A Competence Approach to ICT Knowledge in Relation to Occupation: A Study of Indian Universities

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Abstract- Information and Communication Technology (ICT) has affected every facet of student, faculty and researcher's life. In Higher education system of India, there is extensive involvement of ICT in colleges and universities. To encourage the ICT based teaching and learning methodologies in Indian universities, government had taken many rigorous steps on time. The vision of Indian Prime minister is to empower every resident either urban or rural have to access the digital services, knowledge and information through ICT. Therefore, researcher felt to investigate the ICT knowledge among students, teachers and research scholars those are studying in Indian universities. Many of universities either government or private are supporting the utilization of various ICT based teaching and learning practice. This study describes the ICT knowledge between students and faculty in relation to their occupation.

Index Terms: occupation, knowledge, significant, university.

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A Competence Approach to ICT Knowledge in Relation to Occupation: A Study of Indian Universities

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Abstract - Information and Communication Technology (ICT) has affected every facet of student, faculty and researcher's life. In Higher education system of India, there is extensive involvement of ICT in colleges and universities. To encourage the ICT based teaching and learning methodologies in Indian universities, government had taken many rigorous steps on time. The vision of Indian Prime minister is to empower every resident either urban or rural have to access the digital services, knowledge and information through ICT. Therefore, researcher felt to investigate the ICT knowledge among students, teachers and research scholars those are studying in Indian universities. Many of universities either government or private are supporting the utilization of various ICT based teaching and learning practice. This study describes the ICT knowledge between students and faculty in relation to their occupation. The paper is emphasizing on ICT knowledge awareness among faculty, researchers or students in Punjab and Haryana. Findings of this paper is describing that whether significant difference lies in between student and faculty towards ICT Knowledge in relation to their occupation using statistical methods. More than Nine hundred participants have participated from six Universities of two states. The results of paper are summing the awareness, knowledge of Indian educators and students. Indeed to understand the current scenario of ICT knowledge in Indian education system.

Index Terms: occupation, knowledge, significant, university.

I. Introduction

In Indian economical growth, Higher Education is playing an imperative role. To making literal knowledge based culture in Indian society, ICT has participated well in 21th century. Indian universities are facing many problems like Access, Quality and Equity. Therefore, Indian Government has taken crucial steps to overcome these barriers by adapting Vocational programs, Networking, Information Technology adoption, Curriculum reforms and Distance Education along with reforms in E-governance. In India major governing body is university grant commission (UGC), which implements new policies, standards and rules for promoting Higher education in state government and private universities. Information and Communication Technology (ICT) playing a vital role to promote knowledge based society in India. Even many of colleges, institutions and universities are adopting ICT in their instructional material, teaching and learning methodology. Therefore, Ministry of Human Resource development, GOI has initiated scheme named "The National Mission on Education through Information and Communication Technology" (NMEICT), to aware the educationist about potential of ICT in teaching and learning for improve Indian Higher education system. The three cardinal principles of Education Policy viz., access, equity and quality could be served well by providing connectivity to all colleges and universities, providing low cost and affordable access-cum-computing devices to students and teachers and providing high quality e-content free of cost to all learners in the country [1]. The National Knowledge Network (NKN) and Connected Digital has launched an initiative to cover 1,000 institutions besides providing digital campuses, video-conference classrooms, wireless hotspots, laptops/desktops to all students of professional/ science courses and Wi-Fi connectivity in hostels [2]. ICT has sheltered almost educational universities in developed countries. Many of developed countries have committed that by adopting ICT in their educational system, lead to economical growth. The researcher realizes a keen investigation about the ICT Knowledge in Indian Higher educational Institutions. Therefore may of researchers had done lots of work about ICT awareness in educational colleges and universities. Mudasiru O. Yusuf and Modupe R. Balogun found that gender had no significant influence on the attitude of student-teachers towards ICT, and similarly no significant difference was established between male and female student-teachers in their ICT competence [3]. Ruqiyabi Naz. Awan found that teachers felt confident and happy with the ICT they were using in their classroom and this resulted in positive learning experiences and attitudes to further ICT training and use in their lessons [4]. G. R. Angadi concluded that male and female have significant difference in their attitudes towards Information and Communication Technology (ICT). Similarly science and arts teachers have meaningful difference in their opinions towards ICT. Attitude of senior teachers has not been found significant difference between the senior and junior teachers' of B.Ed colleges [5]. R.Kozma stated that ICT

