Knowledge of Stakeholders of Cotton Value Chain Management in Telangana State

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ABSTRACT: A significant portion of the world's population uses cotton for textile purposes. Due to its direct and indirect employment opportunities and contribution to income generation in the agricultural and industrial sectors, the cotton crop is crucial to the Indian economy. In order to determine the knowledge of cotton value chain stakeholders, a study was carried out in the state of Telangana. By using a random selection technique, a sample size of 120 stakeholders—80 cotton growers and 40 other stakeholders—was selected. According to the study, most respondents had a medium degree of awareness of cotton growers and other stakeholders (57.50%). With the exception of Age, Education, and Annual Income, all profile features of respondents demonstrated a significant link with the amount of stakeholders' understanding of. (Multiple linear regression value 75.66). High seed cost of cotton hybrids, complexity in the technology to understand, inadequate knowledge on pink boll worm infestation, unavailability of transportation were the major constraints expressed and their suggestions for effective implementation of value chain activities in cotton.

Keywords: Knowledge, stakeholders, value chain management.

INTRODUCTION

The most popular natural fiber on earth is cotton. Annual production of raw materials exceeds 22 million tones, with India, China, and the United States being the top three producers. The production, subsequent processing, and sale of cotton goods involve millions of people worldwide, making it one of the largest and most significant value chains in the global economy and a source of income and sustainability for many.

However, cotton only grows in a much specialized climate as an agricultural commodity, and high-quality production is only possible with adequate water availability. Therefore, in order to create future yields in a sustainable manner, the impact of knowledge change on cotton production and subsequently its entire value chain needs to be thoroughly assessed. Porter Michael (1985) defined a value chain as a group of operations carried out by a corporation to generate value for its consumers. Porter Michael wrote about value chains in his book "Competitive Advantage". "Added value" is produced through value creation, and this results in competitive advantage.

Koontz and Weihrich (2007) in their book on "Essentials of Management" stated value chain management involves analyzing every step in the process ranging from the handling of raw material to delivering the final product to the end users, providing them with the greatest value at the lowest cost. A Value chain refers to "the full range of activities which are required to bring a product or service from conception, through the intermediary phases of production, delivery to final consumers, and disposal after use" (Kaplinsky and Morris 2002).

The area under cotton in India is around 120.69 lakh hectares, with the production and productivity of 341.91 lakh bales and 510 kg/ha respectively in 2020-21. After Maharashtra and Gujarat, Telangana ranks at third position in the country in cotton cultivation with an area of around 58.27 lakh hectares, and production and productivity of 116 lakh bales and 522 kg/ha respectively in 2020-21. Main cotton growing districts in Telangana are Nalgonda, Nagar Kurnool Adilabad, Sangareddy Warangal, Karimnagar, Khammam. Adilabad is one of the leading districts in Telangana with 2.41 lakh bales of cotton production under 4.23 lakh hectares during 2020-21.

The processing of cotton is a business which is undertaken for the purpose of value addition to the product. The value addition to cotton takes place at three main stages of processing *viz*., ginning, spinning and weaving. The end product in cotton processing is the cloth which will result at the weaving stage of cotton processing. A knowledge value chain is a sequence of intellectual tasks by which knowledge workers build their employer's unique competitive advantage and/or social and environmental benefit

The cotton processing industry, in fact, is the largest labour intensive economic activity next to agriculture and provides employment to Indian population either directly or indirectly. It is the largest organized and

unorganized sector and constitutes an integral part of the urban and rural life of the country. India like other countries in the world, preserves its ancient and time honored traditions of ginning, spinning, weaving, dyeing and printing crafts.

Suryavanshi *et al.* (2006) in their study explored that eighty percent of the cotton was sold through the channel producer-commission agent cum wholesaler-retailer consumer, remaining percentage was through channel producer-consumer. Kumar *et al.* (2012) identified three cotton seed value chains in Samastipur district of Bihar i.e. private maize seed value chain, Rajendra Agricultural University (RAU) maize seed value chain and IARI Regional Station maize seed value chain. The channels through which cotton flows helps us in identifying different actors involved in the value chain, their relationships, information flows, product flows, the level of coordination, constraints involved, awareness of chain actors on quality standards, decision making, planning and scheduling of operations etc., all of which eventually make up the chain (Parveen, 2021).

The current production and productivity of cotton depicts the technological gap in Knowledge Management in value chain. To boost up the cotton production in the Telangana state, the farming community needs to be aware about technological development and Knowledge Management of same. Majority of cotton growers has medium level of knowledge management in cotton value chain i.e. (57.50%) and other stakeholders having medium level of knowledge (57.50%) in cotton value chain.

