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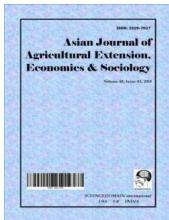
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## **Organizational Level Performance of Agricultural Technology Management Agency (ATMA) under New Extension Reforms in the State of Assam**

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### **Authors' contributions**

*This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.*

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### **ABSTRACT**

The Agricultural Technology Management Agency (ATMA), defined as a semi-autonomous decentralized participatory and market-driven extension model represents a shift away from transferring technologies for major crops to diversifying output. As the ATMA programme is under operation in Assam for the last ten years, the researchable questions may arise about to what extent the functions of ATMA through cafeteria of activities at district level are achieved such as farmer oriented activities, farm information dissemination, agricultural technology refinement, validation and adoption (R-E-F-Linkage), administrative and capital expenses, innovative activities and other innovative activities etc. Keeping in view the broad aims of the ATMA and to find out relevant answers on the above stated questions, a study was carried out in three CSS-ATMA districts of Assam namely Kokrajhar, Bongaigaon and Goalpara in the year 2015-16 with a view to find out the organizational level performance of ATMA under new extension reforms. A purposive sampling method was followed to select the districts for the study. The result of the findings highlighted that

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the trend of achievement of cafeteria of activities as per ATMA guideline were below 50.00 per cent in the three consecutive years viz., 2013-14, 2014-15 and 2015-16 except in few activities where the achievement of activities under the heads "Agri. Technology Refinement, Validation and Adoption (R-E-F-Linkage)", "Administrative/Capital Expenses" and "Innovative Activities", were 62.50 per cent, 59.39 per cent and 50.03 per cent respectively in the year 2013-14. On the other hand, in the year 2014-15, the achievement of activities under the head "Other Innovative Activities" were 100.00 per cent.

**Keywords:** ATMA; level; achievement; cafeteria and activities.

## 1. INTRODUCTION

Agriculture accounts for more than one third of the State of Assam's income. Farming is both a way of life and the principal means of livelihood for more than 70 per cent of the population of the state of Assam accounting for more than 53 per cent of the state's workforce. Agriculture in the state is a combination of peasant and tenant farming where most of the farmers belong to small (20.9%) and marginal (62.2%) categories, large farmers being very few (0.19%). The average farm size is becoming smaller over years (1.11 ha) [1]. Assam's agriculture has yet to experience modernization in a real sense and is lagging behind. With implications to food security, per capita food grain production has declined in past five decades [2]. On the other hand, although productivity of crops increased marginally, still these are much lower in comparison to highly productive regions like northern and southern regions.

Rapid agricultural growth is the key to poverty alleviation and overall economic development of the farming community. The changing scenario of agriculture with the introduction of the reforms process warrants a remarkable demand on the extension system to revise their own approaches and methodology to carry the appropriate technologies to the farming communities [3,4]. In the existing research and extension system of agriculture and allied sectors such as animal husbandry and veterinary, fishery and sericulture, the linkage operates in a top to down manner and perhaps it partly failed to achieve at the required level. Considering the farmer's problems, available resources, the integration of farming system approach, involvement of extension personnel and farmers in the research and extension system etc. a gap has been observed between the recommended package of practices and adoption of those at farmer's level. Therefore, Government of Assam has launched "Assam Agricultural Competitiveness Project (AACP)" with the financial assistance of the

World Bank to minimize the existing gap of technology refinement and dissemination amongst the farming community. To achieve this, the State Government has adopted the "Agricultural Technology Management Agency" (ATMA model) developed by MANAGE, Hyderabad for refinement and effective transfer of farm technology to the farming community on the same pattern as it was pilot tested under the "Innovations in Technology Dissemination" (ITD) component of "National Agricultural Technology Project" (NATP). At present in India, ATMA model adopted in 603 rural districts where 591 districts are under CSS-ATMA and 12 districts in Assam still under World Bank assisted ATMA [5,6,7,8].

As the ATMA programme is under operation for the last ten years, the researchable questions may arise about to what extent the functions of ATMA through cafeteria of activities at district level are achieved such as farmer oriented activities, farm information dissemination, agricultural technology refinement, validation and adoption (R-E-F-Linkage), administrative and capital expenses, innovative activities and other innovative activities etc. Therefore, a comprehensive study was carried out with the objective i.e. To find out organizational level performance of ATMA under new extension reforms in Assam.

