Farmers' Level of Satisfaction on Agricultural Technology Information Centre of AAU, Jorhat, Assam

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ABSTRACT

The present study was conducted in Jorhat district of Assam to find out farmers' satisfaction level on Agricultural Technology Information Centre (ATIC) of Assam Agricultural University (AAU), Jorhat, Assam. 8 villages which are located within the radius of 50 km from ATIC were selected on random basis for the present study. 120 farmers from eight villages were selected purposively by using snowball sampling technique with the help of records available in ATIC register of AAU, Jorhat. The collected data were systematically arranged, classified, tabulated and analysed with the help of different statistical techniques and tests viz. frequency distribution, percentage, mean, standard deviation, weighted mean score, Pearson product-moment correlation coefficient, test of significance of correlation coefficient and chi-square test. The findings from the study revealed that 12.50 per cent respondents had low, 71.67 per cent respondents had medium and 15.83 per cent respondents had high overall satisfaction level on ATIC. The study indicated that annual family income had positive and significant relationship whereas social participation had significant association with satisfaction level of the respondents.

Keywords: *Farmers' satisfaction; Agricultural Technology Information Centre; Snowball sampling technique; Assam.*

Satisfaction refers to the contentment or fulfilment of wishes, expectations, needs of a person according to the requirement. While measuring the level of satisfaction of the farmers visiting Agricultural Technology Information Centre (ATIC), consideration of several factors like relevancy, quality and usefulness of various services provided by ATIC will come to the fore. Satisfaction is defined as a person's feeling of pleasure or disappointment resulting from comparing to his or her expectations in relation to a product's perceived performance or outcome (*Kotler et al., 2013*). *Shukla et al. (2020)* opined that large number of technologies evolved in the field of agriculture are not accepted and adopted to the fullest extent by the farmers; the gap between recommendations made by the scientists and actual use by farmers is frequently encountered. Assessment of the clienteles' satisfaction will help provide an insight to the effectiveness (beyond only assessing the quality of the service) in fulfilling the agricultural needs of the farmers because studying clienteles' satisfaction may not only help uncover any constraints in the delivery of outputs and services to the clients but also help document and publish any recommendations made by the farmers which may help increase the organisational efficiency with regards to agricultural development (*Dkhar et al., 2019*). Measuring customer satisfaction is also a way to assess the quality of the outputs delivered by the organization

as higher satisfaction of its acquisition and use depends on the perceived quality of the product or service (*Tsiotsou, 2006*). Therefore, it can be said that satisfaction is a very important factor in determining the utilization, adoption and impact of a particular technology or information disseminated among the farmers.

The role of appropriate farm information package, its dissemination and access to farming community are of paramount importance for agricultural development (*Goudappa et al., 2017*).

With the continuous development of new agricultural technologies and innovations, production of the farms has quite increased, but often the farmers are not able to have access to timely and accurate information and products. It is observed that average farmers are deprived of accessible and cost-effective means to get the required information and products in time. They are not much aware about where and whom to contact to get up-to-date information about latest technologies in agriculture as well as for various problems occurring in their farms. Therefore, Indian Council of Agricultural Research (ICAR) considered the importance of establishing a coordination and linkage between researchers, scientists and department in-charges of different disciplines and technology users or the farmers. The coordination needs to be direct, integrated and which includes timely availability of sufficient information and resources (*Dutta, 2020*).

To strengthen the Research – Extension – Farmers linkages, National Agricultural Technology Project (NATP) was launched with the support of World Bank in 1998. Agricultural Technology Information Centres (ATICs) were introduced under the Innovations in Technology Dissemination (ITD) component of National Agricultural Technology Project (NATP). (*Indian Council of Agricultural Research (ICAR), 2004, DARE/ICAR Annual Report 2003-2004, pp. 189-201*).

Agricultural Technology Information Centre (ATIC) is a regulatory body which links the farmers with different units of a research institution to provide various agricultural information and services. ATIC is a 'single window delivery system' that acts as single-entry point at the entrance of the Indian Council of Agricultural Research (ICAR) Institute or State Agricultural Universities (SAUs) with the aim of helping the farmers to improve the cultivation practices by providing all the required information as well resources at a single place. At present, 44 ATICs are functioning in different locations of India (*Dhanraj, 2010*).

