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Supply Chain Analysis in Broiler Farms of Punjab

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ABSTRACT

Poultry farming, especially broiler farming is important component of Punjab's livestock sector as it provides regular income and employment to the farmers. The present study focuses on broiler farming in Punjab, examining various marketing channels used by farmers to sell live and processed broiler meat. A sample of 22 retailers, 13 wholesalers, and 17 processors was selected to assess the costs and margins involved in the marketing process. Acharya's marketing efficiency formula was applied to analyze the efficiency of different marketing channels. The study concluded that the channel III (Farmer-Retailers-Consumers) was found to be most efficient channel in terms of marketing efficiency and producer's share in consumer's rupee followed by Channel II (Farmer-Wholesalers-Retailers-Consumers) and Channel IV (Farmer-Wholesalers I-Wholesalers II-Retailers-Consumers). Results showed that the majority of broiler farmers, especially those with smaller farms, preferred selling through wholesalers. The study also revealed that mobile phones, particularly WhatsApp, were the primary sources of market information for farmers, with commission agents playing a minor role. In terms of value addition, dishes like chicken biryani and butter chicken showed the highest degree of profitability for restaurants, with a net profit margin ranging from ₹193 to ₹826. The degree of value addition ranged from 141 per cent for tandoori chicken to 603 per cent for chicken biryani.

Keywords: Broiler farming, Marketing channels, Marketing efficiency, Price spread,Value addition.

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INTRODUCTION

The poultry sector plays a pivotal role in the agricultural economy of many regions worldwide, contributing significantly to food security, employment generation, and rural development. In India, particularly in Punjab, broiler farming has emerged as a rapidly growing sub-sector within the poultry industry, primarily due to increasing demand for chicken meat, which is one of the most affordable and widely consumed protein sources.

India's agricultural economy heavily relies on livestock production, which boosts the Gross Domestic Product (GDP) of the nation. India ranks eight in world in term of total meat production (Anonymous, 2023a). Due to growing consumer demand for poultry products and greater knowledge of the nutritional advantages they provide, the sector has seen exponential expansion. A significant portion of the Indian population prefers poultry meat, especially chicken, as a source of protein due to its affordability and adaptability to different culinary cultures.

During the year 2022-23, the meat production was 9.77 million tonnes in India. India contributes for around 2.52 per cent of world meat output (FAO, 2023). Presently, poultry meat contributes 10.91 per cent and 5.85 per cent of livestock Gross Domestic Product (GDP) in India and Punjab, respectively (Anonymous, 2023a). India poultry meat produce 4.995 million tonnes and Punjab produce 0.128 million tonnes. The proportion of poultry meat in total meat production is 51.14 per cent in India and 50.60 per cent in Punjab. In Punjab, poultry meat production has increased from 42 thousand tonnes during 2007-08 to 127.87 thousand tonnes during 2022-23 at annual growth rate of 13.63 per cent (Anonymous, 2023b). Poultry meat, rich in vitamins and proteins, is widely accepted meat in India being cheaper than goat meat.

The broiler supply chain involves multiple stakeholders, including producers, wholesalers, retailers, and processors, all contributing to the movement of chickens from farms to consumers. However, the complexity of the supply chain can lead to inefficiencies, affecting the profitability of farmers and intermediaries. Through a detailed examination of marketing channels, pricing structures, and value-added activities, this research aims to provide insights into the costs, margins, and marketing efficiencies

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across different channels within the broiler farming sector.

The study also focused on their marketing strategies, price spread, and the role of intermediaries. By analyzing the marketing efficiency and degree of value addition at various points in the supply chain, the research aims to identify opportunities for improvement, ultimately fostering a more sustainable and economically viable broiler farming sector in Punjab.

