

Farmers' Characteristics Influencing the Decision Making Pattern in Sugarcane Cultivation Activities

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ABSTRACT

The present study was carried out in Mandya district of Karnataka state during 2014-15 to find out the association between the personal, socio-economic, psychological and communication characteristics of sugarcane farmers with their decision making pattern in sugarcane cultivation activities. One hundred and twenty sugarcane farmers from Maddur and Mandya taluks were personally interviewed using a schedule. Education, innovativeness, extension participation, age, farming experience, scientific orientation, management orientation, achievement motivation, economic motivation, mass media participation and extension agency contact of sugarcane farmers were found to be having a significant to highly significant association with their decision making pattern. The results also revealed that 72.80 per cent of the variation in the decision making pattern of sugarcane farmers was explained by all the 15 independent variables included in the study. Further, it was observed that management orientation and achievement motivation of sugarcane farmers had direct, indirect and largest indirect effects on the decision making pattern of sugarcane farmers.

AGRICULTURE is the largest sector of our country, which provides livelihood to more than 70 per cent of the population and contributes about 40 per cent to the national production. Agriculture progress in India depends on millions of farmers, who must know, understand and act upon the new technology. In rural families too, the decisions are required to be taken in farming as well as in other family activities. The decision-making process passes through a series of "Ifs and Buts", before finally arriving at a decision. The decision to adopt a technology not only depends upon the availability of technologies, but by various other amalgam of factors. In this study, an attempt is made to unearth the factors which influences the decision making pattern of farmers in sugarcane cultivation activities. Against this background, the present study is carried out with the following specific objectives:

To find out the associations between the personal, socio-economic, psychological and communication characteristics of sugarcane farmers with their decision making pattern on sugarcane cultivation activities.

To know the extent of contribution of the personal, socio-economic, psychological and communication characteristics of sugarcane farmers to the decision making pattern

To analyze the direct, indirect and largest indirect effects of the personal, socio-economic, psychological and communication characteristics contributing to the decision making pattern of sugarcane farmers.

METHODOLOGY

The present study was conducted in Maddur and Mandya taluks of Mandya district in Karnataka State during 2014-15. Five villages were randomly selected for the study from each of the two sampled taluks. From each village, 12 sugarcane farmers were randomly selected for the study. The total sample constituted 120 sugarcane farmers from ten villages of Mandya and Maddur taluks. Data was collected from 120 sugarcane growers using a pre-tested interview schedule. The details about the number of sugarcane growers sampled for the study are as follows:

Number of villages and sugarcane farmers sampled for the study

District	Taluk	Village	Sugarcane Farmers
	Mandya	5	60
Mandya	Maddur	5	60
	Total	10	120

Decision making pattern (dependent variable) refers to the 'extent of involvement of farm men and women in deciding the sugarcane cultivation activities that needs to be performed'. Decision making was measured using the scale developed by Puri (1972) with slight modification. A total of 15 sugarcane cultivation activities were included to know the decision making pattern of farmers. While analyzing the decision making pattern of farmers, the respondents were given a score of 2 to the respondents who were involved in decision making and a score of 1 was given to respondents who were not involved in decision making. The minimum and maximum decision making score one could get was 15 and 30, respectively. Based on the total score obtained by each respondent, they were grouped into low, medium and high using mean and half standard deviation as a measure of check.

Information regarding 15 personal, socio-economic, psychological and communication characteristics (independent variables) (Table 1) of sugarcane growers were collected using a structured schedule with suitable scales.

The collected data was analyzed using frequency, percentage, mean, chi-square test, multiple regression analysis and path analysis. Chi-square test was employed to find out the association between independent variables and dependent variable. Multiple regression analysis was used to find out the extent of contribution of independent variables on dependent variable. Path analysis was employed to find out the direct, indirect and largest indirect effects of independent variables on dependent variable.

