Preference towards marketing channels: a case of tomato farmers in Kolar district of Karnataka

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ABSTRACT

Tomato, *Solanum lycopersicum* L (Solanaceae) is the world's largest vegetable crop cultivated extensively for its edible fruits. The profitability of marketing of this perishable, seasonal and bulky agricultural produce critically depends on the choice of proper marketing channels. In the present study the preference of farmers towards marketing channels for tomato in Kolar district of Karnataka was analysed. Based on area and production, Kolar district in Karnataka and Mulbagal Taluk were purposively chosen where 60 farmers were selected randomly. Results indicated that three marketing channels for tomato were patronized by the farmers. Nearly 43 per cent of the farmers had chosen combination of channels I and II to market their produce. They sold 212.28 q tomato on an average and per unit price realized was Rs 1360.26/q. The net price received by the tomato farmers by marketing through Channels I, II and III was Rs 974.60, 1328.70 and 823.68 per quintal respectively. Among these channels the farmer's share in consumer rupee and the marketing efficiency were highest in Channel II. Excessive post-harvest losses was the major hindrance faced by the tomato growers The implications of the study were that farmers could realize better prices by using a combination of channels to market their produce.

Keywords: Marketing channels; channel performance; marketing efficiency; price spread

INTRODUCTION

Tomato is the world's largest vegetable crop and it is known as productive as well as protective food because of its special nutritive value and wide spread production. It is cultivated across all over the world and among various countries China is the largest producer of tomato in the world. India stands second with a total production of 19.70 MT where it is cultivated in an area of 809000 ha (Anon 2017). Among the various states in the country Karnataka was the third largest state in terms of area under tomato (6373000 ha) and production (2138000 ton) during 2016-17 after Andhra Pradesh and Madhya Pradesh. The major tomato growing districts in Karnataka are Kolar, Haveri, Belgaum, Chikkaballapur and Mandya districts. In Karnataka, Kolar stands first with an area of 596000 ha and production of 338000 ton (Anon 2017). Farmers are mainly interested in tomato production more than any other vegetable for its multiple harvests and potential of year-round production which result in high profit per unit area. Marketing serves as a vital link between the producers and the consumers by stimulating the production and consumption.

After harvest tomato undergoes a series of operations like grading, sorting, packaging, transportation, storage, processing, distribution and exchange before it reaches the market. Besides a considerable loss in crop output takes place at all the stages as it is being handled by different stakeholders Tomato owing to its highly perishable nature demands timely distribution so as to achieve higher producer's share in consumer's rupee. The marketing arrangements at different stages play an important role in deciding the price levels at various stages viz from the farm gate to the ultimate user. Moreover the level

of profitability of tomato crop depends upon means through which the farmers market their produce in addition to the technology adopted by them in growing the crop, the time of sale of the produce, the price at which they sell the produce and the agency through whom they sell the produce being some of the important factors that influence the net income received by the farmers for their surplus produce.

Thus profitability of marketing the agricultural produce critically depends on the choice of proper marketing channels which necessitates understanding each channel, its benefits, requirements and limitations. It is also important to know the volume of production required and the average prices paid in order to assess the potential returns of a channel. Choosing the right mix of marketing channels includes the consideration of several factors including sales volume, risk, lifestyle preference, stress aversion, labour requirements and channel-specific costs.

The markets of Kolar district in Karnataka are generally flooded with tomato produce throughout the year. As the supply exceeds the demand in many situations farmers are forced to go in for distressed sales and thus end up with lower prices for their produce. Besides when farmers use the traditional channels for marketing as being practiced since years they realize comparatively lower prices. Using a combination of channels and not relying only on one single channel to market their produce could be a viable option so as to help the farmers to gain better income from their produce.

The study was thus conducted to identify the different marketing channels and to analyze preference of tomato farmers towards a particular channel. The channel performance was analyzed through price spread, volume of produce sold and prices realized vis à vis marketing efficiency.

METHODOLOGY

Kolar district in Karnataka was selected for the study as this district had the highest area and production of tomato in the state. Among the various Taluks, Mulbagal was chosen as this Taluk had the highest area and production of tomato. The random sampling technique was adopted to select three villages and 20 farmers in each village thereby resulting in a total sample size of 60 farmers The data were collected during April-May 2018. A pre-tested questionnaire was used to collect the relevant information from tomato growers based on recall method. The data were analysed using suitable statistical tools.

