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Naveed Hamid
Faculty, Division of Agricultural Economics & ABM SKUAST Jammu, Chatha, Kashmir, Jammu Kashmir, India

Jyoti Kachroo
Faculty, Division of Agricultural Economics & ABM SKUAST Jammu, Chatha, Kashmir, Jammu Kashmir, India

Anil Bhat
Faculty, Division of Agricultural Economics & ABM SKUAST Jammu, Chatha, Kashmir, Jammu Kashmir, India

Quadri Javeed Ahmad Peer
Division of Agricultural Extension and Communication. FoA, Wadura SKUAST-Kashmir, Jammu Kashmir, India

An economic analysis of marketing and price spread of saffron in J&K State

Naveed Hamid, Jyoti Kachroo, Anil Bhat and Quadri Javeed Ahmad Peer

Abstract
The research was conducted in district Pulwama of Kashmir region. Ten villages from the district were selected on the basis of highest saffron grown area. Then from each village samples of farmers, commission agents, wholesalers and retailers were randomly selected, so as to constitute a total sample size of 95 which comprised of 50 farmers/growers, 15 wholesalers, 20 retailers and 10 agents. Secondary data was collected from various published sources such as bulletins of the Ministry of Agriculture, Govt. of India, Directorate of Economics and Statistics, Govt. of India, Directorate of Economics and Statistics, Govt. of Jammu and Kashmir and Primary data regarding saffron crop was done by interviewing the saffron farmers, retailers and wholesalers with the specially structured schedules and by visiting growers, various markets and contacting various intermediaries involved in marketing of saffron crop. In India almost entire production of saffron comes from the valley of Kashmir. Although, in terms India ranks second after the Iran in terms of area and production, but ranks fifth in terms of productivity among the top seven saffron producing countries of the world. It has also been observed that in Kashmir valley production as well as area under saffron cultivation has shrunk over the past few years causing a setback to this important activity. Some of the major causes responsible for low productivity are primarily attributed to lack of proper irrigation facilities and traditional unscientific methods of cultivation. Compound growth rate of area, production and productivity had shown a declining trend during the last fourteen years due to conversion of saffron land for commercial purposes. Apart from using Acharya's technique for analyzing the marketing cost, marketing margins and price spread, Shepherds' index was used for computing the marketing efficiency. The study revealed that the maximum marketing, margins were grabbed by intermediaries (retailers & agents) followed by wholesalers leaving saffron growers with an unfair margin. The chain actors who usually performed the task of grading, picking, sorting etc incurred maximum marketing cost in both the channels. The results also revealed that the producer's share in consumer's rupee was more in channel-I as compared to the Channel-II of the sample area. The study revealed that there was considerable scope to increase the producers share in the consumers rupee if the number of intermediaries is reduced & the government intervenes pro-actively in order to organize saffron organized markets and by framing the farmer's clubs and unions so that the farmer use these unions as profitable channels to sell their produce.

Keywords: Saffron, marketing, chain actors, intermediaries, producer's share, consumers.

Introduction
Saffron is having the lot of commercial value and is having the potential to earn the foreign exchange as well as to provide the livelihood security to the poor growers of the state. Saffron falls under the category of spices and the spice board of India (The Spices Board of India (Ministry of Commerce, Government of India) is the apex body for its export promotion. Established in 1987, the Board is the catalyst of these dramatic transitions. The Board plays a far reaching and influential role as a developmental, regulatory and promotional agency for Indian Spices. Spices are strongly flavoured or aromatic substance of vegetable origin, obtained from tropical plants, commonly used as a condiment". Spices were once as precious as gold. India plays a very important role in the spice market of the world. India produces a wide range of spices. Having varying climates from tropical to sub-tropical to temperate almost all spices grow splendidly in India. Almost all the states and union territories of India grow one or the other spices. Under the act of Parliament, a total of 52 spices are brought under the purview of Spices Board. However 109 spices are notified in the ISO list. The Indian spices can be categorized into three main categories as basic, complimentary and aromatic or secondary spices (Saffron). At present, production is around 3.2 million tonnes of different spices valued at approximately 4 billion US $, and holds a prominent position in world spice production. With global demand for spices and spices products rising, India is targeting exports of 2.3 billion US dollars in 2013-14 fiscal even as Rs 9,433 crore worth spices were shipped during April-December last year.

Correspondence
Quadri Javeed Ahmad Peer
Division of Agricultural Extension and Communication. FoA, Wadura SKUAST-Kashmir, Jammu Kashmir, India

The total volume of spices and spices products exported in the nine month period of April-December 2013 was 5,71,680 tonnes, valued at Rs 9,433 crore, a 41 per cent growth in rupee terms and 27 per cent both in volume and dollar terms. During the same period of the previous fiscal, as much as 4, 49,926 tonnes valued at Rs 6,696 crore ($1232 million) was exported. For 2014-15 fiscal also the board was targeting spices exports of $2.3 billion. **(**Spice board of India**)**

The countries like Iran, Spain and India are the major saffron producing nations of the world with Iran contributing to the 88 per cent of the world's saffron production and at the same time India contributes around 7 per cent of the total production with the average productivity of 2.30kg/ha (Anonymous). Production of saffron in India is restricted to the states of Jammu and Kashmir and Himachal Pradesh with the area of around 4265 hectares and annual production 7.50 MT. out of this about 2469.02 hectares lie exclusively in Jammu and Kashmir State. In Jammu and Kashmir which is considered as the second largest contributor of saffron to the global market, the cultivation is confined to district Pulwama, Budgam and Doda (kishtwar). District Pulwama accounts for 75 per cent of total area under saffron in the state followed by the District Budgam accounting for 16.13 per cent of the total area. District Srinagar accounts for 6.68 per cent whereas, Poochal, Namil, Cherrad, Hullar, Blasia, Gatha, Bandakoota and Sangrambatta of District kishtwar account for 2.5 per cent of the total area of the state.

