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Relational analysis between socio-economic characteristic and adoption of scientific dairy farming practices

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Abstract

The study was conducted in three districts of ATMA block *viz.*, (Vadgam) Banaskantha, (Vadali) Sabarkantha and (Siddhpur) Patan of North Gujarat region. Five villages were selected purposively from each ATMA block. From each village 10 beneficiaries and 10 non-beneficiaries were randomly selected from each ATMA block and overall total of 150 ATMA beneficiaries and 150 non-beneficiary were selected as respondent making a total of 300 respondents. A study was made to find the relationship between socio-economic characteristic and adoption of scientific dairy farming practices. The results indicated that majority (61.00 per cent) of the dairy farmers belonged to middle age group ranged as 35 to 50 years. While majority of the respondents had medium size herd. Further 52.66 percent ATMA beneficiary farmers mean 3.2 were found to hold relatively high in education compared to ATMA non beneficiary (2.81). Majority (79.00 per cent) of the respondents had major occupation of agriculture and animal husbandry and majority of the respondents had dairy farming income (above Rs.1,50,000/-). Whereas majority (84.00 per cent) of pooled respondents had medium level of annual family income (Rs.2,50,001/- to Rs.5,00,000/-). Results also revealed that family size had positive and significant correlation ('r' = 0.161*) with adoption of scientific dairy farming practices. Whereas herd size ('r'= 0.208**), income from dairy farming ('r' = 0.153**), annual family income ('r' = 0.163**) , mass media exposure ('r' = 0.160**), informal sources ('r' = 0.354**), training participation ('r' = 0.117**), economic motivation ('r' = 0.227**) , scientific orientation ('r' = 0.270**), attitude ('r' = 0.433**) and knowledge ('r' = 0.760**) had positive and highly significant correlation with adoption of scientific dairy farming practices.

Keywords: Dairying, adoption, scientific, socio-economic

Introduction

Dairy farming plays a crucial role in promoting rural welfare and reducing poverty by generating meaningful income and employment at farm level. The role of dairy farmers has been recognized as crucial in dairy development and all-over socio-economic development as rural households. These farmers not only require knowledge and understanding of the technologies, but also progressively more and more skills in various complex dairy farming operations for adoption on their farms. Training is recognized as an important means for the development of human resource. ATMA is a recent model designed for transfer of agricultural technology and imparting training to the farmers at the district level. Over the years, with enhanced demand for improved agricultural and allied technologies, the number of trainings organized by ATMA has grown substantially. The system i.e. ATMA model has introduced new concept in technology transfer like multiagency extension strategies and integrated broad based extension delivery mechanism etc. however, it is imperative to know its strength and weaknesses in terms of transfer of technology and its adoption. To prove the effectiveness of training it is important, not only to justify the expenses of training but also the very purpose for carrying training out. In fact, it is essential to know actually what happens to the trainees after few years of completion of training. In this context the study was undertaken with the objective to assess the relationship between socio-economic characteristic and adoption of scientific dairy farming practices

Materials and Methods

The study was conducted in three districts of ATMA block *viz.*, (Vadgam) Banaskantha, (Vadali) Sabarkantha and (Siddhpur) Patan of North Gujarat region which were purposively selected. On the basis of the list, five villages having more participants were selected purposively from each ATMA block. Ten beneficiary respondents from each village were randomly selected, thus making a list of 50 beneficiaries from each ATMA block. Total 150 ATMA beneficiaries were selected. To generate the comparison group, same villages were selected and from each village

minimum ten ATMA non-beneficiary farmers were selected. Thus, making a group of total 150 ATMA non-beneficiary respondents. Thus, the ultimate sample size for the study comprised of 150 ATMA beneficiary and 150 ATMA non- beneficiary respondents, making a total sample size of 300 respondents. A special interview schedule was designed for collecting the data. Initially, interview schedule was prepared in English covering various items as per the objective of the study and keeping in view a background of the respondents. The developed scheduled was then translated into local language (Gujarati). This valuable information was obtained through direct questioning, ensuring accuracy and relevance

