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Research Article

An economic analysis of marketing of kinnow in Punjab: emerging *vis-a-vis* traditional marketing channels

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SUMMARY : Kinnow growers in the state have been benefitted by selling their produce through direct marketing/ emerging marketing channels (EMC). Despite incurring higher marketing costs, the net price received by them was about 20 per cent higher than those received by farmers who disposed of their produce through traditional marketing channel (TMC) *viz.,* pre-harvest contractors. The share of kinnow growers in the price paid by consumer under TMC was only 33.70 per cent, while the same in case of EMC was 55 per cent. However, the marketing operations of EMC are very limited enabling only a few farmers to secure higher price. Thus, expansion of such innovative/ direct/emerging marketing channels for fruits in an organized manner, coupled with upgraded market infrastructure can go a long way to promote horticultural base in the state through reducing intermediaries, increasing net returns for the producers as well as for the benefit of the consumers.

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BACKGROUND AND OBJECTIVES

Agriculture continues to be a dominant sector of the economy in Punjab; however, due to predominance of rice-wheat cropping system the environmental concerns in state have been escalating, particularly relating to high levels and imbalance among fertilizers, decline in the water table and loss of land to salinity and water logging. In order to revitalize Punjab agriculture through exploring alternatives to the rice-wheat system, various expert committees have recommended the diversification of agriculture towards high value commodities (HVCs) and a broader mix of traditional commodities and agro-processed products that augment farm income, promote exports, and conserve soil and water resources (Johl Committee 2002; Alagh Committee 2005; Government of Punjab 2006). Changes in consumption patterns clearly reveal that food security is no longer restricted to availability of cereals but involves a diversified food basket that includes fruits and vegetables. The global trade of HVCs is growing rapidly. The share of HVCs in agricultural exports increased from 21 per cent in 1990 to 36 per cent in 2000 (Rao *et al.*,2004). The rapid increase in domestic and export demand for HVCs clearly demonstrates the opportunity for greater agricultural diversification in Punjab. It has been observed that the Punjab state has large potential for cultivation of fruits especially the citrus. Among the citrus fruits, kinnow fruit cultivation in Punjab gained momentum due to its profitability and good market value. Out of the total 67553 hectares under fruit cultivation in state, kinnow farming is carried out on 38837 hectares, thus, accounting for about 58 per cent of the total area under fruits (Anonymous, 2011).

However, HVCs especially fruits and vegetables are susceptible to inaccessibility of markets, high transactions costs and price volatility. Due to the perishable nature, seasonal production and bulkiness, entire marketing process of HVCs is complex and risky. It is further complicated by the absence of sufficient infrastructure such as lack of specialized markets, cold chains and agro-processing

facilities. Thus, to promote agricultural diversification towards HVCs, the agricultural marketing strategy requires a paradigm shift by strengthening marketing institutions, developing synergies between producers and agri-business, and consolidating the supply chain. Hence, it is of paramount importance to examine how the producers of HVCs are integrated with the markets and how innovative supply chains are emerging for HVCs to meet the growing domestic and global demands. The "emerging" marketing channels are supposed to reduce transaction costs and ensure that high margins maintained by intermediaries in the supply chain are reduced so that the farmer benefits and gets a better price. Keeping this in mind the present paper aims to analyze the share of the farmer in the consumer's rupee in an emerging marketing model *vis-à-vis* the traditional marketing channel and to analyze the constraints faced by farmers in the emerging marketing channel as compared to the traditional marketing channel.

