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Dynamics of Marketing and Export Potential Of Litchi In Muzaffarpur District Of Bihar

Janmejay Kumar*, Nikky Kumari and Nahar Singh
Department of Agricultural Economics, SHUATS, Prayagraj-211007, INDIA
Email:- janmejaykumarrau@gmail.com

ABSTRACT
Present study was conducted to determine the current status of marketing and export of litchi. The present study based was on the primary data collected from 120 randomly selected Litchi growers from eight villages i.e. 15 from a village of Mushhari and Muroal blocks in Muzaffarpur district of Bihar state. More over the information related to marketing cost, and margin was collected from pre-harvest contractors, , harvest contractors, wholesalers, retailers market intermediaries from Muzaffarpur district, block and distant markets. The feasibility of export of litchi from Muzaffarpur to European markets has taken a new dimension with the fast changing technology in the exporting of fruits since 1993. The study also intended to find out marketing system and marketing channels followed by growers in domestic and overseas as marketing, marketing costs, marketing margin incurred price spread and marketing efficiency resulted in domestic markets. Along with, trend in area, production, productivity, export Four channels of marketing were identified viz, Channel I (Producer –consumer), Channel II (Producer – Retailer – Consumer), Channel III (producer – wholesaler- retailer–consumer) and Channel IV (producer -Commission agent -wholesaler – retailer –consumer). The producer's share in consumer rupee in channel Istis highest since it is the shortest channel (83.64 percent) where as the producer's share in consumer rupee in channel I, channel II and Channel III are 72.72 percent 65.45 percent and 54.54 percent respectively.The price spread in channel I is the lowest because it is the shortest channel (Rs.900) where as the price spread in channel 1I, channel III and channel IV are Rs. 1500, 1900, and 2500 respectively.The marketing efficiency for channel I, II, III and IV were 5.11, 2.66, 1.89 and 1.09 respectively. It is observed from this efficiency index that channel I was the most efficient one. This is because of the fact that channel I does not involve intermediary. The growth rate analysis indicated that, the export of litchi from Muzaffarpur and from India increased by 1.64 and 6.34 percent per annum during the period of 2001-02 to 2015-16.
Keywords: *Litchi, marketing channels, marketing efficiency, export potential and Muzaffarpur.*

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INTRODUCTION
Litchi (*Litchi chinensis*) is the important sub-tropical evergreen fruit crop, belonging to family sapindaceae and originated from china during 300 years ago. Litchi reached India through Myanmar by the end of the 17th Century and then spread over in many tropical and subtropical area of the world. Its homeland, china still remains the biggest producer of Litchi. India is the second largest Litchi producing Country in the world. Beside India, it is cultivated extensively in temperature regions or Australia, South Africa, Thailand, Mauritius and Hongkong etc. Litchi is famous for its excellent quality pleasant flavor and attractive red color. Litchi fruit contains about 60 percent Juice, 8 per cent of rag, 19 percent seed and 13 percent rind which depends upon the varieties and the climate under which it is grown. The principle chemical constituents are carbohydrates, organic acids, vitamins, pigments, protein and fat. Litchi fruit is considerably rich in sugar and the sugar

content in fruit of Indian varieties varies from 6.74 to 18.0 per cent with the average of 11.85 per cent. Litchi is also an excellent source of vitamin 'C' (ascorbic acid) ranging from40.20 to 90 mg/100 g. It also contains protein (0.8-0.9 % fat (0.3 %) pectin (0.42 %) and minerals specially calcium phosphorus and iron (0.7 %). ThusLitchi fruits add to the country's total production of bulky food over and its nutritive values, which is of ultimate utility at the present Juncture under nutrition.

