Conceptual Framework, Trend and Constraints Faced by Red Gram Value Chain Agents in Gulbarga District of Karnataka, India

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The paper evaluated the conceptual framework, trend and constraints of the red gram value chain in Gulbarga district of Karnataka. The red gram value chain involves different actors/participants including commission agent, trader, processor, wholesaler and retailer. The methodology followed involves the sampling of primary data from the participants. A total sample of 80 farmers and 10 each of market intermediaries. The farmers individually sell their products either to commission agents or traders who were connected to the processors. Dal mills where value addition to red gram starts, produces dal, along with two other by-products i.e., bhusa and chunni, purchased by the animal feed manufacturing factories. The processed red gram sold to wholesalers, were marketed mainly to retailers and ultimately to consumers. Broken dal was sent to the local market to dispose at a lesser price. The identified constraints faced were ranked using Garrett ranking technique. The major constraints experienced by the farmers were low price at harvest and untimely payments. The major constraint faced by the commission agent as well as the traders was excessive price fluctuations. The constraints faced by processors/dal millers include cuts in power supply and labour availability problem. The major constraints faced by wholesalers and retailers were lack of adequate storage facilities and lack of adequate processing units.

Introduction

Value chain in the marketing of agricultural commodities has been in existence for long. It has been observed that intermediaries in agriculture in the form of commission agents at mandis (government-regulated market), intermediaries at wholesale markets and retail vendors are getting more margin than farmers. In this traditional red gram crop marketing neither the producer nor the consumer is benefitted. Processing and value addition may be the suitable strategies to overcome the problems of low price realization by farmers and higher purchase price by consumers in red gram marketing. Value addition in red gram is very essential as it will help the farmer to increase his income. The value-added products in red gram majorly are dal and chunni. Value addition will help in reducing wastage of red gram and farmers will get a remunerative price. Value addition of red gram not only includes processing, but also many other important activities like

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grading, packaging etc., These activities add value to the product and thus the process of value addition increases the utility of the consumers. The mapping of value chain, concept which has two steps to map the value chain in general. The first step includes drawing the initial map, which indicates the chain boundaries including the main beneficiaries, activities, connections and some initial indicators of size and importance. The second step includes elaborating the refined map by analysing key variables, such as value-added, and by identifying strategic and non-strategic activities. This clarified map can be understood as a framework for indicating chain statistics.

India has imported pulses for many years to meet the rising consumption demand as the pulses production is mainly restricted to dry and marginal lands resulting in lower productivities. However, with the various government efforts including pulses mission, procurement at minimum support price, export incentives and import restriction and also recent bumper crop years made the country to become self-sufficient and hold surplus stocks. This had resulted in a sharp decline of market prices i.e., below MSP (Minimum Support Price)

Materials and Methods

Combination of purposive and random sampling techniques was used for selection of district, taluks, market functionaries and farmers required for the study. Four contiguous taluks in the district were selected purposively based on the area under the crop. Two villages from each taluk were selected based on the area occupied under red gram and its production. A total of eight villages were selected. In each village the red gram growers were identified and listed. From the list of red gram growers, sample farmers were selected by following simple random

sampling technique. The required primary data were obtained from 10 sample farmers from each village by interview method, thus making a total sample of 80 farmers from eight selected villages in four selected taluks of the district. Karnataka state which occupies second position in the area and third position in the production of red gram in India was selected purposively for the study. The other major states producing pulses include Maharashtra, Madhya Pradesh, Uttar Pradesh, Rajasthan and Telangana. In Karnataka, red gram is mainly grown in Gulbarga, Bidar, Bijapur, Bagalakot and Raichur. Among the major red gram growing districts, Gulbarga was selected purposively for the present study as it stands first in area and production of red gram crop in Karnataka. Further, the fact that more number of dal industries are operating in Gulbarga has been another consideration for the selection of this district. A total sample of 10 each of market intermediaries (commission agent, traders, wholesalers and retailers) and 10 dal millers were selected for obtaining required data for the study. The primary data used in this study to fulfill various objectives were collected through personal interview with the help of pre-tested schedules designed for the purpose (Table 1).

