



# Vegetable Marketing in Jharkhand

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*Vegetable is one of the important crops of Jharkhand, which is being cultivated on a commercial scale. About 3.2% of the gross cropped area of the state is devoted to the vegetable crops. But it is often alleged that the marketing system of vegetable is inefficient and farmers get low share in the price and a large share is appropriated by the middle men. Present evaluates the marketing efficiency and operational problems of vegetable marketing in Jharkhand*

**Keywords : Vegetable, Marketing Efficiency**

## Introduction

In a country which has predominance of small land holdings and surplus labour, horticulture and vegetable cultivation, particularly the latter is most suitable. Jharkhand is major producer of vegetables. About 3.2% of the gross cropped area of the State is under vegetable crop. The major vegetable crops grown in the state in order of area covered by them are potato, tomato, lady finger, peas, cauliflower, brinjal, & cabbage. Growing of vegetables has added significance from the point of view of its contribution to national income and employment generation. Cultivation of vegetables is highly profitable. It has the potential of earning almost four times more income per hectare than food (Srivastava, 1993). Due to higher income elasticity and the growing demand for vegetables. The emphasis in five year planes is also laid on vegetable crop diversification.

Jharkhand is a traditional supplier of vegetables South hotanagpur has been supping vegetables to big cities like Patna, Kolkata, Asansole, Rourkela, Jamshedpur, Bokaro and Dhanbad. Vidyarthi (1962) reported that in agricultural villages near Ranchi, a shift was visible in the cropping pattern especially towards vegetables. According to the data available with the Directorate of Horticulture (2007-2008), nearly 22,023 hectares of land was under different vegetable crops. Vegetables are produced and marketed largely by all size groups of farms. The 'Vegetable Village Clusters' schemes sponsored by nationalized banks and the 'Million Well Scheme' have encouraged farmers for vegetable cultivation (Sinha and Kumar, 1988). But the vegetable marketing system did not receive the needed attention to handle the increased production. The problem is that the increased production not increase the income level for the farmers unless marketing linkage is seriously planned and implemented.

It has been observed that production and marketing of vegetables for the small farmers is a profitable enterprise. Different studies such as Acharya (1994), Cummings (1976), Lele (1972), Rao (1989), Thakur (1974), Prasad (1996), Ekka & Deogharia (2005) and Deogharia (2006) have also highlighted the problems of marketing like high commission charges, transport and packing cost. So, if the farmers do not see any easily accessible market outlet where they can sell their produce at a fairly reasonable price they will have little incentive to regard vegetable cultivation as a gainful occupation. Role of agriculture marketing is so important that it has prompted the government to place particular emphasis on agriculture marketing. There have been direct and indirect government interventions in marketing of farm produce, for agrarian market reform in our country.

The role of the government is creation of market access in the rural areas and to work for the improvement in the economic conditions of the farmers. The crux of the problems of the farmers of Jharkhand is thus, not only of development but also distributive justice which can be achieved only through those institutions which can strengthen linkages between production and marketing.

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A different aspect of vegetable marketing has also been studied by economists like S. S. Acharya. (1990). A. J. Singh. and I. Singh. (1992) GC Srivastava (1993), Jagdish Prasad (1997) D.S. Thakur et al (1994) Singh & Chaddha (1990). These include marketing pattern, marketing systems, marketing margins, marketing channels, marketing efficiency and even the factors affecting the marketed surplus in vegetable marketing. The questions about domestic trade in vegetables, marketing surplus, margins of market intermediaries and their impact on producer's income or consumer's prices are of much interest not only to participants of the marketing system, but also for policy makers and administrators.

Keeping in view the economic importance of vegetables in Jharkhand a study was conducted in three districts of South Chotanagpur namely Ranchi, Lohardaga & Singhbhum during the agriculture year 2009-10 with the following objectives:

1. To estimate the marketable and marketed surplus of different size group of farmers.
2. To identify the factors determining the marketed surplus, and
3. To identify different marketing channels for vegetable.
4. To study the marketing cost and
5. To estimate the marketing efficiency of the farmers.

The study related to three selected vegetable crops namely potato, tomato & cauliflower.

## **Methodology**

Stage stratified random sampling method was used to select vegetable cultivators in the region. Altogether 150 cultivators, 50 each from the three selected districts, were selected randomly for the study. The sample farmers were classified into marginal, small, medium and large farmers. The data from the sample farmers were collected through personal interview with the help of pre-tested schedules. The study analyses marketed surplus marketing channels, marketing cost and marketing efficiency of selected vegetables.

