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RESEARCH ARTICLE

Economic Impact of Marketing Interventions of Fruits and Vegetables in Karnataka

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ABSTRACT

Marketing plays an important in fruits and vegetables due to their perishability. The farmers need to decide in a short span where to sell their fruits and vegetables across different markets to get remunerative prices. The marketing system of fruits and vegetables has seen major changes with the involvement of emerging interventions like co-operative and corporate market interventions. The study was conducted in the Davangere district of Karnataka. By simple random sampling, 40 farmers from public, co-operative and private market interventions were selected, consisting sample size of 120. The data was collected with help of pretested interview schedule through personal interviews. The co-operative market intervention is found to be an efficient (1.22) market for the Chili crop compared to private (1.14) and public (1.03) market intervention. The private market intervention was found to be efficient (2.71) market intervention for Tomato followed by co-operative (2.45) and public (2.23) market intervention. The co-operative market intervention is found to be an efficient (1.22) market for the Banana crop compared to private (1.28) and public (1.23) market intervention. The public market intervention was found to be efficient (1.04) market intervention for Papaya followed by co-operative (1.03) and private (0.75) market intervention.

Key words**:** *Market Intervention; Chilli; Tomato; Banana; Papaya.*

India being second largest producer of fruits and vegetables has seen diversification towards high-value agricultural produce like horticulture. This transformation in developing country has a profound effect on the nature of agricultural supply channels, smallholder farmer's opportunities, and public and private investments (*Gulati, 2016*). The traditional agricultural marketing system has experienced significant changes during the past one decade. We need to keep pace with the expanding and changing needs of agricultural marketing sector to remove marketing imperfections (*Chengappa, 2001*). In this circumstance, there is need for development of efficient marketing system to tackle problems like avoiding distress sale at the time of harvest, processing, grading, value addition, storage, packaging, transportation techniques, distribution, product standardization, reduction in number of intermediaries etc (*Marbaniang et al, 2020*).

The co-operative and private-led fresh fruits and vegetables retailing has been emerging fast in the urban areas. These interventions are easing rigidity in price transmission due to increase in competition, use of ICT in vegetable trading and marketing (*Aniruddha roy and Sudipta paul, 2015*

All this background created the necessity to understand the knowledge of the farmers about these market interventions and to know the efficient market intervention for fruits and vegetables. The efficient market intervention will provide better prices to producers with minimum market intermediaries which helps in getting better returns. With this background, the present study was conducted to know the efficient markets for slected fruits and vegetables in different market interventions.

METHODOLOGY

The present research study was conducted in Davangere district of Karnataka in 2018. The district

was purposively selected based on the functioning of all three institutional market interventions for selected fruits and vegetables. From these institutional interventions APMC (Agricultural Produce Market Committee) was selected under public institutional market intervention, HOPCOMS (Horticultural Producers' Cooperative Marketing and Processing Society) was selected under co-operative institutional market intervention and Big Bazaar and Reliance Fresh were selected under private institutional market interventions. The study was planned to involve three categories of respondent's *viz.,* APMC farmers, HOPCOMS farmers and Big Bazaar and Reliance Fresh farmers who were growing fruits and vegetables. The study was conducted on two fruits i.e., Banana and Papaya and two vegetables i.e., Chilli and Tomato based on availability of farmers selling produce to these interventions. Based on simple random sampling, 10 farmers growing Chilli, Tomato, Banana and Papaya each are selected from public, co-operative and private market interventions. The total sample selected for the study was 120. The data was collected with help of pretested interview schedule through personal interview method. The methodology used to calculate economics of crop and economic impact as follows:

Economics of crop enterprise under different market intervention : Total cost: It is the sum of all expenses incurred by the farmers for the crop production. It is the sum of total variable cost and total fixed cost.

Total cost (₹) = Total variable cost (₹) + Total fixed cost (₹)

Gross returns: Gross returns are the value of the quantity of main product at present market price.

Gross returns (₹) = Yield (₹) × Price (₹)

Net returns : It refer to returns obtained after deducting total cost from gross returns.

Net returns (₹) = Gross returns (₹) - Total cost (₹)

Economic impact : The economic impact of the institutional market intervention on farmers was calculated using market efficiency.

