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Research Article

Value Chain Analysis and Marketing Performance of Vegetable Subsector: A Case of Sindupalchowk District, Nepal

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Abstract

This study assessed value chain and marketing performance of vegetable subsector of Sindupalchowk district, Nepal with the objectives of identifying the value chain actors and their roles, analyzing the market channel and identifying the problems related to production and marketing system The study was based on both primary and secondary data. The primary data were collected from 84 households that were selected purposive proportionately. The study showed major vegetable value chain actors as input suppliers, producers, bulk traders, retailers, wholesalers and consumers. The total amount of vegetable production was 29.73 tons with productivity of 7.2 tons/ha transacting 17.92 tons of vegetables through four marketing channels. The channel transacting the vegetables to consumers directly by producers was found to be dominant in terms of volume of vegetable which represented 71.75% of total vegetable supplied by farmers (12.86 tons). The bulk traders supplied 18.97 % of vegetables to Kathmandu and 8.77% to consumers of Sindupalchowk district through retailers. The wholesalers were of least volume transacting actor to consumers through retailers (0.51%). The study suggests that Government of Nepal should focus on development of marketing infrastructures to provide equitable market sharing to actors.

Abbreviations: CBS- Central Bureau of Statistics; CCRC- Communities, Children and Responsible Care; DADO- District Agricultural Development Office; DDCO- District Development Committee; DDRC- District Disaster Relief committee; FAO-Food and Agriculture Organization; GDP- Gross Domestic Product; GMM- Gross Market Margin; GTZ- German Technical Cooperation; MOAD- Ministry of Agricultural Development; RAD- Regional Agriculture Directorate; SCCI- Sindupalchowk Chamber of Commerce and Industry; TGM- Total Gross Margin; VC-Value Chain

Keywords: Market channel; Market margin; Performance; Vegetable; Value Chain

Introduction

Vegetable production is one of the major subsectors of agriculture economy of Nepal and considered as high value crop. It has multidimensional importance due to its nutritional, cultural and economic value. Vegetable are rich source of nutrients like minerals and vitamins (Gurung *et al*., 2016).

The demand of vegetable has been increasing over the years due to rapid urbanization, increase in population, health consciousness and general awareness of people. To meet

this demand, during the last 10 years, area of vegetable crops has increased by about 41%, however there is still large gap between import and export value of vegetable that is almost NRs. 12.22 billion in fiscal year 2015/16 (Thapa & Dhimal, 2017). Large numbers of farmers in Nepal are small land holding and want to get higher economic returns from a small area. In this regards, vegetable production are efficient to generate higher income in short period and help the farmers to uplift their economy (Gurung, Thapa et al., 2016).

Sindupalchowk is mid to high hilly district where vegetable production has carried good potentiality. However, vegetable production in the study area is from subsistence to semi-commercial type but, majorities are at subsistence level of production. On the other hand, the study area is near to capital city Kathmandu and border market in Tibet linked by Arniko Highway, is advantageous to produce vegetable in rainy season and supply to such large market areas. Previous studies (Pokhrel, 2010; Paudel, 2012) indicated that the product marketing of hilly regions is imperfect due to malpractices of intermediaries, poor marketing system, inadequate and improper policies and other reasons. Similarly, the marketing of vegetables in this area is characterized by seasonal gluts and shortages which in turn affect the marketing behaviors of farmers, traders and consumers. The study is therefore intended to investigate the marketing system with a value chain approach, understand the system, and come up with recommendations. Agricultural Development Strategy (ADS) for 2015 to 2035 has prioritized the need to accelerate the development of vegetable value chain among limited five value chains (dairy, lentil, maize, tea, and vegetables) by establishing National Value Chain Development Program and clearly mentioned to improve vegetable productivity for smallholder farmers, postharvest operations and marketing of vegetables and policies, regulatory framework and institutions for vegetable sub-sector (MOAD, 2015). Value chain means a linkage which shows the set of interconnecting and interdependent economic activities and agents. It initiates from the production of commodities and end to the consumption involving the different phases of economics activities like processing, transportation, wholesaling, retailing and so on (FAO, 2013).