Objectives of the study
1. Understanding the status of saffron.
2. To examine the marketing, price spread and efficiency of the saffron.

Review of Literature
Singh (1981) while conducting study on "Imbalances in Agricultural Growth" and found that an uneven growth rate of individual crop has led to the regional imbalances in the rural prosperity. Rice is the main cereal crop in most of states, even in this crop also the growth rate has not been uniform in the different states. Agriculture is the main income generation factor in rural India. There is any imbalance evidence in growth led to imbalance among the regions and states.

Bhat *et al.* (2012) studied about the marketing efficiency of Kashmir apple. Marketing efficiency is important for increase in production and fair returns to apple growers. Marketing efficiency is measured in terms of price spread. Lesser price spread means more marketing efficiency and vice versa. They talked about three marketing channels and have concluded that marketing channel i.e., Grower to consumer is having less price spread and more returns to growers but is rare in practice due to lack of marketing information, credit and institutional facilities, small holdings.

Materials and Methods
The Jammu and Kashmir state is divided into three regions-Jammu, Kashmir and ladakh. The Kashmir region of the state was selected purposively as per the requisition of NABARD whose project was undertaken by the researcher. Thus Pulwama district was selected purposively on the basis of area of saffron under cultivation i.e., 75 per cent out of the total area under this crop

A multi stage random sampling was adopted for the selection of samples. District, villages and growers (saffron) were first, second, third and fourth stage units respectively. Pulwama district of Kashmir region was selected because the district

covers the maximum area under saffron cultivation and production as well. The villages were selected on basis of highest area under saffron cultivation. A total of 95 sample respondents were selected from the District Pulwama. Total samples were distributed by various categories which are presented in table below. Saffron growers constituted 50 (52.63 per cent) of total sample while saffron wholesalers constituted 15 (15.79 per cent), retailers 20 (21.05 per cent) and different agents 10 (10.53 per cent) of total respectively.

List of selected district (villages)
One district for the saffron crop falling in Kashmir region of J&K state was selected for this study:

Selected district
(i) Pulwama

Selection of villages from district Pulwama

S.No	Crop	Name of Village
1		Chandhara
2		Befin
3		Barsoo
4		Lethpora
5	Saffron	Andrussu
6		Konibal
7		Dusoo
8		Kadlabal
9		Namlabal
10		Pampora

Compound annual growth rate (CAGR) is a business and investing specific term for the geometric progression ratio that provides a constant rate of return over the time period. CAGR is not an accounting term, but it is often used to describe some element of the business, for example revenue, units delivered, registered users, etc. CAGR dampens the effect of volatility of periodic returns that can render arithmetic means irrelevant. It is particularly useful to compare growth rates from different data sets such as revenue growth of companies in the same industry.

$$CAGR\,(t_0, t_n) = (V(t_n)/V(t_0))^{\frac{1}{t_n - t_0}} - 1$$

Where**;**
$V(t_0)$ = start value
$V(t_n)$ = finish value
$t_n - t_0$ = number of years.
The percent change from one period to another is calculated from the formula:

$$PR = \frac{(V_{Present} - V_{Past})}{V_{Past}} \times 100$$

Where:
PR = Percent Rate
$V_{Present}$ = Present or Future Value
V_{Past} = Past or Present Value
The annual percentage growth rate is simply the percent growth divided by N, the number of years.

Analysis of marketing
The data collected were tabulated and analyzed for examining the marketing cost margin, price spread and the marketing efficiency

Marketing margins, costs and loss
The post harvest loss at various stages of marketing has been included either in the farmer's net margin or market

intermediaries' margin. In the present study, the marketing loss at different stages has been used for separating the 'post harvest loss during marketing' at different stages of marketing as well as for estimating the producer's share, marketing margins and marketing loss.

Net Farmers Price
The net price received by the farmer will be estimated as the difference in gross price received by him and sum of his marketing costs and value loss during harvesting, grading, transit and marketing. Thus, the net farmer's price is expressed mathematically as follows:
$NP_F = GP_F - \{C_F + (L_F \times GP_F)\}$ or
$NP_F = \{GP_F\} - \{C_F\} - \{L_F \times GP_F\}$ (1)
Where NP_F is net price received by the farmers (Rs/10gm),
GP_F is gross price received by the farmers or wholesale price to farmers
(Rs/10gm),
C_F is the cost incurred by the farmers during marketing (Rs/10gm),
L_F is physical loss in produce from harvest till it reaches assembly market
(per10gm).