Market Efficiency: It refers to a measure of the availability of the information that provides maximum opportunities to buyers and sellers to effect transactions with minimum transaction costs (Business Dictionary). A market in which prices always fully reflect available information is called efficient. The formula given by *Acharya and Agarwal (2011)* was used.

$$\text{Market Efficiency} = \frac{\text{Net price received by the farmer}}{2\text{Marketing cost} + \text{Market Margin}}$$

The efficient market intervention was calculated in the three market interventions by using the formula of Market efficiency and also producer share in consumer rupee was calculated.

RESULTS AND DISCUSSION

Economics of crop enterprises across market interventions : The data in Table 1 shows that cost of production of Chilli was high in private (₹ 44,336.73) followed by co-operative (₹ 44,653.4) and public (₹ 41,191.3) market intervention. The gross returns were high (₹ 2,47,200) in private compared to co-operative (Rs. 2,24,400) and public (₹ 2,00,000) market interventions. The net returns of Chilli were found to be high in case of private (₹ 2,02,863.30) compared to co-operative (Rs. 1,79,746.60) and public (₹ 1,58,808.30) market intervention. This might be due to the fact that co-operative and private intervention farmers have incurred their major cost on chemical fertilizers and plant protection chemicals to obtain the high-quality produce which will give them high returns. Another reason is that private markets will only procure 'A' quality produce from farmers.

The cost of production of Tomato was high in private (₹ 69,820.07) followed by co-operative (₹ 67,576.73) and public (₹ 64,405.07) market intervention. The gross returns from Tomato was high (₹ 1,48,500) in private compared to co-operative (₹ 1,30,000) and public (₹ 1,25,000) market

Table 1. Economics of crop enterprises across the market interventions (per acre)

Crop	Total Cost (in Rs.)	Gross Return (in Rs.)	Net Returns (in Rs.)
Public Market intervention (n_1= 40)			
Chilli	41,191.73	2,00,000	1,58,808.3
Tomato	64,405.07	1,25,000	60,594.93
Banana	69,088.4	3,12,000	2,42,911.6
Papaya	50,438.40	2,56,000	2,05,561.60
Co-operative Market intervention (n_2 = 40)			
Chilli	44653.4	2,24,400	1,79,746.6
Tomato	67576.73	1,30,000	62,423.27
Banana	70635.07	3,36,000	2,65,364.9
Papaya	52721.73	2,64,000	2,11,278.3
Private Market intervention (n_3 = 40)			
Chilli	44,336.73	2,47,200	2,02,863.3
Tomato	69,820.07	1,48,500	78,679.93
Banana	77,363.4	3,48,000	2,70,636.6
Papaya	55,746.73	2,97,000	2,41,253.3

Table 2. Market efficiency in Chilli and Tomato across the market interventions (₹ / Kilo gram) (N=120)

Particulars	Chilli			Tomato		
	Public	Co-operative	Private	Public	Co-operative	Private
Farmer						
Marketing Cost	0.50	0.12	0.14	1.10	0.19	0.18
Net Price received	19.50	21.88	23.86	8.90	9.81	10.82
Wholesaler						
Marketing Cost	0.33	-	-	0.80	-	-
Market Margin	8.67	-	-	1.20	-	-
Retailer						
Marketing Cost	0.56	0.44	0.48	0.22	0.43	0.38
Market Margin	9.44	17.56	20.52	1.78	3.57	3.62
Retail Price	39.00	40.00	45.00	14.00	14.00	15.00
Producer share in consumer rupees	50.00	54.70	53.02	63.57	70.06	72.15
Price spread	19.00	18.00	21.00	4.00	4.00	4.00
Market Efficiency	1.03	1.22*	1.14	2.23	2.45	2.71*

*Efficient Market intervention

interventions. The net returns of Tomato were found to be high in case of private (₹ 78,679.93) compared to co-operative (₹ 62,423.27) and public (₹ 60,594.93) market intervention. This might be due to the fact that co-operative and private intervention farmers have incurred their major cost on chemical fertilizers and plant protection chemicals to obtain the high-quality produce which will give them high returns. Another reason is that private markets will only procure 'A' quality produce from farmers.