Methodology

The questionnaire survey was conducted in six Village Development Committees (VDC) of Sindupalchowk district which included Duwachaur, Banskharka, Baruwa, Bhotang, Lagarche and Thakani. The lists of vegetable farmers were collected from DADO and 84 sample household lists of vegetable farmers were selected on the basis of proportional to total vegetable farmers of those VDCs. All the available data were collected in MS Excel and analysis through use of analytical software MS Excel as well as SPSS.

Value Chain Analysis

This analysis was conducted through mapping the value chain which shows the structure and flow of chain in logical clusters. Mapping the chain facilitates understanding of sequence of activities, key actors and relationship involved in the value chain. This analysis was undertaken in qualitative and quantitative terms.

Marketing Channel

Market channel was formed as a sequence drawn as vertical linkage which which illustrates the points within the market system where production, transformation, distribution and consumption of a commodity take place, as suggested by (FAO, 2008).

Marketing Conduct and Performance

Total marketing cost:

Total Marketing was calculated by Tuffour & Dokuruga, (2015) in their study using the formula as given below,

Total marketing cost (TMC) = Cost during transportation + Cost for storage + Cost of packaging + Labor cost + Cost of miscellaneous instrument use + Cost for processing + Cost incurred to tax, fees, dues etc.

Market Margin:

Marketing margin studied by Murthy, Gajanana, Sudha, & Dakshinamoorthy, (2007) has estimated the different forms of margins by using the formulae which is given below;

$$\text{TGMM} = \frac{\text{Final consumers'price} - \text{Farmgate price}}{\text{Final consumers'price}} \times 100$$

$$\text{GGM}_{\text{intermediaries}} = \frac{\text{Price taken by intermediaries} - \text{Producers'price}}{\text{Final consumers'price}} \times 100$$

$$\text{GMM}_{\text{p}} = 100\% - \text{TGMM}$$

$$\text{NMM} = \text{TGMM} - \text{TMC}$$

Where, TGMM is total gross market margin

$GGM_{intermediaries}$ is the percentage of total gross marketing margin received by intermediaries

GMM_p is the producers' share in consumer price.

NMM is the net marketing margin

TMC is the total marketing cost as percentage of consumer price.

Profitability analysis:

The different level of profit and their distribution will be calculated by formula used by Mogaji, Olufemi and Fapetu, (2013) are given below;

Profit margin = Sales revenue – Total production/buying cost – Total marketing cost – Cost of post-harvest losses

$$\text{Profit in terms of sales} = \frac{\text{Profit margin}}{\text{Sales revenue}}$$

$$\text{Profit in terms of cost} = \frac{\text{Profit margin}}{\text{Total cost}}$$

Value addition % used by Miah, (2013) on his study is given by,

$$\text{Value addition \%} = \frac{\text{Marketing margin}}{\text{Purchase price}}$$

Results and Discussion

Vegetable Production and Marketing Overview

The sample households six VDCs produced combinations of vegetable types with average productivity of 357 kg per ropani. The average percentage of production share was found to be 8.73%. The percentage of sold vegetables to market was 60.26% which is amounted as 17.2 quintals. The details of production overview of different VDCs are shown in Table 1.

The major marketing centres of household were local spots, Melamchi, Pokhare, Palchowk, kathmendu, Tipeni, Pathibar and Bhotechaur. Most of household found to be sell their product at local market with average of 42.38% which in turn may assist farmers to lessen their transport cost and enhances their market surplus and margins. In addition, accessibility of roads capital city Kathmandu makes easier for traders to enter small trucks to production site which also accounts for 18.97%.

