EVALUATING MARKETING EFFICIENCY OF GRAPES UNDER DIFFERENT VALUE CHAINS IN NORTHERN KARNATAKA

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ABSTRACT

The objective of the study was to conduct value chain analysis of grapes. Mapping activity helped to identify links in the chain where exchanges are made. In VC –I Bagalkot district, PHC added a value of 5.47 per cent, and retailer added a higher value of 9.75 per cent. Higher mark-up implied higher costs to the customer and subsequently to the stakeholder. In this case, PHC earned a relatively lower mark up due to higher volumes or quantity handled exclusively for a grape. The retailer earned higher mark up due to lesser quantity transacted. In Belagavi, The chain VC2 (Sell to Wholesaler Chain) had only 2 intermediaries. It showed an increased mark up than the other co-existing value chains. Retailers were assured better mark up (10.07 per cent) due to higher quality fruits, due to less handling and transactions. In Vijayapura, The chain length reduced in VC3 (Sell to Wholesaler Chain) with only 2 intermediaries. It showed an increased mark up than the other co-existing value chains. Wholesalers (7.75 per cent) and retailers (9.95 per cent) were assured better mark up due to higher quality fruits, due to less handling and transactions in Bagalkot analysis depicted that the index of marketing efficiency (IME) was high (1.78) in value chains I (Sell directly to PHC), in case of Belagavi district analysis depicted that the index of marketing efficiency was high (1.83) in value chains I (Sell directly to PHC) and In Vijayapura analysis depicted that the index of marketing efficiency was high (2.15) in VC-4(sell to CDC), so the higher index indicates higher degrees on chain efficiency in Vijayapura compared to Bagalkot and Belagavi districts. Farmers selling improved of grapes directly to Agents with Cold Storage facility presented the most efficient value chain arrangement (IME is 2.15) which was higher than traditional value chain and therefore modern value chain in Vijayapura district was more efficient than the traditional one.

KEYWORDS: Value Chain Mapping, Mark up Cost & Marketing Efficiency

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INTRODUCTION

In India, there is a sizeable increase in acreage and production of grapes in India. In acreage, there is an increase of 47.5 thousand ha in 2001-02 to 121.65 thousand ha in 2015-16. Similarly, the production has increased from 1,184.2 thousand tons in 2001-02 to 2,590.04 thousand tons in 2015-16. Maximum grape production takes place in Maharashtra (2048.11 thousand tons) State followed by Karnataka (429.78 thousand tons), and Tamil Nadu (34.10 thousand tons). Karnataka is India's second largest producer of grapes. It has prominent grape growing regions like Nandi Valley, Cauvery Valley, and Krishna Valley. The climate of the State is also conducive to grape cultivation. As such, the State has several vineyards and enjoys a healthy production of high- quality grapes every year. The total area and production of grapes in Karnataka are 23,350 ha, 4.29 lakh tonnes of grapes

that accounts for 16.59 per cent of the country's share in the production of grapes. Vijayapura is the leading district in Karnataka with respect to both area and production of grapes. The total area and production of grapes in Vijayapura was 10.58 thousand hectares and 190.86 MT, accounting for 45.31 and 44.41 per cent of area and production of grapes in Karnataka respectively during 2015-16. Followed by Chikballapur (12.72 per cent), Belgavi (11.57 per cent), and Bagalkot (9.16 per cent) are the other major grapes growing districts of Karnataka. (Source: National Horticulture Board, 2017)

The study was based on primary data collected from a sample of grapes growers, PHC, wholesalers, Commission agents and retailers in Vijayapura, Belgavi and Bagalkot districts of Karnataka. The results of the study will be helpful for studying the variability among actors in the value chain in terms of production and marketing. It also helps to bridge the gap between local and domestic market, as well as in promoting value addition at each stage of the value chain and to understand the main factors that might help to reduce the variability in the grapes value chain. Therefore, the main objective of the paper was to conduct value chain analysis of grapes in northern Karnataka

METHODOLOGY

A multi-stage random sampling technique was used to select the ultimate sample respondents. Based on time and resource constraints of the investigator, in the first stage, among the various districts in Karnataka, Vijayapura, Belgavi and Bagalkot districts were selected. These three districts constituted 66 per cent of the area under grape cultivation in the State (National Horticulture Board). In the second stage, based on the area under Grapes in these three districts, top two blocks in Vijayapura district (Tikota, Babaleswar), Belgavi district (Ananthapura, Telasang) and Bagalkot district (Mudhol, Savalagi) were selected. In the third stage, three villages were selected at random from each block.

