Measuring Compatibility of Faculty Members while using ICT for Academic Management of Higher Education

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Abstract

Indian Education System has witnessed extensive use of computers in many areas of Indian education system. Faculty members are the focal point of this system. Young Faculty members are using computers for teaching, learning, examination, result declaration, attendance management and office administration in schools. The use of technology, particularly information and communication technology, to support learning promises much. This technology helps the students to complete their studies in terms of place, time and pace, and most importantly, the ICTs provides teaching staff more opportunities to communicate with students without their physical presence. This study aims at measuring compatibility of faculty members while using ICT for academic management of higher education.

Introduction:

IT has become a buzzword these days because each and every field is influenced by technology and its application. It is used in various fields like business, organisations and in education sector. IT helps in acquiring, storing, processing and displaying data and information by using hardware and software. For better use of IT, communication technology (CT) is also required. Both of these technologies became complementary to each other. Hence IT and CT started moving together and a new term was introduced named as Information and communication Technology (ICT).

Indian education system was moreover based on chalk and talk method but after occurrence of computer technologies, Institutes have started using ICT in teaching learning. Institute education especially teaching and learning in India is more of class-room, laboratory, and presentation oriented, where teacher being its focal point. Off late it is now supplemented with audio-visual aids like the use of projectors, stereo systems and the projection of films. Students are required to listen to whatever the teacher is explaining and then understand it. A large number of researches conducted on students learning have outlined that in tradition methods many students are not comfortable due to their perceptions of the atmosphere and the circumstances leading to the unsatisfied learning experience. This approach has been in use for a very long period of time and despite of all its disadvantages the approach has delivered results.

Past few decades have witnessed extensive use of computers in many areas of our life on a daily basis. One of such area is teaching and learning process in Institutes. Today computers are extensively used for teaching, learning, examination, result declaration, attendance management and office administration in Institutes. Advancements in information technology innovations and computer usage have rapidly transformed work culture of Institute teachers. They cannot escape the fact that today's teaching must be aided with Information and Communication Technology (ICT).

In Indian society education has always been accorded an honoured high place. In the last few years improvement in the status of Institute education has been the prime focus of government. Use of ICT enabled technology has been a very helpful in this step. India recognised the importance of ICT based Institute education in early 80's when the Computer Literacy and Studies in Institutes (CLASS) Project was introduced as a pilot project with the introduction of BBC micro-computers.

Since then the use of ICT in teaching learning in Institutes has been increasing. In recent years blackboards have given way to projectors with interactive whiteboards. ICT enables interactive classrooms improve teaching and learning process. It has changed the way of teaching and learning of subjects like Mathematics, Science, Social Sciences and English etc. It allows a teacher to engage students in class more effectively by using audio visual means. Further enables them to create question papers and analyse students' performance in much better way. Science teachers can give a visual tour of entire laboratory in classroom with the help of ICT. Lesson

plans can be easily captured and shared online enhancing the interaction with students. Concept dealt with the use of ICT based teaching methodology enables students to grasp them more effectively and quickly. With the help of ICT based learning teacher can easily make their teaching material and can spread that material to students. ICT based technologies is not restricted within four walls of classrooms. Teaching material can be spread with a single click and it depends on students when and where they want to access that material given by teacher. The use of technology, particularly information and communication technology, to support learning promises much. This technology provides the learners with an environment that allows them to distribute their studies in terms of place, time and pace, and most importantly, the ICTs give teaching staff more opportunities to actually communicate with students than just face-to-face.

Review of Literature:

Harris (2000) revealed that the highest percentage of use of computers and the internet was for preparing instructional materials. Lowest percentage of use of computers and the internet was for instructional use for students. The teachers used word processing primarily for preparing instructional materials, instructing students in the classroom and interactive lab. The second highest use was for web searching.

