
Marketing and Prices of Agricultural Commodities: A Study on Major Vegetables in the Paschim Midnapore District of West Bengal**Mousumi Bakshi**

Ph. D Scholar, Department of Economics, Vidyasagar University

Abstract

This paper analyses the role of marketing structure and supply chain in the determination of agricultural prices. In general, agricultural products are not directly sold by the farmers to the final consumers. The products pass through a typical marketing channel or supply chain. Local traders or Fariahs, wholesale traders and retail traders are involved in this process. The basic hypothesis of this paper is that if greater no. of traders or middlemen are involved in the marketing process or marketing costs like distance, transportation, packaging etc. are high, the final consumers will have to pay higher prices and the farmers will get smaller share of the prices paid by the consumers. This paper has made field survey on the marketing of six vegetables in Paschim Midnapore District of West Bengal. Data have been collected from local, wholesale and retail markets. The analysis of data and regression results support our hypothesis. The results show that if price is higher in retail market, the price received by the farmer will be also high. The most important result is that if the no. of trader is high in the supply chain, the farmer will get a lower share of the consumer's price.

1. Introduction and Objective of the Study

In our research paper we want to discuss mainly three broad issues - supply-chain, marketing structure, and variation of agricultural product prices. There are various definitions of supply chain. Basically a supply chain means the flow and management of the product from the producers to the consumers. We all know that the agricultural products are not generally sold by the farmers to the consumers directly. The product reached to the hand of the consumer through different levels or stages of marketing. Traditionally the procedure or the supply chain management has focused on efficiently integrating suppliers and the customer activities, so that products are produced and distributed in the right qualities, at the demanded quality, at acceptable prices, to the right location and on time (Visser et al., 2007).

Agricultural products differ from other industrial products due to their perishable nature and special requirements during various farm and marketing operations. But, this does not imply that the field of agricultural marketing is something entirely different from marketing of industrial and other products. It is simply application of principles of marketing in agriculture sector and has been defined by various experts as under; According to Thomson (2002), the study of agricultural marketing comprises all the operations and the agencies conducting these, involved in the movements of farm produced foods, raw materials and their derivatives such as textiles, from the farm to the

final consumers, and the effects of such operations on farmers, middlemen and consumers”.

Acharya and Agarwal (1999) defined agricultural marketing as comprising of all activities involved in supply of farm inputs to the farmers and movements of agricultural products from the farms to the consumers.

First definition mainly focuses on product side of agricultural marketing and does not consider the farm supplies whereas second definition also does not adequately cover the scope of agricultural marketing.

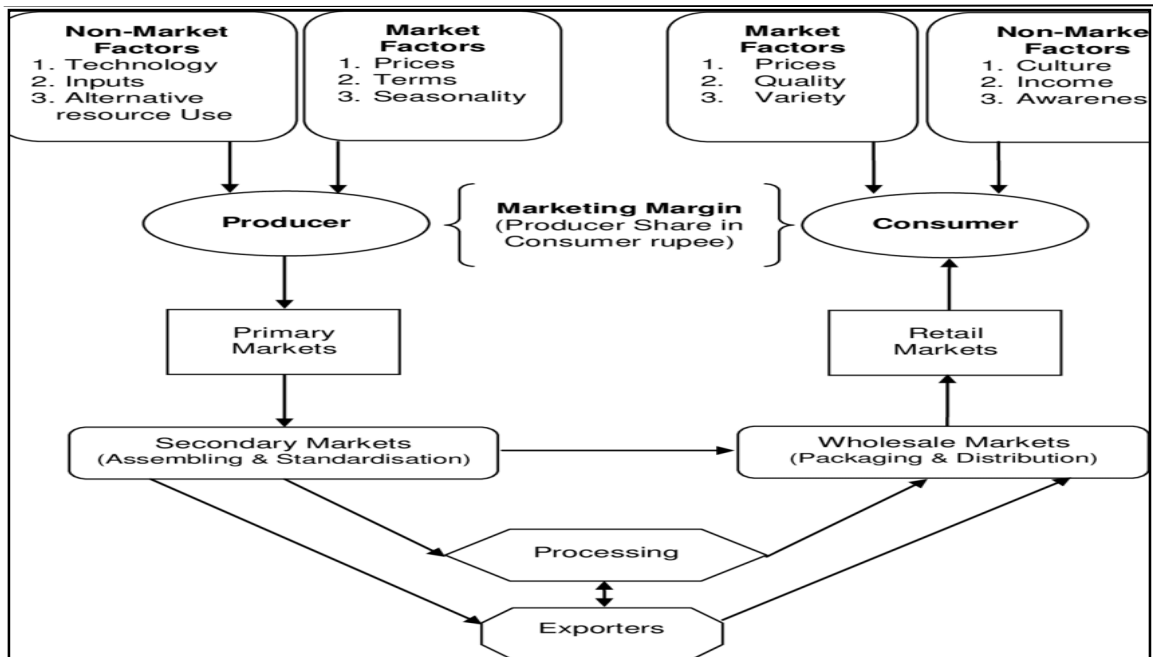
A comprehensive definition of agricultural marketing may be as under, Agricultural Marketing embraces all business activities involved in production planning, transformation, grading, storing, transportation and distribution of goods and services related to agriculture as desired by agricultural producers (farmers) and ultimate consumers (Qamer and Hammad, 2011)