The Agricultural Technology Information Centre (ATIC) of Assam Agricultural University (AAU), Jorhat was established on 22 January, 2003. The ATIC is under the administrative control of Directorate of Extension Education (DEE), Assam Agricultural University (AAU), Jorhat. The ATIC of AAU, Jorhat has been at the farmers' services as the 'single window' approach since 2003. Thus, it is necessary to find out whether the farmers are satisfied with the services or not and what is the status of their satisfaction level on ATIC. By collecting the opinion and feedback of the respondents, it would be possible to know whether the farmers are satisfied or dissatisfied with the available products or services and also about the general experiences they have about ATIC. Keeping all these in view, the present study was carried out with the objective: to find out the satisfaction level of farmers on Agricultural Technology Information Centre (ATIC) of Assam Agricultural University (AAU), Jorhat, Assam.

METHODOLOGY

The present study was conducted in purposively selected Jorhat district of Assam state in India. The district was selected purposively to assess the satisfaction level of the farmers on ATIC, which is located at Jorhat district. Two villages from each main direction i.e. North, East, West and South; which are located within the radius of 50 km from the ATIC were selected by following the selection method of *Pandey (2013)*. Thus, a total of 8 villages were selected on random basis following the location of registered villagers from the ATIC register of AAU, Jorhat. The names of the selected villages are: Tulsijan Pahumara Village, Ujani Majkuri Village, Charingia Village, Khangia Village, Napamua Village, Potiagaon Village, Mohimabari Village, Raidangjuri Village.

From the selected villages, a list of farmers having regular visits to ATIC was prepared from the records available in ATIC register of AAU, Jorhat. The beneficiaries who had been in regular and good contact with ATIC were selected for the present study. 15 farmers from each village were selected purposively by using snowball sampling technique. Thus, the total

number of respondents for the present study was 120 (N = 120). The data from the respondents were collected through personal interview method by using a pre-tested structured research schedule in their own residence or farm.

To know about the socioeconomic and personal profile of the respondents, ten numbers of independent variables were selected *viz.* age, caste, education, marital status, type of family, size of family, operational land holding, occupation, annual family income and social participation. To collect data about age of the respondents, they were classified into different age groups according to their chronological years whereas data about caste, marital status, type of family, size of family, occupation and annual family income, was collected by developing structured research schedule. To collect data about education, scale developed by *National Sample Survey Office, Ministry of Statistics & Programme Implementation, Government of India (2015)* was followed with slight modification; to determine operational land holding of the respondents, the norms of *Directorate of Economics & Statistics, Transformation and Development Department, Government of Assam (2018)* was followed and to know about social participation, scale developed by *Pareek & Trivedi (1964)* was followed.

The collected data were systematically arranged, classified, tabulated and analysed with the help of different statistical techniques and tests *viz.* frequency distribution (f), per cent age (%), mean ($\overline{X}$), standard deviation (SD), weighted mean score (WMS), Pearson product-moment correlation coefficient (r value), test of significance of correlation coefficient (t value) and chi-square ($\chi 2$) test.

The satisfaction level of respondents was measured by using four categories *viz.* overall environment, research products available at ATIC, diagnostic and other services available at ATIC, information sources available at ATIC; with slight modification of scale developed by *Songara (2007)*. Each category was further divided into different subheads to find out the existing level of satisfaction of the respondents with the functioning of ATIC. Satisfaction level of respondents was measured on a six-point continuum, i.e. Most Satisfied (MS), Quite Satisfied (QS), Satisfied (S), Somewhat Satisfied (SS), Dissatisfied (DS) and Not Applicable (NA). The scoring was done in the order of

5, 4, 3, 2, 1 and 0 respectively. By using the procedure followed by *Dasgupta (1989)*, the respondents were classified into three categories of satisfaction level *viz.* low, medium and high; on the basis of mean and standard deviation of the obtained scores.

RESULTS AND DISCUSSION

Socioeconomic and personal profile of the respondents: The findings from Table 1 reveal that majority of the respondents belonged to the middle aged group (40.00%) of 36 to 55 years, from the OBC caste (56.67%), with educational qualification of High School passed (26.67%), were married (80.83%), belonged to joint family type (57.50%) having medium family size (55.00%) with 5 to 10 members. Majority of the respondents possessed marginal land holding (70.00%), had occupation of only farming with no subsidiary occupation (40.00%). It was observed that majority of the respondents had medium annual family income (73.33%) ranged between Rs. 53,764.36 to Rs. 1,56,893.98 with no membership in any organization (44.17%).

Satisfaction level of respondents: In the present study, satisfaction level of respondents was measured in frequency (*f*) and percentage (%) according to their response which is presented in Table 2. Weighted Mean Score (WMS) was given on each feature/service to rank them accordingly. Overall satisfaction level of respondents was calculated with the help of mean ($\overline{X}$) and standard deviation (SD) of the obtained scores which is depicted in the Table 3.