Litchi being a temperature sensitive fruit the access to market is constrained by unavailability of cool chain facilities to transport it to distant markets. It is important to reach the produce to distant locations at ambient temperature within 24-36 hours after plucking, in order to retain its desired color. The supply chain from farm to final consumers outside the state market is not so efficient to maintain the timings. Hence refrigerated truck and cool chain facilities are essential for targeting larger markets for export markets. Litchi requires some processing to increase its self-processing to increase its self-life. AdditionallyLitchi is also processed for pulp, Juices, canned, for preservation. Currently there are about 5 pack houses Litchi processors in the state. Litchi is negligibly exploited at Post harvest level for processing and value addition. This situation would normally encourage effort to develop various Litchi products like nut, canned fruits juices, squash, Jam, Jelly, wine etc. product diversification will lead to income and employment generation in the agro processing sector.

Litchi market can be broadly classified into three categories

- Domestic Market in Bihar
- National Market
- Export Market

Marketing of Litchi in India is largely dependent on the quantum of the produce available for sale, outside the state, within the country and outside the country. The quality of the produce as per the cultivator coder, infrastructure support for transport and market information system as well as the government policies play a vital role in marketing of highly perishable Litchi fruits.Most of the contractors market the Litchi fruits as per the convenience some work as commission agents of whole sale merchants, operating from metro-cities where same as financed by merchants and workers on their behalf. Few pre-harvest contractors also supply the produce to local processing unit and export houses.The potential of Litchi in India is unexploited so far high price disparities exist between the returns that the producers get and the consumers pay. The pre harvest contractor or the commission agent makes the maximum margin in Litchi marketing, as they only perform a transfer function without involving only other cost. The stockiest in Litchi sale adopts the undercover system and realizes higher margin.

At present about 37000 tons of Litchi are exported from India to the Middle East Europe, Russia and Canada.APEDA and NAFED are the export promoters of Indian Litchi. In the International Market Litchi are available from November to March from countries like Australia, Mauritius, South Africa and Madagascar conversely, the availability of fruit from Indian coincides with the period of least production in May to July. Most of the consumer'smarket prefers large, highly colored, sweet fruits with small seeds.The expansion of fresh Litchi market will develop on high quality of the fruits availability for a larger period through lengthening cropping season emergence a new supplier countries by sea transportation. The expansion of the fresh market will depend mainly on availability of high quality fruit in abundance, availability for a longer period by lengthening of fruiting seasons of transporting fruits by sea.India is accepted worldwide as a source for good quality Litchi as 'Shahi' and 'Rosecented' considered among the best varieties in the world. The harvesting season in India starts earlier then in the people's republic of china and Taiwan province the other main areas of Litchi production. This provides India with a significant marketing advantage especially in Europe. Even with respect to completion from Thailand which produces fruit at a similar time as India. India is a geographically closer to market. India has a well-established food processing and entrepreneurs are familiar with the technology and both equipment and trained manpower is readily available.The fresh fruit market of Litchi dominates the trade followed by dried and canned products. The main Litchi importing countries are the Middle East countries, European Union, The United States, Hong Kong, Singapore, Japan and Canada.

MATERIALS AND METHODS

A list of all the litchi growers in two blocks was prepared. The relevant information and wear collected from 40 litchi growers and 80 market intermediaries from all the blocks were randomly selected making the total sample of 120.

Four channels are identified based on the preliminary information;

> ➢ **Channel**-I: Producer - Consumer
> ➢ **Channel**-II: Producer-----Retailer - Consumer
> ➢ **Channel**-III: Producer – Wholesaler – Retailer- Consumer.
> ➢ **Channel**-IV: Producer – Commission agent – Wholesaler - Consumer.

The data were collected by survey method from the sample farmers, Local traders, wholesaler, retailers and consumer by interviewing them with the help of specifically prepared and pre tested schedules for the purpose. The information was collected for the agricultural year 2017-18. Each of the selected cultivators, local traders, wholesalers, retailers and consumers were contacted twice or three in order to fill in the schedules.

The marketing system, channel and efficiency of litchi Marketing, primary data from selected farmers of the villages were collected for the purpose. The information was collected on system of marketing and item wise cost incurred in the marketing of litchi on selected farmers to examine the price spread and channels of litchi marketing in Muzaffarpur market. Pre–Harvest Contractor, village traders, wholesaler's/commission agent, retails and consumer were contracted to obtain information's related to price received and paid per box of produce, as well as marketing cost incurred and margin taken at subsequent stages of its marketing.

