Role of ICT in Teachers' Motivation, Professional Skills and Performance at Public Sector Universities in Pakistan

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Abstract

The study aimed to analyze the role of information & communication technologies in teachers' motivation, professional skills and performance at public sector universities in Pakistan. The study was survey type and descriptive in nature. Probability sampling technique was adopted for data collection. Population of the study comprised of lecturers, assistant professors, associate professors and professor from 5 public sector universities. Sample of the study consisted of 20 professors, 40 associate professors, 80 assistant professors and 160 lecturers' total 300 faculty members randomly selected from 5 public sector universities of Pakistan. The questionnaire and observation sheet as research tools were used and finalized after expert's opinions and its pilot testing. The collected data was analyzed through SPSS. It was found that 59% of respondents expressed that latest information & communication technologies are available for university teachers in public sector universities, majority of respondents stated that digital technologies have significant role in developing teachers' motivation, professional skills and performance.

Keywords*:* Information & communication technologies, motivation, professional Skills and performance.

Introduction

The latest information and communication technologies have changed the entire world. These modern technologies make the world border less and shaped it in a global village. Now everything is just far away at a click of a button (Oliver, 2002). Information and communication technologies are basically a set of equipment, different type of applications and information handling tools. It also stores, process and exchange information through the computer. Radio, television, telephone, tapes and tape recorders are old ICT's, which are called analogue media. While computers, satellite, wireless, mobile devices, laptop and internet are new ICT's, which are called Digital media. The new digital technologies are the arrangements of various technological

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implements and collaterals, which can be used to conversant or interchange, produce, yield up and set of information. The computer auditioning and performing technologies, telephone conversation are the types of these technologies (Blurton, 1999).

Khirwadkar (2007), expressed that information and communication technologies are merging of current and previously established technologies. Section of gadgets surrounding the computer software involves the use of devices which relates to the world websites and engaged peoples in it as it is a part of their life. This connection use to translate or interchange of knowledge in text, image and form it into well-organized numerical composition (Shelly, Cashman, Gunter, & Gunter, 2004). Now mostly modern communities and societies are relaying on ICT for their business, education and communication.

When some things have importance in any social structure, then it motivate them to get knowledge about it for their better performance in its application. Motivation is an inner driver which prepares someone to perform an action and actions improve performance of any individual. Therefore; its implementation and awareness became vital for new generation's better performance.

Youssef and Dahmani (2008) stated that today's generation is called internet generation and we are living in a digital world. Information and communication technologies have an impact on every field of life, from workplace to social place and from education to entertainment. The digital age changes the way of living, a way of communication, thinking and learning. In a traditional classroom, students were entered with textbooks but now in a digital classroom student enter with tablets and laptops. He further said that information and communication technologies had a great impact on universities. Universities invested a lot on ICT's within the last two decades. Digital technologies also have a very positive impact on the student's performance.

According to Willis and Tranter (2006) many of the ICT implements depends upon the web related knowledge to enhance the readers learning and understanding. Social networks also available as source of other merging of learning. The social networks are used in ICT based practices (Tømte, Hovdhaugen, & Solum, 2009). Now a day it is reality that the digital developed or under developing (Kirkwood & Price, 2006). On the other hand Kozma (2005), thought that the ICT is now becoming heart of the new set of students and as well as for teachers. ICT implements and social network present their participation for both students and teachers society.

Mondal and Mete (2012) expressed that higher education system has a lot of positive changes and new things in the last five decades to meet the challenges of a new era. In this digital world higher education equipped their learners with the latest

technology to move in the globalized society. To make sure the people access to higher education now open and distance learning programs has been started. The people who lived in remote and depressed areas now also had an access to post schools. The online learning reduced the cost and travel for poor learners. In the last two decades, higher education has grown exponentially due to the use of information and communication technology.

