Extension Journal

International Journal of Agriculture Extension and Social Development

Agristartups on artificial intelligence-profile analysis

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Abstract
Artificial intelligence (AI) will have significant global impact on agricultural productivity at all levels of the value chain. Globally, digital and AI technologies are helping to solve pressing issues across the agriculture value chain. Currently, the market size of agri tech, including AI-based agri innovation start-ups in India, is estimated to be worth USD 204 million. The study conducted to understand the socio-economic profile of agristartups entrepreneurs on artificial intelligence they were selected randomly based on farmers who are receiving services continuously from last three years from that particular startup with a sample size of 90 in the year 2021. This study emphasized on the agristartups related to artificial intelligence. Expost facto was conducted to understand the profile agristarup entrepreneurs in ten agristarups of Telangana with a sample size of 30. The analysis of profile characteristics of respondents revealed that majority of agristartup entrepreneurs from the analysis it was found that Majority of the agristartup entrepreneurs belong to middle age (57.80%), with graduation (43.30%), from urban background (63.30%), had medium level of innovative proneness (60.00%), medium business support (50.00%), business sustainability (73.30%), medium social networking (60.00%), medium service orientation (60.00%), low institutional support (53.3%), medium financial management (76.70%).

Introduction
Artificial intelligence (AI) will have significant global impact on agricultural productivity at all levels of the value chain. Globally, digital and AI technologies are helping to solve pressing issues across the agriculture value chain. Hence there is a huge scope for the agriculture industry to support emerging technologies for assisting farmers with solutions to their crop specific problems by helping them in minimize cost of cultivation, reduce various losses of farmers and to provide them with high yield. (Monika *et.al*, 2020) [6]. The government's motive is to encourage the agricultural industry in the expansion of agristartups because the sector became more profitable for ambitious entrepreneurs as a result of infrastructural development, financial allocations, regulatory reforms, ease of doing business, and specialized pl initiatives (Deshmukh and Raj, 2021) [4]. The profiles of the Agri-Startups in the interprets majority of the entrepreneurs were helping in reducing the use of traditional agricultural methods with innovative technologies. The success of agristartups helps to improve standard of living of the farmers. and also majority of agricultural innovation in India comes from supported

research institutions (Pal *et al.,* 2012). Sensing the upsurge in mobile and internet penetration the agriculture sector is being flooded with the stream of educated youth, fired by the ideas, passion and innovations to launch newer kinds of technology and business models in order to lift the face of agriculture from primitive to hi-tech one (Anand *etal*) [1].

Materials and Methods
The state of Telangana was purposively selected for the study. The farmers are operationally defined as the individuals from the farming community who actually subscribed to the agristartups on artificial intelligence and receiving the services from them. Ninety farmers *i.e.,* 30 farmers from each of the three startups (Thanos, Plantix, Bharat rohan) were selected. The famers from each agristartup were taken based on the services received by them 3 successive years from the agristartups randomly. The data from the respondents was collected with the help of interview schedule. The data collected was examined and interpretations were drawn based on results. The statistical techniques frequency, percentage, mean, and inclusive class interval method were followed for analysing data, and

accordingly, respondents were classified into different groups.

Results and Discussion

The data was collected from the respondents on the selected profile characteristics were analysed, interpreted, and accordingly the following results and conclusion were drawn.

Age

Age was operationalized as the chronological age of the respondent in terms of the total number of years completed at the time of conducting the study. Data presented in table.1 majority (58.90%) of the farmers belong to middle age followed by young age (35.60%) and old age (5.60%). This result may be due to that middle and young aged farmer have more exposure to digital knowledge. The above findings are in accordance with the results of Anil Kumar (2019) [2].