## 2. METHODOLOGY

The present study was conducted in Assam, which is situated in the central part of North-east India, lying between 24° to 28°18' north latitudes and 89°50' to 97°4' east longitudes. A purposive sampling design was adopted for the present study. Out of six Agro-Climatic Zone, Lower Brahmaputra Valley Zone was selected purposively because the maximum numbers (4 nos.) of CSS-ATMA districts falls under this zone. There are four CSS-ATMA districts under Lower Brahmaputra Valley Zone namely Kokrajhar, Bongaigaon, Chirang and Goalpara.

Out of these four districts three districts namely, Kokrajhar, Bongaigaon and Goalpara were selected purposively for carry out the research study due to limitation of time and resources. Again, these three districts represent heterogeneity in terms beneficiary farmers that Bongaigaon and Goalpara districts represents majority of general/OBC caste and Kokrajhar represents majority of ST caste. The organizational level performance in the study has been operationally defined to what extent the main functions of ATMA through cafeteria of activities as per guideline is accomplished. Thus, the organizational level performance reflects the 'level of achievement of the cafeteria of activities' as per ATMA guideline.

For assessing the organizational level performance of ATMA under new extension reforms, the achievement of cafeteria of activities of ATMA in three (3) consecutive financial years i.e. 2013-14, 2014-15 and 2015-16 in three districts namely Kokrajhar, Bongaigaon and Goalpara were considered in the study. The major six heads of cafeteria activities were Farmer Oriented Activities, Farm Information Dissemination, Agricultural Technology Refinement, Validation and Adoption (R-E-F-Linkage), Administrative/Capital Expenses, Innovative Activities and Other Innovative Activities. After obtaining the data for respective districts, the per cent of achievement of cafeteria of activities under six major heads were calculated out to study the level of achievement.

### 3. RESULTS AND DISCUSSION

#### 3.1 Overall Level of Achievement of Cafeteria of Activities in Kokrajhar, Bongaigaon and Goalpara District

A perusal of the Table 1 (a) reveals that the overall level of achievement of cafeteria of activities under different heads as per district target and ATMA guideline had some variation. The trend of achievement of farmer oriented activities as per district target were 82.91 per cent, 77.57 per cent and 76.09 per cent in the year 2013-14, 2014-15 and 2015-16 respectively. On the other hand, the trend of achievement of farmer oriented activities as per ATMA guideline were 25.76 per cent, 12.76 per cent and 6.77 in the three consecutive years respectively. Further, the trend of achievement of farm information dissemination activity as per district target were 100 per cent in the year 2013-14 and 16.66 per

cent in each the year 2014-15 and 2015-16. While as per the ATMA guideline, the trends were 40.16 per cent in the year 2013-14 and 0.41 per cent in each the year 2014-15 and 2015-16. The trend of achievement under the activity agricultural technology refinement, validation and adoption (R-E-F-Linkage) as per district target were 100 per cent, 94.44 per cent and 38.89 per cent in the three consecutive years respectively. On the other hand, as per ATMA guideline under this activity the trends were 62.50 per cent, 33.33 per cent and 12.50 per cent in the three consecutive years respectively. The trend as per district target under the activity administrative/capital expenses were 84.40 per cent, 85.41 per cent and 94.69 per cent in the expressed three consecutive year respectively whereas as per ATMA guideline, the trends were 59.39 per cent, 42.85 per cent and 25.84 per cent respectively. The trend of achievements as per district target under the innovative activities were 66.86 per cent, 89.04 per cent and 66.66 per cent in the three consecutive years respectively. Whereas as per ATMA guideline, the trends were 50.03 per cent, 44.52 per cent and 33.33 per cent in the three consecutive years. The trend of achievement as per district target under the other innovative activities were 100.00 per cent and 33.33 per cent in the year 2014-15 and 2015-16 respectively where in the year 2013-14, the district had not targeted against this activity. As per ATMA guideline, the trend showed that there was nothing achievement of a single activity in each the year 2013-14 and 2015-16 excepting the year 2014-15 which showed the 100.00 per cent of achievement.

