

RESEARCH ARTICLE

Study the Relationship between Psychological Variables and Their Perception Regarding Climate Change

Deepali Suryawanshi¹ and Shobhana Gupta²

1.Asstt. Prof.,
Dept. of Agril. Ext. &
Communication, School of
Agri., ITM University, Gwalior
(M. P.)

2.Sr.Scientist and Head, Dept.
of Agril. Ext. Edu., RVSKVV,
Gwalior (M.P.)

Corresponding author e-mail:
deepsuryaa@gmail.com

ABSTRACT

The present study focuses on psychological attributes influencing farmer's perception to climate change in Madhya Pradesh which influence the intensity of adoption of adaptation options governed by different characteristics of farmers of Madhya Pradesh. The survey area was selected in Chhindwara district. Which is part of agro climatic zone of Satpura range of M.P. The selected district Chhindwara consists of 11 blocks. Out of 11 blocks, 6 blocks were selected randomly. Thus, making total no. of respondents as 240 were selected from all the 6 blocks. The selected respondents were interviewed personally with the help of a well-structured and pre-tested interview schedule. The relationship between psychological variables of the respondents and perception of climate change was assessed and it was inferred that variables like economic motivation, decision making ability and adaptation strategies were found to be highly significant with perception at 1% level of significance, while variable innovativeness exhibited positive and significant association with their perception of climate change at 5% level of significance. In addition the study shows that psychological qualities have a high impact on farmers' perception.

Key words: Climate change; Variables; Farmers' perception.

Climate-induced risks threaten nations worldwide, but developing countries like India are particularly vulnerable because of their low adaptive capacity and heavy reliance on climate-sensitive sectors such as agriculture. Assessment of the effects of global climatic variations on agriculture is imperative to adapt farming and to enhance agricultural production (Fraser *et al.* 2011). Moreover, in India most of the farmers lack awareness about recent technologies and also depends on the cognitive skills of the farmers varies across the households and mainly influenced by demographic features (age, head of the family, family size, education and caste) and other socio-economic parameters varies at regions and local levels. Further depending on other factors such as source of irrigation, access to knowledge, infrastructure, agricultural extension services, rural financial markets, economic parameters and suitable farm technology the impact of climate change has severe vulnerability on livelihoods of farmers. The farmers' exposure to climatic extremes and frequent changes in the climatic conditions is responsible for their vulnerability. (Paavola, 2008 and Morton, 2007).

Moreover, in India most of the farmers lack awareness about recent technologies and also depends on the cognitive skills of the farmers varies across the households and mainly influenced by demographic features (age, head of the family, family size, education and caste) and other socio-economic parameters varies at regions and local levels. Further depending on other factors such as source of irrigation, access to knowledge, infrastructure, agricultural extension services, rural financial markets, economic parameters and suitable farm technology the impact of climate change has severe vulnerability on livelihoods of farmers necessitating the need for a self reliant production system (Noopur *et al.*, 2021). The farmers' exposure to climatic extremes and frequent changes in the climatic conditions is major responsible for their vulnerability. (Paavola, 2008 and Morton, 2007). As per the special report on global warming it confirms the sharp rise in temperature of 3.1 to 3.7 ° Celsius expected to occur by 2100. The warming of 1.5° C resulted into large scale drought, famine, heat stress, damaging entire ecosystem. (IPCC, 2018). Changing

climate is a serious environmental problem affecting agricultural productivity at global level (Rohit Shelar et al. 2022) *challenging food and nutritional security even at household level* (Panwar et al., 2021)

Furthermore, the present study focuses on psychological attributes influencing farmer's perception to climate change in Madhya Pradesh which influence the intensity of adoption of adaptation options governed by different characteristics of farmers of Madhya Pradesh.