Table 1: Distribution of farmers according to their age (n=90)

S. No.	Age	Frequency	Percentage
1	Young Age(<35 years)	32	35.60
2	Middle Age(35-55 years)	53	58.90
3	Old Age (>55 years)	05	5.60
	Total	90	100.00

Digital literacy

Digital literacy was operationalized as the extent to which farmers are skilled to operate ICT tools to get information from social media and to the extent, they can utilize and store the information for instant and future use as well. Data presented in table 2. shows that majority (48.90%) of the farmers have high level of digital literacy followed by medium (41.10%) and low (10.00%). This result may be due to that most of the young and middle age farmers are educated and have their own smartphones where they had access to various agristartups on artificial intelligence. The above findings are in consonance with Laxmipriya (2017) [8].

Table 2: Distribution of farmers according to their digital literacy (n=90)

S. No.	Digital literacy	Frequency	Percentage
1	Low (12-28)	09	10.00
2	Medium (29-45)	37	41.10
3	High (46-62)	44	48.90
	Total	90	100.00

Farming experience

Farming experience was operationalized as the number of years of experience a respondent had in farming and allied sectors. Weightage of one score was assigned for one year of experience in farming. Data presented in table. 3 shows that the majority (45.60%) of farmers receiving services from agristartups on artificial intelligence are having small-medium size landholding followed by those with small (27.8%), medium holding (18.90%), marginal holdings (6.70%) and large size holdings (1.10%). The present study was in consonance with Kiranmayi (2013) [7] and Farida *et al*. (2011) [5] the majority of the farmers had small- medium level of farm size.

Table 3: Distribution of farmers according to their Farming experience (n=90)

S. No.	Farming experience	Frequency	Percentage
1.	Low (4-16)	50	55.60
2.	Medium (17-29)	18	20.00
3.	High (30-42)	22	24.40
	Total	90	100.00

Farm size

Farm size was operationalized as the number of standard acres possessed by the respondents at the time of conducting the study. Data presented in table.4 shows that the majority (55.60%) of the farmers receiving services from agristartups on artificial intelligence had low farming experience followed by high (24.40%) and medium (20.00%) levels From the table. 4 it can be depicted that the majority of farmers had a low to medium of farming experience. This is obvious due to the earlier finding reported that majority of the farmers using social media belong to young and middle age.

Table 4: Distribution of farmers according to their Farm size (n=90)

S. No.	Farm size	Frequency	Percentage
1.	Marginal (< 1 ha)	06	6.70
2.	Small (1 to 2 ha)	25	27.80
3.	Small-medium (2 to 4 ha)	41	45.60
4.	Medium (4 to 10 ha)	17	18.90
5.	Large (>10 ha)	01	1.10
	Total	90	100.0

Social participation

Social participation is operationally defined as the extent of involvement of the farmers in any formal organizations in his/her community either as member or nonmember in one or more organizations. Data presented in table. 5 shows that the majority (73.30%) of the farmers receiving services from agristartups on artificial intelligence had low social participation followed by medium (22.20%) and High (4.40%) levels. From the table. 4 it can be depicted from the above that farmers had low level of social participation. This might be due to the possible reason that most of them were middle and young farmers there are less participating in physical contact rather than on visiting on social platforms for agriculture related information. The above findings are in consonance with Archana (2012) [3].

Table 5: Distribution of farmers according to their Social participation (n=90)

S. No.	Social participation	Frequency	Percentage
1.	Low (10-12)	66	73.30
2.	Medium (13-15)	22	22.20
3.	High (16-18)	04	4.40
	Total	90	100.00

Extension contact

Extension contact is operationally defined as the extent of contact of farmers to various extension specialists such AEO, scientists, KVKs *etc*. Data presented in table 6. shows that the majority (50.00%) of the farmers receiving services from agristartups on artificial intelligence had medium extension contact followed by low (40.00%) and high

(10.00%) levels. From the table.6 it can be depicted from the above that majority of the farmers had medium level of extension contact. This might be due to the possible reason that most of the young and middle age farmers depend on the social media to clear their improve their knowledge in crop management.