MATERIALS AND METHODS

The detailed study of broiler farming was conducted in five districts of the Punjab state to represent the whole state. Accordingly, Hoshiarpur, Gurdaspur, Patiala, Ludhiana and Bathinda districts were selected from different amongst different zones of the Punjab state. The districts having higher concentration of broiler farms have been selected from different agro-climatic zones. Accordingly, Hoshiarpur district has been selected from sub-mountaneous zone; Gurdaspur, Patiala and Ludhiana districts from central zone and Bathinda district has been selected from south-western zone. Amongst the five selected districts, a total sample of 50 independent non-contract broiler farmers was selected for detailed study. The selection of broiler farmers of various size categories from various districts is given in table 1.

rent marketing channels for the disposal of live broilers and processed broiler meat in the study area were examined by selecting a small sample (22 retailers, 13 wholesalers and 17 processors) of different intermediaries involved in the marketing of live broilers and processed broiler meat to assess the cost and margins of different functionaries involved till the produce reaches in the hands of the end users/consumers. The study was conducted in the year 2022-23 covering the data for agricultural year 2021-22. The data on the distribution of broiler farm size, quality and prices of feed and chicks' prices, labour charges, miscellaneous charges, etc. was also collected for calculating the economics from broiler production. The information on marketing costs and marketing margins was collected directly from the producer and middlemen on separate schedule using personal interview method.

The information pertaining to various channels adopted by the broiler farmers, various component of costs and margins of various intermediaries, volume of the produce handled by them along with value added, if any at each step was recorded. Any other relevant information related to supply/value chain which becomes available at the time of data collection, was also recorded for the comprehensive study of the broiler supply/value chains.

Statistical Analysis:

In order to examine the marketing efficiency of each broiler marketing channel, Acharya's formulae of marketing efficiency (Acharya and Agarwal, 2021)were used.

Where,

MME = FP / (MC + MM)

MME = Modified measure of marketing efficiency

FP = Price received by the farmer, MC = Marketing cost, MM = Marketing marginsProducer's share in Consumer's rupees

Producer's share in Consumer's rupees

$$\text{Producer's share in Consumer's rupees} = \frac{\text{Price paid by the consumer (Rs/kg)}}{\text{Degree/ proportion of value addition}} \times 100$$

quantity or the proportion increase inside the product's value is the degree of value addition to that product (Kaur *et al,* 2024). It was calculated by the difference between marketing margins and the purchase price of the product and then multiplying the result by 100. The marketing margin represents the difference between the selling price and the purchase price, reflecting the additional value generated through marketing efforts.

Price spread

It is the gap between the price paid by the consumer/ end user and price received by the producer for an equivalent quantity of the product.

Marketing costs

The expenses borne by the different intermediaries in the marketing of the broiler are known as marketing costs which include weighing charges, loading/unloading charges, transportation charges, etc.