A. Cost of marketing

The total cost incurred on marketing in cash or kind, by the producer-seller and by various intermediaries involved in the sale and purchase of the commodity till the commodity reaches the ultimate consumer was computed as follows.

$$C = \mathbf{Cf} + \mathbf{Cm1} + \mathbf{Cm2} + \mathbf{Cm3} + \text{........}\mathbf{Cmn}$$

Where,

C = Total cost of marketing of the commodity.

Cf = Cost paid by the producer from the time, the produce leaves the farm till sale.

Cmn = Cost incurred by the nth middlemen in the process of buying and selling the product.

B. Producer's share in consumer's rupees

It is the price received by the producer as a percentage in the consumer price.

$$Ps = (Pf/Pc) \times 100$$

If (Pc) is a consumer's price and (Pf) is the producer's price, then the producers share in consumer rupee (Ps) expressed as follows.

C. Marketing Margin of Middleman

This is the different between the total payments (cost + purchase price and receipts (sale price)of the middleman (Ith agency)

(a) Absolute Margin of the it middleman (Ami)

$$(Ami) = Pri – Ppi + Cmi)$$

(b) Percentage margin of the middleman (Pmi)

$$(Pmi) = \frac{Pri – Ppi + Cmi}{Pri} \times 100$$

Where,

Pri = total value of receipts per unit table (sale price)

Ppi = Purchase value of goods per unit (Purchase price)

Cmi = Cost incurred on marketing per unit.

D.Analysis of price spread under channels

It is the difference between the price paid by the consumer and the price received paid by the consumer and the price received by the producer. The price spread was work by using following method.

Where,

$$\text{Price spread} = Pp - Pr$$

Pp = Price paid by the consumer

Pf = Price received by the farmer

E.Analysis of marketing Efficiency under different channel

Marketing efficiency is a measure of market performance. The movement of goods from producers to the ultimate consumers at the lowest possible cost consistent with the provision of service desired by the consumers at lowest possible cost consistent with the provision of service desired by the consumers is termed as efficient marketing.

Shepherd's Formula

Shepherd (1965) suggested that the ratio of total value of goods marketed to the marketing cost could be used as a measure of marketing efficiency. The higher this ratio, higher would be the efficiency and vice-versa. This can be expressed in the following form.

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

Where,

ME = Index of marketing efficiency

V = Value of goods sold.

I =Total marketing cost.

Export analysis

The compound growth rates were estimated by fitting exponential foundation for the data. The equation fitted was of the following form

$$Y = ab^t$$

Where,

Y= Area (000ha)/production (000MT)/productivity (MT/ha)/

Export (Tonnes)/ Value (/kg)

a = constant

b= Regression coefficient

t = time period in years.

Finally, the annual rate of compound growth in area, production and productivity and export of litchi were work out by using the formula

r = (Antilog b -1) x 100

The significance of the estimated compound growth rates was tested with the help of student's't' test.

RESULTS AND DISCUSSION

Marketing channel

Marketing channels state that how produce passes through different agencies from producers till it reaches to the final consumer. It is essential to point out different marketing channels existing in litchi marketing.

Table 1 Marketing cost, marketing margin and price spread in channel-I
(Producer – Consumer)
No. of Respondent=120
S M L=50+45+25=120

S.N	Particulars	Value in Rupees/qntl	
		Value (Rs.)	Percentage of the consumer's price
1	Producer sale price to Consumers	5500	100
2	**Cost born by the producer**		
I	Packing martial	75.00	1.36
Ii	Grading, filling & stretching etc	100.00	1.82
Iii	Loading &Unloading charges	80.00	1.45
Iv	Damage fruit in transportation	150.00	2.72
V	Transportation charges	195.00	2.27
Vi	Miscellaneous labour charges	300.00	5.45
3	Cost born by the producer (i-vi)	900.00	16.36
4	Net price received by the producer	4600.00	83.64
5	Purchased price by consumers	5500.00	-
8	Producer's share in consumer rupee (%)	-	83.64
9	Price spread	900.00	16.36
10	Marketing Efficiency (%)		5.11