## **Marketed Surplus**

Marketed surplus was estimated by deducting the requirement for family consumption, farm seeds and other payment from the farm produce of the sample farmers. The marketed surplus, on the other hand, is the actual quantity of the produce, which the producer farmer actually sold in the market irrespective of his requirements for family consumption, farm seeds and other payments.

The factors affecting the marketed surplus of vegetables were analysed by applying multiple regression analysis. The marketed surplus of vegetable (S) was taken to depend on the following factors:

The multiple regression analysis is used for the function :

$$S = f(X_1, X_2, X_3, \dots, X_7)$$

Where S = Marketed Surplus of Vegetables

$X_1$  = Family size of the Farmers

$X_2$  = Area under Vegetable Crop

$X_3$  = Total Production of Vegetable

$X_4$  = Income from Vegetable

$X_5$  = Family Consumption

$X_6$  = Total Non-market Transaction

$X_7$  = Price of Vegetable

Apart from analysing the marketed surplus the marketing costs of the vegetable and the marketing

efficiencies are also analysed. The total marketing costs comprise of costs of all the functions like, ground rent, marketing fee, grading, packing, transportation, etc.

Marketing efficiency has been a subject matter of paramount concern for economists from time to time. Clark (1954) defined marketing efficiency as having the three components of effectiveness, cost and their effect on performance of marketing functions and services which in turn affect production and consumption. According to Jasdanwala (1966) marketing efficiency denotes the effectiveness or competence with which market structure performs its designated function. Kohl (1980) denotes marketing efficiency as the ratio of market output or satisfaction to marketing inputs or cost of resources in the marketing system. Thakur (1992) expressed marketing efficiency as a ratio of output to marketing input. The expounders of agricultural marketing in India who have studied and analysed various aspects, situations, markets and marketing systems to determine their marketing efficiency and performance are Jasdanwala (1966), Cummings (1976), Lela (1967, 72) Holmes (1971) and Thakur (1971-1997).

Present study examines the marketing efficiency as a ratio of output to inputs; In fact, marketing efficiency refers to the maximization of this input-ratio.

$$\text{Therefore} \quad \text{ME} = \frac{O}{I}$$

Where,            ME = Marketing efficiency.  
                      O = Output of the marketing system.  
                      I = Inputs used in marketing.

Accordingly, the ratio of the total value of goods marketed (O) to the total marketing cost (I) involved or incurred denotes marketing efficiency. The marketing efficiency is expressed in percentage terms as follows:

$$\text{ME} = \frac{\text{Value added by marketing sy stem X 100}}{\text{Cost of marketing functions services margins}}$$

## Analysis

The marketed surplus of vegetables is presented in Table - I. It may be observed from the table that there is a very high percentage of marketable surpluses with the farmers but the absolute quantity of the marketed surplus remains very small.

The marketable and marketed surplus of sample vegetable produced by the sample farmers on various categories of farmers in the study area revealed that the marketed surplus as proportion of production farm. However, the marketed surplus reduced to nearby 95%, 90%, and 93% of total production of potato, tomato, and cauliflower, mainly due to the post harvesting losses, because of their perishable nature. The extent of losses was estimated to be maximum in tomato (5.54%) followed by cauliflower (3.46%) and minimum in case of potato (0.64%). Both the marketable and marketed surplus of all the three vegetables showed direct relationship with the farm size which can be observed from Table-I.

**Table-1**

**Marketable and Marketed Surplus of Sample Vegetables on Different Categories of Sample Farms**

Vegetables	Farm Size	Total Production	Marketable Surplus	Marketed Surplus
A. Potato	1.Small	02.50	01.36 (54.40)	01.36 (53.60)
	2.Medium	06.28	04.12 (65.61)	04.05 (64.49)
	3.Large	18.71	16.47 (88.03)	16.25 (86.85)
TOTAL		27.49	21.95 (79.03)	21.64 (78.72)
B. Tomato	1.Small	02.44	.02.33 (97.39)	02.21 (90.59)
	2.Medium	04.33	04.09 (94.46)	03.85 (86.92)
	3.Large	10.06	09.74 (96.82)	09.12 (90.66)
TOTAL		16.83	16.16 (96.02)	15.18 (90.20)
G. Cauliflower	1.Small	03.58	03.35 (93.57)	03.30 (92.18)
	2.Medium	05.59	05.33(95.35)	05.19 (92.84)
	3.Large	14.70	14.34(97.55)	13.95 (94.90)
TOTAL		23.87	23.02 (96.44)	22.44 (94.01)

