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Relationship between psychological characteristics of beneficiary tribal farmers and their socio-techno-economic change

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Abstract

The Agricultural Technology Management Agency (ATMA) has significantly improved the lives of tribal farmers by promoting socio-techno-economic transformations through efficient technology dissemination. Keeping in view, the present study entitled "relationship between psychological characteristics of beneficiary tribal farmers and their socio-techno-economic change" was carried out in middle Gujarat. The four tribal Districts Dahod, Panchmahals, Mahisagar and Chhotaudepur of middle Gujarat were selected purposively for present study. From each selected district two talukas were selected purposively. From each selected talukas, two villages were selected randomly. Thus, total sixteen villages were selected. Fifteen respondents from each village were selected. Thus, total 240 respondents were selected randomly from those four Districts. The results reveals that more than half (56.67%) of the respondents exhibited good to excellent cohesiveness, slightly more than half (52.50%) of the respondents had medium to high level of innovativeness, nearly three-fifth (58.75%) of the respondents had medium to high level of achievement motivation, majority (74.17%) of the respondents displayed medium to very high level of economic motivation, majority (60.41%) of the respondents exhibited medium to very high level of scientific orientation, slightly more than two-third (64.16%) of the respondents had medium to high level of risk orientation, slightly less than three-fifth (59.16%) of the respondents had favourable to strongly favourable attitude towards Agricultural Technology Management Agency. Among the selected psychological variables innovativeness, cohesiveness, achievement motivation, economic motivation, scientific orientation, risk orientation and attitude towards Agricultural Technology Management Agency had established positive and highly significant relationship with socio-techno-economic change.

Keywords: Relationship, respondents, agricultural technology management agency, beneficiary tribal farmers, socio-techno-economic change, psychological characteristics

Introduction

The establishment of ATMA has significantly enhanced the dissemination of agricultural technologies, leading to improved productivity and innovation in farming practices. By providing a flexible and autonomous working environment, ATMA has effectively bridged the gap between research institutions and farmers, ensuring timely adoption of new technologies. This initiative has played a crucial role in advancing agricultural development and increasing the overall efficiency and sustainability of farming operations in India. Additionally, the implementation of advanced agricultural practices has fostered sustainable farming methods, supporting environmental preservation and ensuring long-term economic stability for tribal communities. Keeping in view, the present study entitled **"**relationship between psychological characteristics of beneficiary tribal farmers and their socio-techno-economic change" was undertaken with following objectives.

Objectives

1. To study Psychological characteristics of the beneficiary tribal farmers.
2. To find out relationship between psychological characteristics of beneficiary tribal farmers and their socio-techno-economic change.

Research Methodology

For present investigation multistage sampling technique was employed at different levels to select 240 farmers who were the members of FIGs**.**Middle Gujarat has eight districts. Out of eight districts, four tribal districts Dahod, Panchmahals, Mahisagar and Chhotaudepur were selected purposively. From each selected district two talukas were selected purposively. Selected talukas of the Dahod, Panchmahals, Mahisagar and Chhotaudepur districts. From the selected taluka, a list of villages has been collected from ATMA office for selection of villages. Two villages were selected from each selected taluka randomly. Further, from each selected village fifteen respondents have been selected on random basis for the study. Thus, a total of 240 respondents

have been selected for the study. With a view to analyze the important characteristics in relation to socio-techno economic change of the respondents, various psychological variables *viz,* innovativeness, cohesiveness, achievement motivation, economic motivation, scientific orientation, risk orientation and attitude towards Agricultural Technology Management Agency were included in this study. The data of this study were collected by arranging personal interviews. The data was analyzed and interpreted with frequency, percentage, mean score and rank. The relationship between each of the independent variables and the dependent variable was computed by employing following formula given by Karl Pearson (1978).

$$r = \frac{\sum(XY) - \frac{\sum X \sum Y}{n}}{\sqrt{\left[\sum X^2 - \frac{(\sum X)^2}{n}\right]\left[\sum Y^2 - \frac{(\sum Y)^2}{n}\right]}}$$

Where,

r = Correlation coefficient

X = Independent variable

Y = Dependent variable

Σxy = Sum of the product of the deviation of x and y from their mean

Σx^2 = Sum of square of the deviation of x and from their mean.

Σy^2 = Sum of square of the deviation of y and from their mean.