Garrett ranking technique was used to rank the constraints of sample respondents involved in red gram value chain. As per this method, the respondents have been asked to assign the rank for all the constraints and the outcomes of such ranking have been converted in to score value by using the formula.

$$\frac{100\,(R_{ij} - 0.5)}{N}$$

Where,
R_{ij} = Ranking assigned to i^{th} constraint by j^{th} respondent

N= Number of respondents

Results and Discussion

A simplified conceptual framework for understanding the various stages in the value chain of red gram was shown in Fig. 4.

Farmer

The red gram producers (farmers) are the starting point in the chain. Production of red gram was the first stage in red gram value chain. Farmers undertake activities like production and marketing of red gram. Red gram farmers pay 1.5% of the value of products as a market fee for selling their produce in APMC (Agricultural Produce Market Committee). As the farmers are not organized, they sell red gram individually to commission agents or traders. If the farmers form a cooperative, they can pool their produce and sell it directly to the dal millers.

Commission agent

Farmer, commission agent and trader are connected through APMC. The commission agents and traders are licensed by APMC. The commission agent is one who acts as an agent between farmers and processors in marketing of red gram. The commission agents are called as 'Adati' in Gulbarga district. Commission agents mostly collect a commission of 2% of the value of produce transacted from processors.

Trader

Traders are the ones who buy the produce directly from farmer. Traders buy the produce through e-tendering in the APMC. After quoting the price, the trader will have no right to withdraw his quote. APMC will analyse the quoted prices and disclose the highest price quoted to the farmer and traders. If the farmers accept price discovered, then the trader has to make payment to farmers within the stipulated time given by APMC. After making payment, the produce will be handed over to the trader. Further, traders sell the red gram to processors or if they are trader cum processors, undertake the processing.

Processor

Processors in Gulbarga are mostly traders cum processors. Real value addition to red gram starts at this stage by processors. Under the present study, it was found that most of the red gram for processing will be sent to dal industries located in Kapanoor industrial area. There are more than 300 dal mills in Gulbarga taluk itself. But only 150 dal mills are working throughout the year. In dal mills, dal, flour and roasted dal, etc. are produced. But dal making is the major processing activity in these mills. The processed red gram will be sold to wholesalers. Some millers themselves also act as wholesalers. The by-products such as bhusa and chunni will be purchased by the animal feed manufacturing factories which may reach consumers through local retailers.

Wholesaler

Wholesalers buy dal from processors and sell it to retailers. As they usually deal with large-scale of production, their profit margins are also high. Red gram dal from wholesalers in Gulbarga will be marketed mainly to retailers in Tamil Nadu, Telangana, Andhra Pradesh, Mumbai, Kerala, Maharashtra and local retailers in Gulbarga.

Retailer

From retailers red gram dal will be purchased by the ultimate consumers. Broken dal will be sent to the local market to dispose at a lesser price.

The below Table 2 includes different stages of the value chain, agents involved in the chain, the functions of each agent and the output of each stage.

Dal mills where real value addition to red gram starts, produces dal, the most value-added product along with two by products i.e., bhusa and chunni, will be purchased by the animal feed manufacturing factories. The processed red gram after grading and standardization will be sold to wholesalers. Graded dal from wholesalers will be marketed mainly to retailers. From the retailers it will be purchased by the ultimate consumers. Broken dal will be sent to local market to dispose at a lesser price.

Trend in red gram area, production and productivity in Gulbarga district

The linear trend analysis of red gram area, production and productivity over 20 years i.e., from 1997-2016 in Gulbarga district presented in Fig. 1, 2 and 3 have revealed that area, production and productivity of red gram in the district has grown at a rate of 2612.5 ha, 10758 tonnes and 26.4 Kg/ha every year during the above period.