Kellenberger and Hendricks (2000) and **Martin Ofori-Attah (2005)** identified that the computer use by teachers was divided into three main components namely, for teaching purposes (to impart knowledge, create variety, and to give confidence to teachers), administration purposes (in preparation of job-related materials and to ensure safe-keepings of data and information about students), and personal purposes (to engage teachers" free time in a beneficial and fruitful manner).

Wallace (2001) developed a conceptual framework as to how teachers used internet in their teaching and how they used material resources. The results stated that teachers made use of internet by transforming it into a resource which fit into their own teaching methods.

Kumar, B.T. and Biradar, B.S.(2010). Emerging ICTs in India have changed traditional libraries into knowledge centers and librarians function more like consulting information engineers or knowledge managers. The purpose of this research work has been to examine the use of information communication technology (ICT) in 31 college libraries in Karnataka, India by investigating the ICT infrastructure, current status of library automation, barriers to implementation of library automation and also librarians' attitudes towards the use of ICT. Data-gathering tools used included questionnaire, observation and informal interview with selected college librarians. The researcher says that application of ICT in Indian college libraries has not reached a very high level. Main constraints for not having an automated library are the lack of budget, lack of manpower, lack of skilled staff and lack of training. Even though library professionals have shown a positive attitude towards the use of ICT applications and library automation, they need extensive and appropriate training to make use of ICT tools. This research work was a comprehensive study on the use of ICT in Indian college libraries.

Daihani, M. S. (2011). This research reports the situation of ICT education in IS programs in Kuwait, focusing on specific areas such as resource, curricula, and instructors. The researcher says that information and communications technology (ICT) skills have become extremely important as we witness an intensive use of automated systems and tools in learning and teaching activities. The purpose of this paper is to explore students' perceptions and views of the instructors, in relation to information and communications technology (ICT) education in library and information science (LIS) programs. The researcher has used the questionnaire survey among students from the two LIS departments in Kuwait. In the study it is noted that participants showed dissatisfaction with the currently available ICT courses in the LIS programs. Students pointed out deficiencies and inadequacies in ICT resources and facilities, and suggested upgrading software and hardware. They appeared to be satisfied with the ICT skills being targeted by LIS programs. They also appeared to be satisfied with the ICT instructors. The study pointed out a need for collaboration with professional forums for continuing education programs and the need for revisions in curricula to introduce more focused courses that meet the needs of the ever-changing market requirements and give the students access to professional bilingual materials. The faculty members noted the demands of the job market and proposed measures for

addressing them through enhanced course content and improved opportunities for hands-on instruction.

Research Methodology:

Research Gap:

A thorough review of existing literature on current status of usage of ICT in Higher education revealed that there exist a dearth of research on the issue of usage of ICT in higher education and its impact on quality and delivery of higher education particularly in Madhya Pradesh. An attempt has been made in this study to bridge this gap.

Scope of the study:

For the purpose of this study faculty members of Engineering and Management institutes of Madhya Pradesh have been taken in to consideration.

Objectives of the Study:

1. To study the compatibility level of faculty members while using ICT for academic management of management and engineering institutes of Madhya Pradesh.

Methodology:

For this research, survey method is chosen to give emphasize on large number of respondents.

Data collection and sample size:

Primary Data was collected by the administration by self made structured questionnaire. The questionnaire was distributed to faculty members of Engineering and Management institutes of Madhya Pradesh. The questionnaire was distributed to 400 faculty members of Engineering and Management institutes (200 for each) of Indore, Bhopal, Ujjain, Gwalior and Jabalpur cities of Madhya Pradesh. The total number of usable questionnaires was 355. 45 questionnaires were rejected due to insufficient responses/ ambiguous responses.

Questionnaire Development

In order to develop the questionnaire extensive review of literature was done. A panel of experts was formed to validate, trim and refine the initial items. The panel consisted of four faculty members two from each management and engineering background. These faculty members had 15 plus years of teaching and research experience in their relevant streams. Apart from dichotomous questions, the questionnaire included statements which the respondents had to rate on the basis of likert scale having responses ranging from 1 to 5.

