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Job satisfaction of agricultural extension officers in Nalgonda district of Telangana state

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Abstract

The present study was conducted on 'Job competence and job satisfaction of Agricultural Extension Officers in Nalgonda district of Telangana state' with sample sizes of 120 Agricultural Extension Officers from the various Mandal of Nalgonda district. The data was collected with the help of an interview schedule prepared according to the objectives of the study. In case of job satisfaction the majority of Agricultural Extension Officers (65.84%) had a moderate level of job satisfaction. The study found no significant correlation between age or educational achievement and job happiness, emphasizing the role that organizational and individual traits play. Job experience did not significantly improve job satisfaction despite a considerable correlation, highlighting the importance of personal characteristics and the workplace. However, there was a significant and positive link between training and job satisfaction, indicating that well-designed training programs increase officers' job happiness and productivity. Among psychological variables, work stress was found to have a negative and significant link with job satisfaction, demonstrating the deleterious impacts of stress on overall job pleasure.

Keywords: Job satisfaction, agricultural extension officers, achievement motivation, job stress, psychological variables etc.

Introduction

Agricultural sector occupies a predominant place in the growth and development of Indian economy. The development of agriculture sector is crucial for a balanced regional development of the country. Similarly, it can be said that agriculture has been playing a dynamic role in the development of Telangana's economy. (Guntukula, 2017) ^[11]. Agricultural officers, committed experts who put in endless effort to promote and develop agricultural practices, are at the center of this vital industry. Their work involves a wide range of duties, such as advising farmers, carrying out agricultural programs, and advocating for best practices that are appropriate for the given circumstances. The role of agricultural extension officers as facilitators, innovators, motivators, dynamists and educators simultaneously has a positive and significant effect on rural development in terms of income. (Sitepu *et al.*, 2022) ^[20]. An essential element of a positive work environment is job satisfaction. Job satisfaction and employee engagement were positively related. (Barden, 2018) ^[4].

Agricultural officers place a high value on job satisfaction since it affects many facets of their work and their overall performance in the field. Job satisfaction is a sense of relative pleasure or pain that differs from objective thought and behavioral intentions (Davis and Newtron, 1997) ^[6]. There are three important dimensions to job satisfaction as an emotional response to employment situation, how well meet or exceed expectations, and related attitudes about

important characteristics of the duty (work itself, promotion, opportunities, supervision and co-workers) (Luthans, 1998) ^[14]. Job satisfaction is defined as the extent to which an employee feels self-motivated, contented and satisfied with his/her job. Employees with higher job satisfaction levels believe that working in their organization will be satisfying in the long run, that they'll care about the standard of their work, which they're going to be more committed to the organization (Bavendam, 2000) ^[5]. Job satisfaction may cause positive outcomes in organizations that have low absentee levels and better productivity rates amongst employees (Robbins, 2005) ^[19].

Several writers looked at job satisfaction levels among different categories in a thorough analysis of numerous studies. Majority of the extension workers (65.5%) belonged to intermediate level of job satisfaction, followed by 29.1 and 5.5% belonging to high and low level of job satisfaction, respectively. (Asadi *et al.*, 2008) ^[2] majority of the extension workers (65.5%) belonged to intermediate level of job satisfaction, followed by 29.1 and 5.5% belonging to high and low level of job satisfaction, respectively.

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Staff members of university-managed KVKs and Agricultural Assistants (AAs) reported differing degrees of

job satisfaction, according to Jyothi (2006) [22]. When Anum khan *et al.* (2013) [1] investigated job satisfaction among operational bank staff, the majority of them reported higher than average levels of satisfaction. According to Manjula's (2000) [15] research, almost half (48.50%) of AAOs fell into the category of medium job satisfaction, with the remaining 27.20 and 24.30 percent falling into the low and high job satisfaction categories, respectively.

When taken as a whole, these studies offer insightful information about the varying degrees of job satisfaction seen across various populations.

Methodology

The study was conducted during 2020 in Nalgonda district of Telangana state. Nalgonda district is divided into three revenue divisions, namely Nalgonda, Miryalguda, Devarkonda, which consisted of 31 Mandals. The disproportionate random sampling method was used in selecting 120 Agricultural Extension Officers from all mandals of Nalgonda district who were working in the Agriculture Department.