Farmers constraints in the value chain of red gram

In this section, an attempt has been made to present different constraints that come in the way of the red gram value chain, which includes farmer, commission agent, trader, processor, wholesaler and retailer.

The constraints based on opinion of the farmers are analysed by using Garrett ranking technique and presented in Table 3.

The various constraints revealed by farmers include lack of HYV's, high fertilizer cost, high pesticide cost, high marketing cost,

untimely payment, defective weighing machines, labour shortage, low price at harvest, lack of transportation, lack of storage facilities and lack of processing units.

When the overall sample is taken into consideration, the major constraint experienced by the farmer was a low price at harvest (78.19), followed by untimely payment (76.81), high marketing cost (62.00), labour shortage (61.85), lack of transportation (52.44) and defective weighing machines (52.38). Emefiene. (2014) also observed similar constraints concerning farmers involved in red gram production.

Constraints for commission agent in the value chain of red gram

The commission agent plays an important role in the red gram value chain analysis. It is very important to know the problems of the commission agents and suggest some solutions to these problems, which will otherwise disturb the chain of red gram. The various constraints faced by commission agents are presented in Table 4.

The major constraint faced by commission agent was too much price fluctuation (66.2) followed by lack of adequate storage facilities (60.9), lack of adequate processing units (57.9), lack of transportation (49.2), low price at harvest (35.8) and non-payment / untimely payment (30.0).

Constraints for traders in the value chain of red gram

The trader and commission agent work in parallel in a red gram value chain. So it is important to know the constraints faced by the trader. The various constraints faced by trader in red gram marketing are presented in Table 5.

Table.1 Summary of sampling design

District	Taluks	Villages	Number of respondents
Gulbarga	Sedam	Kodla	10
		Sedam	10
	Chincholi	Chincholi	10
		Sulepet	10
	Chittapur	Chittapur	10
		Diggav	10
	Gulbarga	Gulbarga	10
		Malaked	10
Total			80

Table.2 Functional analysis of red gram chain

Stage of the chain	Function	Agent	Output
Production	Cultivation	Farmer	Red gram
Primary marketing	Marketing Transport to dal mill	Commission agent Trader	Red gram
Processing	Dal processing	Dal millers / processors	Dal, bhusa and chunni
Secondary marketing	Marketing	Wholesaler	Dal
Tertiary marketing	Marketing to consumers	Retailer	Dal

Table.3 Farmers constraints in the value chain of red gram

S. No	Constraint	Garrett score	Rank
1	Lack of HYV's	28.26	9
2	High fertilizer cost	42.78	8
3	High pesticide cost	43.05	7
4	High marketing cost	62.00	3
5	Untimely payment	76.81	2
6	Defective weighing machines	52.38	6
7	Labour shortage	61.85	4
8	Low price at harvest	78.19	1
9	Lack of transportation	52.44	5
10	Lack of storage facilities	26.23	10
11	Lack of processing units	25.01	11

Table.4 Constraints for commission agent in the value chain of red gram

S. No	Constraint	Garrett score	Rank
1	Lack of transportation	49.2	4
2	Lack of adequate storage facilities	60.9	2
3	Lack of adequate processing units	57.9	3
4	Too much price fluctuation	66.2	1
5	Low price at harvest	35.8	5
6	Non-payment / untimely payment	30.0	6

Table.5 Constraints for traders in the value chain of red gram

S. No	Constraint	Garrett score	Rank
1	Lack of transportation	41.50	5
2	Lack of adequate storage facilities	48.10	4
3	Lack of adequate processing units	58.70	2
4	Too much price fluctuation	73.90	1
5	Low price at harvest	23.00	6
6	Non-payment / untimely payment	53.10	3

