

PERCEPTION OF STUDENTS TOWARDS USE OF EXPERT SYSTEM IN AGRICULTURE**Pooja H. Prajapati¹, Hemlata Saini² and Shrutiba Zala³**

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ABSTRACT

The integration of expert systems into mobile applications opens the door to a new age of agricultural technology transfer. As technology, especially expert systems, is incorporated into agriculture to improve decision-making, boost productivity, and advance sustainability, the industry is undergoing a dramatic change. The expert system helps in rapid decision making, to give data driven insights, helps in knowledge transfer and is cost effective. Students are essential to the adoption and application of expert systems in agriculture since they will be the future professionals in this field. However, how students view about expert systems will determine how well these technologies are incorporated into agricultural education and practice. With this consideration, the present study was undertaken to investigate the perception of students towards use of expert system in agriculture. It was conducted in Anand Agricultural University. 100 undergraduate students were randomly selected for the study. The responses were collected personally with the help of pre-tested, structured interview schedule. It is found that majority of the students had medium favorable perception towards use of expert system in agriculture. Computer use efficiency found positively significant and mass media exposure was found highly significant with the perception of students towards use of expert system in agriculture.

Keywords: expert system, perception, information and communication technology, problem solving

INTRODUCTION

Agriculture is the backbone of the Indian economy. Agriculture and allied activities employ approximately 46% of the total population and contribute around 18% to the Gross Domestic Product (GDP). According to the Economic Survey 2023–24, 89% of Indian farmers are small and marginal, owning less than 1 to 2 hectares of land. Since the Green Revolution, agricultural extension has played a catalytic role in agricultural and rural development in India. However, with changing times, the challenges faced by agriculture have also evolved. The emergence of novel diseases and pests, along with climatic adversities and their severe impact on agriculture, has highlighted the need for robust mechanisms to address farmers' concerns. One such emerging trend is the **expert system**, which uses modern technologies like artificial intelligence (AI) to provide solutions to farmers' queries. An expert system (ES) is a computer program designed to replicate the reasoning and logic that a human expert would use to solve problems within a specific domain (Waterman, 1986). Some examples of expert systems developed in India include: **Rice Crop Doctor** by MANAGE, which diagnoses pests and diseases in rice crops and suggests preventive measures and **e-SAGU** (meaning "electronic cultivation"), which delivers high-quality, personalized agro-expert advice to farmers. As technology-especially expert systems

is integrated into agriculture to enhance decision-making, increase productivity, and promote sustainability, the sector is undergoing a significant transformation. Expert systems facilitate rapid decision-making, provide data-driven insights, promote knowledge transfer, and are cost-effective.

Students play a crucial role in the adoption and implementation of expert systems in agriculture, as they are the future professionals in this domain. However, the success of integrating these technologies into agricultural education and practice depends on how students perceive and respond to them. The aim of this study is to determine the perceptions of agricultural students that influence the adoption and use of expert systems in agriculture.

OBJECTIVES

- (1) To study profile of the students
- (2) To assess perception of students about use of expert system in agriculture
- (3) To study the relationship between profile of students and their perception towards use of expert system

METHODOLOGY

The study was conducted at B.A. College of

Agriculture, Anand Agricultural University, Anand. The sample comprised 100 undergraduate students from the Faculty of Agriculture. An *Ex-Post Facto* research design was employed for carrying out the study (Kerlinger, 1976). A structured interview schedule was developed based on the objectives of the study and used to collect the data. The data were gathered personally using a pre-tested and structured interview schedule, ensuring consistency and reliability. The collected data were then interpreted to derive meaningful findings. The statistical tools used for data analysis included percentage, mean, standard deviation, and Pearson's correlation coefficient. The perception of students towards the use of expert systems in agriculture was measured using a scale developed by Ravikishore *et al.* (2016), with

appropriate modifications. The scale included 10 statements designed to capture students' perceptions, assessed on a five-point Likert continuum: *Strongly Agree*, *Agree*, *Undecided*, *Disagree*, and *Strongly Disagree*, assigned scores of 5, 4, 3, 2, and 1 respectively. For negatively worded statements, reverse scoring was applied. Respondents were categorized into five groups based on their perception scores, using the mean as the central measure. The data were analysed using statistical techniques such as the percentage, standard deviation, Pearson's correlation coefficient, to examine both the demographic characteristics and the perception of students towards the use of expert systems in agriculture. The data were analysed using excel and SPSS software.