There are many actors involved in the cotton value chain from cotton growers to the textile industry. Cotton growers need data based advice on soil information, rainfall and temperature in order to make better knowledge management decisions when to sow and harvest and how to till land appropriately as well as a tool to be able to timely react , as pests expand quickly and risk crop failure or problems with post-harvest management such as fungus.

MATERIALS AND METHODS

Ex-post-facto-research design is most often used with social and behavioral sciences because it is difficult to assign a respondent dynamic behavioral condition. Thus, Ex-post-facto-research design was used for the study. It was considered appropriate because the event has already happened. It was a systematic empirical study in which the researcher does not have direct control over independent variables because their manifestations have already occurred. The present study was conducted by Ex-post facto research design. The study was carried out purposively Adilabad and Nalgonda district covered highest area under cotton

crop. Again from each district top two villages having more cotton growers of small, medium and large farmers were selected. The village-wise information relating to cotton growers were obtained from Krishi Vigyan Kendras, Agricultural extension officers after brief consultation with Agricultural scientists, Agricultural Officers and data available 08 villages from Agricultural officer under study were selected purposively on the basis of maximum area. In each of the identified villages 10 farmers were randomly selected for collecting the required data for the research. Thus, 40 respondents were selected from each of the mandals. Totaling the sample constituted for the study to 120 stakeholders. The total of 8 villages were selected and top three villages had maximum number of cotton growers had been issued were chosen in each district through simple random sampling 10 respondents per village and 40 other stakeholders from Cotton Textile industry available nearby villages were selected. One district × two districts × two villages × 10 farmers. The study aimed to assess the statements about the Knowledge management of stakeholders in value chain and to find out the relationship between stakeholder profiles characteristics with their in relation to Knowledge level recommendations. Statistical tools and tests used such as arithmetic mean, Frequency, percentage, standard deviation, rank, correlation, multiple linear regression for continuity. In the current study, it is an efficiency of analyzing knowledge level benefits or features by the stakeholders in terms of applying value chain practices for farm sustaining and improving status in value chain Porter Michael (1985) describes that a value chain is a collection of activities that are performed by a company to create value for its customers. Value Creation creates "added value" which leads to competitive advantage. Procedure followed by Parveen (2021) with suitable modifications was used for the study. With twelve statements was prepared by using teacher made test technique with the help of research reviews and consulting experts of statistics, economics and extension discipline for deriving meaning of conclusions. The responses of the respondents on each statement was obtained on two point continuum via yes or no with weightage of 2 and 1 scores, respectively. Thus, the possible score for stakeholders in knowledge management ranges between minimum of 12 and maximum of 24. The respondents were grouped into three categories on the basis of mean and standard deviation.

Status of Adilabad District. The following table shows the awareness of value chain practices has collected, analyzed, number of farmers covered, number of stakeholders are participated and number of stakeholders are perceiving knowledge management practices to the farmers in district.

Table 1: Mandal wise distribution of respondents.

Name of the villages	Name of the Mandal	No. of cotton growers	No. of Stakeholders
Uddadi	Tamsi	**20**	**10**
Ponnari	Tamsi	**20**	**10**
Talamadugu	Talamadugu	**20**	**10**
Kottur	Talamadugu	**20**	**10**
	Total	**N=80**	**N = 40**

Table 2: Distribution of textile industries in Adilabad district.

Sr. No.	Name of the industry	Location
1.	Dharani cotton mill	Khursheed nagar
2.	Mahadev Sitharam cotton mills India Pvt. Ltd	Bhainsa
3.	Devdoot gin mill	Rampur

RESULTS AND DISCUSSION

Knowledge level of stakeholders about activities in cotton value chain management. The data collected from our sampled respondents tabulated and analyzed using suitable statistical tools and techniques. The results are explained along with the inferences drawn in relation to the objectives set forth for the study. Knowledge is the cognitive behavior of an individual. The body of knowledge is the product of learning process. Once the Knowledge is acquired it produces changes in the thinking process of an individual which leads to further change in attitude and helps the farmer in making rational decision helps the farmer in making rational decision.

Value chain management involves analyzing every step in the process ranging from the handling of raw material to end users, providing them with the greatest value at the lowest cost (Koontz and Weihrich 2007). Value chain management as the alignment and consequent focused management of all value chain activities to meet the requirements of a specific segment of customers. The author stated that value chain management has three important concepts such as customer-centricity, alignment of value chain activities and organisational structure (Staden, 2007).