We know all the products are going through a marketing system. That is, marketing system has important role throughout the country and the world. Later we will discuss the importance of agriculture marketing. When a product is going through a supply chain, then it is obvious that the product price will differ. In our research paper we want to know how the price differences vary from one place to another. That is, is there any proportionate relation between the price variation and the supply chain? If yes, then how it will vary in different level of supply chain? It is quite sure that West Bengal is a state where most of the districts are best for agricultural product and the agricultural product depends on the agricultural marketing and agricultural supply chain. The typical agricultural supply chain is

Farmers → Local Assembler → Central wholesale → Retailer → consumer

Marketing margin is defined as the difference between price paid by the final consumer and the price received by the producers (farmers). Here, the marketing margin includes costs includes cost of marketing and profits of traders in the marketing channel. If market structure is imperfect and control by few traders, then profit margin will be high. The other point is, if storage and transportation facilities are limited, then marketing cost will be high. In that case, the consumer will pay high price for the product and the producer will get a smaller share of the price paid by the consumer in the retail market. (Nicholls, 1955; Sasmal, 2003)

Now a day, the marketing channel is defined as another way. According to Qamer and Hammad (2011) the marketing channel be like the later diagram and they also defined marketing margin in different way i.e. producer share in consumer rupee.



Source: Internet (Research gate)

So, in the above chain system we see that there is different level of stages between the producers and consumers. We use the phrase “level of stages” because as the stage changes the marketing structure also changes. Sometime there may be perfect competition, monopolistic competition or oligopoly (leadership) in nature. Sometime the middle men are powerful and sometimes they are not. Basically in our research topic we want to see what will be the effect of the power of middle on the agriculture product prices. In our research topic we want to know the actual procedure of the flow of agricultural product, the power of the middle men’s effect on the agricultural product prices or the share of farmer i.e. are the farmer get their prices or not and the overall system of marketing structure.

Importance of Agricultural Marketing

From Agribusiness Management and Trade (AMT, Lesson-26), one came to know that agricultural marketing plays an important role not only in stimulating production and consumption, but in accelerating the pace of economic development. Its dynamic functions are of primary importance in promoting economic development. For this reason, it has been described as the most important multiplier of agricultural development. The importance of agricultural marketing in economic development has been indicated in the paragraphs that follow.

Optimization of Resource use and Output Management: An efficient agricultural marketing system leads to the optimization of resource use and output management. An

efficient marketing system can also contribute to an increase in the marketable surplus by scaling down the losses arising out of inefficient processing, storage and transportation. A well-designed system of marketing can effectively distribute the available stock of modern inputs, and thereby sustain a faster rate of growth in the agricultural sector.