Source: Primary (Figures in parenthesis are percentages to total Production)

The marketed surplus of the three vegetables is being sold to the consumers through different market channels. The farmers sold their marketed surplus in more than one channel. The distribution of quantities sold by different size groups of farmers in different channels of marketing is also analyzed in our study. Table-II below presents the distribution of marketed surplus of the sample vegetables in five identified marketing channels.

### **Determinant of Marketed Surplus**

There are so many factors which determine the marketed surplus of vegetables. The factors in our study were regressed to find the impact of each factor on marketed surplus of sample vegetable (Table-II and III). All the variables were non incorporated due to multicollinearity problem. It can be observed from Table-II that the regression co-efficients for total production of potato are found to be positively related to the marketed surplus. It were found to be highly significant (at 1 %) in small and marginal sample farms indicating that an increase of one quintal output will increase the marketed surplus by 53 and 72 Kg. in marginal and small farms respectively. The regression coefficient with respect to the family size (number of adult) is found to be negatively related as in case of gross income. The regression coefficients for total consumption are found to be negatively highly significant (at 1 %) and poorly significant (at 10%) in small and overall group of farms respectively. With respect to weighted price of potato, the regression co-efficient

is found negative and non-significant in farm and negatively highly significant in overall size of farms.

**Table-II**

**Regression Co-efficients and t-Values of Factors Affecting Marketed Surplus of Potato in Sample Farms**

Size group	Intercept	Family size in adult Units (X <sub>1</sub> )	size of Holding (X <sub>2</sub> )	Total production (X <sub>3</sub> )	Gross income in Rupees (X <sub>4</sub> )	Total Consumption (X <sub>5</sub> )	Price of the crop (X <sub>7</sub> )	R <sup>2</sup>	n
Small	0.1871			0.7204 (34.912)	-2.7150 (-2.427)	0.6174*** (4.542)		0.005	36
Medium	-0.1937	-0.0264***	5.7130***		-4.6250			0.995	22
Large	0.1400			0.1548 (1.6130)	5.4880 (-1.0877)			0.948	18
All	-0.2687	-0.0041 (0.3603)	4.7363 (17.444)		-5.2050 (-1.5262)	0.5970* (-1.936) J	-0.003 (-3.727)	0.942	76

\*\*\* Significant at 01 percent level of significance.

\*\* Significant at 05 per cent level of significance.

\* Significant at 10 per cent level of significance.

**Table-III**

**Regression Co-efficients and t-Values of Factors Affecting Marketed Surplus of Tomato in Sample Farms**

Size group	Intercept	Family size in adult Units (X <sub>1</sub> )	Total production (X <sub>3</sub> )	Gross income in Rupees (X <sub>4</sub> )	R <sup>2</sup>	n
Small	-1.0075	-0.0211** (-3.684)	1.0014*** (16.325)	-7.5400*** (-3.595)	0.948	34
Medium	-0.1117	-0.0198 (-0.6091)	0.9447*** (31.358)	-	0.989	21
Large	-0.3657	-0.0325** (-4.3148)	1.0111 (63.888)	-	0.99	11
All	0.0195	-0.0006 (-0.895)	0.9546*** (45.894)	-	0.982	65

\*\*\* Significant at 01 percent level of significance.

\*\* Significant at 05 per cent level of significance.

\* Significant at 10 per cent level of significance.

The regression co-efficients of the total production in tomato (Table-III) were found significant with respect to family size, if found negatively significant in small and large farms, whereas gross income of marginal farm is found negatively related to marketed surplus.

Thus, we observe that total production plays an important role in the marketed surplus but the variables family size, gross income total consumption, non-market transaction are also observed to affect the marketed surplus in desired direction at different levels of significance. Increase in area under cultivation of the crop has significant impact on marketed surplus. Unexpectedly, we found that the farmers were not found price responsive. This may be attributed to the fact that the farmers are bound to sell their product at low price just after the harvest under poor economic conditions.

### **Marketed Surplus & Marketing Channels**

Farmers sold their marketed surplus of vegetables through different marketing channels. The following channels were found to be utilized by the sample farmers for selling there marketed surplus.