The analysis on marketing channels was intended to provide a systematic knowledge of the flow of goods and services from their origin ie from the farmer-producer to the final destination ie to the ultimate consumers The performance of the marketing channels of tomato was assessed first by identifying the major marketing channels, the quantities of produce sold through each of these channels as well as the value realized on selling the produce through each channel estimating the farmer's share in consumers' rupee (price spread) highlighting the various marketing costs incurred by the intermediaries, the marketing margins gained by the players in the marketing channel and marketing efficiency. Shepherd's method (Shepherd 1965) was applied to estimate the marketing efficiency (ME), Acharya's method (Acharya and Agarwal 2006) to estimate the modified marketing efficiency (MME) and Calkin's index to measure the economic efficiency. The constraints faced by the tomato growers were analyzed using Garrett's ranking technique (Garett and Woodworth 1969).

RESULTS and DISCUSSION

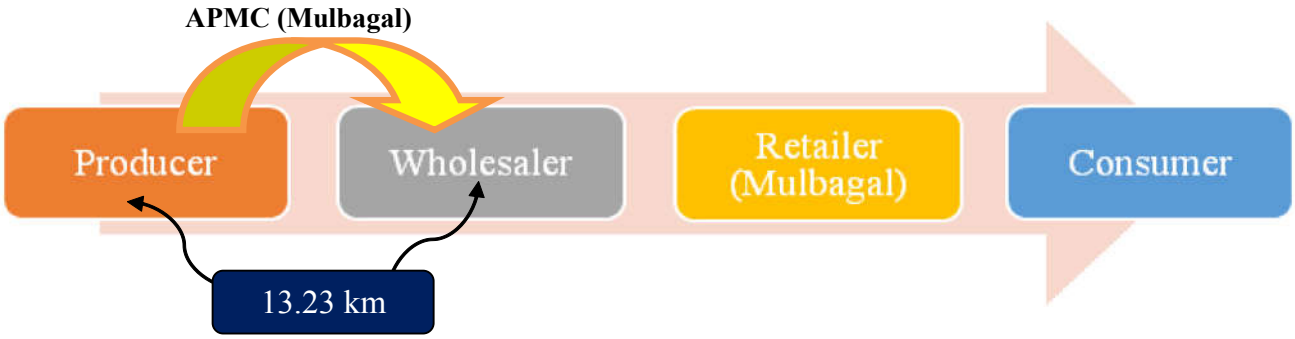
The sample farmers involved in the cultivation of tomato in the study area preferred different marketing channels to dispose off their produce. There were three main marketing channels through which the tomato was marketed by the farmer-producers to the ultimate consumers.

It was observed that Channel I was operated through the Vodahalli market which exclusively dealt with the sale of tomatoes. The sample farmers engaged in tomato cultivation sold their produce either to wholesalers at Mulbagal APMC or Vodahalli markets. Whenever the marketable surplus was relatively in smaller quantities, producers preferred to sell at the nearby Mulbagal APMC. However when the surplus was in larger quantities, they preferred to sell through Vodahalli market with a view to get better prices. Tomatoes after harvest were washed, thoroughly graded, sorted and packed in various packaging materials such as plastic crates or wooden boxes with capacities of 15 kg and 20 kg for transportation to distant markets. Tomatoes after being sent to the APMC were auctioned till a suitable price was obtained from the

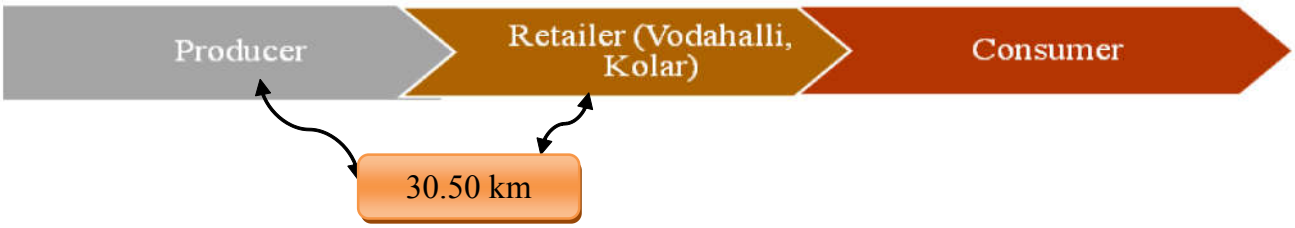
wholesalers. The wholesalers in turn transported the produce to the retailers located in the nearby cities or towns from where it was sold to the consumers.