Marketing Margins
The margins of market intermediaries include profit and return, which accrue to them for storage, the interest on capital and establishment after adjusting for the marketing loss due to handling. The general expression for estimating the margin for intermediaries is given below.
Intermediaries = Gross price – Price paid – Cost of – Loss in value
Margin (sale price) (cost price) marketing during wholesaling
Net marketing margin of the wholesaler is given mathematically by
$MMw = GPw - GPF - Cw - (Lw \times GPw)$ or
$MMw = \{GPw - GPF\} - \{Cw\} - \{Lw \times GPw\}$ (2)
Where MMw is net margin of the wholesaler (Rs/10gm),
GPw is wholesaler's gross price to retailers or purchase price of retailer
(Rs./10gm)
Cw is cost incurred by the wholesalers during marketing (Rs./10gm),
Lw is physical loss in the produce at the wholesale level (per 10gm)

In the marketing chain, when more than one wholesaler is involved, i.e., primary wholesaler, secondary wholesaler, etc, then the total margin of the wholesaler is the sum of the margins of all wholesalers. Mathematically,
$MMw = MMw1 + …….. + MMwi + …….. + MMwn$
Where MMwi is the marketing margin of the i-th wholesaler.
Net marketing margin of retailer is given by:
$MMR = GPR - GPW - CR - (LR \times GPR)$ or
$MMR = \{GPR - GPW\} - \{CR\} - \{LR \times GPR\}$ (3)
Where MMR is net margin of the retailer (Rs./10gm),
GPR is price at the retail market or purchase price of the consumers (Rs./10gm)
LR is physical loss in the produce at the retail level (per 10gm),
CR is the cost incurred by the retailers during marketing (Rs./10gm).

The first bracketed term in equations (1), (2) and (3) indicates the gross return, while the second and third bracketed terms indicate respectively the cost and loss at different stages of marketing.

Thus, the total marketing margin of the market intermediaries (MM) is calculated as
$MM = MMW + MMR$ (4)
Similarly, the total marketing cost (MC) incurred by the producer/ seller and by various intermediaries is calculated as
$MC = CF + CW + CR$ (5)
Total loss in the value of produce due to injury/ damage caused during handling of produce from the point of harvest till it reaches the consumers is estimated as
$ML = \{LF \times GPF\} + \{LW \times GPW\} + \{LR \times GPR\}$ (6)

Marketing Efficiency
Most commonly used measures are conventional input to output marketing ratio, Shepherd's ratio of value (price) of goods marketed to the cost of marketing (Shephard, 1965) and Acharya's modified marketing efficiency formula (Acharya and Agarwal, 2001).

$$ME = \frac{NP_F}{MM + MC + ML}$$ (7)

Where NPF is net price received by the farmers (Rs/10gm),
MM is the marketing margin,
MC is marketing cost,
ML is marketing loss.

Results Nd Discussions
Country Wise area, production and productivity of saffron
The country wise area, production and productivity were depicted in table 1. From the above cited table, it is observed that Iran has the highest area (43,408 ha) under saffron cultivation followed by India i.e., 4265 ha, then Greece (1000ha) and soon. As far as its production is concerned again India follows Iran (174.00MT).but with regard to productivity, India rank is fifth. Italy, which has lowest area and production, rank first in productivity as is clear from the table.

District wise area under saffron cultivation and its Production
Table 2, provides an insight across the district wise area under saffron cultivation and its production. The above cited table highlights that in Jammu and Kashmir Pulwama appears to be at the highest scale in terms of area (1851.75 ha) and production having 1.85 MT, followed by Budgam 398.28 ha and production having 0.40 MT, while on the other hand Doda was having lowest area and production i.e., 61.73 ha and 0.06MT production.

Average domestic price of saffron in India in Rs/kg
Table 3 highlights the domestic price of saffron in India per kg during 2009-10 to 2014-15. The above cited table highlighted the monthly fluctuations of the domestic price of saffron. It has been identified that during 2009-10, the price ranges from 3.2lakh/kg to 1.7 lakh/kg from April to march. On the similar lines, the year 2013-14 highlights that the price/kg of saffron was lowest from 1.1lakh/kg in April with 1.85lakh per kg as highest during September and October. From the table, it was further observed that during 2014-15, the price of saffron was almost same throughout the year ranging from 1.63lakh/kg in April to 1.67lakh/kg. The domestic price on an average was highest during 2009-10 (2.70 lakh/kg) with lowest (1.11 lakh/kg) during 2011-12.

Table 1: Country Wise Area, Production and Productivity

Country	Area(ha)	Production (MT)	Yield (kg/ha)
Iran	43,408 (87.7)	174.00 (88.89)	4.00
India	4265 (6.59)	7,50 (3.83)	2.29
Greece	1000 (2.02)	4.30 (2.19)	4.30
Azerbaijan	675 (1.36)	3.70 (1.88)	5.48
Spain	600 (1.21)	5,00 (2.54)	2.00
Morocco	500 (1.01)	1,00 (.50)	2.00
Italy	29.4 (.06)	0.24 (0.12)	8.16
Total	49477.4	195.74	3.96

(**Source**: Annual Report of Directorate of Agricultural Jammu and Kashmir)
Note: figures in parentheses are percentages to total.

Table 2: District wise area under saffron cultivation and its production.