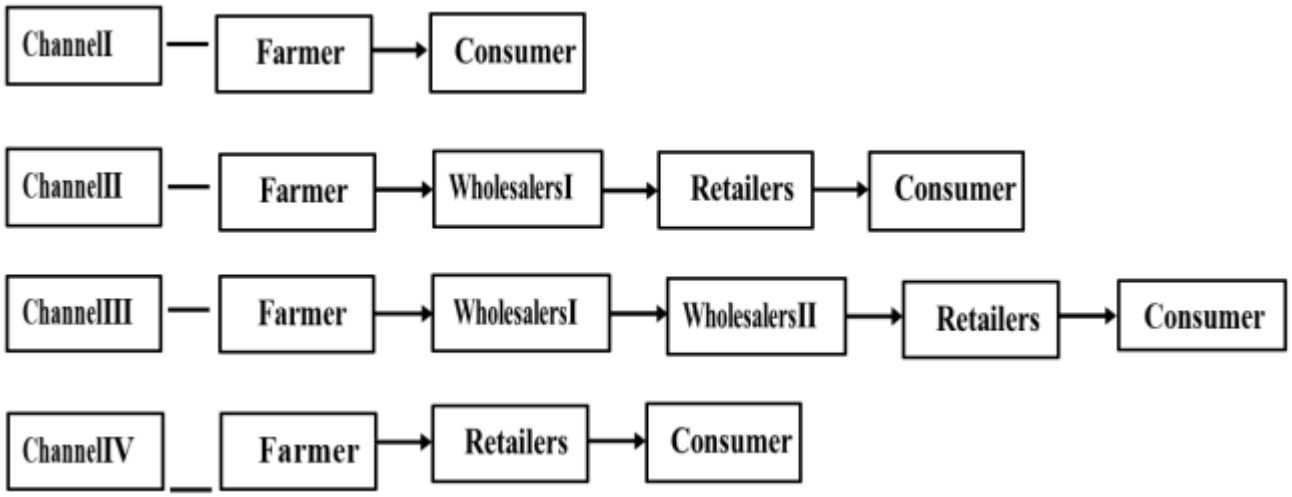
Marketing margins

When the costs borne by the intermediaries are deducted from the price received by them, the remainder is called net margin or profit margin.

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Table 1. District wise selection of broiler farmers across various size categories in Punjab, 2021-22

Districts/ sample size	S (0 - 6864)	M (6864 - 15902)	L (>15902)	Total
Hoshiarpur	11	5	1	17
Gurdaspur	7	7	3	17
Patiala	3	3	1	7
Ludhiana	3	3	1	7
Bathinda	1	1	0	2
Total	25	19	6	50



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RESULTS AND DISCUSSION

Marketing channels in Punjab for broilers

Following marketing channels were identified which were followed by the broiler farmers for

Wholesale I are the local wholesalers and wholesaler II are the distant wholesalers in Srinagar market. The producers, even the large farmers avoided selling directly to wholesalers in distant markets as they were discouraged from outside sales by shrinkage risks, mortality risks, and difficulty in collecting sales payments in a timely manner. Therefore, the producers preferred to sell to wholesalers in the local market for timely cash payments and timely lifting of the lots. The local wholesalers, on the other hand, used their agents in the distant markets to carry on their business. Wholesalers themselves bear the risks associated with transportation. They were able to spread the risks associated with transportation among their agents. This allowed them to offer better prices to the producers and increase their profit margins. The data (Table 2) provides insights into the different channels used by the broiler farmers for marketing of their broilers. A perusal of the table brought out that 64 per cent of broiler farmers sold their broilers exclusively through wholesalers. Additionally, 8 per cent of farmers marketed their broilers to both wholesalers and directly to consumers, while 20 per cent sold exclusively to retailers, and 8 % of farmers used both wholesalers and retailers for the sale of broilers. The highest proportion of farmers selling exclusively to wholesalers was found on small farms (76.00 %), followed by medium farms (57.89 %) and large farms (33 .33%). Some farmers opted for dual sales strategies selling to both wholesalers and directly to consumers. This approach was more common among large farms (16.67 %), with small farms at 8 % and medium farms at 5.27 %. Among those who sold exclusively to retailers, 33.33 % were large farm operators, followed by 26.31 % from medium farms and 12.00 % from small farms. Additionally, a segment of farmers sold their broilers to both wholesalers and retailers, with 16.67 % on large farms, 10.53 % on medium farms, and 4.00 % on small farms engaging in this strategy. This data indicates varied disposal strategies based on the size of the broiler farm.

Quantity of broilers handled by different middlemen

To highlight the relative significance of various marketing channels in managing the volume of broilers, the quantity of the broilers sold through various intermediaries in broiler farms in Punjab is

Table 2. Marketing of broilers by different sized broiler farmers in Punjab.

