Research Paper

A Study of Impact of ICT Tools on College Teachers Based On Statistical Techniques

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ABSTRACT:
In this digital era, ICT use in the classroom is important for giving students opportunities to learn and acquired new skills.ICTs are making dynamic changes in the society. Using ICT to improve the teaching learning process. Hence studying the issues and challenges related to ICT use in teaching and learning can assist teachers in overcoming the obstacles and become successful technology users. Therefore, the main purpose of this study is to analyze teachers' perceptions of the challenges faced in using ICT tools in classrooms. A quantitative research design was used to collect the data randomly from a sample of 146 teachers from senior colleges in the Kolhapur city of Maharashtra state . Evidence has been collected through distribution of a systematic survey questionnaire containing various components of ICT tools. And the collected information's are analyzed using various statistical tools and techniques.
KEYWORDS: *ICT Tools, Graphical Representation, Testing of hypothesis, Level of significance*

I. INTRODUCTION:

In the recent few years the tremendous changes in the communication technology. Computer network and information technology. Development of new broadband communication services and convergences of telecommunication with computers have created various possibilities to use variety of new technology for teaching learning process. Information and communications technology (ICT) is an important part of most organizations these days(Zhang & Aikman, 2007). Computers began to be used in schools in the early 1980s, and several scholars suggest that ICT will be an important part of education for the next generation (Bransford, Brown, & Cocking, 2000; Grimus, 2000; Yelland, 2001). Up-to-date technology offers many methods of enhancing classroom teaching and learning (Ghavifekr et al., 2014; Lefebvre, Deaudelin & Loiselle, 2006). Dawes(2001)stated that new technologies have the potential to upkeep education across the curriculum and deliver opportunities for efficient student-teacher communication in ways not possible before. ICT in education has the potential to transform teaching. However, this potential may not easily be realized, as Dawes (2001) underlined when he stated, "problems arise when teachers are expected to implement changes in what may well be adverse circumstances" (p. 61).

Due to ICT's importance in society as well as in the future of education, identifying the possible challenges to integrating these technologies in schools would be an important step in improving the quality of teaching and learning. Balanskat, Blamire, and Kefala (2006) argue that although teachers appear to acknowledge the value of ICT in schools, they continue encountering obstacles during the processes of adopting these technologies into their teaching and learning.

However, despite the Ministry of Education, Malaysia having embarked on the project "1Bestarinet" in providing a virtual learning platform in schools to enhance ICT usage among teachers, ICT has not been fully adopted in the teaching and learning process in most schools in the country. Only a few teachers are using ICT as teaching and learning tools (MoCT, 2003). This is because the challenges outweigh the benefits (Bingimlas, 2009). Therefore, this study is expected to generate information on the teachers' perceptions and challenges of integrating ICT tools in the teaching and learning process. With changes in modern technologies learners need to be equipped with updated knowledge that will help them adapt to the changing world. Such knowledge leads to better communication and increased 21st century skills as a result of e-Commerce and self-employment in the ICT sector.

Many studies have been conducted to investigate the challenges to technology integration in education (Al-Alwani, 2005; Ghavifekr , Afshari & Amla , 2012; Gomes, 2005; Osborne & Hennessy, 2003; Özden,

2007). This study provides teachers' perception and perceived barriers to the use of technology tools in classroom's teaching and learning process. Therefore, the main objectives of this study are as follow:

1. To analysis use of ICT tools by teacher during lectures/practical's
2. To find the most used ICT tools and its period of usage
3. To find most of the social media app for providing notes.
4. To find the use of ICT tools by teachers in age group below 42 and above 42
5. To find the independence between use of ICT tools and gender.