District	Area (hectares)	Production (MT)	Productivity (kg/ha)
Srinagar	157.28	0.16	1.01
Budgam	398.24	0.40	1.00
Pulwama	1851.75	1.85	0.99
Doda	61.73	0.06	0.97

(**Source**: Annual Report of Directorate of Agricultural Jammu and Kashmir)

Table 3: Average domestic price of saffron in India

Year	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15
APR	321000	178500	101000	-	111375	163750
MAY	321000	170500	-	-	130000	167500
JUN	301000	152250	-	-	135000	167500
JUL	308500	150950	-	-	141800	167500
AUG	304800	163500	121000	115500	162000	-
SEP	321000	163500	-	115500	185000	-
OCT	319600	151500	-	115500	185000	-
NOV	251000	133500	-	118000	163500	-
DEC	236000	131000	-	125500	160000	-
JAN	203167	131000	-	125500	159500	-
FEB	181375	126000	-	125500	162500	-
MAR	173500	106000	-	125500	162500	-
Average	270162	146517	111000	120813	154848	166563

(Source: Spice Board of India)

Compound annual growth rate of saffron in Jammu and Kashmir State in terms of area, production and yield presented in table 4. The table 4 depicted that on an average, the compound annual growth rate showed a declining trend in terms of area -5.80 per cent, production -3.28 per cent and productivity or yield -0.419 per cent respectively. In contrast to this while analyzing the growth rate over the period of time, there has been increase in area up to 14.62 per cent during 2004-05, afterwards continuous downtrend has been observed except for 2009-10, where the growth trend was highest of 15.4 per cent. On the similar lines the highest production as well as yield rate appears to be 68.52% and 79.53% during the year 2002-03 i.e, 68.52 per cent and 79.53 per cent respectively. It was further observed from the table that the annual growth trend was a mixture of increase and decrease. In some period, it increased, while in another, it decreased as is clear from the table.

Fig 5 depicted the size of population of saffron growers in rural and peri-urban area was 65.38 per cent and 34.62 per cent, respectively. Out the total male population of saffron growers, 65.21 per cent were in rural area and 34.79 per cent in peri-urban area and female population. It was 65.56 per cent and 34.44 per cent respectively while as in case of children's it was 71.71 per cent and 28.29 per cent respectively.

The average size of family and landholding of saffron farmers is presented in table 5. The perusal of table depicts that 42% of the saffron farmers with having an average landholding between 2.0 to 5.0 kanals are classified under the category of marginal farmers. Whereas 5% of the farmers with land holding of 8.0 to 9.0 kanals and size of family >12 are classified under the large category. The villages show cultivators to be less than 50%. Family size varies from 3-20 members. The farmers falling in class <4, 5-9 and >10 members are 1%, 91% and 8% respectively. Maximum farmers, i.e. 42% have land holdings size of 2.0 to 5.0 kanals are categorized as marginal farmers, followed by 38% having land holding size between 5.5 to 8.0 kanal, thus categorized as small farmers. 15% farmers are categorized as medium farmers with an average land holdings size ranging from 8.0 to 9.0 kanals and 5% farmers categorized as large farmers having 9.0 and above land holding size. The study thus confirmed that the majority of farmers in the saffron villages are marginal, having a low risk bearing capacity. Thus it can be concluded that the farmer under saffron cultivation are residing in rural areas with an average landholding 5.5 to 8.0 kanals and contributing to the total production of 10MT with the export value 1.5 million MT respectively. The maximum annual income per farmer comes from saffron production followed by apple cultivation. On an average, farmer owning an area of about 0.6995 ha per farmer under saffron with an average production of about 0.016732 quintals, earns an annual income of 6300 US$.

Table 4: Compound annual growth rate for saffron in J&K state

Year	Area (ha)	Production (MT)	Yeild (kg/Ha)	Growth Rate (Area)	Growth Rate (Production)	Growth Rate (Yield)
1996-97	5707	15.95	2.8	0	0	0
1998-99	4116	12.88	3.13	-27.88	-19.25	11.79
1990-00	3997	7.65	1.89	-2.89	-40.61	-39.62
2000-01	2831	3.59	1.27	-29.17	-53.07	-32.8
2002-03	2825	6.05	2.28	-0.21	68.52	79.53

2003-04	2742	5.15	1.88	-2.94	-14.88	-17.54
2004-05	3143	6.86	2.23	14.62	33.2	18.62
2005-06	3200	7.5	2.34	1.81	9.33	4.93
2006-07	3010	6.5	2.15	-5.94	-13.33	-8.12
2007-08	3280	8.2	2.5	8.97	26.15	16.28
2008-09	3280	7.7	2.34	0	-6.1	-6.4
2009-10	3785	9.46	2.5	15.4	22.86	6.84
2010-11	2479.2	9.5	2.55	-34.5	0.42	2
2011-12	2469.02	10	2.64	-0.41	5.26	3.53
CAGR	-0.058	-0.033	-0.004			

Table 5: Population, family size & landholding of saffron farmers of sample area

Class (Size of Family)	Land Holding (kanal)	Percentage of Farmers	Farmers
< 4 (1%)	2.0-5.0	42%	Marginal
5-9 (89%)	5.5-8.0	38%	Small
> 10 (8%)	8.0-9.0	15%	Medium
>12 (2%)	9.0 and above	5%	Large

Marketing channels in selected study area.
The chain of various intermediaries/ functionaries commonly known as marketing channel comprising of agencies like producers, commission agents, wholesalers and retailers and also sometimes direct sale of produce help in distribution of the fruits/ crops from producer to ultimate consumers in Kashmir region. The marketing channel operating under Kashmir conditions are as under
1. Producer/ Farmer → Wholesaler → Retailer → Consumer
2. Producer/ Farmer → Commission agents → Wholesaler → Retailer → Consumer