Kannegiesser (2008) stated that integrated value chain management is the process of integration of demand, supply and value decisions from sales to procurement using strategy, planning and operational processes. The primary goal of measuring the amount of knowledge that value chain partners had on various parts of value chain management was to ascertain how well-versed farmers and other stakeholders were in using these "value chain" characteristics in their current contexts to improve the value of their products. High exposure to information sources, more interest in obtaining better prices and profits, and superior managerial skills compared to cotton growers may all contribute to other stakeholders' high degree of knowledge. On the basis of Knowledge the cotton stakeholders were classified into three levels and the data are given in Table 3.

The data with regards to level of knowledge possessed by cotton stakeholders about recommended management behavior in cotton value chain furnished in Table 3, it is revealed that 57.50 percent had the medium level of cotton growers and other stakeholders had the medium level of 57.50 percent of respondents showing medium level in cotton value chain respectively.

Overall knowledge management of stakeholders in cotton value chain. It was clear from the data in Table 5 revealed that cotton growers had medium level knowledge (57.50%), followed by low level (31.25 %) and high level (11.25%) and other stakeholders had medium level of knowledge management (57.50%) in value chain respectively. It might be due to that farmers have understood that using active participation of value chain activities of adopting new technologies to increase the yield efficiently would decrease the cost of cultivation and helps to sustain and maintain the production and productiveness of their cotton value chain activities.

Table 3: Overall Knowledge level of stakeholders in cotton value chain (n=120).

Sr. No.	Cotton growers(n=80)			Other Stakeholders(n=40)		
		F	%		F	%
1.	Low	25	31.25	Low	13	32.50
2.	Medium	46	57.50	Medium	23	57.50
3.	High	09	11.25	High	04	10.00
	Total	80	100.00	Total	40	100.00

Statement –wise Knowledge management of cotton value chain by stakeholder. To the first item on "value adding activities in the farm operations" 93 percent of the farmers/cotton growers stated that "optimum time of sowing is essential for obtaining healthy cotton boll formation because if the flowering happens during excess rains, it leads to damaged bolls that may fetch less price" and "cotton pickings must be spread evenly and not in bales because humidity may increase if kept as cotton bales and seeds may get damaged". With regard to other stakeholders in the value chain most (72.5%) responded as "moisture content of cotton is an important quality check" besides "bales conforming to the FAQ norms shall only be taken from farmers".

Most (18.25%) of the cotton growers stated that "occurrence of weeds/other plants doesn't add any value to the standing crop but incurs additional costs for managing them" as response to the non-value adding operations. Other stakeholders (72.50%) stated, "improper stitching of the gunny bags containing cotton bales leads to the loss of produce during transportation, the losses for which must be incurred by that agency/corporation itself". Most poultry farmers also stated, "Excess moisture retards the quality of poultry feed besides reducing storage time".

Cent percent of the cotton growers and other stakeholders knew that better prices will be realized if the procurement agency/buyer states prices in advance. In the present investigation, TS MARKFED was a

nodal agency to procure cotton under MSP and hence cotton growers had sold the cotton at a uniform price (MSP) with immediate returns from MARKFED.

Most (81.25%) of the cotton growers had no idea of the costs incurred by other chain partners in the value chain neither other stakeholders (57.50%) knew about the costs incurred by their immediate chain stakeholders. As far as the item "risk sharing improves trust" is concerned, most (77.50%) farmers had given a "yes" response. Though government stated to grow cotton, since there is a surplus, farmers in the sample districts have grown cotton. When the government stated that it will not procure cotton from farmers, they were in a distress situation especially during the Covid lockdown periods when the movements were restricted. But the government later altered its decision to procure cotton through MARKFED under MSP. With this decision, cotton growers were relieved that they will be able to sell their produce and accordingly TS MARKFED procured cotton with immediate returns to the farmers. When asked about the trust levels with this type of regulation by the government, most said that since they are assured of returns, they can develop trust on such regulations. All these might be the reason that influenced farmers to believe that risk sharing may definitely improve trust levels. Other stakeholders in the value chain, especially managers of PACS/DCMS also believed risk sharing improves trust.

Seventy percent of cotton growers stated a "yes" response to the item on training labour to manage quality. This referred to the farm operations that require quality considerations such as not cotton bales, removing the foreign grains and other particulate matter, cotton pickings at right time etc. Training here in farmer's perception was to enable the labour to get the desired work done. Other stakeholders to know that training the labour is the most important factor in maintaining quality. Processing firms and poultry farmers in the present investigation had given informal trainings to the new labour from the pre-existing experienced labour.

