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Research Article

Influence of Socio-Economical Variables on Backward and Forward Linkages Developed Among the Cotton Growers in Andhra Pradesh- An Ex-Post-Facto Study

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ABSTRACT

In the present study, an attempt was made to find out the activity wise backward linkages followed by cotton growers in information activity, physical inputs, financial requirements and technical guidance. Based on maximum area under cotton cultivation Kurnool and Guntur districts from Andhra Pradesh was purposively selected. An ex-post facto research design was used for the study and the data were collected from 240 respondents. The results showed all the sixteen variables acted as cause to bring 54.50 per cent variation in extent of following backward and forward linkages in cotton cultivation were attributed to educational status, extension contact, Mass media exposure, Innovativeness and Risk orientation were positively and significantly contributed and the F value (3.167) was also found to significant at 0.01 level of probability. The cotton grower who having more education, extension contact, mass media exposure, innovativeness and risk orientation they may gain more understanding of backward and forward linkages than the average members of the community. These findings draw attention to researchers, and policy makers and other stakeholders for the introduction of innovative methods in better indulgent of backward and forward linkages in cotton cultivation. Since the farming community is proactive, the government has to initiate block chain technology enabled infrastructure to facilitate them with respect to timely information reach as well as efficient dissemination of technology at the farmer's door steps.

Keywords: *Agriculture, Food, Backward, Forward Linkages*

INTRODUCTION

Agriculture ranks second in forward linkages in terms of supplying its output to other sectors to the extent of 42 percent of its output. Agricultural sector has the least input requirements (backward linkage) compared to nonfarm sectors and contributes 16 per cent to gross value added in the economy (Sharma, 2008).

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Agriculture provides food, raw materials, and export earnings for the growth of nonfarm sectors. On the other hand, non-agricultural sectors support agriculture by supplying inputs (fertilizers, insecticides, irrigation structures, infrastructure and markets for farm produce). Consequently, the deficiency in production of one sector becomes the limiting factor for the growth of other sectors, thereby affecting the overall growth of the economy. It is imperative to study the magnitude of backward and forward linkages of farmers with various agencies for achieving a desired rate of growth in agriculture (Delgado, Hopkins, & Kelly, 1998). In the prevailing situation, farmers will be benefited by organizing themselves into functional groups in the form of self-help groups, co-operatives, associations, companies and by linking with markets. Linking primary producers with global and national markets through fresh food retail chains is seen as one of the emerging agricultural marketing practices in India to improve small producers' livelihood. (Singhal et al., 2011).

FPO members had developed backward linkages with SAU and KVKs scientists for technical guidance, and with cooperatives for getting loans. FPO members had developed forward linkages with marketing board for marketing, whereas, linkages with private sector were developed for storage, processing and value addition. (Swati et al., 2019).

In view of the significance and importance of cotton in world trade WTO hosted on 7 October 2019 the launch of World Cotton Day in collaboration with the secretariats of the United Nations Food and Agriculture Organization (FAO), the United Nations Conference on Trade and Development (UNCTAD), the International Trade Centre (ITC) and the International Cotton Advisory Committee (ICAC). Cotton is one of the most important fiber and cash crop of India and plays a dominant role in the industrial and agricultural economy of the country. Cotton is the backbone of Indian textile industry, which produces 59 % of the country's total fiber production. It accounts for 34% of the country's export and fetches about Rs.50, 000 crores annually to the exchequer. Along with the industry, which it sustains, it touches the country's economy at several points including employment and export earnings. India. India ranks first in the world in cotton cultivation with 12.66 million hectares of area constituting about 38% to 41% of the world area under cotton cultivation and ranked first in production yielding 28.71 million bales production with productivity of 466 Kgs per ha (Source: Directorate of Economics & Statistics, 2019). So it is imperative to study and critically analyse the extent of backward and forward linkages followed by farmers in cotton cultivation. Backward linkages are the channels through which information, material and money flow between a firm and its suppliers and create a network of economic independence. Forward linkages are distribution chains connecting producers or suppliers to its customers. Hence there is a need to study the influence of socio economic variables on backward and forward linkages developed by cotton growers.