Marketing cost, margins, losses and price spread.
Marketing cost incurred by the chain for channel-I
The table 6 revealed that the major item of marketing expenses in all channels at producer's level included picking, filling, and transportation cost. The average total marketing cost was recorded as ₹ 255.88, ₹ 262.22, ₹ 241.45, Rs ₹ 243.18, ₹ 264.75, ₹ 267.04, ₹ 272.30, ₹ 272.00, ₹ 254.67 and ₹ 268.75 per 10gm respectively for channel-I. for Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal, Pampore. Whereas it was ₹ 237.00, ₹ 243.02, ₹ 224.65, ₹ 224.18, ₹ 246.25, ₹ 249.04, ₹ 252.30, ₹ 255.00, ₹ 238.00 and ₹ 248.00 per 10gm respectively for channel-I for the farmer. Marketing cost borne by the wholesaler ₹ 13.38, ₹ 13.60, ₹ 12.80, ₹ 13.25, ₹ 13.25, ₹ 12.80, ₹ 14.33, ₹ 12.33, ₹ 11.67 and ₹ 14.75 per 10gm respectively for channel-I and marketing cost borne by the retailers ₹ 5.50, ₹ 5.60, ₹ 4.00, ₹ 5.75, ₹ 5.25, ₹ 5.20, ₹ 5.67, ₹ 4.67, ₹ 5.00 and ₹ 6.00 per 10gm respectively.

Marketing cost incurred by the chain for channel-II
The table 7 revealed that the major item of marketing expenses in all channels at producer's level included picking, filling, and transportation cost. The average total marketing cost was recorded as ₹ 257.81, ₹264.32, ₹244.45, ₹245.31, ₹ 266.63, ₹ 268.94, ₹274.47, ₹ 274.67, ₹256.33 and ₹ 269.79 per 10gm respectively for channel-II for Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal, Pampore. Whereas it was ₹ 237.00, ₹ 243.02, ₹ 224.65, ₹ 224.18, ₹ 246.25, ₹ 249.04, ₹ 252.30, ₹ 255.00, ₹ 238.00 and ₹ 248.00 per 10gm respectively for channel-II for the farmer. Marketing cost borne by the Agents ₹ 1.94, ₹ 2.10, ₹ 1.80, ₹ 2.13, ₹ 1.88, ₹ 1.90, ₹ 2.17, ₹ 1.92, ₹ 1.67 and ₹ 1.93 per 10gm respectively for channel-II. Marketing cost borne by the wholesaler ₹ 13.38, ₹13.60, ₹ 12.80, ₹ 13.25, ₹ 13.25, ₹ 12.80, ₹ 14.33, ₹ 12.83, ₹ 11.67 and ₹

14.14 per 10gm respectively for channel-II marketing cost borne by the retailers ₹ 5.50, ₹ 5.60, ₹ 5.20, ₹ 5.75, ₹ 5.25, ₹ 5.20, ₹ 5.67, ₹ 4.92, ₹ 5.00 and ₹ 5.71per 10gm respectively.

Physical loss incurred by the chain for channel-I and channel-II
In this study an attempt has been made to estimate physical losses of saffron at different stages of marketing. But during the survey it was found that marketing losses of saffron were high at producer's level. However table 8 and 9 revealed that the
physical losses ranged between ₹ 44.71, ₹ 45.12, ₹ 44.49, ₹ 45.02, ₹ 45.06, ₹ 44.56, ₹ 44.80, ₹ 45.03, ₹ 44.98, ₹ 45.00 per 10gram at Farmers level in case of Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal, Pampore respectively followed by wholesaler level as ₹ 26.55, ₹ 26.80, ₹ 26.38, ₹ 26.70, ₹ 26.78, ₹ 26.40, ₹ 26.60, ₹ 26.77, ₹ 27.10, ₹ 27.10 at respectively then by retailer level as ₹ 14.79, ₹ 15.23, ₹ 14.88, ₹ 15.11, ₹ 15.09, ₹ 14.88, ₹ 14.98, ₹ 15.03, ₹ 15.27, ₹ 15.00 per 10 gram in channel-I respectively. It was least physical loss at agent level which ranged between Rs 6.70 to Rs 6.84. On the whole, the physical loss ranged between Rs 92.41 in Barsoo to Rs 93.91 in Befin.

Marketing margins for the Channel-I and for channel-II
Table 10 revealed and estimated the marketing margins of saffron chain actors in channel-I and II respectively. In the channel-I the marketing margins at wholesalers level is estimated as ₹ 10.08, ₹ 10.60, ₹ 8.82, ₹ 8.80, ₹ 11.23, ₹ 7.80, ₹ 9.07, ₹ 12.57, ₹ 31.23 and ₹ 28.04 in in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area respectively.At retailer level it was calculated as ₹ 131.58, ₹ 162.17, ₹ 148.92, ₹ 155.39, ₹ 149.66, ₹ 147.92, ₹ 147.68, ₹ 145.30, ₹ 151.40 and ₹ 124.29 in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area respectively. It was estimated at Agents level as ₹ 54.36, ₹ 55.14, ₹ 52.54, ₹ 52.89, ₹ 55.62, ₹ 51.44, ₹ 54.12, ₹ 56.08, ₹ 74.49 and ₹ 73.52 in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area. At wholesaler's level was estimated as ₹ 27.08, ₹ 26.60, ₹ 27.82, ₹ 27.00, ₹ 26.98, ₹ 27.80, ₹ 26.07, ₹ 27.90, ₹ 28.63 and ₹ 26.11 in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and

Pampore villages of sample area.At retailers end, it was estimated as ₹ 82.71, ₹ 82.17, ₹ Rs 82.92, ₹ 82.14, ₹ 82.66, ₹ 82.92, ₹ 82.35, ₹ 83.30, ₹ 82.73 and ₹ 82.29 in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area respectively per 10 gram.. It was thus concluded that the Channel-I having less marketing margin as compared to Channel-II.