RESULTS AND DISCUSSION

Personal, socio-economic, psychological and communication characteristics of sugarcane farmers : Table I showed that a greater proportion of sugarcane farmers were of middle age (59.16%), small farmers (51.66%), living in nuclear family (91.67%), having moderate farming experience (47.50%) with high level of economic motivation (43.34%) and low levels of annual income (41.67%) and education (42.50%). It is observed from the table

TABLE I
Personal, socio-economic, psychological and communication profile of sugarcane farmers
(n=120)

Characteristics	Category	Sugarcane farmers	
		Number	Per cent
1	2	3	4
Age	Young	17	14.17
	Middle	71	59.16
	Old	32	26.67
Education	Low	51	42.50
	Medium	38	31.67
	High	31	25.83
Family type	Nuclear	110	91.67
	Joint	10	8.33
Farming experience	Less	35	29.16
	Moderate	57	47.50
	More	28	23.34
Land holding	Marginal	58	48.34
	Small	62	51.66
Annual family income	Low	50	41.67
	Medium	42	35.00
	High	28	23.33
Attitude towards farming	Less favourable	24	20.00
	Favourable	52	43.34
	More favourable	44	36.66
Innovativeness	Low	37	30.84
	Medium	55	45.83
	High	28	23.33
Scientific orientation	Low	32	26.66
	Medium	56	46.67
	High	32	26.67
Management orientation	Low	32	26.66
	Medium	58	48.34
	High	30	25.00

1	2	3	4
Achievement motivation	Low	34	28.34
	Medium	55	45.83
	High	31	25.83
Economic motivation	Low	24	20.00
	Medium	44	36.66
	High	52	43.34
Mass media participation	Low	39	32.50
	Medium	44	36.67
	High	37	30.83
Extension agency contact	Low	43	35.84
	Medium	53	44.16
	High	24	20.00
Extension participation	Low	38	31.66
	Medium	51	42.50
	High	31	25.84

that more number of sugarcane farmers were possessing favorable attitude towards farming (43.34%) and having medium levels of innovativeness (45.83%), scientific orientation (46.67%), management orientation (48.34%), achievement motivation (45.83%), mass media participation (36.67%), extension agency contact (44.16%) and extension participation (42.50%). It can be inferred from the above findings that majority of the sugarcane farmers were of middle age, small farmers, living in nuclear family and having medium levels of other socio-economic, psychological and communication characteristics.

Association of personal, socio-economic, psychological and communication characteristics of farmers with their decision making pattern in sugarcane cultivation activities : Table II reveals that family type, land holding, annual family income and attitude towards farming of farm men and women were found to be having a positive and non-significant association with their decision making pattern. Education, innovativeness and extension participation

TABLE II
Association of independent variables with the decision making pattern of farmers in sugarcane cultivation activities

(n=120)		
Independent variables	Contingency co-efficient	Chi-square Value
Age	0.27	10.01 *
Education	0.31	13.67 **
Family type	0.12	1.92 NS
Farming experience	0.27	10.08 *
Land holding	0.17	3.67 NS
Annual family income	0.18	4.01 NS
Attitude towards farming	0.14	2.68 NS
Innovativeness	0.32	13.69 **
Scientific orientation	0.27	9.88 *
Management orientation	0.27	9.69 *
Achievement motivation	0.28	10.99 *
Economic motivation	0.31	13.11 *
Mass media participation	0.29	11.62 *
Extension agency contact	0.27	9.98 *
Extension participation	0.31	13.28 **

NS = Non-significant

* = Significant at 5 per cent level

** = Significant at 1 per cent level

of sugarcane farmers had a positive and significant association with their decision making pattern at one per cent level of probability. Whereas, age, farming experience, scientific orientation, management orientation, achievement motivation, economic motivation, mass media participation and extension agency contact of sugarcane farmers were found to be having a positive and significant association with their decision making pattern at five per cent level of probability. The above findings are in line with the findings of Thejaswini *et al.* (2004), Vinay Kumar (2005), Bharat Kumar (2010), Ganeshprasad (2010), Satyanarayan and Jagadeeswary (2010), Yavana Priya (2010), Sunitha (2012), Gopala (2014), Madhushree (2014) and Nayak (2014).

The explanation for the independent variables having significant to highly significant association with the decision making pattern of sugarcane farmers are given in ensuing paragraphs.

As the age increases the farmer's experience and knowledge also increases which helps the farmers to understand the situation better and enhance their decision making ability to take appropriate decisions. Education exposes farmers to more communication media and methods. Better perception and comprehension could be observed among better educated than others. Acquisition of formal education may also help to interpret ideas in a rational manner resulting in pragmatic decision making. Education also widens the horizon of the individual and therefore, farmers with higher education had higher involvement in decision making.

Experience in sugarcane cultivation aids in effective management and helps in making quick decisions to perform farm activities. Innovativeness is associated with accepting change leading to decisions on adoption of innovative ideas and scientific practices. The farmers who are more innovative are highly involved in decision making about cultivation of sugarcane. Scientific orientation of farmers influences adoption of innovative ideas and practices thus, leading to active and regular participation in the decision making.