Price spread in channel I (Producer –Consumer)

Table 1 shows that marketing cost, marketing margin, and price spread for channel I. this is the direct channel in which producer sells his producer directly to the consumer with out the involvement of any intermediaries. Average marketing cost when producer sold their produce to consumers in the market was Rs.900.00 per quintal. Out of the total marketing cost incurred by the producer, miscellaneous labour charge was highest (Rs.300.00 / qtl) followed by transportation cost amount to Rs. 195.00 per quintal, damage fruit in transportation Rs 150.00 per quintal, Grading, filling & stretching Rs.100.00. packing martial Rs.75.00 per quintal respectively. Producer price of the producer to consumer was Rs.5500.00 per quintal in different farms size group.Net price received by the producer was Rs.4600.00 per quintal which constitute 83.64 per cent of the producer's share in consumer rupee.

Price Spread in Channel II (Producer – Retailer –Consumer)

In the second marketing channel of litchi, the producer sells his produce to the ailer in the local market. The retailer takes produce to nearby market andsell it to the end cnsumer. Various cost incurred by the producer was found to be Rs.900.00 per quintal in which maximum cost incurred by was damage fruit in transportation cost was highest(Rs 300.00/ quintal owed by transportation i.eRs. 195.00 per quintal, miscellaneous labour charge Rs. 150.00 per quintal, grading, filling & stretching Rs.100.00, loading& un loading charges Rs.80.00 per quintal and packing martial Rs.75.00 per quintal, respectively. The average selling price of the producer to the retailer was Rs.4900.00 per quintal while the net price received by the producer was Rs.4000.00 which constituted 71.67 percent of the consumer 's price .The total average cost incurred by the retailer on was Rs 600.per quintal, which included retailer margin (Rs 250.00 / quintal), loading & unloading charges (Rs.80.00 / quintal), damage fruit Rs.80.00 / quintal, transportation charge Rs. 50.00 per quintal,packing martial cost Rs.50.00 per quintal, miscellaneous charge (Rs.50.00 / quintal) The retailer sold the produce to the final consumer at Rs. 5500.00 per quintal include the margin Rs. 250.00 per quintal. The overall price spread in channel II was Rs 1500.00 per quintal and marketing efficiency of this channel was found to be 2.66 percent.

Table 2 Marketing cost, marketing margin and price spread in channel II
(Producer – Retailer – Consumer)
No. of Respondent=120 S M L 50+45+25=120

S.N	Particulars	Value in Rupees/qntl	
		Value (Rs.)	percentage of the consumer's price
1	Producer sale price to retailer	4900.00	89.00
2	**Cost born by the producer**		
I	Packing martial	75.00	1.53
Ii	Grading, filling & stretching etc	100.00	2.04
Iii	Loading &Unloading charges	80.00	1.63
Iv	Damage fruit in transportation	300.00	6.12
V	Transportation charges	195.00	3.98
Vi	Miscellaneous labour charges	150.00	3.06
3	Total cost born by the producer (i-vi)	900.00	18.36
4	Net price received by the producer	4000.00	71.67
5	**Sale price of producers to Retailer**	**4900.00**	
6	**Cost born by the Retailer**		
I	Packing Material cost	50.00	1.22
Ii	Grading, filling& Stretching etc	40.00	1.63
Iii	Loading &Unloading charges	80.00	1.63
Iv	Transportation	50.00	2.04
V	Damage of fruits	80.00	1.63
Vi	Retailer margin	250.00	
Vii	Miscellaneous charge	50.00	2.04
7	Total Cost Incurred by the producers (i-vii)	600.00	-
8	**Net price received by the consumer**	**5500.00**	-
9	Producer's share in consumer rupee %		72.72
10	Price Spread	1500.00	27.28
11	Marketing Efficiency		2.66