Sample farmers were selected randomly based on the area and production at the rate of 10 farmers from each selected villages. Totally 6 blocks comprising of 18 villages were included in the study, thus a total of 180 sample farmers was selected. The farmers were contacted individually for a collection of details on production, post-production activities, marketing, and value chain of grapes, etc. with the help of a well structured and pre-tested interview schedule.

1. PRICE STRUCTURE AND COST ANALYSIS

1.1 Price Spread

Relevant information was collected from the stakeholders in the grapes value chain viz. Individual farmers, Pre Harvest Contractor, commission agents, wholesalers, and retailers. In the process of marketing of grapes, the difference between the retail price paid by the consumer and that received by the grapes grower for an equivalent quantity of grapes was defined as "Price Spread". The Profits of the different stakeholders engaged in moving the product from the initial point of production till it reached the ultimate consumer were documented.

1.2 Calculation of Mark-up Percentage

The mark-ups of different intermediaries involved in traditional, integrated and grapes value chains were computed. Revenue was calculated based on cost C and the desired gross margin G, where G is in decimal form;

$$R = C / (1 - G)$$

The gross profit P is the revenue R from the sale times the gross margin G percentage, where G is in decimal form:

$$P = R * G$$

The mark -up percentage M, in decimal form, is gross profit P divided by cost C.

- $M = P / C$
- $M * 100$ will change the decimal to a percentage

1.3 Farmers' Net Price

The net price received by the farmers was estimated as a difference between gross prices received and the sum of the marketing costs incurred, including the post-harvest losses at different stages of handling the produce. The farmers' net price was expressed mathematically follows:

$$NPF = GPF - \{CF + (LF * GPF)\}$$

NPF = Net price received by the farmers (Rs/kg)

GPF = Gross price received by farmers or wholesale price received by the farmer (Rs/kg)

CF = Cost incurred by the farmers during marketing (Rs/kg), and

LF = Physical loss in produce from harvest till it reaches the market (kg).

1.4 Marketing Margins

The margins of market intermediaries include profits and returns, which is due for handling and storage. The general expression for estimating the margin of the intermediaries is given below:

Intermediaries margin = Gross price (sale price) – Purchase price (cost price) – Cost of marketing – Loss in value during wholesaling

1.5 Farmer's Share in Consumer's Rupee

Further, the farmer's share in consumer's rupee was calculated with the help of the following formula.

$$Fs = (Fp/Cp) * 100$$

Where,

Fs = Farmer's share in consumer's rupee (percentage),

Fp = Price received by the farmer (Rs/unit)

Cp = Price paid by the consumer (Rs/unit)

1.6 Marketing Efficiency

Most commonly used measures are conventional output to input ratio, Shepherd's ratio of value (price) of goods marketed to the cost of marketing (Shepherd, 1965).

$$ME = [(V/I) - 1]$$

Where,

ME = Index of Marketing Efficiency

V = Value of goods sold

I = Total marketing cost

RESULTS AND DISCUSSIONS

1. MAPPING OF THE GRAPE SUB-SECTOR

Mapping activity helped to identify links in the chain where exchanges are made. Linkages in the chain showed the activities and roles played by the different players of the value chain (Recklies, 2001). Different value chains adopted by sample farmers are discussed hereunder:

1.1 Traditional Value Chain for Local Markets in Bagalkot District

Figure 1.1: Mapping the Value Chain for Local Markets in Bagalkot District

The sub sector map (Figure 1.1) shows how grapes currently flows via several alternative value chain paths from farm to various end market consumers in Northern Karnataka. Four primary channels operate within these districts.

- In the first channel, producers supply grapes to Pre-harvest contractors, who in turn deliver to retailers.
- In the second channel, producers sell grapes to commission agents, who distribute it to retailers.
- In the third channel, producers supply grapes directly to wholesalers who distribute it to retailers.
- In the fourth channel, producers supply grapes directly to retailers.

