

# An ICT Integration in Higher Education Institutes of Pakistan: A Critical Literature Review

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## Summary

This is the era of Information and Communication Technology (ICT), because ICT have a lucid impact on every sector of life. Interestingly, ICT practices has become the backbone in providing the quality of education. Therefore, ICT is used as a key to success and has become indispensable part of the education sector from primary education to Higher Education. ICT helps students as well as teachers to augment their knowledge, skills, as well as learning. Education being the main pillar of society needs modern approaches to enhance the scope impact of education. Hence, ICT is best tool for this. Even ICT has become inevitable tool in every sector. Thus, developed world and developing nations are also adopting ICT. This paper has reviewed ICT related literature including different plans and projects by government of Pakistan and its autonomous bodies. Meanwhile, to compare the real situation, it also considered the papers published in world recognized journals as well reports and surveys by United Nation's subsidiary bodies like UNESCO and World Bank. The reading of relevant literature resulted in four factors to be highlighted in this review paper. The factors to be highlighted consist of ICT importance, infrastructure, challenges to its successful use and suggestions to improve the usage. All these factors are drawn from previous literature and discussed comprehensively in comparison with findings. Finally, the current findings and expected targets for ICT in education are discussed with specific recommendation based on literature evaluation.

## Key words:

*ICT Integration, Higher Education, Literature Review, Pakistan*

## 1. Introduction

The literature review includes the relevant work from the year 2007 up to 2018. The included literature is specifically focused to ICT integration in higher educational institutions in Pakistan. The detailed review is categorized in form of research framework divided in four aspects discussed in past research. It consists of importance of ICT, infrastructure of ICT, challenges to ICT, and suggestions about ICT provided in previous literature. Mostly the research about benefits of ICT in education is categorized in importance of ICT category, while the literature demonstrating current level of adoption is categorized in infrastructure of ICT category. The research on critical thoughts appears in challenges of

ICT category. While the literature demonstrating current level of adoption is categorized in infrastructure of ICT category, the research that focus on critical thoughts has been portrayed in challenges to ICT and, the research that highlights suggestion to overcome the challenges to ICT is kept in suggestion category.

### (i). Importance of ICT

In, evaluating the usage and impact of ICT in context of students, it was found that ICT is very essential and increases the efficiency of students [10]. Likewise another study highlighted that, in order to compete with international graduates, there is dire need to train and develop human resource with ICT skills in Pakistani educational institution [11]. The paper about importance and use of ICT by academics states that, it is difficult for an institution to compete without the utilization of ICT in the institution [12]. Shahzad and Khan ,in a research on role of interactive media in teaching learning process at higher education pointed that interactive media improves education up to international standards [13]. Bakhsh et.al. assert that the ICT is considered a standard, by which the worth of institutions is measured [14]. Abbasi et.al. find that, the organizations seems to be compelled to invest a significant amount of capital into information technology services [15].

### (ii). Infrastructure of ICT

Though the vast literature is available that determines the importance of ICT in higher educational institution in Pakistan, the studies with actual statistics are scarce. Yet, the study with statistics revealed basic infrastructure comprising Internet, computer labs, digital library access, video conference systems, provided in higher educational Institutes declaring either unsatisfactory implementation level or usage of ICT [16]. Similarly Shaikh, point out that despite the elementary availability of ICT equipment, digital library access and various ICT based information system, many stakeholders including students, academics, administration lack the use of ICT [17]. In a study about the role of ICT in shaping the future of Pakistani higher

education system measured the challenges for ICT integration in higher education institutes, found that the ICT usage is 50%, while low infrastructure, non-uniform policy, improper budget lack of training and facilities are main challenges towards success of ICT usage [17].

### (iii). Challenges to ICT

A study [18] depicts that the low infrastructure and lack of training, remain the main challenge. The teachers in academic institutes are not properly motivated towards ICT tools [19]. Afaq et al. claim that even all the stakeholders of universities including administration, faculty and students have limited knowledge about use of ICT [20]. Swar and Khan claim that, the inequitable access to ICT resources is major issue [21]. The recent figure shows that overall only 15% of government projects succeeded while most IT projects failed, due to failure of technology management, politics and finance [22]. The study about the entrepreneurial mindset for state of higher education institutions claims that higher educational institutes in Pakistan cannot have not attained the required level of performance during preceding five decades [23]. While Abbas et al. proclaims that the promises have been made for educational reforms, yet not a single national educational policy has been fulfilled [24].