Table.6 Constraints to processors in the value chain of red gram

S. No	Constraint	Garrett score	Rank
1	Lack of timely availability of raw materials	32	4
2	Cuts in power supply	69	1
3	Transportation bottlenecks	32	4
4	Lack of adequate processing units	54	3
5	Labour shortage	62	2

Table.7 Constraints to wholesalers in the value chain of red gram

S. No	Constraint	Garrett score	Rank
1	Lack of transportation	33.8	3
2	Lack of adequate storage facilities	65.0	1
3	Lack of adequate processing units	65.0	1
4	Too much price fluctuation	37.2	2

Table.8 Constraints to retailers in the value chain of red gram

S. No	Constraint	Garrett score	Rank
1	Lack of transportation	36.7	4
2	Lack of adequate storage facilities	63.7	1
3	Lack of adequate processing units	60.8	2
4	Too much price fluctuation	44.8	3

Appendix table 1 Area, production and productivity of red gram in Karnataka

Year	Area (Hectare)	Production (Tonnes)	Yield (Tonnes/Hectare)
1997-98	238994	60394	0.25
1998-99	273391	124147	0.45
1999-00	311666	181795	0.58
2000-01	366678	164418	0.45
2001-02	318250	81329	0.26
2002-03	335663	161667	0.48
2003-04	349894	136616	0.39
2004-05	345723	177356	0.51
2005-06	382765	273447	0.71
2006-07	382521	163528	0.43
2007-08	429589	302817	0.70
2008-09	379769	187606	0.49
2009-10	336853	153285	0.46
2010-11	377775	206718	0.55
2011-12	370523	175998	0.47
2012-13	340119	250736	0.74
2013-14	369537	394592	1.07
2014-15	315343	210003	0.67
2015-16	261076	94993	0.36
2016-17	388914	541641	1.39

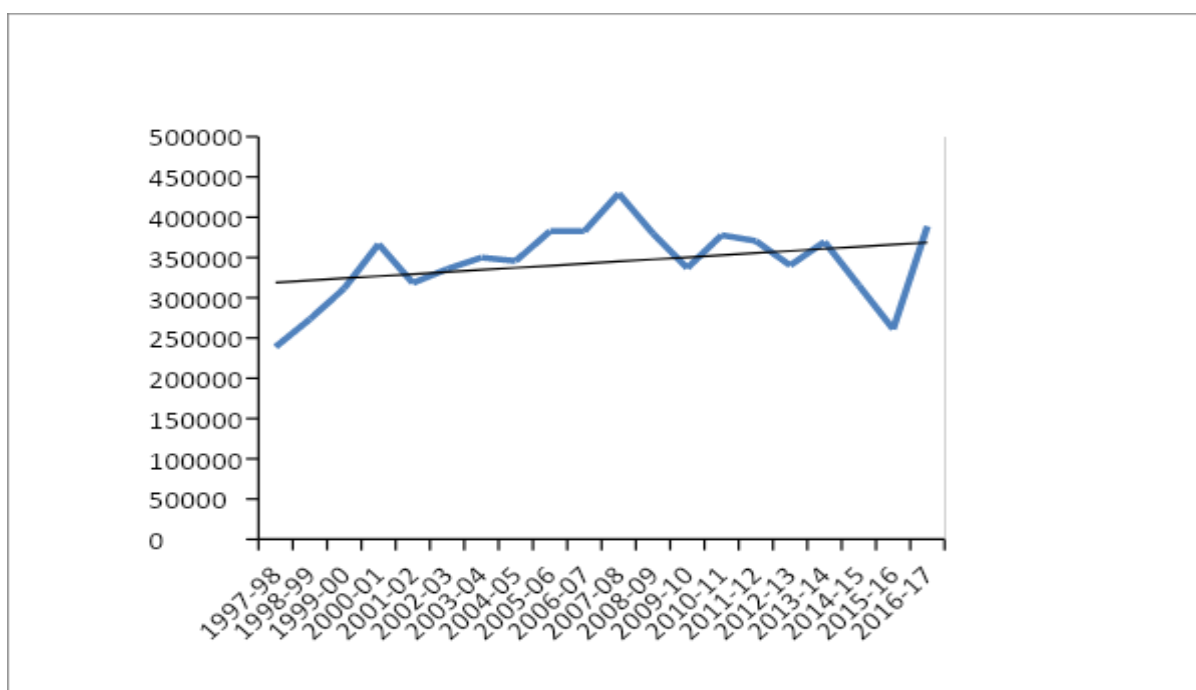**Fig.1** Trend in red gram area (ha) in Gulbarga district