Price spread in channel III

In the third marketing channel, the wholesaler himself approaches the producer and purchase their produce at field level directly and takes produce to the wholesale market and dispose it the retailers. The marketing cost and the marketing margin of the prouder and the intermediaries of marketing is shown in the table 5.21. The price spread analysis of the channel reveals that total average cost incurred by producer included miscellanies charge. Rs. 300.00 / quintal) .followed by on grading, filling and stretching(Rs.100.00/quintal) and transportation charge Rs.195.00 per quintal .The producer sold the sold the produce to the wholesaler at a price of Rs.4500.00 per quintal. The net price received by the producer was Rs.3600.00 per quintal which accounts for 65.45 of the consumer's rupee. The cost incurred by the wholesaler was Rs.400.00 per quintal. The major component of wholesalerexpenditure Includes wholesaler margin Rs.160.00 per quintal, damage fruit Rs.50.00 per quintal,packing martial Rs. 50.00 per quintal, grading, filling & stretching Rs.40.00 per quintal respectively

Table 3 .Marketing cost, Marketing margin and Price spread in channel III
No. of Respondent = 120 S M L 50+45+25 =120
(Producer – wholesaler – Retailer-Consumer)

S.N	Particulars	Value in Rupees/qntl	
		Value (Rs.)	percentage of the consumer's price
1	Producer sale price to wholesaler	4500	81.82
2	**Cost born** by **the producer**		
I	Packing martial	75.00	1.16
Ii	Grading, filling & stretching etc	100.00	2.22
Iii	Loading &Unloading charges	80.00	1.77
Iv	Miscellaneous labour charges	300.00	6.66
V	Transportation charges	195.00	4.33
Vi	Damage fruit in transportation	150.00	3.34
3	Cost born by the producer	900.00	20.00
4	Net price received by the producer	3600.00	70.00
5	**Purchased price by wholesaler**	**4500.00**	
6	**Cost born by the wholesaler**		
I	Packing Material cost	50.00	1.11
Ii	Grading, filling& Stretching etc	40.00	1.66
Iii	Loading &Unloading charges	25.00	1.00
Iv	Transportation	40.00	0.88
V	Damage fruit	50.00	1.11
Vi	Miscellaneous charge	35.00	1.88
Vii	Wholesaler Margin	160.00	
7	Total Cost Incurred by the wholesaler (i-vi)	400.00	6.66
8	**Sale price of Wholesaler to Retailer**	**4900.00**	-
9	**Cost Incurred by retailers**		
I	Packing Material cost	50.00	1.33
Ii	Grading, filling & starching etc	40.00	1.77
Iii	Loading & Unloading charge	80.00	1.77
Iv	Transpiration charge	50.00	2.22
V	Damage fruit in transportation	80.00	1.77
Vi	Retailer's Margin	250.00	
Vii	Miscellaneous charge	50.00	2.22
10	Total cost incurred by retailer(i-vii)	600.00	11.11
13	**Sale price of Retailers to Consumers**	**5500.00**	**100**
14	Price Spread	1900.00	34.55
15	Producer's share in consumer rupee		65.45
16	Marketing Efficiency %		1.89

The margin of the wholesaler accounted for Rs.160.00 per quintal. The whole sealer further sold the produce to the retailer at Rs 4900.00 per quintal .The cost incurred by the retailer was Rs 400.00 per quintal which includes wholesaler margin Rs.160.00 per quintal .packing martial charge Rs. 50.00/ quintal damage fruit Rs.50.00 per quintal,

transportation cost Rs.40.00 per quintal and miscellaneous expenses Rs. 50.00 per quintal .The retailer finally is the produce to the end consumer at Rs. 5500.00 per quintal include to marginofRs.250Per quintal. The price spread in this channel which is the difference between price paid by the consumer and price received by the producer is Rs.1900.00 per quintal while the marketing efficiency was estimated to be 1.89 percent.

