Price-spread of Potato Marketing in the Post- APMC Era in Bihar: A Study from Muzaffarpur

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INTRODUCTION

The cultivation of vegetables in a densely populated state like Bihar where approximately 97 percent of farmers have small holdings (less than two hectares), plays a crucial role in socio-economic development of that category of farmers. Cultivating vegetables on small holdings is more profitable as it utilises family labour effectively and ensures employment, income and nutrition security throughout the year (Ryan & Spencer, 2001; Singh et al, 2002; Mahapatra et al, 2017). It is very appealing to small and marginal farmers as it offers higher economic returns compared to traditional crops (Sidhu et al, 2009). In Bihar, vegetables are produced on nearly 12 percent of gross sown area. The growth of area and production of vegetables in the state has been encouraging due to support of government policy, fertile soil and diverse agro-climatic conditions. As of 2022-23, the state produced 163.43 lakh tonnes of vegetables, cultivated on 8.9 lakh hectares (Economic Survey of Bihar, 2023-24) whereas in 2005-06, the area was 4.96 lakh hectares and production 72.62 lakh tonnes (Economic Survey of Bihar, 201011). The major vegetables produced during 2020-21 to 2022-23 were potato (87.78 lakh tonnes), onion (13.21 lakh tonnes), brinjal (12.14 lakh tonnes), tomato (11.67 lakh tonnes), and cauliflower (11.01 lakh tonnes) whereas in 2008-09, potato (50.34 lakh tonnes), onion (9.47 lakh tonnes), brinjal (11.86 lakh tonnes), tomato (10.37 lakh tonnes), and cauliflower (10.44 lakh tonnes). The comparison of these data establishes that the area and production of the vegetables in the state is showing upward trend. However, the trend will sustain only if the vegetable growers get remunerative prices for their produces that will be possible only if the marketing system for the same is efficient.

The main aim of this study is to explore the working of potato marketing system and to examine the efficiency of the same in Bihar with the help of a case study in the post-APMC/deregulated marketing era. Potato is one of the most important vegetable crops in the state occupying as stated above, a major share in both area and production. It is an all-weather vegetable and dominants in the vegetable market throughout the year. Generally, as cited in a study by Prasad (1989), potato production in one hectare of area provides approximately twice the calories produced by one hectare of rice/wheat, and three times the calories produced by one hectare of cabbage. It is a staple food crop for common people in general and a cash crop for farmers in particular. Farmers expect remunerative prices while potatoes are marketed and this will be possible only if the marketing system is efficient. The efficiency of potato marketing system has been measured in this study with the help of the nature and magnitude of the cost and margin of marketing of potato. Thus, the objectives of this study are as follows:

1) To identify the major marketing channels of potato in the study area;

2) To estimate the marketing cost incurred at each stage of marketing;

3) To analyse the marketing margins of intermediaries and the price spread; and

4) To evaluate the marketing efficiency of different marketing channels.

REVIEW OF LITERATURE:

To make the agricultural produce marketing system efficient, the Government of Bihar intervened in the said marketing system following the 'Report of the Royal Commission on Agriculture, 1928' and introduced some regulations therein through 'The Bihar Agricultural Produce Markets Act, 1960'. The Act was enacted to regulate

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the purchase and sale of agricultural produces and establish organized markets in the state, with the goal of protecting farmers from middlemen and improving marketing conditions. During the period of regulated agricultural marketing system, some improvements in the marketing of agricultural produces were noticed but it was evidenced in the case of foodgrains only (Prasad, 2000). In a study of India level, it was stated that the overall performance of regulated agricultural marketing system had not been satisfactory (Acharya, S.S., 2004). In the year 2003, the Government of India introduced a Model APMC Act popularly known as 'The APMC Act, 2003', and issued advisory to the States' Government to reform their 'agricultural marketing act' for making it more efficient, competitive, transparent, and farmer-friendly. Many States' Government followed that advisory but the Government of Bihar repealed the Act of 1960 in the year 2006, and now, the free/deregulated agricultural marketing system in place of the regulated one is the reality for the farmers to sell the agricultural produces.

In Bihar, many studies on price-spread and efficiency of agricultural produce (foodgrains, vegetables and fruits) marketing are available but they all are related to the period of regulated marketing system. Very few studies on those issues are available during the period of the free/deregulated agricultural marketing system. An important study (Kumar, 2020) related to marketing of foodgrain in Bihar is available but the studies on the marketing of vegetables are not significantly available. Consequently, the actual working of vegetable marketing system in general and potato marketing system in particular is still unfolded and to be explored. It is, thus, the most desirable to have an understanding of the present vegetables marketing system that can provide the feedback to the policy makers and planners to formulate the appropriate strategies to improve the system so that the vegetable growers shall be benefitted in terms of remunerative prices received by them.