METHODOLOGY

The survey area was selected in Chhindwara district which is part of agro climatic zone of Satpura range of M.P. The selected district Chhindwara consists of 11 blocks. Out of 11 blocks, 6 blocks i.e. Mohkhed, Bichhua, Chhindwara, Parasia, Amarwada and Chourai were selected randomly. Out of selected blocks 2 villages from each block were selected randomly. In total 12 villages were selected & from each of these villages, 20 farmers were randomly selected. Thus, total 40 farmers were selected from each block, making total no. of respondents as 240 from all the 6 blocks

The selected respondents were interviewed personally with the help of a well-structured and pre-tested interview schedule. The data gathered through a semi-structured interview schedule was analysed using frequency, percentage, and mean statistics. The Scientific orientation, achievement motivation and Economic motivation was examined with the help of scale developed by Patel (2014) with slight modifications. The responses from the respondents were obtained on stated agreement or disagreement with statement. The scale comprised of six statements and responses were obtained on five-point continuum viz., Strongly agree, Agree, Undecided, Disagree and Strongly disagree with assigning a weightage of 5, 4, 3, 2 and 1, respectively for positive statements while, it was reversed for negative statements. The total scores explain the degree of scientific orientation. A maximum score of 25 and a minimum score of 5 was given to the respondents. On the basis of range of scores, the respondents were categorized into low, medium and high level of scientific orientation.

The risk orientation was measured with the help of risk preference scale developed by Supe (1969). The scale comprises of six items and these were scored on two-point continuum as "agree" and "disagree". There were four positive statements and two negative statements comprising of total 6 statements. The scoring pattern followed for positive statements were as 1 for agree and 0

for disagree. For the negative statements the reverse order of scoring was followed. By considering the total score obtained by each respondent, a maximum score of 6 and a minimum score of 0 was given to the respondents. Further, based on the total score, the respondents were grouped into three categories low, medium and high risk orientation.

Innovativeness was quantified by using the scale of Fraser (2011) with slight modifications. Thirteen statements were included for the present study with three response categories as, Strongly Agree, Agree and Disagree and scores of 2, 1, 0 were given to the respectively. By considering the total score obtained by each respondent, a maximum score of 26 and a minimum score of 0 was given to the respondents. Further, they were categorized into three groups as low, medium and high innovativeness. While decision making ability was measured by using statements proposed by Moulik (1965) with modification in weights given to the statements. For positive statements 2, 1 and 0 scores were assigned respectively for agree, undecided and disagree and reverse order of scoring was followed for negative statements. The maximum score an individual could obtain on this scale was 8 and minimum was 0. Further, the respondents were categorized into three categories low, medium and high decision-making ability.

Management orientation refers to the degree to which a farmer is oriented towards scientific management of farm comprising of planning, production and marketing functions. The management orientation of the respondents was measured by using the scale developed by Samanta (1977). The scale consisted of eighteen statements, six each for planning, production and marketing orientation. In each group both positive and negative items were mixed. Each statement was measured through two-point continuum. The positive statements were given the score of 'one' for Yes and 'zero' for No response and reverse scoring was followed for negative statements. The management orientation score for the individual respondents was obtained by summation of the scores awarded for each statement. A maximum score of 18 while the minimum score of 0 was given to the respondents. On the basis of total score obtained respondents were grouped into 3 categories of low, medium and high management orientation.

RESULTS AND DISCUSSION

Psychological parameters can enhance the understanding of the behaviours of the individuals it is one of the unique contributions at the individual level. Many psychological barriers come in the way of behavioural changes that would help limit climate

change. However, many of them take strategies in response to climate change but many others are unaware of the adverse impact think the problem is elsewhere, are fixed in their ways. The distribution of the respondents based on scientific orientations is presented in the Table 1. The findings reveal that majority of the respondents (58.33%) had medium scientific orientation indicated that maximum farmers had scientific orientation might be due to exposure with KVK scientist, agriculture officers or other workers, Besides attitude of farmers (Snehal and Sharma, 2022). During such type of interaction they might have understood the importance of science. This was followed by 24.17 per cent having high and 17.50 per cent having low scientific orientations respectively. Therefore, it can be concluded that higher percentage (58.33%) of the farmers had medium scientific orientation.