II. METHOD OF DATA COLLECTION:

The primary data is collected by personal interview and this method was apply throughout the survey. Therefore we choose seven colleges in Kolhapur city. The survey was conducted among senor college teachers. Total two hundred questionnaires were distributed among the teachers and out of these two hundred teachers only 146 were return. The collected questionnaires are analyzed applying various statistical tools and techniques.
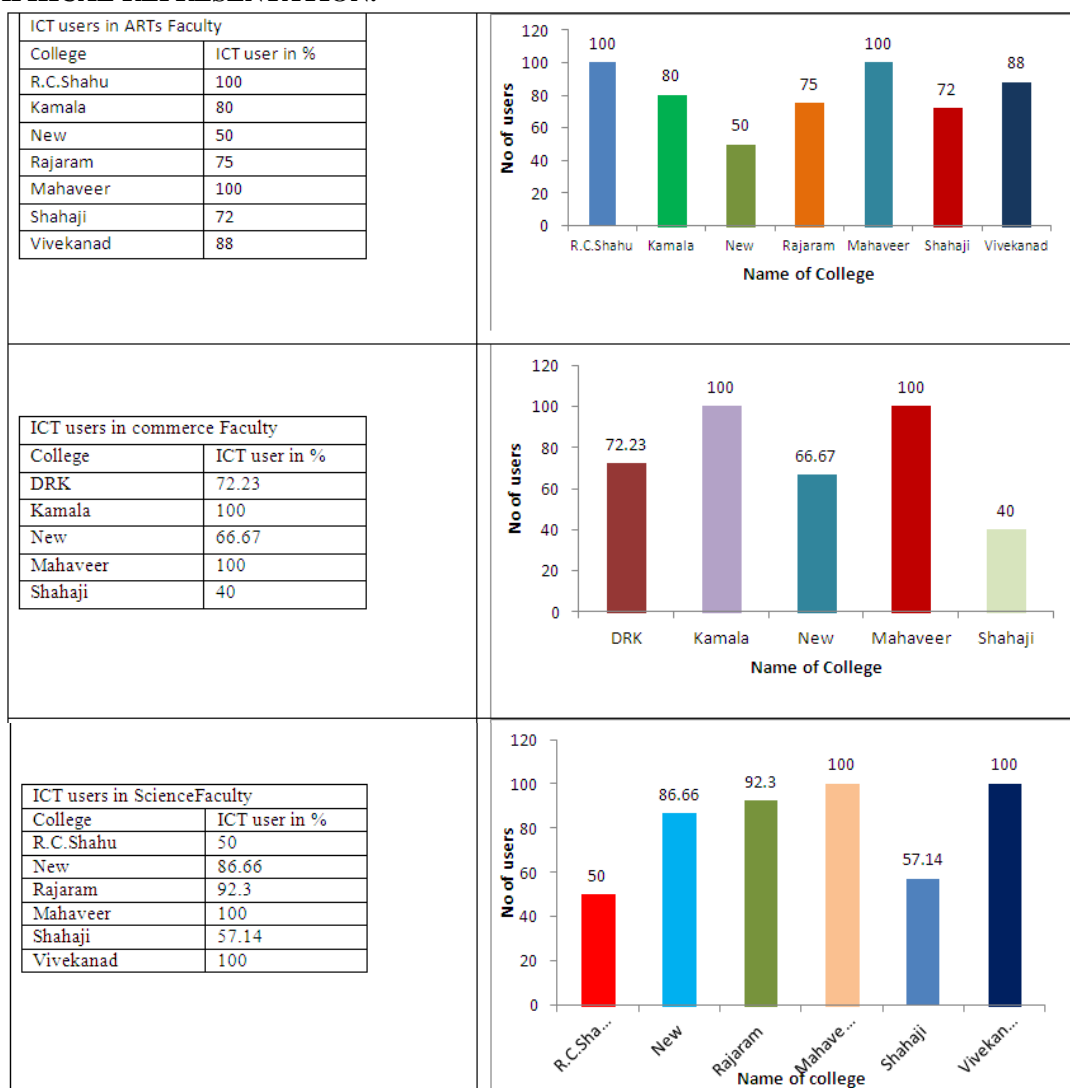
STATISTICAL TOOLS USED:-
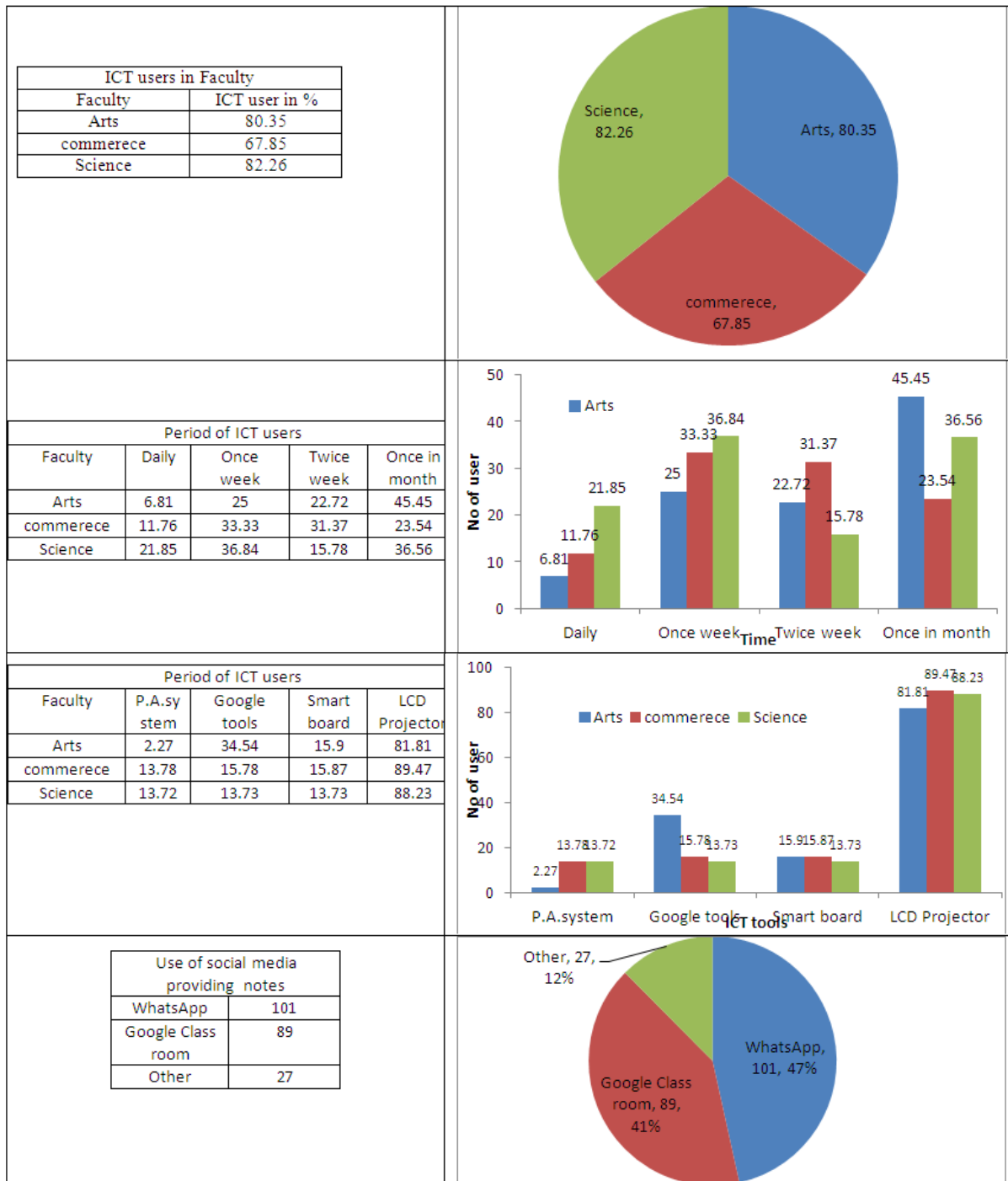➢ Graphical Representation
➢ Testing of hypothesis
SOFTWARE'S USED:-
➢ MS-Excel
➢ MS-Word