METHODOLOGY

The study is based on the primary data collected using stratified sampling method with the help of a wellstructured and pre-tested questionnaire. The area selected purposively for this study is Muzaffarpur district of Bihar. The district has sixteen community development blocks out of which three blocks namely Aurai, Mushahari and Saraia and three villages from every block have been selected randomly. The villages are Adampur, Bedaul and Ratwara from Aurai block; Madapur, Susta and Vinda from Mushahari block; and Baghnagari, Rewa, and Bhilwara from Saraia. The main respondents are vegetable growers which number is 108. The sample size is small because the population of potato growers in the study area is small. Apart from this, many middlemen have also been interviewed. In this study, the estimation of cost and margin of potato marketing or the estimation of price-spread of the same has been worked out using the method of concurrent margins. The reason to select this method is that it works out the difference between the prices prevailing at successive stages of marketing on the same day ignoring the time-lag in marketing. The efficiency of the marketing channels has been calculated using the following formula as suggested by S. S. Acharya:

$$ME = FP / (NMN + MC)$$

Where, ME = Marketing efficiency, NMM = Net marketing margins, MC = Marketing cost, and FP = Net Price received by farmers.

Marketing Channels for Potato:

The marketing channel is a way through which the ultimate consumers get commodity from the producers. In this study, three marketing channels for potato have been identified as follows:

Channel - I: Farmer → Village merchant/Itinerate Trader → Wholesaler / Commission Agent → Retailer → Consumer

Channel - II: Farmer → Small Commission Agent (Kacha Arhatiya) → Wholesaler → Retailer → Consumer

Channel - III: Farmer → Wholesaler / Commission Agent → Retailer → Consumer

It is worth mentioning here that in this study, the marketing cannel - I and channel - II have been merged for the analysis purpose. The reason for merging these channels is that the market agencies such as village merchant/itinerant trader and small commission agent (Kacha Arhatiya) who is the agent of the

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wholesaler/commission agent, operate in villages and are more or less, of the similar nature in purchasing the vegetables from the farmers around them. They are the first choice of maximum farmers especially of small farmers to sell their potato. Channel - III is concerned with selling and purchasing activities of vegetables at the urban market centre commonly known as agricultural market yard which was developed under the programme of regulation of markets. This was an attempt to centralise the marketing of agricultural produce with an aim to eliminate or minimise the role of intermediaries so that farmers may get remunerative prices for their produce on the one hand and on the other hand, to make the agricultural produce at the reasonable prices to the consumers.

Price-spread of Potato:

The study of price-spread of potato helps in understanding the extent of marketing costs and margins which, in turn, gives the idea about the farmer's shar in consumer's rupee. It also helps in understanding whether farmers are getting the remunerative prices for their produce. Further, the knowledge of price-spread indicates the degree of marketing efficiency. Larger the price-spread, smaller the efficiency in the marketing system. The estimation of the producer's share and the different components of marketing costs and margins indicating the extent of price-spread of potato in the different marketing channels is presented in Tables 5.4 and 5.5:--

Table 5.4: Price-Spread and Producer's Share of Potato in Channel I and II (per cent)

Particulars	Marginal	Small	Medium	Large	All
Channel I & II Producer's share	53.55	54.68	55.40	56.36	54.66
Margins Total Village intermediaries' margins Wholesaler/Commission agents' margins Retailer's margins	21.29 05.92 03.25 12.12	20.40 06.36 03.82 10.22	21.46 05.60 03.66 12.20	20.55 05.14 03.74 11.67	20.94 05.78 03.42 11.74
Cost of Marketing Total Incurred by producers Incurred by intermediaries	25.16 10.06 15.10	24.92 11.84 13.08	23.14 12.90 10.24	23.09 12.09 11.00	24.40 11.52 12.88
Consumer's rupee	100.00	100.00	100.00	100.00	100.00

Source: Calculated from the Primary Data

It can be noted from the table that taking together all the sample farmers the producer's share is 54.66 per cent of the consumer's rupee in case of marketing channel I & II. The producer's share varies between 53.55 (marginal) and 56.36 (large) per cent among the different farm sizes. This variation is reported to be to the extent of 3 to 4 per cent among different farm sizes. The marginal farms get the lowest share whereas the large farmers get highest share meaning thereby as the farm sizes increase the producer's share increase. The results, thus, indicate that producer's share in case of each farm size is low. This may be on account of higher marketing costs and margins.