### (iv). Suggestions to improve ICT

Number of researchers have given suggestions in their work to improve the ICT status in higher educational institutes of Pakistan. Most researchers emphasized on providing the latest ICT equipment and to keep up to date with the technology advancements [25] and skilled teachers bring quality in education [22], and increasing budget for institution to update ICT infrastructure [26], [27]. It is also suggested to focus on academic's trainings with respect to ICT acceptance and usage, as academics are the driving force towards success of ICT in education [12], [28]. In addition academics provide training to administrative staff [29]. Thus, universities should provide ICT based skilled trainings to all employees [25], [30] and embrace whatever is new and advancement in technology [31].

## 2. Findings

Let the above relevant literature revealed that ICT is well known in higher education in Pakistan. While, following aspects need comprehensive focus and definite policy.

- a) Increase of budget for ICT upgradation and facilities.
- b) Uniform and simultaneous policy for ICT implementation.
- c) ICT training and maintenance department

- d) Key point indicators for ICT implementation and usage level.
- e) Inter-university online collaboration and research programmes.
- f) Campus Management Information System.
- g) Inter-university Online Public Access Catalogue.

## 3. Discussion and Conclusion

Based on literature review it is well justified to say that the ICT integration is inevitable in higher education. While integration of ICT does not guaranty quality. Hence, quality to education comes through proper utilization of ICT resources as well as updated infrastructure and environment. The research work has highlighted finding focused on the successful integration of ICT to bring quality in higher education of Pakistan, specifically the important aspects that need to improve for successful ICT integration. Higher education budget in Pakistan is overall much less [24]. Even ICT project are included in regular budget, despite high expenses of modern technologies and their maintenance [31]. Mostly the ICT projects are planned in distinct phases where the continuity of implementation is lost with change of administration. Frequent changes in administration of organization bring more problems than solutions, Thus, almost different projects are not completed or if completed then face the lack of maintenance and upgrade [32]. It is recorded that most of the initiatives taken for ICT integration in higher educational institutions face this challenge of different of policies between incumbent and upcoming management [22]. Therefore, ICT latest technology supply should be applied simultaneously across the board in different regions and same administration should be given specific time to implement it. There should be ICT relevant training and maintenance department in each higher educational institute like developed world universities. That division could be linked with central ICT resource department under higher education commission of Pakistan or its regional branches. The Central ICT resource centre for higher educational institutes should set criteria or key parameters for ICT standard integration and usage at all institutes across the board. It should make accreditation annually. There should be digitization of classrooms, campus based wi-fi availability and free licence software's and training to employees to use new systems. In addition to this, there is need of online platform which could bring academicians of all over the university at one platform and provide them facility to share and respond. Hence, it was revealed through literature review that there is no common platform even researchers individually send their surveys or queries to official emails of academics or go to query at different international independent research platforms. Thus, it

creates gap among Pakistani researchers. Hence, it can affect overall Pakistani researchers' performance. Even there is no online public access catalogue (OPAC) in many higher educational institutes of Pakistan. This keeps books, manuscripts and historical research articles aside from the researchers working in other universities or colleges. Therefore, it is required to update all educational institutes' libraries with OPA facility and integrate it web based system with all institutes to facilitate all institutes to borrow resources from each other. Finally, the Campus management information system (CMIS) should be provided to every institute, still more than half of HEIs are relying upon manual record keeping and correspondence or even independent applications of information systems for different applications. This makes institutes environment much complex and affect working environment and accountability. Therefore, all institutes should be integrated with CMIS. this will bring the evaluation easily and will boost the performance of employees across the board.

#### 4. Recommendations

Based on discussion it can be recommended that;

- a) There should be separate budget allocation for ICT infrastructure and latest technology.
- b) There should be uniform policy for ICT integration in all institutes of Pakistan.
- c) An independent central body should be formed to measure the ICT integration and usage similar to that of universities in developed countries.
- d) Separate ICT division in each higher education institutes should be responsible for maintenance of infrastructure and training of employees.
- e) Web based OPAC system should be implemented in all libraries of HEIs
- f) Interuniversity online research and collaboration platform should be provided to all academics in all over universities of Pakistan.
- g) Integrated Management Information System should be implemented to manage university matters and records.

#### 5. Achievements and Future Work

This research has attempted in summarizing the past and present development on ICT integration in higher education institutes of Pakistan. The categorization of past research in form of importance, infrastructure, challenges and suggestion demonstrates real picture of ICT in higher education institutes of Pakistan. It can be summarized that this research sets the milestone for future ICT policy by education ministry and higher education commission. The future work could be to identify world top university ICT

infrastructure to be adopted in all Pakistan's Higher education institutes.

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