Price Spread Analysis for Channel-I and Channel-II

The price spread is the gap between the price paid by the consumer and the price received by the farmer at a particular time because from the producer, it has to pass through various agencies before it reaches to the final consumer. The distribution channel in addition to some charges for the services, they perform some margin money is also expected by them in that transaction. Therefore it is worthwhile to examine as to what share of the rupee paid by the consumer was received by the producer. The price spread as percent of consumer rupee for different market functionaries of saffron under different channels of District Pulwama in Kashmir of J&K state was presented in table.11 & 12. The saffron growers of pulwama in Kashmir region received the net price of about ₹ 996, ₹ 1001, ₹ 1002, ₹ 1017, ₹ 996, ₹ 979, ₹ 983, ₹ 987, ₹ 1002, and ₹ 993 per 10gm for channel-I and channel-II in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area respectively. The producer sale price of saffron was ₹ 1277.50, ₹ 1289.00, ₹ 1271.00, ₹ 1286.25, ₹ 1287.50, ₹ 1273.00, ₹ 1280.00, ₹ 1285.00, and ₹ 1285.71 per 10gm in channel-I and II in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area respectively respectively. Thus the table revealed that the producer's share in consumer's rupee in Channel-I was ₹ 0.67, ₹ 0.66, ₹ 0.67, ₹ 0.67, ₹ 0.66, ₹ 0.66, ₹ 0.66, ₹ 0.66, ₹ 0.66, ₹ 0.66 per 10 gram respectively in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area and in channel-II was ₹ 0.65, ₹ 0.65, ₹ 0.66, ₹ 0.65, ₹ 0.64, ₹ 0.64, ₹ 0.64, ₹ 0.64, ₹ 0.65, ₹ 0.64 per 10 gram respectively in Chandhara, Befin, Barsoo,

Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area. Hence showed that the channel-I is more beneficial for a farmer to dispose off their produce in the sample area I order to get a remunerative fair income for their produce.

Marketing efficiency in different channels.

The marketing efficiency is an important tool and therefore requires more attention. The marketing efficiency of different marketing channels of pulwama district in Kashmir of J&K state is shown in table 13 and figure 1 respectively. The saffron growers received highest net return/10gm from channel-I followed by channel-II, whereas the marketing cost/10gm was found to be highest in channel-II followed by Channel-I. The table revealed that the marketing efficiency of Channel-I was recorded as 4.93, 4.28, 4.62, 4.52, 4.50, 4.56, 4.50, 4.58, 4.15, 4.64 per 10 gram in Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area and 4.27, 4.28, 4.34, 4.39, 4.25, 4.26, 4.22, 4.20, 4.96, 4.94 per 10 gram Chandhara, Befin, Barsoo, Letpora, Andrussu, Konibal, Dusoo, Kadlabal, Namlabal and Pampore villages of sample area respectively. Hence channel-I was found to be the most efficient marketing channel for the grower of saffron followed by channel-II.

Table 6: Marketing cost incurred by the chain for channel-I (₹/10gm)

Name of Village	Marketing Cost of Farmer	Marketing Cost of Wholesaler	Marketing Cost of Retailer	Total Marketing Cost
Chandhara	237.00	13.38	5.50	255.88
Befin	243.02	13.60	5.60	262.22
Barsoo	224.65	12.80	4.00	241.45
Lethpora	224.18	13.25	5.75	243.18
Andrussu	246.25	13.25	5.25	264.75
Konibal	249.04	12.80	5.20	267.04
Dusoo	252.30	14.33	5.67	272.30
Kadlabal	255.00	12.33	4.67	272.00
Namlabal	238.00	11.67	5.00	254.67
Pampora	248.00	14.75	6.00	268.75

Table 7: Marketing cost incurred by the chain for channel-II (₹/10gm)

Name of Village	Marketing Cost of Farmer	Marketing Cost of Agent	Marketing Cost of Wholesaler	Marketing Cost of Retailer	Total Marketing Cost
Chandhara	237.00	1.94	13.38	5.50	257.81
Befin	243.02	2.10	13.60	5.60	264.32
Barsoo	224.65	1.80	12.80	5.20	244.45
Lethpora	224.18	2.13	13.25	5.75	245.31
Andrussu	246.25	1.88	13.25	5.25	266.63
Konibal	249.04	1.90	12.80	5.20	268.94
Dusoo	252.30	2.17	14.33	5.67	274.47
Kadlabal	255.00	1.92	12.83	4.92	274.67
Namlabal	238.00	1.67	11.67	5.00	256.33
Pampora	248.00	1.93	14.14	5.71	269.79

Table 8: Physical loss incurred by the chain for channel-I (₹/10gm)

Name of Village	Physical Loss of Wholesaler	Physical Loss of Retailer	Physical Loss of Farmer	Total loss
Chandhara	26.55	14.79	44.71	86.06
Befin	26.80	15.23	45.12	87.15
Barsoo	26.38	14.88	44.49	85.75
Lethpora	26.70	15.11	45.02	86.83
Andrussu	26.78	15.09	45.06	86.93
Konibal	26.40	14.88	44.56	85.84
Dusoo	26.60	14.98	44.80	86.38
Kadlabal	26.77	15.03	45.03	86.83

Namlabal	27.10	15.27	44.98	87.34
Pampora	27.10	15.00	45.00	87.10

Table 9: Physical loss incurred by the chain for channel-II (₹/10gm)