MATERIALS AND METHODS

Ex-post facto research design was selected as an appropriate research design to investigate the variables influencing extent of backward and forward linkages in cotton cultivation. Andhra Pradesh state was purposively selected for the study, since the researcher belongs to the state and was familiar with local language and culture. Two districts were selected purposively from Andhra Pradesh based on the highest area under cotton cultivation. The names of the selected districts were Kurnool and Guntur. Three mandals from each district were purposively selected based on the highest area of cotton cultivation thus constituting six mandals. Four villages from each mandal were selected by following simple random sampling procedure. The sample constituted to a total of twenty four villages. From each of the selected village, ten farmers were selected by following lottery method of simple random sampling procedure. The sample constituted to a total of 240 respondents. The structured interview

schedule was developed and was pre-tested on non-sampled respondents. The interview was conducted personally by the investigator with the farmers individually. The data thus collected were processed, tabulated and analyzed by using frequency, percentage and mean weight score. The main objectives of this study were to identify the existing relationship between independent socio- economic variables and dependent variable like backward and forward linkages in cotton cultivation.

RESULTS AND DISCUSSION

Socio-economical variables among the cotton growers

Age: From Table 1 it is inferred that majority of the farmers were belonged to middle age group (67.22%), followed by 17.50 per cent belonged to old age group, and the remaining 15.41 per cent were in young age group respectively.

Middle age farmers dominated the sample as they were most enthusiastic towards the farming and old aged growers were less energetic, look after supporting activities of agriculture like taking care of household works and care of cattle. Jadhav (2009) and Raviya (2017) also found similar results.

Education: From the Table 1 it could be seen that majority of the respondents were High school (37.50%), followed by primary school (19.58%), middle school (17.50%), college education (10.00%), functionally literate (8.75%) and illiterate (6.66%) levels of education. The possible reason might be that, existence of high school in their village premises and awareness of importance of education. The government scheme *i.e.* mid day meal is one of the motivating factors for enrolment in the educational school particularly from primary to high school level. Patil (2008) and Ravi Goud (2017) also found similar results.

Farm Size: From Table 1 it could be seen that majority (37.50%) of the respondents were semi-medium farmers, followed by 25.83 per cent were small farmers, 17.50 per cent were medium farmers, 10.00 per cent were marginal farmers and very scanty percentage (8.88%) of them were large.

The probable reason might be that now a days in villages rarely we can observe the joint family system and mostly with nuclear family system. Due to nuclear family system farmer's ancestors land divided between them and resulted in fragmentation of farm land from one generation to another generation. Patil (2008) and Ravi Goud (2017) were found similar results.

Farming Experience: It could be inferred from table 1 that half (50.83%) of the farmers were grouped under medium farming experience followed by 36.66 per cent were in high farming experience and rest 12.50 per cent were in low farming experience.

It might be attributed to their middle age. Further much experienced farmers would be in a better position to venture in farming for their livelihood purpose and understand backward and forward linkages followed in cotton cultivation. Gotyal (2007) and Rajarathnam (2000) were found similar results.

Annual Income: It could be seen from Table 1 that majority (48.75%) of the respondents had medium family income followed by low (31.25%) and high (20.00%) family income respectively. majority (48.75%) of the respondents had medium family income.

It is quite natural when the farmers are having semi-medium land holding with agriculture as a major occupation and farmers can earn only medium family income and most of the farmers are depending on agriculture occupation which suffers frequently with natural calamities make them to have low to medium family income (Rs.95, 015 - 1,80,500). Subodh et al. (2016) and Kirti et al. (2016) were found similar results.

Social Participation: It could be inferred be seen from table 1 that that majority (52.08%) of the respondents had medium level of social participation followed by high (26.66%) and low (21.25%) level of social participation respectively.