RESOURCES AND METHODS

Selection of traditional and emerging marketing channels:

Traditionally, the kinnow orchards are leased out by growers to the pre-harvest contractors. The most prominent traditional supply chain for kinnow in the region involves Producer – Pre-harvest contractor– Commission agent – Wholesaler – Retailer – Consumer. As per various studies nearly three fourth of the total kinnow production in state is disposed of through this traditional channel (Sidhu, 1993; Toor and Poonia, 1995; Singh *et al.,* 2001). Pre-harvest contractors provide advance payments to the growers during the time of agreement. Such contracts are undertaken only for a season and price is determined by pre-harvest contractor through looking at the condition of orchard, expected yield and price in the previous season. Growers prefer this channel due to the difficulties in watch and ward, picking of fruits, to avoid the risk of price and other marketing related responsibilities like packing, grading, transportation, etc. In present study this has been taken as the traditional marketing channel (TMC) for the kinnow. In recent years many growers has started retaining their orchards for marketing the produce themselves especially in the farmers' evening markets, thus eliminating the role of pre-harvest contractor. In order to observe if this change in supply chain has reduced inefficiencies in agricultural marketing which arise due to multi-layer intermediaries operating with high margins and depriving the farmer a fair share in the price paid by final consumer, this channel has been taken as an emerging marketing channel (EMC.)

Selection of respondents:

Though the Punjab state is the leading state in kinnow production, more than 85 per cent of the total area under its cultivation is concentrated in four districts, namely, Ferozepur, Hoshiarpur, Muktsar and Bathinda. Ferozepur district covering more than half of the total area under kinnow in state was purposively selected as locale of present investigation. Owing to highest area under kinnow cultivation, two development blocks of this district *viz.*, Abohar and Khuian Sarvar were selected. From these blocks, a sample of 45 kinnow growers consisting of 35 growers who had sold their produce through the traditional channel (TMC) and 10 growers who had sold their produce through emerging supply chain (EMC) was taken randomly. A sample of 5 wholesalers, 5 retailers and 5 consumers were taken from the each of the study supply chain, respectively. The primary information for the purpose has been collected through primary surveys with the help of pre structured schedules from growers, intermediaries and consumers. The reference period for the primary data survey was 2009-10. To meet the objectives of study simple statistical tools like averages and percentages were used.

OBSERVATIONS AND ANALYSIS

The results of the present study as well as relevant discussions have been presented under following sub heads:

Socio-economic characteristics of sample kinnow growers :

The socio-economic characteristics of sample kinnow growers are indicated in Table 1. It was observed that about 37 per cent of the kinnow growers following traditional marketing channel (TMC) belonged to scheduled caste category as compared to about 30 per cent in case of emerging marketing channel (EMC), however, all the households were belonging to the above poverty line (APL) families. All the houses were pucca and more than 80 per cent of the kinnow growers owned at least one mobile phone. The average age of heads of the household was about 52 years with average years of schooling at 7.80 and 7.40 in case of TMC and EMC, respectively. The Punjab agriculture being highly mechanized, 94 per cent of the kinnow growers following TMC possessed tractors as compared to about 70 per cent in case of EMC. The average operated land was 10 hectares for kinnow growers following TMC while in case of EMC, it was 8.3 hectares. To expand the operational size and improve resource use efficiency through economies of size and scale, leasing in of land was only prevalent among the kinnow growers following TMC. The irrigation facilities were excellent as all area operated was irrigated across all households. Canal as well as tube wells were used by the sample kinnow growers for irrigating their orchards. While canal water was available for all the kinnow growers, 66 per cent of the kinnow growers in case of TMC and 50 per cent

in EMC were also using ground water as supplementary source of irrigation. Kinnow was the important fruit which constituted about 43 per cent (4.20 ha) and 37 per cent (3.32 ha) of the net cropped area for farmers operating in TMC and EMC, respectively.

Cost of cultivation of kinnow :

The cost structure as reflected by share of various inputs in total variable costs is determined by the level of technology and use of modern inputs. Per hectare cost of cultivation of kinnow in the study area is presented in Table 2. It was evident from the results that per hectare cost of cultivation including the imputed value of family labour for sample growers in EMC (Rs 65190) was higher than that for those in TMC (Rs 58048). Out of total cost of cultivation, maximum share in both channels was that of the material inputs *viz.*, manures, fertilizers, micro nutrients and pesticides at about 45 and 43 per cent in case of growers following TMC and EMC, respectively. Another major cost component was the hired labour constituting about 26 per cent of cost of cultivation at both groups of the farms. Major difference between two groups of farms was observed regarding the use of family labour which was used more intensively on farms following the EMC. The respective share of this component in total

