



# Relationship between the Personal Characteristics of Teachers and their Extent of Utilization of Different ICT Tools

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## **Authors' contributions**

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

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## **ABSTRACT**

ICT has the ability to prepare learners for a rapidly changing world scenario. They may use ICT as a tool to identify, analyze, exchange and present information as per their need. The study was conducted in three purposively selected agricultural universities in Rajasthan. Three constituent colleges from each agriculture university were selected purposely on the basis of having maximum number of teachers and 60 per cent of teachers were selected from every college by using simple

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random sampling technique. The teachers of SKNAU, Jobner and their personal characteristics there were negative and significant relationship with age and annual income, negative and non-significant relationship with education, teaching experience and training, positive and significant relationship with time devoted to ICT in a day and achievement motivation and positive and non-significant relationship with accessibility to ICT tools, innovativeness and job commitment. In SKRAU Bikaner there were negative and significant relationship with age, annual income and teaching experience, negative and non-significant relationship with achievement motivation, positive and significant relationship with time devoted to ICT in a day and accessibility to ICT tools and positive and non-significant relationship with education, training, innovativeness and job commitment. Whereas, in MPUAT, Udaipur there were negative and significant relationship with age, teaching experience and annual income, negative and non-significant relationship with education, innovativeness and achievement motivation, positive and significant relationship with training, time devoted to ICT in a day and accessibility to ICT tools and positive and non-significant relationship with job commitment.

*Keywords: Agriculture universities; ICT tools; teachers; relationship; utilization.*

## 1. INTRODUCTION

Information and Communications Technology (ICT) is a global term that includes all technologies for the manipulation and communication of information encompassing: computers, internet, cell phones, and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them. ICTs in fact encompass any medium for recording and broadcasting information like magnetic disk, optical disk, CD/ DVD, flash memory etc. Information and Communication Technologies are defined as electronic and digital technologies for storing, processing, transferring of information and communication. They are enabling technologies that allow quicker and more efficient exchange and processing of information. ICT has the capacity to prepare learners for a rapidly changing world scenario. They may use ICT as a tool to find, explore, analyze, exchange and present information as per their need [1]. The finding regarding the relationship between personal characteristics of teachers with their extent of utilization of ICT tools will help in identification of the factors which significantly affect the utilization of ICT tools by the teachers, which is useful for planners, policy makers and administrators in creating suitable environment for the effective utilization of ICT tools by incorporating or reducing the factors which significantly affect the extent of utilization of ICT tools.

## 2. MATERIALS AND METHODS

The study was conducted in three purposively selected agricultural universities in Rajasthan;

namely, Sri Karan Narendra Agriculture University, Jobner, Maharana Pratap University of Agriculture and Technology, Udaipur and Swami Keshwanand Rajasthan Agricultural University, Bikaner. From the selected agricultural university separate lists of all the constituent colleges were procured, out of which three constituent colleges from each agriculture university were selected purposely on the basis of having maximum number of teachers. The selection of teachers was made by using stratified random sampling technique. For this purpose from the selected constituent colleges separate lists of all the teachers were prepared and out of these 60 per cent of teachers were selected from every college by using simple random sampling technique.

After collecting the data from respondents the data were transferred to the work tables and tally sheets were prepared. The data were classified, analyzed and subjected to statistical analysis. The cross tables were prepared and the data were interpreted in light of the objectives of the study. To analyze the collected information several statistical tools were used. The following statistical measures were used for interpreting the data and testing the hypotheses.

### 2.1 Correlation Coefficient

The correlation coefficient ('r' value) was used to measure the relationship between dependent and independent variables. The correlation coefficient between two groups was calculated by using the following formula.

$$r = \frac{\sum (XY) - \frac{\sum X \sum Y}{n}}{\sqrt{\left[ \sum X^2 - \frac{(\sum X)^2}{n} \right] \left[ \sum Y^2 - \frac{(\sum Y)^2}{n} \right]}}$$

Where,

- r = Correlation Coefficient
- X = Independent variable
- Y = Dependent variable
- n = Total number of respondents

### 3. RESULTS AND DISCUSSION

#### 3.1 The Relationship between the Personal Characteristics of Teachers and their Extent of Utilization of different ICT Tools

