

Market Marginal Analysis of Peas in Khyber Pakhtunkhwa

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Abstract

This study was initiated to overview the peas marketing practices, identify the socio-economic, technical and marketing constraints confronted by the growers in enhancing its marketing and promoting its exports. To achieve the objectives, pea's growers and market traders involved in peas marketing were interviewed through pre-tested questionnaires in two districts. i.e. Haripur and Mansehra districts of Khyber Pakhtunkhwa in the year 2013-14. Both districts are enjoying the central position in Khyber Pakhtunkhwa by supplying peas. The farm size of the selected growers ranged between 0.88 to 31.25 acres with an average of 4.52 acres in the study area. Most of the wholesalers and Beoparis bought pea's produce from the growers directly at seasonal market such as Baffa (Mansehra) and tube well No.18 (Haripur) and sold at different wholesale markets of the country. It is remarkable that auction system was not existed in these seasonal markets. Sixty eight percent (68%) and 46% of the growers in both districts sold their pea's produce in seasonal markets such as Baffa (Mansehra) and Tube-well No.18 (Haripur) respectively. The remaining 54% of the growers in Haripur district and 32% in Mansehra district sold their produce at the local seasonal markets as well as at Rawalpindi wholesale market. Eighty two percent of the growers enjoyed the price variation at each level, while the rest (18%) were not benefited from price variation, because they sold their peas crop to pre-harvest contractors at immature stage. Pea's grower received a highest portion (68%) of the consumer's rupee followed by the retailers. Data also indicated that the retailer realized 13 to 23% with an average of 18% of the consumer's rupee in the whole season, while wholesaler received a minimum portion of the consumer's rupee. The grower and retailer got 100% & 17.5% margin respectively in the one step promotion of peas produce, which are high as compared to other market intermediaries such as contractor and wholesaler.

Keywords: Structure conduct performance (SCP), Marginal Analysis, Break down consumer rupee, Marketing Cost, Absolute Cash Margins, Net Margins.

INTRODUCTION

A PEA (*PISUM SATIVUM*), although treated as a vegetable in cooking, is botanically a fruit; the term is most commonly used to describe the small spherical seeds or the pods of the legume. The pea is a green, pod-shaped fruit, widely grown as a cool-season vegetable crop. The seed may be planted as soon as the soil temperature reaches 10°C, with the plants growing best at temperatures of 13°C to 18°C. They do not thrive in the summer heat of warmer temperate and lowland tropical climates but do grow well on cooler high altitude tropical areas. Many cultivars reach maturity about 60 days after planting. Peas grow best in slightly acidic, well-drained soils. It is a cool season crop grown in many parts of the world; planting can take place from winter through to early summer depending on location. The average pea weighs between 0.1 and 0.36 grams. Sativa has been cultivated for thousands of years.

In early time peas were grown mostly for their dry seeds. In modern times however peas are usually boiled or steamed which breaks down the cell walls and make the taste sweeter and the nutrients more bio-available. Along with broad beans and lentils, these formed an important part of the diet of most people in Europe during the middle Ages. By the 1600s and 1700s it had become popular to eat peas "green" that is, while they are immature and right after they are picked. This was especially true in France and England, where the eating of green peas was said to be "both a fashion and madness". New cultivars of peas were developed by the English during this time which became known as garden peas and English peas. The popularity of green peas spread to North America. With the invention of canning and freezing of foods, green peas are often eaten boiled and flavored with butter and/or spearmint as a side dish vegetable. Salt and pepper are also commonly added to peas when served. Fresh peas are also used in pot pies, salads and casseroles.

Dried peas are often made into a soup or simply eaten on their own. In Japan, China, Taiwan and some South-east Asian countries, including Thailand and Malaysia, the peas are roasted and salted, and eaten as snacks. In the UK, dried yellow split peas are used to make peas pudding (or "Pease porridge"), a traditional dish. In North America a similarly traditional dish is split pea soup. In the United Kingdom, dried rehydrated and mashed marrowfat peas, known by the public as mushy peas, are popular, original in the north of England but now ubiquitously, and especially as an accompaniment to fish and chips or meat pies, particularly in fish and chip shops.