Value Chain Analysis

The major actors involved in value chain were input suppliers, producers, bulk traders, retailers, wholesalers and consumers. DADO, Care Nepal, SCCI Vegetable Development Directorate, agricultural service centres, Agricultural Development Bank and cooperatives are those who supported vegetable value chain (Fig. 1).

Market Channel Analysis

About four market channel were identified. Among them, the channel of direct selling and buying between producers and consumers represented the largest portion of transaction (71.75%) which is amounted to 12860 kg. The bulk traders used to collect vegetables by using small trucks and supplied 3400 kg of vegetable to Kathmandu. They also sold 8.77% of vegetable to consumers of Sindupalchowk through retailers. The wholesalers occupied very less space in total transaction of vegetable i.e. 0.51% (Fig. 2).

Marketing Cost and Profitability

Marketing costs are estimated to compute the share of profit captured by key actors in the marketing chain (Table 2). The main costs for middlemen's were storage, crate, sacks and plastic, transportation, weighing machine, losses etc. Among marketing cost of actors in the channel, transport cost is the highest followed by packaging cost.

Farmers are found to get higher profit margin compared to bulk traders, wholesalers and retailers. However, profit in terms of sale price is not differing by drastic number value i.e. 26.6%, 14.9%, 11% and 7.7% for farmers, bulk traders, wholesalers and retailers respectively. While passing the vegetable from producers to consumers, the market margin is differing in each level. The retail price or consumer price is almost double of farm gate price. The bulk traders' price, wholesalers' price and retailers' price in comparison to farm gate price was found to be higher by 33%, 43% and 96% respectively.

Market Margin for Different Channel

A marketing margin measures the share of final selling price that is captured by a particular actor in the marketing chain. As indicated in table TGMM is highest in channel III and IV which was 48.9% and 48.8% respectively. The producers' share (GMMp) was highest in I and II channel which account 100% and 75.3% respectively. This difference might support the theory that as the number of marketing agents increases the producers share decreases. The reason being, the higher number of middlemen in the commodity market, the more profit they retain for their services whether they add value to the item or not (Table 3)..

Table 1: Overview of vegetable production in six VDCs

VDCs	Production(Kg)	Vegetable land (ropani)	% of production share	Sold (%)
Duwachaur	5621	13.2	5.55%	26.38%
Banskharka	4340	12.3	18.92%	51.03%
Baruwa	3756	8.5	6.49%	18.69%
Bhotang	4135	13.5	19.29%	67.84%
Lagarche	4060	13.75	5.80%	83.87%
Thakani	7825	22	10.33%	93.42%
Total	29737	83.25	8.73%	60.26%

