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Relationship between Selected Profile Characteristics of Agricultural Officers and Their Extent of ICT Utilization

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ABSTRACT

Agriculture is one of the vital sectors in which ICT can be used reasonably in transferring the modern agricultural technologies to the farmers. ICT has many potential applications in agricultural extension most especially in accessing required information and knowledge. Hence, the present investigation was carried out in Nellore, Srikakulam, Ananthapur districts purely covering all the three regions viz., Coastal Andhra, North Coastal and Rayalaseema regions in the newly formed state of Andhra Pradesh. The main objective of the study was to analyze the relationship between selected profile characteristics of Agricultural Officers and their extent of ICT utilization. Ex post facto research design was followed for the study. A total 120 respondents covering the three districts equally were selected for the study. Nearly half of the Agricultural Officers had moderate extent of ICT utilization followed by one-third of Agricultural Officers had low and one-fifth of Agricultural Officers had high extent of ICT utilization. The results of the study shown that majority of the respondents were middle aged (36-45 years), majority were males, had M.Sc. (Ag.) academic qualification, 6-10 years of work experience and possessed medium level of communication gadgets. The psychological variables like Perceived workload, organizational climate, job autonomy, personal importance and social status attached to the job were found to be medium level with moderate convenience of posting and job satisfaction. The relationship between selected profile characteristics and their extent of ICT utilization indicated that organizational climate, job autonomy, possession of communication gadgets and job satisfaction were positively significant related. Further, the selected twelve independent variables put together explained about 49.38 per cent variation in the extent of ICT utilization.

Key words: *Extent of ICT utilization, Agricultural Officers, Profile characteristics.*

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INTRODUCTION

Agriculture is one of the vital sectors in which ICT can be used reasonably in transferring the modern agricultural technologies to the farmers. ICT has many potential applications in agricultural extension most especially in accessing required information and knowledge[3]. Strong agricultural extension linkage complimented by flawless information flow enhanced by the effective use of information and communication technologies (ICT) would significantly boost agricultural production and improve rural livelihoods in developing countries[2]. ICT are information transmission technology built on the potential of electronic communication devices such as computers and telecommunication equipment, for connecting and accessing various ends in the information pathway[1]. Information and Communication Technologies are key enablers of globalization. They allow for the efficient and cost-effective flow of information, products, people and capital across national and regional boundaries. The emergence of new agricultural development paradigms has led to challenging the conventional methods of delivering important services and the transformation of traditional societies into knowledge societies. ICTs have been developed as a tool for achieving meaningful societal transformation, which is believed to provide a reliable network in agricultural sector. ICT has been utilized as an extension tool, which has enhanced the information flow between agricultural extension services and their clients[4]. The application of ICT in agricultural extension has significantly increased in several countries where it has provided a medium to adequate access to agricultural information[5]. In the changing scenario of Agriculture, the role of Agricultural Officer is skill glorified and expecting a diversified performance from an Agricultural Officer. Hence there is every need for the Agricultural Officer to transform their traditional style of functioning to the digital style of functioning which involves more usage of ICTs in their professional activities. Hence the present study was undertaken with an objective to find out the relationship between the selected profile characteristics of Agricultural Officers and their extent of ICT utilization.

MATERIAL AND METHODS

Ex post facto research design was followed to study the relationship between selected profile characteristics of Agricultural Officers and their extent of ICT utilization. The present investigation was carried out in Nellore, Srikakulam, Ananthapur districts purely covering all the three regions viz., Coastal Andhra, North Coastal and Rayalaseema regions in the newly formed state of Andhra Pradesh. From each of the selected district, forty Agricultural Officers were selected as respondents by following simple random sampling procedure. The sample constituted to a total of 120 respondents. Keeping the objectives of the study, extent of ICT utilization was measured with the help of an index and pretested. This was administered to sample respondents through personal investigation. The data were coded, classified and tabulated. Finally statistical tools such as arithmetic mean, standard deviation, frequency and percentage were used for analysis of the data, so that the finding could be meaningfully interpreted and conclusions drawn. The relationship between the selected profile characteristics with extent of ICT utilization was measured by co-efficient of correlation and multiple linear regression analysis.

