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Research Article

STUDY ON DECISION MAKING ABILITY AND RISK ORIENTATION AMONG DAIRY FARMERS AND CORRELATES WITH THEIR SOCIO-ECONOMIC AND PSYCHOLOGICAL CHARACTERISTICS

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ABSTRACT

The study was undertaken on 160 dairy farmers selected from 12 villages of Jind and Hisar districts of Haryana during 2014-15 to assess the level of decision making ability and risk orientation. The results revealed that a majority of farmers had moderate level of decision making ability. 59.52% of small dairy farmers were found to have medium level of risk orientation while majority of medium category of dairy farmers had low level of risk orientation whereas in case of large farmer's category, 37.50% of them exhibited medium level of risk of dairy farming enterprise. The correlation analysis revealed all the independent variables except age were positively and significantly correlated with farmer's decision making ability and risk orientation. However, age of the respondents had negative and significant correlation with decision making ability. The determinant of multiple coefficients (R^2) further revealed that all the independent variables jointly explained 88 to 96% of variation about decision making ability. Likewise, the independent variables together contributed 81 to 96% variation towards risk orientation. Educational qualification, mass media exposure, economic motivation and scientific orientation were important variables which influenced decision making ability and risk orientation of dairy farmers.

Key words: Decision making ability, risk orientation, dairy farmers, economic orientation

Dairying in our country is recognized as an instrument for social and economic development. The National Policy on Agriculture also advises farmers to diversify their risks by avoiding mono-cropping and take up animal husbandry, dairy, horticulture and other similar business. The nation's milk supply comes from millions of small producers, dispersed throughout the rural areas. These farmers maintain on an average a herd of two-three milch animals, comprising cows and/or buffaloes. Haryana holds a special place in the field of milk production and it is truly known as the 'Milk Pail' of the country. More than 80% of the State milk comes from buffaloes alone. The milk production in Haryana has increased from 4.8 to 8.4 million ton during 2000-01 and 2015-2016, respectively. The per capita per day milk availability in the State for the year 2001-01 and 2015-2016 was 640 gm and 805 gm, respectively, which is the second highest in the country (Anonymous, 2016).

Decision-making is regarded as the cognitive process resulting in the selection of a belief or a course of action among several alternative possibilities. Every decision-making process produces a final choice; it may or may not prompt action. It is the process of identifying and choosing alternatives based on the values and preferences of the decision-maker. Decision-making ability can be regarded as a problem-solving activity terminated by a solution deemed to be satisfactory. It is therefore a process which can be more or less rational or irrational and can be based on explicit or tacit knowledge. When trying to make a good decision, a person must weight the positives and negatives of each option, and consider all the alternatives. For effective decision making, a person must be able to forecast the outcome of each option as well, and based on all these items, determine which option is the best for that particular situation. In prospect theory, risk orientation is defined as the expression of a preference for a risky versus certain outcome and depends upon the probabilistic framing of gains and losses as well as an individual's status-quo position relative to expected gains and losses. Risk orientation can be thought as the tolerance for risk. Ehrlich and Maesta (2010) as state that risk orientation is "one's general degree of comfort with facing uncertain gains or losses". Dairy farmers with low risk orientation may be less tolerant of such risk. Keeping in view the above mentioned facts, the present study was conducted in Haryana to ascertained the level of decision making ability and risk orientation among the dairy farmers

MATERIALS AND METHODS

The study was carried out in Hisar and Jind districts of Haryana state. These districts were selected on the basis of highest concentration of cattle and buffalo.

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Multi-stage sampling procedure was adopted in this study. Two subdivisions, namely Hisar and Jind were selected from Hisar and Jind districts, respectively. In the next stage, one CD block, namely Hisar-I and one CD block, namely Adampur were randomly selected from Hisar subdivision. Likewise from Jind subdivision, Jind CD block and Pillukhera CD block were selected randomly. Three villages, namely Daya, Mirzapur and Mirkan were selected from Hisar-I CD block while Sadalpur, Adampur and Kishangarh villages were selected from CD block Adampur randomly. Similarly from Jind CD block three villages, Bahbalpur, Bibipur and Ghimana while from Pillukhera CD block, Dhatrath, Pillukhera and Mandikhurd villages were selected randomly. In this way 12 villages were selected from both districts. Village wise list of buffalo and cattle owners having more than 8 animals (cattle and buffalo) was prepared and 80 farmers from six villages were selected randomly from each selected district from that list by using proportionate population sampling technique. Therefore, 160 farmers constituted the sampling unit for this study.

