problems?

Market management □ Production increase □

Diversified production □ Quality improvement □
2. Semi structured schedule for discussion with different Value chain players

2.1 Meeting with Vegetable Marketing and Planning cum Hat Bazaar Committee

- Discussion about current vegetable marketing mechanism.
- Discussion about trade linkage among different vegetable value chain actors.
- Discussion on strategy for the sustainable development of vegetable value chain.

2.2 Meeting with value chain actors and service providers

- Identification of most attractive vegetables through Attractive matrix method.
- Identification of vegetable marketing channels in the district.
- Identification of constraints and opportunities and its ranking.

2.3 Meeting with Farmers Groups

- Identification of constraints and opportunities and its ranking.

2.4 Visiting the district level Government and Non Government Offices for discussion on overall topic related matters.

- District Agriculture Development Office
- District Development Committee
- International Development Enterprise Nepal: RIU Project
- Any other related stakeholders (Unplanned)