On the basis of NAEP, Ministry of Education, Government of India, the respondents were categorized into following three groups young up to 35 years, middle 35 to 50 years and old above 50 years. Herd size is operationalised as the number of cattle and buffalo including in-milk, dry, heifer and young stock kept by the respondent for milk production purpose on the date of investigation. The respondents were grouped into three categories *viz.*, Small size herd Up to 10 animals, Medium size herd 11 to 20 animals and Large size herd above 20 animals. The measurement of level of education of farmer was as per scale developed by Pandya and Pandya with some modification. The scoring procedure was 0=Illiterate,1=Literate, 2=Primary School (5^{th} to 8^{th} standard),3= High school education (9^{th} to 10^{th} standard), 4=Higher Secondary school education (11^{th} to 12^{th} standard) and 5=College education (UG/PG)

Occupation is operationalized as the main source of income of the respondents. The respondents were categorized into five categories. On the basis of major and subsidiary source of income, with 1= Agriculture, 2= Animal Husbandry, 3= Agriculture + Animal Husbandry, 4= Agriculture + Animal Husbandry + Business and 5= Agriculture + Animal Husbandry + Service score were allotted to each category

Average value of each parameter was calculated to compare the milk production of beneficiary and non-beneficiary dairy farmers. Income was calculated by converting per day milk yield in term of present price per liter farmer received and then subtracted per day total expenditure on feeding, labour and health to obtain net income in dairy farming. It was categorized into low income up to Rs.50,000, medium income in between Rs.50,000/- to Rs.1,50,000/-and high income above Rs.1,50,000/-Annual income is the total income in rupees earned from all sources by the entire family members in a year. As regards, annual income the last year income has been considered. The category was done on the basis of *per capita* income of Gujarat state in 2022 low income Below Rs.2,50,000/-, Medium income In between Rs.2,50,000/- to Rs.5,00,000/- and High income Above Rs.5,00,000/-

Adoption in present study was operationalised, as improved scientific dairy farming practices actually put into practice by beneficiaries and non-beneficiary's dairy farmers in their dairy farming.

Extent of adoption of scientific dairy farming practices by dairy farmers was measured with the help of teacher made type test developed, which was based on scale. The respondent was given 1 score, if he adopted the practice as per the recommendation. If, the respondent deviates from the recommendation, zero score was assigned.

The adoption index of each respondent was calculated using following formula.

$$\text{Adoption Index} = \frac{\text{Total adoption score obtained by respondent}}{\text{Maximum obtainable score by respondent}} \times 100$$

The respondents were categorized into low adoption, medium adoption and high adoption category with the help of Mean ($\bar{x}$) and Standard Deviation (S.D.) in respect to the adoption of all practices.

The data were analyzed by used of SPSS and OP STAT software where Frequency (f) Percentage (%) Arithmetic Mean ($\bar{x}$), Standard Deviation (S.D.) and Correlation Coefficient ('r') was determined.

Results and Discussion

The ability of an individual to work on their farm is influenced by the age. The distribution of respondents as per their age is shown in Table 1, which clearly pointed out that the majority (61.00 per cent) of the dairy farmers from the middle age group ranging 35 to 50 years, followed by the old age (20.66 per cent) and young age (18.33 per cent) group. A large proportion (58.00 per cent) of ATMA beneficiary farmers and ATMA non-beneficiary farmers (64.00 per cent) were belonged to middle age group. An overall average age of the respondents was 42.84 years. The non-beneficiary farmers were relatively younger in an average age (42.15 years) compared to beneficiary farmers (43.60 years). The result is in line with the findings of Ashwar *et al.* (2011) [2], Potdar (2019) [24] and Rajput *et al.* (2023) [28]. However, it does not agree with the findings of Parmar *et al.* (2023) [22], who reported that the majority of the respondents were in young age group

Data of the Table 2 indicated that 42.00 per cent of beneficiary had medium size of herd (11 to 20 cattle), while 35.33 per cent non- beneficiary had medium size herd, 52.66 per cent of non- beneficiary had small size of herd (up to 10 animals) against 34.00 per cent beneficiary Calculated 't' value 3.962** was found to be significant ($P < 0.01$), indicated that there was statistically highly significant difference in ATMA beneficiary and ATMA non-beneficiary with respect to the possession of herd size. ATMA beneficiary mean 15.87 were found to hold relatively higher herd size compared to non- beneficiary (13.77). This finding is in line with finding of Nande *et al.* (2019) [17], Mahesh *et al.* (2020) [14] and Usadadiya (2021) Parmar *et al.* (2023) [22] who stated that majority of dairy farmers had medium sized herd, where as it contradicted to the finding of Khode *et al.* (2020) [10] and Rajput *et al.* (2023) [28] and who revealed that majority of the dairy farmers had small sized herd while Ashwar *et al.* (2011) [2] reported that about 76 per cent respondents had herd size up to 1 to 6 animals.