It might be due to their high school education and exposure to the different inter personal and mass media channels to acquire right information consequently and increased use of Internet of Things (IoT) facilitated easy contact with different social organizations. Vinayak (2013) and Ravi Goud (2016) were found similar results.

Extension contact: It could be inferred from Table 1 that, more than half (52.91%) of the respondents had medium extension contact followed by 25.41 per cent and 21.66 per cent had high and low extension contact respectively.

It might be due to due to regular contact with Extension officials, Scientists, ADA's, AEO's and other Progressive farmers to gain knowledge and under different linkages in cotton. The other reason might be that respondents actively participated in various extension activities such as exhibitions, workshops, trainings, demonstrations, farmers field visits *etc.* Another reason might be that majority of respondents were educated up to high school and willing to contact the officials to adopt latest technologies related to cotton. Patil (2008) and Ravi Goud (2017) were found similar results.

Mass Media exposure: Table 1 indicated that, more than half (51.25%) of the respondents had medium level of mass media exposure followed by 26.25 per cent and 22.50 per cent had high and low levels of mass media exposure respectively.

This might be due to exposure to different inter personal and mass media channels to acquire precise information and increased use of IoT facilitated medium level of mass media exposure. Another reason might be due to high school education, medium family income and possessing semi-medium land holding. Ravi Goud (2017) and Raviya (2017) were found similar results.

Innovativeness: Nearly half (49.58%) of the respondents had medium innovativeness followed by 27.08 per cent had high innovativeness and 23.33 per cent had low innovativeness.

The possible reason might be due to the fact that majority of the cotton farmers were adopting new technologies on the advice of Extension officials and also regularly contacted them to gain information on different linkage activities. Extension officials might have motivated them to learn and adopt innovative technologies in farming and modern cultivation practices in cotton to increase their income levels. Gopinath (2005), Vinayak (2013), Ravi Goud (2017) and Khandave et al. (2019) were found similar results.

Economic Orientation: It could be observed from Table 1 that more than half (56.66%) of the respondents had medium economic orientation followed by 38.33 per cent of them had high economic orientation and 5.00 per cent had low economic orientation.

The possible reason might be due to majority of the farmers were having high school education, medium family income, medium mass media exposure, medium extension contact due to which it has become difficult to orient them towards understanding backward and forward linkages in profit maximization in cotton cultivation and the farmers are not getting the remunerative prices for their produce. Jadhav (2009), Ravi Goud (2017) and Khandave et al. (2019) were found similar results.

Scientific Orientation: It could be seen from Table 1 that more than half (52.50%) of the respondents had medium scientific orientation followed by 24.58 per cent of them had high scientific orientation and 23.33 per cent had low scientific orientation.

The reason might be that the farmers with medium social participation, medium extension contact and medium mass media exposure might have leaning them towards somewhat less knowledge about scientific developments in cotton cultivation, thus they were medium in scientific orientation. Ravi Goud (2017) and Raviya (2017) were found similar results.

Risk orientation: It could be seen from Table 1 that more than half (57.50%) of farmers belonged to medium risk orientation followed

by high (25.00%) and low (17.50%) risk orientation, respectively.

The reason might be that the farmers with medium social participation, medium extension contact and medium mass media exposure, aberrant climatic conditions and medium scientific orientation in latest developments in cotton cultivation were prevented to take higher risks. Acharya (2007) and Gotyal (2007) were found similar results.

Management Orientation:

a) **Planning orientation:** It could be seen from table 1 that more than half (60.00%) farmers belonged to medium planning orientation followed by 26.66 per cent of them had high planning orientation and 13.33 per cent had low planning orientation.

It might be attributed to medium social participation, medium extension contact and medium mass media exposure, aberrant climatic conditions and medium scientific orientation in latest developments in cotton cultivation to enable them medium planning orientation.

b) Production Orientation

It could be seen from table 1 that more than half (59.58%) farmers belonged to medium Production orientation followed by 30.41 per cent of them had high planning orientation and 10.00 per cent had low planning orientation.