Sr. No.	Disposal pattern	Farm size category			
		Small (25)	Medium(19)	Large(6)	Overall(50)
1	Wholesaler	19(76.00)	11(57.89)	2(33.33)	32(64.00)
2	Wholesaler+Directly	2(8.00)	1(5.27)	1(16.67)	4(8.00)
3	Retailers	3(12.00)	5(26.31)	2(33.33)	10(20.00)
4	Wholesaler+Retailers	1(4.00)	2(10.53)	1(16.67)	4(8.00)

Note: Figures in the parentheses denote the percentage to the total number of farms in respective category

Table 3. Quantity of broilers sold through various intermediaries in broilers farms in Punjab. (in Kg)

Sr. No	Market intermediary	Farm size category			
		Small	Medium	Large	Overall average
1	Wholesaler	46278(58.39)	129877 (57.97)	204511(41.01)	126889(47.47)
2	Retailer	21763(27.46)	83898(37.45)	279144(55.98)	128268(47.98)
3	Direct	11215(14.15)	10273(4.59)	15000(3.01)	12163(4.55)
	Total	79256(100.00)	224048(100.00)	498655(100.00)	267320(100.00)

Note: Figures in the parentheses denote the percentage to the total marketable surplus in respective category

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detailed in Table 3. It was observed that broiler farmers of different categories utilized distinct channels to distribute their produce in varying proportions. Small sized farmers sold the majority of their produce directly to wholesalers, accounting for 58.39 % of their total production, while only 27.46 % produce was sold directly to retailers and 14.15 % of their produce was sold directly to the consumers. Medium sized farmers distributed 57.97 % of their broilers to wholesalers,

37.45 % to retailers and 4.59 % directly to the consumers. Large broiler farmers sold 55.98 % of their produce to retailers, 41.01 % to wholesalers and 3.01 % produce directly to the consumers. Overall, 4.55% of the total marketable surplus of broilers was sold directly to the consumers, while wholesalers acquired 47.47 %. The largest share of the produce i.e. 47.98 % was sold directly to retailers.

Marketing costs, margins and price spread through different channels of broiler marketing in Punjab

The Marketing costs, margins and price spread through different marketing channels has been presented in table 4. The perusal of the table brought out that marketing channel-I (Farmer → Consumer), farmer received Rs 95.40 and Rs 117.00 per kg live weight from live broiler sale. As there was not marketing intermediary involved, price spread was zero and consumer paid the same price as received by the farmer or producer. Hence, the marketing efficiency of this channel could not be calculated.

The marketing channel-II (Farmer-Wholesalers-Retailers-Consumer) was the main channel of marketing of broilers in Punjab. The farmer received Rs. 81.90 (64.17 %) and Rs. 95.30 (65.12 %) of consumers rupee in summer and winter season respectively. The total marketing costs and margins were estimated at Rs. 7.03 (5.51 %) and Rs. 9.32 (7.30 %) in summer season and Rs. 9.00 (6.15 %) and Rs. 12.60 (8.61 %) in the winter season respectively. The retailers marketing margins were found to be more than those of wholesalers. In the winter season, the marketing margins and costs of retailers as well as wholesalers were found to be more than those in summer. Hence the total price spread was higher i.e. Rs. 51.05 in winter season than in summer season (Rs. 45.73). The marketing efficiency was found to be higher in winter season than in the summer season. The proportion of producer share in consumers rupees was higher in winter season i.e. 65.12 % compared to 64.17 % in summers season.

In marketing channel-III (Farmer-Retailers-Consumer), the net share received by the farmer was more in winter season i.e. Rs. 105.70 (79.79 %) than in the summer season

i.e. Rs. 86.20 (76.65 %). Further, the marketing costs were found to be higher in the summer season i.e. Rs.9.97 (8.87 %) and Rs. 8.45 (6.38 %) than in winter season and retailer margins were found more in winter season i.e. Rs. 18.32 (13.83 %) than in summer season Rs. 16.29 (14.48 %). The total price spread was higher in winter season (Rs. 26.77) than in

Table 4. Marketing costs, Margins, and Price spread through different channels of Broiler marking in Punjab, 2021-22 (Rs. /kg).