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allows teaching and learning activities by educational innovations and by connecting students and teachers to each other and to a vast array of human and informational resources around the world [4]. M. J. Philomina and S. Amutha (2016) concluded that science teacher Students and Faculty are more aware about ICT use in teaching as compare to arts teachers. Similarly female teachers won from male teachers in ICT occupation [5]. Beena and Madhu Mathur (2012) found that male students have shown higher occupation as compare to female students for the use of ICT in education. There is no significance difference between Knowledge of male and female students [6]. Nabin Thakur (2014) revealed that there is no significant difference in the level of ICT occupation among the male and female trained teachers [7]. U. Pratik concluded that male and female B.Ed. students have similar attitude towards computer. There is no significance difference towards computer in relation to their student's occupation [8]. Illayaperumal found that there is significant difference is observed between the groups regarding locality, type of selection and community. Therefore it is necessary for our future teachers to have the knowledge and understanding of the role of ICT in sustainable development [9]. Dubey concluded that female faculty have more positive attitude towards computer as compare to male teachers [10].

II. Objectives and Hypothesis

The main objective of this study is to investigate the ICT knowledge of students and faculty those obtaining higher education in Indian universities. To find out the significant occupation wise difference in between students and faculty towards information and communication technology knowledge. The objectives with their respective hypotheses have been designed:-

1. To study about Information and communication technology knowledge of students and faculty.
2. To study about Information and communication technology knowledge of boys' student and male faculty
3. To study about Information and communication technology knowledge of girls' student and female faculty.

To achieve the above cited objectives null hypothesis are described below:

H01: There is no significant difference between students and faculty Knowledge towards Information and communication technology.

H02: There is no significant difference between Boys student and Male Faculty's Knowledge towards Information and communication technology.

H03: There is no significant difference between Girls student and Female's Faculty's Knowledge towards Information and communication technology.

III. Design & Methodology

The present study includes the normative survey method to collect primary data and to test the hypotheses standardised statistically t- test has been applied. Both faculty and students were asked to filled-up the survey forms with objective to gather their Knowledge about information and communication technology. This section has been divided into three parts which have described below:

a) *Variable Selection*

According to above mentioned objectives, there are, the present study includes the six independent and thirty five dependable variables). List of independent variables are given in Table 1.

Table 1 : Independents Variable

Var No.	Independent Variable
1	Student
2	Faculty
3	Boys student
4	Males faculty
5	Girls student
6	Females faculty

(Source: Authors)

Present study includes the Item Analysis test. This test is founded by Kelley's (in 1939) for selection of items/variables. Total 70 variables are assumed while started up, and then after applied item analysis test, only 35 were accepted. Detail list of accepted independent variables are given in Table-2. There are 26 variables were found very good (VG) and no need for alteration (DP is range of 0.40-0.9) and 09 items were found good (G) whose DP is range of 0.30-0.39, needs little bit alteration; Total 35 variables were accepted (A) and remaining were rejected due to poor status (<0.19).

Table-2 : Item Analysis

	#Accepted Variables	#Rejected Variables	#VG	#G	#P
n	35	35	26	09	35
Range	DV>0.20<0.75	DV<0.20	0.9>DP>.40	0.39>DP>0.3	DP<0.19

*(Source: Authors): *Discriminating power (DP),*Difficulty value (DV)*

To collect samples of students and faculty, a structured questionnaire has been designed. This instrument consisted of 35- items self-report scored on a 5 point Likert type scale (strongly disagree (SD) =1, disagree (D) =2, undecided (UD) =3, agree (A) =4, and strongly agree (SA) =5).

b) Sampling

A stratified random sampling method is used. More than Nine hundred participants have been participated in this study from six universities located in Punjab and Haryana state of India. Table -4 shows that out of total participants 904, study included 560

students (62%) and 344 faculty members (38%) were involved. Out of total male category, 175 male faculty (39%) and 274 boys student (61%) were participated. Out of total female category, 169 female faculty (37.1%) and 286 girls student (62.9%) were included.

Table 4 : Occupation Distributions

Groups	Student	Faculty	Boys student	Male Faculty	Girls Student	Female Faculty
N	560	344	274	175	286	169
%	62	38	61	39	62.9	37.1
Total	904		449		455	

(Source: Authors)

Participants have been involved from six universities in India. They were belonging to either from private or government universities. They are providing or

receiving higher education in different fields like engineering, humanities and science field. Demographic characteristics of participants are given in table-3.