Results and Discussion

Psychological Characteristics of The Beneficiary Tribal Farmers

Table 1: Distribution of the respondents according to their innovativeness (n=240)

Sr. No.	Innovativeness	Frequency	Per cent
1.	Very low (5.00 to 7.00 score)	33	13.75
2.	Low (7.01 to 9.00 score)	36	15.00
3.	Medium (9.01 to 11.00 score)	108	45.00
4.	High (11.01 to 13.00 score)	42	17.50
5.	Very high (13.01 to 15.00 score)	21	08.75
Total		240	100.00

It is obvious from the data presented in Table 1 that more than two-fifth (45.00%) of the respondents had medium level of innovativeness, followed by 17.50, 15.00, 13.75 and 8.75 per cent of the respondents had high, low, very low and very high innovativeness, respectively.

It is concluded that slightly more than half (52.50%) of the respondents had medium to high level of innovativeness.

The probable reason for this could be that the majority of the respondents had regularly interact with KVK scientists and frequent contact with farmer friends, Agricultural Technology Management (ATM) officials, Block Technology Managers (BTM), project directors and village-level workers. As a result of these connections, most respondents were found to exhibit a medium to high level of innovativeness.

These findings are in line with the findings of Chaurasiya *et al*. (2016) [4], Parmar (2018) [12] and Chauhan (2020) [3].

Table 2: Distribution of the respondents of according to their cohesiveness (n=240)

Sr. No.	Cohesiveness	Frequency	Per cent
1.	Poor (10.00 to 18.00 score)	48	20.00
2.	Fair (18.01 to 26.00 score)	56	23.33
3.	Good (26.01 to 34.00 score)	77	32.08
4.	Very good (34.01 to 42.00 score)	43	17.92
5.	Excellent (42.01 to 50.00 score)	16	06.67
Total		240	100.00

It is obvious from the data presented in Table 2 that slightly less than one-third (32.08%) of the respondents had good cohesiveness, followed by 23.33, 20.00, 17.92 and 6.67 per cent of the respondents had fair, poor, very good and excellent cohesiveness, respectively.

It is concluded that more than half (56.67%) of the respondents exhibited good to excellent cohesiveness.

This might be due to that their strong interpersonal communication skills. This capability likely cultivated a supportive group atmosphere, promoting unity and facilitating effective problem-solving and decision-making processes among members. This finding is in contrast with the finding of Ghetiya (2019) [6].

Table 3: Distribution of the respondents according to their achievement motivation (n = 240)

Sr. No.	Achievement motivation	Frequency	Per cent
1.	Very Low (06.00 to 08.40 score)	26	10.83
2.	Low (08.41 to 10.80 score)	52	21.67
3.	Medium (10.81 to 13.20 score)	82	34.17
4.	High (13.21 to 15.60 score)	59	24.58
5.	Very High (15.61 to 18.00 score)	21	08.75
Total		240	100.00

A perusal of data presented in Table 3 makes it clear that slightly more than one-third (34.17%) of the respondents had medium level of achievement motivation, while 24.58 per cent were found to have high and 21.67 percent of them had low level of achievement motivation. Further, 10.83 per cent of them were found to have very low level of achievement motivation, while only 8.75 per cent of them fell under the category of very high level of achievement motivation.

Thus, it can be concluded that nearly three-fifth (58.75%) of the respondents had medium to high level of achievement motivation. This is likely due to the influence of the Agricultural Technology Management Agency which plays a crucial role in enhancing farmers' understanding of modern agricultural practices and providing the necessary support and resources to achieve higher productivity and success in agriculture. This finding is supported by the findings of Sharma *et al.* (2022) [14] and Akbari *et al.* (2023) [1].

Table 4: Distribution of the respondents according to their economic motivation (n=240)

Sr. No.	Economic motivation	Frequency	Per cent
1.	Very low (6.00 to 10.80 score)	31	12.92
2.	Low (10.81 to 15.60 score)	31	12.92
3.	Medium (15.61 to 20.40 score)	83	34.58
4.	High (20.41 to 25.20 score)	64	26.66
5.	Very high (25.21 to 30.00 score)	31	12.92
Total		240	100.00

A look at Table 4 makes it clear that slightly more than one-third (34.58%) of the respondents had medium level of economic motivation, while 26.66 per cent were found to have high and same 12.92 per cent of them were found to have very low, low and very high level of economic motivation.