1.2 Traditional Value Chain for Local Markets in Belgavi District

In Belagavi a market, the grapes are disposed of in two major ways. The grapes are harvested by the farmers themselves and taken to auctioning centers, subsequently sold to wholesalers. Secondly, Grapes are sold out to the Pre-Harvest Contractors by the farmer who further sells it in the grape markets.

Value Chain I (Sell to Pre Harvest Contractor Chain)

Value Chain II (Sell to Wholesaler Chain)

Figure 1.2: Mapping the Value Chain for Local Markets in Belagavi District

1.3. Traditional and Modern Grape Value Chains in Vijayapura District

Vijayapura district is a representative of upstream grape chains in Northern Karnataka. The modern grape value chain was selected based on its comparability with the traditional grape chain in Bagalkot and Belagavi districts, its attempts to operate competitively and innovatively to survive in the industry, its supply to retail outlets and its willingness to provide access to its members. A pictorial representation of the Traditional and State-of-Art flow is depicted below in Figure 1.3.

Traditional value chain (GVC1)

Traditional value chain (GVC2)

Traditional value chain (GVC3)

State-of-Art Integrated Value Chain (GVC4)

Figure 1.3: Traditional and State-of-Art Grape Value Chains

1.4. Analysis of the Economic Viability of Traditional Value Chains in Bagalkot District

1.4.1. Price Structure and Cost Analysis - Mark up Costs

Figure 1.4 depicted an existing traditional value chain model of grape practiced in Bagalkot district with cost details. In VC1-Bagalkaot (Sell to PHC Chain), for grapes, Producers had the highest share (49.90 per cent) in the value chain. They do not find it profitable to harvest the crop at periodic intervals, transport to markets by themselves, considering the costs involved. The grapes do not attain uniform harvestable maturity due to variation in berry sizes, variation in fertilization, irrigation schedules. So they find it profitable to sell to intermediaries involved in the grape chain. The arrows indicate the value- added activities done by each stakeholder. In VC1 (Sell to PHC Chain), for grapes, PHC's manually harvested the bunches and brought them to grape markets for auction.

Figure 1.4: Value Chain – 1 Bagalkot (VC1: Sell to PHC Chain)

PHC added a value of 5.47 per cent, and retailer added a higher value of 9.75 per cent. Higher mark-up implied higher costs to the customer and subsequently to the stakeholder. In this case, PHC earned a relatively lower mark up due to higher volumes or quantity handled exclusively for a grape. The retailer earned a higher mark up due to the lesser quantity transacted.

The chain length had only with 2 intermediaries in VC2-Bagalkot (Sell to CA Chain). It is evident that there was a decrease in mark up due to accession in the loss of fruits, due to the higher number of transactions and handling. It is shown in Figure 1.5

Figure 1.5: Value Chain - 2 Bagalkot (VC2: Sell to Commission Agent Chain)

In VC3, Sell to Wholesaler Chain with added a value of 7.71 per cent and retailer added a higher value of 10.01 per cent. In addition, WH earned a relatively lower mark up due to higher volumes or quantity handled exclusively for grapes. The Retailer earned a higher mark up due to the lesser quantity transacted. Similar mark-up costs were observed in VC1. VC3 is illustrated in Figure. 1.6.

Figure 1.6: Value Chain - 3 Bagalkot (VC3: Sell to Wholesaler Chain)

The chain length was further reduced in VC4 (Sell to Retailer Chain) with only 1 intermediary. It is illustrated in Figure 1.7. It showed a slightly increased mark- up than the other, co-exist value chains. Retailers assured better mark up due to higher quality fruits, due to less handling and transactions.

Figure 1.7: Value Chain - 4 Bagalkot (VC4: Sell to Retailer)

1.4.2. Marketing Efficiency for Different Grapes Value Chains in Bagalkot District

The Table 1 revealed that marketing cost was the least in value chain-I (Sell directly to pre- harvest contractor) with Rs.17.99 per kg respectively ,for grapes mainly due to direct selling of grapes to pre -harvest contractor i.e., due to less number of market intermediaries. Selling through Retailer also (Value Chain IV) was lower at Rs.18 per kg for grapes. These value chains had low marketing costs while selling to pre-harvest contractor or retailer because of direct trade with grape growers.