Table 1: Socio –economic characteristics of sample kinnow growers, Punjab, 2009-10

Particulars	TMC	EMC
Caste of farm household (%)		
SC household	11.00	-
OBC household	37.00	30.00
Other households	52.00	70.00
Household characteristics (%)		
APL household	100.00	100.00
Pucca house	100.00	100.00
Household owning telephone landline	11.00	40.00
Household owning at least one mobile phone	86.00	80.00
Household owning at computer	3.00	40.00
Household owning internet	-	10.00
Household owning internet as well as computer	-	10.00
Age and education of head of the household (years)		
Average age of head	52.40	52.20
Average education of the head	7.80	7.40
Assets (% households)		
Owning bullock cart	54.00	60.00
Owning tractor	94.00	70.00
Owning car/jeep	54.00	60.00
Owning pumpset	66.00	50.00
Main occupation (% households)		
Agriculture	100.00	100.00
Allied	54.00	50.00
Others	17.00	20.00
Landholding and irrigation status		
Own land (ha)	9.50	8.30
Leased-in-land (ha)	0.70	-
Leased-out-land (ha)	0.20	-
Net operational area (ha)	10.00	8.30
Maximum size of the farm (ha)	24.00	22.00
Minimum size of the farm (ha)	1.80	0.80
Availability of groundwater (% households)	66.00	50.00
Availability of surface water (% households)	100.00	100.00
Area under kinnow (ha)	4.20	3.04
Total area under fruits (ha)	4.35	3.32

cost of cultivation of kinnow farms following TMC and EMC was about 20 and 24 per cent.

Cost of production and net returns :

The details on cost of production of kinnow and net returns accruing to farmers in case of sales through TMC and EMC are provided in Table 3. The per hectare productivity of kinnow was higher on farms following EMC (230 q/ha) as compared to those following TMC (208 q/ha). It can be observed that the price realized by the kinnow growers in

Table 2: Cost of cultivation of kinnow in Punjab, 2009-10 **(Rs/ha)**

Sr. No.	Items	TMC	EMC
Cost of material input			
(i)	Manure	454	776
(ii)	Fertilizers	15046	15513
(iii)	Micro nutrients	2225	2092
(iv)	Pesticides	8611	9451
	Sub total	26336 (45.37)	27832 (42.69)
Hired labour charges			
(i).	Male	10941	13453
(ii).	Female	4153	3044
(iii).	Machine	135	671
	Sub total	15229 (26.24)	17168 (26.33)
Maintenance expenses of farm machinery		3303 (5.59)	2992 (4.59)
Depreciation		1671 (2.88)	1542 (2.37)
(A)	Total paid out cost (1+2+3+4)	46539 (80.17)	49534 (75.98)
Imputed family labour charges			
(i)	Male	2942	5114
(ii)	Female	34	55
(iii)	Machine use	8533	10487
(B)	Sub total	11509 (19.83)	15656 (24.02)
Total cost of cultivation (A+B)		58048 (100)	65190 (100)

Figures within parentheses are percentages of total

Table 3: Details of cost of production and net returns for kinnow, Punjab, 2009-10

Sr. No.	Particulars	TMC	EMC
1.	Productivity (q/ha)	208.01	230.00
2.	Gross return (Rs/ha)	178880	298103
3.	Cost of production including family labour (Rs/q)	279.10	283.40
4.	Cost of production considering only paid out cost(Rs/q)	223.70	215.40
5.	Price realized by farmer (Rs/q)	860.00	1296.00
6.	Net profit including family labour (Rs/ha)	120832	232913
7.	Net profit considering paid out cost (Rs/ha)	132341	248569
8.	Net profit considering only paid out cost (Rs/q)	636.30	1080.70
9.	Net profit including family labour (Rs/q)	580.90	1012.70
10.	BCR for kinnow considering only paid out cost	3.80	5.10
11.	BCR for kinnow including family labour	3.10	4.60