Job satisfaction is the degree to which the job is perceived to be meeting the physical and psychological needs to his/her satisfaction of Agricultural officers. The job satisfaction of AOs was measured by using the scale developed by Manjula (2000) [15] with slight modifications in the present

investigation. The scale consists of 8 sub-components. Each sub-component with certain statements. The response of the respondents was rated on five-point continuum namely, very much satisfied, satisfied, partially satisfied, dissatisfied and very much dissatisfied with the scores of 5, 4, 3, 2 and 1 respectively. The job satisfaction scores for all the statements were summated to get the satisfaction scores of Agricultural Extension Officers. The scores range from 42 to 210. The agriculture extension officers were categorized based on mean and standard deviation

Table 1: Overall Job Satisfaction of Agricultural Officers n=120

Sl. No.	Category	Criteria
1.	Low	Up to 142.34
2.	Medium	142.35 to 174.09
3.	High	174.10 and above

Results and Discussion

1. Overall Job satisfaction of Agricultural officers

Table 2 presents the data on the overall job satisfaction of Agricultural officers. The data revealed that more than half (65.84%) belonged to medium Job satisfaction category implying that the officers were moderately satisfied, and remaining 17.50 percent and 14.16 percent of them belonged to high and low job satisfaction category implying that they were highly satisfied and dissatisfied respectively.

Table 2: Distribution of Agricultural Extension Officers according to the Job satisfaction

Sl. No.	Category	Respondents (n=120)	
		Frequency	Percentage
1	Highly satisfied (Up to 142.34)	21	17.50
2	Moderately satisfied (142.35 to 174.07)	79	65.84
3	Un satisfied (174.08 and above)	17	14.16
Total		120	100
Mean =158.21			

It was observed that the majority of Agricultural Extension Officers had a medium level of satisfaction it may be due to the lack of proper working conditions, workload, lack of

opportunities for personal growth and less increment salary. The findings of the study were matched with the findings of Senthil (1998) [23].

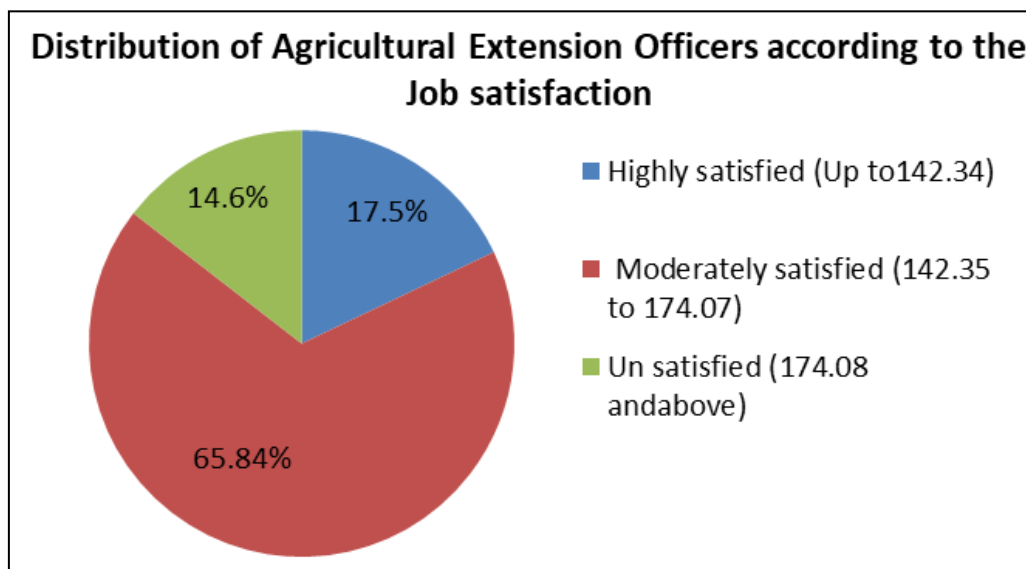


Fig 1: Distribution of Agricultural Extension Officers according to the Job satisfaction

2. Job satisfaction of Agricultural officers with respect to sub-components

The mean scores obtained by the respondents with respect to sub-components of job satisfaction presented in the table 3.