Table 1: Marketing Efficiency for Different Grape Value Chains in Bagalkot

(Rs/kg)

I	Marketing Cost Drivers	VC-1	VC-2	VC-3	VC-4
1	Cost incurred by the Producer	0	9.65	9.55	9.55
2	Cost incurred by the PHC	9.64	0	0	0
3	Cost incurred by the CA	0	4.78	0	0
4	Cost incurred by the Wholesaler	0	0	7.72	
5	Cost incurred by the Retailer	8.35	8.45	8.35	8.45
	Total Marketing Cost of the Intermediaries	17.99	22.88	25.62	18
II	Margin				
1	Margin of the PHC	2.6	0	0	0
2	Margin of the CA	0	5.24	0	0
3	Margin of the Wholesaler	0	0	4.11	0
4	Margin of the Retailer	4.45	4.15	5.23	3.77
	Total Margin of the of the Intermediaries	7.05	9.39	9.34	3.77
III	Farmer's Share in Consumer's Rupee				
1	Farmer's price (selling price)	25	25	32	31
2	Consumer's price (purchase price)	50	47.63	57	44
	Farmer's share in consumer rupee	50	52.48	56	70.45
IV	Marketing Efficiency				
1	Value of goods sold (Consumer Rupee)	50.1	47.63	57.36	43.83
2	Total Marketing Cost	17.99	22.88	25.62	18
3	Total Margin	7.05	9.39	9.34	3.77
4	Total Marketing Cost +Total Margin	25.04	32.27	34.96	21.77
5	Index of Marketing Efficiency	1.78	1.08	1.24	1.44

The details of the margin of intermediaries are given in Table 1. The marketing margin was lower in value chain- IV and it was Rs.3.77. Of the total marketing margin, as indicated already retailer's share of marketing margin was higher at the rate of Rs.5.23per kg for grapes. And the farmer's share in consumer's rupee was relatively high ranging from 70.45per cent for grapes, mainly due to direct procurement of Grapes from farmers by retailers. Also in the value chain- III (Sell to WH Chain), the farmer's share in consumer's rupee was around 56 per cent for grapes because of direct selling to wholesalers. In case of value chain-I (Sell to Pre-Harvest Contractor), the farmer's share in consumer's rupee was minimum compared to other chains and it was 50 per cent due to higher marketing costs incurred by the intermediaries.

Thus, results finally showed that by avoiding one or more intermediaries and by minimizing the marketing cost farmers could gain considerably in terms of their share of the rupee paid by the end user.

The results of the marketing efficiency are presented in Table 1. The analysis depicted that the marketing efficiency was high (1.78) in value chains I (Sell directly to PHC). Subsequently, the marketing efficiency of grape was 1.44, in the value chain- II (Sell directly to retailer chain). This would imply that efficiency was higher when sold through a lesser number of intermediaries.

1.5. Analysis of the Economic Viability of Belagavi Grape Sub Sector

1.5.1. Price Structure and Cost Analysis

Figure 1.8 depicted an existing traditional value chain model of grape Practiced in Belagavi district with cost details. The arrows indicate the value -added activities done by each stakeholder. Retailers added a value of 9.7 per cent, and PHC added a higher value of 47.06 per cent. Higher mark-up implied higher costs to the customer and subsequently to the stakeholder. In this case, Retailers earned a relatively lower mark up due to higher volumes or quantity handed exclusively for grapes. Compared to Bagalkot retailer value chains, the price was relatively lower in Belagavi chains since it was a major market supplier of grapes across different districts and huge volumes were transacted every day.

Figure 1.8: Value Chain - 1 (VC1: Sell to PHC Chain)

The chain VC2 (Sell to WH Chain) with only 2 intermediaries. It showed an increased mark -up than the other, co-exist value chains. The retailers assured better mark- up due to higher quality fruits, due to less handling and transactions.