The study revealed that (Table 2), satisfaction level of the respondents regarding "behaviour of personnel" ranked first with WMS (4.23), followed by "concept of ATIC" with second rank having WMS (3.99), "information about location of diagnostic centres/ agricultural departments/veterinary departments etc." ranked third with WMS (3.97), "chart, poster, map and graph" ranked fourth with WMS (3.87), "photograph and picture" ranked fifth with WMS (3.84), "farm literature (leaflets, magazines, folders, bulletins, pamphlets, books etc.)" ranked sixth with WMS (3.83), "infrastructure" ranked seventh with WMS (3.82), "nursery plants of vegetables, fruits and ornamental plants" ranked eighth with WMS (3.80), "plants health clinic" ranked ninth with WMS (3.74), "exhibition of model and specimen" ranked tenth with WMS (3.63),

Table 1. Distribution of the respondents according to their socioeconomic and personal profile (N = 120)

Variables	No.	%
Age		
Young (18 to 35 years)	47	39.17
Middle (36 to 55 years)	48	40.00
Old (56 years and above)	25	20.83
Caste		
General	33	27.50
Other Backward Class (OBC)	68	56.67
More Other Backward Class (MOBC)	05	4.17
Scheduled Caste (SC)	11	9.17
Scheduled Tribe (ST)	03	2.50
Education		
Not literate	03	02.50
Literate but below primary level	12	10.00
Primary school	14	11.67
Middle school	24	20.00
High school	32	26.67
Higher secondary	14	11.67
Diploma/Certificate course	08	06.67
Graduate	11	09.17
Post Graduate and above	02	01.67
Marital status		
Single	22	18.33
Married	97	80.83
Widowed	01	00.83
Type of family		
Nuclear	51	42.50
Joint	69	57.50
Size of family		
Small (2-4 members)	50	41.67
Medium (5-10 members)	66	55.00
Large (>10 members)	04	03.33
Operational land holding		
Marginal (Below 1.0 ha)	84	70.00
Small (1.0-2.0 ha)	22	18.33
Semi medium (2.0-4.0 ha)	10	08.33
Medium (4.0-10.0 ha)	04	03.33
Occupation		
Farming	48	40.00
Farming + Business	24	20.00
Farming + Service	16	13.33
Farming + Labour	27	22.50
Farming + Others	05	04.17
Annual family income		
Low (Less than Rs. 53,764.36)	12	10.00
Medium (Rs. 53,764.36 to Rs. 1,56,893.98)	88	73.33
High (Above Rs. 1,56,893.98)	20	16.67
Social participation		
None	53	44.17
Member of one organization	26	21.67
Member of more than one organization	21	17.50
Office holder in such an organization	16	13.33
Wide public leader	04	03.33

"location" ranked eleventh with WMS (3.58), "seeds of field crops, vegetables and other horticultural crops" ranked twelfth with WMS (3.54), "vermiculture and vermicompost" ranked thirteenth with WMS (3.34), "processed products and by-products of cereals, oilseeds, pulses, vegetables, fruits, mushrooms including spawn, honey, milk, meat and fish, tea, black pepper etc." ranked fourteenth with WMS (3.23), "helpline service, on-farm consultancy for farmers/orchardists" ranked fifteenth with WMS (3.18), both "bio-fertilizer *viz.* azolla etc." and "projects profiles and consultancy" ranked sixteenth with WMS (2.98), "poultry strains, livestock breeds, semen, fish seed etc." ranked seventeenth with WMS (2.87), "IPM-organic and bio-pesticides" ranked eighteenth with WMS (2.78), "microbial culture for milk and milk products" ranked nineteenth with WMS (2.65), "audio-visual aid e.g. video conference, T.V." ranked twentieth with WMS (2.23), "veterinary/animal clinics for small and large animals" ranked twenty first with WMS (2.07), "tissue cultured plant materials" ranked twenty second with WMS (1.77), "soil testing" ranked twenty third with WMS (1.36), "vaccine/diagnostic kit" ranked twenty fourth with WMS (1.18), "seed quality testing" ranked twenty fifth with WMS (0.55), "testing and calibration of agricultural equipment and implements" ranked twenty sixth with WMS (0.22) and "small farm implements, agricultural equipment and drawing of designs" ranked twenty seventh with WMS (0.08).