Table 3: Job satisfaction of Agricultural officers with respect to sub-components

Sl. No.	Mean index	Ranking
Salary	70.00	6
Job security	80.00	3
Working condition	69.41	7
Recognitions	79.04	4
Opportunity	64.37	8
Supervision	83.85	2
Co -Worker	91.50	1
No of Working Hours	78.22	5

Agricultural extension officers' job satisfaction data analysis identified both noteworthy strengths and places for

development. Positive interpersonal relationships were indicated by the highest ranking of coworker satisfaction. Strong supervision satisfaction was also seen, indicating pleasure with direction and leadership. Positive evaluations were given to work-life balance (number of working hours), recognition, and job security. Salary satisfaction, however, was only moderate, indicating potential for growth. The relative lack of contentment with working circumstances suggests that there is room for improvement in the physical and environmental components of the workplace. The opportunity component showed the lowest level of satisfaction, indicating that agricultural extension officers' perceptions of their prospects for progress and growth need to be addressed. To summarize, the overall job satisfaction of agricultural extension officers may have been further improved by addressing elements such as salary, working conditions, and growth prospects, even though other characteristics like coworker interactions and supervision were praiseworthy.

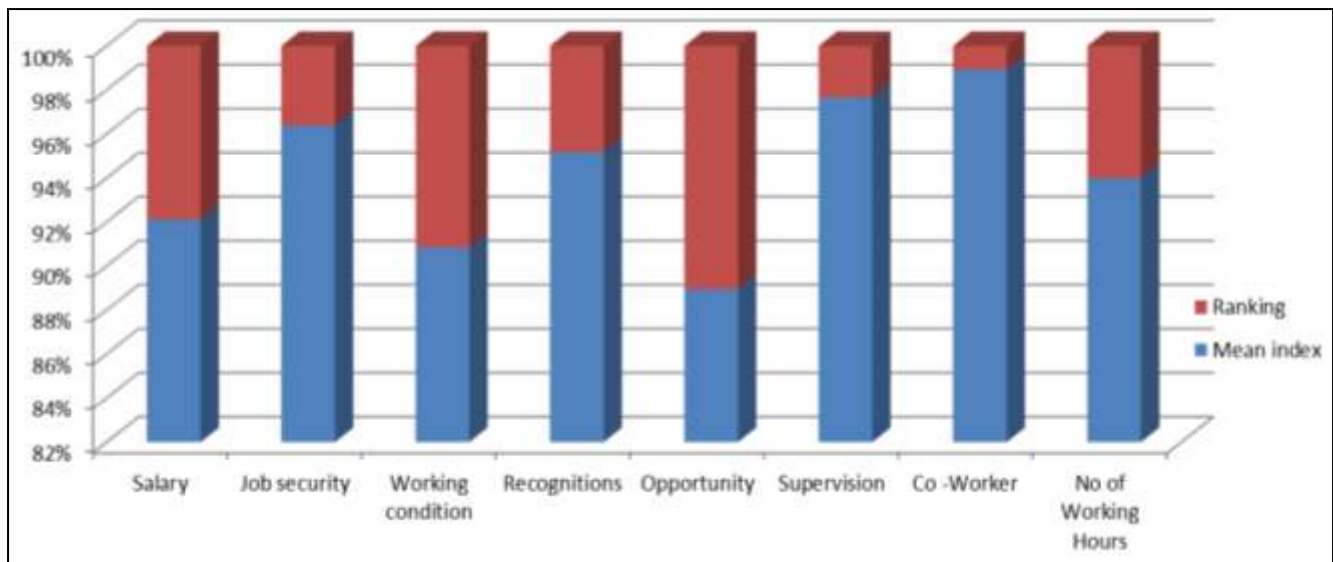


Fig 2: Job satisfaction of Agricultural officers with respect to sub-components

3. Item wise Job satisfaction of Agricultural Officers

The item-wise study of their job satisfaction offers an in-depth understanding of agricultural officers' feelings. Regarding pay, 20% of respondents were Very Much Satisfied (VMS) with the commensurability of their current income, and 34.16% were Satisfied (S) with the salary's crucial role. On the other hand, 18.33% are dissatisfied (DS), and 23.33% express partial satisfaction (PS). Interestingly, a mean score of 3.13 indicates a mixed mood with a tendency toward contentment, with 15.83% of respondents expressing Very Much Dissatisfaction (VMDS) (Rank: 37).