In Channel II the farmers sold their produce to the more distant markets like Kolar market which was the second largest APMC in Asia and Chennai markets based on the existing market prices in order to get reasonable price. Accordingly the produce was graded and sorted after harvest, transported in crates to retailers in the distant markets who sold the produce to the consumers. In Channel III farmers sold their produce directly to the pre-harvest contractors who came to the farmers' fields or villages. The pre-harvest contractors themselves transported the produce to the retailers in the nearby towns and cities from where it was then sold to the consumers. The farmers did not incur any kind of costs when they followed this distribution channel for the marketing of their produce.

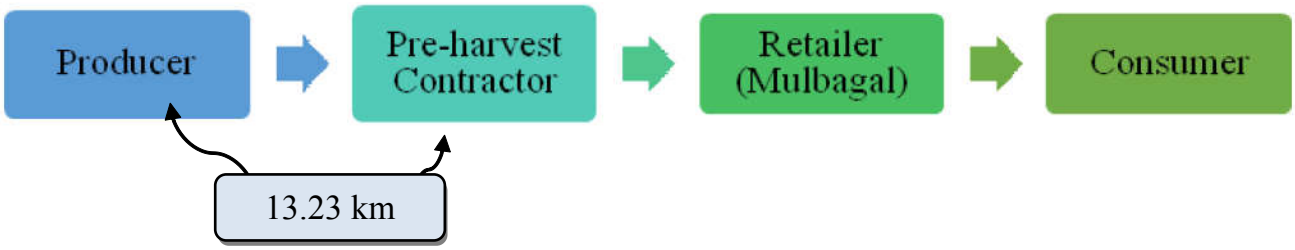
The sample farmers involved in the cultivation of tomato in the study area preferred different marketing channels to dispose their produce. Accordingly the quantities of produce sold as well as the value realized by selling the produce through a specific channel varied. The growers either disposed off their produce through a single channel or through a combination of channels depending upon the benefits that the farmers realized from each specific channel. The details of the number of farmers who sold tomato through the above channels along with the quantity sold and the value realized are presented in Table 1.



Channel I. Producer – Wholesaler (through APMC) – Retailer – Consumer



Channel II. Producer – Retailer in distant markets – Consumer



Channel III. Producer – Pre-harvest contractor – Retailer – Consumer

Table 1. Choice of marketing channel, quantities sold and the total value realized by the tomato growers

Channel	Number of farmers	Quantity sold (q)	Value realized (Rs in lakh)	Average quantity sold (q)	Price/q (Rs)
Exclusively Channel I	15 (25.00)	1403.28 (13.81)	12.67 (10.59)	93.55	903.50
Channel I + Channel II	26 (43.33)	5519.35 (54.33)	75.08 (62.71)	212.28	1360.26
Channel I + Channel III	17 (28.34)	3135.25 (30.86)	30.88 (25.79)	184.42	984.98
Channel I + Channel II + Channel III	2 (3.33)	101.40 (1.00)	1.09 (0.91)	50.70	1075.29
Total	60 (100.00)	10159.28 (100.00)	119.72 (100.00)	169.32	1178.51

Figures in parentheses denote percentage values to total sample

Note: There were no sample farmers who preferred to market their produce exclusively through Channels II and III or Channels II and III combined

Table 1 presents that 43.33 per cent farmers had chosen a combination of Channel I and Channel II. A quantity of 5519.35 q was sold through these channels and this accounted for 54.33 per cent of the total quantity sold through all the channels put together. The value thus realized was Rs 75.08 lakh accounting for 62.71 per cent of the total value realized. This could be attributed to the fact that producer-farmers preferred to sell their produce through Channels I and II wherein the Channel I was operated through Vodahalli markets or Mulbagal where APMC had been regulating. They were also confident of realizing better price for their produce without much hassle. The farmers preferred to sell through Channel II operated at distant market ie Kolar where APMC was also functioning. Besides offering the farmers a plethora of buyers to choose from, the entire produce could be marketed through these two channels.