The Greeks and Romans cultivated and ate them in abundance, and it was the Romans who introduced them to Britain. They were also likely responsible for its spread through India. Where it is still a popular

vegetable. However, it appears that peas did not reach China until the 7th century CE, where they were given the name hu tou, meaning foreign legume. In China, peas are commonly used in stir-fries and its price is relatively high due to its agreeable taste. In Greece, Turkey, Cyprus, and other parts of the Mediterranean, peas are made into a stew with meat and potatoes.

During the reign of Elizabeth I, various types were imported from Holland. The traditional English ‘pea’s pudding’ is made from dried peas and was a versatile food as referred to in the popular nursery rhyme. Pease were generally eaten dried until the 16th century, when Italian gardeners developed tender varieties for cooking and eating fresh, although it took another century before this practice was accepted by the wealthy and fashionable English. Peas were not eaten fresh until the 17th century, when Louis XIV developed a liking for them.

Nature has blessed Pakistan with abundant quantities and qualities of fruit and vegetables to compensate the deficiency of food item, essential in the diet of our people. For this purpose, peas play a vital role and their chemical analyses have revealed that peas are also a good source of vitamins C, E, B complex, iron, and magnesium. Peas and other legumes are a good choice for diabetics as they help regulate the flow of blood sugar. Fresh peas are generally one of the most digestible and non-gassy of the legumes and have a mild diuretic and laxative effect. Instead of throwing out the pods after shelling, store them in the freezer until the next time a soup stock is needed. They can be leached of their nutrients at that time.

Today, however, peas are cultivated in almost every country in the world. The largest producers are the US, Europe, and India, and cultivated almost exclusively out of doors. The vast majority is processed by the food industry in such forms as canned, frozen, and dried. At the end of 19th century when canned vegetables began to be widely sold, peas were a popular item. Commercially, peas are classified as round, smooth, wrinkled, or having edible pods.

- Round- seeded types (convar. sativium) are easily recognized by their smooth, round yellow or green seeds. They are often dried when fully ripe and because of their high starch content, taste slightly mealy and less sweet than wrinkled or sugar snap peas.
- Smooth-seeded types are hardly and are used for early and late crops.
- Wrinkle-seeded varieties (convar. Middulare) are less hardly and generally sweeter. They are a type of pea that is particularly large, sweet, and tender and do not become soft when cooked, but sold only as a fresh vegetable.

In India and Pakistan, fresh peas are used in various dishes such as aloo matar (curried potatoes with peas) or matar paneer (cheese with peas), though they can be substituted with frozen peas as well. Peas are also eaten raw as they are sweet when fresh off the bush. Peas have been cultivated throughout the country. In Khyber Pakhtunkhwa peas occupy an area of 1942 hectares with a total production of 13418 tones. The sites of cultivation in Khyber Pakhtunkhwa is Haripur, Mansehra, Swabi etc. province wise area and production of peas is given in Table-1 below.

Table 1: Peas area and production in Khyber Pakhtunkhwa

District	2013-14		
	Area in hectares	Production in tones	Yield in Kg/hectars
Peshawar	31	110	3548
Mardan	44	241	5477
Swabi	157	644	4102
Kohat	1	12	12000
Abbottabad	5	88	17600
Haripur/Mansehra	10	128	12800
Malakand	25	58	2320
Swat	1280	10200	7969
Shangla	5	40	8000
Dir Lower	30	126	4200
Dir Upper	20	19	950
Chitral	202	1266	6267
D.I Khan	33	91	2758
Tank	5	18	3600
Bannu	13	12	923
Lakki Marwat	4	5	1250
KP	1942	13418	6909

Source: Crop Reporting Service Khyber Pakhtunkhwa, 2013-14

Keeping in view the fact and figure the present research was conducted in Haripur and Mansehra districts in order to generate information regarding the market of peas. The objectives of the study are as follows.

- To study the socio-economic constraint in peas production and marketing system which have an impact on the expansion of marketing system;
- To explore the present marketing channels used by the producer and determine the structure conduct and performances of existing marketing system;
- To quantify the marketing margins of growers and other market intermediaries and assess ways to increase the grower share;
- Findings of the present study would help the growers, and other organizations to frame out a dynamic peas development policy in Khyber Pakhtunkhwa.