The table shows that total marketing costs and margins account for 46.45 per cent of consumer's rupee. So far as margins in case of all the sample farms are concerned, the margin of village intermediaries is reported to be 5.78 per cent whereas the margins of wholesaler/commission agent and retailers account for 3.42 and 11.74 per cent respectively. Likewise, the producer's share, the mar- gin of village intermediaries varies between 5.92 (marginal) and 6.36 (small) per cent. The margin of wholesaler/commission agent varies between 3.25 (marginal) and 3.74 (large) per cent. In case of retailer's margin, it varies between 10.22 (small) and 12,20 (medium) per cent. This means that the variation of margins among different intermediaries is reported to be less (1 to 2%) as compared to producer's share.

The results as shown in the table further indicate that total marketing costs account for 24.40 per cent when taken together all the sample farmers. Out of this marketing cost, 11.52 per cent is incurred by producer and 12.88 per cent is borne by the intermediaries. This means that farmers bear, by and large, the same marketing costs as compared by intermediaries.

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The estimation of price-spread along with marketing costs and margins of potato for channel III is represented in Table 5.5. The results indicate that the producer's share in consumer's rupee is 57.36 per cent in case of all sample farmers. Among the different farm sizes, its variation is between 56.92 (large) and 58.33 (small) per cent. A comparative view of producer's share in channel I & II and channel III very clearly indicates the larger producer's share in channel III. This may be due to absence of multiplicity of intermediaries at the village level.

However, the margins of wholesaler/commission agent in marketing of potato are by and large, the same proportion in both the channels. It can be seen from the table that the margin of wholesaler/commission agent is 3.18 per cent in channel III as compared to 3.42 per cent in channel III in case of all sample farmers. Even it could be said that it is slightly less margin in channel III as compared to channel I & II. It can, thus, be said that channel III is better than channel I & II for marketing.

Table 5.5: Producer's Share and Price-Spread of Potato in Channel III (per cent)

Particulars	**Marginal**	**Small**	**Medium**	**Large**	**All**
Channel III Producer's share	57.10	58.33	57.61	56.92	57.36
Margins Total	23.52	24.36	23.50	23.77	23.60
Wholesaler/Commission agent's margins Retailer's margin	03.62 19.90	03.21 21.15	03.16 20.34	03.05 20.72	03.18 20.42
Cost of Marketing					
Total Incurred by producers Incurred by intermediaries	19.38 05.03 14.35	17.31 05.47 11.84	18.89 05.67 13.22	19.31 06.19 13.12	19.04 05.43 13.61
Consumer's rupee	100.00	100.00	100.00	100.00	100.00

Source: Calculated from the Primary Data

Further, it can be noted from the table that marketing cost incurred by farmers in channel III is low as compared to Channel I & II. This indicates that channel III is preferable to sell potato but marginal and small farmers sell their produce at the village level on account of low quantity of produce and high transportation cost. There is also lack of post-harvest management while selling potato at the village level.

The results of break-up of marketing cost of potato in channel I & II and III are shown in Table 5.6. It can be noted from the table that farmers incur 30.82 per cent of total marketing cost in case of all sample farmers. The costs incurred by the farmers comprise of cleaning/sorting and physical/handing losses. How- ever, this is not in true sense of cost rather cost-harvest losses which are converted into rupee value and being treated as cost while marketing their produce. So, these are indirect marketing cost which is incurred by the farm- ers. In channel III, the farmers incur 25.86 per cent of total marketing costs whereas 39.66 and 34.48 per cent are borne by the wholesaler/commission agent and retailer respectively. The break-up of marketing cost shows that 40 and 60 per cent are borne by the farmers and retailers on cleaning and grading respectively. In channel III, farmers bear the cost on weighing/loading/unloading (52.63%), transportation charges (42.26%), physical and handling losses (32%) and others (20.93%). The wholesalers /commission agents bear the cost on account of storage cost/loss (81.36%) and physical handling/losses (48%)

Table 5.6: Channel-Wise Break-Up of Marketing Costs of Potato (per cent)

Channels/ Agencies	Cleaning/ sorting	Packing/ bagging	Weighing/ loading/ unloading	Storage cost/ losses	Transport charges	Physical / handling/ losses	Others	Total

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Channel I & II								
Farmers	55.41	-	-	-	-	25.00	18.75	30.82
Village intermediaries	-	100.00	31.58	-	42.86	-	31.25	30.82
Wholesaler/Commission agent	-	-	-	32.26	-	30.56	37.50	8.85
Retailers	44.59	-	68.42	67.74	57.14	44.44	12.50	45.58
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Channel III								
Farmers	40.00	-	52.63	-	42.86	32.00	20.93	25.86
Wholesaler/Commission agent	-	-	-	81.36	-	48.00	46.51	39.66
Retailers	60.00	-	47.37	18.64	57.14	20.00	32.56	34.48
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Calculated from the Primary Data

It can be further seen from the table that retailers bear 34.48 per cent of total marketing costs as compared to 39.66 per cent by wholesalers. As such, the maximum percentage of marketing costs is incurred by the wholesalers/com- mission agents followed by retailers and farmers. The farmers, thus, incur less cost as compared to wholesalers/commission agents and retailers. It can also be noted from the table that farmers do not bear any market charges while marketing their produce either in channels I & II and III. However, during the APMC period, farmers had to bear market charges as against market fee while

selling their produce in regulated market yard. This has been abolished after the repeal of APMC Act paving the way for free marketing system of agricultural produce.