The result of the findings highlighted that the trend of achievement of cafeteria of activities as per ATMA guideline were very discouraging except under some heads in respective years. This might be because of the fact that delay and inadequate fund transferred to the state, shortage of manpower to implement the activities and failure to timely submission of utilization certificate by the state and district implementing agency. Further, the result indicated that in the year 2013-14 and 2014-15 the per cent of achievement of cafeteria of activities were quite average as compare to the year 2015-16. This might be due to transfer of too little fund to the district implementing agency of ATMA in the year 2015-16. Further, the result highlighted that the trend of achievement of cafeteria of activities as per district target were encouraging except under some heads in respective years.

The result of the present study conforms to the suggestions of [9,10]. They concluded that public sector extension has to play a much greater role in the changing agricultural situation in India than it has played so far. Public sector extension has to provide information and advice to farmers not only on technologies, but also on solutions to specific field problems, market, prices, quality and implications of policy changes. Public sector extension also has to organize farmers to take collective action to adopt new technologies, solve problems, and increase income from agriculture [11,12].

### 3.2 Level of Achievement of Cafeteria of Activities in Kokrajhar District

A perusal of the Table 1 (b) reveals that the level of achievement of cafeteria of activities under different heads as per district target and ATMA guideline had some variation. The trend of achievement of farmer oriented activities as per district target were 98.75 per cent in the year 2013-14 and 100 per cent in each the year 2014-15 and 2015-16. On the other hand, the trend of achievement of farmer oriented activities as per ATMA guideline were 27.22 per cent, 12.21 per cent and 2.92 in the three consecutive years respectively. The trend of achievement of farm information dissemination activity as per district target was 100 per cent in the year 2013-14 where the district had not targeted on this activity in each the year 2014-15 and 2015-16. On the other hand as per ATMA guideline, the trend of achievement was 37.16 per cent in the year 2013-14 and nothing achievement of a single activity in each the year 2014-15 and 2015-16.

The trend of achievement under the activity agricultural technology refinement, validation and adoption (R-E-F-Linkage) as per district target were 100 per cent in each the year 2013-14 and 2014-15 where 33.34 per cent in the year 2015-16. As per ATMA guideline under this activity the trends were 40.00 per cent, 31.25 per cent and 6.25 per cent in the three consecutive years respectively. The trend as per district target under the activity administrative/capital expenses were 99.72 per cent, 98.00 per cent and 96.60 per cent in the expressed three consecutive years respectively whereas as per ATMA guideline, the trends were 43.33 per cent, 38.17 per cent and 15.00 per cent respectively. The achievement trend as per district target under the innovative activities were 50.30 per cent in the year 2013-14 and 100.00 per cent in each the year 2014-15 and 2015-16 whereas as per ATMA guideline, the trends were 50.05 per cent in the year 2013-14 and 50.00 per cent in each the year 2014-15 and 2015-16. The trend of achievement under the other innovative activities as per district target was 100.00 per cent only in the year 2014-15 where in the year 2013-14 and 2015-16, the district had not targeted against this activity. As per ATMA guideline, the trend showed that there was nothing achievement of a single activity in each the year 2013-14 and 2015-16 excepting the year 2014-15 which showed the 100.00 per cent of achievement.

### 3.3 Level of Achievement of Cafeteria of Activities in Bongaigaon District

A perusal of the Table 1 (c) reveals that the level of achievement of cafeteria of activities under

**Table 1a. Overall level of achievement of cafeteria of activities in Kokrajhar, Bongaigaon and Goalpara district**

Sl. District level activities No.	% of achievement of cafeteria of activities					
	As per district target (Year wise)			As per ATMA guideline (Year wise)		
	2013-14	2014-15	2015-16	2013-14	2014-15	2015-16
I. Farmer Oriented Activities	82.91	77.57	76.09	25.76	12.76	6.77
II. Farm Information Dissemination	100.00	16.66	16.66	40.16	0.41	0.41
III. Agril. Technology Refinement, Validation and Adoption (R-E-F-Linkage)	100.00	94.44	38.89	62.50	33.33	12.50
IV. Administrative/Capital Expenses	84.40	85.41	94.69	59.39	42.85	25.84
V. Innovative Activities	66.86	89.04	66.66	50.03	44.52	33.33
VI. Other Innovative Activities	0.00	100.00	33.33	0.00	100.00	0.00
(No target)						