RESEARCH METHODOLOGY

An information survey was conducted by the researchers in Haripur and Mansehra districts of Khyber Pakhtunkhwa in the first week of May, 2014. Interviews were conducted informally with individual pea growers, market intermediaries without using questionnaires. An effort was made to create a relaxed atmosphere in which respondents would feel free to express themselves. A comprehensive questionnaire was designed on the basis of information obtained in the informal survey. For examining the validity and accuracy of the interview schedule, it was pre-tested in the field. After pre-testing, changes and modification were incorporated and interviewing schedule was finalized for the collection of data.

The aim of the study is to assess the existing marketing system of peas in Khyber Pakhtunkhwa. However, in an empirical investigation, it is impossible to collect information from the whole population. Therefore, researchers are representative sample of population. Sample size of 60 is generally regarded as the minimum requirement that will yield a sufficient level of certainty for decision making (poate and Daplyn, 1993). The sample size and variation in data usually affect the quantity and quality of information obtained from the survey. Given the limitation in term of grower availability, cost, efforts, data management, traveling and time, it was decided to interview 60 growers and 40 wholesalers, contractors and retailers in the study areas (Table 2).

Table-2: Distribution of sampled respondents for Peas marketing survey, 2013-14

Variables	Districts		
	Haripur	Mansehra	Total
Peas growers	30	30	60
Contractors	10	10	20
Wholesalers	05	05	10
Retailers	05	05	10
All	50	50	100

Face to face interview were conducted on marketing system in a specific field as well as general characteristic such as land owner-ship, respondent's age, education level and experience in peas growing and marketing.

Analytical Frame Work:

There are many paradigms to determine the marketing efficiency such as productivity measure, market margin analysis, welfare analysis and structure-conduct-performance (SCP). Due to time and financial constraints the analysis was confined only to market margin analysis.

Market Margins Analysis

Market margin are the differences between prices at two market level. Marketing margins was estimated on the basis of data obtained on prices at different stages of the marketing chain. Beside this, marketing margins were calculated by computing the absolute margin or prices, spread, which is essentially the same as the difference between the prices, paid and received by each specific marketing agency. The following formula was used to compute percentage-marketing margins as earned by each market intermediary involved in the marketing of farm products.

$$M_m = (P_s \times 100) / S_p$$

Where 'M_m' indicates the marketing margins earned by a specific agency, 'P_s' stands for price spread availed by that agency and 'S_p' represents sale price of the same agency for the same commodity.

Breakdown of Consumer's Rupee

Breakdown of consumer's rupee is a phase applied to the manner in which consumer's one rupee expenditure on a specific commodity is divided among the marketing agencies and producer. It shows that portion of a consumer's rupee earned by marketing agency such as Growers, pre-harvest contractors, commission agent, wholesaler and retailers. This was calculated by expressing the net margin of a specified agency as a proportion of the retail price. The following formula was used to determine the breakdown of consumer's rupee.

$$Bdcr = P_s / R_p$$

Where Bdcr stands for breakdown of consumers rupee spent on specific commodity, 'P_s' indicates price spread and 'R_p' represent retail price.

Marketing costs

Marketing costs are the expenditure incurred by various market intermediaries from the time when commodity leaves the farm until it reaches the consumers. Such costs are necessary incurred to create form, time, place, and possession utilities in the products to make them marketable. To determine whether the marketing margins (amount received by the different marketing agencies for providing their services) were reasonable, it was essential to calculate the costs of these agencies. The costs incurred by the fruit and vegetables producers and other marketing intermediaries have impact on prices as well as on the margins of the market intermediaries.

The major components of marketing cost include grading, loading, unloading, transportation, commission charges and market fees. These costs were computed on a per Kg basis. Each marketing agency was inquired about the amount it spent per bag and the cost of each agency was calculated by using the following formula.

$$MC = A_s / q_h$$

Where 'M' stands for marketing cost of a specific unit quantity, "A_s" for actual amount spent and "q_h" represents quantity handled. All marketing costs were calculated by estimating the above formula except for commission charges. To calculate commission charges, the following formula was used.

$$Cc = (S_p \times R_c) Q_m$$

Where Cc' stands for commission charges, 'S_p' denotes sale proceeds of citrus marketed, 'R' represents rate of commission and 'Q_m' quantity marketed.