Increase in Farm Income: An efficient marketing system ensures higher levels of income for the farmers by reducing the number of middlemen or by restricting the commission on marketing services and the malpractices adopted by them in the marketing of farm products. An efficient system guarantees the farmers better prices for farm products and induces them to invest their surpluses in the purchase of modern inputs so that productivity and production may increase. This again results in an increase in the marketed surplus and income of the farmers. If the producer does not have an easily accessible market-outlet where he can sell his surplus produce, he has little incentive to produce more. The need for providing adequate incentives for increased production is, therefore, very important, and this can be made possible only by streamlining the marketing system.

Widening of Markets: A well-knit marketing system widens the market for the products by taking them to remote corners both within and outside the country, i.e., to areas far away from the production points. The widening of the market helps in increasing the demand on a continuous basis, and thereby guarantees a higher income to the producer.

Growth of Agro-based Industries: An improved and efficient system of agricultural marketing helps in the growth of agrobased industries and stimulates the overall development process of the economy. Many industries depend on agriculture for the supply of raw materials.

Price Signals: An efficient marketing system helps the farmers in planning their production in accordance with the needs of the economy. This work is carried out through price signals.

Adoption and Spread of New Technology: The marketing system helps the farmers in the adoption of new scientific and technical knowledge. New technology requires higher investment and farmers would invest only if they are assured of market clearance.

Employment: The marketing system provides employment to millions of persons engaged in various activities, such as packaging, transportation, storage and processing. Persons like commission agents, brokers, traders, retailers, weigh-men, hamals, packagers and regulating staff are directly employed in the marketing system. This apart, several others find employment in supplying goods and services required by the marketing system.

Addition to National Income: Marketing activities add value to the product thereby increasing the nation's gross national product and net national product.

Better Living: The marketing system is essential for the success of the development programmes which are designed to uplift the population as a whole. Any plan of economic development that aims at diminishing the poverty of the agricultural population, reducing consumer food prices, earning more foreign exchange or

eliminating economic waste has, therefore, to pay special attention to the development of an efficient marketing for food and agricultural products.

Creation of Utility: Marketing is productive, and is as necessary as the farm production. It is, in fact, a part of production itself, for production is complete only when the product reaches a place in the form and at the time required by the consumers. Marketing adds cost to the product; but, at the same time, it adds utilities to the product. The following four types of utilities of the product are created by marketing:

Form Utility: The processing function adds form utility to the product by changing the raw material into a finished form. With this change, the product becomes more useful than it is in the form in which it is produced by the farmer. For example, through processing, oilseeds are converted into oil, sugarcane into sugar, cotton into cloth and wheat into flour and bread. The processed forms are more useful than the original raw materials.

Place Utility: The transportation function adds place utility to products by shifting them to a place of need from the place of plenty. Products command higher prices at the place of need than at the place of production because of the increased utility of the product.

Time Utility: The storage function adds time utility to the products by making them available at the time when they are needed.

Possession Utility: The marketing function of buying and selling helps in the transfer of ownership from one person to another. Products are transferred through marketing to persons having a higher utility from persons having a low utility. (AMT 2013, Lesso-26)

Objectives of the Study

The objectives of this research work are as follows;

- To investigate the supply chain and market structure in agricultural marketing.
- To explain the behavior of prices of major agricultural commodities in different markets (local, wholesale, retail etc.)
- To examine the sharing of price between the consumers, producers and traders.
- To examine the effect of market imperfection on agricultural price.

To fulfill the above objectives, we make a primary survey with three local, one wholesale and four retail markets in different areas of Paschim Midnapore district and Kolkata region with six important vegetables. From our survey we get various types of information relevant to our work proposal. We have processed those data and get a clear result from descriptive statistics and regression analysis. The whole work has been arranged as follows:

2. Sources of Data

Every research work needs the qualitative as well as the quantitative data on information about the major crops grown in, the food prices in some parts of West Bengal. The major crops grown in the state are: paddy, wheat, potato and the vegetables. In this paper, we have used different vegetables for analysis of marketing system and determination of

prices in the Paschim Midnapore district of West Bengal.