The data presented in the Table 1 revealed that about (74.16%) of the farmers had medium achievement motivation followed by 14.17 per cent having high and 11.67 per cent having low achievement motivation. The findings infer that most of respondents (74.16%) had medium level of achievement motivation in the study area. The economic gain also encourage farmers to adopt new technology as majority of the respondents (73.33%) had medium economic motivation, followed

Table 1. Distributions of farmers based on psychological variables

Psychological variables	Category	No.	%
Scientific orientations	Low (5 - 11)	42	17.50
	Medium (12 - 18)	140	58.33
	High (19 - 25)	58	24.17
Achievement motivation	Low (6 - 13)	28	11.67
	Medium (14 - 21)	178	74.16
	High (22 - 30)	34	14.17
Economic motivation	Low (6 - 13)	28	11.67
	Medium (14 - 21)	176	73.33
	High (22 - 30)	36	15.00
Risk orientation	Low (0 - 2)	12	5.00
	Medium (3 - 4)	158	65.83
	High (5 - 6)	70	29.17
Innovativeness	Low (0 - 8)	56	23.34
	Medium (9 - 17)	119	49.58
	High (18 - 26)	65	27.08
Decision making ability	Low (4 - 6)	42	17.50
	Medium (7 - 9)	121	50.42
	High (10 - 12)	77	32.08
Management orientation	Low (0 - 5)	72	30.00
	Medium (6 - 11)	60	25.00
	High (12 - 18)	108	45.00

by 15 per cent having high and 11.67 per cent having low economic motivation respectively. The findings show that most of respondents (73.33%) cover under medium category of economic motivation in the study area. While 65.83% of the respondents had medium level risk orientation. At the same time 29.17 per cent having high risk orientation and only 5.00 per cent of them had low risk orientation. The findings depicted that most of respondents (65.83%) had medium risk orientation.

The distribution of the respondents based on innovativeness is presented in the Table 1. The findings show that near about half of the respondents (49.58%) had medium level of innovativeness followed by 27.08 per cent having high and 23.34 per cent having low innovativeness. However, 50.42 per cent of the farmers falls under medium category of decision-making ability followed by 32.08 per cent with high decision-making ability and 17.50 per cent having low decision-making ability. The climate change also known to increase cost of cultivation (Shelar et al., 2022) The respondents based on management orientation are presented in the Table 1 depicted that about 45.00 per cent of the respondents cover under high management orientation followed by 30.00 per cent of them with low management orientations and 25.00 per cent having medium management orientation. The findings declare that most of respondents (45.00%) had high management orientation.

Table 2 indicated the relationship of different psychological attributes with their perception regarding climate change. It was observed that economic motivation, decision making ability adaptation strategies and innovativeness exhibited positive and significant relationship with their perception regarding climate change might be due to the fact that scientific orientation likely to have more inclination towards

Table 2. Relationship between psychological variables of the respondents and perception

Psychological variables	r value
Scientific orientation	0.114 ^{NS}
Achievement motivation	0.121 ^{NS}
Economic motivation	0.415 ^{**}
Risk orientation	0.112 ^{NS}
Innovativeness	0.181 [*]
Decision making ability	0.318 ^{**}
Management orientation	0.025 ^{NS}
Adaptation strategies	0.272 ^{**}

*,** indicates significant at P = 0.05 and 0.01

scientific methods and other innovations. (Walia et al., 2022 and Kaur et al., 2021), other variable like scientific orientation, achievement motivation, risk orientation and management orientation have no relationship with perception regarding climate change.

The relationship between psychological variables of the respondents and perception of climate change was assessed and it was inferred that variables like economic motivation, decision making ability and adaptation strategies were found to be highly significant with perception, while innovativeness exhibited positive and significant association with their perception of climate change. Furthermore, it was found that other variables like scientific orientation, achievement motivation, risk orientation and management orientation although had positive associations with perception regarding climate change but not high enough to be statistically significant.

CONCLUSION

Farmers' ability to adapt improves the farming system's capacity for minimizing climate change. Thus the above study aimed to study the impact of the respondents' perception about climate change on their psychological variables strategies. It was seen that economic motivation, decision making ability adaptation strategies and innovativeness exhibited positive and significant relationship with their perception regarding climate change other variable like scientific orientation, achievement motivation, risk orientation and management orientation have no relationship with perception regarding climate change

CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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