Regarding job security, 37.50% were satisfied and 32.50%

were VMS based on the objective performance assessment. The percentages of VMS, Satisfied (39.16%), and Partially Satisfied (16.66%) indicate areas needing improvement. Dissatisfaction was expressed by only 0.83% of respondents, with a mean score of 3.95 (Rank: 22).

Regarding working circumstances, 34.16% were satisfied, whereas 44.16% were very much satisfied regarding the distance between the office and the home. With a mean score of 3.35 (Rank: 35), the provision of facilities was seen as having 34.16% VMS, 22.50% Satisfied, and 6.66% Dissatisfied. The community demonstrated robust recognition, with 75.00% VMS yielding the highest mean score of 4.68 (Rank: 1).

Item wise Job satisfaction of Agricultural Officers

Sl. No.	Statements	VMS		S		PS		DS		VMDS		Mean Score	Rank
		No.	%	No.	%	No.	%	No.	%	No.	%		
A													
Salary													
1	Present salary is commensurate with my work and position	24	20	27	22.50	28	23.33	22	18.33	19	15.83	3.13	37
2	Salary paid is a vital source of satisfaction	41	34.16	34	28.33	37	30.83	6	5.00	2	1.66	3.88	26
B													
Job security													
1	The performance will be assessed objectively before taking any serious actions.	39	32.50	45	37.50	28	23.33	7	5.83	1	0.83	3.95	22
2	Guidance will be given to improve the job	45	37.50	47	39.16	20	16.66	5	4.16	3	2.50	4.05	16
C													
Working conditions													
1	Distance from office to house	53	44.16	16	13.33	15	12.50	19	15.83	17	14.16	3.58	33
2	Provision of separate chair, table with almirah in office	22	18.33	41	34.16	22	18.33	27	22.50	8	6.66	3.35	35
3	Accessibility of telephone facility	53	44.16	40	33.33	17	14.16	5	4.16	5	4.16	4.09	12
4	Provision of house rents	16	13.33	6	5.00	12	10.00	32	26.66	54	45.00	2.15	40
5	Provision for transportation during the late hours from work place to home	14	11.66	3	2.50	17	14.16	26	21.66	60	50.00	2.04	41
6	Enough literature for distribution to farmers	48	40.00	44	36.66	19	15.83	7	5.83	2	1.66	4.08	13
7	Budget provided to organise the educational activities	38	31.66	41	34.16	29	24.16	12	10.00	0	0.00	3.88	27
8	Opportunities provided to utilize personal skills	27	22.50	46	38.33	28	23.33	9	7.50	10	8.33	3.59	32
9	Job authority delegated to me in the present job	22	18.33	69	57.50	24	20.00	4	3.33	1	0.83	3.89	24
10	Opportunity to work with the team spirit	38	31.66	60	50.00	14	11.66	8	6.6	0	0.00	4.07	15
D													
Recognition													
1	Recognition given to your work by the people of your area	90	75.00	21	17.50	9	7.50	0	0.00	0	0.00	4.68	1
2	Recognition from your superior officers for good work done	55	45.83	44	36.66	18	15.00	3	2.50	0	0.00	4.26	7
3	Recognition you are getting from your colleagues	28	23.33	72	60.00	14	11.66	3	2.50	3	2.50	3.99	19
4	Recognition you are getting from your family members	74	61.66	25	20.83	19	15.83	2	1.66	0	0.00	4.43	5
5	Recognition of your role in comparison with the role of other AEO's	27	22.50	63	52.50	19	15.83	9	7.50	2	1.67	3.87	28
6	Your guidance to farming community to bring good name to the department.	62	51.66	24	20.00	20	16.66	13	10.83	1	0.83	4.11	11
7	Recognition and reward for creative work	23	19.16	14	11.66	59	49.16	14	11.66	10	8.33	3.22	36
E													
Opportunity for personal growth													
1	Scope to prove your excellence in doing the job	24	20.00	44	36.66	28	23.33	22	18.33	2	1.67	3.55	34
2	Utilization of personal skills in your job	24	20.00	59	49.16	21	17.50	10	8.33	6	5.00	3.71	30
3	Opportunities for securing higher education/ training	27	22.50	9	7.50	15	12.50	37	30.83	32	26.67	2.68	38
4	Opportunities to visit and observe others work/ organization	53	44.16	31	25.83	23	19.16	9	7.50	4	3.33	4.00	17
5	Opportunities to update technical information	42	35.00	43	35.83	24	20.00	10	8.33	1	0.83	3.96	21
6	Opportunities to participate in workshops seminar and other intellectual forums	40	33.33	43	35.83	23	19.16	12	10.00	2	1.67	3.89	24
7	Promotional opportunities in the present job	1	0.83	17	14.16	24	20.00	47	39.16	31	25.83	2.25	39
8	Promotional policy of the department	6	5.00	4	3.33	20	16.66	33	27.50	57	47.50	1.91	42
9	Ambition you have with the present job	37	30.83	32	26.66	29	24.16	17	14.16	5	4.16	3.66	31
F													
Supervision													
1	Supervision of the superiors on technical matters	48	40.00	31	25.83	27	22.50	12	10.00	2	1.67	3.93	23
2	Delegation of responsibilities by the supervisor to improve your work efficiency	58	48.33	37	30.83	21	17.50	4	3.33	0	0.00	4.24	8
3	Your relationship with the superiors	75	62.50	32	26.66	6	5.00	4	3.33	3	2.50	4.43	4
4	Superiors concern for the welfare of their subordinates	64	53.33	26	21.66	20	16.66	5	4.16	5	4.17	4.16	10
5	Scope given to express the new ideas before superiors	73	60.83	24	20.00	11	9.16	9	7.50	3	2.50	4.29	6
6	Superiors setting an ideal example to do all the job	49	40.83	40	33.33	22	18.33	9	7.50	0	0.00	4.08	13
7	Superior readiness to solve the grievances of subordinates	67	55.83	25	20.83	18	15.00	8	6.67	2	1.67	4.23	9
G													
Co-workers													
1	Amount of confidence with the colleagues	76	63.33	36	30.00	7	5.83	1	0.83	0	0.00	4.56	2
2	Mutual understanding with the co-workers	82	68.33	28	23.33	9	7.50	1	0.83	0	0.00	4.59	3
H													
Number of working hours													
1	Amount of time devoted to field work	49	40.83	36	30.00	23	19.16	10	8.33	2	1.67	4.00	11
2	Flexibility provided to you in working hours as a compensation to field work	33	27.50	43	35.83	32	26.66	7	5.83	5	4.16	3.77	19
3	The timings of present working hour	53	44.16	34	28.33	13	10.83	16	13.33	4	3.33	3.97	14