Table 4: Disposal pattern of kinnow in TMC and EMC channels, Punjab, 2009-10 **(Q/farm)**

Sr. No.	Particulars	TMC	EMC
1.	Total production	873.60 (100.00)	699.22 (100.00)
2.	Net quantity sold	869.57 (99.54)	694.92 (99.38)
	Study channel	859.33 (98.82)*	694.92 (100.00)*
	Alternate channels	10.24 (1.18)*	-
3.	Home consumption/ gifts etc.	3.32 (0.38)	2.81 (0.41)
4.	Rejected and damaged	0.71 (0.08)	1.49 (0.21)

Figures in parentheses denote per cent to total production; * denote per cent of net quantity sold

TMC (Rs. 860/q) was lower than that realized by those farmers who sold through EMC (Rs. 1296/q). However, the growers who sold in EMC had to incur marketing costs which reduced the net price received by them, whereas growers who sold through TMC did not have to incur marketing costs as the contractors purchased the produce from the growers's field.

The net profit (after taking into consideration cost of family labour) made by growers who sold kinnow under TMC was about Rs 581/q whereas in case of EMC it was about Rs 1013/q. However, when only paid-out costs were taken into consideration the net returns per quintal increased by 10 and 7 per cent in case growers following TMC and EMC, respectively. As the price received in case of sales through EMC is 50 per cent higher than that through TMC, the benefit-cost ratio (BCR) in kinnow cultivation was relatively higher on farms following this channel.

Disposal pattern :

Per farm output disposal patterns of sample kinnow growers selling through TMC and EMC is given in Table 4. On sample farms selling their output through TMC, 0.38 per cent of the total output was consumed at home. The net quantity sold was observed to be 99.54 per cent of the total production and out of this 98.82 per cent was disposed through the pre-harvest contracts whereas a marginal proportion (1.18 %) was sold through other channels. As most of the produce was sold to the pre-harvest contractors, the rejected quantity before sale of produce in the alternate marketing channels was observed to be negligible (0.08 %). On sample farms in EMC, the net quantity sold was 99.38 per cent of the total production and entire part of this was disposed off in the EMC taken for the study. On these farms the proportion of output consumed at home and rejected or discarded before sale was observed to be 0.41 per cent and 0.21 per cent, respectively.

Price spread and marketing costs :

In the marketing of agricultural commodities, the difference between the price paid by the consumer and the price received by the producer for an equivalent quantity of

Table 5 : Price spread and marketing costs of kinnow, Punjab, 2009-10 **(Rs/q)**

Sr. No.	Particulars	TMC	EMC
I	Price received by farmer	860.0	1296.10
II	Total marketing costs of farmer	-	265.30
	(a) Transport to APMC	-	34.30
	(b) Loading and unloading	-	-
	(c) Weighing and other related expenses (packing, waxing etc.)	-	231.0
	Net price received by farmer	860.0	1030.80
	Net profit (Net price received-paid out cost)	636.30	815.40
III	Marketing costs and margins of pre-harvestor contractor (PHC)	266.0	-
	(a) Wastage during transport	6.90	-
	(b) Transport to terminal market	32.30	-
	(c) Weighing and other related expenses (packing, waxing etc.)	212.0	-
	(d) PHC's margin	215.0	-
	Purchase price of PHC plus marketing costs and margins	1326.0	-
IV	Marketing costs and margins of wholesaler	204.40	194.70
	(a) Market fee	119.40	116.70
	(b) Wholesaler's margin	85.0	78.0
	Purchase price of wholesaler plus marketing costs and margins	1530.40	1490.80
V	Marketing cost and margins of retailer	358.40	382.90
	(a) Hamali from point of purchase to tempo	-	-
	(b) Transport to retail outlet	10.50	11.0
	(c) Wastage	10.90	11.90
	(d) Retailer's margin	337.0	360.0
	Sale price of retailer/consumer's price	1888.80	1873.70
VI	Share of farmer (%) in consumer's price	33.70	55.0
VII	Marketing costs as % of consumer's price	20.70	21.60
VIII	Marketing margins as % of consumer's price	33.70	23.40
IX	Modified Measure of Marketing Efficiency (MME)	1.53	1.22