With regard to the knowledge item "are the buyer complaints viewed as an opportunity to improve value chain activities" 67.50 percent of the farmers partially given a "no" response. It was observed that farmers are more concerned with disposing of their produce and hardly concerned about the corrective measures/feedback from their immediate buyers. This may be an important factor for consideration in effective value chain developmental projects. Other stakeholders *viz.*, managers in MARKFED/PACS/ too had cared least on the feedback from the immediate buyers but processing firms/poultry farmers have given a "yes" response indicating they take into consideration on the corrections/feedback obtained in their processed cotton.

Majority (80.00%) of the farmers knew the standards to be maintained in cotton to get fair price. These are stated as FAQ (Fair Average Quality) norms provided by the government which are listed below

Specifications of the cotton quality as stated by TS MARKFED

Farmers focused more on the moisture content than any other one of the mentioned requirements. An essential player in getting the harvested cotton to the next chain of stakeholders was the agricultural extension officer. He or she also helped with sales by allowing farmers to know about these standards. Other parties with an interest in preserving the quality of poultry feed and poultry units, such as poultry farmers and processing businesses, adhere to the criteria.

Sr. No.	Refractions	Maximum limits (%)
1.	Moisture content	10.0
2.	Foreign matter	1.0
3.	Damaged seeds	3.0
4.	Oil content	15.0
5.	Trash content	3.0
6.	Bundle strength	.>28.0
7.	Micronaire	2.8 to 3.0
8.	Staple length	32.5

Not more than 0.10 % by weight shall be mineral matter and not more than 0.10 % by weight shall be impurities of plant origin

According to 50% of the cotton growers, it is appropriate to include other stakeholders in planning and goal-setting processes. Many of them view farming activities as a natural form of employment and as a result, don't focus on planning and goal-setting. They just have knowledge about the purchasers and give little thought to including other stakeholders in planning. In value chain development projects, when involvement and shared goal-setting among chain stakeholders can be encouraged through extension interventions, this component may be given particular focus.

T. S. MARKFED has provided instructions for the purchase of cotton during the 2022–2023 market seasons. The instructions were given clear about the actions that had to be completed, starting with the collection of cotton from villagers' farmers, followed by weighing and bagging by PACS or DCMS, distribution by transport companies, and delivery to godowns. The roles and responsibilities of each chain member are undoubtedly clarified by planning involving several stakeholders, further strengthening the entire value chain system.

Although the majority (89.38%) of cotton growers answered "stronger is the market for cotton products, greater is the stability for sustaining in the value chain," Correctly, cotton was in excess during the current investigation, and there was only a moderate amount of demand; nonetheless, farmers continued to grow cotton because it is less expensive. In these circumstances, convincing farmers to grow the crops that have higher demand and provide higher returns for the same cost of cultivation may be necessary as an extension intervention. Most feed processors have provided a "correct" response to this knowledge item in relation to other stakeholders in the value chain, demonstrating that this is also true for processors: a greater market for cotton products enables higher profitability and sustainability.

The majority of cotton farmers in the sampled districts (86.88%) responded "correctly" to the knowledge item "associations/group formations help in better management of operations," demonstrating that they were aware that it would be simpler to make decisions and sell their goods through group formation, particularly during global epidemic periods. Here it should be mentioned that groupings were stronger at the village level but that there was only a weak correlation between farmers from two distinct mandals. This knowledge item has likewise received a "correct" answer from buyers and processing companies. They believed that they could easily handle price-related issues by maintaining relationships with their direct customers.

Most cotton growers (98%) who responded to the knowledge question on "buyer preferences" cited "moisture content" and "lack of impurities and damaged seeds" as the main arguments. The most common replies from other stakeholders were "colour of the grain," "size of the grain," "staple length" and "moisture percentage."

According to the majority (89.37%) of cotton growers and 90% of the other stakeholders, time and distance of transportation will undoubtedly have an impact on earning a good price. According to cotton growers, since both of these factors affect moisture content, they do have an effect on quality. District managers must move cotton bale stocks within a radius of 70 kilometers from the point of purchase to the godown, and if the godown is located beyond that radius, the necessary approval must be obtained from the head office. These rules have been established by TS MARFED. If the transit distance is greater, it may not only cause the stock to degrade but also result in higher transportation costs.

Table 4: Statement-wise Knowledge level of stakeholders in cotton value chain management (n=120).