A little more than one-fourth of the farmers (28.34%) however preferred to sell 30.86 per cent of their produce (3135.25 q) through Channels I and III and thus realized a value of Rs 30.88 lakh (25.79%) of the total value realized by the sample farmers. Farmers preferred a combination of Mulbagal APMC and Vodahalli markets (Channel I) and also through pre-harvest contractors (Channel III) for selling their produce in order to cut down expenses on transportation.

Besides one-fourth of the sample tomato cultivators (25.00%) however sold their produce exclusively through Channel I with the total quantity of 1403.28 q (13.81% of the total quantity traded) realizing a value of Rs 12.67 lakh (10.59% of the total value realized). Vodahalli market dealing exclusively with the sale of tomatoes facilitated better value for money. There were also sample farmers (3.33%) who preferred to sell through a combination of all the three channels. However only one per cent of the total volume traded was marketed through the combination of these three channels amounting to 101.40 q and realizing a value of Rs 1.09 lakh (0.91% of the total value realized).

A total quantity of 10159.28 q was sold through all these channels and the total value realized was Rs 119.72 lakh. On an average a farmer sold 169.32 q of tomato along these three identified marketing channels. Channel-wise the average quantity sold exclusively through Channel I was 93.55 q whereas farmers sold 212.28 q on an average when they preferred a combination of marketing Channels I and II. Similarly when farmers used a combination of channels I and III the average quantity sold was 184.42 q whereas by utilizing all three channels the average quantity sold was only 50.70 q.

The price realized by the sale of the produce exclusively through Channel I was Rs 903.50/q, through Channels I and II was Rs 1360.26/q, through Channels I and III was Rs 984.98/q and through all three channels it was Rs 1075.29/q. The average price realized was Rs 1178.51/q.

Thus farmers generally preferred to sell their produce through different marketing channels as it helped them to minimize the risks while marketing through only a single channel. As the end consumers were widespread and scattered, these marketing channels ensured that the produce was not limited to just the area of production and so the produce was

sold to different intermediaries with a view to obtain comparatively better/reasonable prices after considering the costs involved in marketing the produce from the point of production to the point of consumption.

Price spread across marketing channels

The three identified marketing channels patronized by the farmers were considered in the price spread analysis (Table 2).

The net price received by the farmers per quintal of tomato by marketing through Channels I, II and III was Rs 974.60, 1328.70 and 823.68 respectively. The farmers incurred the marketing cost only in Channels I and II. As the produce was sold to the pre-harvest contractor (PHC) in Channel III the farmers did not incur any marketing expenses.

Among the different marketing costs incurred by the farmers by selling through Channel I the highest expenditure incurred was for transportation (Rs 30.52/q) followed by loss due to handling (Rs 12.51/q). In Channel II the highest cost incurred was for transportation (Rs 61.24/q) followed by loss due to handling (Rs 17.62/q). The total marketing cost incurred by the farmer was found to be the highest in Channel II (Rs 124.86/q) as against Rs 76.22/q in Channel I. Thus the gross price received by the farmer or the purchase price of the wholesaler was Rs 1050.83/q in Channel I, Rs 1453.57/q in Channel II and Rs 823.68/q in Channel III where the produce was sold to the pre-harvest contractors at village level.

The wholesaler/PHC in turn incurred cost for moving the produce to the next player ie the retailer and such cost was found to be higher in Channel I (Rs 74.78/q) than Channel III (Rs 71.74/q). Among the various costs incurred in Channel I the highest charge incurred by the wholesaler was for transportation (Rs 18.60/q) followed by rent and electricity charges (Rs12.00/q). There were no charges incurred by the wholesaler in Channel II as the produce was sold by the farmers to the retailers in distant market. In Channel III the highest charge incurred by the pre-harvest contractor was loss due to handling (Rs 16.42/q) followed by transportation (Rs 14.45/q).