For this research work, we have used the primary data. We have collected the primary data directly from the fieldwork i.e. in some local, wholesale and retail markets by field survey method with particular questionnaire and by direct enquiry method.

Methodology of Primary Survey

In the primary field survey we have chosen six vegetables. The vegetables are cauliflower, cabbage, brinjal, bittergourd, cucumber and chili. We made separate questionnaires for all the vegetables and for all individual markets i.e. for local markets, for wholesale markets and for retail markets. For every vegetable we take 10 samples at each market. We choose these vegetables or agricultural products because in West Bengal these vegetables are produced very well in November – December season. From West Bengal, we choose West Midnapore and Kolkata districts. Basically we want to find out the supply chain as well as the price differences for the product. In the early part of the paper we have defined a basic supply chain for the marketing of agricultural product. So according to this, we choose first three local markets i.e. from where the product first marketed. These three markets are Lankagarh, Kolora and Dashpur, they are situated at Paschim Medinapore district. The distance of the local markets are 50 to 100 km from the Midnapore bus stand. We started our field survey in the middle of the December, when the price and availability of the vegetables are desirable. Basically the demand of the vegetables is high. First we surveyed at the three local markets at three different days and the next day after the survey in local markets, we went to the wholesale market where the vegetables are supplied for sale. After one or two days of survey in local markets we have collected data from Kolkata wholesale market, which is popularly known as Koley market Sealdah. At Sealdah the products are delivered from the two big local markets i.e. Daspur and Kolora. Most of the product of Lankagarh is sent to the Retail markets in Midnapore Town. To follow the supply chain in broad sense, we surveyed from Retail markets, two are situated at Paschim Midnapore town and another two are situated at Kolkata. The Minapore Retail market bring the agricultural product from Lankagarh i.e. the Midnapore supply chain is small and the power of middle men is not very strong. The Misnapore supply chain is Lankagarh (local) → Raja bazaar and Miya bazaar (Retail). On the other hand, the Kolkata retail markets bring the product from Koley wholesale market Sealdah and the wholesale market brings those products from Dashpur and Kolora local market. So the chain is basically divided into three stages, Daspur and Kolora (local) → Koley market, Sealdah in Kolkata(wholesale) → Maniktala and College street (Retail).

From the 10 days survey, we got relevant information on prices in different markets for our research work.

3. Literature Review

The post-economic reforms period in India has been characterized by a slowdown in the growth rate of overall agricultural output and crop yields due to various reasons (Bhalla and Singh, 2009; Desai et al. , 2011). In the context of persistently high food price inflation in India over the last few years, it was argued that the supply constraint causing high food prices was rooted in the slow growth in Indian agriculture in the post-reforms period (Carrasco and Mukhopadhyay, 2012; Desai et al. , 2011; GoI 2012). However a clear understanding of the food price situation during the post-reforms period as a whole and its connection with the slowdown in agricultural growth during the same period is yet to emerge.

We know that for underdeveloped country like India, agriculture acts as the backbone of the country. In case of India, most of the rural people engaged in the agricultural sector. The agricultural sector occupies an important place in the India economy, but it is very much backward in nature. It is plagued with some basic problems, like; low productivity, unequal development of different region of the agricultural sector, little amount of fixed capital, lack of modern technologies etc.

For this research work, following Bhalla (2007), Bhalla and Singh (2009) and Panagariya (2004), the growth path of India's agricultural sector is divided into four phases: the pre-Green Revolution period (1950-51 to 1964-65), the initial stage of the Green Revolution (1967-68 to 1979-80), the maturing stage (1980-81 to 1991-92), and the post-reforms period (1992-93 to 2012-13).