RESULTS AND DISCUSSION

Distribution of Agricultural Officers by their overall extent of ICT utilization

The results presented in Table 1 indicated that, nearly half (49.16%) of the Agricultural Officers had moderate extent of ICT utilization followed by low (30.84%) and high (20.00%) extent of ICT utilization.

Table 1: Distribution of Agricultural Officers by their overall extent of ICT utilization

S. NO.	Extent of ICT Utilization	Frequency	Percentage
1	Less	37	30.84
2	Moderate	59	49.16
3	High	24	20.00
	Total	**120**	**100**
Mean: 3039.04		S.D: 1238.33	

The above trend might be due to lack of awareness and accessibility of different ICT tools for the Agricultural Officers. On the other side, capacity building on ICTs and time management to handle different extension activities might also have contributed for the degree of variation in ICT utilization among the Agricultural Officers.

Selected profile characteristics of the Agricultural Officers towards ICT utilization

It is clear from Table 2 that more than half (58.34%) of the Agricultural Officers belonged to '36 to 45 years'. More than half (57.50%) of the Agricultural Officers were males followed by females (42.50%), while more than half (54.16%) of the Agricultural Officers were M.Sc. (Ag.) degree holders and B.Sc. (Ag.) degree holders (45.84%). Nearly half (47.50%) of the Agricultural Officers had '6 to 10 years' of experience, followed by 'above 10 years' (30.00%) and 'up to 5 years' (22.50%) of experience.

Table 2: Selected profile characteristics of the Agricultural Officers towards ICT utilization

S. No.	INDEPENDENT VARIABLES	FREQUENCY	PERCENTAGE
I.	**Age (Years)**		
1.	Up to 35	33	27.50
2.	36 to 45	70	58.34
3.	46 and above	17	14.16
II.	**Gender**		
1.	Male	66	57.50
2.	Female	54	42.50
III.	**Academic Qualification**		
1.	B.Sc. (Ag.)	55	45.84
2.	M.Sc. (Ag.)	65	54.16
IV.	**Experience(Years)**		
1.	Up to 5	27	22.50
2.	6 to 10	57	47.50
3.	11 and above	36	30.00
V.	**Possession of communication gadgets**		
1.	Low	32	26.66
2.	Medium	64	53.34
3.	High	24	20.00
Mean: 16.68	S.D: 6.78		
VI.	**Perceived workload**		
1.	Low	21	17.50
2.	Medium	66	55.00
3.	High	33	27.50
Mean: 15.29	S.D: 1.07		
VII.	**Organizational Climate**		
1.	Low	31	23.83
2.	Medium	73	60.83
3.	High	16	15.34
Mean: 63.89	S.D: 8.78		
VIII.	**Job autonomy**		
1.	Little	15	12.50
2.	Moderator	86	71.66
3.	Greater	19	15.84
Mean: 4.10	S.D: 1.60		
IX.	**Personal Importance**		
1.	Low	12	10.00
2.	Medium	61	50.84
3.	High	47	39.16
Mean: 4.87	S.D: 0.96		
X.	**Social status attached to the job**		
1.	Low	17	14.16
2.	Medium	78	65.00
3.	High	25	20.84
Mean: 5.67	S.D: 1.09		
XII.	**Convenience of posting**		
1.	More convenient	24	20.00
2.	Moderately convenient	85	70.83
3.	Less convenient	9	07.50
4.	Not at all convenient	2	01.67
XII.	**Job satisfaction**		
1.	Low	19	15.84
2.	Medium	69	57.50
3.	High	32	26.66
Mean: 30.44	S.D: 1.99		