The cost of production of Banana was high in private (₹ 77,363.4) followed by co-operative (₹ 70,635.07) and public (₹ 69,088.4) market intervention. The gross returns from Banana was high (₹ 3,48,000) in private compared to co-operative (₹ 3,36,000) and public (₹ 3,12,000) market interventions. The net returns of Banana were found to be high in case of private (₹ 2,70,636.6) compared to co-operative (₹ 2,65,364.9) and public (₹ 2,42,911.6) market intervention. This might be due to the fact that co-operative and private intervention farmers have incurred their major cost on chemical fertilizers and plant protection chemicals to obtain the high-quality produce which will give them high returns. Another reason is that private markets will only procure 'A' quality produce from farmers.

The cost of production of Papaya was high in private (₹ 55,746.73) followed by co-operative (₹ 52,721.73) and public (₹ 50,438.40) market intervention. The gross returns from Papaya was high (₹ 2,97,000) in private compared to co-operative (₹ 2,64,000) and public (₹ 2,56,000) market interventions. The net returns of Papaya were found to be high in case of private (₹ 2, 41,253.3) compared to co-operative (₹ 2,11,278.3) and public (₹ 2,05,561.60) market intervention. This might be due to the fact that co-operative and private intervention farmers have incurred their major cost on chemical fertilizers and plant protection chemicals to obtain the high-quality produce which will give them high returns. Another reason is that private markets will only procure 'A' quality produce from farmers.

Market efficiency : The co-operative market intervention is found to be efficient (1.22) market for the Chili crop compared to private (1.14) and public (1.03) market intervention was presented in Table 2. This might be due to the reason that buy selling their produce in co-operative market, the farmers obtained the maximum share in consumer rupees and other reason is that co-operative market intervention motive is to serve the farmers. The private market intervention was found to be efficient (2.71) market intervention for Tomato followed by co-operative (2.45) and public (2.23) market intervention. This is due to the reason that farmers received high net price for the produce along with maximum share in consumer rupee. The results are in line with *Mangala and Chengappa, 2008*. They found that there was 34 percent incremental net return was received by farmers over traditional marketing channel for Tomato.

The data in Table 3 revealed that, co-operative market intervention is found to be efficient (1.22) market for the Banana crop compared to private (1.28) and public (1.23) market intervention. It might be due to the reason that buy selling in co-operative market, the farmers obtained the maximum share in consumer rupees and other reason is that co-operative market intervention motive is to serve the farmers.

Table 3. Market efficiency in Banana and Papaya across the market interventions (₹ / Kilo gram) (N=120)

Particulars	Banana			Papaya		
	Public	Co-operative	Private	Public	Co-operative	Private
Farmer						
Marketing Cost	0.94	0.95	0.96	0.69	0.77	0.74
Net Price received	21.56	23.05	23.04	7.31	7.23	8.26
Wholesaler						
Marketing Cost	1.64	-	-	0.61	-	-
Market Margin	6.36	-	-	3.39	-	-
Retailer						
Marketing Cost	0.79	0.77	1.08	0.20	0.23	0.44
Market Margin	8.71	15.23	16.92	2.80	6.77	10.56
Retail Price	40.00	40.00	42.00	15.00	15.00	20.00
Producer share in consumer rupees	53.90	57.63	54.86	48.75	48.22	41.29
Price spread	17.50	16.00	18.00	7.00	7.00	11.00
Market Efficiency	1.23	1.44*	1.28	1.04*	1.03	0.75

*Efficient Market intervention

The results are supported by *Dastagiri, 2010* who found that Marketing efficiency of Banana was better in organized retail over traditional marketing system.

The public market intervention was found to be efficient (1.04) market intervention for Papaya followed by co-operative (1.03) and private (0.75) market intervention. The reason behind this is that Papaya being seasonal fruit and the co-operative and private markets do not require larger quantity of produce for particular season to sell in their outlets. The farmers receiving the maximum share in consumer rupees in the public market only.

CONCLUSION

Efficient market will help the farmers to get remunerative prices for their produce. Farmers should analyze the different market interventions available for their produce by asking fellow farmers or through price available in the markets for past few days. So, finding an efficient market for fruits and vegetables is very important which can fetch better profit than other crops in short duration. For Chilli and Banana, the efficient market intervention was co-operative i.e., HOPCOMS where farmers were able to get better returns. For Tomato, private market interventions were beneficial since most of the private players were ready to fetch produce at good prices from growers. Papaya growers were benefitted when they sell produce to public market interventions i.e., APMC.

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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