Decision making ability and risk orientation were taken as dependent variables in this study and were measured by using scales developed by Singha (1991) with slight modification. Decision making ability is conceptualized as the ability of dairy farmers to select the most efficient means from among the available alternatives on the basis of scientific criteria for achieving maximum economic profit. Eight decision criteria were selected and the response categories for each item were 'not considered', 'considered after consultation with others', and 'considered independently'; and 0, 1, and 2 scores were assigned, respectively. Thus, the possible score for each respondent on his decision-making ability was 0 to 16. Risk orientation was conceptualized as the degree to which the dairy farmer is oriented towards risk and uncertainty in facing problems in dairy enterprise. The instrument consisted of six statements and responses obtained on three-point continuum viz., 'agree', 'undecided', and 'disagree'. A weight-age of 2, 1 and 0, respectively, was assigned to the response categories in case of positive statement and scoring was reversed for negative statements. The total score range was 0 to 12. The respondents were grouped into three categories namely low, medium and high level of decision making ability and risk orientation using mean and standard deviation.

Thirteen important independent variables (socio-psychological characteristics) namely age, educational qualification, size of land holding, annual income, caste, dairy farming experience, extension contact, social participation, mass media exposure, scientific orientation, economic motivation, attitude of farmers towards dairy farming, and market orientation. Chronological age of respondents was taken into account for age and for educational qualification, income, caste, experience, extension contact, social participation, annual income and size of land holding, market orientation, respectively schedules were developed. Scientific orientation and economic motivation were measured by using Scale developed by Moulik and Rao (1965) whereas attitude of farmers towards dairy farming was tested by using attitude scale developed by Dixit (1993). The data were collected through pre-tested structured interview schedule by holding personal interview with the dairy farmers during 2014-15.

RESULTS AND DISCUSSION

Level of Decision Making Ability: The data presented in Table 1 revealed that majority (57.14%) of the small dairy farmers had medium level of decision making ability whereas slightly more than 1/4th (26.19%) and approximately 1/7th (16.37) part of total small farmers were having high and low level of decision making ability, respectively. Contrary to this, in case of medium farmers, order of distribution was different as majority (59.30%) of medium farmers were found to have medium level of decision making ability while remaining of them possessed low and high level of decision making ability with 22.09 and 18.60%, respectively. Large farmers in study area were found to have medium, high and low level of decision making ability with 56.26, 25 and 18.75 per cent, respectively.

Table 1
Distribution of dairy farmers on the basis of components of decision making ability

Level of decision making ability	Frequency (%)			
	Small farmers	Medium farmers	Large farmers	Overall
Low (Below 8)	7 (16.67)	19 (22.09)	6 (18.75)	32 (20.00)
Medium (8-12)	24 (57.14)	51 (59.30)	18 (56.26)	93 (58.13)
High (Above 12)	11 (26.19)	16 (18.60)	8 (25.00)	35 (21.88)
Mean	8.21	9.90	12.25	9.93
S.D.	3.98	2.00	1.73	2.96

Table 2
Distribution of dairy farmers on the basis of components of risk orientation

Level of decision making ability	Frequency (%)			
	Small farmers	Medium farmers	Large farmers	Overall
Low (Below 8)	9 (21.43)	50 (58.14)	10 (31.25)	69 (43.13)
Medium (8-10)	25 (59.52)	18 (20.93)	12 (37.50)	55 (34.38)
High (Above 10)	8 (19.04)	18 (20.93)	10 (31.25)	36 (22.50)
Mean	7.76	8.55	9.97	8.63
S.D.	2.52	1.21	1.65	1.89

Overall analysis of dairy farmers revealed that 58.13, 21.88 and 20% of farmers had medium, high and low level of decision making ability, respectively. These results are in accordance with findings of Jha (2008), Baindha (2011), Kayensuza (2012) and Lawrence and Ganguli (2012) who reported that majority of farmers were having medium level of decision making ability in their studies.

Level of Risk Orientation: It is evident from the information given in Table 2 that majority (59.52%) of small dairy farmers had medium level of risk orientation while only 21.43 and 19.04% of dairy farmers had low and high level of risk orientation, respectively. In case of medium category of dairy farmers, majority (58.14%) of them possessed low level of risk orientation. The medium and high level of risk orientation was shared in equal per cent age (20.93% each) by dairy farmers. In case of large farmers, 37.50% of them were found to be in medium category whereas equal per cent age (31.25%) of dairy farmers had low and high level of risk orientation.

