Qualitative study on ICT Adoption and Management practices in Public Sector Universities in Sindh Province, Pakistan

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Abstract: This ICT tools and technologies have become essential elements for the successful functioning of organizations. Consequent to that push, Pakistan government has provided ICT infrastructure including labs, Internet services, computers for both staff and students, access to the digital library, and video conference rooms especially from the year 2002 in educational institutes. Yet, Pakistan has not improved it ranking among world standards for ICT readiness as well as higher education management. Therefore, we assessed and measured ICT usage with the goal to know the adoption of ICT in terms of implementation, acceptance, and management in universities. Specifically, we focused on universities in Sindh province of Pakistan. In this research, we used the qualitative approach and conducted face to face interviews. Our target population included experienced administrative staff at important administrative posts and teaching staff who were familiar with ICT infrastructure in higher education institutions. Through this research, it was also revealed that, there ICT infrastructure is available in higher education institutions, yet, it lacks proper upgradation and that the human resource needs trainings. Furthermore, the analysis of data resulted in seven main themes that include adoption of ICT, utilization of ICT, ICT Policy of universities, higher authorities, attitude towards ICT, motivating factors, and challenges towards ICT success. It depicts the complete picture of ICT adoption and management practices in public sector universities in Sindh, Pakistan.

Keywords: ICT; Management; Universities; Pakistan

I. INTRODUCTION

The modern era of technology has completely reshaped the customary ways of management in almost all organizations and disciplines including education system. Information and Communication Technology has been blended with other functions of every sector and it has been shown to be helpful in smart management of workload and delivery of tasks. Nowadays, ICT tools and technologies have become essential for the success and smooth operations of organizations such as corporations, government organizations etc. Clearly Information and Communication Technology (ICT) is an apparatus that upgrades regulatory exercises of advanced education organization [1] Hence, ICT practices ought to maintain quality and standards in higher education [2]. UNESCO also considers that ICTs can contribute to universal access to education, equity in education, the delivery of quality learning and teaching, teachers' professional development as well as improve education management, governance and administration. The ICT has brought about the modern management and practices, thus reshaping the conventional education system [3]. Moreover, for effective management of knowledge, resources, and dissemination of information inside institutions, modern ICT tools and technologies have become a necessity. Thus, for effectiveness and efficient knowledge management, ICT role is considered very important to bring quality benefits in university [4]. Salleh and Laxman describe that ICT being important to education has also brought many challenges in management of resources and people [5]. While, the ICT tools and practices have been merged with education system in technologically advanced countries, developing nations who lag behind are also struggling to follow them in terms of ICT usage in their education system. Pakistan, a developing country, realised the importance of ICT in education and launched various education reforms policies and projects since its ICT vision 2000. Pakistan government, through the Higher Education Commission, provided ICT labs, Internet service, computers for staff and students, digital library access, and video conference rooms especially from the year 2002 in educational institutes [6]. Pakistan is ranked at 110th position in the list of 143 countries in networked readiness index according to the global information technology report 2016 by world economic forum [7]. However, Pakistan is ranked at 120th position in higher education and training in the list of 137 countries [7]. These two reports highlight that despite the enormous efforts to upgrade and manage educational

institutions and equip them with modern ICT apparatus, Pakistan has not improved the position among world standards for ICT readiness as well as higher education management. Amongst the 21st century challenges in every field of life when the world has become a global village, today management of institutions needs efficient ICT systems as well as well-trained human resource to operate those systems. Thus, the world is actively assessing and measuring the ICT usage for the betterment of higher education [8][9][9][9][8]. It was found in the past research that academicians can play a vital role in ICT acceptance and utilization[10] This research work, also assess and measure ICT usage with the goal to know the adoption of ICT in terms of implementation, acceptance, and management in universities in Sindh, Province in Pakistan.

II. RESEARCH OBJECTIVES

Following are the main research objectives of this research.
- To assess the ICT implementation level at Universities.
- To assess the ICT acceptance by university admin and academic staff.
- To know the general usage of ICT in Universities for workload and knowledge Management.
- To evaluate the management of ICT resources.