Price spread in channel IV

The fourth marketing channel, producer sent their produce to commission agent in the wholesale mandi situated in company bag , Muzaffarpur. The commission agent sells the produce to the distant wholesaler at the commission of 10 percent . The commission agent their by dispose the produce to distant wholesaler which is further sold to the retailer of near by market. Various cost and margin involved in IV are shown in the 5,22 The total cost incurred by grower was Rs.600.00 per quintal and include commission charge @10 percent Rs.300.00/ quintal, transportation charge Rs.100.00 per quintal , loading& unloading charge Rs. 50.00 per quintal, grading, filling and starching charge Rs.50.00 per quintal. Net price received by the litchi grower was Rs.3000.00 per quintal which account for 83.34 per cent of the consumer's rupee. The grower sell the produce to commission agent at price of Rs.3600r .00 per quintal. The total cost incurred by the commission agent was Rs. 600.00 per quintal The major components of commission agent's expenditure includes miscellaneous expenses (Rs.100.00/ quintal) The margin of the commission agent accounted for Rs.250.00 per quintal. The commission agent then forward to the produce distant wholesaler at Rs. 3600.00 per quintal. The cost incurred by the distant wholesaler amount to Rs.600.00 per quintal which included packing martial cost(Rs.50.00/ quintal).damage fruits (Rs.50.00/ quintal), loading/unloading expenses Rs 25.00per quintal. The distant wholesaler gets the margin of Rs. 250.00 per quintal. The distant wholesaler sell the produce to the retailer at Rs.4600.00 per quintal . The cost incurred by retailer amount Rs.4600.00per quintal which includes loading/unloading charge (Rs.80.00 / quintal), transportation charge(Rs.60.00 per quintal),damage fruit transportation Rs. 90.00 per quintal and miscellaneous expenses Rs. 100.00 per quintal. The retailer add his margin of Rs.250.00 per quintal and sell the produce to the end consumer at Rs. 5500.00 per quintal. The price spread in this channel amount to Rs. 2500.00 per quintal. The marketing efficiency of this channel was estimated to be 1.20 per cent . Thus, the above analysis clearly shows that longer the channel and more the number of intermediaries in the system ,bigger the price spread and the share of producer in consumer rupee declines.

Table 4 ;Marketing cost, marketing margin and price spread in channel IV
(Producer- Commission agent – wholesaler – Retailer-Consumer)
NO. of Respondent = 120
S M L 50 +45+ 25 =120

		Value in Rupees/qntl	
S.N	Particulars	Value (Rs.)	Percentage of the consumer's price
1	Producer sale price to Commission agent	3600.00	65.45
2	**Cost born bythe commission**		
I	Packing martial	25.00	0.69
Ii	Grading, filling & stretching etc	50.00	1.38
Iii	Loading &Unloading charges	50.00	1.38
Iv	Miscellaneous labour charges	25.00	0.69
V	Transportation charges	100.00	2.77
Vi	Commission charge@10 per cent	300.00	8.33
Vii	Damage fruit in transportation	50.00	1.38
3	Total cost born by commission agent	600.00	16.66
4	Net price received by the producer	3000.00	83.34
5	**Purchased price by commission agent**	**3600.00**	**100.00-**
6	**Cost Incurred by commission agent from producer /contractor**		
I	Precooling expenses	50.00	1.38
Ii	Wholesaler 's Margin	250.00	6.94

Iii	Miscellaneous Expenses	100.00	2.77
7	Total cost incurred by Commission Agents (i-iii)	400.00	11.12
8	**Sale Price of commission agents to Whole sellers**	**4000.00**	**100.00**
9	**Cost Incurred by the wholesaler**		-
I	Packing Material cost	50.00	1.38
Ii	Grading, filling& Stretching etc	40.00	1.11
Iii	Loading &Unloading charges	25.00	0.69
Iv	Transportation	40.00	1.11
V	Damage fruit	50.00	1.38
Vi	Miscellaneous charge	35.00	0.97
Vii	Wholesaler Margin	250.00	6.94
	Total cost incurred by retailer(i-vii)	600.00	16.66
10	**Sale price of Wholesales to Retailers**	**4600.00**	**83.63**
I	Packing Material cost	70.00	1.94
Ii	Grading, filling & starching etc	50.00	1.77
Iii	Loading & Unloading charge	80.00	1.77
Iv	Transpiration charge	60.00	2.22
V	Damage fruit in transportation	90.00	1.77
Vi	Retailer's Margin	250.00	6.94
Vii	Miscellaneous charge	100.00	2.22
12	Total cost incurred by retailer(i-vii)	600.00	11.11
13	**Sale price of retailer to consumer**	**5500.00**	**100.00**
14	Producer's share	-	54.54
15	Price Spread	2500.00	45.46
16	Marketing Efficiency %		1.20

