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THE INFLUENCE OF INFORMATION TECHNOLOGY ON HIGHER EDUCATION IN PAKISTAN

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ABSTRACT
This study aims to analyze the impact of information technology (IT) on higher education in Pakistan. IT has emerged as a valuable tool, improving access and providing opportunities for individuals to pursue education and careers. The specific objectives are to explore the role of IT in Pakistan's education sector, propose effective integration measures, examine how individuals utilize IT for educational enhancement, and investigate strategies for generating innovative research ideas. The discussion will focus on the structure, accessibility, quality, and future prospects of IT in Pakistan. Emphasizing the importance of quality education, the study highlights the need to produce knowledgeable, skilled, motivated, and ethically responsible individuals to achieve national development goals. The Higher Education Commission (HEC) has been instrumental in advancing the higher education system by transforming institutions into centers for advanced education, research, and development through IT integration. However, the study acknowledges challenges that need addressing, including infrastructure improvements, qualified teachers, and a stronger emphasis on quality. Overall, the findings suggest that IT has significant potential to enhance higher education in Pakistan, but concerted efforts are required to overcome existing challenges.

Keywords: Higher Education Commission, Information Technology, Pakistan

INTRODUCTION

Information Technology (IT) encompasses computer and software usage for information management and processing. Young people gain knowledge from their surroundings, promoting critical thinking, creativity, and receptiveness to new ideas. Initially, computers were inaccessible due to our underdeveloped stage. But as they became more affordable, their importance grew. In urban areas, IT is now a compulsory subject in primary schools. Since the 1990s, IT has played a crucial role in education, expanding access to qualifications and new careers through online learning. Technological advancements have replaced outdated systems. Effective communication and meeting the audience's needs are vital in engaging with them. The information society presents challenges to education, requiring active responses to global cooperation and teamwork. Competence and understanding in professional and organizational contexts heavily rely on IT. Information technology has revolutionized the way companies operate, allowing for decentralized operations and boosting society as a whole. In education, cloud computing initiatives have been implemented, benefiting schools, businesses, and government institutions. Universities are leveraging cloud computing to enhance competitiveness and influence. Tools such as attendance systems and library management software are improving education management. Computers have become integral to learning, with online education gaining popularity. Project-based, differentiated, and remote learning have thrived due to computer and internet access. Teachers guide students to use online resources for independent research, while computers provide easy access to research materials. Differentiated learning allows students to progress at their own pace using specialized computer appliances, supported by teachers. Students and teachers both play important roles in promoting information technology in education, creating a dynamic and efficient learning environment. The integration of AI-based tools in education can provide significant value for professionals and potential benefits for students. However, it's important to avoid over-reliance on these tools, as they may replace genuine effort and hinder the development of essential skills. Information technology has revolutionized secondary education in developed countries, impacting high schools, vocational schools, and universities. Online education has transcended borders, enabling students to access

courses globally. IT has also allowed for customized school calendars and virtualization of certain educational elements. For instance, the boards of Punjab province have implemented an online admission form submission system as a notable IT initiative.
This study investigates the impact of information technology on education in Pakistan, focusing on Lahore. It aims to assess the acceptance and utilization of IT among residents and propose strategies to encourage its integration. The research will contribute valuable insights into how individuals in Pakistan use technology to enhance their education, addressing a research gap in the field.
The objectives of the study includes: (a) To assess the influence of information technology on Pakistan's education sector; (b)To gather data on the socio-economic characteristics of the survey participants; (c) To determine the extent of acceptance of information technology among the residents of Lahore, Pakistan; (d) To propose effective strategies to encourage the integration of information technology in the education sector; (e) To emphasize the various ways in which individuals utilize information technology to enhance their education; (f) To comprehend the methods people employ to enhance their research ideas.

LITERATURE REVIEW

In Pakistan, Saeed (2000) rightly acknowledges the increasing necessity of IT. University students frequently utilize technology-equipped libraries that provide access to resources such as the internet. The Government of Pakistan is providing comprehensive support and encouragement for IT implementation in educational institutions. Significant investments are being made by the government, with a major focus on human resource development and the establishment of enabling infrastructure. The government is leading technology-driven initiatives aimed at enhancing infrastructure, developing the workforce, and integrating IT in both public and private sectors across the country.