RESULTS AND DISCUSSION

Table 1: Profile of students

(n=100)

Sr. No.	Profile	Categories	Frequency	Percentage (%)
1	Native	Rural	67	67.00
		Semi urban	07	07.00
		Urban	26	26.00
2	Academic performance (OGPA)	Below 6.5	06	06.00
		6.5 to 7.5	37	37.00
		7.5 to 8.5	44	44.00
		Above 8.5	13	13.00
3	Time spent on internet for studies	Less than 1 h	18	18.00
		1 to 2 h	73	73.00
		2 to 4 h	03	03.00
		More than 4 h	06	06.00
4	Mass media exposure	Low	04	04.00
		Medium	82	82.00
		High	14	14.00
5	Computer use efficiency	Low	03	03.00
		Medium	46	46.00
		High	51	51.00
6	Achievement Motivation	Low	01	01.00
		Medium	21	21.00
		High	78	78.00

The data presented in Table 1 revealed the demographic and personal characteristics of the respondents. A majority of the respondents, two-thirds (66.00%), belonged to a rural background, followed by 26.00% from urban areas. In terms of academic performance, 44.00 per cent of the respondents had an OGPA (Overall Grade Point Average) between 7.5 to 8.5, while 37.00 per cent had an OGPA ranging between 6.5 to 7.5. Regarding internet usage for agricultural purposes, 73.00 per cent of the respondents reported spending 1 to 2 hours per day, followed by 18.00 per cent who spent less than one hour. In terms of mass media

exposure, a significant portion, 82.00 per cent, had medium exposure, followed by 14.00 per cent with high exposure. With respect to computer use efficiency, 51.00 per cent of the respondents exhibited high efficiency, followed by 46.00 per cent with medium efficiency. Finally, in the domain of achievement motivation, 78.00 per cent of the respondents demonstrated high motivation, while 21.00 per cent were categorized under medium motivation. The findings are in line with Thakur *et. al* (2017); Shukla *et al.* (2022); Radadiya *et al.* (2024) and Zala *et al.* (2024).

Table 2: Distribution of respondents according to their perception towards use of expert system

(n=100)

Sr. No.	Categories	Frequency	Percent
1	Very low (10 to 18 Score)	07	07.00
2	Low (19 to 26 Score)	11	11.00
3	Medium (27 to 34 Score)	37	37.00
4	High (35 to 42 Score)	30	30.00
5	Very High (43 to 50 Score)	15	15.00

Table 2 presents the distribution of respondents based on their perception towards the use of expert systems in agriculture. The results show that 37.00 per cent of the respondents had a medium level of perception, followed by 30.00 per cent with high perception, 15.00 per cent with very high perception, 11.00 per cent with low perception, and 7.00 per cent with very low perception. A majority of the students came from rural backgrounds, and many exhibited high computers use efficiency and high mass media exposure. These factors likely contributed to the development of a moderate overall perception towards the use of expert systems in agriculture, creating a conducive environment for their adoption and application. The findings are in line with Bhagvathsingh *et al.* (2018); Kumar and Thakkar (2024); Khodifad *et al.* (2024).

Table 3: Relationship between profile of respondents and their perception towards use of expert system in agriculture

(n=100)

Sr. No.	Independent Variables	Correlation coefficient (r value)
X ₁	Native	0.07 ^{NS}
X ₂	Academic performance	0.12 ^{NS}
X ₃	Time spent on internet for study purpose	0.09 ^{NS}
X ₄	Mass media exposure	0.29**
X ₅	Computer use efficiency	0.21*
X ₆	Achievement Motivation	0.11 ^{NS}

^{NS} - Non significant, * significant at 0.05 level of probability, ** Highly significant at 0.01 level of probability

Table 3 presents the correlation between selected independent variables and the perception of students towards the use of expert systems in agriculture. Among the six independent variables studied, mass media exposure was found to be positively and highly significantly correlated with students' perception. Additionally, computer use efficiency showed a positive and significant correlation with perception towards the use of expert systems. The remaining four variables—background (rural/urban), academic performance,

time spent on the internet for agricultural purposes and achievement motivation were found to have a non-significant relationship with students' perception of expert systems in agriculture. The highly significant relationship between mass media exposure and perception may be attributed to the fact that mass media provides students with greater access to information about expert systems, enhancing their awareness and shaping positive attitudes. Similarly, the significant positive relationship between computer use efficiency and perception suggests that students who are proficient in using computers are more likely to understand, apply, and appreciate the relevance So expert systems in agricultural contexts.

CONCLUSION

These findings highlight the critical role of information access and digital proficiency in shaping positive perceptions and potentially influencing the adoption of expert systems in agriculture. Therefore, future efforts should focus on enhancing students' mass media engagement and computer literacy to promote effective integration of expert systems into agricultural education and practice.

POLICY IMPLICATIONS

In the era of modern agriculture, alongside the need for increased production of food grains with the risk of climate change, it becomes necessary to shift towards precise agricultural practices. Expert system facilitates informed agriculture and decision support system just like the expert advise and guidance. Therefore, the authorities and institutions should work together upon bringing a policy framework to encourage the adoption of expert system among the farmers. Following are the possible recommendations to be considered:

- (1) Extensive research studies on expert system and formulation of a well-defined and detailed literature for knowledge purpose
- (2) Collaboration among IT engineers, software developers, government and private players to bring an effective expert system model for agriculture use
- (3) Capacity building of the extension personnel in handling expert system
- (4) Promote their adoption among farmers through training programmes, demonstrations, exposure visits to progressive farmers who are effectively using the expert system tools for improved production
- (5) Dedicated efforts towards improving digital literacy among the rural people

- (6) Agricultural universities and academic institutions should incorporate a dedicated course and capacity development programmes on expert system for the undergraduate and postgraduate students

CONFLICT OF INTEREST

This is to declare that there is “No conflict of interest” among researcher.

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