It can be inferred that the majority (74.17%) of the respondents displayed medium to very high level of economic motivation. This indicates their recognition of Agricultural Technology Management Agency (ATMA) as crucial for achieving higher economic gains.

This finding is supported by the findings of Bhoi (2016) [2], Ghetiya (2019) [6] and Chauhan (2020) [3].

Table 5: Distribution of the respondents according to their scientific orientation (n=240)

Sr. No.	Scientific orientation	Frequency	Per cent
1.	Very low (14.00 to 25.20 score)	49	20.42
2.	Low (25.21 to 36.40 score)	46	19.17
3.	Medium (36.41 to 47.60 score)	75	31.25
4.	High (47.61 to 58.80 score)	50	20.83
5.	Very high (58.81 to 70.00 score)	20	08.33
Total		240	100.00

A perusal of data presented in Table 5 reveals that slightly less than one- third (31.25%) of the respondents had medium level of scientific orientation, while 20.83 per cent and 20.42 per cent of the respondents had high and very low level of scientific orientation, respectively. Whereas 19.17 per cent respondents were observed in the low and 8.33 per cent was found under very high level of scientific orientation.

Therefore, it can be concluded that majority (60.41%) of the respondents exhibited medium to very high level of scientific orientation.

This trend could be attributed to their proximity to and frequent interaction with ATMA, farm schools, NGOs, Krishi Vigyan Kendra, and the Tribal Training Centre of Anand Agricultural University.

This result is supported by the findings of Bhoi (2016) [2], Ninama (2016) [11], Chauhan (2020) [3] and Akbari *et al.* (2023) [1].

Table 6: Distribution of the respondents according to their risk orientation (n=240)

Sr. No.	Risk orientation	Frequency	Per cent
1.	Very low (10.00 to 18.00 score)	35	14.58
2.	Low (18.01 to 26.00 score)	39	16.26
3.	Medium (26.01 to 34.00 score)	83	34.58
4.	High (34.01 to 42.00 score)	71	29.58
5.	Very high (42.01 to 50.00 score)	12	05.00
Total		240	100.00

A perusal of Table 6 reveals that slightly more than one-third (34.58%) of the respondents had medium level of risk orientation, followed by 29.58 per cent of them with high level of risk orientation, while 16.26 per cent of them were observed to have low level of risk orientation and 14.58 per cent of the respondents belonged to very low level of risk orientation. Only 5.00 per cent of the respondents were found under very high level of risk orientation.

To epitomize the result it can be said that slightly more than two-third (64.16%) of the respondents had medium to high level of risk orientation.

The probable reasons might be that ATMA's efforts in providing training, resources and support to help the farmers to adopt new practices which increase their willingness to take calculated risks. This finding is supported by the findings of Ninama (2015) [10], Ninama (2016) [11] and Akbari *et al.* (2023) [1].

Table 7: Distribution of the respondents according to their attitude of ATMA beneficiary farmers towards ATMA (n=240)

Sr. No.	Level of attitude towards ATMA	Frequency	Per cent
1.	Strongly unfavourable (22.00 to 39.60 score)	31	12.92
2.	Unfavourable (39.61 to 57.20 score)	34	14.17
3.	Neutral (57.21 to 74.80 score)	33	13.75
4.	Favourable (74.81 to 92.40 score)	120	50.00
5.	Strongly favourable (92.41 to 110.00 score)	22	09.16
Total		240	100.00

Table 7 portrays that half (50.00%) of the respondents had favourable attitude towards Agricultural Technology Management Agency, followed by 14.17 per cent and 13.75 per cent of the respondents were unfavourable and neutral attitude towards Agricultural Technology Management Agency, respectively. While 12.92 per cent of the respondents had strongly unfavourable attitude towards Agricultural Technology Management Agency and only 9.16 percent of the respondents had strongly favourable attitude towards Agricultural Technology Management Agency.

It can be concluded that slightly less than three-fifth (59.16%) of the respondents had favourable to strongly favourable attitude towards Agricultural Technology Management Agency. The probable reasons might be that the respondents derive advantages subsidies in seeds and kits among other supports facilitated by the Agricultural Technology Management Agency (ATMA) activities which likely foster a favorable perception and supportive attitude towards ATMA's initiatives. This result is similar to the findings of Gonshetwad *et al.* (2016) [7].