S. No.	Functionary/ item	Channel I (Farmer → Consumer)				Channel II (Farmer → Wholesalers → Retailers → Consumer)				Channel III (Farmer → Retailers → Consumer)				Channel IV (Farmer → Wholesalers → Wholesalers2 → Retailers → Consumer)			
		SS		WS		SS		WS		SS		WS		SS		WS	
		Amt	PCP	Amt	PCP	Amt	PCP	Amt	PCP	Amt	PCP	Amt	PCP	Amt	PCP	Amt	PCP
1	Wholesalers purchase price	95.40	100.00	117.00	100.00	81.90	64.17	95.30	65.12	-	-	-	-	90.00	52.14	100.00	55.79
2	Costs incurred by wholesaler I																
	i) Labour	-	-	-	-	1.57	1.23	1.80	1.23	-	-	-	-	0.58	0.35	0.43	0.24
	ii) Transportation	-	-	-	-	3.11	2.44	3.50	2.39	-	-	-	-	5.00	3.04	5.00	2.79
	iii) Shrinkage	-	-	-	-	1.09	0.85	1.30	0.89	-	-	-	-	1.80	1.09	1.50	0.84
	iv) Mortality	-	-	-	-	0.97	0.76	1.50	1.02	-	-	-	-	4.50	2.73	4.00	2.23
	v) Miscellaneous	-	-	-	-	0.29	0.23	0.90	0.61	-	-	-	-	1.50	0.91	1.30	0.73
3	Total cost	-	-	-	-	7.03	5.51	9.00	6.15	-	-	-	-	13.38	8.13	12.23	6.82
4	Wholesalers Margin	-	-	-	-	9.32	7.30	12.60	8.61	-	-	-	-	19.12	11.62	22.77	12.70
5	Wholesalers Sale price/Wholesalers (II) purchase price	-	-	-	-	98.25	76.98	116.90	79.88	-	-	-	-	122.50	74.42	135.00	75.31
6	Costs incurred by wholesaler II																
	i) Labour	-	-	-	-	-	-	-	-	-	-	-	-	0.51	0.31	0.33	0.18
	ii) Transportation	-	-	-	-	-	-	-	-	-	-	-	-	3.75	2.28	3.75	2.09
	iii) Shrinkage	-	-	-	-	-	-	-	-	-	-	-	-	1.69	1.03	1.62	0.90
	iv) Mortality	-	-	-	-	-	-	-	-	-	-	-	-	1.49	0.91	1.26	0.70
	v) Storage	-	-	-	-	-	-	-	-	-	-	-	-	0.83	0.50	0.90	0.50
	vi) Rent	-	-	-	-	-	-	-	-	-	-	-	-	0.09	0.05	0.06	0.03
	vii) Feed	-	-	-	-	-	-	-	-	-	-	-	-	1.75	1.06	1.00	0.56
	viii) Miscellaneous	-	-	-	-	-	-	-	-	-	-	-	-	0.75	0.46	1.25	0.70
7	Total cost	-	-	-	-	-	-	-	-	-	-	-	-	10.86	6.60	10.17	5.67
8	Wholesalers Margin	-	-	-	-	-	-	-	-	-	-	-	-	9.14	5.55	12.83	7.16