Reactions to opportunities for personal development varied. 49.16% were satisfied and 36.66% were very much satisfied with the scope to demonstrate excellence. Nevertheless, only 0.83% of respondents indicated satisfaction with the current job's promotional chances, while 39.16% expressed dissatisfaction, resulting in a mean score of 2.25 (Rank: 39).

Job satisfaction was often positively impacted by supervision and coworker relations, highlighting the need for a supportive work environment. In general, addressing these subtle insights through numerical breakdowns helps direct efforts to improve agricultural officers' overall job satisfaction.

Relation analysis

Table 4: Relationship between independent variables with job satisfaction

Sr. No.	Characteristics	Coefficients of correlation 'r'
A Socio-Personal variables		
1.	Age	0.155
2.	Education	-0.068
3.	Job experience	0.149
4.	Training received	0.271**
5.	Health	0.069
B Psychological variables		
6.	Job stress	-0.197*
7.	Level of aspiration	0.068
8.	Achievement motivation	0.399**
9.	Job commitment	0.185*
C Communication variables		
10.	Mass media exposure	0.058

*Correlation is significant at the 0.05 level

**Correlation is significant at the 0.01 level

Relationship between social and personal characters with job satisfaction

The age of Agricultural Extension Officers showed a non-significant correlation ($r = 0.155$) with job satisfaction, indicating that age has no discernible influence on job satisfaction, and satisfaction levels are similar across all age groups. This lack of significance suggests that job satisfaction is contingent not only on the age of individuals but also on various personal and organizational factors. Similar findings were supported by Asadi *et al.* (2008) [2].

In contrast, the education qualification of Agricultural Extension Officers exhibited a negative and non-significant correlation ($r = -0.068$) with job satisfaction. This implies that those with higher qualifications (B.Sc., M.Sc., and Ph.D.) eligible for higher posts in the Agricultural Department were more likely to be dissatisfied, potentially due to the minimum qualification of an agricultural diploma for the role. This observation aligns with the findings of Rahman and Hoque (2014) [24].