Net Margin

The net margin of a specific agency is the net earnings, which it earns after paying all marketing costs. Net earnings of various market agencies involved in the marketing of peas were computed with the following formula.

$$N_m = P_s - M_c$$

Where, 'N_m' stands for net margins, 'P_s' indicated the price spread availed by the specific agency and 'M_c' represents marketing costs incurred by the same agency.

The data was entered in the computer, using Statistical Package for Social Scientists (SPSS) software package. The replies of the respondents were codified and keeping in view the specific objectives of the study, data was analyzed using relevant techniques of data analyses.

Analysis and Discussion

Farm size and peas area of the growers

It is important to examine how resource are managed, and resulting impact on productivity and sustainability, A number of studies indicated that the size of landholding affects the efficient utilization of resources and type of cropping pattern a farmer will follow e.g. Chaudry et al; 1985, Mureithi et al; 1992; Kapronchzai and Tomka, 1991 and Thakur et al; 1990 and many other researchers reported that small farms have an advantage in labour supervision over large farmers. Second, small farmers can have an advantage in labour supervision over large farmers. Therefore, the quantity of labour inputs is likely to be higher on small farms. Second, small farmers can have restricted access to modern inputs, and this can hold back their attitude to risk and uncertainty. The large farmers may differ in their attitude to risk and uncertainty. The large farmers may be more willing and able to carry greater risk. On the other hand, Griffin, 1970; found a positive relationship between farm size and productivity.

Table-3: Average Farm size and Area under peas by various Districts of Khyber Pakhtunkhwa.

Variables	Districts		
	Haripur	Mansehra	All
Operation land holding (acres)	5.92	3.11	4.52
Peas area (acres)	3.43	1.76	2.59
Peas area in %	56.78	58.10	57.30

The farm size of the selected growers ranged between 0.88 to 31.25 acres with an average of 4.52 acres in the study area. Data showed that 90% respondent had less than 10 acres, 8% falling between 10 to 25 acres and 2% had more than 25 acres. It is remarkable that more than half of the total cultivated area is devoted to pea's crop which, show its importance in the study area.

Pea's varieties and seed source

There is collection of more than 12 recommended varieties of peas in Khyber Pakhtunkhwa. From the available material, the number of varieties has been recommended for the growers in view of their quality and vigorous growth. It is remarkable that most of the growers (90%) in the study area grown Meteor variety (locally called

Freshy), need no stake. Ninety six percent of the pea's area is covered under Meteor variety followed by the local variety called Hara. In the study area, none of the respondents was aware regarding the names of pea's varieties.

It is commonly believed that farmers should use pure, clean and disease free seed to obtain optimum yields. Growers have a number of option available to them as a regard seed sources i.e. own seed, other farmers, seed purchase from market etc. the data shows that majority of the respondents (85%) purchased seed from market at Baffa, Mansehra. While the rest of the growers used own seed or obtained seed from other farmers.

Marketing channels

A channel of distribution, sometime called a trade channel, for a product is the rout taken by the title to the goods, as they move from the producer to the ultimate consumer or final destination. A channel always includes both the producer and the final consumer for the products, as well as all agents and merchant middlemen involved in the title transfer (Khan, 1999). Cox and Thomas (1969) defined marketing channels as: a network of cooperating organizations that together perform all the activities required to link producers of goods and services to the end-users. An awareness of marketing as concept and as a vital and dynamic element in economic development has greatly increased in the development countries. The improvement in the functioning of commodity markets as well as the improve performance of the marketing system is now generally recognized as important, strategic elements in agricultural and economic development. Changes of attitude to marketing have come about particularly during the last decade, when many developing countries have had to undergo stringent economic reforms (Mittendorf, 1992). The existing pea's marketing channels are presented in figure-1. Private organization and individuals carryout the peas marketing viz; producers, commission agents, wholesaler and retailers were the principle market agencies in peas marketing system.

Sale of Pea's produce

Pea's farming is carried out by large number of growers, who were geographically scattered in various locations of Khyber Pakhtunkhwa. They in general belong to farming community. In research area, majority of the growers (82%) sold their produce in wholesale/seasonal markets such as Baffa, Mansehra (seasonal market), t .well No.18 Haripur (seasonal market) and Rawalpindi wholesale market. The remaining 18% sold their produce to pre-harvest contractors as shown in Figure-2.