Figure 1.9: Value Chain - 2 (VC2: Sell to Wholesaler)

1.5.2. Marketing Efficiency for Different Grapes Value Chains in Belagavi

The Table 2 revealed that marketing cost was the least in value chain-I (Sell directly to PHC with Rs.18.12, per kg of grapes mainly due to direct selling of grapes to PHC i.e., due to less number of market intermediaries. This value chain had low marketing costs while selling to PHC because of direct trade with grape growers.

Table 2: Marketing Efficiency for Different Grape Value Chains in Belagavi (Rs/kg)

Sl. No	Marketing Cost Drivers	VC-1	VC-2
1	Cost incurred by the Producer	0	10.05
2	Cost incurred by the PHC	9.67	0
3	Cost incurred by the Wholesaler	0	7.71
4	Cost incurred by the Retailer	8.45	8.43
	Total Marketing cost of the intermediaries	18.12	26.19
II	Margin		
1	Margin of the PHC	2.7	0
2	Margin of the Wholesaler	0	4.26
3	Margin of the Retailer	4.5	5.32
	Total Margin of the of the intermediaries	7.2	9.58
III	Farmer's Share in Consumer's Rupee		
1	Farmer's price (selling price)	26.06	33
2	Consumer's price (purchase price)	51.26	59
	Farmer's share in consumer rupee	50.83	55.93
IV	Marketing Efficiency		
1	Value of goods sold (Consumer Rupee)	51.26	59
2	Total Marketing Cost	18.12	26.19
3	Total Margin	7.2	9.58
4	Total Marketing Cost +Total Margin	25.32	19.16
5	Index of Marketing Efficiency	1.83	1.25

The details of marketing margin of intermediaries are given in Table 2. The marketing margin was lower in value chain I and it was Rs.7.2, per kg for grapes. Of the total marketing margin, as indicated already retailer's share of marketing margin was higher at the rate of Rs.5.23, per kg for grapes. From the Table 2, it could be concluded that the farmer's share in consumer's rupee was relatively high ranged from 56 per cent, for grapes, mainly due to direct procurement of grapes from farmers by wholesalers. In case of value chain I (Sell to Pre-Harvest Contractor), the farmer's share in consumer's rupee was minimum compared to other chain and it ranged of 50.83per cent due to higher marketing costs incurred by the intermediaries. Thus, results finally showed that by avoiding one or more intermediaries and by minimizing the marketing cost farmers could gain considerably in terms of their share of the rupee paid by the end user. The results of the marketing efficiency are presented in Table 2. The analysis depicted that the marketing efficiency was high (1.83) in value chains I (Sell directly to PHC). Subsequently, the marketing efficiency of grape was (1.25); in the value chain- II (Sell directly to Wholesaler). This would imply that farmers should collectively organize themselves to avoid (one or more) intermediaries to realize more profit margin and gain a major share of consumer's rupee.

1.6. Analysis of the Economic Viability of Vijayapura Grape Sub Sector

1.6.1. Price Structure and Cost Drivers for Traditional Value Chain (GVC1)

Figure 1.10: Value Chain - 1 (VC1: Sell to PHC)

Figure 1.10 depicted an existing traditional value chain model of grape practiced in Vijayapura district with cost details. In VC1 (Sell to PHC Chain), for grapes, PHC adds a higher value of 35.15 per cent, CA adds a value of 14.18 per cent, the retailer adds a value of 10.44 per cent. Higher mark-up implied higher costs to the customer and subsequently to the stakeholder. PHC earned a higher mark up due to the lesser quantity transacted. It is also evident that on an average, there is a post-harvest loss of 10 -12 per cent in PHC level, 18 – 20 per cent from PHC to Wholesaler level and 25 - 30 per cent from wholesaler to retailer level due to inappropriate handling by multiple intermediaries in the value chain. All the stakeholders do not work in a synchronized way in this value chain.

In GVC2 (Sell to PHC Chain), for grapes CA adds a value of 12.59 per cent, the retailer adds a higher value of 9.95 per cent. Higher mark-up implied higher costs to the customer and subsequently to the stakeholder. CA earned higher mark up for higher quantity transacted.

Figure 1.11: Value Chain - 2 (GVC2: Sell to Commission Agent)

The chain length reduced in VC3 (Sell to WH Chain) with only 2 intermediaries. It showed an increased mark-up than the other, co-exist value chains. Wholesalers and retailers assured better mark up due to higher quality fruits, due to less handling and transactions.