5 = Very High	4 = High	3 = Moderate	2 = Low	1 = Very Low

The questionnaire has three parts namely Part A, B, C. Part A was dedicated to gathering of demographic information of the respondents, such as gender, age, job status, position, stream, specialization, institute category, greatest barrier of using ICT.

Part B consists of two section. Section 1 dealt with identifying the competence of faculty members with respect to various computer softwares / package. Section 2 focused on identifying the frequency of usage of various ICT enabled tools by faculty members.

Part C focuses on measuring the level of usage by faculty members on following aspects related to management of academic institutions:

1. Admission process
2. Teaching learning process
3. Conduction of examination and result declaration
4. Research
5. Management of learning resources
6. Training and placement activities
7. Management of other activities.

The rationale of choosing above mentioned parameters is that they are widely used by various grading agencies such as NAAC, NBA and NIRF to grade academic institutions on the basis of their performance.

Data analysis:

Descriptive statistical analysis is done in this study using mean, frequency, and percentage. The research findings are tabulated and illustrated with the help of bar diagrams, pie charts and other graphical representation tools. Hypothesis in accordance to the objectives of the study are framed and are tested using advanced statistical tools like the Regression model and t - Test. For accurate analysis of the data, advanced statistical analysis software like the SPSS is used

Hypothesis Formation:

H_{50}: There is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT for admission process in Engineering and Management institutes of Madhya Pradesh.

Group Statistics

	Levele_of_Usage_of_ICT	N	Mean	Std. Deviation	Std. Error Mean
F1	>= 59.00	191	17.3665	2.96324	.21441
	< 59.00	164	17.5244	3.07663	.24024

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
F1 Equal variances assumed	.180	.672	-.492	353	.003	-.15790	.32109	-.78939	.47359

Equal variances not assumed			-.490	340.662	.004	-.15790	.32201	-.79128	.47548

Inference:

Since the p value = 0.003

This clearly indicates that the H_{50} is rejected at 0.05 level of significance. This implies that there is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT for admission process in Engineering and Management institutes of Madhya Pradesh.

Further it can be stated that compatibility in IT skills is material when it comes to level of usage of ICT for admission process in Engineering and Management institutes of Madhya Pradesh.

H_{51}: There is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in teaching and learning in Engineering and Management institutes of Madhya Pradesh.

Group Statistics

	Levele_of_Usage_of_ICT	N	Mean	Std. Deviation	Std. Error Mean
F2	>= 59.00	191	24.8639	3.76162	.27218
	< 59.00	164	23.3841	2.78559	.21752

Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means					
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
								Lower	Upper

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
F2	Equal variances assumed	1.362	.244	4.154	353	.000	1.47973	.35626	.77907	2.18039
	Equal variances not assumed			4.247	345.786	.000	1.47973	.34842	.79444	2.16502

Inference:

Since the p value = 0.000

This clearly indicates that the H_{51} is rejected at 0.05 level of significance. This implies that there is significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT for teaching and learning in Engineering and Management institutes of Madhya Pradesh.

Further it can be stated that compatibility in IT skills is material when it comes to level of usage of ICT for teaching and learning in Engineering and Management institutes of Madhya Pradesh.

H_{52}: There is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in conduction of examination and result declaration in Engineering and Management institutes of Madhya Pradesh.

Group Statistics

	Levele_of_Usage_of_ICT	N	Mean	Std. Deviation	Std. Error Mean
F3	>= 59.00	191	27.3194	2.54178	.18392
	< 59.00	164	21.5549	3.04013	.23739

Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means

	F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
F3 Equal variances assumed	.942	.332	19.457	353	.000	5.76449	.29627	5.18182	6.34717
Equal variances not assumed			19.196	318.847	.000	5.76449	.30030	5.17367	6.35532

Inference:

Since the p value = 0.000

This clearly indicates that the H_{52} is rejected at 0.05 level of significance. This implies that there is significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT for conduction of examination and result declaration in Engineering and Management institutes of Madhya Pradesh.