In case of pooled analysis, it was maximum numbers of respondents were found to have high level of risk orientation to the extent of 43.13%, followed by medium (34.38%) and low (22.50%) level. High level of risk orientation among dairy farmers might be due to the fact that generally commercial dairy farming is prone to risk due to fluctuations in the cost of feed, risk of health related emergencies etc. This finding is in line with the findings of Jha (2008) and Lawrence and Ganguli (2012) who reported that majority of farmers were having medium level of risk orientation.

Relationship Between Socio-economic and Psychological Characteristics and Decision Making Ability of Farmers: A minute examination of the data contained in Table 3 revealed that among small category of farmers, the variables namely, educational qualification, size of land holding, caste, extension contact, mass media exposure, economic motivation, scientific orientation, attitude towards dairy farming and market orientation were found to have positive and highly significant values of correlation coefficient with decision making ability (P<0.01) While annual income was positively and significantly correlated with decision making ability (P<0.05). Age was found to have negative and significant correlation with decision making ability of dairy farmers at the same level.

With respect to medium category of farmers, size of land holding, caste, extension contact, mass media exposure, economic motivation, scientific orientation, attitude towards dairy farming and market orientation were positively and highly significantly correlated (P<0.01) while only age (r=-0.36) was found to have negative and significant correlation with decision making ability of dairy farmers at the same level. Educational qualification had positive and significant relationship with the decision making ability (P<0.05). In case of large category of farmers, size of land holding, caste, extension contact, mass media exposure, economic motivation, scientific orientation, attitude towards dairy farming and market orientation were found to have positive and highly significantly correlation with decision making ability (P<0.01).

Further, the pooled data indicated that all the independent variables were found to have significant

Table 3
Correlation between socio-economic and psychological characteristics and decision making ability of farmers

Attribute	r value			
	Small (n=42)	Medium (n=86)	Large (n=32)	Overall (n=160)
Age	-0.37*	-0.36**	-0.11	-0.28**
Educational qualification	0.63**	0.274*	-0.12	0.42**
Size of land holding	0.43**	0.34**	0.48**	0.43**
Annual income	0.37*	0.19	0.30	0.31**
Caste	0.77**	0.53**	0.63**	0.64**
Dairy farming experience	0.27	0.19	0.08	0.27**
Extension contact	0.95**	0.80**	0.80**	0.88**
Social participation	-0.09	-0.04	0.13	0.25**
Mass media exposure	0.94**	0.67**	0.92**	0.85**
Economic motivation	0.89**	0.77**	0.81**	0.86**
Scientific orientation	0.95**	0.86**	0.84**	0.90**
Attitude towards dairy farming	0.96**	0.90**	0.89**	0.91**
Market orientation	0.85**	0.75**	0.75**	0.83**

*(P<0.05), **(P<0.01)

relationship with decision making ability of dairy farmers (P<0.01). On the other hand, age also exhibited significant but negative correlation at the same level of significance. This implies that higher the level of all these characteristics of the respondents more would be their level of decision making ability.

Relationship Between Socio-economic and Psychological Characteristics and Risk Orientation of Farmers: It is evident from the data in Table 4 that among small category of farmers, educational qualification, size of land holding, caste, extension contact, mass media exposure, economic motivation, scientific orientation, attitude towards dairy farming and market orientation were found to have positive and highly significant correlation with risk orientation (P<0.01). Furthermore, it was found that annual income had positive and significant relationship with risk orientation (P<0.05). In case of medium category of farmers, variables such as educational qualification, annual income, extension contact, mass media exposure , scientific orientation, attitude towards dairy farming and market orientation variables were found to have positive and highly significant correlation with risk orientation (P<0.01). While, only one variable namely age was negatively and significantly correlated at the same level of significance. Moreover, it was found that caste of the respondents and economic motivation had positive and significant relationship with risk orientation (P<0.05). Among large category of farmers, the variables namely, size of land holding, annual income and market orientation had positive and significant correlation with risk orientation (P<0.05) whereas caste, extension contact, mass media exposure, economic motivation, scientific orientation and attitude towards dairy farming (r=0.60) were found to have positive and highly significant relationship with risk orientation (P<0.01).