Table 3 : Participated Universities

UNI'S	Haryana			Punjab			
	Govt.		Private	Govt.	Private		Total
	CDLU	GJUST	SGT	PU	CU	GKU	
N	144	138	148	143	198	133	904
%	15.9	15.3	16.4	15.8	21.9	14.7	100

(Source: Authors)

Table -3 shows that 904 participants from six universities have participated in the present study. These six universities located in Punjab and Haryana state of India, Out of sic universities, three were from Punjab and three were from Haryana state.

c) Statistical Techniques

To test the proposed hypotheses to achieve objectives, Student T-test has been applied. Beside of this descriptive Analysis (frequency (N), percentage (%), Mean and Standard deviation have been also implied in present study. To determine significant difference between students faculty towards ICT knowledge in relation to their occupation, t-test with equal variance has been applied using MS-Excel with extra Add-ins named Analysis Tool pack and Analysis Tool pack-VBA.

IV. Results and Discussions

In this section results have been found regarding evaluate Knowledge of students and faculty in relation to their occupation. The results of the independent group's t-test have been applied to test assumed hypothesis.

- *Testing of Hypothesis H01*

From the Table-5, It is apparent that calculated t-value is 1.0, is smaller than the critical table value which is 2.0 with degree of freedom 68 at 5% level of significant (01.0<2.0 at df =68, @0.05). Hence it is not significant up to 5% level. Therefore, it is reflecting that occupation variable did not influenced students and
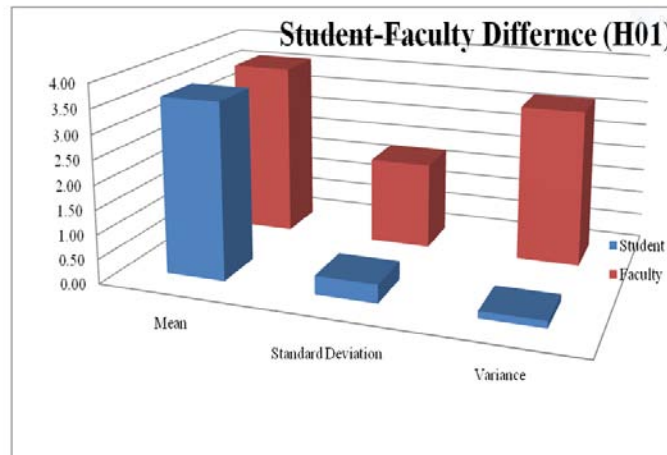
faculty Knowledge about ICT in relation to their occupation.

Table 5 : Student-Faculty ICT Knowledge Analysis

	Student (n=560)	Faculty (n=344)
Mean	3.61	3.62
Standard Deviation	0.38	1.79
Variance	0.14	3.20
t-Value	1.0 at df=68 t-critical two-tail = 2.0	

(Source: Authors)

It is concluded that there is no significant difference between students and faculty knowledge about ICT. Hence first Null Hypothesis H01 is accepted here.

Fig-1 : Student-Faculty ICT Knowledge Difference

(Source: Author)

Above figure -1 it is proving that students and faculty have not considerable difference in their Knowledge towards ICT in relation to their occupation. Students and faculty have their mean scores 3.61 and 3.62 respectively. Standard deviations and variances for boys and girls are also reflecting no significant in relation with occupation.

- *Testing of Hypothesis H02*

From the Table-6, It is revealed that calculated t-value is 3.2, is much greater than the critical table value which is 2.0 with degree of freedom 68 at 5% level of significant (3.2>2.0 at df =68, @0.05). Hence we found significant difference at 5% level of significance. Therefore, there is meaningful difference found in between boys' student and male faculty towards ICT knowledge.