Through ICT teaching, learning process becomes more effective and motivate to teachers and students for improving their performance. Technologies offer anywhere and anytime learning but now the time and place are determined by the learner. Digital technologies are a symbol of a new era in the field of education. It introduces new methods of teaching and new models for training. These latest learning methods motivate the learners to be self-directed, independent, and self-disciplined. These methods also moving content centered curricula to competency based curricula and teacher centerd forms of delivery to student centered forms (Talebian, Mohammadi, & Rezvanfar, 2014).

Talebian et al. (2014), further explained that digital technology considered as a milestone for motivation and performance in the field of education, especially in higher education. ICT helps a lot in developing course content, sharing information and content, learner to learner interaction and contact with teachers all over the world. Today ICT includes laptops, wireless connected internet, video camera, and mobile devices at low cost which is accessible to everyone. It is the technology in education that enables the students to participate in the rapidly changing world. ICT also promotes digital resources in education, so that students, teachers and other persons that are involved in education process can have access to course material, articles and scholarly material anywhere, anytime (Das, 2019).

ICT pledge with implements necessary to impart education in distance areas Guttman (2003). Another statement given out by Punie, Zinnbauer, and Cabrera (2006) is that the blending of ICT is widely spread when we search the layout of its fusion among new generation. ICT made three major milestones; availability towards teachers and learners, betterment in teaching and learning standards, and pledge with lifelong knowledge for students. ICT have great importance towards higher education and includes internet, social networks which plays an evolutionary role in distance learning and provides learning chances from time to time. In short, ICT have important impacts all over the world in relation to education. The lines between internet and actual word going to move rapidly the world population along a specific angle, especially for new generation whose lives highly influenced by social networks. This generation use social

network points as initial source of correspondence, social commitment and information pursuing a major part of their personality building (Fly & Milner, 2000).

Small and Vorgan (2009), discuss that the generation of young people who born into a world of computer and social media, they spend much of their time in this, may experience various brain formation, constant conversation and multitasking approach. This new generation have all the communication sources as they open their eyes in the world of digital technologies and they spend half of the time in this massive technology world (Pegler, Kollewyn, & CriChton, 2010).

Tinio (2003), stated that ICT enriched the penetration of knowledge provides chance of betterment in education system in developing countries, reform policy lines aside all of this it provides dimensions for business. Sense of detachment is experience by the people of poor countries which is the greatest misfortune for them. The coming technologies commit to minimize sense of detachment and makes possible approach to knowledge in unbelievable way. The advanced and progressing countries spend huge amount of money in higher education with the help of ICT investment towards education sector by using ICT, makes a chance for flourishing to upgrade their education system. According to Oliver (2002) advanced trends offers enhancement in education system because of plenty of chances through ICT. Technology can expand communication and aspect between learning and teaching.

The higher education institutions should learn in drawing on the advantages and potential of new information and communication technologies, ensuring qualities and maintaining high standards for education practices and outcome in spirit of openers, equity and co-operation (Gilakjani, 2017; Rubel & Jones, 2016). According to Kozma (2005), add about ICT that it can change social framework, action method and imputes educational sectors to proceed and innovate as well. The handling of ICT, which practice in higher educational institutions is exceptional, because of students demands and precedence, educational sector should modify higher education atmosphere (Kirkwood & Price, 2006).

Information and Communication Technology has greater influence on development of tertiary education. Service of ICT is not the cure for challenge experience by higher educational institutes. On the other hand, it collects and provides solution for conventional teaching in the universities. ICT is now improving teaching and schooling methods apprenticeship circumstances influenced tertiary education to ratify and merge ICTs which makes larger supply of information. Many research works concluded that ICT plays an important role in motivation and performance of both levels of teaching and learning at all the times (Balasubramanian et al., 2009; Shaikh & Khoja, 2011).

ICT in higher education moving ahead in terms of personal knowledge, processing machines for learner's mobile technology and good at producing an effect forms. Higher education must be ready to take urgent steps to make certain right apparatus as replacement to let such forms of ICT to be got mixed together within their teaching through training. Because training provide expertise which the first steps is towards believes of the personnel. When positive believes built; it provides motivation, professional skills and performance in human beings. Therefore, this study is focused on role of ICT in teacher's motivation, professional skills and performance at public sector universities in Pakistan.