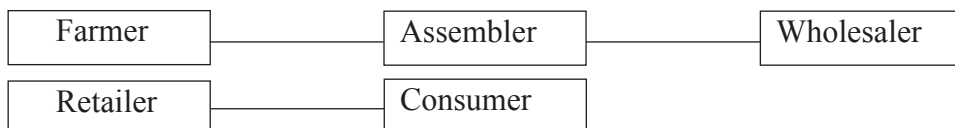
#### **Channel – I**



#### **Channel – II**



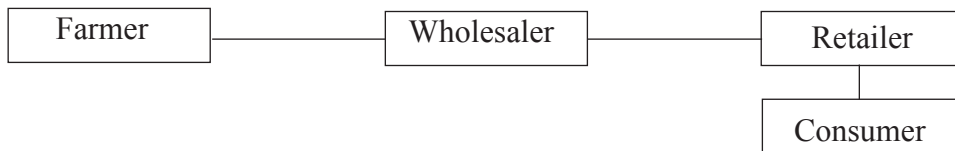
#### **Channel - III**



#### **Channel - IV**



#### **Channel – V**



There are so many factors, which influence the selection of different channels by the farmers, and one such factor is the quantity of marketable surplus with the farmers. Thus, it is desirable to analyze the marketable

surplus and its distribution in different marketing channels.

Now it was desirable to analyze how the farmers distributed their marketable surplus in different market channels. Actually, the farmers adopt different marketing channels not only for convenience but to extract higher net price. Table-IV shows the distribution of sample vegetables by the farmers in different marketing channels.

**Table-IV**  
**Marketed Surplus of Selected Vegetables Sold in Different Marketing Channels**

Vegetable	Marketing Channel	Farm Category			
		Small	Medium	Large	Overall
1. Potato	I	18.56	11.63	04.41	04.36
	II	62.11	30.65	03.35	03.27
	III	05.13	42.34	43.27	38.18
	IV	14.10	15.52	33.18	37.35
	V	-	-	06.36	16.74
2. Tomato	I	41.16	20.36	<b>05.21</b>	10.28
	II	25.42	21.18	16.03	18.64
	III	27.57	<b>33.13</b>	<b>38.28</b>	44.74
	IV	05.85	<b>16.59</b>	<b>21.64</b>	18.03
	V	-	<b>08.74</b>	<b>18.74</b>	08.31
3. Cauliflower	I	68.34	<b>42.82</b>	<b>12.48</b>	20.36
	II	14.56	<b>16.36</b>	<b>06.35</b>	21.13
	III	11.83	<b>17.08</b>	<b>36.71</b>	36.18
	IV	05.27	<b>15.41</b>	<b>27.69</b>	13.54
	V	-	<b>08.33</b>	16.77	08.79

Source: Primary

It can be observed from the table that the farmers in general sell their potato in first four marketing channels, only 16.74% of the produce of the large farmers are sold in the fifth channel. It has been observed that majority of small farmers (62.11 %) select the II<sup>nd</sup> channel sell directly to the retailers at hat. But overall, channel-III is the most popular channel. Majority of sample farmers sell their vegetable product (43.27% potato, 44.74% tomato and 36.18% of cauliflower) in this channel. So, the farmers prefer to sell their marketable surplus to assemblers at Hat.

However, it is interesting to see that in case of tomato and cauliflower the majority of small farmers prefer to sell their product in channel I where they sell it directly to the consumer. It was informed that in these vegetables, they get a higher margin for this surplus than potato, which is comparatively less perishable. Distribution of vegetable product to different market channel depends upon the lot of sale. If the quantity for sale is more, they prefer channels other than 1<sup>st</sup> and II<sup>nd</sup>. If the quantity for sales is less, the farmers prefer to sell the produce directly to the consumer

## Marketing Cost of Vegetable

The vegetables are sold by farmers through the agents and those who are non members. The information relating to per quintal cost of marketing of vegetables is presented in *Table V*

The results indicate that marketing costs varied from one vegetable to another. Of the several components of total marketing costs, transportation is a major cost. It constituted more than 37 per cent of the total marketing costs. Next in order of magnitude are commissions to commission-agent and the packaging charges sharing nearly 33 per cent and 14 per cent of total costs of marketing, respectively. The farmers sell their vegetables in different stages of markets.