Price spread and Producer's share in consumer's rupee under different marketing channel of Litchi

Table 5 revels the total marketing cost , total marketing margin, price spread and producer's share in consumer's rupee in the four different marketing channels. The total marketing cost was highest in channel IV (Rs. 2000.00 / quintal), followed by channel III (Rs.1700.00 / quintal), channel II (Rs. 1500.00 / quintal) and channel I (Rs. 900.00 / quintal) respectively. Price spread of channel IV was highest (Rs. 2500.00/quintal followed by channel III (Rs. 1900.00 per quintal), channel II (Rs. 1500.00 per quintal and channel I (Rs.900.00 per quintal) respectively. The marketing efficiency under different marketing channel was worked out by using Acharya's Method and revealed that channel I was found to be most efficient with marketing efficiency of 5.11 percent compared to 2.66 percent in channel II, 1.89 percent in channel III and 1.02 percent in chnannel IV .The low marketing efficiency in channel IV was due to higher number of marketing intermediaries in this chain which raises the marketing cost and the margins in the channel and eventually brings down the producer's price.

Table:5 **Price spread and Producer's share in consumer's rupee under different marketing channels of Litchi**

S.N	Particulars	Channel -1	Channel -2	Channel -3	Channel -4
1	Total marketing cost	900.00	1500.00	1700.00	2000.00
2	Total marketing margin	-	250.00	450.00	750.00
3	Price spread	900.00	1500.00	1900.00	2500.00
4	Producer's share	83.64	72.72	65.45	54.54
5	Marketing efficiency	5.11	2.66	1.89	1.02

Trend in export of litchi from Muzaffarpur.

The information about year wise quantity exported from Muzaffarpur and India. Muzaffarpur share in India's total export, per kg price realization and results of compound growth rates as well as percent change over base year are given in table 5.18

Table 6: Trend of export of litchi from muzaffarpur and India (2001-02 to 2015-16)

S. No.	Year	Quantity exported		value (kg)	Muzaffarpur percent share in Export
		Muzaffarpur	India		
1.	2001-02	53	300.00	12.00	17.67
2.	2002-03	42	347.00	20.46	12.10
3.	2003-04	46	962.00	13.93	4.78
4.	2004-05	25	544.00	13.03	4.59
5.	2005-06	22	718.00	13.04	3.06
6.	2006-07	30	1661.00	98.90	1.80
7.	2007-08	40	1615.00	39.28	24.76
8.	2008-09	50	1546.50	100.80	3.24
9.	2009-10	21	545.40	163.01	3.85
10.	2010-11	46	1186.11	135.85	3.87
11.	2011-12	39	319.94	38.76	12.18
12.	2012-13	24	794.86	118.13	3.01
13.	2013-14	49	457.49	28.22	10.71
14.	2014-15	45	961.43	215.18	4.68
15.	2015-16	42	708.86	5.49	5.91
	CGR	-1.64 **	6.34***	17.55**	7.52***
	CV	28.60	59.98	79.73	84.29
	% change from base year 2001-02	20.75	70.88	54	66.55

Quantity – tonnes, value - Rupee /kg
Note; *, * * ,and * * * indicate significance at 10, 5 and 1 percent level of significance.