GRAPHICAL REPRESENTATION:

ICT users in ARTs Faculty	
College	ICT user in %
R.C.Shahu	100
Kamala	80
New	50
Rajaram	75
Mahaveer	100
Shahaji	72
Vivekanad	88

ICT users in commerce Faculty	
College	ICT user in %
DRK	72.23
Kamala	100
New	66.67
Mahaveer	100
Shahaji	40

ICT users in ScienceFaculty	
College	ICT user in %
R.C.Shahu	50
New	86.66
Rajaram	92.3
Mahaveer	100
Shahaji	57.14
Vivekanad	100

ICT users in Faculty	
Faculty	ICT user in %
Arts	80.35
commerece	67.85
Science	82.26

Period of ICT users				
Faculty	Daily	Once week	Twice week	Once in month
Arts	6.81	25	22.72	45.45
commerece	11.76	33.33	31.37	23.54
Science	21.85	36.84	15.78	36.56

Period of ICT users				
Faculty	P.A.sy stem	Google tools	Smart board	LCD Projector
Arts	2.27	34.54	15.9	81.81
commerece	13.78	15.78	15.87	89.47
Science	13.72	13.73	13.73	88.23

Use of social media providing notes	
WhatsApp	101
Google Class room	89
Other	27

a)   Chi-square test:

The purpose of this test is to test the attributes use of ICT and Gender are independent.