The selling price of the wholesaler/pre-harvest contractor to the retailer or the purchase price of the retailer was highest in Channel II amounting to Rs 1453.57/q followed by Channel I (Rs 1260.00/q) and Channel III (Rs 1036.84/q). Among the various costs incurred by the retailers, the marketing cost incurred by the retailer was found to be higher in Channel II with Rs 116.34/q than Channel I (Rs 71.69/q) and Channel III (Rs 58.89/q). Among the various marketing costs incurred by the retailer in Channel I the highest charge incurred was for transportation (Rs 20.40/q) followed by rent and electricity charges (Rs 18.37/q). In Channel II the highest charge incurred was also for transportation (Rs 52.56/q) followed by rent and electricity charges (Rs 15.41/q) whereas in Channel III it was for loss due to handling (Rs 17.60/q) followed by transportation (Rs 15.39/q). The retailer's selling price or the consumer's purchase price in Channel I was Rs 1524.16/q, in Channel II Rs 1800.07/q and in Channel III Rs 1323.68/q.

The intermediaries also made some profit ie marketing margin. The marketing margin of wholesaler was Rs 134.39/q in Channel I and the marketing margin of the pre-harvest contractor was Rs 141.40/q in Channel III. The marketing margin of the retailer was found to be the highest in Channel II with Rs 230.16/q followed by Channel III (Rs 227.94/q) and Channel I (Rs 192.47/q).

The details of farmer's share in consumer rupee, total marketing cost and margin across each channel are presented in Table 3. The gross price received by the farmer in Channel I was Rs 1050.83/q, net price was Rs 974.60/q, consumer's purchasing price was Rs 1524.16/q and the farmer's share in consumer rupee was 68.94 per cent. In Channel II the farmer-producers sold their produce at Rs 1453.57/q while the net price received by the farmer was Rs 1328.70/q; consumers purchased the produce at Rs 1800.07/q and the farmer's share in consumer rupee was 80.75 per cent. With respect to Channel III farmers sold their produce at Rs 823.68/q while consumers purchased the produce at Rs 1323.68 and the farmer's share in consumer rupee was 62.23 per cent.

The farmer's share in consumer rupee was highest in Channel II with 80.75 per cent which could be attributed to relatively lesser number of players in the marketing channel followed by Channel I with 68.94 per cent and Channel III with 62.23 per cent. The results also indicated that by avoiding one or more intermediaries in the marketing channels and by minimizing the marketing costs, the producer-farmers could gain considerably in terms of their share of the rupee paid by the end user. The total marketing cost incurred by all the actors was found to be Rs 222.70/q

Table 2. Price spread in different marketing channels of tomato

Component	Channel I (Rs/q)	Channel II (Rs/q)	Channel III (Rs/q)
Net price received by farmer	974.60	1328.70	823.68
Marketing costs incurred by farmer			
Loading and unloading	6.29	10.76	0.00
Grading and sorting	11.84	15.13	0.00
Packing	10.41	16.35	0.00
Transportation	30.52	61.24	0.00
Loss due to handling	12.51	17.62	0.00
Market information	4.65	3.75	0.00
Total marketing cost	76.22	124.86	0.00
Gross price of farmer/purchase price of wholesaler/PHC	1050.83	1453.57	823.68
Marketing costs incurred by wholesaler/PHC			
Harvesting	0.00	0.00	6.43
Loading and unloading	1.84	0.00	10.54
Weighing	0.00	0.00	2.45
Grading and sorting	8.80	0.00	4.54
Packing	8.32	0.00	11.71
Transportation	18.60	0.00	14.45
Loss due to handling	11.81	0.00	16.42
Market information	3.31	0.00	5.20
Rent and electricity charges	12.00	0.00	0.00
Market fee	10.10	0.00	0.00
Total marketing costs	74.78	0.00	71.74
Marketing margin of wholesaler/PHC	134.39	0.00	141.40
Selling price of wholesaler/PHC or purchase price of retailer	1260.00	1453.57	1036.84
Marketing costs incurred by the retailer			
Loading and unloading	0.62	3.76	1.87
Grading and sorting	3.97	4.08	3.46
Packing	11.73	8.51	4.17
Transportation	20.40	52.56	15.39
Loss due to handling	14.00	15.29	17.60
Market information	2.60	2.23	2.52
Rent and electricity charges	18.37	15.41	13.88
Market fee	0.00	14.50	0.00
Total marketing costs	71.69	116.34	58.89
Marketing margin of retailer	192.47	230.16	227.94
Retailer's sales price/consumer's purchase price	1524.16	1800.07	1323.68