Reason for sale to pre-harvest contractors

In the research area some of the pea growers (18%) sold their produce to pre harvest contractors at flowering or immature stage as depicted in Figure-2. Lack of financial resources for marketing cost, no manpower to handle and no knowledge regarding marketing system were the major reasons for sale to pre-harvest contractors.

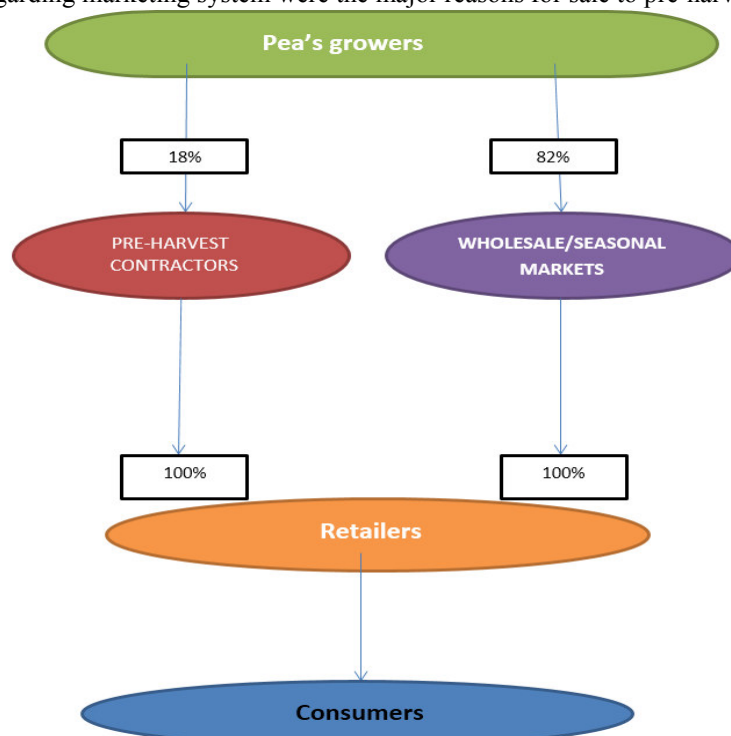


Figure-2:- Marketing Channels of peas in Khyber Pakhtunkhwa

Sale through wholesale/seasonal markets

Most of the wholesalers and Beoparis bought pea's produce from the growers directly at the seasonal markets such as Baffa (Mansehra) and Tube-well No. 18 (Haripur) and sold at different wholesale markets of the country. It is remarkable that auction system was not existed in these seasonal markets, because the markets take place on the road side during the season.

Table-4: Sale of pea's produced through different wholesale/seasonal markets by various Districts of Khyber Pakhtunkhwa

Selling point	Districts		
	Haripur	Mansehra	All
Baffa (Mansehra)	0	68	35
Tube-well (Haripur)	46	0	22
Rawalpindi/Baffa (Mansehra)	0	32	16
Rawalpindi / Haripur	54	0	27

Data showed that 68% and 46% of the growers in the both districts sold their pea's produce in seasonal markets such as Baffa (Mansehra) and Tube-well No.18 (Haripur) respectively. The remaining 54% of the growers in Haripur districts and 32% in Mansehra districts sold their produce at the local seasonal markets as well as at Rawalpindi wholesale market as depicted in Table- 4.

Purchasing point of retailers

Data represent that majority of the pea retailers bought peas from growers directly at seasonal markets and settled prices among themselves, because auction system is not exist in these seasonal markets.

Marketing Margins analysis

Margin analysis as a proportion of consumers price, is frequently used to assess the extent to which consumers prices are transmitted back to the producers. Marketing margins depend on the length of the marketing chain and the extent to which the produce is stored or processed (shepherd, 1993). Marketing margin may be calculated in two ways: absolute cash margins and percentage margin. The absolute cash margins is a good indicator of the trend of marketing costs (Swarp, et al 1985).

Peas Prices

The price of peas was collected on per bag (35 kg) basis. Simple analyses of mean pea's prices on per bag (35 kg) basis by stages of seasonal are presented in Table-5 below.