Education is crucial in enhancing the quality of life and bringing about change in society. Better education level moulds the farmers to opt for improved farming to gain more from dairy farming.

The distribution of respondents as per their education level is shown in Table 3, revealed that 28.00 per cent respondents had formal education up to high school level, followed by 26.33 per cent had education up to higher secondary school level, 24.33 per cent had education up to primary school level and 12.00 per cent of respondents were literate. Only 8.00 per cent respondents were highly

qualified up to degree and above level and 1.33 per cent respondents were illiterate. Larger proportion (32.66 per cent) of beneficiary farmers had education up to High school level, while 24.00 per cent of non- beneficiary farmers had schooling up to higher secondary level. It further revealed that about 10.66 per cent of beneficiary farmers were highly qualified as against non- beneficiary farmers (5.33 per cent) with education up to degree.

Calculated 't' value 3.146** was found to be significant ($p < 0.01$), indicated that there was statistically highly significant difference in ATMA beneficiary farmers & ATMA non beneficiary farmers with respect to the possession of Education. ATMA beneficiary farmers mean 3.2 were found to hold relatively high in education compared to ATMA non beneficiary (2.81).

The results are in consonance with the findings of Raina *et al.* (2016), Khode (2018) [9] and Rajput *et al.* (2023) [28] who had reported that majority of the respondents, had high school level education. While, it did not agree with Patel *et al.* (2018) [21] and Parmar *et al.* (2023) [22] who reported that maximum respondents had education up to primary level.

Occupation is an important factor, which contribute to the annual income of ATMA beneficiary and ATMA non beneficiary dairy farmers. It also reflects socio-economic status of an individual in society. Data of the Table 4 concluded that majority (79.00 per cent) pooled respondents had major occupation of agriculture and animal husbandry, followed by animal husbandry (14.33 per cent), agriculture (05.33 per cent) and agriculture, animal husbandry and business (1.33 per cent). Animal husbandry was as the single source of income of 09.33 per cent of ATMA beneficiary and 19.33 per cent of ATMA non beneficiary while 89.33 per cent beneficiary and 68.66 non- beneficiary followed it as a mixed farming. The possible reason might be that the respondents may have found agriculture and animal husbandry as inter-dependent business enterprise and more remunerative combinations.

Calculated 't' value 4.359** was found to be significant ($p < 0.01$), indicated that there was statistically highly significant difference in ATMA beneficiary farmers & ATMA non beneficiary farmers with respect to occupation they were engaged in. Whereas ATMA beneficiary farmers were found to have higher value (2.90) than the ATMA non beneficiary farmers (2.62).

This finding is in line with that of Gopi *et al.* (2020) [7], Barman *et al.* (2022) [3] and Rajput *et al.* (2023) [28], while Sahu (2016) [30] who stated that majority of respondents had agriculture as a main occupation of the respondents.

Data of the table 5 depicted that more number (54.33 per cent) of pooled respondents belonged to high dairy farming income (above Rs.1,50,000/-), followed by 40.00 per cent and 05.66 per cent from medium and low group of dairy farming income. While, 65.33 per cent of ATMA beneficiary farmers had high dairy farming income, followed by medium (30.66 per cent) and low (04.00 per cent) net annual income from dairy farming. Whereas, 49.33 per cent of ATMA non beneficiary farmers had medium level (between Rs.50,000/- to Rs.1,50,000/-) and near about same ATMA non beneficiary farmers had low level (07.33 per cent) of annual income from dairy farming.

Calculated 't' value 5.62** was found to be significant ($p < 0.01$), indicating that there was difference in ATMA beneficiary farmers and ATMA non beneficiary farmers in terms of their average net annual income from dairy farming. It implied that ATMA beneficiary farmers had significantly higher average net annual income from dairy farming than the ATMA non beneficiary farmers, might be due to their better awareness, knowledge and adoption of scientific dairy practices. Similar findings were reported by Lal (2009) [12] and Pandhare *et al.* (2012) [23], while Khode *et al.* (2020) [10] and Mahesh (2020) [14] who stated that majority of dairy farmers had high annual income.