Research Objectives

The study aimed to analyze the availability of resources and the role of ICT in teacher's motivation, professional skills and performance at public sector universities in Pakistan.

Variables

The study emphasized on following variables:

- Independent variable: Information & communication technologies
- Dependent variable: Teachers motivation, professional skills and performance

Methodology

The nature of study was descriptive which provides insight about role of information & communication technology, motivation and performance. The survey was considered suitable for the reliable results. The questionnaire was used for quantitative data and observation sheet for qualitative data collection. SPSS-20 was used for data analysis.

Population and sample

University teachers (lecturers, assistant professors, associate professors and professor) were Population of the study. A multistage sampling technique was implemented for data collection. In first stage, conveniently 5 public sector universities (Shah Abdul Latif University Khairpur Sindh, University of Balochistan, University of Peshawar, Islamia University of Bahawalpur, Khwaja Fareed University of Engineering & Information Technology) were included. In second stage, 20 professors, 40 associate professors, 80 assistant professors and 160 lecturers' total 300 faculty members were randomly selected.

Tool Development

For study purpose a belief and professional skills scale about motivation was developed for quantitative data and observation sheet was made for qualitative data about performance. Several studies on performance and motivational feature of persons about

information technology were deeply reviewed. After selection of the suitable scale it was necessary to make fit for the study. For the suitability and relatedness of the scales five construct variables were selected for questionnaire and two construct variables for observation sheet. The six experts of education, psychology, computer science and information technology were requested to study and assessment of scale. By their careful analysis, it was perceived that all statements were reasonable except few which were found inappropriate, repetitive or irrelevant to the local setting. After removal of different statements the scale was finalized. After pilot study, collected data was analyzed through SPSS. The reliability of questionnaire was found 0.77. The original belief and professional skill scale had two parts; first is about availability of resources and second on five point Likert scale. It was comprised of 48 items with five construct variables named; Knowledge of ICT, Skills of ICTs, Disposition of ICTs, Application of ICTs, problems and issues of ICTs. The observation sheets have two main construct variables named; operating hardware and software expertise consisting 23 items. Observation was made on five point (Not demonstrated, emerging, developing, proficient, and accomplished) with means of verification (computer lab, classroom, presentation, practicum field, out of class, SBT). After validating the research tool, researcher personally visited and collected data from sampled universities of Pakistan.

Data Analysis

A statistical package of social sciences (SPSS-20) was used to analyze the quantitative data. The responses were weighted according to the position in which they occur. Mean, frequency, percentage and standard deviation were applied for appropriate results. The observation sheet was analyzed by thematic analysis in excel sheet, first all observation were coded in excel and then frequency and percentage were calculated. Their results were demonstrated in graph format.

Results

The quantitative part (Questionnaire)

Table 1: *Availability of information & communication technologies at university level*

	Formula	[a]SDA	[b]DA	Responses [c]UD	[d]A	[e]SA	Mean	[f]S.D
IT lab is fully functional	F	27	17	13	151	92	3.88	1.173
	%	9.0	5.7	4.3	50.3	30.7		
Latest computers are available	F	36	66	21	75	102	3.47	1.448
	%	12.0	22.0	7.0	25.0	34.0		

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Internet is full time available	F	34	63	22	94	87	3.46	1.391
	%	11.3	21.0	7.3	31.3	29.0		
Internet speed is appropriate	F	54	69	22	78	77	3.18	1.487
	%	18.0	23.0	7.3	26.0	25.7		
IT Lab is equipped with latest technologies	F	49	55	42	96	58	3.20	1.378
	P	16.3	18.3	14.0	32.0	19.3		
Proper furniture is available	F	41	63	41	67	88	3.33	1.433
	%	13.7	21.0	13.7	22.3	29.3		
IT lab full fill teachers needs	F	57	42	26	57	118	3.46	1.569
	%	19.0	14.0	8.7	19.0	39.3		
Total	F	298	375	187	618	622	3.42	1.411
	%	14.1	17.8	8.9	29.4	29.6		