Table 8: Distribution of respondents according to their overall socio- techno-economic change due to Agricultural Technology Management Agency (n=240)

Sr. No.	Level of socio-techno-economic change	Frequency	Per cent
1.	Very low (00.00 to 20.00)	07	02.92
2.	Low (20.01 to 40.00)	29	12.08
3.	Medium (40.01 to 60.00)	89	37.08
4.	High (60.01 to 80.00)	89	37.08
5.	Very high (80.01 to 100.00)	26	10.84
Total		240	100.00

The data in Table 8 indicate that same 37.08 per cent of the respondents had medium and high level of overall socio-techno-economic change, followed by 12.08 and 10.84 per cent had with low and very high level of overall socio-techno-economic change, whereas, only 2.92 per cent of the respondents were found to very low level of overall socio-techno-economic change.

Thus, it can be concluded that the majority (74.16%) of the respondents experienced a medium to high level of overall socio-techno-economic change due to the Agricultural Technology Management Agency.

This shows the pivotal role played by the Agricultural Technology Management Agency (ATMA) in empowering tribal respondents. By imparting training on various agricultural technologies, ATMA has equipped respondents with the knowledge and skills necessary to improve their farming practices and enhance productivity. This comprehensive support has not only bolstered agricultural outcomes but also contributed to broader socio-economic advancements among the tribal communities. Therefore, the ATMA project stands as a cornerstone in fostering sustainable development and empowering tribal respondents through effective agricultural interventions and capacity-building initiatives which resulted in a medium to high level of overall socio-techno-economic change among the respondents.

Relationship between psychological characteristics of beneficiary tribal farmers and their socio-techno economic change

The action of individual respondents is governed by personal, socio- economic, communicational and psychological factors involved in situation. A respondent shows different degree of action towards various aspects of situations because of the difference in their personal, socio-economic, communicational and psychological characteristics. Thus, it may be stated that the degree of socio-techno- economic change of the respondents differs with their personal, socio-economic, communicational and psychological characteristics. Hence, considering the importance of these characteristics and review of past research studies, attempt has been made in this investigation to ascertain the relationship if any, between personal, socio-economic, communicational and psychological characteristics of respondents and their socio-techno-economic change occurred due to Agricultural Technology Management Agency project.

Table 9: Relationship between psychological characteristics of respondents and their socio-techno-economic change (n=240)

Sr. No.	Characteristics	Correlation coefficient (' r ' value)
1.	Innovativeness	0.640**
2.	Cohesiveness	0.681**
3.	Achievement motivation	0.540**
4.	Economic motivation	0.622**
5.	Scientific orientation	0.682**
6.	Risk orientation	0.685**
7.	Attitude of ATMA beneficiary farmers towards ATMA	0.758**

* significant at 5% level of probability, ** significant at 1% level of probability

The correlation coefficient was calculated to understand relationship between the psychological characteristics of respondents and their socio-techno-economic change. The results obtained are presented in Table 9.

Innovativeness and Socio-Techno-Economic Change

The data depicted in the Table 9 indicate that innovativeness of respondents had established positive and highly significant correlation (r = 0.640**) with their socio-techno-economic change. Hence, the null hypothesis (H011) “there is no relationship between innovativeness of respondents and their socio-techno-economic change” was rejected.

It implies that respondents having higher innovativeness had more socio-techno-economic change than the respondents having lower innovativeness. As innovativeness nature of respondents enable them to aquire more informations lead to improve their knowledge and skills which may be resulted in more socio-techno-economic change among them. This finding is supported by the findings of Parmar (2018) [12], Khule *et al.* (2019) [8] and Mahalaxmi (2019) [9].

Cohesiveness and Socio-Techno-Economic Change

A look into Table 9 makes it clear that cohesiveness by the member farmers had a positive and highly significant correlation (r = 0.681**) with their socio-techno-economic change. It means cohesiveness affect the socio-techno-economic change of respondents due to ATMA project. Hence, the null hypothesis ($H_0$12) "there is no relationship between cohesiveness of the respondents and their socio-techno-economic change" was rejected.