**Table - V**

### Marketing Cost of Vegetable of the Sample Farmers (Per Quintal)

S.N	Vegetable	Grading	Packaging	Transportation	Commission of Agent	Commission of Society	Ground Rent	Halting Charge	Wastage	Weighting Charge	Total Marketing Cost
1	Potato	2.86	15.32	55.55	45.40	14.18	3.75	1.25	0.21	1.00	139.52
2	Tomato	3.59	31.11	51.88	51.88	16.21	3.75	1.25	0.50	1.00	161.07
3	Cauliflower	3.11	15.79	36.67	49.18	15.37	3.75	1.25	0.67	1.00	146.79

(Figures in parentheses are percentage to average total cost)

## Net Price Received for Sale of Vegetables

The average net prices means the gross prices received minus the average per quintal cost incurred on marketing of these vegetables by the farmers. It was hypothesized that the net prices received by the farmers may vary according to place of sale. Average net price received is compared for channel – II and channel – IV and the results are presented in Table – VI

**Table – VI**

### Average Net Price Received for Vegetable by Sample

Channel - IV				Channel - IV	
Sl. No.	Name of Vegetable	Av. Quantity marketed	Av. Price received	Av. Quantity marketed	Av. Price received
1	Potato	39.72	432.12	38.15	427.98
2	Tomato	40.44	490.50	40.04	487.42
3	Cauliflower	33.06	583.15	29.66	575.52

It may be seen from the table that the average prices received for each of the vegetables by the farmers who are adopting channel – IV were marginally higher than their counterparts for sale in the same market. Cauliflower received the highest per quintal net price followed by Tomato and potato received lowest per quintal net price in case of both the Potato channels.

## Marketing Efficiency

Marketing efficiency is the effectiveness of a marketing system. To compare the effectiveness of the marketing system marketing efficiency index of the farmers who marketed their produce through channel – II and who marketed through Channel – IV in different markets was also calculated and the same is presented in Table – VII



**Table – VII****Marketing Efficiency for marketing the vegetables in terminal market for the farmers in channel II & IV**

Sl. No.	Name of Vegetables	Marketing Efficiency Index	
		Channel II	Channel IV
1	Potato	427.51	406.75
2	Tomato	404.30	402.61
3	Cauliflower	393.07	388.22

It may be observed that for channel IV who sold vegetables in different markets, marketing efficiency index is lower for all the vegetables than the farmers who sold the vegetables through Channel II in the same market. It may, therefore, be concluded that the channel II operated more Efficiently than the Channel - II in marketing the vegetables of their member growers.

There are many problems faced by farmers. The farmers faced the problems of high market charges incurred by the middle man. Farmers also complained that proper storage facilities be provided for vegetables, so the benefits of higher prices during lean period can be achieved. High cost of insecticides and pesticides, lack of technical know-how regarding improved package of practices and the cultivation of vegetables. High cost of packing material was the different problem faced by the farmers. Transport facilities were not major constraint for almost all as most of the farmers carried the produce themselves.

## Conclusion

It may be observed from the study that marketing of vegetables in Jharkhand involves different marketing channels consisting of growers, assemblers, commission agent, wholesalers and retailers. The vegetable grower sell their product immediately after harvest due to the perishability of the product, lack of cold storage, poor economic condition of the farmers and other factors. They could have received a higher price for their product (potato) if sold at a future date. The factors such as size of holding, production have direct relationship with the marketed surplus of vegetables and their distribution in different marketing channels. However, the factors like family size, gross income have a negative influence on marketed surplus of vegetables. The price has been found to have no impact on marketed surplus. This is due to the fact that the vegetable growers in Jharkhand are forced to sale the produce at whatever price is available to them but due to the low quantity of marketed surplus the economic compulsion to sell immediately, lack of storage, facility it is difficult for the farmers to sell the produce at future date.

There is a need to restructure primary co-operative marketing societies particularly from the point of view of betterment of economic standards of growers which solely depends upon remunerative farm production. The institutional approach to create adequate market access to the farmers can be best realized by strengthening co-operative societies. There has been greater emphasis on large centralized whole sale markets leading to the neglect of grassroot market institutions and functionaries. The result has been that the small farmers cannot derive benefits of the market development programmes initiated by the government owing to weak resource base. Setting-up of multi-purpose co-operative societies with both credit and marketing, would be the most desirable strategy for strengthening co-operatives in the field of farm produce marketing.

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