The result presented in the Table 6 revealed that majority (84.00 per cent) of pooled respondents had medium level of annual family income (Rs.2,50,001/- to Rs.5,00,000/-), followed by high (12.00 per cent) and low (04.00 per cent) income with equal proportion by all members of family through various sources *i.e.* agriculture, animal husbandry, business, services *etc.* In ATMA beneficiary farmers group majority (84.67 per cent) were in medium income group followed by high (14.00 per cent) and low (1.33 per cent) income group. While in ATMA non beneficiary farmers group majority (83.33 per cent) were in medium income group followed by high (10.00 per cent) and low (06.67 per cent) income group. Calculated 't' value 4.38** was found to be significant ($p < 0.01$), indicating that an average annual family income of ATMA beneficiary farmers was significantly higher than that of ATMA non beneficiary farmers. This average annual family income difference among ATMA beneficiary farmers and ATMA non beneficiary farmers might be due to comparatively higher contribution of dairy farm income to annual family income among beneficiary farmers and ATMA non beneficiary farmers. The result is in conformity with that of Nazir *et al.* (2012) [19] and Bhise (2015) [4]. The results are also supported by the National Institute of Labour Economics Research and Development (2015), which reported that at least 10 per cent increase in income after ATMA and KVKs intervention.

To ascertain the relationship between selected independent variables and adoption of scientific dairy farming practices by dairy farmers, the correlation coefficient was calculated. Based on operational measure developed for the variables, null hypothesis was stated for testing the relationship and their significance on zero order correlation. The values are given in Table 7

Family is most important, primary and multifunctional unit of the society. It plays a decisive role in the material and cultural life of the rural people, as well as, rural community.

The result presented in the Table 7 made it clear that family size had positive and significant correlation ('r' = 0.161*) with adoption of scientific dairy farming practices. Whereas herd size ('r'= 0.208**), income from dairy farming ('r' = 0.153**), annual family income ('r' = 0.163**) , mass media exposure ('r' = 0.160**), informal sources ('r' = 0.354**), training participation ('r' = 0.117**), economic motivation ('r' = 0.227**) , scientific orientation ('r' = 0.270**), attitude ('r' = 0.433**) and knowledge ('r' = 0.760**) had positive and highly significant correlation with adoption of scientific dairy farming practices. Similar finding was observed by Yaday and Naagar. While the other variable like age, education, caste, family type, landholding, occupation, extension contact and risk orientation was found to be non-significant with adoption of scientific dairy farming practices which clearly indicated that these variables had no relationship with adoption process.

It meant that, size of family of ATMA beneficiary and non-beneficiary had influence adoption of scientific dairy farming. Family is a group of individuals who are living together and fulfilling many important functions of their daily livelihood. Generally, decision is taken in group, here, every individual of the family would have contributed in joint consensus decision leading to adoption scientific dairy farming practices. It is summarized that overall adoption scientific dairy farming practices of ATMA beneficiary and non-beneficiary was increased significantly with increase in size of family means size of family.

Increase in number of milch animals had relationship with the adoption of improved dairy farming practices was also improved. This observation agreed with that of Murai (2009) [15], Ashwar *et al*. (2011) [2], Rahman and Gupta (2015) [27], Singh *et al.* (2015) [32], Yadav and Naagar (2021) [33] and Rajput *et al.* (2023) [28].

Dairy farmers who receive better returns were prepared to invest further on dairy farming and make them more attentive for timely procurement of inputs, proper utilization of professional resources, technology and guidance which play an important role in motivating them to adopt scientific dairy farming technology. Similar findings have also been reported by Ashwar *et al*. (2011) [2], Sahu *et al.* (2013) [29], Rahman and Gupta (2015) [27], Patel and Ashwar (2019) [26], Khode *et al.* (2020) [10] and Yadav and Naagar (2021) [33].

Increase in level of income of ATMA beneficiary and non-beneficiary farmers, had relationship with the adoption of scientific dairy farming practice increased simultaneously. This finding is similar with the findings of Ashwar *et al*. (2011) [2], Sahu *et al.* (2013) [29], Nande *et al.* (2019) [17] and Yadav and Naagar (2021) [33].

Exposure to mass media can help to gain new knowledge and experience of beneficial effect of use of improved technology and scientific practices in dairy farming leading to its more adoption. This finding is in concurrence with the finding reported by Murai (2009) [15], Ashwar *et al*. (2011) [2] and Priya *et al.* (2019) [25].

informal sources of information utilization by ATMA beneficiary and non-beneficiary had a correlation with adoption of scientific dairy farming practices. This finding is similar with Nande (2008) [18] and Khode *et al.* (2018) [9].