At the time of independence, India witnessed an acute shortage of food due to the disruption caused to the agricultural sector following the partition of British India in 1947 (Bhalla 2007; swaminathan 2012).

Since most studies have suggested a threshold level of inflation of about 6% for India (Table 2 in Pattanaik and Nadhanael 2011), they (Nair and Eapen) considered the persistence of inflation of 6% and above as a high inflationary episode. The average inflation rate recorded in an episode, say from June 1972 to May 1975, is calculated based on the change in the average value of the WPI over this period with respect to the average value of the WPI over the corresponding period (June 1971 to May 1974) the year before.

During the pre-Green Revolution period, high food articles price inflation occurred on four occasions (Table 3 in Nair and Eapen 2015) the average inflation recorded during these inflationary episodes ranged from 8.5% to over 15%.

Vaswani, et.al. (2003) stated that agriculture in any country goes through a cycle of development process which can be termed as 'commoditization to commercialization'. Despite the cost effectiveness of the production system at the commoditization stage, the agriculture transition towards commercialization is natural though its pace may be influenced by external factors like agricultural policy framework, extent of market imperfections, overall standards of living of majority population etc.

It would not be complete to review the existing marketing system without mention of

emergence of changed marketing situation in some of the States in the country. Alongside, the evolutions of regulated markets, some alternative marketing systems have developed (DFI, Vol -IV, August 2017). These are Direct marketing, Contract farming, Private Wholesale market, Organized retailing, Farmer Producers Organization (FPOs), Cooperatives in agricultural Marketing and Food & Agro Processing etc.

Dorward, (2004) stated that to be able to match the emerging market dynamics, there is need to strength competitiveness of farmers in the enterprises, value chains and wider environments on which rural producers depend.

Royer, (2008) stated that an understanding of marketing boards' origin and their role in the co-ordination of commercial transactions between farmers and buyers are essential to assess their merit and evaluate their performance.

According to Begun, (2011) the basic objective of regulating the marketing of agricultural products was to bring both producers and buyer/trade closer and to the same level of advantage. This would help reduce middlemen and associated costs and margins. Moreover regulated markets are the platform for both producers and buyers to represent their grievances and discuss matters of mutual interest.

Rehman, (2012) stated that the supply chain in agricultural marketing is long and has increased the margin between the price received by the farmers and the price paid by the consumers. Tightening of the supply chain is called for and the role of the farmer's organizations co-operatives/self-help group needs to be expanded.

Zivengeaned, (2012) recommends that farmer should develop effective mechanisms for collaborations and linkages, invest in market intelligence, and create a sea-change in thinking and practice, and building trust. This will enable them to enhance their bargaining power on prices. Farmers should expand firm sizes and also access mobile phones since such assets significantly influence market channel access. Farmers are encouraged to join co-operatives to enhance their chances of accessing critical production inputs and the government should provide extension services to improve production.

A striking feature of India's agrarian performance during the post-reforms period was the growth of agricultural output and GDP, though lower, was more stable. As a result the rate of price inflation was also low. According to some of the economists, there is found a shift of food consumption from the initial. One of the key reasons attributed to the spikes in food prices witnessed during the post-reforms period are the hefty increases in minimum support prices (MSP) of food grains (rice and wheat) (Balakrishnan 2000, Chand 2005; Dev and Rao 2010). The procurement of food grains by the government at higher MSP can cause high food inflation. One major factor determining food price inflation is the cost of production (CoP) in agriculture.

4. Empirical Information and Econometric Results

In this section, we have analysed the primary survey data and the econometric results.

Table 1: Comparison of the descriptive statistics of farmers share in the retail price of all vegetables in the retail markets of Kolkata and Midnapore town

Descriptive statistics	Kolkata	Midnapore
Mean	52.28	66.80
Median	46.67	67.42
Mode	50	60
Standard Deviation	18.32	13.68

Source: Primary Field survey

In the above table we describe about the farmers share for all vegetables with the entire marketing channel. We previously known that in Kolkata marketing channel there is a big wholesale market and the power of the wholesale traders is very high and in Midnapore town marketing channel there is no wholesale market i.e. the wholesale traders are not so much powerful, that's why we can see that there is difference between those two markets farmers share. Farmers' share in retail prices of all vegetables is high in Midnapore retail markets where either there is no wholesale trader or their power is weak. The implication is if the product passes through a marketing channel controlled by large no. of traders or middlemen, farmer's share in the price of the final market will be lower.