From the table 6 it can be concluded that there wear increase in export from India both in quantity and value terms. The compound growth rate for quantity exported stood at 6.34 and for value 17.55 which are significant at 1 per cent and 5 per cent level of significance respectively . Although Indian litchi has excellent quality and praised all round the world and there is chance of harnessing the export competitiveness of litchi fruit in different world market which can be seen from increasing trend. The export of litchi from Muzaffarpur has also marked increase during the same period of 2001 -2002 to 2015-2016. The calculated annual compound growth rate was -1.64 which is significant at 5 percent level of significance. The percentage change over the base year also increase by 20.75 percent but it is quite less when compared with the percentage change from the export country level which as high as 70.88 percent in quantity term .this comparison made as to conclude that although the export from Muzaffarpur also increase but its share in total countries litchi export is declining which had compound growth rate negative at 7.52 which is significant.
The coefficient of variance of quantity exported from Muzaffarpur was26.60 per cent, while it was 59.98 percent for the quantity exported from India during 2001-02 to 2015-16. It shows the consistency in quantity exported is more in Muzaffarpurthen at country level, Moreover the coefficient of variance for value of export interms of Rs/kg was 79.73 for the same period. This indicates there was large variation in per kg price realized during the period.
The detailed information about the triennium average quantity of litchi exported and value (Rs. / kg) realized to different countries before and after creation of agri export Zone is presented in table 7.

Table 7 Country wise triennium average export and per kg price realization before and after creation of Agri Export Zone (2005-2008 & 2013-2016)

S. No.	Country	2005-2008		2013-2016		% change
		Qunty (Kg)	Rs. / Kg	Qunty (Kg)	Rs. / Kg	
1.	Bangladesh	0	0	555500	77.63	
2.	Nepal	66.67	24.99	175430	25.31	1.28
3.	UAE	3684	31.46	18700	50.80	61.47
4.	Germany	203.34	23.77	600	50.00	110.35
5.	UK	2733.34	54.25	400	255.00	370.04
6.	Oman	706.67	29.86	0	0.00	
7.	Canada	766.67	18.39	60	66.67	262.53
8.	Bahamas	0	0	260	65.38	
9.	Bahrain	10096.67	44.55	130	61.54	38.13
10.	Total	170453	46.85	751133.34	136.81	192.01

Source: Export statistics for agro & food product 2016-17 & NHB Database 2015

Table shows that , the India mostly export litchi few neighbour countries like Bangaladeash, Nepal Arabian countries like UAE, bahrin Canada and European countries as Germany and United Kingdom. The table depicts that the triennium average of quaitityexpoted to different countries had shown increase from 170453 kg to 751133.54 kg before and after creation of Agri Export Zone respectively. The average per kg. Price also has increased from 46.85 to 136,81Rs.per kg after AgriExportZone formation. The per kg was highest to United kingdom which was 255 and lowest in case of Nepal 25.51 per kg. The price realized in Bangladesh was 77;63 per kg while in Arab countries average price gained was in the range of 50.81 to 66.67.Thud export to UK was most profitable followed by Bangladesh and Arab countries. The price of litchi per kilogram has increased in all the countries The change in price before and after formation of Agri export zone was highest (370.04 percent in UK followed by Canada 9262.53) The least increase in price was observed in case of Nepal (1,28 percent) Ear liar formation of Agri Export Zone export to Bangladesh has increased. India has stopped export of litchi to Oman which was regular importer of Indian litchi before creation of Agri Export Zone.

CONCLUSION

Marketing efficiency index (MEI) represents the effectiveness of a marketing system which it operates. The marketing efficiency for channel 1, 2, 3, and 4 were 5.11, 2.66, 1.89 and 1.02 respectively. It observed from this efficiency index that channel 1 was the most efficient one. This because of that fact that channel 1 does not involve any intermediary and hence. This channel was more efficient then channels 1 channel 2 and channel 3. The channel 2 the least efficient one because of the length their marketing channel and multiplicity of margin to the intermediaries and losses due to spoilage. The export trend from India and Muzaffarpur was together significant during the period in both quantity and value terms. However, the export to European countries was very less in volume before and after formation of agri export zone but it is quite profitable as per kg price has shown highest increase.

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