If respondents have higher cohesiveness, then there might be easy and fast sharing of benefits and activities of ATMA

among the respondents.
This finding is more or less similar to the finding of Khule *et al.* (2019) [8]

Achievement Motivation and Socio-Techno-Economic Change
The data presented in Table 9 clearly indicate that achievement motivation of respondents was positively and highly significant correlation (r = 0.540**) with their socio-techno-economic change. It means achievement motivation significantly affect to the socio-techno-economic change among respondents. Hence, the null hypothesis ($H_0$13) "there is no relationship between achievement motivation of the respondents and their socio-techno-economic change" was rejected. Thus it implies that if respondents having high degree of motivation to achieve higher goal in their life had more socio-techno- economic change. This finding is supported by the findings of Sai (2008) [13] and Mahalaxmi (2019) [9].

Economic Motivation and Socio-Techno-Economic Change
The data depicted in the Table 9 indicate that economic motivation of respondents had established positive and highly significant correlation (r = 0.622**) with their socio-techno-economic change. Hence, the null hypothesis ($H_0$14) "there is no relationship between economic motivation of respondents and their socio-techno-economic change" was rejected.
Thus, it can be concluded that when an individual develops higher level of economic motivation and he wants to achieve it, he would strive hard and get internalize himself about different aspects of socio-techno-economic change.
This finding is in line with findings of Ninama (2015) [10], Bhoi (2016) [2], Chovatia *et al.* (2017) [5], Parmar (2018) [12] and Mahalaxmi (2019) [9].

Scientific Orientation and Socio-Techno-Economic Change
It is obvious from the data furnished in Table 9 that scientific orientation of respondents had established positive and highly significant correlation (r = 0.682**) with their socio-techno-economic change. Hence, the null hypothesis ($H_0$15) "there is no relationship between scientific orientation of respondents and their socio–techno-economic change" was rejected.
Thus, it can be concluded that scientific orientation of an individual leads to develop reception power to understand complex technologies to be use in daily life and thereby creating positive disposition towards socio–techno-economic change through intervention of such technologies which ultimately reflected in more socio-techno-economic change.
Ninama (2015) [10], Bhoi (2016) [2] and Chovatiya *et al.* (2017) have reported similar finding.

Risk Orientation and Socio-Techno-Economic Change
The data depicted in the Table 9 indicate that risk orientation of the respondents had positive and highly significant correlation (r = 0.685**) with their socio-techno-economic change. Thus, the null hypothesis ($H_0$16) "there is no relationship between risk orientation of respondents and their socio-techno-economic change" was rejected.
From the above findings, it can be inferred that, the respondents with higher level of risk orientation, would be much ahead than others in exploiting the potentiality of the resources and technology availed which enforced them to think in positive direction to use which open a new avenues towards favourable disposition, which in turn demonstrated its significant influence on socio-techno- economic change.
Ninama (2015) [10], Bhoi (2016) [2] and Khule *et al.* (2019) [8] have reported similar findings.

Attitude of ATMA Beneficiary Farmers towards Agricultural Technology Management Agency and Socio-Techno-Economic Change
The data depicted in the Table 9 indicate that attitude towards Agricultural Technology Management Agency had established positive and highly significant correlation (r = 0.758**) with their socio-techno- economic change. Hence, the null hypothesis ($H_0$17) "there is no relationship between attitude of the respondents towards Agricultural Technology Management Agency and socio-techno-economic change" was rejected.
Concluding the findings, it can be said that a positive attitude towards the Agricultural Technology Management Agency (ATMA) plays an important role in shaping socio-techno-economic change. This indicates that by fostering and enhancing a positive perception of ATMA among farmers, it is possible to influence socio-techno-economic changes in a desirable direction. Attitudes that are positive towards ATMA can lead to greater adoption of innovative agricultural practices, increased productivity and overall economic betterment for farming communities.

Conclusion
More than half of the respondents exhibited good to excellent cohesiveness slightly more than half of the respondents had medium to high level of innovativeness, Slightly more than two-third of the respondents had medium to high level of risk orientation, slightly less than three-fifth of the respondents had favourable to strongly favourable attitude towards Agricultural Technology Management Agency. Majority of the respondents experienced a medium to high level of overall socio-techno-economic change due to the Agricultural Technology Management Agency. Among the selected psychological variables innovativeness, cohesiveness, achievement motivation, economic motivation, scientific orientation, risk orientation and attitude towards Agricultural Technology Management Agency had established positive and highly significant relationship with socio-techno-economic change.

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