Note: ᵃStrongly disagree; ᵇDisagree; ᶜUndecided; ᵈAgree; ᵉStrongly agree; ᶠStandard deviation

The data in above table shows opinions of respondents about availability of digital technologies in public sector universities. According to data 81.0% (50.3%+30.7%) of the respondents agreed that IT lab is fully functional, 59.0% (25.0%+34.0%) of the respondents agreed that latest computers are available, 60.3% (31.3%+29.0%) of the respondents agreed that internet is full time available, 51.7% (26.0%+25.7%) of the respondents agreed that internet speed is appropriate, 77.4% (32.0%+19.3%) of the respondents agreed that IT lab is equipped with latest technologies, 51.6% (22.3%+29.3%) of the respondents agreed that furniture is available IT lab, 58.3% (19.0%+39.3%) of the respondents agreed that IT lab fulfills teachers. As a whole, 59% (29.6%+29.4%) showed availability of digital technologies on university teacher's performance. Collectively, modern information & communication technologies are available in most of the public sector universities of Pakistan. The mean score 3.42 and standard deviation was 1.411 supported the results.

Table 2*: Beliefs of teachers about information & communication technologies as a motivational tool*

Themes	Formula			Responses			Mean	[f]S.D
		[a]SDA	[b]DA	[c]UD	[d]A	[e]SA		
Multimedia enhance teachers' Knowledge of ICT	F	18	12	19	103	148	4.17	1.110
	%	6.0	4.0	6.3	34.4	49.3		
Educational technologies improve teachers' Skills of ICTs	F	20	15	36	113	116	3.97	1.145
	%	6.7	5.0	12.0	37.7	38.7		
Educational technologies increase teachers' Dispostion of ICTs	F	12	13	65	115	95	3.89	1.029
	%	4.0	4.3	21.7	38.3	31.7		
Educational technologies provide online application of ICTs forums for teachers	F	16	33	43	81	127	3.90	1.217
	%	5.3	11.0	14.3	27.0	42.3		
Educational technologies create motivation to reduces problems and issues of ICTs	F	16	20	23	104	137	4.09	1.130
	%	5.3	6.7	7.7	34.7	45.7		
Total	F	82	93	186	516	623	4.00	1.126
	%	5.4	6.2	12.4	34.4	41.5		

Note: [a]Strongly disagree; [b]Disagree; [c]Undecided; [d]Agree; [e]Strongly agree; [f]Standard deviation

Table 2 highlighted the Believes of teachers about information & communication technologies as a motivational tool. According to data 83.7% (34.4%+49.3%) of the respondents agreed that multimedia enhances teachers' Knowledge of ICT, 76.4% (37.7%+38.7%) of the respondents agreed that digital technologies improve teachers' Skills of ICTs, 70.0% (38.3%+31.7%) of the respondents agreed that digital technologies increase teachers' disposition of ICTs, 69.3% (27.0%+42.3%) of the respondents agreed that Educational technologies provide online application of ICTs forums for teachers, 77.4% (34.7%+42.7%) of the respondents agreed that Educational technologies create motivation to reduces problems and issues of ICTs. As a whole, 75.9% (34.4%+41.5%) showed Believes of teachers about information & communication technologies as a motivational resource. Overall mean score 4.00 showed inclination towards agree with the research domain. The value of standard deviation was 1.239.