Name of Village	Physical Loss of Farmer	Physical Loss of Agent	Physical Loss of Wholesaler	Physical Loss of Retailer	Total loss
Chandhara	44.71	6.70	26.55	14.79	92.76
Befin	45.12	6.77	26.80	15.23	93.91
Barsoo	44.49	6.66	26.38	14.88	92.41
Lethpora	45.02	6.74	26.75	15.11	93.62
Andrussu	45.06	6.76	26.78	15.09	93.68
Konibal	44.56	6.67	26.40	14.88	92.50
Dusoo	44.80	6.72	26.60	14.98	93.10
Kadlabal	45.03	6.76	26.77	15.03	93.59
Namlabal	44.98	6.84	26.70	15.27	93.78
Pampora	45.00	6.84	26.74	15.00	93.58

Table 10: Marketing Margin for Channel-I and II respectively

(Channel –I)									
Name Village → Margins ↓	Chandhara	Befin	Barsoo	Lethpora	Andrussu	Konibal	Dusoo	Kadlabal	Namlabal	Pampore
MMw	10.08	10.6	8.82	8.8	11.23	7.8	9.07	12.57	31.23	28.04
MMR	131.58	162.2	148.92	155.39	149.66	147.92	147.7	145.3	151.4	124.29
(Channel –II)									
MMA	54.36	55.14	52.54	52.89	55.62	51.44	54.12	56.08	74.49	73.52
MMw	27.08	26.6	27.82	27	26.98	27.8	26.07	27.9	28.63	26.11
MMR	82.71	82.17	82.92	82.14	82.66	82.92	82.35	83.3	82.73	82.29

Note: MMw stands for marketing margin of wholesaler

MMR stands for marketing margin of retailer

MMA stands for marketing margin of agent

**Table 11:** Price Spread Analysis for channel-I (₹/10gm)

Name of Village	Chandhara	Befin	Barsoo	Lethpora	Andrussu	Konibal	Dusoo	Kadlabal	Namlabal	Pampore
Gross farmers price	1277.5	1289	1271	1286.25	1287.5	1273	1280	1286.67	1285	1285.71
Cost incurred by farmer	237	243.02	224.65	224.18	246.25	249.04	252.3	255	238	247.23
Gross price of wholesaler	1327.5	1340	1319	1335	1338.75	1320	1330	1338.33	1355	1355
Gross price of retailer	1479.38	1523	1488	1511.25	1508.75	1488	1498.33	1503.33	1526.67	1500
Cost incurred by wholesaler	13.38	13.6	12.8	13.25	13.25	12.8	14.33	12.33	11.67	14.14
Cost incurred by retailer	5.5	5.6	5.2	5.75	5.25	5.2	5.67	4.67	5	5.71
Loss at wholesale level	26.55	26.8	26.38	26.7	26.78	26.4	26.6	26.77	27.1	27.1
Loss at retailer level	14.79	15.23	14.88	15.11	15.09	14.88	14.98	15.03	15.27	15
Net farmers price	995.79	1000.87	1001.87	1017.05	996.19	979.41	982.9	986.63	1002.03	993.49
Marketing margin of wholesaler	10.08	10.6	8.82	8.8	11.23	7.8	9.07	12.57	31.23	28.04
Marketing margin of retailer	131.58	162.17	148.92	155.39	149.66	147.92	147.68	145.3	151.4	124.29
Price paid by Consumer	1479.38	1523	1488	1511.25	1508.75	1488	1498.33	1503.33	1526.67	1500
Producer Share in Consumer's Rupee	0.67	0.66	0.67	0.67	0.66	0.66	0.66	0.66	0.66	0.66

Table 12: Price Spread Analysis for channel-II (₹/10gm)

Name of Village	Chandhara	Befin	Barsoo	Lethpora	Andrussu	Konibal	Dusoo	Kadlabal	Namlabal	Pampore
Gross farmers price	1277.5	1289	1271	1286.25	1287.5	1273	1280	1286.67	1285	1285.71
Net farmers price	996	1001	1002	1017	996	979	983	987	1002	993
Farmer Sell to Agent	1277.5	1289	1271	1286.25	1287.5	1273	1280	1286.67	1285	1285.71
Agent to Wholesaler	1340.5	1353	1332	1348	1351.75	1333	1343	1351.33	1368	1368
Gross price of wholesaler	1407.5	1420	1399	1415	1418.75	1400	1410	1418.33	1435	1435
Gross price of retailer	1510.5	1523	1502	1518	1521.75	1503	1513	1521.33	1538	1538
Cost incurred at agent	1.94	2.1	1.8	2.13	1.88	1.9	2.17	1.83	1.67	1.93
Cost incurred at wholesaler	13.38	13.6	12.8	13.25	13.25	12.8	14.33	12.33	11.67	14.14
Cost incurred at retailer	5.5	5.6	5.2	5.75	5.25	5.2	5.67	4.67	5	5.71
Loss at agent level	6.7	6.77	6.66	6.74	6.76	6.67	6.72	6.76	6.84	6.84
Loss at wholesale level	26.55	26.8	26.38	26.75	26.78	26.4	26.6	26.77	26.7	26.74
Loss at retailer level	14.79	15.23	14.88	15.11	15.09	14.88	14.98	15.03	15.27	15
Marketing margin of agent	54.36	55.14	52.54	52.89	55.62	51.44	54.12	56.08	74.49	73.52
Marketing margin of wholesaler	27.08	26.6	27.82	27	26.98	27.8	26.07	27.9	28.63	26.11
Marketing margin of retailer	82.71	82.17	82.92	82.14	82.66	82.92	82.35	83.3	82.73	82.29
Price paid by Consumer	1535.5	1547	1547	1545	1543	1534	1546	1546.5	1550	1543
Producer Share in Consumer's rupee	0.65	0.65	0.65	0.66	0.65	0.64	0.64	0.64	0.65	0.64

Table 13: Marketing efficiency for Channel-I and Channel-II respectively.