Source: Household Survey, 2016

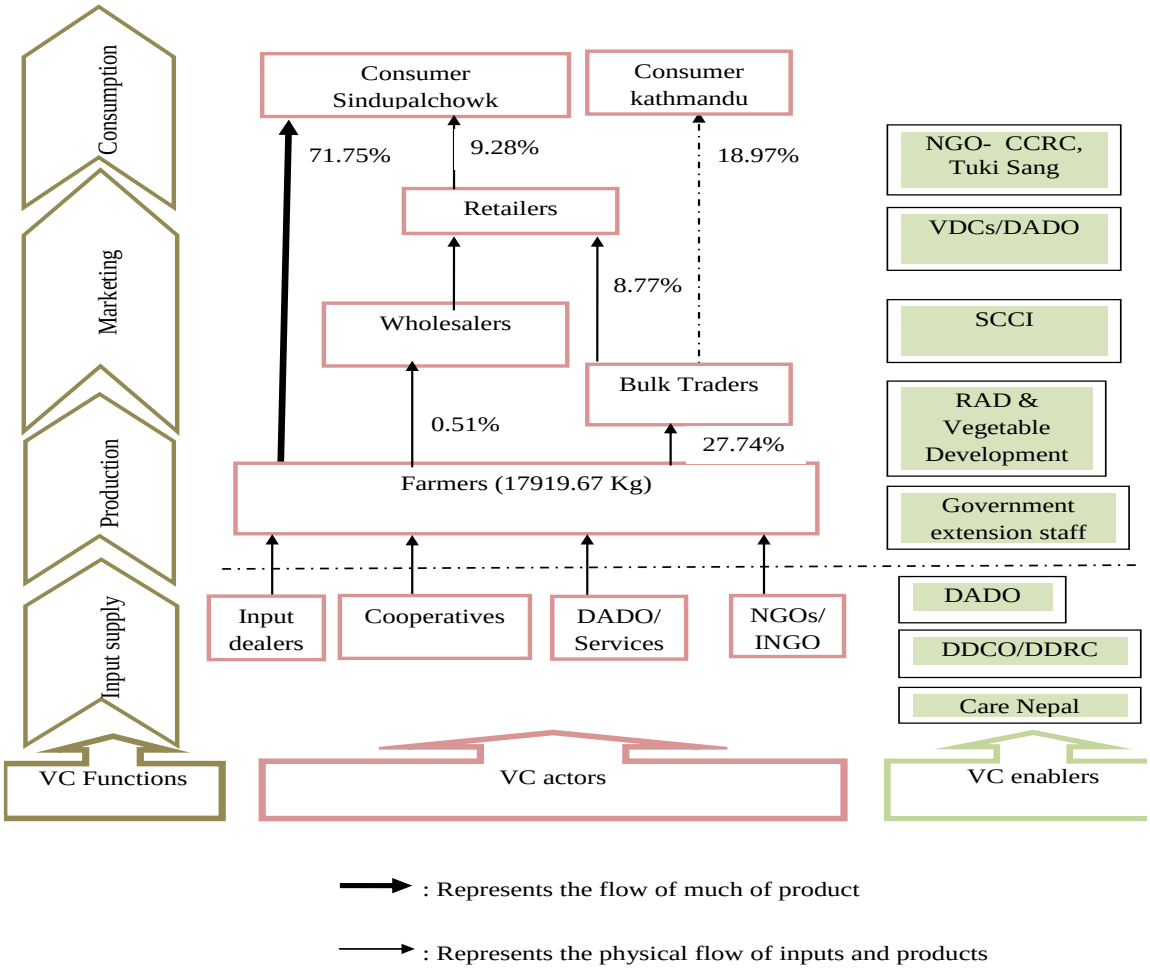

Fig. 1: Value Chain Analysis (Source: Household survey, 2016)

