The Pharma Innovation Journal 2023; SP-12(11): 541-545

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277-7695
ISSN (P): 2349-8242
NAAS Rating: 5.23
TPI 2023; SP-12(11): 541-545

www.thepharmajournal.com
Received: 01-08-2023
Accepted: 06-09-2023

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Profile characteristics of assistant technology managers (ATMs) under ATMA in north Karnataka

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Abstract
India's agricultural extension services, dating back to the 1950s, evolved through initiatives like the World Bank's Training and Visit system in 1974. However, challenges led to the launch of the National Agricultural Technology Project (NATP) in 1998 with a decentralized, demand-driven approach, spearheaded by the Agricultural Technology Management Agency (ATMA) and Assistant Technology Managers (ATMs) are integral figures at block level. *Ex-post facto* research design was adopted for the study and All the ATMs working in the seven districts of UAS, Dharwad jurisdiction were selected. Thus the sample size is 95. The findings revealed that more than half (52.22%) of the ATMs held an undergraduate degree. Nearly two-third (63.33%) of the ATMs had medium experience, more than one-third (38.89%) of the ATMs came from a rural background, majority (75.56%) of ATMs had undergone training with a medium duration. With respect to infrastructure facilities, 41.11 per cent of ATMs had access to low infrastructure facilities and nearly half (47.78%) of the ATMs had high level of ICT utilization. There is no dominant self-confidence level among ATMs and 41.11 per cent of the ATMs had medium self-esteem. The large majority (87.78%) of the ATMs had medium level of job involvement and 47.11 per cent of the ATMs had medium level of job satisfaction, Slightly more than one-third of ATMs experienced either low (36.67%) or medium (36.67%) levels of job stress. Majority (57.78%) of ATMs had medium achievement motivation and more than one-third (38.89%) of the ATMs had favourable attitude towards ATMA.

Keywords: ATMA, ATM, Profile characters, UASD jurisdiction

Introduction
India's agricultural sector has a long history of planned agricultural extension services dating back to the 1950s. These services were introduced to educate farmers about efficient agricultural practices and have undergone various transformations over the years. The World Bank introduced the Training and Visit system in 1974, which initially showed promise but faced issues related to funding and staffing. In response, the National Agricultural Technology Project (NATP) was launched in 1998, focusing on decentralization and demand-driven extension services. The Agricultural Technology Management Agency (ATMA) played a central role in this approach, aiming to involve various stakeholders in technology dissemination at the district level. Assistant Technology Managers (ATMs) are integral figures within the framework of the Agricultural Technology Management Agency (ATMA) program in India. Keeping this in view, the present study was designed with objective of study the profile characteristics of ATMs.

Materials and Methods
The study was conducted in all the seven districts under the jurisdiction of UAS, Dharwad namely Bagalkot, Belgavi, Dharwad, Gadag, Haveri, Uttar Kannada and Vijayapura in North Karnataka. All the ATMs working in the seven districts was selected. Thus the sample size is 95. *Ex-post facto* research design was adopted for the study. A questionnaire was developed and the information was collected by face-to-face administration method and through google form in pattern of multiple choice questions. The collected data were analyzed by using frequency, percentage, mean score and indices.

Results and Discussion
Educational qualification
The Table 1 represents the distribution of Assistant Technology Managers (ATMs) based on their educational qualification. The data in the table depicts that more than half (52.22%) of

the Assistant Technology Managers (ATMs) were undergraduates, followed by 40.00 per cent were diploma holders and a smaller proportion (7.78%) of ATMs were postgraduates. According to ATMA guidelines basic criteria for selection of ATMA personnel with minimum educational qualification for the post ATM is graduate in agriculture or allied field. This is the reason that more than half of the ATMs were undergraduates. The reason behind 40 per cent of ATMs holding a diploma qualification is that in the initial period minimum qualification fixed for ATMs was diploma. During that period, the recruitment of ATMs primarily focused on diploma holders. The past research studies conducted by Das and Borua (2017) [6], Babu (2018) [1] and Chitra (2018) [5] also reported the highest percent of extension personnel possessed B.Sc. in agriculture/ allied subjects.

Experience

The findings in Table 2 displays that most (63.33%) of the ATMs had medium experience, followed by 24.44 per cent had high experience and a smaller proportion (12.22%) of ATMs had less experience. Many ATMs might have joined this post few years ago. So the medium experience category encompasses most of the ATMs. A portion of ATMs might have been in the role for a considerable period of time, which places them in the high experience category. This might be due to the fact that RSKs are near to most of the ATMs native place, working near home can offer convenience so they are not ready to leave this job. This might be the reason that some ATMs had high experience. The similar distribution of experience by extension personnels were also reported by Murai (2016) [14], Reddy *et al.* (2016) [15], Das and Borua (2017) [6] and Bortamuly and Das (2018) [3].