Sr. No.	Statements	Cotton growers N=80		Other stakeholders N=40	
		F	**%**	**F**	**%**
1.	Do you know about value adding activities of your operations?	75	93.75	23	57.50
2.	Do you know non-value adding activities of your operation	15	18.75	29	72.50
3.	Do you know it is necessary that various stakeholders in the chain specify the procurement prices in advance so that you can find the best price?	65	81.25	23	57.50
4.	Do you know the analysis of the costs incurred by your immediate chain partners in getting their materials?	63	78.50	32	80.00
5.	Do you know that risk sharing among chain partners improves the trust?	62	77.50	33	82.50
6.	The labour/employees need to be adequately trained in maintaining quality of the final product.	56	70.00	25	62.50
7.	Are buyer complaints viewed as an opportunity to improve value chain activities?	54	67.50	21	52.50
8.	Do you know the standards to be maintained in your product so that you get a fair price?	64	80.00	24	60.00
9.	Do you know which one of the factors related to inputs is critical for quality produce which fetch premium price?	71	88.75	31	77.50
10.	Which of the following are the symptoms of Pink bollworm contamination?	34	42.50	28	70.00
11.	Which of the following factors cause contamination in cotton?	23	65.00	26	28.75
12.	The present infrastructure facilities are sufficient to manage your operations in the value chain.	35	43.75	21	52.50

F=Frequency of stakeholders and cotton growers;   %= percent

The majority of cotton growers (88.75%) are unaware of the expenses incurred at each stage of their business operations. They don't keep track of the costs associated with producing cotton in cost analysis documents or bills. When asked about the costs, the majority of farmers gave approximations of the entire cost. They don't keep any records that could aid in their comprehension of cost-to-return ratios. Other interested parties do keep track of all costs, from procurement to storage. All organizations, groups, and businesses are required to keep records of information about prices and quantities. Processing companies also keep track of sales and price information.

Information on incentives/schemes from government at village level is provided by Agricultural Extension Officers. Government of Telangana has laid more emphasis on village level agricultural extension officers as an important mediator in getting the information

from farmers and providing information to the farmers. Many of the cotton growers from sample villages do know about certain schemes *viz*., Rhythu Bandhu, Mission Kakatiya etc. With regard to other stakeholders especially processing firms, most of them knew about the initiatives by the central (NABARD) and state government.

The two important distribution channels amongst maize growers were PACS/DCMS under MARKFED and traders/commission agents (mostly prior to post- covid) in Lorries. From MARKFED, the produce was distributed to processing firms such as Nugiveedu seeds, Vimala feeds, Kohinoor hatcheries etc. and also to the NACOF.

Cent percent of the cotton growers stated "feed" as an alternate consumption form of cotton followed by "seed" and "commercial products". Same was the response from procurement and distribution agencies. Processing firms stated cotton is predominantly used in feed industry followed by seed, oil, textile industry etc.

If the quality of the cotton gets decreased, i.e., in case if the grains are deformed or shrivelled, farmers use it for feed requirements for home poultry or treat it as a wastage if found with fungal contamination. In most of the cases, farmers generally take utmost care in maintaining appropriate moisture content. It was reported that quality of cotton was not very adversely damaged at godowns. TS MARKFED ensured all the godowns in perfect condition before transport of cotton. Most used information sources to access market related information by cotton growers were neighbour farmers and television. Whereas other stakeholders used most mass media sources like television, social media and newspapers.

Relationship between profile characteristics with their knowledge level of stakeholders in cotton value chain management. The relationship between profile characteristics with their knowledge of stakeholders of cotton value chain states in Table 7. This results revealed that variables such as, age, education had a no relationship with knowledge level of respondents, similarly, unit size, farming experience, information seeking behavior, innovativeness of respondents had being significant with knowledge level of respondents at five per cent level. Likewise, quality consciousness had being highly significant relationship with regard to knowledge level of respondents at one per cent level.

The explanation for the profile characteristics of respondents were having significant to highly significant relationship with regard to knowledge level of respondents in value chain was discussed in the following paragraphs.

Age and Knowledge level of stakeholders in value chain. As a result age had positive and non –significant relationship with the knowledge level of respondents. Probably reason might be 35-50 age group and they have medium knowledge level of respondents in the value chain.

Education and Knowledge level of stakeholders in value chain. Probably reason in having a non-significant relationship exist between education of farmers with their knowledge level in value chain and

had positive could be due to educated stakeholders have more knowledge information therefore farmers increased the knowledge management activities in value chain.

Annual Income and Knowledge level of stakeholders in value chain. Correlation test revealed a non-significant relationship exists between annual income of respondents and had positive with knowledge level of stakeholders in value chain. Probable reason might have annual income effects on social- technological aspects on knowledge of respondents and therefore, may effect on knowledge management in value chain.