farm produce is often known as price spread. Table 5 reveals that price of kinnow received by growers in EMC was Rs 1296/q. After deducting marketing costs (Rs. 265/q) the net price received by these growers turned out to be about Rs 1031/q. In case of TMC, although growers had not paid any of the marketing cost, the net price (Rs. 860/q) received by them were still about 20 per cent lower than those received by growers who had followed EMC. The growers/contractors sold the produce to wholesalers who incurred marketing costs and margins of about Rs. 204/q in TMC and about Rs. 195/q in case of EMC. The sale price of retailer/price paid by consumer was about Rs 1889/q in TMC and about Rs. 1874/q in case of EMC. It was observed that the share of the kinnow growers in the price paid by consumers under TMC was only 33.70 per cent as compared to 55 per cent in case of EMC. Marketing costs and marketing margins as a percentage of price paid by consumers in TMC were 20.70 and 33.70 per cent, respectively. The corresponding figures in case of EMC were 21.60 and 23.40 per cent, respectively.

Preference for the particular marketing channel :

Elaborating the reasons for preferring sales of kinnow under TMC, maximum responses pertained to the assured sales as the growers did not want to sell their produce directly in the market to overcome the price risk as well as to save time and energy (Table 6). They were also influenced by friends and relatives to sell their produce to the contractor. In case of EMC, higher/fair price and availability of superior infrastructure were the main reasons for preferring this channel.

Information regarding price:

In order to receive best possible price for their produce, it is necessary that producers must be aware of ruling market prices in the market where they sell their produce. This will guide them regarding the right time to dispose off their produce. It can be observed from Table 7 that growers did have information about price prevailing in the regulated markets. The commission agents/traders and the personal

Table 6: Major reason for preferring the particular marketing channel of kinnow, Punjab, 2009-10 **(% to total responses)**

Sr. No.	Particulars	TMC	EMC
1.	Habit	11.40	10.0
2.	Influence of friend, relatives, neighbours	5.70	10.0
3.	Assured sales	28.70	-
4.	Higher/fair price	11.40	30.0
5.	Low cost of marketing	17.10	-
6.	Hidden cost/bribes in alternative channel	14.30	10.0
7.	Longer waiting time and formalities in alternatives channel	11.40	20.0
8.	Superior Infrastructure	-	20.0

Table 7: Details about market related information of kinnow, Punjab, 2009-10 **(% to total responses)**

Sr. No.	Particulars	TMC	EMC
Source of price information			
1.	Personal information	54.30	40.0
2.	Speaking with other farmers	14.30	10.0
3.	Speaking with commission agent/trader	31.40	50.0
4.	AGMARKNET	-	-
Time of price information			
1.	At the time of harvest/sale	100.0	-
2.	At the time of sale	-	100.0
Difference in price information and actual price			
1.	Lower than expected	28.60	-
2.	Similar to expected	42.80	20.0
3.	Higher than expected	28.60	80.0
Time of price agreement			
1.	At the time of sale	-	100.0
2.	By previous agreement	100.0	-

information were the important sources of price information. Further, in case of TMC, the growers were aware of the price at the time of harvest, whereas in case of EMC it was available at the time of sale. None of the growers in the sample got information from AGMARKNET. By and large sample growers revealed that the price received by them in TMC was more or less similar to that expected, however, in case of EMC 80 per cent growers reported that price received was more than expected. In case of TMC, personal information/experience was playing an important role in determining the price of the crop.