9	Wholesalers Sale price/Retailers Purchase Price	-	-	-	-	98.25	76.98	116.90	79.88	86.20	76.65	105.70	79.79	142.50	86.57	158.00	88.15
10	Costs incurred by Retailer																
	i) Labour	-	-	-	-	2.66	2.08	2.08	1.42	2.00	1.77	1.37	1.04	0.69	0.42	0.55	0.31
	ii) Transportation	-	-	-	-	3.33	2.61	2.61	1.78	2.65	2.36	2.40	1.81	1.75	1.06	2.50	1.39
	iii) Shrinkage	-	-	-	-	0.78	0.61	0.61	0.42	0.33	0.30	0.35	0.27	1.41	0.86	1.86	1.04
	iv) Mortality	-	-	-	-	0.86	0.67	0.67	0.46	0.59	0.52	0.67	0.51	0.71	0.43	0.57	0.32
	v) Rent	-	-	-	-	0.20	0.16	0.16	0.11	0.10	0.09	0.06	0.04	0.80	0.49	0.81	0.45
	vi) Feed	-	-	-	-	1.03	0.81	0.81	0.55	2.04	1.81	1.26	0.95	1.75	1.06	1.00	0.56
	vii) Electricity charges	-	-	-	-	1.26	0.99	0.99	0.68	0.41	0.37	0.27	0.20	0.31	0.19	0.21	0.12
	viii) Packaging charges	-	-	-	-	1.03	0.81	0.81	0.55	0.96	0.85	0.96	0.72	1.35	0.82	1.25	0.70
	ix) Miscellaneous	-	-	-	-	0.80	0.63	0.85	0.58	0.90	0.80	1.10	0.83	1.75	1.06	2.00	1.12
11	Total cost	-	-	-	-	11.95	9.36	9.59	6.55	9.97	8.87	8.45	6.38	10.52	6.39	10.75	6.00
12	Retailers margin	-	-	-	-	17.43	13.66	19.86	13.57	16.29	14.48	18.32	13.83	11.58	7.04	10.50	5.86
13	Total Market cost	-	-	-	-	18.98	14.87	18.59	12.70	9.97	8.87	8.45	6.38	34.76	21.12	33.15	18.49
14	Total Market margin	-	-	-	-	26.75	20.96	32.46	22.18	16.29	14.48	18.32	13.83	39.84	24.20	46.10	25.72
15	Retailers Sale price/ Consumers Purchase Price	95.40	100.00	117.00	100.00	127.63	100.00	146.35	100.00	112.46	100.00	132.47	100.00	164.60	100.00	179.25	100.00
16	Price Spread	-	-	-	-	45.73		51.05		26.26		26.77		74.60		79.25	
17	Producer share in consumer rupee (%)	100.00		100.00		64.17		65.12		76.65		79.79		54.68		55.79	
18	Market efficiency	-	-	-	-	1.79		1.87		3.28		3.95		1.21		1.26	