Table 4
Correlation between socio-economic and psychological characteristics and risk orientation of farmers

Attribute	r value			
	Small (n=42)	Medium (n=86)	Large (n=32)	Overall (n=160)
Age	-0.29	-0.29**	-0.10	-0.24**
Educational qualification	0.66**	0.41**	0.01	0.46**
Size of land holding	0.41**	0.10	0.37*	0.34**
Annual income	0.31*	0.52**	0.35*	0.35**
Caste	0.76**	0.26*	0.50**	0.53**
Dairy farming experience	0.29	0.08	0.09	0.22**
Extension contact	0.95**	0.82**	0.67**	0.87**
Social participation	-0.05	0.02	0.16	0.25**
Mass media exposure	0.94**	0.88**	0.82**	0.90**
Economic motivation	0.91**	0.25*	0.51**	0.69**
Scientific orientation	0.93**	0.47**	0.49**	0.73**
Attitude towards dairy farming	0.93**	0.57**	0.60**	0.79**
Market orientation	0.87**	0.36**	0.41*	0.70**

*(P<0.05), **(P<0.01)

Overall analysis further reveals that age of the farmers was negatively and significantly correlated with risk orientation which implies that higher the score of age of the respondents less would be the risk bearing capacity about dairy farming while all other variables were found to have positive and highly significant relationship (P<0.01).

Multiple Regression Analysis*:* The multiple regression analysis was employed to determine the relative influence of each independent variable in explaining the variation in the dependent variable. In case of decision making ability, it is clear from the data (Table 5) that in case of small famers, out of thirteen variables, not a single variable exhibited significant value of 't' for 'b'. The R^2 value revealed that all the thirteen variables jointly explained 96.13% of variation. The F value (53.64) was also significant (P<0.01) which confirms the result. In case of medium category of dairy farmers, extension contact, economic motivation and attitude towards dairy farming had significant influence on decision making ability as indicated by the significant value of 't' for 'b'. Only one variable, i.e. market orientation was found to have negative association with coefficient of determination of 0.8824 (R^2 value) which implies that all the thirteen variables had jointly explained 88.24% of variation towards the decision making ability. As far as the large category of dairy farmers was concerned, only one variable namely, mass media exposure was found to have positive and significant value of partial regression coefficient. All the thirteen variables have accounted for 91.63% of variation towards the decision making ability of dairy farmers which was supported by significant F value (15.16) at 1% level of significance. The overall analysis of 160 respondents indicates that educational qualification, mass media exposure and economic motivation were the most important predictors about the decision making ability of dairy farmers. The coefficient of determination (R^2) indicates that all the thirteen independent variables have explained 89.2% of variation towards decision making ability.

The results of multiple regression analysis in case of risk orientation revealed that with respect to the small category of dairy farmers, mass media exposure and economic motivation had positive and significant contribution towards the risk orientation level (Table 6). All the thirteen independent variables taken together accounted for 96.17% of variation. Among the medium

Table 5
Regression coefficients between socio-economic and psychological characteristics and decision making ability of dairy farmers

Attribute	Small (n=42)		Medium (n=86)		Large (n=32)		Overall (n=160)	
	'b' value	't' value	'b' value	't' value	'b' value	't' value	'b' value	't' value
Age	-0.04	-1.65	-0.01	-0.74	0.01	0.54	0.01	0.79
Educational qualification	0.09	0.49	-0.04	-0.45	-0.03	-0.16	0.22	3.13**
Size of land holding	-0.01	-0.04	0.20	1.50	0.07	0.33	0.03	0.23
Annual income	0.01	1.93	0.00	1.82	0.00	0.15	0.00	-0.74
Caste	0.52	1.29	-0.13	-0.77	0.36	1.50	0.23	1.50
Dairy farming experience	-0.01	-0.24	-0.01	-0.90	-0.01	-0.73	0.00	-0.43
Extension contact	-0.28	-0.65	0.41	2.44*	-0.08	-0.62	0.08	0.65
Social participation	0.33	0.29	-0.07	-0.52	0.28	0.96	-0.17	-1.02
Mass media exposure	0.51	1.75	0.01	0.09	0.47	3.63**	0.28	3.16**
Economic motivation	0.16	0.65	0.41	3.51**	-0.12	-0.76	0.35	3.61**
Scientific orientation	0.46	1.28	0.29	1.54	0.21	1.17	0.09	0.63
Attitude towards dairy farming	0.35	1.49	0.32	2.24*	0.07	0.47	0.22	1.92
Market orientation	-0.33	-1.30	-0.75	-3.71**	0.12	0.51	-0.12	-0.83
R square	0.961397		0.882428		0.916346		0.891979	
F value	53.64098**		41.56846**		15.16714**		85.52333**	