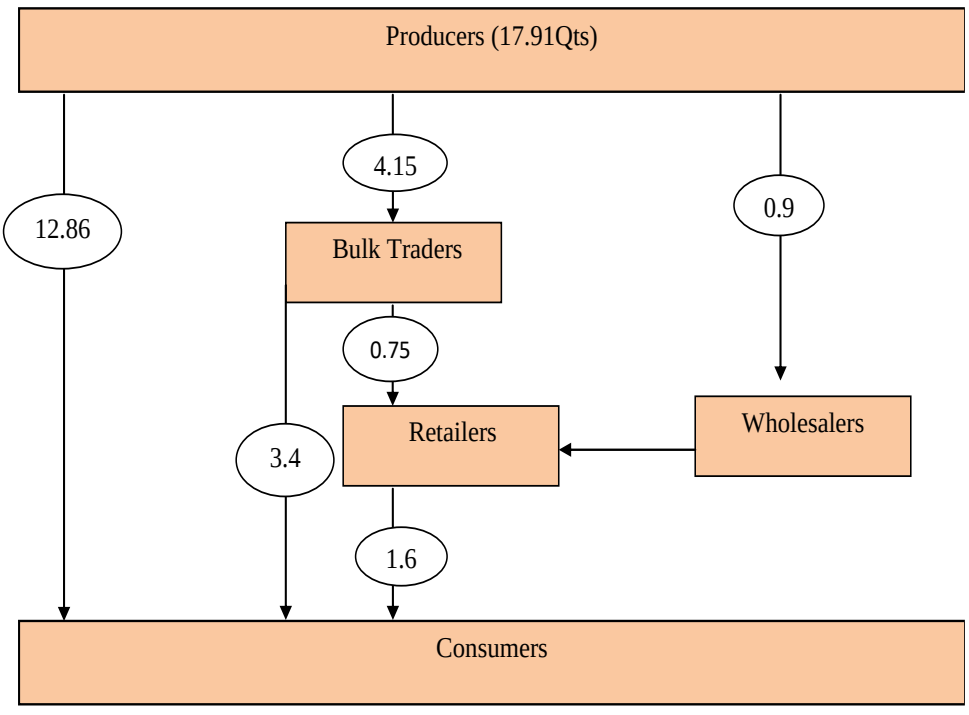

Fig. 2: Vegetable market channel of the study area [Source: Household Survey, 2016]

Table 2: Profit and market margin of per kg of vegetable for different actors

Particulars	Farmers	Bulk traders	Wholesalers	Retailers
Production /buying cost (Rs.)	22.00	35.00	35.00	48.24
Total marketing cost (Rs.)	3.70	4.51	9.55	14.98
Profit margin (Rs.)	9.30	6.94	5.48	5.25
Total value (Rs.)	35.00	11.45	15.03	20.23
Sale amount (Rs.)	35.00	46.45	50.03	68.47
Profit in terms of sales price (%)	26.6%	14.9%	11.0%	7.7%
Profit in terms of cost (%)	36.2%	17.6%	12.3%	8.3%
Profit addition (%)	79.2%	16.4%	0.2%	4.1%

Source: Own computation from survey results, 2016

Table 3: Vegetable market margin for different channels and key actors

Channel	Producer price	consumers' price	TGMM	GMM_p	GMM_{bt}	GMM_w	GMM_r
I	35	35	0.0%	100.0%			
II	35	46.45	24.7%	75.3%	24.65%		
III	35	68.53	48.9%	51.1%	16.71%		32.22%
IV	35	68.4	48.8%	51.2%		21.97%	26.86%

Source: Own computation from survey results, 2016

The results also show that the maximum gross marketing margin from bulk traders was taken by retailers, which accounts 32.22% of the consumers' price in channel III. Similarly, 26.86 % of GMM in channel IV was taken by retailers from wholesalers. This implies share of market intermediaries in the consumers' price was substantial and there was a need to reduce market intermediaries to minimize the marketing margins and thereby enhance the producers' income. The minimum gross margin is taken by bulk trader which was 16.71% in channel IV.

Conclusions

Vegetable production and marketing is valued on account of its growing contribution to the national GDP and expanding areas with potentials to export earning, rural employment and poverty reduction. Such potentials of vegetable farming especially in smallholders of Sindupalchowk could be harnessed only through improved performance of production and marketing systems. So, value chain approach was used. The primary actors are farmers, bulk traders, wholesalers, retailers and consumers. These actors are found to have involvement in transaction of vegetables from four different channels. Majority of vegetables are found to be transacted directly to consumers, however perishability of the produces and lack of proper storage, the farmers have weaker position in price negotiation. While passing the vegetable from producers to consumers, the market margin is differing at each level. The retail price or consumer price is almost double of farm gate price. As the number of marketing agents increase, the producers share decreases, so price control between links of market channel should be justified to make it sound.

Some of the genuine problems related to production system such as diseases and pests severities, unavailability of good quality of seed and fertilizer in the input market hinder vegetable farmers from realizing optimum crop productivity. Likewise, marketing related problems such as poor market access, lack of transportation, low price of output and inadequate government support for price determination, poor availability of price information to farmers compared to traders contribute to market imperfectness. Both the types of problems justified areas for policy marker, development actors and researchers to promote the production and marketing of vegetables in Sindupalchowk district.

Conflict of Interest

The authors declare that there is no conflict of interest with present publication.

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