\*Source: DAO Office, Dept. of Agriculture & Director, SAMETI

**Table 1b. Level of achievement of cafeteria of activities in Kokrajhar district**

Sl. No.	District level activities	% of Achievement of cafeteria of activities					
		As per district target (Year wise)			As per ATMA guideline (Year wise)		
		2013-14	2014-15	2015-16	2013-14	2014-15	2015-16
I.	Farmer Oriented Activities	98.75	100.00	100.00	27.22	12.21	2.92
II.	Farm Information Dissemination	100.00	0.00	0.00	37.16	0.00	0.00
				(No target)			
III.	Agri. Technology Refinement, Validation and Adoption (R-E-F-Linkage)	100.00	100.00	33.34	40.0	31.25	6.25
IV.	Administrative/Capital Expenses	99.72	98.00	96.60	43.33	38.17	15.00
V.	Innovative Activities	50.30	100.00	100.00	50.05	50.00	50.00
VI.	Other Innovative Activities	0.00	100.00	0.00	0.00	100.00	0.00
				(No target)			

\*Source: DAO Office, Dept. of Agriculture & Director, SAMETI

different heads as per district target and ATMA guideline had some variation. The trend of achievement of farmer oriented activities as per district target were 75.00 per cent, 32.72 per cent and 61.61 per cent in the year 2013-14, 2014-15 and 2015-16 respectively. On the other hand, the trend of achievement of farmer oriented activities as per ATMA guideline were 34.76 per cent, 9.11 per cent and 11.73 per cent in the three consecutive years respectively. The trend of achievement of farm information dissemination activity as per district target were 100 per cent in the year 2013-14 where 50.00 per cent in each the year 2014-15 and 2015-16. On the other hand, as per ATMA guideline, the trend of achievement were 50.00 per cent in the year 2013-14 and 1.25 per cent in each the year 2014-15 and 2015-16. The trend of achievement under the activity agricultural technology refinement, validation and adoption (R-E-F-Linkage) as per district target were 100 per cent, 83.33 per cent and 33.34 per cent in the three consecutive years respectively. As per ATMA guideline under this activity the trends were 75.00 per cent, 37.50 per cent and 6.25 per cent in the three consecutive years respectively. The trend as per district target under the activity administrative/capital expenses were 70.78 per cent, 69.37 per cent and 96.06 per cent in the expressed three consecutive years respectively whereas as per ATMA guideline, the trends were 41.97 per cent, 35.91 per cent and 30.44 per cent in the three consecutive years respectively. The achievement trend as per district target under the innovative activities was 100.00 per cent in each the year 2013-14 and 2015-16 where 67.12 per cent in the year 2014-15. As per

ATMA guideline the trend under this activity was 50.00 per cent in each the year 2013-14 and 2015-16 where 33.56 per cent in the year 2014-15. The trend of achievement under the other innovative activities were 100.00 per cent in each the year 2014-15 and 2015-16 where in the year 2013-14, the district had not targeted against this activity. As per ATMA guideline, the trend showed 100.00 per cent in each the year 2014-15 and 2015-16 expecting the year 2013-14 which showed the nothing achievement of a single activity.

### 3.4 Level of Achievement of Cafeteria of Activities in Goalpara District

A perusal of the Table 1 (d) reveals that the level of achievement of cafeteria of activities under different heads as per district target and ATMA guideline had some variation. The trend of achievement of farmer oriented activities as per district target were 75.00 per cent, 100.00 per cent and 66.66 per cent in the year 2013-14, 2014-15 and 2015-16 respectively. On the other hand, the trend of achievement of farmer oriented activities as per ATMA guideline were 15.30 per cent, 16.97 per cent and 5.66 per cent in the three consecutive years respectively. The trend of achievement of farm information dissemination activity as per district target were 100 per cent and nothing achievement of a single activity in the year 2013-14 and 2015-16 respectively where the district had not targeted in the year 2014-15. On the other hand, as per ATMA guideline the trend of achievement under this activity 33.33 per cent in the year 2013-14 where there was nothing achievement of a single