Table-5: Average sale Price of peas at different market intermediaries by various districts of Khyber Pakhtunkhwa

Marketing intermediaries	Price Rs./35kg pack			
	Early season	Mid-season	Late season	Whole season
Grower	1500	800	1000	1100
Beopari	1650	900	1200	1250
Wholesaler	1725	950	1300	1325
Retailer	2100	1225	1500	1608

Majority of the growers (82%) enjoyed the price variation at each level, while the rest (18%) were not benefited from price variation, because they sold their peas crop to pre-harvest contractors at immature stage.

Absolute Cash Margin

Marketing margins represent the price charged by market agencies for their services including buying, packing, transportation, storage and processing. Under competitive market conditions the market margins are the result of demand for marketing services and equal to the minimum cost of services provided plus normal profit (Scarborough and kydd, 1992).

Absolute cash margin or price spread is essentially the same as the difference between the price paid and price received by each intermediary. The absolute cash margin of producers was calculated as the sale price of peas per 35kg bag marketed by the producer. Generally the absolute margin of the commission agents is the commission charged on sale revenue but in case of peas the auction system is not existed in the seasonal markets. The absolute cash margin was calculated for each functionary as below.

Table-6: Absolute Cash Margin of producer and other market intermediaries.

Marketing intermediaries	Early season	Mid-season	Late season	Whole season
Grower	1500	800	1000	1100
Contractors/Beopari	150	100	200	150
Wholesaler	75	50	100	75
Retailer	375	275	200	288
Retailer price	2100	1225	1500	1608

Share in consumer's rupee

The consumer's one rupee expenditure on a specific commodity is divided among the marketing agencies and producer. It shows that portion of consumer's rupee, which is earned by the producer or goes to various marketing agencies such as contractors, commission agents, wholesalers and retailers.

Table 7: Percent Share in consumer's Rupee of pea's grower and other market intermediaries

Marketing intermediaries	Early season	Mid-season	Late season	Whole season
Grower	71	65	67	68
Contractors	07	08	13	09
Wholesaler	04	04	07	05
Retailer	18	23	18	18

The share in consumer's rupee was calculated by expressing the net margin of a specific agency as a proportion of the retail price. Results indicated that the pea's grower received a highest portion (68%) of the consumer's rupee followed by the retailers as depicted in Figure-3. Data also indicated that the retailer realized 13 to 23% with an average of 18% of the consumer's rupee in the whole season, while wholesaler received a minimum portion of the consumer's rupee.