The possible reason might be due to medium social participation, medium extension contact and medium mass media exposure, aberrant climatic conditions and medium scientific orientation in latest developments in cotton cultivation and medium planning orientation to enable them medium planning orientation.

Achievement Motivation

It could be seen from table 1 that more than half (52.22%) of the respondents had medium level of achievement motivation followed by high (28.33%) and low (19.44%) level of achievement motivation respectively.

The possible reason majority of the farmers possess semi medium land holding and in order to gain more income from their farms by adopting latest technologies in agriculture, and frequent contact with extension personnel and progressive farmers to understand and utilize linkages effectively for successful cotton cultivation might have oriented towards medium to high achievement motivation. These results were in conformity with the findings reported by Ravi Goud (2017).

Marketing Orientation

It could be seen from Table 1 that more than half (62.50%) of the respondents had medium market orientation followed by 26.66 per cent of them had high market orientation and 10.83 per cent had low market orientation**.**

The possible reason might be due to as they possess semi medium land holding and medium mass media exposure it might not be possible in many cases to sell their products at remunerative price by analyzing the price variations in markets. The other reason might be that due to their medium family income, medium economic orientation and medium risk orientation they possess medium market orientation. Ravi Goud (2017) found similar results.

Credit Orientation

It could be seen from Table 1 that more than half (53.75%) of the respondents had medium credit orientation followed by 30.83 per cent of them had low credit orientation and 15.41 per cent had high credit orientation.

It might be attributed to as majority of the farmers possess semi medium land holding and due to low to middle income levels due to aberrant climatic conditions they were seeking credit from different sources to run their farm successfully.

The other reason might be that majority of the farmers possess medium extension contact and medium mass media exposure, medium scientific orientation towards latest developments in cotton cultivation and medium economic and risk orientation might have contributed to low to medium credit orientation. Vinayak (2013) and Ravi Goud (2017) were found similar results.

Table 1: Distribution of cotton growers according to their socio-economic profile characteristics n=240

Sl. No	Variable	Category	Frequency	Percentage
01.	Age	Young age (up to 35 years)	37	15.41
		Middle age (36 to 50 years)	161	67.08
		Old age (above 50 years)	42	17.50
		Total	**240**	**100.00**
02.	Education	Illiterate	16	6.66
		Functionally literate	21	8.75
		Primary school	47	19.58
		Middle school	42	17.50
		High school	90	37.50
		College education	10	24.00
		Total	**240**	**100.00**
03.	Farm Size	Marginal (Below 1.00 Hectare)	24	10.00
		Small (1.01 to 2.00 Hectare)	62	25.83
		Semi- medium (2.01 to 4.00 Hectare)	90	37.50
		Medium (4.01 to 10.00 Hectare)	43	17.50
		Large (10.01 Hectare and above)	21	8.75
		Total	**240**	**100.00**
04.	Farming experience	Low farming experience (Up to 10 years)	09	7.50
		Medium farming experience (11- 20 years)	34	28.33
		High farming experience (21-30 years)	35	29.16
		Above 20 years	42	35.00
		Total	**240**	**100.00**
05.	Annual income	Low family income (Rs.(95,015)	75	31.25
		Medium family income (Rs.1,80, 500)	117	48.75
		High family income (Rs. 2,65, 984)	48	20.00
		Total	**240**	**100.00**
06.	Social Participation	Low social participation	51	21.25
		Medium social participation	125	52.08
		High social participation	64	26.66
		Total	**240**	**100**
07.	Extension Contact	Low extension contact	52	21.66
		Medium extension contact	127	52.91
		High extension contact	61	25.41
		Total	**240**	**100**
08.	Mass media exposure	Low mass media exposure	54	22.50
		Medium mass media exposure	123	51.25
		High mass media exposure	63	26.25
		Total	**240**	**100**
09.	Innovativeness	Low Innovativeness	56	23.33
		Medium Innovativeness	119	49.58
		High Innovativeness	65	27.08
		Total	**240**	**100**
10.	Economic orientation	Low economic orientation	12	5.00
		Medium economic orientation	136	56.66
		High economic orientation	92	38.33
		Total	**240**	**100**
11	Scientific orientation	Low Scientific orientation	56	23.33
		Medium Scientific orientation	125	52.50
		High Scientific orientation	59	24.58
		Total	**240**	**100**
12	Risk Orientation	Low Risk orientation	42	17.50
		Medium Risk orientation	138	57.50
		High Risk orientation	60	25.00
		Total	**240**	**100**
13	Planning Orientation	Low Planning orientation	32	13.33
		Medium Planning orientation	144	60.00
		High Planning orientation	64	26.66
		Total	**240**	**100**
14	Production Orientation	Low Production Orientation	24	10.00
		Medium Production Orientation	143	59.58
		High Production Orientation	73	30.41
		Total	**240**	**100**
15	Achievement Motivation	Low achievement motivation	35	19.44
		Medium achievement motivation	94	52.22
		High achievement motivation	51	28.33
		Total	**240**	**100**
16	Marketing orientation	Low Market Orientation	26	10.83
		Medium Market Orientation	150	62.50
		High Market Orientation	64	26.66
		Total	**240**	**100**
17	Credit Orientation	Low Credit Orientation	75	30.83
		Medium Credit Orientation	129	53.75
		High Credit Orientation	36	15.41
		Total	**240**	**100**