Job experience demonstrated a positive and non-significant correlation ($r = 0.149$) with job satisfaction among Agricultural Extension Officers. This suggests that job satisfaction remains consistent regardless of the respondents' job experience, emphasizing that factors such as working conditions and opportunities also play a crucial role. Prabhavati's (2012) [25] study supported similar findings.

On the other hand, the training received by Agricultural Extension Officers exhibited a positive and significant relationship ($r = 0.271$) with job satisfaction at a 0.01 probability level. This implies that training programs addressing field challenges contribute to increased efficiency and job satisfaction. Consistent with this, Manjula (2000) [15] found support for the positive impact of training on job satisfaction.

Lastly, the health of Agricultural Extension Officers had a positive and non-significant correlation ($r = 0.069$) with job satisfaction, indicating that health alone does not significantly influence job satisfaction. The findings, supported by Jayasingh (2019) [12], suggest that organizational factors also contribute to job satisfaction levels among Agricultural Extension Officers.

Relationship between Psychological variable with job satisfaction

The strain of working in Agricultural Extension At the 0.05 percent probability level, officers showed a significant and negative connection with job satisfaction ($r = -0.197$). This implies that officers who are under a lot of stress at work could be less inclined to participate in work-related activities, which could result in job discontent. The research conducted by Manjula (2000) [15], Ferguson *et al.* (2012) [8] and Jayasingh (2019) [12] provides support for the findings. Conversely, there was a positive but insignificant correlation ($r = 0.068$) between the aspiration level of Agricultural Extension Officers and job satisfaction. Management is concerned since there is no discernible correlation between high goals and low job satisfaction, or vice versa, which could create problems for the company. Senthil (1998) [23] observed similar results in his investigation.

At a 0.01 probability level ($r = 0.399$), there was a positive and statistically significant link between the accomplishment motivation of Agricultural Extension Officers and job satisfaction. Given that highly motivated people typically labor tirelessly toward their objectives, it follows that higher accomplishment motivation correlates with higher job satisfaction. This result is consistent with the research of Manjula (2000) [15].

Additionally, at a 0.05 probability level ($r = 0.185$), job commitment among Agricultural Extension Officers showed a positive and significant connection with job satisfaction. According to the results, officers who have a high level of devotion to their work are motivated by a sincere desire to help farmers and believe that their position is the best way to do it. This result is supported by Vijaybabu (2005) [21] and Bagate (2009) [3].

Relationship between communication variable with job satisfaction

With a correlation value of 0.058, the exposure of Agricultural Extension Officers to the media demonstrated a positive and non-significant link with job satisfaction. Exposure to mass media and job happiness are positively and non-significantly correlated because job satisfaction is influenced by a variety of factors, including opportunity, working conditions, recognition, and supervision. Agricultural Extension Officers are more satisfied as a result of these variables. Madhu's findings were corroborated (2001).

Conclusion

According to the study, job satisfaction was not significantly correlated with age or educational attainment, highlighting the importance of organizational and personal characteristics. Despite a strong link, job experience did not significantly affect job satisfaction, emphasizing the significance of personal traits and working environment. On the other hand, training showed a strong and positive correlation with job satisfaction, suggesting that officers' productivity and satisfaction are enhanced by well-crafted training initiatives. Work stress was found to have a negative and substantial link with job satisfaction among psychological variables, highlighting the detrimental effects of stress on total job happiness. Lastly, communication

variables like exposure to the media showed a positive but non-significant correlation with job satisfaction, indicating that other factors - like working conditions and recognition - are more important in influencing Agricultural Extension Officers' satisfaction levels.