III. FRAMEWORK FOR RESEARCH

To achieve the above objectives a framework given in Fig.1, was designed to collect data from target universities.

Figure 1: Framework to assess ICT adoption and management

IV. MATERIAL AND METHODS

A qualitative research approach was used to understand in depth information about the ICT status in universities in Pakistan. Hence, the data collection method called face to face interview was adopted. Where non probability sampling technique called expert sampling was adopted, which leads to potentially useful information even from less number of sample size [11]. Thus, the respondents for this study were more informative, authentic and reliable based on their

expertise in the field of ICT with relevant experience of Management in their corresponding universities. Furthermore, all due ethical and field rules were followed by getting permission from higher authorities than suitable experts were selected based on their academic and administrative experiences and asked for interview and after their due appointment at their convenient places interviews were conducted successfully.
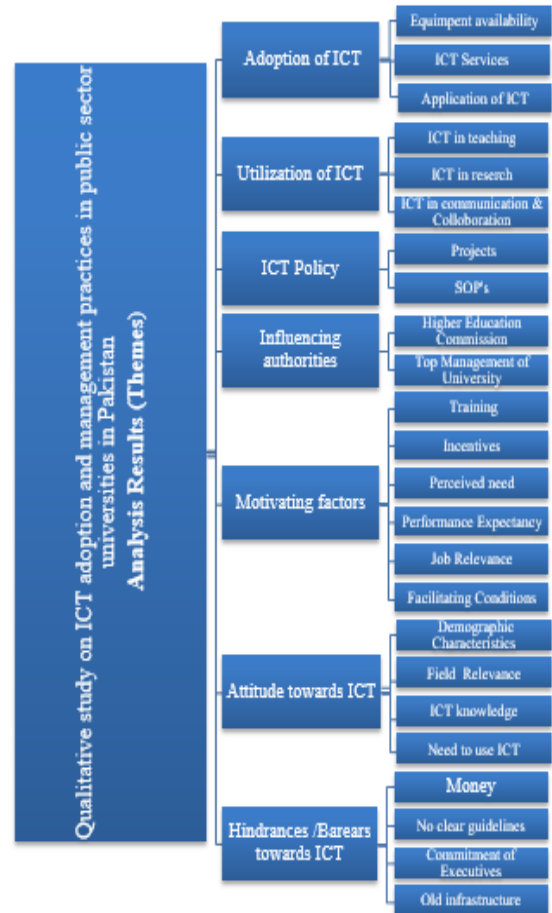

Figure 2: Themes and Subthemes

V. DATA ANALYSIS AND RESULTS

The data analysis was carried by thematic analysis approach, where repetitive terms are underlined in order to know the relevant terminologies and important subthemes of interviewees discussion [12]. Finally, based on similarity of terms and repetitions, subthemes were identified, and then corresponding subthemes were given common theme tittles. The analysis results generated seven themes based on various subthemes. Figure. 2, depicts the results containing Themes and Subthemes.