Table 3: *University teacher's professional skills in information & communication technologies*

Items	Formula	[a]SDA	[b]DA	Responses [c]UD	[d]A	[e]SA	Mean	[f]S.D
I develop technical skills among students through digital technologies	F	25	32	19	89	135	3.92	1.300
	%	8.3	10.7	6.3	29.7	45.0		
I perform well through digital technologies	F	15	30	33	111	111	3.91	1.152
	%	5.0	10.0	11.0	37.0	37.0		
I develop professional skills through digital technologies	F	26	33	22	92	127	3.87	1.306
	%	8.7	11.0	7.3	30.7	42.3		
I deliver lecture through educational technologies effectively	F	16	47	34	83	120	3.81	1.261
	%	5.3	15.7	11.3	27.7	40.0		
I prefer the use of multimedia/ projector	F	18	32	28	119	103	3.86	1.178
	%	6.0	10.7	9.3	39.7	34.3		
Total	F	100	174	136	494	596	3.87	1.239
	%	6.6	11.6	9.0	32.9	39.7		

Note: [a]Strongly disagree; [b]Disagree; [c]Undecided; [d]Agree; [e]Strongly agree; [f]Standard deviation

Table 3 highlighted University teacher's professional skills in information & communication technologies. According to data 74.7% (29.7%+45.0%) of the respondents agreed that digital technologies enhance technical skills among university teachers, 74.0% (37.0%+37.0%) of the respondents agreed that university teachers perform well through digital technologies, 73.0% (30.7%+42.3%) of the respondents agreed that university teachers develop professional skills among students through digital technologies, 67.7% (27.7%+40.0%) of the respondents agreed that university teachers teach effectively through digital technologies, 74.0% (39.7%+34.3%) teachers prefer the use of multimedia/ projector in classroom. As a whole, 72.6% (32.9%+39.7%) showed the significant impact of digital technologies on teacher's performance. Collectively, majority of the respondents expressed that through latest information & communication technologies they enhanced their professional skills. Overall, mean score 3.87 showed inclination towards agree with the research domain. The value of standard deviation was 1.239.

Data analysis qualitative-part (Observation checklist for Performance)
Figure 1: *University teacher's performance about operating hardware's*
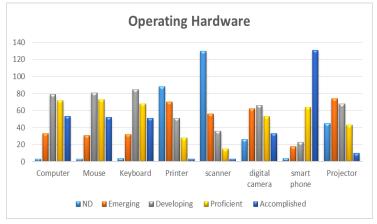

Figure 1 presented university teachers performance about operating hardware and its impact on their efficiency. The results highlighted that majority of teachers were found at developing level about operating computers at university level. Majority of university teachers were found at developing level about mouse operating expertise at university level. Majority of university teachers were found at developing level about keyboard operating expertise. Majority of university teachers were found at not-demonstrating level about printer operating expertise at university level. Majority of university teachers were found at not-demonstrating level about scanner operating expertise. Majority of university teachers were found at accomplished level about smart

phone operating expertise. Majority of university teachers were found at emerging level about project operating expertise at university level.
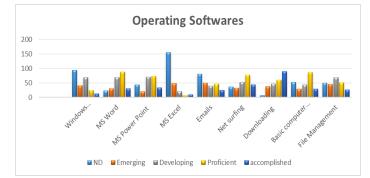
Figure 2: *University Teacher's Performance about Operating Software*

Figure 2 highlights university teacher's performance about operating software and its impact on their efficiency. The results displayed that majority of the teachers were found at not-demonstrating level toward window installation expertise at university level. Majority of faculty members were found at proficient level showed that they had expertise in operating MS word. Majority of the university teachers were found at proficient level showed that they had expertise in PowerPoint. Majority of the university teachers were found that they had expertise in MS Excel. Majority of the university teachers were found at proficient level showed that they had expertise in net surfing. Majority of university teachers were found at accomplished level showed that they had expertise in downloading. Majority of the university teachers were found at proficient level showed that they had expertise in operating basic computer. Majority of university teachers were found at developing stage exposed that they had expertise in managing files.