The relationship between extent of utilization of different ICT tools by the teachers and their personal characteristics viz. Education, Age, Teaching Experience, Training, Time devoted to use ICTs in a day, Annual Income, Accessibility to ICT Tools, Innovativeness, Achievement Motivation and Job Commitment were measured by applying simple correlation coefficient (r) and the results are presented as follow

#### 3.2 Education of Teachers and Extent of Utilization of Different ICT Tools

It is evident from the data presented in table that in SKNAU Jobner, MPUAT, Udaipur and combindly by all the teachers of agricultural universities the value of correlation coefficient (r) between education of teachers their extent of utilization of ICT tools is negative and non-significant which shows a negative and non-significant relationship whereas in SKRAU, Bikaner the value of 'r' is positive and non-significant which shows a positive and non-significant relationship between education of teachers and their extent of utilization of different ICT tools. This leads to accept the null hypotheses and rejecting the alternate hypotheses, hence there was a negative and non-significant relationship between education of teachers of SKNAU, Jobner, MPUAT, Udaipur and overall teachers and their extent of utilization, whereas the relationship is positive and non-significant in the teachers of SKRAU, Bikaner. This leads to the conclusion that in all

the agriculture university teachers there was a non-significant relationship between their education and their extent of utilization of different ICT tools.

It might be due to the fact that the teachers from all agriculture universities were having more or less same level of education and using ICT tools as per their needs which is more or less similar in all the agriculture universities. The similar findings were observed by Raghava and Rao [2].

#### 3.3 Age of Teachers and Extent of Utilization of Different ICT Tools

The data in table shows that in SKNAU, Jobner, SKRAU, Bikaner, MPUAT, Udaipur and combindly in all the teachers of agricultural universities there exist a negative and significant relationship at 1% level of significance between age of teachers and their extent of utilization of different ICT tools. This leads to reject the null hypotheses hence concluded that there was a negative and highly significant relationship between age of teachers of SKNAU, Jobner, SKRAU, Bikaner, MPUAT, Udaipur and overall teachers and their extent of utilization of ICT tools.

It might be due to the fact that young people are often first adopters of new technologies, and this appears to be in the case of agricultural university teachers with ICTs. So young teachers use more ICT tools as compared to old age teachers. The similar findings were observed by Salau and Saingbe [3].

#### 3.4 Teaching Experience of Teachers and Extent of Utilization of Different ICT Tools

Table shows that in SKRAU, Bikaner, MPUAT, Udaipur and combindly in all teachers of agricultural universities there exist a negative and significant relationship at 1% level of significance between teaching experience of teachers and their extent of utilization of different ICT tools. This leads to reject the null hypotheses

( $H_{05.3.2}$ ,  $H_{05.3.3}$  and  $H_{05.3.4}$ ) which means that there was a negative and significant relationship between teaching experience of teachers of SKRAU, Bikaner, MPUAT, Udaipur and overall teachers of agricultural university and their extent of utilization of ICT tools. But in SKNAU, Jobner their exist a negative and non-significant relationship between teaching experience of teachers and their extent of utilization of different ICT tools. This leads to accept the null hypothesis which means that there was a negative and non-significant relationship between teaching experience of SKNAU, Jobner teachers and their extent of utilization of ICT tools. It might be due to the fact that less experienced teachers are mostly young in age so they might have used more ICT tools but in case of SKNAU Jobner more numbers of teachers were having less teaching experience as compared to others universities so there might be negative and non-significant relationship between teaching experience of SKNAU, Jobner teachers and their extent of utilization of ICT tools. The similar findings were observed by Kale et al. [4].