The findings presented in Table 3 indicate that majority of the respondents i.e. 71.67 per cent respondents had medium whereas 12.50 per cent respondents had low and 15.83 per cent respondents had high level of overall satisfaction with ATIC. These findings are in line with the findings of *Kappen (2005)* and *Nishi et al. (2011)*.

Relationship between independent variables and satisfaction level : The relationship of four quantitative independent variables having interval and ratio scale *viz.* age, size of family, operational land holding, annual family income with the dependent variable i.e. satisfaction level of respondents was analysed by using Pearson product-moment correlation coefficient (r) (Table 4). The calculated t-value from test of significance of correlation coefficient was compared with table value of t for 118 degree of freedom at 0.05 and 0.01 level of significance.

Table 2. Frequency and Percentage distribution of the respondents according to their satisfaction level (N = 120)

Features and services	MS No. (%)	QS No. (%)	S No. (%)	SS No. (%)	DS No. (%)	NA No. (%)	WMS	Rank
Overall environment								
Concept of ATIC.	45(37.50)	33(27.50)	38(31.67)	4(3.33)	0(0.00)	0(0.00)	3.99	II
Location.	27(22.50)	30(25.00)	49(40.83)	14(11.67)	0(0.00)	0(0.00)	3.58	XI
Infrastructure.	34(28.33)	35(29.17)	46(38.33)	5(4.17)	0(0.00)	0(0.00)	3.82	VII
Behaviour of personnel.	54(45.00)	40(33.33)	26(21.67)	0(0.00)	0(0.00)	0(0.00)	4.23	I
Research products available at ATIC.								
Seeds of crops, vegetables and other horti.	30(25.00)	35(29.17)	30(25.00)	20(16.67)	5(4.17)	0(0.00)	3.54	XII
Nursery	32(26.67)	38(31.67)	44(36.67)	6(5.00)	0(0.00)	0(0.00)	3.80	VIII
Bio-fertilizer *viz.* azolla etc.	29(24.17)	23(19.17)	36(30.00)	6(5.00)	0(0.00)	26(21.67)	2.98	XVI
IPM-organic and bio-pesticides.	26(21.67)	22(18.33)	32(26.67)	8(6.67)	3(2.50)	29(24.17)	2.78	XVIII
Small farm implements	0(0.00)	0(0.00)	0(0.00)	5(4.17)	0(0.00)	115(95.83)	0.08	XXVII
Tissue cultured plant materials.	9(7.50)	16(13.33)	25(20.83)	14(11.67)	0(0.00)	56(46.67)	1.77	XXII
Processed products etc.	25(20.83)	32(26.67)	41(34.17)	6(5.00)	0(0.00)	16(13.33)	3.23	XIV
Poultry, livestock, semen, fish seed etc.	24(20.00)	25(20.83)	38(31.67)	5(4.17)	0(0.00)	28(23.33)	2.87	XVII
Vermiculture and vermicompost.	39(32.50)	26(21.67)	34(28.33)	0(0.00)	0(0.00)	21(17.50)	3.34	XIII
Vaccine/ diagnostic kit.	13(10.83)	13(10.83)	6(5.00)	3(2.50)	0(0.00)	85(70.83)	1.18	XXIV
Microbial culture for milk and milk products	30(25.00)	21(17.50)	28(23.33)	0(0.00)	0(0.00)	41(34.17)	2.65	XIX
Diagnostic and other services available at ATIC								
Soil testing.	17(14.17)	9(7.50)	12(10.00)	3(2.50)	0(0.00)	79(65.83)	1.36	XXIII
Seed quality testing.	5(4.17)	4(3.33)	7(5.83)	2(1.67)	0(0.00)	102(85.00)	0.55	XXV
Plants health clinic.	34(28.33)	36(30.00)	37(30.83)	11(9.17)	2(1.67)	0(0.00)	3.74	IX
Veterinary/ animal clinics	13(10.83)	24(20.00)	25(20.83)	6(5.00)	0(0.00)	52(43.33)	2.07	XXI
Testing of agricultural equipment	0(0.00)	0(0.00)	6(5.00)	4(3.33)	0(0.00)	110(91.67)	0.22	XXVI
Projects profiles and consultancy	20(16.67)	28(23.33)	38(31.67)	16(13.33)	0(0.00)	18(15.00)	2.98	XVI
Helpline service, on-farm consultancy	21(17.50)	17(14.17)	47(39.17)	32(26.67)	3(2.50)	0(0.00)	3.18	XV
Information about location of diagnostic	39(32.50)	38(31.67)	43(35.83)	0(0.00)	0(0.00)	0(0.00)	3.97	III
Information sources available at ATIC.								
Farm literature	39(32.50)	27(22.50)	48(40.00)	6(5.00)	0(0.00)	0(0.00)	3.83	VI
Chart, poster, map and graph.	37(30.83)	35(29.17)	43(35.83)	5(4.17)	0(0.00)	0(0.00)	3.87	IV
Photograph and picture.	34(28.33)	36(30.00)	47(39.17)	3(2.50)	0(0.00)	0(0.00)	3.84	V
Exhibition of model and specimen.	29(24.17)	28(23.33)	52(43.33)	11(9.17)	0(0.00)	0(0.00)	3.63	X
Audio-visual aid	22(18.33)	14(11.67)	28(23.33)	9(7.50)	0(0.00)	47(39.17)	2.23	XX