Table 3. Marketing costs, marketing margins and value added

Component	Channel I (Rs/q)	Channel II (Rs/q)	Channel III (Rs/q)
Gross price received by farmer	1050.83	1453.57	823.68
Net price received by farmer	974.60	1328.70	823.68
Consumer price (purchasing price)	1524.16	1800.07	1323.68
Farmer's share in consumer rupee (%)	68.94	80.75	62.23
Total marketing costs (MC)	222.70	241.20	130.64
Total marketing margins (MM)	326.85	230.16	369.35
Total value added (MC + MM)	549.55	471.36	500.00

in Channel I, Rs 241.20/q in Channel II and Rs 130.64/q in Channel III. The total marketing margins obtained by the intermediaries in marketing the produce across the channels was found to be Rs 326.85/q in Channel I, Rs 230.16/q in Channel II and Rs 369.35/q in Channel III. The total value added which is equal to the sum of the total marketing costs and total marketing margins on marketing the produce through Channels I, II and III was Rs 549.55, 471.36 and 500.00/q respectively.

Marketing efficiency

While applying Shepherd's method of estimating the marketing efficiency Channel II had the highest marketing efficiency index with 3.82 followed by Channel I with 2.77 and Channel III with 2.65 (Table 4). The marketing efficiency index estimated using Acharya's method also showed that Channel II had the highest marketing efficiency (2.82) followed by Channel I (1.77) and Channel III (1.65). However the interpretation of efficiency index through Calkin's index was different as lower the value of the index higher would be the efficiency. Accordingly Channel II was found to be the most efficient with an index of 1.95 followed by Channel I with 2.47 and Channel III with 3.83.

Thus based on all the three methods of marketing efficiency estimates Channel II was found to be the most efficient in the marketing of tomatoes as it had the least number of players in the marketing channel apart from low marketing costs incurred by the players in the channel. Also this channel helped to market the farmers' produce at Kolar APMC though the farmers incurred additional cost towards transportation and other miscellaneous expenditure.

Marketing constraints faced by the tomato growers

The observations given in Table 5 indicate that among the many marketing constraints that the tomato growers faced, excessive post-harvest losses (average score 61.67) was the major hindrance followed by lower price offered for the produce (average score 53.33) and increasing middlemen costs (average score 51.67). Lack of information/information asymmetry (average score 35.00) was the least important constraint faced by the farmers.

Table 4. Marketing efficiency

Method	Channel I	Channel II	Channel III
Shepherd's method (ME)	2.77	3.82	2.65
Acharya's method (MME)	1.77	2.82	1.65
Calkin's index (economic efficiency)	2.47	1.95	3.83

Table 5. Marketing constraints faced by the tomato growers

Constraint	Average score	Rank
Excessive post-harvest losses	61.67	I
Low price offered for the produce	53.33	II
Increasing middlemen costs	51.67	III
Greater competition	50.00	IV
Poor bargaining power of the grower	48.33	V
Low trading volume	46.67	VI
Lack of agricultural marketing information systems/online marketing systems	45.00	VII
Poor quality of the produce	41.67	VIII
Higher market risk	38.33	IX
Lack of information/information asymmetry	35.00	X

CONCLUSION

Three marketing channels for tomato were patronized by the farmers in Kolar district of Karnataka. The farmer's share in consumers' rupee was highest in Channel II followed by Channels I and III. Based on all the three methods of marketing efficiency estimates, Channel II was found to be the most efficient

in the marketing of tomatoes. The study indicated that there existed scope to increase the producer's share in consumers' rupee by making the market more effective by restricting the number of intermediaries and reducing the marketing costs and marketing margins. This would make tomato cultivation more lucrative. At each stage the players in the marketing channel incurred costs as well as margins and hence both the marketing costs and margins suppressed the efficiency. Moreover the price of the produce was also low in the case of Channels I and III. Creation of infrastructure like cold storages in tomato producing areas and linkages to processing industries would promote value addition and achieve better market efficiency.

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