### **3.5 Training Duration of Teachers and Extent of Utilization of Different ICT Tools**

The data in table shows that in SKRAU, Bikaner and combindly in all teachers of agricultural universities there exist a positive and non-significant relationship but in SKNAU, Jobner there exist a negative and non-significant relationship between training duration of teachers and their extent of utilization of different ICT tools. This leads to accept the null hypotheses ( $H_{05.4.1}$ ,  $H_{05.4.2}$ , and  $H_{05.4.4}$ ) which means that there was a non-significant relationship between training duration of teachers and their extent of utilization of different ICT tools. Whereas, In MPUAT, Udaipur there exist a positive and significant relationship between training duration of teachers and their extent of utilization of different ICT tools. This leads to reject the null hypothesis which means that there was a significant and positive relationship between training of MPUAT, Udaipur teachers and extent of utilization of different ICT tools. In MPUAT Udaipur it might be due to the fact that the teachers utilized their knowledge and skills for use ICT tools which acquired from training but in other agricultural universities it is not effective as compared to MPUAT, Udaipur. The similar findings were observed by Kale et al. [4].

### **3.6 Time Devoted to use ICTs in a Day by Teachers and Extent of Utilization of Different ICT Tools**

The data in table shows that in SKRAU, Bikaner, MPUAT, Udaipur and combindly in all teachers of agricultural universities there exist a positive and significant relationship at 1 % level of significance whereas in SKNAU, Jobner at 5 % per cent level of significance between time devoted to use ICTs in a day by teachers and their extent of utilization of different ICT tools. This leads to reject the null hypotheses which mean that there was a positive and significant relationship between time devoted to use ICTs in a day by teachers and their extent of utilization of ICT tools.

It might be due to the fact that those teachers who give more time to use ICT tools they might have high extent of utilization of ICT tools as compare to the teachers with less time devoted to use ICT tools in a day. The similar findings were observed by Sharma [5].

### **3.7 Annual Income of Teachers and Extent of Utilization of Different ICT Tools**

The data shows that in SKNAU, Jobner, SKRAU, Bikaner, MPUAT, Udaipur and combindly in all teachers of agricultural universities there exist a negative and significant relationship at 1% level of significance between annual Income of teachers and their extent of utilization of different ICT tools. This leads to reject the null hypotheses which means that there was a negative and significant relationship between annual income of teachers and their extent of utilization of ICT tools. It shows that the teachers having more annual income they having less extent of utilization of ICT tools as compare to less annual income level teachers. It might be due to the fact that less annual income level teachers were mostly young in age so they might have used more ICT tools.

### **3.8 Accessibility to ICT Tools by Teachers and Extent of Utilization of Different ICT Tools**

The data in table shows that in SKRAU, Bikaner and MPUAT, Udaipur there exist a positive and significant relationship at 5 % level of significance but in combindly all teachers of selected agricultural universities the relationship is significant at 1% level of significance between

accessibility to ICT tools by teachers and their extent of utilization of different ICT tools. This leads to reject the null hypotheses, which means that there was positive and significant relationship between accessibility to ICT tools by teachers and their extent of utilization of ICT tools. Whereas, in SKNAU, Jobner there is a non-significant relationship between accessibility to ICT tools by teachers and their extent of utilization of different ICT tools. This leads to accept the null hypothesis which means that there was a non-significant relationship between accessibility to ICT tools by teachers of SKNAU, Jobner and their extent of utilization of ICT tools.

It might be due to the fact that the teachers who having more accessibility to ICT tools might be having high extent of utilization of ICT tools as compared to teachers who have less accessibility to ICT tools, but in case of SKNAU, Jobner teachers might have used ICT tools on the basis of their requirements and needs of the job. The similar findings were observed by Aramide et al. [6]

### 3.9 Innovativeness of Teachers and Extent of Utilization of Different ICT Tools

The data in table shows that in SKNAU, Jobner, SKRAU, Bikaner and combindly in all the teachers of agricultural universities there exist a positive and non- significant relationship but in MPUAT, Udaipur there exist a negative and non-

significant relationship between innovativeness of teachers and their extent of utilization of different ICT tools. This leads to accept the null hypotheses, which means that there was a non-significant relationship between innovativeness of teachers and their extent of utilization of ICT tools. It shows that the innovativeness of teachers did not affect their extent of utilization significantly. It might be due to the fact that every teachers use ICT tools according to their work need and more or less the teachers use ICT tools equally to perform their duties [7,8].