Rural/Urban background

The results presented in Table 3 represents that the more than one-third (38.89%) of the ATMs came from a rural background, followed by 32.22 per cent had urban background and 28.89 per cent of ATMs from a semi-urban background. Many ATMs had rural backgrounds. The reason might be that most of the ATMs' family occupation is farming and they are belonged to agricultural community. Similarly, the past research studies conducted by Murai (2016) [14] and Manobharathi (2020) [13] also reported the highest percent of respondents had rural background.

Trainings undergone

The data in Table 4 highlights that a significant majority (75.56%) of ATMs received training of medium duration, with a smaller proportion (14.44%) undergone low duration training, and only 10.00 per cent engaged in high duration training. ATMs were predominantly participated in training at SAMETI at state level and KVK at district level. NGOs have not been involved in conducting training in many of the districts. But few NGOs in the districts of Dharwad and Haveri have been entrusted with the tasks of conducting trainings. Need for the training should be assessed from the higher officials of ATMs and then training should be conducted as per the need of the job and training should fixed at the time when ATMs are not loaded with heavy work. Furthermore, high-performing ATMs should participate in national-level training at MANAGE. This finding is in line with the finding of Bose *et al.* (2014) [4], Gopika *et al.* (2015) [8] and Babu (2018) [1].

Infrastructure facilities

Table 5 displays the infrastructure facilities availability for ATMs. The data from the table reveals the facility with the highest mean score and index value is a 'Spacious room to sit and work', which had an average score of 1.37 and an index value of 68.33, ranking it at the top position. 'Demonstration equipments' received the second-highest index value (67.22) with an average score of 1.34, securing the second rank. A spacious room to sit and work might be considered crucial as it provides a comfortable and private environment for ATMs. The provision of a suitable workspace enhances ATMs' productivity, allows for organized work, and fosters a positive work atmosphere.

The overall distribution in Table 6 shows that 41.11 per cent of the ATMs had limited infrastructure facilities. Whereas 35.56 per cent had good infrastructure facilities, while a smaller group of ATMs (23.33%) had moderate infrastructure facilities. This is due to the fact that ATMs are working in RSK. Some RSK in hobli level are having less facilities. Lack of transport facilities might also lead to availability of low infrastructure facilities to ATMs. RSKs near to District head quarters usually have better infrastructure compared to rural areas. Hence, the ATMs with high infrastructure facilities might be working in RSKs near to District head quarters.

ICT utilization

The findings of the Table 7 represents the ICT utilization by ATMs. Among the ICT tools utilized by ATMs, 'Mobile phones' and 'SMS' shared the highest mean score of 3.46 each and index value 86.39, giving them the top rank. This might be due to the fact that mobile phones are widely available and a primary mode of communication. Their high utilization might be due to their convenience for both personal and professional communication. SMS provides a quick and direct means of sharing information.

The overall distribution in the Table 8 furnishes that the 47.78 per cent of ATMs exhibited high ICT utilization, while a smaller portion (26.66%) exhibited low utilization, followed by 25.56 per cent of ATMs exhibited medium level of ICT utilization. This trend is due to the fact that most of the ATMs are young. Younger generations are grown up with technology, making them more comfortable and skillful at using ICT tools. ATMs with better access to technology resources, training related to ICT might be more inclined to use ICT tools extensively. ATMs who are more digitally literate and comfortable with technology and ATMs who had urban background might be more inclined to utilize ICT tools.

Self-confidence

Table 9 indicates that slightly more than one-third (34.45%) of ATMs had medium level of self-confidence, followed by high self-confidence (33.33%) and low self-confidence (32.22%). There is no dominant self-confidence level among ATMs. The probable reason for this can be that the ATMs who have faced difficulties or failures in their work and the ATMs who had low level of experience might had lower self-confidence. ATMs who had received extensive training and skill development might have felt more confident in their capabilities. The finding is in agreement with the results observed by Kudari (2018) [10] and Mahra (2019) [12].

Self-esteem

The results in the Table 10 indicates that the 41.11 per cent of ATMs exhibited medium self-esteem, while 31.11 per cent

had high self-esteem, and a smaller segment (27.78%) exhibited a low level of self-esteem. Possible reason for this distribution could be the diverse backgrounds and experiences of the individuals surveyed. ATMs who had high level of self-confidence, low level of job stress might have high self-esteem. Other factors such as upbringing, personal achievements and social interactions can influence one's self-esteem. Similarly, the past research study conducted by Kujur (2008) [11] also reported the highest percent of women and men sarpanchas had medium level of self-esteem.