The analysis showed that more than half (53.34%) of the Agricultural Officers had medium possession of communication gadgets followed by low (26.66%) and high (20.00%). It further revealed that more than half (55.00%) of Agricultural Officers have perceived medium workload followed by high (27.50%) and low (17.50%) work load. The result also showed that about 60.83 per cent of the Agricultural Officers had medium level of organization climate followed by low (23.83%) and high (15.34%) organization climate. Nearly three fourth (71.66%) of the Agricultural Officers had medium job autonomy followed by high (15.84%) and low (12.50%) job autonomy. It also showed that, half (50.84%) of the Agricultural Officers had medium personal importance followed by high (39.16%) and low (10.00%) personal importance. More than three-fifth (65.00%) of the Agricultural Officers had medium social status attached to the job followed by high (20.84%) and low (14.16%) social status. Majority of Agricultural Officers (70.83%) felt moderately convenient followed by 20.00 per cent felt more convenient, 07.50 per cent felt less convenient and only 01.67 per cent felt not all convenient. It clears that, more than half (57.50%) of the Agricultural Officers had medium job satisfaction followed by high (26.66%) and low (15.84%) job satisfaction.

Relationship between the selected profile characteristics of Agricultural Officers and their extent of ICT utilization

An attempt has been made to find out the association between independent variables and dependent variables through correlation coefficient (r) values. The results are presented in Table 3 indicated that organizational climate (0.183*), job autonomy (0.276*), possession of communication gadgets (0.622**) and job satisfaction (0.372**) were positively significant related. Age (-0.193*), work experience (-0.219*) and perceived workload (-0.298**) were negatively significant related where as Gender (0.042^{NS}), Academic qualification (0.018^{NS}), personal importance (0.027^{NS}) and social status attached to the job (0.003^{NS}) showed non significant relationship with extent of ICT utilization.

Table 3: Correlation coefficients between the selected profile characteristics and Extent of ICT utilization

S. No.	Profile characteristics	'r' value
1.	Age	-0.193*
2.	Gender	0.042NS
3.	Academic qualification	0.018NS
4.	Work experience	-0.219*
5.	Possession of communication gadgets	0.622**
6.	Perceived workload	-0.298**
7.	Organizational climate	0.183*
8.	Job autonomy	0.276*
9.	Personal importance	0.027NS
10.	Social status attached to the job	0.003NS
11.	Convenience of posting	0.312**
12.	Job satisfaction	0.372**

** Significant at 0.01 level *Significant at 0.05 level

NS- Non-significant

Gender, Academic qualification, personal importance and social status attached to the job showed non significant relationship with Extent of ICT utilization. Lack of interest as well as unfavorable attitude towards ICTs by the relatively higher age Agricultural Officers might be resorting to more traditional tools resulting in low utilization of ICTs by the Agricultural Officers. On the other side, young generation who joined in the recent past might be more aware and had shown interest to use ICTs in their day to day activities. Hence they

might be utilizing ICTs effectively. Utilization of ICT by both male and female Agricultural Officers might have been determined by their performance indicators than the gender. Equal opportunities were been grabbed by both male and female Agricultural Officers without any gender bias. This shows the importance of gender equality in State Department of Agriculture. Hence the trend resulted in non significant relationship. Irrespective of academic qualification, all the Agricultural Officers might be utilizing the ICTs in almost equal proportions. Soft skills and communication skills might be contributing for the extent of ICT utilization than the academic qualification. Even though there might be less experience of the young Agricultural Officers, the zeal and enthusiasm among them might have attracted to use ICT in a befitting way than the experienced Agricultural Officers. On the other side, the experienced Agricultural Officers might be habituated to traditional ways of communication and it became difficult for them to change to new methods through ICTs. Hence a negatively significant relationship was observed between experience and extent of ICT utilization. Having different communication gadgets is an add advantage for effective utilization of ICTs. The Agricultural Officers who possess different communication gadgets might be using for effective transfer of technology and for official communication. They also might be exploring all possible ways of reducing their workload through ICTs. On the other side, the Agricultural Officers with less gadgets might be unaware of the ICTs and restrained to use available technology and resulted in poor ICT utilization. Agricultural Officers who perceived their workload as high might be spending more of their time towards attending laborious and non technical work, which may not permit them to utilize the ICTs for effective transfer of technology. The other reason also might be lack of time to learn the knowledge and skills to operate the ICTs due to their busy schedule. On the other side, the Agricultural Officers with interest in ICTs might be effectively using them to reduce their workload. Good organizational climate provides an opportunity to bring something new into the system. The Agricultural Officers with good organization climate might be finding scope for applying different ICTs in their extension and office activities and enjoying the fruits of ICTs. They also might be exploring new ICTs which will ease their workload. On the other side, the Agricultural officers with poor organizational climate might be resorting to traditional tools without taking much risk of handling new ICTs. This reason might have resulted in positively significant relationship between organization climate and ICT utilization. Decentralized decision making in a particular job position is the key success factor for exhibiting excellent performance by an employee. As the Agricultural officers with high job autonomy might be free to execute their activities with greater flexibility, they might be utilizing ICTs more efficiently in their communication system. As ICTs speed up the delivery of information, they might be so comfortable and satisfied with their functioning. On the other side, the Agricultural officers with less job autonomy might be restricting themselves to their age old approaches. Personal importance is regarded as a source of affinity and attachment with the target clients in the social system. Being the Agricultural Officers, they might be more focused towards building confidence in farming community through more of personal contacts resulted in less utilization of ICTs which are relatively impersonal and limits personal touch between the two individuals. This reason might have contributed for non significant relationship towards personal importance and ICT utilization. Leadership is the determining factor for social status attached to the job. The Agricultural Officers with high social status might be oriented towards influencing the farming community. Due course of time, they might be effectively utilizing ICTs so as to create an innovative environment which attracts the farming community. This ambient situation might have resulted in non significant relationship