### 3.10 Achievement Motivation of Teachers and Extent of Utilization of Different ICT Tools

Data in table shows that in SKRAU, Bikaner and MPUAT, Udaipur there exist a negative and non-significant relationship but combindly in all the teachers of agricultural universities there exist a positive and non- significant relationship between achievement motivation of teachers and their extent of utilization of different ICT tools. This leads to accept the null hypotheses, which means that there was a non-significant relationship between achievement motivation of teachers and their extent of utilization of ICT tools. It shows that the achievement motivation of teachers did not affect their extent of utilization significantly. But in SKNAU, Jobner there exist a positive and significant relationship between achievement motivation of teachers and their extent of utilization of different ICT tools.

**Table 1. Relationship between the personal characteristics of teachers and their extent of utilization of different ICT tools**

S.No.	Variables	'r' Value			
		SKNAU, Jobner n <sub>1</sub> =65	SKRAU, Bikaner n <sub>2</sub> =28	MPUAT, Udaipur n <sub>3</sub> =73	Overall n=166
1	Education	-0.132 NS	0.131NS	-0.214NS	-0.137 NS
2	Age	-0.468**	-0.567**	-0.385 **	-0.416 **
3	Teaching Experience	-0.198 NS	-0.500**	-0.376**	-0.282**
4	Training	-0.221NS	0.045NS	0.265*	0.044NS
5	Time devote to use ICTs in a day	0.291*	0.527**	0.326**	0.317**
6	Annual Income	-0.329**	-0.564**	-0.305**	-0.323**
7	Accessibility to ICT Tools	0.240NS	0.439*	0.287*	0.285**
8	Innovativeness	0.226NS	0.041NS	-0.098NS	0.059NS
9	Achievement Motivation	0.337**	-0.029NS	-0.097NS	0.101NS
10	Job Commitment	0.167NS	0.082NS	0.076NS	0.110NS

\* Significant at 0.05 level of probability, NS=Non-significant

\*\* Significant at 0.01 level of probability

This leads to reject the null hypothesis which means that there was a positive and significant relationship between achievement motivation of SKNAU, Jobner teachers and their extent of utilization of ICT tools. It might be due to the fact that every teacher use ICT tools according to their accessibility and availability of ICT tools and needs. But in case of SKNAU, Jobner it might be due to the reason that the teachers were having less and moderate achievement motivation as compared to other agricultural universities. The similar findings were observed by Kale *et al.* [4].

### 3.11 Job Commitment of Teachers and Extent of Utilization of Different ICT Tools

Data in table shows that in SKNAU, Jobner, SKRAU, Bikaner, MPUAT, Udaipur and combindly in all the teachers of agricultural universities there exist a positive and non-significant relationship between job commitment of teachers and their extent of utilization of different ICT tools. This leads to accept the null hypotheses which means that there was a positive and non-significant relationship between job commitment of teachers and their extent of utilization of ICT tools. It shows that the job commitment did not affect the extent of utilization of ICT tools significantly. It might be due to the fact that every teachers use ICT tools according to their accessibility and awareness of ICT tools but majority of teachers were needs trainings related to effective utilization of ICT tools. It might also be due to the reason that both type of teachers with high and low job commitment may have high utilization of ICT tools. The similar findings were observed by Sharma [5].

## 4. CONCLUSION

Relationship between extent of utilization of different ICT tools by the teachers of and their personal characteristics. InSKNAU, Jobner there were negative and significant relationship with age and their annual income, negative and non-significant relationship with education, teaching experience and training, positive and significant relationship with time devoted to ICT in a day and achievement motivation and positive and non-significant relationship with accessibility to ICT tools, innovativeness and job commitment. In SKRAU Bikaner there were negative and significant relationship with age, annual income and teaching experience, negative and non-significant relationship with achievement

motivation, positive and significant relationship with time devoted to ICT in a day and accessibility to ICT tools and positive and non-significant relationship with education, training, innovativeness and job commitment. Whereas, in MPUAT, Udaipur there were negative and significant relationship with age, teaching experience and annual income, negative and non-significant relationship with education, innovativeness and achievement motivation, positive and significant relationship with training, time devoted to ICT in a day and accessibility to ICT tools and positive and non-significant relationship with job commitment.

## COMPETING INTERESTS

Authors have declared that no competing interests exist.

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