VI. DISCUSSION

The results given in Figure 2 demonstrate that there are seven themes, on which interviewees has focused. The first theme given about adoption of ICT describes the status of ICT in universities, which was measured by the three parameters hence, given as subthemes. The adoption in terms of equipment availability was described by interviewee 1, by saying that: "ICT equipment including computer labs, multimedia projectors and somehow personal laptops are provided to faculty members, but still not fulfilling the overall need of students and teachers and administrative staff". In addition, ICT services was stated by interview 2 that "ICT infrastructure has become old and it needs upgradation and maintenance, while we have facility of internet services and official email access. Interviewee 3 said that, "video conference and digital library access services are available to them. Furthermore, the applications of ICT were described by interview 1 that, "they are being provided with some application software's like SPSS, Microsoft office while they still don't have campus management system". In addition, the theme two utilization of ICT illustrates the use of ICT in terms of teaching, research, collaboration and data management. The interview 1 said that, ICT use is necessary to make staff efficient and effective while interview two said ICT bring quality in education. While according to interviewee 3 that, the use of ICT in teaching is random mostly depends upon the field of study while technical department use it more as compared to others, and interview two said that, use of ICT in research was mainly dependent with digital library access databases while experimental machines are also there in limited capacity. In addition, ICT use is common for social networking and somehow for knowledge sharing while video conference facility provides with indigenous training and workshops. Moreover, interview 3 said there is no integrated system to manage database while independent information systems are there in different branches like examination and accounting while teachers share their results manually. Meanwhile, Theme three about ICT Policy, it was found that there was no separate division or directorate to manage ICT related matters, hence, all the interviewees believed that, there should be separate ICT directorate with proper ICT specialist staff to look after Internet, ICT labs, Database systems and arrange training matters for staff from time to time and evaluate the needs of modern technologies with passage of time. Moreover, the theme four about higher authorities comprises subthemes the higher education commission (HEC) and Top Management of Universities. The results revealed that HEC has provided various projects for universities like Pakistan Education Research Network (PERN), Video conferencing rooms and continuously being providing various online workshops and training programs at specific capacity but still they need to maintain and follow them properly while it was discussed that top management of universities needs to introduce, lead and rely upon modern technologies and online systems but it was said by interviewee that university top admin still reluctant and follow traditional methods of file processing instead of digital file processing system nor they establish proper ICT mechanism in all administration and academic branches. Furthermore, the theme five outlined motivating factors, which were strongly recommended by experts in their interviews. The training was recommended as most effective system to motivate people towards ICT usage while incentives in return to use ICT were also suggested by interviewees, while it was said that management should influence on university staff and make them realizes with trainings and other motivating facilitating conditions, that they realize ICT as the need nor option in their duty and encourage them with performance appraisals, moreover, job relevance factor was recommended as most effective to divert staff on usage of ICT. Another, theme derived from the interviewee results explains attitude towards ICT, that is indirect result of demographic characteristics, field relevance, ICT knowledge and need to use ICT. The result shows, that senior level personnel are reluctant to use ICT while field of employee has role in accepting ICT, while others do hesitate in accepting ICT, they too realize to use ICT in their academic and administrative work, but their knowledge about ICT still needs trainings. Finally, the theme seven issues or challenges towards ICT is given in figure 2 along with subthemes explains that money or budget is more required than current releases to universities while guidelines are still not clear by top management of universities to properly develop technologically sound human resource division and automated systems inside universities, whereas old infrastructure also creates issues for ICT environment in universities.

VII. CONCLUSION

This research was focused on ICT adoption and management practices being carried out at various public-sector universities in Sindh, province Pakistan. The overall results achieved the objective of this research and assess the ICT implementation at various levels. The results achieved the first objective that revealed that there is basic ICT infrastructure available but need upgradation and maintenance while objective two revealed that ICT is being accepted by recent hiring staff while old people are bit reluctant and it was recommended that they need trainings and incentives to motivate them towards the use of ICT. Moreover, objective three was also achieved that is supported by theme utilization, that gives information that ICT is being randomly used for data management and academic purpose while still no comprehensive system exists, that shows deficiency of administration. In last objective four about ICT resource management was achieved that describes that there is big gap between standard ICT adoption and management practices in the target universities and worldwide standards, though ICT is implemented and being used at various levels, hence it needs to use integrated campus management system and fully

automated management practices while sophisticated class rooms condition are lacking behind, there is need of ICT and skill development directorate, that could become responsible for ICT diffusion at higher educational Institutions. In Summary ICT is adopted and related resources are provided at academia but needs further facilitation, training and proper management of resources for successful ICT use in higher educational institution especially in public sector universities in Sindh, Province, Pakistan.

VIII.   FUTURE WORK

This study was carried out in three general universities in Sindh, Province Pakistan. However, Higher educational institutes in Pakistan are divided in four criteria's like Engineering, Medical, Business and General. This has only focused on general universities; therefore, it has limitation. So, for generalization another comparative study may be carried out comprising sample from all types of universities,

IX.   REFERENCES:

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