The overall effect of training received had great influence on adoption of scientific dairy farming practices**.** This finding is in line with the finding of Chaudahry (2006) [6], Patel and Ashwar (2019) [26], while this finding is in not line with finding of Rajput *et al.* (2023) [28]. Economically motivated ATMA beneficiary and ATMA non-beneficiary dairy farmers were naturally oriented towards maximization of returns from the dairy farming. They might have accepted that dairy farming as a profitable enterprise. Thus, they could have established better linkages with research and extension agencies to get latest information on scientific dairy farming practices. They were more prone to change and ready to adopt improved scientific dairy farming practices for maximization of profit. The findings have been supported by Ashwar *et al*. (2011) [2], Khuman *et al.* (2014) [11], Gunaseelan *et al.* (2017) [8], Patel and Ashwar (2019) [26], Yadav and Naagar (2021) [33] and Rajput *et al.* (2023) [28]. It is fact that scientifically oriented individuals were disposed towards application of scientific techniques in their business. They comprise a positive perception towards innovation and prepared to adopt soon. The findings have been supported by Ashwar *et al*. (2011) [2], Chaurasia (2018) [5], Yadav and Naagar (2021) [33] and Barman *et al.* (2022) [3].

ATMA beneficiary and non-beneficiary dairy farmers had favourable attitude towards dairy farming. Their positive disposition towards improved scientific dairy farming might have led them to adopt scientific dairy farming practices for higher economic gain which ultimately resulted into positive and highly significant correlation with adoption of scientific dairy farming practices. This finding is in concurrence with the finding reported by Ashwar *et al*. (2011) [2], Lawrence and Ganguli (2012) [13], Patel *et al.* (2016) [20] and Mevada *et al*. (2018) [16].

The better aware of a farmer about advanced dairy farming practices the higher the extent of its adoption. Knowledge influences receptivity and understanding. It widened the vision and develops the foresight of an individual. Exposures to advanced technical know-how enable to arrive at a favourable conclusion regarding adoption. Thus, knowledge fortifies desire to adopt.

Based on the above facts, it could be concluded that knowledge of dairy farmers had positive correlation with adoption of scientific dairy farming practices. This finding is similar with the finding of Ashwar *et al*. (2011) [2], Aparna and Hundal (2016) [1], Patel and Ashwar (2019) [26], Yadav and Naagar (2021) [33] and Saroj *et al.* (2023) [31].

Table 1: Distribution of respondents according to their age

Sr. No.	Category	Beneficiary farmers (n = 150)	Non beneficiary farmers (n = 150)	Pooled (N = 300)	't' value
1	Young (up to 35 years)	33 (22.00)	22(14.67)	55 (18.33)	1.535
2	Middle (35-50 years)	87 (58.00)	96(64.00)	183 (61.00)	
3	Old (above 50 years)	30 (20.00)	32(21.33)	62 (20.66)	
	Mean ± S.E.	43.60 ± 0.70	42.15 ± 0.66	42.84 ± 0.48	

Figure in parentheses express in percentage.
** 't' value is significant at the 0.01 level. * 't' value is significant at the 0.05 level.

Table 2: Distribution of respondents according to herd size

Sr. No.	Category	Beneficiary (n = 150)	Non-beneficiary (n = 150)	Pooled (N = 300)	't' value
1	Small size herd (up to 10 animals)	51 (34.00)	79 (52.66)	130 (43.33)	3.962**
2	Medium size herd (11 to 20 animals)	63 (42.00)	53 (35.33)	116 (38.66)	
3	Large size herd (above 20 animals)	36 (24.00)	18 (12.00)	54 (18.00)	
	Mean ± S.E.	15.87 ± 1.69	13.77 ± 1.26	14.82 ± 1.05	

Figure in parentheses express in percentage.
** 't' value is significant at the 0.01 level. * 't' value is significant at the 0.05 level.

Table 3: Distribution of respondents according to their education

Sr. No.	Category	Beneficiary farmers (n = 150)	Non beneficiary farmers (n = 150)	Pooled (N = 300)	't' value
1	Illiterate	00 (00.00)	04 (02.66)	04 (01.33)	3.146**
2	Literate (1st to 4th standard)	03 (02.00)	33 (22.00)	36 (12.00)	
3	Primary school education (5th - 8th standard)	39 (26.00)	34 (22.66)	73 (24.33)	
4	High school education (9th to 10th standard)	49 (32.66)	35 (23.33)	84 (28.00)	
5	Higher secondary school education (11th to 12th standard)	43 (28.66)	36 (24.00)	79 (26.33)	
6	College education (UG/PG)	16 (10.66)	08 (05.33)	24 (08.00)	
	Mean ± S.E.	3.2 ± 0.082	2.81 ± 0.091	2.79 ± 0.06	

Figure in parentheses express in percentage.
** 't' value is significant at the 0.01 level. * 't' value is significant at the 0.05 level.