**Table 1c. Level of achievement of cafeteria of activities in Bongaigaon district**

Sl. No.	District level activities	% of Achievement of Cafeteria of activities					
		As per district target (Year wise)			As per ATMA guideline (Year wise)		
		2013-14	2014-15	2015-16	2013-14	2014-15	2015-16
I.	Farmer Oriented Activities	75.00	32.72	61.61	34.76	9.11	11.73
II.	Farm Information Dissemination	100.00	50.00	50.00	50.00	1.25	1.25
III.	Agri. Technology Refinement, Validation and Adoption (R-E-F-Linkage)	100.00	83.33	33.34	75.00	37.50	6.25
IV.	Administrative/Capital Expenses	70.78	69.37	96.06	41.97	35.91	30.44
V.	Innovative Activities	100.00	67.12	100.00	50.00	33.56	50.00
VI.	Other Innovative Activities	0.00	100.00	100.00	0.00	100.00	100.00 (No target)

\*Source: DAO Office, Dept. of Agriculture & Director, SAMETI

**Table 1d. Level of achievement of Cafeteria of activities in Goalpara district**

Sl. No.	District level activities	% of Achievement of cafeteria of activities					
		As per District target (Year wise)			As per ATMA guideline (Year wise)		
		2013-14	2014-15	2015-16	2013-14	2014-15	2015-16
I.	Farmer oriented activities	75.00	100.00	66.66	15.30	16.97	5.66
II.	Farm information Dissemination	100.00	0.00	0.00 (No target)	33.33	0.00	0.00
III.	Agri. technology refinement, validation and adoption (R-E-F-Linkage)	100.00	100.00	50.00	72.50	31.25	25.00
IV.	Administrative/Capital expenses	82.70	88.88	91.41	92.87	54.47	32.08
V.	Innovative activities	50.30	100.00	0.00 (No target)	50.05	50.00	0.00
VI.	Other innovative activities	0.00 (No target)	100.00	0.00 (No target)	0.00	100.00	0.00

\*Source: DAO Office, Dept. of Agriculture & Director, SAMETI

activity in each the year 2014-15 and 2015-16. The trend of achievement under the activity agricultural technology refinement, validation and adoption (R-E-F-Linkage) as per district target was 100 per cent in each the year 2013-14 and 2014-15 where 50.00 per cent in the year 2015-16. As per ATMA guideline under this activity the trends were 72.50 per cent, 31.25 per cent and 25.00 per cent in the three consecutive years respectively. The trend as per district target under the activity administrative/capital expenses were 82.70 per cent, 88.88 per cent and 91.41 per cent in the expressed three consecutive year respectively whereas as per ATMA guideline, the trends were 92.87 per cent, 54.47 per cent and 32.08 per cent respectively. The achievement trend as per district target under the innovative activities was 50.30 per cent and 100.00 per cent in the year 2013-14 and 2014-15 respectively where the district had not targeted on this activity. As per ATMA guideline the trends under

this activity were 50.05 per cent, 50.00 per cent in the first two consecutive years respectively where there was nothing achievement of a single activity in the year 2015-16. The trend of achievement under the other innovative activities was 100.00 per cent in the year 2014-15 where in the year 2013-14 and 2015-16, the district had not targeted against this activity. As per ATMA guideline, the trend showed that there was nothing achievement of a single activity in each the year 2013-14 and 2015-16 excepting the year 2014-15 which showed the 100.00 per cent of achievement.

#### 4. CONCLUSION

The result of the findings highlighted that the trend of achievement of cafeteria of activities as per ATMA guideline were below 50.00 per cent in the three consecutive years i.e. 2013-14, 2014-15 and 2015-16 except in few activities where

the achievement of activities under the heads "Agril. Technology Refinement, Validation and Adoption (R-E-F-Linkage)", "Administrative/Capital Expenses" and "Innovative Activities", were 62.50 per cent, 59.39 per cent and 50.03 per cent respectively in the year 2013-14 [13,14]. On the other hand, in the year 2014-15, the achievement of activities under the head "Other Innovative Activities" were 100.00 per cent. Thus, an effective policy and strategy of ATMA should prepare well ahead for enhancing and reaching the organizational level performance as per target in terms of achievement of cafeteria of activities.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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