The advent of information technology has brought about both positive and negative impacts on online education. On the positive side, students now receive enhanced guidance from teachers through synchronous or asynchronous communication channels. However, a drawback is the absence of face-to-face interaction between teachers and students, which is crucial for real-time assessment of student feedback and engagement in the learning process. Despite this challenge, the integration of technology in education has also opened up numerous opportunities for teachers and students. They can now leverage technological tools for educational purposes, such as organizing webinars and fostering connections between institutions on a global scale (Oliveira et al., 2021). The utilization of various online platforms by different teachers has led to confusion among students, as they are required to follow separate instructions from each teacher. This situation has highlighted the need for a standardized platform for online teaching, which would benefit both students and teachers. Additionally, issues with smooth internet connectivity have disrupted lectures, particularly for students residing in different areas who have reported difficulties. However, technology has also provided some advantages for students, such as facilitating group discussions and offering an alternative for higher education, ensuring the preservation of valuable time and lives (Oliveira et al., 2021).

Studies on the digital divide primarily concentrate on various demographic factors, such as socioeconomic status, encompassing elements like income, age, gender, education, and whether individuals reside in urban or rural areas (Azubuike et al., 2021). The digital divide poses challenges for individuals who have limited or no access to the internet. Researchers (Mathrani et al., 2021) assessed the digital divide by considering factors such as gender, age, and educational level. The digital divide continues to exist, particularly in developing nations, with notable disparities observed among gender and lower socioeconomic groups. Access to technology and the internet is closely linked to the initial level of digital access (Mathrani et al., 2021; Rotondi et al., 2020).

According to Leidner (1995), technology serves multiple purposes. Firstly, it addresses the challenges in teaching and learning, making it a significant tool. Secondly, it acts as a

catalyst for change. Lastly, it contributes to economic competitiveness. Information technology facilitates data collection from the internet and improves communication systems. It provides students with a broad spectrum of resources, supporting various subjects and online learning. Additionally, information technology plays a vital role in both the economic and education sectors. Shaikh (2009) highlights the slow introduction of IT in Pakistan, primarily due to restrictions on computer imports during the 1960s. Software companies faced significant delays in obtaining import licenses from the government, and high customs duties and taxes were imposed on computers and electronic items.

According to Daniel (1996), the education sector is undergoing significant changes due to the introduction of modern IT systems such as laptops and other devices. Information technology plays a crucial role in today's education sector, extending beyond being just a subject. It offers a vast range of opportunities for students to access information through the internet. In the 21st century, possessing ICT skills is essential in various fields, particularly in education, employment, and daily life. Employers now require individuals to be proficient and confident in using ICT, whether in academic or industrial settings, as these skills are highly valued in the job market. Consequently, educators face a considerable challenge to provide students with relevant and high-quality ICT knowledge that is up-to-date, ensuring they are well-prepared for the employment world upon graduation. In order to meet the evolving requirements of mediated learning, policymakers will need to revise and improve the education system to ensure efficiency and standardization (Mumtaz et al., 2021).

METHODS

Sampling Structure: The sampling frame for this current research consists of individuals residing in four specific locations who possess knowledge of information technology and utilize it for educational purposes. Sampling Method: Stratified Random Sampling. Sample Size: 290 respondents. (Age ranges from 21 to 45 years). Data Collection Tools: Surveys were collected from all the participants through online to gather information about their demographic characteristics and their utilization of information technology. Data Analysis**:** Data analysis in this study involves utilizing Excel to examine the collected data. Frequency distribution is computed for each question as part of the analysis process.

RESULTS

Table 1. Distribution of respondents according to their Age

Age	**Frequency**	**Percentage (%)**
21-25	112	50
26-30	81	36.16
31-35	16	7.14
36-40	9	4.02
41-45	6	2.68
Total	224	100

Source: Processed Data, 2023

Table 2. Distribution of respondents according to their Gender

Gender	**Frequency**	**Percentage (%)**
Male	178	79.46
Female	46	20.54
Total	224	100

Source: Processed Data, 2023

Table 3. Distribution of respondents according to their Education

Education	Frequency	Percentage (%)
BS	142	63.39
Masters	27	12.05
MS/M.Phil	35	15.63
PGD	16	7.14
PhD	4	1.79
Total	224	100