Table 4: Distribution of respondents according to their occupation

Sr. No.	Category	Beneficiary (n = 150)	Non- beneficiary (n = 150)	Pooled (N = 300)	't' value
1	Agriculture	01 (0.66)	15 (10.00)	16 (05.33)	4.359**
2	Animal Husbandry	14 (9.33)	29 (19.33)	43 (14.33)	
3	Agriculture + Animal Husbandry	134 (89.33)	103 (68.66)	237 (79.00)	
4	Agriculture + Animal Husbandry + Business	01 (0.66)	03 (02.00)	04 (01.33)	
5	Agriculture + Animal Husbandry + Service	00 (00.00)	00 (00.00)	00 (00.00)	
	Mean ± S.E.	2.90 ± 0.027	2.62 ± 0.056	2.76 ± 0.032	

Figure in parentheses express in percentage.
** 't' value is significant at the 0.01 level. * 't' value is significant at the 0.05 level.

Table 5: Distribution of respondents according to their income from dairy farming

Sr. No.	Category	Beneficiary farmers (n = 150)	Non beneficiary farmers (n = 150)	Pooled (N = 300)	't' value
1	Low (below Rs.50,000/-)	06 (04.00)	11 (07.33)	17 (05.66)	5.62**
2	Medium (Rs.50,001/- to Rs.1,50,000/-)	46 (30.66)	74 (49.33)	120 (40.00)	
3	High (above Rs.1,50,000/-)	98 (65.33)	65 (43.33)	163 (54.33)	
	Mean ± S.E.	365666 ± 269	195971 ± 158	280819 ± 163	

Figure in parentheses express in percentage.
** 't' value is significant at the 0.01 level. * 't' value is significant at the 0.05 level.

Table 6: Distribution of respondents according to their annual family income

Sr. No.	Category	Beneficiary farmers (n = 150)	Non beneficiary farmers (n = 150)	Pooled (N = 300)	't' value
1	Low (up to Rs.2,50,000/-)	02 (01.33)	10 (06.67)	12 (04.00)	4.38**
2	Medium (Rs.2,50,001/- to Rs.5,00,000/-)	127 (84.67)	125 (83.33)	252 (84.00)	
3	High (above Rs.5,00,000/-)	21 (14.00)	15 (10.00)	36 (12.00)	
	Mean ± S.E.	804533 ± 5401	535233 ± 2924	669883 ± 3163	

Figure in parentheses express in percentage.
** 't' value is significant at the 0.01 level. * 't' value is significant at the 0.05 level.

Table 7: Correlation between characteristics of respondents and their adoption of scientific dairy farming practices

Sr. No.	Characteristics	Correlation coefficient ('r' value)
1	Age (X_1)	0.007^{NS}
2	Education (X_2)	-0.039^{NS}
3	Caste (X_3)	-0.109^{NS}
4	Family type (X_4)	0.056^{NS}
5	Family size (X_5)	0.161*
6	Land holding (X_6)	0.089^{NS}
7	Herd size (X_7)	0.208**
8	Occupation (X_8)	-0.041^{NS}
9	Income from dairy farming (X_9)	0.153**
10	Annual family income (X_{10})	0.163**
11	Mass media exposure (X_{11})	0.160**
12	Extension contact (X_{12})	0.057^{NS}
13	Informal sources (X_{13})	0.354**
14	Training participation (X_{14})	0.117**
15	Economic motivation (X_{15})	0.227**
16	Scientific orientation (X_{16})	0.270**
17	Attitude (X_{17})	0.433**
18	Risk orientation (X_{18})	0.047^{NS}
19	Knowledge (X_{19})	0.760**

**Correlation is significant at the 0.01 level (2-tailed);
* Correlation is significant at the 0.05 level (2-tailed).

Conclusion

ATMA beneficiaries were better off than non-beneficiaries in several aspects like education, herd size, annual income from dairying and other sources. Socio-economic variable of the respondents had a positive relationship with the adoption of scientific dairy farming practices.

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