Table 6: Distribution of farmers according to their Extension Contact (n=90)

S. No.	Extension Contact	Frequency	Percentage
1.	Low (15-18)	36	40.00
2.	Medium (19-22)	45	50.00
3.	High (23-26)	09	10.00
	Total	90	100.00

Farm equipment possession
It is operationally defined as the degree of extent of use of farm machinery to possess by the farmers. Data presented in table 7. shows that the majority (87.80%) of the farmers receiving services from agristartups on artificial intelligence had low level of farm equipment possession followed by high (7.80%) and medium (4.40%) levels. From table.7 it can be depicted from the above that majority of the farmers had low level of farm equipment possession. This might due to the possible reason that they had small holdings of the farmers. The above findings were in consonance with Archana (2012) [3] and Sundera Rao (2016) [10].

Table 7: Distribution of farmers according to their Farm Equipment Possession (n=90)

S. No.	Farm Equipment Possession	Frequency	Percentage
1.	Low (10-12)	79	87.80
2.	Medium (13-15)	04	4.40
3.	High (16-18)	07	7.80
	Total	90	100.00

Social networking
It is operationally defined as extent of involvement of farmers in maintaining relations with others for getting useful information regarding agristartups. Data presented in table 8. shows that the majority (47.80%) of the farmers receiving services from agristartups on artificial intelligence had low social networking followed by medium (34.40%) and high (17.80%) levels. From the table.8 it can be depicted from the above that majority of the famers had medium level of social networking. This might be due to the possible reason that lack of contacts with experts related to agristartups on artificial intelligence. The above findings are in consonance with Sandeep (2020) [9].

Table 8: Distribution of farmers according to their Social networking (n=90)

S. No.	Social networking	Frequency	Percentage
1.	Low (12-18)	43	47.80
2.	Medium (19-25)	31	34.40
3.	High (26-32)	16	17.80
	Total	90	100.00

Innovativeness
It is operationally defined as the degree to which a farmer perceives her/himself to act in a manner so as to extend into a new idea, product and services. Data presented in table 9.

shows that the majority (52.20%) of the farmers receiving services from agristartups on artificial intelligence had medium level of innovativeness followed by low (27.80%) and high (20.00%) levels. From the table. 9 it can be depicted from the above that majority of farmers had medium level of innovativeness. This might be due to the possible reason that increased level of awareness of the new technologies on agristartups on artificial intelligence among the young famers.

Table 9: Distribution of farmers according to their Innovativeness (n=90)

S. No.	Innovativeness	Frequency	Percentage
1.	Low (24-32)	25	27.80
2.	Medium (33-41)	47	52.20
3.	High (42-50)	18	20.00
	Total	90	100.00

Information seeking behaviour
It is operationalized as the degree of contact of farmers for information up gradation from various formal and informal sources. Data presented in the table 10. shows that the majority (65.60%) of the farmers receiving services from agristartups on artificial intelligence had medium level of information seeking behaviour followed by high (27.80%) and low (6.70%) levels. From the table.10 it can depicted from the above that majority of the farmers had medium level of information seeking behaviour. This might be due to the possible reason that young and middle age farmers may lack interest and time and also some may be introverted to dependent on others.

Table 10: Distribution of farmers according to their Information seeking behaviour (n=90)

S. No.	Information seeking behaviour	Frequency	Percentage
1.	Low (12-17)	06	6.70
2.	Medium (18-23)	59	65.60
3.	High (24-29)	25	27.80
	Total	90	100.00

Conclusion
Through this study of profile characteristics we observed that majority of the farmers using the services related to agristartups belong to middle and young age which indicates that middle and young age farmers are interested in encouraging the agristartups on artificial intelligence, also they had high digital literacy with semi-medium holdings, low farming experience which indicates that these farmers are easily accepting the innovative techniques in their field which is a positive sign, low social participation, medium extension contact, low farm equipment possession which would help them in accepting the drone based technologies, low social networking, medium level of innovativeness and medium level of information seeking behaviour indicates that they are more attracted to use the mobile phones which would be helpful for them to about the agristarups applications and also approach them.

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