Table 6 : Boys Student and Males Faculty ICT Knowledge Analysis

	Boys Student (n=274)	Males Faculty (n=175)
Mean	3.58	3.83
Standard Deviation	0.39	0.25
Variance	0.15	0.06
t-Value	3.2 at df=68 t-critical two-tail = 2.0	

(Source: Authors)

Hence second Null Hypothesis H02 is rejected here. There is no significant difference found between boys' student and male faculty towards Information and communication technology.
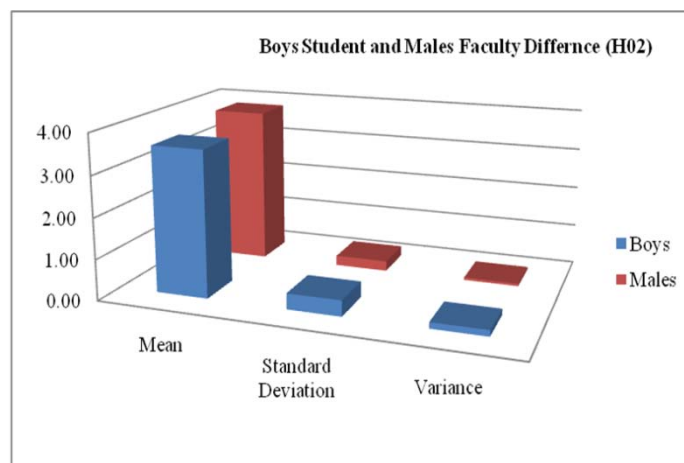

Fig-2 : Boys Student and Males Faculty ICT Knowledge Difference (Source: Author)

Above figure -2 it is showing that boys' student and male faculty have major significant difference in their Knowledge towards ICT. As mean score of boys student is 3.58 and male faculty's mean score is found 3.83. It is showing that male faculty have better knowledge about ICT as compare to boy's student.

- *Testing of Hypothesis H03*

From the Table-7, It is described that calculated t-value is 4.4, is more than twice of the critical table value which is 2.0 with degree of freedom 68 at 5% level of significant (4.4>2.0 at df =68, @0.05). Hence it is significant up to 5% level. Therefore, it is concluded that girls student and female faculty have major consequential difference towards ICT Knowledge.

Table 7 : Girls Student and Females Faculty ICT Knowledge Analysis

	Girls Student (n=286)	Females Faculty (n=169)
Mean	3.64	4.01
Standard Deviation	0.38	0.31
Variance	0.15	0.10
t-Value	4.4 at df=68 t-critical two-tail = 2.0	

Hence third Null Hypothesis H03 is also rejected here. There is significant difference found between girls' student and female faculty towards knowledge about Information and communication technology.
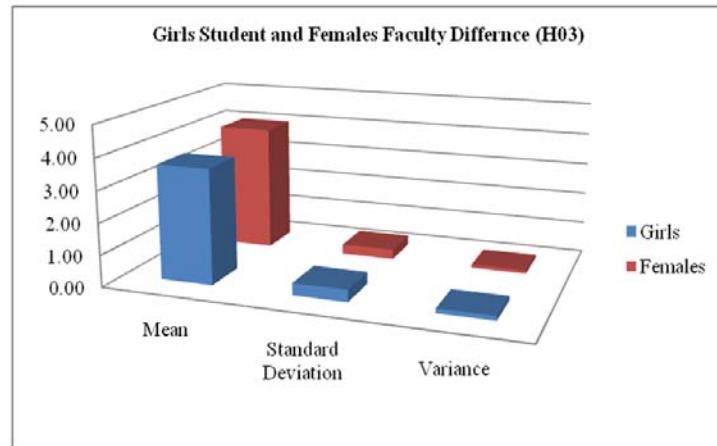

Fig. 3: Girls Student and Females Faculty ICT Knowledge Difference (Source: Author)

Fig-3 is also showing that female faculty have greater knowledge about ICT in contrast girls' student (4.01>3.64). The findings of this paper are suggesting to girl's student to improve increase their knowledge regarding ICT use in their study.

V. Conclusion

Every university is providing ICT based education to their students. Faculty of university are also accepting involvement of ICT tools and resources in their teaching methodology. Research Students are also committing that they are almost depends upon ICT use in to their research. This study has been carried out to investigate the significantly difference in students and faculty Knowledge about ICT in relation to their occupation. Six universities have participated successfully in this research study. Findings of this paper are proving that there is no meaningful difference between student and faculty towards ICT knowledge. It has been concluded that occupation variable did not affect students and faculty Knowledge towards information and communication occupation. It has been also found that there is significant difference between males faculty and boys student towards ICT Knowledge. Male faculty are more conscious about ICT as compare to boys' student. The findings of this paper are also proving that there is much significant difference between female faculty and girls' student towards ICT knowledge. Female faculty won from girl's student in understanding of ICT knowledge. The outcomes of this paper shall endow with suggestions to participated universities and states administration of the country regarding to support ICT adaption, promotion and awareness in Higher education.

VI. Acknowledgement

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