Influence of the independent variables towards the backward and forward linkages developed among the cotton growers towards cotton cultivation

Table 2: Multiple regression analysis of profile characteristics of farmer's towards the extent of backward and forward linkages in cotton cultivation

n= 240

Sl. No.	Selected factors	Regression co-efficient (b)	SE of regression co-efficient (SEb)	't' value
X_1	Age	0.124	0.135	0.925^{NS}
X_2	Education	0.103	0.015	7.023**
X_3	Farm size	0.768	0.800	0.960^{NS}
X_4	Farming experience	0.030	0.033	0.931^{NS}
X_5	Annual income	-0.043	0.029	-1.465^{NS}
X_6	Social participation	-0.062	0.304	-0.205^{NS}
X_7	Extension contact	0.821	0.336	2.443^{*}
X_8	Mass media exposure	0.103	0.035	2.958**
X_9	Innovativeness	0.055	0.025	2.250*
X_{10}	Economic orientation	0.371	0.202	1.837^{NS}
X_{11}	Scientific orientation	0.074	0.037	1.983^{NS}
X_{12}	Risk orientation	0.102	0.039	2.600**
X_{13}	Management orientation	-2.059	0.869	-2.369^{*}
X_{14}	Achievement motivation	-0.375	0.663	-0.565^{NS}
X_{15}	Marketing orientation	-0.570	0.378	-1.509^{NS}
X_{16}	Credit orientation	-0.258	0.468	-0.551^{NS}

*P < 0.05- Significant at 5 per cent level; **P < 0.01 Signifiant at 1 per cent level; NS–Non-significant; NA-Not applicable, SE=Standard Error, $R^2 = 0.545$, F = 3.167 Constant = 0.297

The regression results revealed from Table 4.5 indicated that all the sixteen variables acted as cause to bring 54.50 per cent variation in extent of following backward and forward linkages in cotton cultivation. The prediction equation fitted for extent of understanding backward and forward linkages in cotton cultivation.

Extent of backward and forward linkages in cotton cultivation (Y) = 0.124 (X1) + 0.103 (X2) + 0.768 (X3) + 0.030 (X4) - 0.043 (X5) -0.062 (X6) + 0.821 (X7) + 0.103 (X8) + 0.055 (X9) + 0.371 (X10) + 0. 0.074 (X11) + 0.102 (X12) -2.059 (X13) -0.375 (X14) -0.570 (X15) -0.258 (X16).