Discussion

According to results of the quantitative data, the first important aspect of present research was to analyze the availability of digital technologies at university level. Talebian et al., (2014), expressed that digital technology considered as a milestone in the field of education, especially in higher education. In present study, it is clear to discuss over here that a number of universities have fully functional IT labs. The results of current research indicate that latest computers are available in most of the universities, internet facility is full time available in most of the universities, internet speed is appropriate in more than half of the universities, IT lab is well equipped with latest technologies in the large number of universities, special furniture is available in IT labs of the universities, IT labs fulfill teachers professional and research needs in

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most the universities. In overall, results showed significant impact of digital technologies on university teacher's performance. Mean score showed inclination towards agree with the research domain.

The second important factor was to examine the Believes of teachers about information & communication technologies as a motivational tool. As described by Mondal & Mete, (2012) the universities made a lot of positive changes and new things in the last five decades to meet the challenges of a new era as a motivational tool because of the current demands of the society. In this digital world higher education equipped their learners with the latest technology to move in the globalized society. In present study, it is clear to discuss over here that a number of university teachers improve their efficiency, pedagogical skills, performance and motivation through multimedia, most of the respondents agreed that latest educational technologies provide online forums for teachers. In overall, majority showed significant impact of modern digital technologies on university teacher's motivation. Mean score presented inclination towards agree with the research domain.

The third important aspect of this research was to analyze the teacher's professional skills in digital technologies, teaching and research. As clarified by Guttman (2003) the university teachers need to learn qualities, outcomes, opener's spirit, co-operation and equity through ICT. In present study, it is clear to discuss over here that a large number of universities teachers have technical skills of digital technologies, a large number of university teachers are of the view that they perform well through digital technologies, most of the university teachers develop professional skills among students through latest digital technologies, most of university teachers teach effectively through latest information & communication technologies especially they prefer multimedia/ projector in the classroom.

In qualitative data analysis results, presented university teachers performance about operating hardware and its impact on their efficiency. Majority of the teachers were at developing level about operating computers at university level. Majority of university teachers were at developing level about mouse operating expertise, keyboard operating expertise. Majority of university teachers at not-demonstrating level about printer operating expertise and demonstrating level about scanner operating expertise. Majority of university teachers have accomplished level about smart phone operating expertise and at emerging level about project operating expertise at university level.

Second construct variable highlights university teacher's performance about operating software and its impact on their efficiency. The majority of the teachers are at not-demonstrating level toward window installation expertise and at proficient level in operating MS word, that they had expertise in PowerPoint and expertise in MS Excel.

Majority of the university teachers were at proficient level in net surfing, downloading, expertise in operating basic computer and expertise in managing files.

In overall, results indicated the significant impact of latest information & communication technologies on university teacher's motivation, professional skills and performance in teaching and research.

Conclusion

In the light of results and discussion, it is concluded that IT labs are functional, latest computers are available, internet facility is full time available, internet speed is appropriate, IT lab is well equipped with latest technologies in most of the universities, special furniture is available in IT labs of the universities, IT labs fulfill teachers professional needs. In overall, it is concluded that in most the universities latest information & communication technologies are available. The mean score and standard deviation showed inclination towards agree with the research domain. It is further concluded that multimedia improves university teachers' motivation, efficiency, increase teachers pedagogical skills, increase teachers performance, provide online forums for teachers and create enthusiasm among teachers. In overall, university teachers perform effectively through information & communication technologies. It is concluded that university teachers improve their professional and technical skills through digital technologies. The university teachers perform more efficiently through digital technologies and develop professional skills among students through latest information & communication technologies. The university teachers teach effectively through digital technologies and prefer the use of multimedia/projector in classroom. In overall, results indicated the significant role in information & communication technologies on university teacher's motivation, professional skills & performance in teaching.

Recommendations

The major recommendations of study are as follows;

1. The seminars, workshops and conferences should be arranged for faculty members to enhance research culture in higher education systems.
2. Through training may construct believes of university teachers which is first step of motivation towards information & communication technology
3. The online lectures facility should be provided in shape of learning management system or social media platform like zoom, meet, etc.

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