Job involvement

Table 11 illustrates that the large majority (87.78%) of the ATMs showed a medium level of job involvement, while 12.22 per cent indicated low job involvement. ATMs with good level of ICT utilization, experience and satisfaction leads to the job involvement. Lack of autonomy in their job and lack of infrastructure facility like transport facility, lack of internet connectivity could affect their sense of responsibility and involvement that led to low to medium level of job involvement and no ATMs had high level of job involvement. This finding is partially in conformity with the findings of Bharamagoudar (2015) [2], Reddy *et al.* (2016) [15] and Bortamuly and Das (2018) [3].

Job satisfaction

The Table 12 indicates that the majority (47.11%) of ATMs reported a medium level of job satisfaction. Following this, 34.45 per cent of ATMs expressed a high level of job satisfaction, and 24.44 per cent of ATMs expressed a low level of job satisfaction. Factors like the work environment, relationships with colleagues, farmers, stakeholders and recognition from superiors can influence job satisfaction. If ATMs experience a supportive and positive work environment, they might be more likely to report high job satisfaction. ATMs who had good level of job involvement might had a significant level of job satisfaction. This result derives support from the results of Gopika *et al.* (2015) [8] and David Son *et al.* (2021) [7].

Job stress

The data from the Table 13 displays that a substantial proportion of ATMs undergo either low (36.67%) or medium (36.67%) levels of job stress, followed by 26.66 per cent of ATMs were experienced high level of job stress. The variety and complexity of tasks assigned to ATMs might vary. Those with a relatively straight forward or well-defined set of responsibilities could experience lower stress levels, whereas those dealing with intricate, high-pressure tasks might face higher stress. A supportive work environment with clear communication, positive relationships, and opportunities for skill development can contribute to a more balanced stress level among ATMs. Different individuals have varying coping mechanisms to manage stress. ATMs who possess strong coping skills might handle higher work demands with less stress. This finding is in conformity with the findings of Khamitkar (2015) [9].

Achievement motivation

The Table 14 reveals that majority (57.78%) of ATMs exhibited a medium level of achievement motivation. A smaller segment (23.33%) displayed low achievement motivation, while 18.89 per cent of ATMs exhibited high level of achievement motivation. This might be because of the fact that majority of the ATMs are willing to do something well for the greater sake of farming community rather than to gain power or recognition or profit. The desire for personal growth, mastery, and the satisfaction derived from accomplishing tasks fuels their achievement motivation. The above finding is in agreement with the findings of Gopika *et al.* (2015) [8], Babu (2018) [1], Bortamuly and Das (2018) [3], Yadav (2018) [16], Madhavrao (2020) [13] and David Son *et al.* (2021) [7].

Attitude towards ATM

The findings in the Table 15 furnishes that the most (38.89%) of the ATMs had favourable attitude towards ATMA, followed by 32.22 per cent of ATMs had more favourable attitude towards ATMA and 28.89 per cent of ATMs had less favourable attitude towards ATMA. This might be due to the fact that adequate communication and engagement strategies could influence a positive attitude. Regular updates, feedback from ATMA beneficiaries and opportunities for involvement could create a favourable attitude towards ATMA. ATMs who had high level of job satisfaction might had favourable attitude towards ATMA. The results are in conformity with the finding of Bortamuly and Das (2018) [3].

Table 1: Distribution of ATMs according to educational qualification

(n=90)

Sl. No.	Category	Frequency	Percentage
1	Diploma	36	40.00
2	Under graduation (Agri/ Allied)	47	52.22
3	Postgraduation (Agri/ Allied)	7	7.78
Total		90	100.00

Table 2: Distribution of ATMs according to experience

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Less experience (Upto 4 years)	11	12.22
2.	Medium experience (4-8 years)	57	63.33
3.	High experience (Above 8 years)	22	24.44
Total		90	100.00

Table 3: Distribution of ATMs according to rural/ urban background

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Rural Background	35	38.89
2.	Semi-urban Background	26	28.89
3.	Urban Background	29	32.22
Total		90	100.00

Table 4: Distribution of ATMs according to trainings undergone

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low	13	14.44
2.	Medium	68	75.56
3.	High	9	10.00
	Total	90	100.00
Mean= 2.73		SD= 1.83	

Table 5: Infrastructure facilities for ATMs

(n=90)