This revealed that an one unit increase in (X2) educational status, (X7) extension contact, (X8) Mass media exposure, (X9) Innovativeness, (X12) Risk orientation, *ceteris paribus* would result in an increase of 7.023 units, 2.443 units, 2.958 units, 2.958 units and 2.250 units in extent of understanding of backward and forward linkages in cotton cultivation respectively. Also, it is revealed that one unit increase in (X13) Management orientation would result in a decrease of 2.369 units of extent of understanding of backward and forward linkages in cotton cultivation.

It could be further observed from the table 4.4, that among the 16 variables, education, extension contact, mass media exposure, innovativeness, risk orientation were found to have positively contributed to the extent of understanding forward and backward linkages in cotton cultivation.

CONCLUSION

It can be summed up as, the variables such as education, extension contact, mass media exposure, innovativeness, risk orientation were found to have positively contributed to the extent of following backward and forward linkages in cotton cultivation. Therefore, it may be concluded that there was a need to the policy makers and administrators should take care to design awareness programs regarding

latest technologies in cotton cultivation through effective utilization of IoT and strengthening of linkages village level will facilitate easy access to technology, credit, weather and market information precisely. Since the farming community is proactive, the government has to initiate broad based, commodity oriented approach to enhance agriculture infrastructure at the farmer's door step to facilitate them with respect to timely information reach as well as better transfer of technology.

REFERENCES

Amruthrao, J. B. (2009). Technological gap in adoption of recommended practices of mango cultivation. *M.Sc. (Ag.) Thesis*. *University of Agricultural Sciences*, Dharwad.

Bipinbhai, R. P. (2017). Knowledge and Adoption of Farmers about Cotton Production Practices recommended by GAU and JAU in Junagadh District. M.*Sc. (Ag.)* Thesis. *Junagadh University*, Junagadh. India.

Delgado, C. L., Hopkins, J., & Kelly, V. A. (1998). Agricultural Growth Linkages in Sub-Saharan Africa, Research Report 107, Washington, D.C. *International Food Policy Research Institute*.

Gopinath, M. (2005). Knowledge and Adoption of Bengal Gram Farmers in Kurnool district of Andhra Pradesh. *M.Sc. (Ag) Thesis*, *Acharya N G Ranga Agricultural University*, Hyderabad, India.

Gotyal, S. H. (2007). Backward and forward linkages of grape production in Karnataka. *Ph.D. Thesis*, University of Agricultural sciences, Dharwad, India.

Kirti, Jirli, B., & Pankaj, K. M. (2016). Communication Behaviour of Jeevika Project beneficiaries. *Journal of Communication Studies*. *34*(1), 100-103.

Ramesh, N. V. (2013). Linking farmers to export market: A Case of Mahagrapes in India. *Ph.D. Thesis. Indian Agricultural Research Institute*, New Delhi.

Ravi, E., Goud, Ram, D., & Raghavendra, Chowdary, K. (2018). Constraints perceived by the Cotton growers on the Cotton Cultivation in Kurnool District of Andhra Pradesh. *International Journal of Current Microbiology and Applied Sciences. 7*(6), XX-XX.

Sharma, K. L. (2008). Production linkages between farm and nonfarm sectors in Fiji islands. Workshop on farmers and agricultural research: Complementary methods, *University of the South Pacific*, Suva, Fiji Islands.

Shreeshail, Gotyal, H. (2007). Backward and forward linkages of Grape production in Karnataka. *Ph.D. Thesis. University of Agricultural Sciences*, Dharwad, India.

Khandave, S., Shafi, M., Shaik, R., & Vijaypal, Dedun, S. (2019). Backward and forward linkages developed by farmer producer organizations in Western Maharashtra. *Journal of Krishi Vigyan. 7*(2), 28-31.

Singhal, N., Singh, S., & Dindsh, P. K. (2011). Linking small farmers to emerging agricultural marketing systems in India: The case study of a fresh food retail chain in Punjab. *Agric Eco Res Rev 24*, 155-159.

Subodh, K. P., Khan, M. A., & Painkra, V. K. (2015). Information Pattern utilized by the Scented rice growers. *Journal of Com*munication *Studies*. *34*(3), 40-46.