Unit size and Knowledge level of stakeholders in value chain. Correlation test revealed that strongly relationship exists between unit sizes of respondents and had positive with knowledge level of stakeholders in value chain. Probable reason might have unit size effects on physiological aspects on and Knowledge level of stakeholders in value chain.

Farming Experience and Knowledge level of stakeholders in value chain. It indicates that farming experience had positive and highly significant association with regard to knowledge level of respondents in value chain at five per cent level. Probable reason might have majority of farmers felt easy to follow the recommendations of knowledge level and need to have high farming experience.

Information seeking behavior and knowledge level of stakeholders in value chain. It indicates that medium level information seeking behavior and have positively significant with regard to knowledge level of respondents in value chain at five percent level. Probable reason might have information seeking behavior effects among farming communities with regard to the knowledge level of respondents in value chain.

Creative potential and knowledge level of stakeholders in value chain. Correlation test revealed that highly significant relationship exists between creative potential of respondents with regard to knowledge level of stakeholders in value chain. Hence, alternate hypothesis was accepted.

Quality consciousness and knowledge level of stakeholders in value chain. Correlation test revealed that highly significant relationship exists between Quality consciousnesses of respondents with regard to knowledge level of stakeholders in value chain at one percent level. Hence, alternate hypothesis was accepted.

Economic motivation and knowledge level of stakeholders in value chain. As a consequence, economic motivation had positive and significant relationship with regard to the knowledge level of stakeholders in value chain at five percent. Probable reason might have farmers frequent and active participation in demonstration activities organized by KVK scientists might acts as strong motivational factor in knowledge level of respondents in value chain.

Innovativeness and knowledge level of stakeholders in value chain. Probable reason might be innovative farmers are always ready for adopting new things and same may happened in knowledge level of respondents in value chain. It indicates that innovativeness had

positive significant association with at five per cent level.

Risk taking ability and knowledge level of stakeholders in value chain. Probable reason might be majority of farmers have low risk taking ability in value chain activities and other stakeholders might have taken medium level of risk taking ability in cotton value chain activities and had positive significant relationship with regard to the knowledge level of stakeholders in value chain.

Achievement Motivation and knowledge level of stakeholders in value chain. It indicates that achievement motivation had a positive and highly significant relationship with knowledge level of stakeholders in value chain at five per cent level.

Table 5a: Relationship between independent variables of farmers with knowledge of stakeholders of cotton value chain.

Sr. No.	Independent variables	Correlation coefficient (r)
1.	Age	0.180^{NS}
2.	Education	0.0274^{NS}
3.	Unit Size	0.564**
4.	Annual Income	0.109^{NS}
5	Farming Experience	0.513**
6	Information seeking behavior	0.485**
7.	Creative potential	0.524**
8.	Quality consciousness	0.352**
9.	Economic motivation	0.577**
10.	Innovativeness	0.648**
11.	Risk taking ability	0.678**
12.	Achievement motivation	0.499**

**Significant level at 1%; *Significant level at 5%; NS = Non- significant

Table 5b: Relationship between independent variables of stakeholders with knowledge of stakeholders of cotton value chain.

Sr. No.	Independent variables	Correlation coefficient (r)
1.	Age	0.247^{NS}
2.	Education	0.534**
3.	Unit size	0.342*
4.	Annual Income	0.026^{NS}
5.	Farming Experience	0.632**
6.	Information seeking behavior	0.532**
7.	Creative potential	0.631**
8.	Quality consciousness	0.324*
9.	Economic motivation	0.587**
10.	Innovativeness	0.659**
11.	Risk taking ability	0.482**
12.	Achievement motivation	0.531**

**Significant level at 1%; *Significant level at 5%; NS = Non- significant

Table 6a: Multiple- linear Regression analysis between independent variables of farmers with Knowledge of stakeholders of cotton value chain.

Sr. No.	Independent variables	Regression coefficient	Standard error	't' value
1.	Age	0.057^{NS}	0.486	1.173
2.	Education	0.166^{NS}	0.726	0.229
3.	Unit size	0.683**	1.987	0.344
4.	Annual Income	0.523**	0.648	0.802
5.	Farming Experience	0.335*	0.654	1.996
6.	Information seeking behavior	0.532**	0.655	2.336
7.	Creative potential	0.687**	0.845	0.713
8.	Quality consciousness	0.987**	0.104	1.827
9.	Economic motivation	0.473**	0.197	0.174
10.	Innovativeness	1.941**	0.169	5.936
11.	Risk taking ability	0.883**	0.566	1.269
12.	Achievement motivation	0.393*	0.605	6.451

$R^2 = 0.756$; F=17.369; **Significant level at 1%; *Significant level at 5%; NS = Non- significant

Probable reason might be farmers would had availed the knowledge management benefits and value added activities in the form of reducing input cost through active participation of extension activities.