Sl. No.	Facilities	Mean	Index	Rank
1	Spacious room to sit and work	1.37	68.33	I
2	Computer / Laptop	1.09	54.44	VI
3	Scanner and Printer	1.01	50.56	VIII
4	Internet Connectivity	1.20	60.00	III
5	Demonstration equipments (Posters, Display chart, Folders, etc)	1.34	67.22	II
6	Training Material (Public address system, Projector, etc)	1.19	59.44	V
7	Exhibition Material (Models, specimens, Display boards)	1.20	60.00	III
8	Black/white/Bulletin Board	1.06	52.78	VII
9	RO plant	0.84	42.22	IX

Table 6: Distribution of ATMs according to Infrastructure facilities

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low infrastructure facilities	32	41.11
2.	Medium infrastructure facilities	21	23.33
3.	High infrastructure facilities	37	35.56
	Total	90	100.00
Mean= 10.30 S.D= 5.37			

Table 7: ICT utilization by ATMs

(n=90)

SI. No.	ICT Tools	Mean	Index	Rank
1	e-Newspapers	3.12	78.06	VI
2	Mobile phones	3.46	86.39	I
3	SMS	3.46	86.39	I
4	e-Mail	3.26	81.39	III
5	WhatsApp	3.08	76.94	IV
6	Facebook	2.56	63.89	VIII
7	Instagram	2.50	62.50	IX
8	Telegram	2.47	61.67	X
9	Twitter	1.86	46.39	X1
10	You Tube	2.79	69.72	VII
11	Search engine (Google, Internet explorer, etc)	3.08	76.94	IV

Table 8: Distribution of ATMs according to ICT utilization

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low	24	26.66
2.	Medium	23	25.56
3.	High	43	47.78
	Total	90	100.00
Mean= 31.61 S.D= 13.92			

Table 9: Distribution of ATMs according to self-confidence

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low self-confidence	29	32.22
2.	Medium self-confidence	31	34.45
3.	High self-confidence	30	33.33
	Total	90	100.00
Mean= 29.62 S.D= 3.66			

Table 10: Distribution of ATMs according to self-esteem

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low self-esteem	25	27.78
2.	Medium self-esteem	37	41.11
3.	High self-esteem	28	31.11
	Total	90	100.00
Mean= 37.71 S.D= 4.96			

Table 11: Distribution of ATMs according to job involvement

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low job involvement	11	12.22
2.	Medium job involvement	79	87.78
3.	High job involvement	0	0.00
	Total	90	100.00
Mean= 37.14 S.D= 9.03			

Table 12: Distribution of ATMs according to job satisfaction

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low job satisfaction	22	24.44
2.	Medium job satisfaction	31	34.45
3.	High job satisfaction	37	41.11
	Total	90	100.00
Mean= 35.23 S.D= 9.92			

Table 13: Distribution of ATMs according to job stress

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low job stress	33	36.67
2.	Medium job stress	33	36.67
3.	High job stress	24	26.66
	Total	90	100.00
Mean= 32.19 S.D= 5.64			

Table 14: Distribution of ATMs according to achievement motivation

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Low achievement motivation	21	23.33
2.	Medium achievement motivation	52	57.78
3.	High achievement motivation	17	18.89
	Total	90	100.00
Mean= 26.93 S.D= 3.82			

Table 15: Distribution of ATMs according to attitude towards ATMA

(n=90)

Sl. No.	Category	Frequency	Percentage
1.	Less favourable attitude	26	28.89
2.	Favourable attitude	35	38.89
3.	More favourable attitude	29	32.22
	Total	90	100.00
Mean= 47.47 S.D= 5.52			

Conclusion

The majority of Assistant Technology Managers (ATMs) in this study held undergraduate degrees, in line with ATMA guidelines. Most ATMs have medium levels of experience,

with some having high experience due to their proximity to their native areas. This suggests a tendency for ATMs to remain in their positions when they work near home. Further, many ATMs come from rural backgrounds, likely due to their family ties to agriculture. The majority of ATMs have undergone medium-duration training, primarily at the state and district levels. However, there's room for improvement in assessing the training needs and timing for ATMs. The study reveals a predominant high ICT utilization among ATMs, attributed to the younger generation's tech-savvy nature and training exposure. Those with urban backgrounds and greater digital literacy tend to exhibit more extensive ICT tool usage. ATMs exhibit varying levels of self-confidence and self-esteem, which may be influenced by their experience and training, personal factors, achievements, and social interactions. Meanwhile, Job stress varies among ATMs, with some experiencing low or medium levels. A supportive work environment, clear communication, and coping skills can mitigate stress levels. A majority of ATMs hold favorable attitudes toward ATMA, with communication and engagement strategies contributing to this positive perception. Job satisfaction may also correlates with a more favorable attitude.

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