Perception of growers regarding the market infrastructure and measures to increase the returns :

The main purpose of regulated markets was to ensure free and competitive sales by auction methods. Regulated markets also ensure standardized market charges, reliable weighing, payment of cash to farmers without undue deductions, and several other amenities in market yards. Accordingly, in Table 8 the market infrastructure facilities available in the APMC markets as perceived by growers is indicated. Majority of growers expressed that the village roads were of average or good quality. About 60 per cent of respondents travelled more than 50 kms to access the kinnow market. With respect to other facilities such as auction, supervision of sale, loading, sorting and weighing the majority responses were either satisfactory or good. While banking facilities in APMC were rated well by the respondent growers, they opined that computer/internet facilities were of the average to good quality. Thus, with respect to certain market facilities majority growers were satisfied, but at the same time there were also certain shortcomings and farmers felt the need to improve infrastructure.

The suggestions of selected kinnow growers which would ensure them higher prices/net returns are summarized in Table 9. According to them the exports should be promoted and encouraged especially when global prices are ruling high. The market charges and number of intermediaries should be reduced and credit should be made easily available. Government intervention/purchase can also help to push up prices. Growers also opined that ensured availability of good transport as well as marketing facilities would encourage

Table 8 : Perception of kinnow growers regarding the market infrastructure, Punjab

Sr. No.	Particulars	% of respondent farmers
Condition of roads to market		
a	Bad	
b	Average	40.0
c	Good	60.0
Proximity of market		
A	Within 10 kms	-
b	Between 10 and 25kms	20.0
c	25 to 50 kms	20.0
d	More than 50 kms	60.0
Auction arrangements		
a	Bad	-
b	Average	20.0
c	Good	80.0
Supervision of sale		
a	Bad	-
b	Average	30.0
c	Good	70.0
Loading facilities		
a	Bad	-
b	Average	80.0
c	Good	20.0
Weighing facilities		
a	Bad	-
b	Average	31.10
c	Good	68.90
Packing facilities		
a	Bad	-
b	Average	44.50
c	Good	55.50
Banking facilities		
a	Bad	-
b	Average	-
c	Good	100.0
Computer/internet facilities		
a	Bad	-
b	Average	57.78
c	Good	42.78

Table 9: Suggestions to ensure that growers get higher price/net returns for kinnow, Punjab

Sr. No.	Particulars	% of respondent farmers
1.	Need export facility	55.55
2.	Creation of cold storage facilities and provision of MSP	26.67
3.	Provision of input (s) subsidy	17.78
4.	Steps to reduce intermediaries in market	10.0
5.	Provision of good transport facilities	20.0
6.	Government purchase	10.0

them to sell their produce through EMC resulting in higher net returns from kinnow cultivation.

Conclusion :

The study revealed that although kinnow growers who sold their produce through EMC had to incur higher marketing costs, still the net price received by them was about 20 per cent higher than those received through TMC. The share of the kinnow growers in the price paid by consumers under TMC was only 33.70 per cent, while the same in case of EMC was 55 per cent. This resulted in higher benefit cost ratio (BCR) for kinnow enterprise in EMC as compared to that in TMC. The reasons for preferring the particular marketing channel indicated that in case of TMC, maximum responses pertained to the assured sales as the growers did not want to sell their produce directly in the market to overcome the price risk and to save time and energy. In case of EMC, fair price and superior infrastructure were the main reasons for preferring this channel. The growers were found to have information about price prevailing in the regulated markets. The commission agent/trader and personal information were the important sources of price information. None of the growers in the sample got information from AGMARKNET. In case of EMC, about 80 per cent of the growers expressed that they got a bit higher prices for their produce than their expectation. Majority of respondents expressed that they had to travel long distances to access the market. Kinnow growers' responses with respect to other facilities such as auction, supervision of sale, loading, sorting, weighing and banking were satisfactory.

To help farmers in getting remunerative returns through encouraging the sales through EMC, there is need for providing facilities/concessions for promoting the export of the produce in general and in case of glut in the market in particular. The facilities of waxing, grading and transportation of the fruits to distant markets should be subsidized so that the farmers get better returns from kinnow cultivation in state.

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