Management orientation offers a chance for working towards excellence, which could enable an individual to manifest themselves as excellent in their field of activity and the urge to move earlier than others will act as an instrument to acquire and adopt managerial components related to agriculture. Thus, the need to have better management orientation might have raised the decision making ability of the farmers. Achievement motivation influences the urge of the individual to excel in their life and it is the important determinant of excellence or perfection in what one does. It is the value associated with an individual that drives them to excel in farming and there by attain a sense of personal accomplishment. In order to achieve this distinction, the farmers would have actively involved in decision making about sugarcane cultivation.

If responsibility of a farmer to earn more money for meeting his family needs increases, then such farmers try to involve in making decisions to adopt new technologies for earning higher profit.

Exposure to mass media develops modern orientation among farmers; making them more efficient in acquiring, retaining and evaluating the effectiveness factors leading to knowledge gain which influences their decision making ability. Mass media also provides enormous opportunity of repeated exposure to new technologies, motivating farmers to take positive steps relevant for decision making.

Contact with extension agents influences the decision making ability and participating in different extension activities to upgrade knowledge regarding farming. Extension professionals not only communicate latest developments in sugarcane cultivation but also about development in other farmer's fields. Collecting information on sugarcane cultivation from researchers and from farmers is possible through extension agency for making appropriate decisions regarding sugarcane cultivation.

Participation in agricultural extension activities like demonstrations, discussion, general meetings, field days, campaigns, etc., promotes the acquisition of knowledge and helps the farmers to involve in making decisions to adopt innovative farm technologies. Frequent and effective participation by farmers in extension activities might act as strong motivational factor for making decisions which aids in better management of farming.

Extent of contribution of personal, socio-economic, psychological and communication characteristics to the decision making pattern of sugarcane farmers : Table III reveals that that 72.80 per cent of the variation in the decision making pattern of sugarcane farmers was explained by all the 15 independent variables included in the study as evidenced by R^2 value of 0.7280. The results further revealed that education and extension participation were significantly contributing to the decision making pattern at one per cent level of probability. Whereas, innovativeness, Management orientation and extension

TABLE III

Extent of contribution of independent variables with the decision making pattern of farmers in sugarcane cultivation activities

(n=120)

Independent variables	Regression co-efficient (b)	Standard error	't' value
Age	0.20	0.31	1.49 NS
Education	0.27	0.88	3.26 **
Family type	0.30	0.30	1.01 NS
Farming experience	0.08	0.11	1.38 NS
Land holding	0.36	0.25	0.71 NS
Annual family income	0.45	0.41	0.92 NS
Attitude towards farming	0.60	0.29	0.48 NS
Innovativeness	0.40	0.81	1.99 *
Scientific orientation	0.27	0.41	1.52 NS
Management orientation	0.28	0.69	2.49 *
Achievement motivation	0.08	0.11	1.33 NS
Economic motivation	0.18	0.26	1.42 NS
Mass media participation	0.07	0.12	1.81 NS
Extension agency contact	0.38	0.78	2.02 *
Extension participation	0.33	0.91	2.68 **

NS = Non-significant

* = Significant at 5 per cent level

** = Significant at 1 per cent level

R² = 0.7280

agency contact and were significantly contributing to the decision making pattern of sugarcane farmers at five per cent level of probability. The remaining variables namely, age, family type, farming experience, land holding, annual family income, attitude towards farming, scientific orientation, achievement motivation, economic motivation and mass media participation had not significantly contributed to the decision making pattern of sugarcane farmers.

Education, extension participation, innovativeness, management orientation and extension agency

contact of sugarcane farmers have synergic effect on one another influencing the decision making process.

Direct, indirect and largest indirect effects of personal, socio-economic, psychological and communication characteristics of sugarcane farmers with their decision making pattern : Eleven variables which were found to be having significant association with the decision making pattern of sugarcane farmers were considered for computing the path analysis. It is observed from the Table IV that all the 11 variables selected for path analysis had positive direct effect on decision making pattern of sugarcane farmers .

Ranking variables based on their direct effect on decision making pattern revealed that management orientation (X6), achievement motivation (X7), extension participation (X11), extension agency contact (X10), economic motivation (X8), scientific orientation (X5) and innovativeness (X4) occupied first seven ranks in that order, whereas education (X2), mass media participation (X9), farming experience (X3) and age (X1) obtained the last four ranks in the same order.