Figure 1.12: Value Chain - 3 (GVC3: Sell to Wholesaler)

Figure 1.13 illustrated State-of-art value chain process (GVC4). For grapes, the agents added a value of 8.14 per cent; retailers earned a mark-up of 6.36 per cent. The post-harvest losses due to handling were significantly reduced to 4.53 per cent at the retailer level in this chain. All stakeholders worked in a synchronized way.

Figure 1.13: GVC-4 (Modern Value Chain)

1.6.2 Marketing Efficiency for Different Grapes Value Chains in Vijayapura

The total marketing costs for different intermediaries indicate that the traditional value chain incurred higher cost of Rs 22.83 per kg, on comparability with the State-of-Art value chain which incurred Rs 19.71 per kg of grapes.

Table 3: Marketing Efficiency for Different Grapes Value Chains in Vijayapura

(Rs/kg)

I.	Marketing Cost Drivers	Traditional Value Chain			State of Art Value Chain
		GVC1	GVC2	GVC3	GVC-4
1	Cost incurred by the Producer	0	9.72	9.5	0
2	Cost incurred by the PHC	9.7	0	0	0
3	Cost incurred by the CA	4.78	4.78	0	0
4	Cost incurred by the Wholesaler	0	0	7.41	0
5	Cost incurred by the CDC	0	0	0	7.3
6	Cost incurred by the Retailer	8.35	8.2	8.3	12.41
	Total Marketing cost of the intermediaries	22.83	22.7	25.21	19.71
II	Margin				
1	Margin of the PHC	2.8	0	0	0
2	Margin of the CA	8.32	5.52	0	0
3	Margin of the Wholesaler	0	0	3.73	0
4	Margin of the Retailer	6.33	4.47	4.68	3.7
5	Margin of the CDC	0	0	0	4.67
	Total Margin of the of the intermediaries	17.45	9.99	8.41	8.37
III	Farmer's Share in Consumer's Rupee				
1	Farmer's price (selling price)	27	26.4	27.6	34
2	Consumer's price (purchase price)	67.5	49.38	51.7	62
	Farmer's share in consumer rupee	40	53.46	53.38	54.83
IV	Marketing Efficiency				
1	Value of goods sold (Consumer Rupee)	67.5	49.3	51.7	62
2	Total Marketing Cost	22.83	22.7	25.21	19.71
3	Total Margin	17.45	9.99	8.41	8.37
4	Total Marketing Cost +Total Margin	40.28	32.69	33.62	28.08
5	Index of Marketing Efficiency	1.96	1.17	1.05	2.15

The total marketing margins for different intermediaries calculated inferred that, the margin was higher (Rs 17.45 per kg) in the traditional value chain, when compared with the State-of-Art value chain which incurred a lower margin of Rs 8.37 per kg of grapes. The share of farmers in consumer rupee is lower in the traditional value chain (53.46 per cent), State-of-art value chain gained a better share of 54.83 per cent of consumer rupee.

The higher index indicates higher degrees on chain efficiency. Farmers selling improved of grapes directly to Agents with Cold Storage facility present the most efficient value chain arrangement (IME is 2.15) higher than traditional value chain. The farmers who sell improved Grape through a complex chain of 2 to 3 actors presents the less efficient value chain arrangement (IME is 1.05).

CONCLUSIONS

The findings of the study indicated that the marketing of grapes is a profitable business. Thus the selected grapes in Northern Karnataka are shown to be more efficient. Vijayapura district was highly efficient in value chain compared to Bagalkot and Belagavi districts of Northern Karnataka due to higher index indicate higher degrees of chain efficiency. The modern value chain of grape was selected based on its distinguishing features that can be compared with the traditional grape, chain in Bagalkot and Belagavi district, in terms of its ability to operate competitively and innovatively to survive in

the industry, its supply to retail outlets and its willingness to provide access to its members. Because farmers selling improved premium grapes directly to agents with cold storage facility present the most efficient value chain arrangement higher than traditional value chain so it is recommended that instead of traditional method farmers are better to use a modern method.

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