It is revealed from the Table 6a that calculated 'r' values between unit size, annual income, information seeking behavior, creative potential, quality consciousness, risk taking ability, innovativeness and the knowledge of stakeholders in value chain were greater than table 'r' value at 0.05 level of probability, whereas, the calculated 'r' value of the variables farming experience and achievement motivation were greater than table 'r' value at 0.01 level of probability. Hence, null hypothesis was rejected and empirical hypothesis was accepted. Therefore, it can be concluded that there was a positive and significant relationship between the knowledge levels of stakeholders in value chain.

Constraints encountered and suggestions offered by value chain stakeholders. Open ended questionnaire was constituted to know the constraints value chain stakeholders are facing in the present investigation. The results are represented in the form of frequencies and percentages as shown in Table 7.

Table 6b: Multiple – linear Regression analysis between independent variables of stakeholders with Knowledge of stakeholders of cotton value chain.

Sr. No.	Independent variables	Regression coefficient	Standard error	't' value
1.	Age	0.589^{NS}	0.134	0.438
2.	Education	0.615**	0.233	0.263
3.	Unit size	0.970**	0.653	0.301
4.	Annual Income	0.436**	0.251	0.173
5.	Farming Experience	6.397**	1.004	0.636
6.	Information seeking behavior	0.560**	0.805	1.311
7.	Creative potential	0.547**	0.138	0.395
8.	Quality consciousness	0.733**	0.321	0.228
9.	Economic motivation	0.375*	0.992	3.786
10.	Innovativeness	0.477**	0.130	0.805
11.	Risk taking ability	0.333*	0.229	0.145
12.	Achievement motivation	0.674**	0.854	0.789

$R^2 = 0.772$;   F=7.909;   **Significant level at 1%;   *Significant level at 5%;   NS = Non- significant

Table 7: Constraints as stated by cotton growers in the existing cotton value chain (n=80).

Sr. No.	Constraints	Frequency*	Percentage	Rank
1.	Lack of adequate storage facilities at individual farmer level	25	31.25	I
2.	Pink boll worm infestation leading to reduced yields	13	16.25	II
3.	Labour unavailability	09	11.25	III
4.	High costs of inputs	05	06.25	
6.	Lack of awareness on stocks and demand of major crops	06	07.50	IV
7.	Unavailability of transportation	05	06.25	V
8.	Lack of standardized, recommended low cost technologies for cotton farming.	05	06.25	VI
9.	Lack of regular visits by extension worker to give guidance to farmers on cotton farming	02	02.50	VIII
10.	Higher weed infestation	04	05.00	VII
11.	Minimal usage of various forms/ channels of communication to disseminate the information on cotton farming	06	07.50	IV
	Total	**80**	**100.00**	

Table 8: Constraints as stated by other stakeholders in the existing cotton value chain (n=40).

Sr. No.	Constraints	Managers and distribution partners (n=12)	Poultry farmers (n=08)	Industry firms and seed companies (n=12)	Traders (n=08)	F	%
1.	Increased losses with cotton procurement to the government since there was a Surplus	05	0	5	0	06	15.00
2.	Stagnant businesses with post covid to most of the processing firms	6	02	05	0	10	25.00
3.	Huge losses to the poultry firms, with lack of customers	2	02	3	2	08	20.00
4.	Closure of feed manufacturing plants leading to shortage in supply	0	0	0	0	02	05.00
5.	Non availability of labours due to migration	03	04	03	0	10	25.00
6.	Restricted transport	01	01	0	0	02	05.00
7.	Losses due to heat waves	0	02	0	0	02	05.00
	Total					**40**	**100.00**

Constraints expressed by cotton farmers in value chain management. The constraints elicited by cotton farmers were shown in Table 9. A great majority (31.25%) of farmers perceivedthe problem of lack of adequate storage facilities at individual farmer level and it was ranked I among all the constraints.16.25 percent of farmers cotton growers are pink bollworm infestation was assigned rank II. These problems have been ranked as III, IV, V, VI and VII, VIII and IX respectively. The difficulties experienced by farmers, monsoon failure followed by price volatility, labour scarcity, and high input costs. High transportation costs were the biggest issue for commission agents and retailers, while poor quality was the biggest issue for wholesalers and consumers. There were issues with commission agents receiving their payments late, poor storage facilities for consumers and wholesalers, and high handling costs for retailers (Komaravel, 2013).