between social status attached to the job and extent of ICT utilization. Working at right place as per the wish of an Agricultural Officers might have shown more interest towards learning ICTs and acquired knowledge and skills of ICT and utilizing them for speedy dissemination of information. On the other side, the Agricultural Officers with less convenience of posting might be leading their job activities for the sake of completion than confidence building among the farming community. High job satisfaction might be as source of inspiration for handling the activities more efficiently. In the same line, the Agricultural Officers with high job satisfaction might be utilizing ICTs effectively for their day to day activities. On the other side, the Agricultural Officers with less job satisfaction might be just handling their activities with traditional means of communication. An attempt has been made to find out the amount of contribution made by the independent variables in explaining the variation in the dependent variables through multiple linear regression. It was observed from the table 4 that the twelve independent variables with the extent of ICT utilization taken on multiple linear regression analysis gave the R^2 (Coefficient of multiple determination) value of 0.4938.

Table 4: Multiple Linear Regression analysis of selected independent variables with the extent of ICT utilization

S.No.	Variable	Partial regression co-efficient values	Computed 't' values
X_1	Age	0.0617	0.4230NS
X_2	Gender	0.1723	0.0893NS
X_3	Academic qualification	0.4789	0.1634NS
X_4	Work experience	-0.2343	-1.268NS
X_5	Possession of communication gadgets	0.5872	4.344**
X_6	Perceived workload	0.4692	3.812**
X_7	Organizational climate	0.5621	2.237*
X_8	Job autonomy	0.3112	1.963NS
X_9	Personal importance	0.0489	0.942NS
X_{10}	Social status attached to the job	0.0917	0.0847NS
X_{11}	Convenience of posting	0.4162	3.129**
X_{12}	Job satisfaction	0.3396	2.948*

$R^2 = 0.4938$

* Significant at 5% level of probability. ** Significant at 1% level of probability.

NS Non significant

Hence, it could be depicted that all the selected twelve independent variables put together explained about 49.38 per cent variation in the extent of ICT utilization. The independent variables *viz.* Possession of communication gadgets, Perceived workload, Organizational climate, Convenience of posting and Job satisfaction were the important variables that contributed to the most of the variation in Extent of ICT utilization.

CONCLUSION

At the office of Agricultural Officer, there must be common ICT facility has to be made

available, so that the Agricultural Officer uses them frequently and develop their proficiency. This facilitates the Agricultural Officers to upgrade their skills. Basic infrastructure facilities, services and installations needed for providing the scope and opportunity for better utilization of the ICT by the Agricultural Officer. Focus must be given for application of ICT tools as well as the reinforcement of the learned content for better practice of the ICT tools. Long term and short term training programmes has to be organized at regular intervals to enrich the knowledge and skills of Agricultural Officer.

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