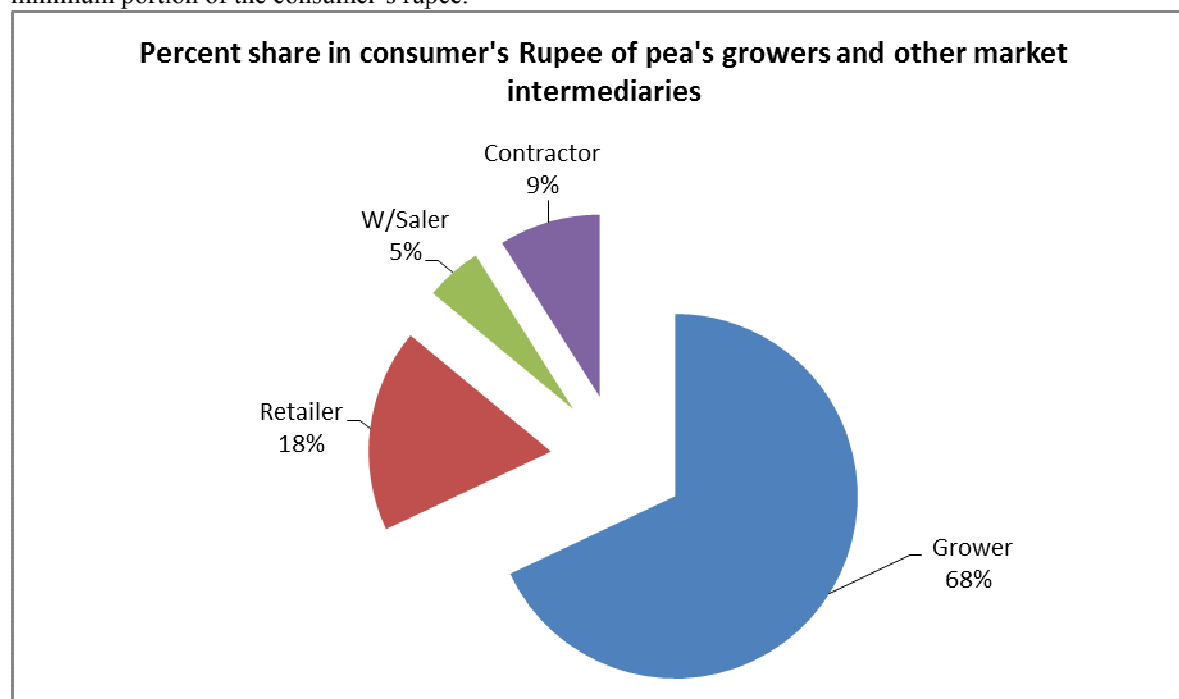


Figure-3:- Pie Chart of Percentage share of Consumer's Rupee of Pea's growers and other market intermediaries

Marketing cost

Marketing costs are composed of the total costs incurred on marketing of produce by each agency. One way of defining costs is as all the expenses incurred in organizing and carrying out the marketing process. Another definition is as the charges which are paid for any marketing activity such as, assembling, transportation, storage, grading processing, wholesaling and retailing. The most important factors, which influence marketing costs, are distance between production and consumption markets, conditions of the roads, seasonality, perish ability, packaging, storage and processing (Smith, 1992). Marketing cost of peas was analyzed at each stage.

Table 8: Marketing cost of grower and other market intermediaries

Marketing intermediaries	Cost in Rs/35kg bag			
	Early season	Mid-season	Late season	Whole season
Grower	65	65	64	65
Contractors	55	48	50	51
Wholesaler	11	12	12	12
Retailer	14	16	16	15

The average marketing cost of peas was estimated at per pack (35kg) basis for different market intermediaries. The producer and contractor costs were estimated to be a maximum Rs.65 and 51 respectively in the Whole Season. The wholesaler and retailer had cost of Rs. 12 and Rs.15 per 35 kg bag respectively as show in Table- 8. This is because of transportation of produce from market to selling point and rent of shop or barrow etc.

Marketing Margins Analysis

Marketing margins calculated for different marketing intermediaries involved in Peas marketing in the research area are as below.

Table-9: Marketing Margins for grower and other market intermediaries

Marketing intermediaries	Early season	Mid-season	Late season	Whole season
Grower	100.0	100.0	100.0	100.0
Contractor	9.1	11.1	16.7	12
Wholesaler	4.4	5.2	7.7	5.7
Retailer	17.9	22.4	13.3	17.6

The above estimates reveal that the grower and retailer got 100% & 17.6% margin, respectively in the one step promotion of peas produce, which are high as compared to other market intermediaries such as contractor and wholesaler.

Net Margin

Net margins calculated for different marketing intermediaries involved in Peas marketing in both agro-ecological zones are as below;

Table-10: Net Margin of pea's grower and other market intermediaries

Marketing intermediaries	Early season	Mid-season	Late season	Whole season
Grower	1435	735	934	1035
Contractor	95	52	150	99
Wholesaler	64	38	88	63
Retailer	361	259	184	168

The above estimated reveal that the net marketing margin for the grower and retailer is high as compared to other market intermediaries as depicted in Table-10.

Conclusion and Recommendations

It is concluded that pea's farming is a profitable profession. Majority of the growers wanted to increase the acreage of pea's crop. Hazara division enjoyed the central position in Khyber Pakhtunkhwa by supplying peas. Marketing system analyses illustrated that marketing of peas is completely performed privately without government intervention. it is revealed that marketing system is not completely competitive, but sufficiently competitive to prevent market traders from collecting excessive margins. A large number of buyers and sellers participated and none is able to place exclusive access to large supplies. However, no marketing intermediaries were able to manipulate prices, but the information flow of market and prices was rapid in between the market intermediaries including producers. In the current environment, it is imperative that government should make investment on infrastructure development particularly establishment of assemble markets, communication network and institution credit system to reduce post-harvest losses and to enhance the bargaining power of the growers in the market.

Recommendations

- Efforts should be made to establish assemble markets, generally in small towns to reduce the post-harvest losses and making cost of the growers.
- Advanced institutional credit should be provided to Pea's growers in order to accumulate them from pre-harvest sale.
- Farm to market link roads should be constructed in perishable commodities producing areas.

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