Suggestions for effective implementation of cotton value chain

Table 9: Suggestions expressed by the cotton stakeholders in value chain management (n=120).

Sr. No.	Statements	Cotton growers(n=80)	Other stakeholders (n=40)	F	%	Rank
1.	Production of tolerant varieties to sucking pests should be developed.	20	11	31	25.83	I
2.	The prices of cotton produce should be maximized to build the confidence among the stakeholders	09	05	14	11.67	II
3.	The data on market intelligence of cotton marketing should be strengthened	04	06	10	08.33	VII
4.	The practice of variety wise grading and standardization has to be refined and standardized for better price	10	04	14	11.67	III
5.	The government should use various mass communication media like radio, television and newspapers to broad cast the market prices of cotton regularly	07	03	10	08.33	VI
6.	The existing polambadi programme should be used as a plat form to disseminate the knowledge on cotton farming to various farmers.	11	00	11	09.17	V
7.	Un scientific methods of storing is leading to considerable wastage due to absence of sufficient number of ware houses, therefore majority of the farmers were resorting to distress sales with the prevailing low prices. Hence the govt, should thought of creating more number of ware houses to preserve the cotton	06	00	06	05.00	IX
8.	Information corners run by the officials of DOA should be used as an effective channels to high light market prices, demand and supply, certification aspects and other related information on regular basis	05	05	10	08.33	VII
9.	Production high-yielding and good-quality cotton seeds by doing a contract farming system	08	04	12	10.00	IV
10.	To support irrigated water and to hire a harrowing machine and ginning machine with a fair price.	0	02	02	01.67	X

Stakeholders direct the researchers, extension personnel, NGOs, and field staff to act as advisors, facilitators, and partners in encouraging and empowering the farmers to assess their own circumstances, to experiment, and to make wise decisions (Savitha, 2009). The suggestions elicited by cotton stakeholders were shown in Table 9. A great majority (25.83%) of stakeholders perceived the production of tolerant varieties to sucking pest should be developed and it was ranked I among all the stakeholders. 11.67 percent of stakeholders the prices of cotton produce should be maximized and practice of variety wise grading and standardization has to be refined was assigned rank II. These suggestions have been ranked as III, IV, V, VI and VII, VIII and IX respectively (Prashanth, 2011).

CONCLUSIONS

The farmers need to bring awareness among farming communities along with adoption of new varieties, techniques are implemented by KVK scientists, Agricultural Officers in Adilabad district. The majority of respondents possessed medium level of knowledge level of information in cotton value chain. Extension personnel involved in conducting capacity building programs need to be evolving an exercise that makes the farmers to comprehend value chain activities and right way of making inferences for cropping decisions.

Field days need to be arranged at appropriate crop growth stage for farmers of the same and nearby villages. Subject matter specialists should explain the advantages of value-added based products like cotton seed oil and need based use of product amendments. Intensive use and need of information and communication technologies for database management for faster delivery of value chain management programs or projects in public private partnerships, NGO's mode and popularizing, supporting the value chain management activities or field demonstrations through empowerment and employment of youth.

The Panchayat Raj Institutes (PRIs) need to be involved in publicizing the demonstrations and training of farmers and in ensuring participation of farmers from nearby areas for widespread dissemination of technology. The follow-up activities by extension agency to make the best use on value added product recommendations are inadequate was another constraint. Undertaking appropriate follow-up activities is a must for the success of any program or project. Timely reminding farmers through online platforms and giving holding hands in the procurement of inputs need to be carried out by extension agencies to win the confidence of the farmers.

The Telangana government focusing on the improvement and procurement of value added textiles. The government brings the presence of both backward linkages right up to the fiber and forward linkages right up to the retail, in physical as well as virtual platforms, supported by large pool of manpower with skills, male it a ready to exploit opportunity for industry. The Government focusses to create awareness among farmers through platform like Rhythu sadassu and bring more knowledge about technologies implemented in cotton crop. The major opportunities drawn from contract farming, substantial subsidy for cotton processing, and diversified application of cotton products to different industries. Gambling of cotton cultivation with monsoon, competition from imported starch, lack of coordination between growers and processors (Ramesh, 2005).

FUTURE SCOPE

The promising that knowledge of stakeholders in this study can be exploited technically to increase the knowledge of respondents regarding quality and quantity of cotton produce in value chain management.

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