*(P<0.05), **(P<0.01)

category of dairy farmers, positive and significant value of 't' for 'b' was found in case of extension contact, mass media exposure and scientific orientation while the market orientation was found to have negative and significant value of 't' for 'b'. The R^2 value reveals that all the thirteen variables have jointly explained 84.24% of variation towards risk orientation among the medium category. This was confirmed further by the highly significant F value (29.60).

Mass media exposure (b=0.68) was the only variable which was found to have considerable influence on risk orientation in respect of the large category of dairy farmers. The value of R^2 indicated that all the variables selected for this purpose explained 81.81% of variation towards the risk orientation of the farmers. Taken together as pooled analysis of all the 160 farmers, a good number of variables namely, educational qualification, extension contact, mass media exposure, economic motivation and attitude towards dairy farming were found to have significant values. The attitude of dairy farmers was found to have negative and significant value of 't' for 'b'. The coefficient determinant (R^2) further depicted that all the thirteen variables had together explained 85.59 per cent of variation towards risk orientation of the dairy farmers.

Age of the respondent, educational qualification, size of landholding, annual income, caste, dairy farming experience, extension contact, social participation, mass

Table 6
Regression coefficients between socio-economic and psychological characteristics and risk orientation of dairy farmers

Attribute	Small (n=42)		Medium (n=86)		Large (n=32)		Overall (n=160)	
	'b' value	't' value	'b' value	't' value	'b' value	't' value	'b' value	't' value
Age	0.02	1.01	-0.002	-0.195	0.00	0.07	0.02	2.10*
Educational qualification	0.17	1.49	0.041	0.743	-0.06	-0.26	0.16	3.12**
Size of land holding	-0.12	-0.78	0.000	0.001	-0.06	-0.22	-0.11	-1.17
Annual income	0.00	0.95	0.001	1.177	0.00	-0.31	0.00	1.24
Caste	0.17	0.68	-0.021	-0.178	0.32	0.96	0.30	2.60
Dairy farming experience	-0.01	-0.74	-0.002	-0.385	0.01	0.46	0.00	0.11
Extension contact	0.11	0.40	0.369	3.156**	0.22	1.25	0.20	2.32*
Social participation	-0.56	-0.76	0.014	0.137	0.35	0.85	-0.07	-0.56
Mass media exposure	0.52	2.85**	0.300	3.858**	0.68	3.76**	0.48	7.40**
Economic motivation	0.73	4.69**	0.006	0.072	-0.12	-0.52	0.26	3.54**
Scientific orientation	-0.16	-0.70	0.332	2.518*	-0.35	-1.36	-0.11	-0.99
Attitude towards dairy farming	-0.27	-1.81	-0.141	-1.400	0.16	0.71	-0.17	-2.01*
Market orientation	-0.17	-1.05	-0.483	-3.418**	-0.44	-1.35	-0.05	-0.45
R square	0.961678		0.842415		0.818133		0.855862	
F value	54.04999**		29.60733**		6.228711**		61.49882**	

*(P<0.05), **(P<0.01)

media exposure, economic motivation, scientific orientation, attitude towards dairy farming and market orientation have accounted for variation in the level of decision as well as risk orientation of dairy farmers hence, extension agencies, public and private organization, NGO's etc. should concentrate on these variables for bringing about overall improvement in the knowledge level and extent of adoption of dairy farmers. These findings are in line with the findings of Lawrence and Ganguli (2012) who reported that education of farmers, mass media communication and economic status were the important factors which influence the risk orientation of dairy farmers.

It can be concluded that majority of the dairy farmers had medium level of decision making ability and risk orientation. Evidently, all the twelve independent variables except age had positive and significant relationship with decision making ability and risk orientation. This implies that the dairy farmers having higher education, more exposure to different media and various sources of information, having higher income and received more training in animal husbandry and having highly favourable attitude towards animal husbandry are intent to have greater decision making and risk bearing capability. The dairy farmers having high economic motivation, scientific and market orientation are likely to take quick decision. Extension efforts should be strengthened to improve the knowledge level especially among the small category of dairy farmers for better managing the dairy animals.

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