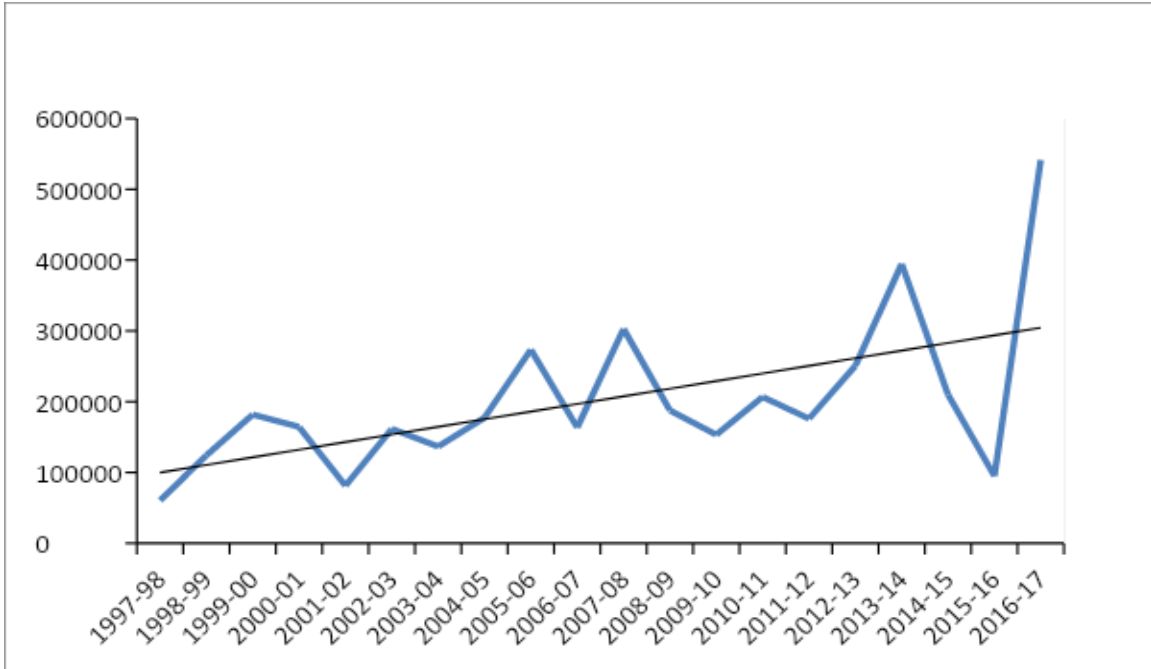**Fig.2** Trend in red gram production (tonnes) in Gulbarga district