Reference

- Anum Khan, Muhammad R, Muhammad S. Is job satisfaction of Islamic banks operational staff determined through organizational climate, occupational stress, age and gender. *J Business studies Quarterly*. 2013, 4(3).
- Asadi Ali, Fereshteh F, Zahra K, Seyyed MH, Gholamhossein H. Personal Characteristics Affecting Agricultural Extension Workers' Job Satisfaction Level. *J Social Sci*. 2008;4(4):246-250.
- Bagate, K.S. Job competence and Job performance of agriculture Assistants in state Agriculture Department. M.Sc. (Agri.) Thesis (Unpub.) PDKV, Akola; c2009.
- Barden, C. L. The correlation between employee engagement and job satisfaction in the social security administration; c2018.
- Bavendam, J. Managing job satisfaction [Electronic version]. Bavendam Research Incorporated: Special Reports: Effective Management Through Measurement. 2000;6:1-2.
- Davis, K., Newstrom, J.W. *Organizational Behavior: Human Behavior at Work*. 10th Edition, New York: McGraw-Hill; c1997.
- Debnath, A., Jayasree, D., Raj, S. Job competence and job performance of the Extension Personnel of the Department Of Agricultural in Tripura state of North-East. *Int J social sci*. 2014;3(2):91-112.
- Ferguson, K., Frost, L., Hall, D. Predicting teachers' anxiety, depression, and job satisfaction. *J teaching and learning*. 2012;8(1):27-42.
- Ganguly R. Quality of work life and job satisfaction of university employees. *Asian J Management Res*; 2010.
- Gopika MH. Study on participation in decision making, job performance and job Satisfaction of Assistant Horticulture Officers. M.Sc. (Agri.) Thesis (Unpub.), Univ. Agri. Sci., Bangalore; 2014.
- Guntukula, Raju. Agricultural Performance of Telangana State: An Analysis. *Asian J Res Soc Sci Humanit*. 2017;7:169. doi: 10.5958/2249-7315.2017.00414.2.
- Jayasingh, D. K. Study on job competence and job satisfaction of Teachers of Orissa university of Agriculture and Technology, Bhubaneswar, Odisha. M.Sc. (Agri.) Thesis (Unpub.) UAS, Bangalore; c2019.
- Kusumalatha, D. V., Gowda, N. S. S. Job Competence of Agricultural Officers in Southern zone of Andhra Pradesh, India. *Int J Curr Microbiol App Sci*. 2020;9(3):2394-2398.
- Luthans, F. *Organizational Behavior*. Eight edition, Boston: Irwin McGraw – Hill; c1998.
- Manjula N. Study on job perception, job performance and job satisfaction of AAO (FW) in Karnataka. Ph.D. thesis (Unpub.), Univ. Agri. Sci., Bangalore; c2000.
- Mishra, D. A Comparative study on the job performance, job satisfaction, and constraints of men and women extension Officers of Karnataka state department of agriculture. M. Sc. (Agri.) Thesis, UAS, Dharwad; c2005.
- Nwaogu, F. K., Abiodun, A. L. Competencies of Agricultural Development Programme Personnel in Extension Service Delivery in Oyo and Ogun States Nigeria. *J Agric Extens*. 2018;22(3):40-52.
- Reddy, K. N. Job competence and Job performance of Agricultural Officers in Training and Visit system of Andhra Pradesh. Ph.D. thesis (Unpub.), UAS., Bangalore; c1990.
- Robbins, S.P. *Essentials of Organisational Behaviour*. New Jersey: Pearson; c2005.
- Suheri Sitepu, H.B., Tarmizi, Rujiman. Analysis of the role of agricultural extension officer on rural development in Sunggal District, Deli Serdang Regency. *Int J Res Rev*. 2022;9(6):329-336.
- Vijaybabu, D. Job competence of Agricultural Officers in the state department of agriculture in Tamilnadu. M.Sc. (Agri.) Thesis (Unpub.) Srivenkateswara agricultural college, Tirupati; c2005.
- Jyothi AN, Moorthy SN, Rajasekharan KN. Effect of cross-linking with epichlorohydrin on the properties of cassava (*Manihot esculenta* Crantz) starch. *Starch-Stärke*. 2006 Jun;58(6):292-299.
- Patil KV, Senthil J, Jiang J, Mathur RM. Application of STATCOM for damping torsional oscillations in series compensated AC systems. *IEEE transactions on energy conversion*. 1998 Sep;13(3):237-243.
- Rahman MM, Mostofa MG, Hoque MA. Women's household decision-making autonomy and contraceptive behavior among Bangladeshi women. *Sexual & Reproductive Healthcare*. 2014 Mar 1;5(1):9-15.
- Prabhavati E, Anthony JA. Bacteriocin production by rhizobia isolated from root nodules of Horse gram. *Bangladesh Journal of Medical Science*. 2012;11(1):28.