Correlation between Wholesale price and Retail Price: The correlation results between wholesale and retail prices of vegetables show that the correlation co-efficient is very high and positive. The value of "r" is 0.83, that means retail price and wholesale price are highly correlated.

Table 1a: Wholesale price differences between the local markets in Midnapore town

Vegetables	Daspur	Colora	Lankagarh
Cabbage	13.50	13.50	6.50
Cauliflower	14.50	12.50	8.50
Brinjal	6.75	8.00	8.00
Bitter Gourd	17.83	17.33	27.50
Chilli	46.00	45.00	39.00
Cucumber	16.25	15.50	13.57

Source: Primary Field Survey

In methodology section we discuss about three local markets i.e. Daspur, Kolora and

Lankagarh. From these three markets the vegetables are distributed in different areas. If we notice the earlier table i.e. Table_1a, we see there are some differences between the local market wholesale prices. If we look it very carefully, then one can find that the prices of Daspur and Kolora are almost same but the price of Lankagarh is quite low in most of the vegetables. This may be due to difference in local areas or the market to which the products are sent for sale. Since vegetables are sent to Kolkata from Daspur and Kolora and prices are higher in Kolkata, local wholesale prices in Daspur and Kolora are also high.

Table 1b: Price differences between the Retail markets in Kolkata and Midnapore town

Vegetables	Kolkata RP	Midnapore town RP
Cabbage	26.70	11.20
Cauliflower	19.30	11.75
Brinjal	25.50	18.50
Bitter gourd	44.00	35.00
Chilli	59.20	50.50
Cucumber	39.00	22.00

Source: Primary Field Survey

The above table represents the difference between retail prices of different places. We know that, the vegetables of Kolkata cross different steps of marketing channel. So we notice that the retail price of the retail markets in Kolkata is quite high. But in case of Midnapore town the product basically come from the local market Lankagarh directly the retail price is not so high.

Table 2: Regression of wholesale price received by farmers in local market (WP_F_Local) on retail price in consumer market (Retail_Price_Con.) in Kolkata
Dependent variable: WP_F_Local
Independent variable: Retail_Price_Con

	Co-efficient	t-value	P-value
Intercept	-7.476	-3.018	0.003
Retail_Price_Con	0.745	11.511	1.3E-16
	R-Square= 0.69	F=132.52	n=60

The result shows both R-square and F-statistic are high. That means, overall regression is significant and the variation in whole sale price in local market is largely explained by the retail price in the consumer market. The relation between WP_F_Local and Retail_Price_Con is positive and statistically highly significant. Although quite natural it suggests that, if price in the retail consumer market is high, then the price received by the farmers in the local market will be also high. What share of the price paid by the

consumers in the retail market will be received by the farmer in the local wholesale market depends on how much share of the consumer price is appropriated by the middle men traders and the marketing cost.

Table 3: Regression of wholesale price received by farmers in local market (WP_F_Local) on retail price in consumer market (Retail_Price_Con.) in Midnapore town

Dependent variable : WP_F_Local

Independent variable : Retail_Price_Con

	Co-efficient	t-value	P-value
Intercept	-4.417	-5.308	7.43E-06
Retail_Price_Con	0.893	30.108	1.41E-25
	R-Square= 0.964	F=906.51	n=35

In the above result we can also find that, the result shows both R-square and F-statistic is high, which means overall regression is highly significant and the variation in wholesale price in local market is largely explained by the retail price in the consumer market. The relation between WP_F_Local and Retail_Price_Con is positive and statistically highly significant. Although quite natural it suggests that, if price in the retail consumer market is high, then the price received by the farmers in the local market will be also high. What share of the price paid by the consumers in the retail market will be received by the farmer in the local wholesale market depends on how much share of the consumer price is appropriated by the middle men traders and the marketing cost. The comparison of results in Table 2 and 3 tells that the coefficient of retail consumer price is higher for Midnapore town. This is because the role of middle men /trader is less or absent in case of Midnapore town. That is why the farmers are getting a greater share of consumers,' price.