Fig.3 Trend in red gram productivity (tonnes/ha) in Gulbarga district
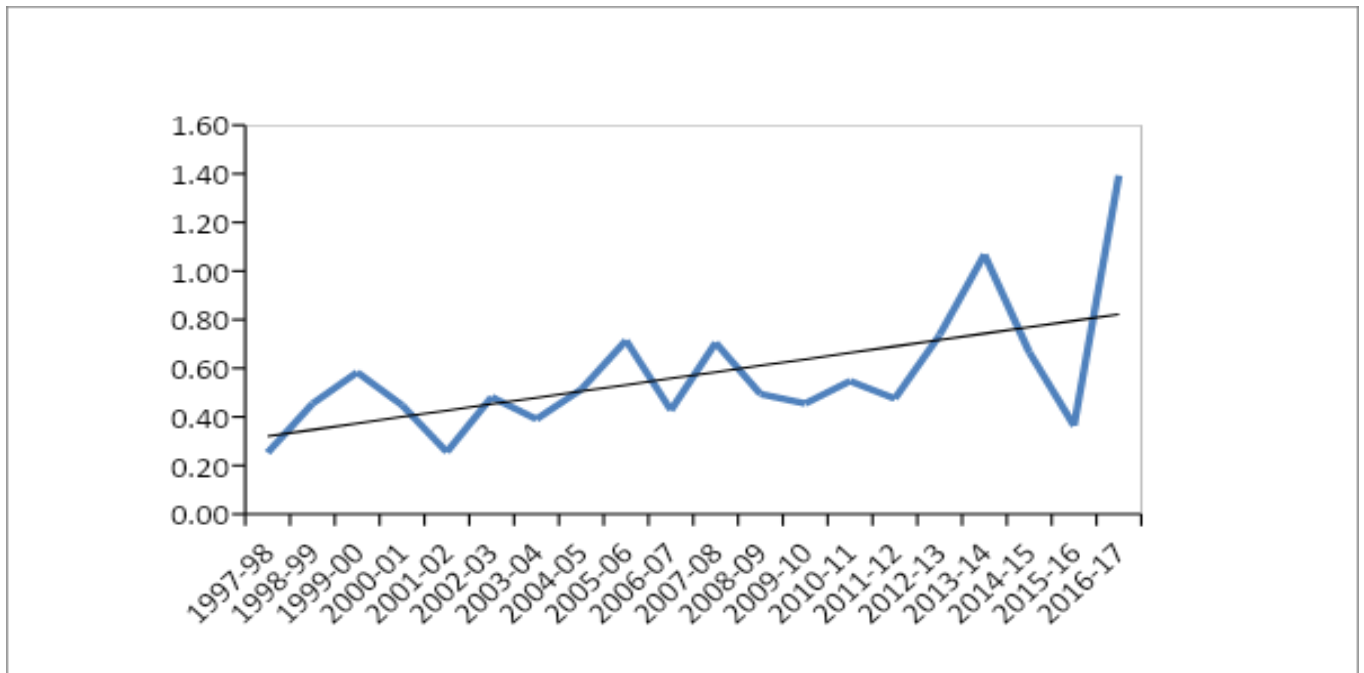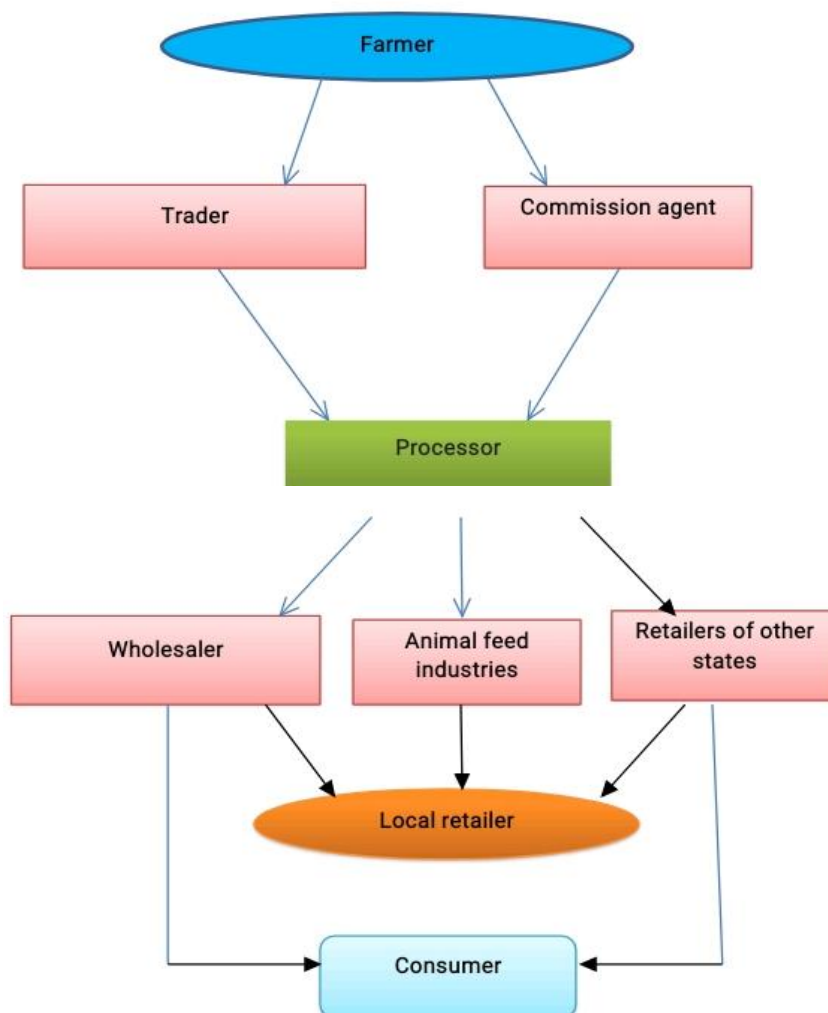
Fig.4 Mapping of red gram value chain