MS : Most Satisfied,   QS : Quite Satisfied,   S : Satisfied,
SS : Somewhat Satisfied,   DS : Dissatisfied,   NA: Not Applicable.

Table 3. Frequency and Percentage distribution of the respondents according to their overall satisfaction level (N = 120)

Category	Score Range	No.	%	MS	SD
Low	<72.39	15	12.50		
Medium	72.39 to 86.19	86	71.67	79.29	6.90
High	>86.19	19	15.83		
Total		120	100.00		

Table 4. Relationship between independent variables having interval and ratio scale and satisfaction level of respondents

Independent variables	r value	t value
Age	0.1107	1.2103
Size of family	0.1448	1.5894
Operational land holding	0.0132	0.1436
Annual family income	0.1880*	2.0796

* Significant at 0.05 level,   ** Significant at 0.01 level

Table 5. Association between independent variables and satisfaction level of respondents

Independent variables	χ^2	d.f.
Caste	6.6771	8
Education	13.1264	18
Marital status	4.3227	6
Type of family	3.4083	2
Occupation	11.8238	8
Social participation	17.3012*	8

* Significant at 0.05 level ; ** Significant at 0.01 level

The findings from the study revealed that age, size of family, operational land holding had no significant correlation with satisfaction level of respondents at 0.05 and 0.01 level of significance.

Whereas, annual family income had positive and significant correlation with satisfaction level of respondents at 0.05 level of significance. This may be due to the reason that when the annual family income of the respondents increases by utilizing the various services and facilities of ATIC, then they become more satisfied with ATIC.

Association between independent variables and satisfaction level of respondents : The association of six qualitative independent variables having nominal and ordinal scale *viz.* caste, education, marital status, type of family, occupation, social participation with the dependent variable i.e. satisfaction level of respondents was analysed with the help of chi-square (χ^2) test (Table 5). The calculated χ^2 value was compared with table value at 0.05 and 0.01 level of significance.

The findings from the study indicated that caste, education, marital status, type of family, occupation had no significant association with satisfaction level of respondents at 0.05 and 0.01 level of significance.

Whereas social participation had significant association with satisfaction level of respondents at 0.05 level of significance. This may be because the farmers with higher social participation have more involvement in various organizations. They are more aware and up-to-date about use of different improved farming techniques as well as availing the ATIC services and facilities. Due to that, they receive more benefits in their farms and thus, they become more satisfied with ATIC than the respondents with less or no social participation.

CONCLUSION

It can be concluded that majority of the respondents had medium overall satisfaction level on ATIC. It was observed from the study that most of the respondents were not aware about all the services and facilities provided by ATIC. Thus, there arises a need to create awareness about ATIC among the farmers. More numbers of good quality research products should be made available directly in ATIC as most of the farmers go to ATIC for purchasing the products. Popularization and efficient working of the helpline service should be there so that the problems faced by the farmers can be solved directly. More numbers of models and specimen should be displayed in ATIC to increase its efficiency. It was observed from the study that very less number of the respondents had gone to ATIC regarding queries related to small farm implements and agricultural equipment. Therefore, information along with practical demonstration about small farm implements and agricultural equipment should be made easily available to the farmers, so that they become more aware about application and utilization of the implements and equipment. The findings of the study revealed that scientific testing and diagnostic lab is not present in ATIC. Therefore, establishment of a diagnostic centre or service in ATIC would be of great help to the farmers for soil testing, seed quality testing and other relevant tests. It was also observed from the study that annual family income had positive and significant relationship whereas social participation had significant association with satisfaction level of the respondents. This could provide wide scope to identify the factors and reasons which determine the farmers' satisfaction level on ATIC. Thus, various strategies should be implemented to increase the satisfaction level of farmers as well as to enhance the effectiveness of ATIC.

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