As regards to total indirect effects channeled through other variables for each of the independent variables, it was found quite substantial. Ranking of these effects revealed that management orientation (X6), achievement motivation (X7), extension participation (X11), economic motivation (X8), innovativeness (X4), extension agency contact (X10) and scientific orientation (X5) occupied the first seven ranks, which had the highest total indirect effect on decision making pattern in the descending order of magnitude. On the other hand, farming experience (X3), education (X2), mass media participation (X9) and age (X1) occupied the last four ranks in the same order.

The first largest indirect effect channeled through is management orientation (X6) in the case of six variables and the remaining five variables channeled through extension agency contact (X10) and extension participation (X11). The second largest indirect effect channeled through achievement motivation (X7) in case of eight variables, closely followed by mass media participation (X9), extension agency contact (X10) and

TABLE IV

Direct, indirect and largest indirect effects of independent variables on the decision making pattern of farmers in sugarcane cultivation activities

(n=120)

F. No	Factor number	Direct effect	Rank	Total Indirect effect	Rank	Three largest indirect effects channeled through
X1	Age	0.0092	11	0.0091	11	0.174 X6 0.090 X7 0.012 X11
X2	Education	0.0391	8	0.0292	9	0.081 X6 0.019 X7 0.017 X11
X3	Farming experience	0.2912	10	0.0301	8	0.109 X11 0.101 X7 0.024 X10
X4	Innovativeness	0.0411	7	0.0411	5	0.240 X6 0.050 X7 0.032 X11
X5	Scientific orientation	0.0499	6	0.0311	7	0.590 X11 0.021 X7 0.021 X4
X6	Management orientation	0.0768	1	0.0812	1	0.112 X10 0.500 X7 0.020 X11
X7	Achievement motivation	0.0711	2	0.0712	2	0.579 X10 0.120 X11 0.042 X6
X8	Economic motivation	0.0511	5	0.0412	4	0.120 X6 0.079 X7 0.023 X11
X9	Mass media participation	0.0310	9	0.0196	10	0.578 X11 0.089 X7 0.051 X6
X10	Extension agency contact	0.0522	4	0.0399	6	0.115 X6 0.036 X9 0.034 X11
X11	Extension participation	0.0691	3	0.0661	3	0.198 X6 0.046 X10 0.036 X8

Residual effect : 0.272

extension participation (X11). However, the third largest indirect effect has channeled through extension participation (X11) in case of six variables, closely followed by innovativeness (X4), management orientation (X6), economic motivation (X8) and extension agency contact (X10). The total residual effect was found to be 0.272.

Management orientation and achievement motivation had direct, indirect and largest indirect effects on the decision making pattern of sugarcane farmers. Management orientation offers a chance for working towards excellence, which could enable an individual to manifest themselves as excellent in their field of activity and the desire for better management, resulting in greater efforts towards excellence. The urge to move earlier than others will act as an instrument to acquire and adopt managerial components related to agriculture. Thus, the need to have better management orientation might have raised the decision making ability of the farmers.

Achievement motivation influences the urge of an individual to excel in their life and it is the important determinant of excellence or perfection in what one does. It is the value associated with an individual that drives them to excel in farming and thereby attain a sense of personal accomplishment. In order to achieve this distinction, the sugarcane farmers would have actively involved in decision making about sugarcane cultivation.

Therefore, management orientation and achievement motivation were found to be not only having major direct effect on the decision making pattern, but also through indirect and largest indirect effects influencing the decision making. Hence, management orientation and achievement motivation were the dominant variables through which other variables can influence the decision making. Management orientation can be considered as the forerunner of the decision making pattern of farmers in sugarcane cultivation activities activities that needs to be performed in the field..

The desire for better management, resulting in greater efforts towards excellence and profitability is the main criteria for involvement of sugarcane farmers

in decision making about sugarcane cultivation. Hence, management orientation of sugarcane farmers had contributed immensely for the decision making in the sugarcane cultivation activities.

The research results revealed that a strong association exist between the management orientation, extension participation, mass media participation and extension agency contact of sugarcane farmers with their decision making pattern in sugarcane cultivation activities. The decision making pattern needs to be increased by strengthening leadership and capacities of sugarcane farmers in planning and production of sugarcane. Dissemination of improved sugarcane technologies through media (newspapers, farm magazines, radio, television etc.) in local languages will increase their knowledge and thereby enhancing the decision making ability and involvement of farmers in sugarcane cultivation activities. More exposure of farmers to the extension activities and frequent contacts with the formal extension personnel will help the farmers to gain knowledge for improving self perception, self esteem and confidence to help them to contribute in decision making and increased participation in sugarcane cultivation activities.

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