Further it can be stated that compatibility in IT skills is material when it comes to level of usage of ICT for conduction of examination and result declaration in Engineering and Management institutes of Madhya Pradesh.

H_{53}: There is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in research in Engineering and Management institutes of Madhya Pradesh.

Group Statistics

	Levele_of_Usage_of_ICT	N	Mean	Std. Deviation	Std. Error Mean
F4	>= 59.00	191	11.3560	1.85783	.13443
	< 59.00	164	9.5671	1.90618	.14885

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
F4	Equal variances assumed	1.181	.278	8.937	353	.391	1.78895	.20017	1.39527	2.18263
	Equal variances not assumed			8.920	342.094	.385	1.78895	.20057	1.39445	2.18344

Inference:

Since the p value = 0.391

This clearly indicates that the H_{53} is not rejected at 0.05 level of significance. This implies that there is significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in research in Engineering and Management institutes of Madhya Pradesh.

Further it can be stated that compatibility in IT skills is immaterial when it comes to level of usage of ICT in research in Engineering and Management institutes of Madhya Pradesh.

H_{54}: There is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in management of learning resources in Engineering and Management institutes of Madhya Pradesh.

Group Statistics

	Levele_of_Usage_of_ICT	N	Mean	Std. Deviation	Std. Error Mean
F5	>= 59.00	191	9.8534	2.95750	.21400
	< 59.00	164	9.6159	2.17459	.16981

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
F5	Equal variances assumed	13.204	.000	.850	353	.396	.23755	.27947	-.31208	.78718
	Equal variances not assumed			.870	345.108	.385	.23755	.27318	-.29976	.77486

Inference:

Since the p value = 0.396

This clearly indicates that the H$_{54}$is not rejected at 0.05 level of significance. This implies that there is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in management of learning resources in Engineering and Management institutes of Madhya Pradesh.

Further it can be stated that compatibility in IT skills is immaterial when it comes to level of usage of ICT in management of learning resources in Engineering and Management institutes of Madhya Pradesh.

H$_{55}$: There is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in training and placement activities in Engineering and Management institutes of Madhya Pradesh.

Group Statistics

	Levele_of_Usage_of_ICT	N	Mean	Std. Deviation	Std. Error Mean
F6	>= 59.00	191	17.6911	3.15292	.22814
	< 59.00	164	18.0732	2.94022	.22959

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
F6	Equal variances assumed	1.977	.161	-1.174	353	.241	-.38207	.32539	-1.02202	.25788
	Equal variances not assumed			-1.180	350.580	.239	-.38207	.32367	-1.01864	.25450

Inference:

Since the p value = 0.241

This clearly indicates that the H_{55} is not rejected at 0.05 level of significance. This implies that there is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in training and placement activities in Engineering and Management institutes of Madhya Pradesh.

Further it can be stated that compatibility in IT skills is immaterial when it comes to level of usage of ICT in training and placement activities in Engineering and Management institutes of Madhya Pradesh.

H_{56}: There is no significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in management other activities in Engineering and Management institutes of Madhya Pradesh.

Group Statistics

	Levele_of_Usage_of_ICT	N	Mean	Std. Deviation	Std. Error Mean
F7	>= 59.00	191	21.1309	3.18196	.23024
	< 59.00	164	19.4329	2.42970	.18973

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
F7	Equal variances assumed	1.907	.168	5.578	353	.173	1.69796	.30439	1.09931	2.29662
	Equal variances not assumed			5.691	348.393	.182	1.69796	.29834	1.11119	2.28474

Inference:

Since the p value = 0.173

This clearly indicates that the H_{56} is not rejected at 0.05 level of significance. This implies that there is significant difference amongst faculty members with high compatibility and low compatibility IT skills towards their perception about level of usage of ICT in management other activities in Engineering and Management institutes of Madhya Pradesh.

Further it can be stated that compatibility in IT skills is immaterial when it comes to level of usage of ICT in management other activities in Engineering and Management institutes of Madhya Pradesh.

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