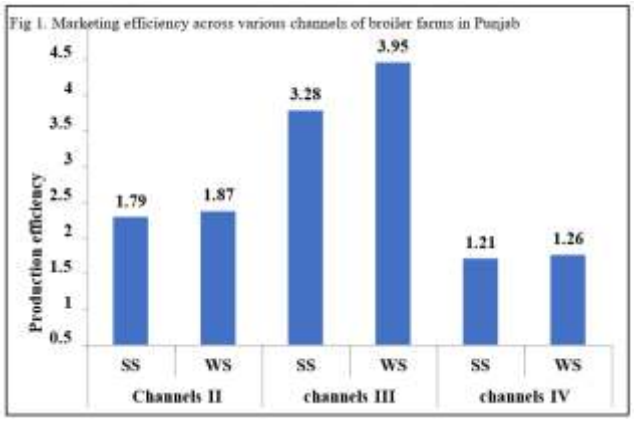
Note: Amt- AmountSS- Summer season (June,2021) PCP- % to consumer's priceWS- Winter season (January,2022)
**(Rs. / 645gm dressed chicken out of one kg live weight broiler)*

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Table 5. Economics of value addition of chicken.

Sr. No.	Particulars/Processed Chicken products	Butter chicken	Rara chicken	Masala chicken	Lemon chicken	Karahi chicken	Chicken biryani	Palak chicken	Tandoori kabab	Chicken pakora	Chicken curry	Chicken tandoori
1	Chicken Producers cost & margins per kg live weight of chicken	88.6	88.6	88.6	88.6	88.6	88.6	88.6	88.6	88.6	88.6	88.6
2	Wholesaler cost and margins per kg live weight of chicken	19	19	19	19	19	19	19	19	19	19	19
3	Retailers cost and margins per of dressed chicken	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4	29.4
4	Retailers price or cost per kg of dressed chicken	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0	137.0
5	Cost incurred on ingredients, labour, gas, and miscellaneous items in preparation of chicken dishes	427	531	665	586	685	481	778	628	612	760	610
6	Total cost incurred towards preparation of chicken dishes (4+5)	564	668	802	723	822	618	915	765	749	897	747
7	Quantity of chicken dishes prepared out of 1 kg of dressed chicken (plates)	6	5	5	5	5	6	6	5	5	5	4
8	Selling price per plate of chicken dishes	192	193	224.7	230.0	230.0	240.7	205.7	215.3	215.5	233.6	235.0
9	Total returns generated by preparing dishes using 1 kg of dressed chicken (7X8)	1152	965	1124	1150	1150	1444	1234	1077	1078	1168	940
10	Value addition (9-4)	1015	828	987	1013	1013	1307	1097	940	941	1031	803
11	Net profit to Hoteliers (9-6)	588	297	322	427	328	826	319	312	329	271	193
12	Degree of value addition (%) ((11/4)*100)	429	217	235	312	239	603	233	227	240	198	141

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summer season (Rs. 26.26). The marketing efficiency was found to be higher in winter season than in summer season. The proportion of producer share in consumers rupees was higher in winter season was 79.79 % compared to 76.65 % in summers season. Gangwar et al. (2010) compared the efficiency of broiler supply chains in organized and unorganized markets. The study revealed distinct differences in marketing costs, margins, and price spreads between these market types. In the unorganized market, the primary channel was Producer-Wholesaler-Retailer-Consumer, which yielded the highest marketing efficiency, with a producer's share of 62 % in the consumer's rupee. In contrast, the organized market, which involved multiple intermediaries, reduced the producer's share to 43 %.

Further, in marketing channel-IV (Farmer-Wholesalers (I) - Wholesalers (II)-Retailers-Consumer), the farmers received Rs. 90 (52.14 %) and 100 (55.79 %) of consumers rupee in summer and winter season respectively from the wholesalers I (local). In Local wholesalers I, total marketing costs were estimated higher in summer season at Rs. 13.38 (8.13 %) than Rs. 12.23 (6.82 %) in winter season and wholesalers I margins were found to be Rs. 19.12 (14.15 %) and Rs. 22.77 (12.70 %) in the summer and winter season respectively. The wholesalers II (other state) purchase price was Rs. 122.50 (74.42 %) and Rs. 135.00 (75.31 %) in summer season and winter season respectively. The marketing costs were found to be higher in the summer season i.e. Rs. 10.86 (6.60 %) and Rs. 10.17 (5.67 %) than in winter season and wholesalers II margins were found more in winter season i.e. Rs. 12.83 (7.16 %) than in summer season Rs. 9.14 (5.55 %). The total share received by the wholesalers II was more in winter season i.e. Rs. 158.00 (88.15 %) than in the summer season i.e. Rs. 142.50 (86.57 %). Further, the retailers marketing costs were found to be higher in the winter season i.e. Rs. 10.75 (6.00 %) and Rs. 10.52 (6.39 %) than in summer season and retailer margins found more in summer season i.e. Rs. 11.58 (7.04 %) than in winter season Rs. 10.50 (5.86 %. The total price spread was higher in winter season (Rs. 79.25) than in summer season (Rs. 79.25). Further, the marketing efficiency was higher in

winter season than in summer season. The proportion of producer share in consumers rupees was higher in winter season (55.79 %) than 54.68 % in summers season.

In nutshell, it may be concluded from the foregoing discussion that the price spread was higher in winter season in all the channels. Despite this the marketing efficiency was found to be higher in winter season mainly due to higher selling prices in winter season when the demand of broiler meat is at the peak. The channel III was found to be most efficient channel in terms of marketing efficiency and producer's share in consumer's rupee followed by channel II and channel IV. The main reason for higher efficiency of channel III was less number of intermediaries in this channel. Lowest the number of intermediaries involved, higher the efficiency and higher the producer's share in consumer's rupee.Economics of value addition of chicken