The estimation of channel-wise percentage distribution of market margins of Potato according to farm size is given in Table 5.7. The estimation indicates that in case of all sample farms the margin is reported to be 46.18 per cent channel I & II whereas 54.17 per cent is marketing cost.

Table 5.7: Channel-wise Percentage Distribution of Market Margins of Potato (Per cent)

Channel/ Farm Size	**Margin of Intermediaries**				**Cost of marketing**	**Total market margins**
	Village inter-mediaries	**Wholesaler/ Commission agent**	**Retailers**	**Total**		
I & II						
Marginal	12.74	7.00	26.09	45.83	54.17	100.00
Small	14.03	8.43	22.55	45.01	54.99	100.00
Medium	12.56	8.21	27.35	48.12	51.88	100.00
Large	11.78	8.57	26.74	47.09	52.91	100.00

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All	12.75	7.54	25.89	46.18	53.82	100.00
III						
Marginal	-	8.44	46.39	54.83	45.17	100.00
Small	-	7.70	50.67	57.96	42.04	100.00
Medium	-	7.45	47.98	55.43	44.57	100.00
Large	-	7.08	48.10	55.35	44.82	100.00
All	-	7.46	47.89	55.35	44.65	100.00

Source: Calculated from the Primary Data

The variation in margins between different market intermediaries is between 7.54 per cent (wholesaler/commission agent) and 25.89 per cent (retailer). This means that retailers get maximum margin in marketing of potato due to small quantity of transaction being sold by the retailers. The break-down of consumer's rupee, thus, indicate a higher proportion of marketing costs and margins in all the marketing channels.

A comparative analysis of the market margins at the different stages of marketing reveals the fact that retailer's margins are higher than that of other intermediaries. This, further, means that retailers sell potato at higher margins on ac- count of small quantity of potato. This has been a general marketing trend but overall, the higher marketing costs and margins are mainly responsible for low producer's share in marketing of potato. It can, therefore, be concluded that retailers are selling potato on a very high margins which not only reduces the proportion of producer's share but also increases the consumer's price. This poses in the sense that marketing system of potato is not sufficient to ensure the producer to get remunerative prices for their produce.

Marketing Efficiency of Potato:

An efficient marketing system ensures the remunerative prices received by the farmers on the one hand and the reasonable prices paid by the consumers on the other hand. Not only this, the system reduces the number of middle men, minimises the cost of marketing and ensures the due profit to the middle men involved in the channel of marketing as well. The analysis of price-spread does not only explain the nature and magnitude of marketing system but also indicates the degree of marketing efficiency. The Knowledge of the marketing efficiency indicates the level of farmer's share in consumer's rupee. Higher the marketing efficiency, higher the level of farmer's share in consumer's rupee. Using the data of Table - 5.4 & 5.5 and the Acharya's formula, it has been found the marketing efficiency in channels - I & II is 1.21 percent whereas in the channel - III, it is 1.34. Channel - III is more efficient and preferable one because the farmer's share in the consumer's rupee is relatively high and the involvement of intermediaries low in this channel.

CONCLUSION AND SUGGESTIONS

The foregoing analysis of price-spread and producer's share of the potato marketing indicates that the potato growers are not able to get remunerative prices for their produce due to the prevalence of high marketing costs and margins. Also, there are variations among the various components of marketing costs and margins in both the channels. These variations are also noted among the different farm sizes. All these factors indicate that potato marketing system even after the de-regulation seems to be highly deficient in its nature and magnitude. It was expected that after the repeal of APMC Act of 1960, the free marketing system of potato might improve the efficiency of the system but ironically, there has not been any change in marketing pattern and spatial allocation of potato in the study area as well as across the state. This calls for improving the potato marketing system by providing institutional support through market infrastructure and services. At the first stage, there should be minimisation of intermediaries particularly at the village level. Since the bulk of the potato is sold at the village level, the rural/primary markets need to be developed. The development of rural/primary market may create competitive market environment which may enable the farmers to get remunerative prices for their produce.

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Along with it, some alternative form of marketing system on co-operative pattern may be evolved to improve the level of marketing efficiency of potato.

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