The following hypothesis are stated as

H_o: The use of ICT is not dependent on gender against H_1: The use of ICT is dependent on gender

        Level of significance taken as $\alpha = 5\%$

Notations used as (A)=no of males (B)=no of ICT user

The observation table :

Gender	ICT used	ICT not Used	Total
Male	67	14	81
Female	48	17	65
Total	115	31	146

Test Statistics:
Under H_0 the test statistics,

$$\chi^2 = \frac{N(ad-bc)2}{(a+b)*(c+d)*(a+c)*(b+d)} = 1.696$$

$$\chi^2_{cal} = 1.696$$

Critical Value:

$\chi^2_{table} = \chi^2_{(r-1)(s-1)}$, 5% level of significance
$\chi^2_{table} = 3.841$
Therefore, $\chi^2_{cal.} < \chi^2_{table}$
b)   Kruskal wallis test fortesing equality of average use of ICT Tools in different faculties:
H_o: The average use of different modes of ICT Tools is not same against
 H_1: The average use of different modes of ICT Tools is same
Level of significance taken as $\alpha = 5\%$
Observation table :

Faculty	P.A.System	Google tools	Smart board	LCD Projector
Arts	2.27	34.54	15.9	81.81
commerce	13.78	15.78	15.87	89.47
Science	13.72	13.73	13.73	88.23

From table,   n = n1 + n2 + n3= 3+ 3+ 3+ 3=12 and $H = \sum_{i=1}^{n}\left(\frac{T_i^2}{n_i}\right) = 616.23$

Test Statistic: Under Ho,

$H = \frac{12}{n(n+1)}\sum_{i=1}^{n}\left(\frac{T_i^2}{n_i}\right) - 3(n+1)$
$H = \frac{12}{12(12+1)}(616.23) - 3(12+1) = 8.40$
$\chi^2_{table} = \chi^2_{table}(0.05, 4-1) = 9.488$ and $H < \chi^2_{table}$,
c)   Kruskal wallis test fortesing equality of average use of mode ICT Tools in different faculties:
H_o: The average use of several modes of ICT Tools used by arts, science and commerce teachers is
    not Same against
 H_1: average use of several modes of ICT Tools used by arts, science and commerce teachers is
    same
         Level of significance taken as $\alpha = 5\%$
Observation table :

Faculty	P.A.System	Google tools	Smart board	LCD Projector
Arts	2.27	34.54	15.9	81.81
commerce	13.78	15.78	15.87	89.47
Science	13.72	13.73	13.73	88.23

From table,   n = n1 + n2 + n3= 4+ 4+ 4+ 4=16 and $H = \sum_{i=1}^{n}\left(\frac{T_i^2}{n_i}\right) = 521$

Test Statistic: Under Ho,

$H = \frac{12}{n(n+1)}\sum_{i=1}^{n}\left(\frac{T_i^2}{n_i}\right) - 3(n+1)$
$H = \frac{12}{16(16+1)}(521) - 3(16+1) = -28.015$
$\chi^2_{table} = \chi^2_{table}(0.05, 4-1) = 9.488$ and $H < \chi^2_{table}$,

Major Finding:
        The faculties belongs arts of Shahu college and Mahaveer college use the maximum ICT tools as compared to remaining .The faculties of Kamala college and Mahaveer college uses the maximum use of ICT tools than others. Faculty of science in Vivekanand College and arts faculty from Kamala College are uses the maximum ICT tools as compared to other colleges and the proportion of use of ICT tools teachers if Mahaveer college is more than other colleges. The faculty of science and commerce are uses maximum times than arts faculties.The percentage of LCD user is more than other modes. Most of the teachers are uses whatsaap and google classroom for sending notes to students. Every faculty is uses the ICT tools in his early age of services and less use in end of service. The attribute use of ICT tools and gender are independent .The average use of

several modes of ICT Tools used by arts, science and commerce teachers and the average use of different modes of ICT Tools is not same.

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