Table 5. presents the details of value addition of chicken. Different chicken dishes are prepared and marketed in non-veg restaurants. The dishes include butter chicken, rara chicken, masala chicken, lemon chicken, karahi chicken, chicken biryani, palak chicken, tandoori kabab, chicken pakora, chicken curry, and chicken tandoori. Restaurants buy their supply from chicken stalls at retail price of ₹ 137/kg and prepare various chicken dishes through addition of various ingredients to add form utility to the chicken. The major items required for value addition are ingredients, skilled labour, fuel and other miscellaneous items. Value addition of chicken was computed over the retail price of ₹ 137/kg of live weight of chicken. It was observed that the degree of value addition was maximum per kg chicken flesh in case of chicken biryani (603 %), followed by butter chicken (429 %), lemon chicken (312 %), chicken pakora (240 %), karahi chicken (239 %), masala chicken (235 %), Palak chicken (233 %), Tandoori kabab (227 %), rara chicken (217 %), chicken curry (198 %), and chicken tandoori (141 %). Degree of value addition ranged between 229 % in case of chicken pepper dry to 657 % in case of chicken biriyani. (Kumar *et al*, 2019). The value addition across various actors in the poultry value chain producers, wholesalers, retailers, and consumers can serve as a framework for understanding how income is distributed. The margin of profit at different levels (*e.g.,* 4.9 % for wholesalers and 7 % for retailers in Dhaka) can be related to the economic position of farmers in the value chain (khatun *et al,* 2016).

Butter chicken is most preferred chicken dish because of its taste and aroma. An expenditure of ₹ 564 towards chicken flesh, ingredients, labour and fuel generated gross revenue of₹ 1152 from 6 plates of butter chicken out of every one kg of chicken flesh to the hoteliers. They realized the net profit of 588 due to value addition.

Rara chicken is also is the most relished dish by consumers. Invariably consumers prefer rara chicken along with side dishes such as masala chicken, and karahi chicken. Around five plates rara chicken could be prepared with one kg of chicken flesh. The selling price of each plate was ₹ 193 resulting in gross profit and net profit of ₹ 965 and ₹ 297, respectively.

Masala chicken is another delicious dish liked by consumers and preferred along with roti and chapati as it is gravy. This has generated substantial gross profit to the restaurant at ₹ 1124 per kg of chicken flesh. Similarly, lemon chicken, and karahi chicken have also resulted in gross revenue of ₹ 1150 per kg of chicken flesh indicating their high consumer preference.

Chicken biryani is amply the most enjoyed dish by consumers. Consecutively, consumers fancied chicken biryani simultaneously with side options like masala chicken, palak chicken and chicken curry. About 6 plates of chicken biryani can be readied with one kg of chick flesh. The vending cost of each plate was ₹ 240.7 yielding total profit and net profit of ₹ 1444 and ₹ 826, correspondingly. Similarly, palak chicken, tandoori kabab, chicken pakora, chicken curry, and chicken tandoori this generated net profit to the restaurant at ₹ 233, 227, 240, 198, 141. Respectively.

Hoteliers are earning excellent profits when it comes to chicken biryani, butter chicken, lemon chicken, chicken pakora, Masala chicken, and karahi chicken. The profits in other dishes were observed to be low due to the costly ingredients and tedious cooking process. Hoteliers on resorting to value addition could reap net profit ranging from ₹ 193 in case of chicken tandoori to ₹ 826 in case of chicken biriyani indicating remunerativeness of value addition to chicken. The degree of value addition ranged from 141 % for tandoori chicken to 603 % for chicken biryani.

CONCLUSION

The study concluded that broiler farmers in Punjab rely heavily on wholesalers, especially small-scale farmers, for the disposal of their products.

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Mobile phones, particularly WhatsApp, are critical for disseminating market information. Winter emerged as the season with the highest marketing efficiency due to increased demand for broiler meat. Marketing channel III, involving fewer intermediaries, was found to be the most efficient, offering the highest share of consumer price to producers. Additionally, value addition in restaurants generated significant profits, particularly with popular dishes like chicken biryani and butter chicken.

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