Name of Village	Marketing Efficiency (Channel-1)	Marketing Efficiency (Channel-II)
Chandhara	4.93	4.27
Befin	4.28	4.28
Barsoo	4.62	4.34
Lethpora	4.52	4.39
Andrussu	4.50	4.25
Konibal	4.56	4.26
Dusoo	4.50	4.22
Kadlabal	4.55	4.20
Namlabal	4.15	3.96
Pampora	4.64	3.94
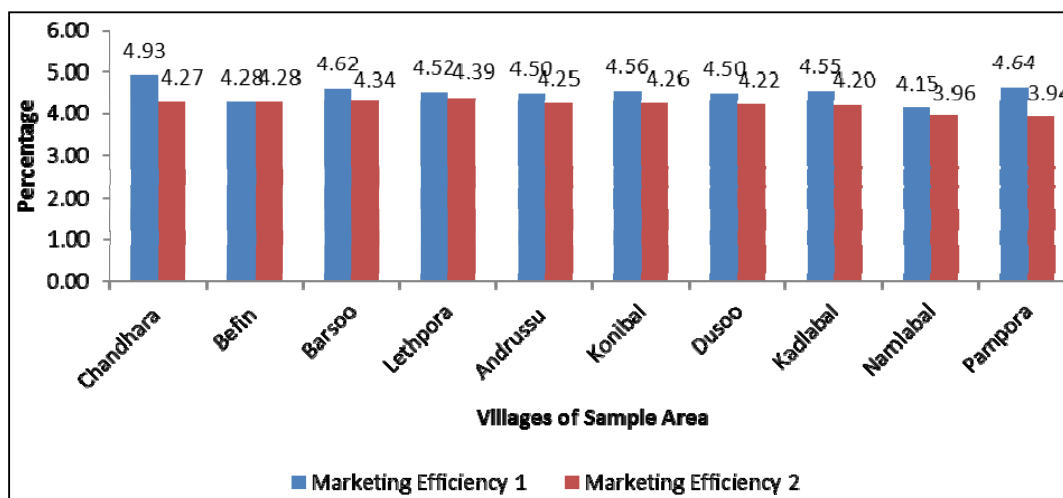
Fig 1: Marketing efficiency of different channels

Conclusion
In terms of productivity, India appears to be at 5th position during the years 2012-13 and Pulwama district in J&K state depicted the higher scale in terms of area, production and productivity of saffron followed by other districts of the Kashmir region. Further, it has been identified that the price/kg of saffron appears to be highest the month of September and October due to the new arrival and harvesting season of the saffron crop. Mean while, the Compound annual growth rate for saffron in J&K. In terms of area area, production and productivity depicted a declining trend, whereas the study found that the farmer under saffron cultivation are residing in rural areas with an average landholding 5.5 to 8.0 kanals and contributing to the total production of 10MT.

The study also determined the economic relationship between the stakeholders in both the channels of saffron value chain. It has been concluded that in the channel-I, the marketing cost incurred by the farmer was ₹ 2417.44 per 10 gram and physical loss of ₹ 448.76 per 10 gram. As far as the wholesaler was concerned, the marketing cost was ₹ 2549.60/10gm and for retailer, it was ₹ 2602.23/10gm for retailer. The physical loss for wholesaler was ₹ 267.17/10gm while as it was ₹ 150.27/10gm. The marketing margin of wholesaler was ₹ 138.23/10gm and for retailer, it was ₹ 1464.31/10gm.While study showed the relationship between the farmer, agent wholesaler, retailer and consumer with each other in economical terms comprising the channel-II. It was observed that the marketing cost incurred by farmer was ₹ 2417.44/10gm, while as the physical loss was to the extent of ₹ 448.76 / 10gm. As far as agent was concerned, the marketing cost was ₹ 2436.86/10gm and physical loss was having ₹ 67.44/10gm with margin ₹ 580.18/10gm. As far as

the wholesaler was concerned, the marketing cost was ₹ 2549.60/10gm and for retailer, it was ₹ 2602.23/10gm. The physical loss for wholesaler was ₹ 267.17/10gm while as it was ₹ 150.27/10gm for retailer. The marketing margin of wholesaler was ₹ 138.23/10gm and for retailer, it was ₹ 1464.31/10gm.

It was found using Acharya's and Shepherd's Index techniques, that the maximum marketing margin were grabbed by the intermediaries (retailers, agents) followed by Wholesalers' leaving saffron growers an unfair margin. The empirical analysis depicted that in channel-I the Chandhara, Barsoo and Lethpora villages were more beneficial and fair for the saffron grower in terms of remunerative return for their produce in shape of producer's share in consumer's rupee. While as in channel-II, the producer's share in consumer's rupee was higher in Lethpora village followed by rest of the villages respectively.

It was found that the channel-I comprising farmer, wholesaler, retailer and consumer was more efficient than the channel-II and among villages, the chandhara seemed to be on higher efficiency side followed by rest of the villages respectively. While as in channel-II, the Lethpora village in sample study area was most efficient followed by rest of the villages respectively.

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