The major constraint faced by the trader in a red gram value chain was also too much price fluctuation (73.9) followed by lack of adequate processing units (58.7), non-payment / untimely payment (53.1), lack of adequate storage facilities (48.1), lack of transportation (41.5) and low price at harvest (23.0)

Constraints to processors in the value chain of red gram

The constraints faced by processors/dal millers in red gram value chain are mainly lack of timely availability of raw materials,

cuts in power supply, lack of transportation, lack of adequate processing units and labour shortage. Among these, cuts in power supply (69.0) ranked first followed by labour shortage (62.0), lack of adequate processing units (54.0), transportation bottlenecks (32.0) and lack of timely availability of raw materials (32.0) (Table 6).

Constraints to wholesalers in the value chain of red gram

The major constraints faced by wholesalers are lack of transportation, lack of adequate storage facilities, lack of adequate processing

units and too much price fluctuation. The findings of Garrett ranking indicated lack of adequate storage facilities (65.0) and lack of adequate processing units (65.0) as major constraints followed by too much price fluctuation (37.2) and lack of transportation (33.8) as other constraints (Table 7).

Constraints to retailers in the value chain of red gram

The major constraints faced by retailers of red gram dal are lack of transportation, lack of adequate storage facilities, lack of adequate processing units and too much price fluctuation. Among these constraints, lack of adequate storage facilities (63.70) ranked first followed by lack of adequate processing units (60.8), too much price fluctuation (44.8) and lack of transportation (36.7) (Table 8).

In conclusions the value chain of red gram in Gulbarga district involves different actors/participants: commission agents, traders, processors, wholesalers and retailers. The farmers in Gulbarga district sell individually their produce either to commission agents or traders. These commission agents and traders are connected to the processors. They are used as a bridge to connect the farmers and processors in the value chain of red gram. Low price at harvest, too much price fluctuations, frequent power cuts, lack of adequate processing and storage godowns were observed as major constraints of farmers, commission agents / traders, processors, wholesalers and retailers in the red gram value chain in Gulbarga district. Hence, to realize more profits the farmers should promote farmers cooperatives (FPOs) for collective production and marketing of red gram, development of wide spread marketing arrangements, Financing for establishment and dispersion of more number of processing units (dal mills) by government. Promotion of direct linkage of farmers to processors through suitable contract farming models by both government and non – government organizations is essential for strengthening the red gram value chain

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