Comparison

In case of local markets of Midnapore, where the same vegetables items were supplied from Lankagarh local market, the regression result of local wholesale price receive by the farmers on retail consumer price in Midnapore town show that the regression results are more robust with high R-square and very high F-satistic. That means the variation in the wholesale price in the local market is more strongly explained by variation in the retail prices in the consumer markets of Midnapore town. The co-efficient of retail price in the regression is much higher, that is the price received by farmers is greater explained by retail price. This is because the marketing in this case is less dependent on middle men traders. So, it may be concluded that if the no. of middle men traders in the marketing

system is high, then the farmers in local markets will not get proper price from the traders, because a large share of price paid by the consumers in the retail market will go to the traders. So marketing system and supply chain is important for the price the farmers will get.

Table 4: Regression of Wholesale price received by wholesale traders (W_Price_T) on Retail price in consumer market (R_Price_Con) in Kolkata

Dependent Variable: W_Price_T

Independent Variable: R_Price_Con

	Co-efficient	t-value	P-value
Intercept	5.266	2.338	0.028
R_Price_Con	0.467	6.810	6.04E-07
	R-Square=0.668	F= 46.384	n=25

The result shows that both R-square and F-statistic are high. That means, the regression equation between prices in wholesale market is explained by retail price in consumer market. The relation between W_Price and R_Price_Con is positive and statistically significant. If price in retail market is high rate price in wholesale market will be also high. Then the wholesale traders become more powerful and they control the wholesale marketing.

Table 5: Regression of Local Wholesale price received by the farmers (L_WP_P) on Wholesale market price (W_Price_T) in Midnapore Town

Dependent variable: L_WP_P

Independent variable: W_Price_T

	Co-efficient	t-value	P-value
Intercept	-1.871	-1.522	0.139
W_Price_T	0.803	19.632	6.59E-18
	R-Square=0.932	F=385.440	n=30

From the above table one can found that both the R-square and F-statistic are high. That means, the overall result is highly significant and the variation between local wholesale prices received by farmers is largely explained by the wholesale market price. The relation between L_WP_P and W_Price_T is positive and it is statistically highly significant. When wholesale traders get higher price that means the farmers also get higher share. It is found that the wholesale price both in local markets and wholesale markets depend on price in retail consuming market. But the problem is that the demand in the consumer market for agricultural commodities like vegetables is less elastic (with

respect to both price and income).

5. Conclusion

From the above discussion one can find that the marketing channel and marketing structure is very much important for prices of agricultural products. We know that agricultural products are perishable in nature; so it has to be marketed properly as soon as possible. But the agricultural products are produced in rural areas, where the transport facility is not so well and the farmers are not so rich to bear the transportation cost. And if we look into the consumer side then we see that they cannot go to the rural area to buy the products. As a result the producers want to sell their products in the local market and the consumers buy their products in the retail market but they cannot meet with each other. That is why the traders operate at different stages of marketing between producers and consumers. Not only local traders but there are many wholesale traders also. Now if producers (farmers) and consumers sell and buy their product directly then both of them will be profitable, but when the local traders, wholesale traders and many other middlemen are involved in the marketing process then both the producers and consumers are exploited. Farmers get low price share but consumer paid a higher price. In our paper we see that when the marketing channel is long or there is many stages then the price paid by the consumer is high but the share of the producers is low and when the marketing channel is short or very little stage to cover, then the share of the farmer is comparatively high and consumer has to pay comparatively low price i.e. both producers and consumers are gainer.

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