Source: Processed Data, 2023

Table 4. Distribution of respondents according to their views

Question	Yes	No	Yes	No
	Frequency		Percentage (%)	
Has the education sector in Pakistan made significant progress in terms of development?	192	32	85.71	14.29
Does the economic development purpose necessitates recognizing the crucial role of Information Technology (IT)?	205	19	91.52	8.48
Did Pakistan possess an adequate level of Information Technology (IT) for the purpose of educational development?	187	37	83.48	16.52
Did the utilization of Information Technology (IT) result in the replacement of Islamic values?	46	178	20.54	79.46
Are educational institutions in Pakistan benefiting from the advantages offered by Information Technology (IT) techniques?	212	12	94.64	5.36
Did institutions in Pakistan keep pace with the developed world in terms of the utilization of Information Technology (IT)?	166	58	74.11	25.89
Does the adoption of Information Technology (IT) contribute to the educational prosperity of a nation?	174	50	77.68	22.32
Was there a correlation between Information Technology (IT) and the development of education?	163	61	72.77	27.23
Was Information Technology (IT) considered an easy method of education?	207	17	92.41	7.59
Is there a level of Information Technology (IT) in Pakistani institutions?	139	85	62.05	37.95

Source: Processed Data, 2023

The results of the study indicate several key findings:

Demographic Characteristics:

The majority of respondents (50 percent) belonged to the age group of 21-25 years, suggesting a younger population participating in the study. A smaller proportion (2.68 percent) fell into the age group of 41-45 years, indicating a lower representation of older individuals in the sample. In terms of gender, a significant majority of respondents (79.46 percent) were male, highlighting a gender imbalance in the research sample. In terms of education, a majority (63.39 percent) pursued a 4-year BS program, while a small percentage (1.79 percent) pursued a PhD.

Perception of Education and IT:

The majority of respondents (85.71 percent) agreed that education in Pakistan has made significant progress, while a smaller proportion (14.29 percent) disagreed. A significant majority (91.52 percent) recognized the crucial role of IT for economic development, while a minority (8.48 percent) believed it was unnecessary. A large majority (83.48 percent) considered Pakistan to have an adequate level of IT for educational development, while a smaller proportion (16.52 percent) disagreed. The majority of respondents (79.46 percent)

disagreed with the notion that the utilization of IT would replace Islamic values, while a smaller proportion (20.54 percent) agreed.

Perception of IT in Education:
The majority of respondents (94.64 percent) believed that educational institutions in Pakistan benefit from IT techniques, while a minority (5.36 percent) disagreed. A majority (74.11 percent) believed that Pakistani institutions are keeping pace with the developed world in IT utilization, while a smaller proportion (25.89 percent) disagreed. A majority (77.68 percent) believed that the adoption of IT contributes to educational prosperity, while a minority (22.32 percent) disagreed. A majority (72.77 percent) perceived a strong correlation between IT and educational development, while a smaller proportion (27.23 percent) perceived it as weak. A significant majority (92.41 percent) considered IT an easy way of education, while a minority (7.59 percent) disagreed. Regarding the level of IT in Pakistani institutions, a majority (62.05 percent) perceived its presence, while a minority (37.95 percent) did not.

The study's findings reveal a generally positive perception of information technology (IT) in education among respondents. They believe that IT contributes to educational prosperity, benefits institutions, and is an easy way to learn. The results align with previous studies emphasizing the positive impact of IT in education. Respondents also recognize the crucial role of IT in economic development and perceive Pakistani institutions as keeping pace with the developed world. These findings address a research gap by offering insights into perceptions of IT in Pakistani educational institutions, contributing to the existing literature.

CONCLUSION

This study highlights the significance of Information Technology (IT) in education and emphasizes its crucial role in a country's overall development. It suggests that countries like Pakistan should prioritize IT adoption for educational purposes to drive their growth. Additionally, the study addresses a research gap by exploring IT utilization in the education sector, providing insights into the current state of IT integration in Pakistan. This research fills a gap by exploring the relationship between IT and the education sector in Pakistan. The findings can inform future policies and strategies to enhance IT integration in education. The study also recognizes the potential of ICTs to empower individuals and generate income in developing countries, emphasizing the broader implications of IT adoption for economic growth. This study highlights the significance of IT in education, especially in countries like Pakistan, and addresses a research gap by offering insights into IT utilization and acceptance in the education sector. The findings emphasize the transformative potential of IT for economic development and highlight broader implications, such as empowerment and income generation in developing nations.

RECOMMENDATIONS

Government Focus
The government must prioritize private and community-based broadcasting and ISPs to enhance ICT accessibility.
Launch Prospective Initiatives
Enabling private and community broadcasting and ISPs can drive ICT initiatives and technological advancements in Pakistan.
Key Indicators
Key indicators of an information technology society in Pakistan include e-government practices, robust IT policies, rapid growth in the IT and telecom sector, Internet service expansion, promotion of e-learning, integration of e-health services, and facilitation of e-commerce. By implementing these recommendations, Pakistan can promote ICT development, leading to digital access, improved governance, enhanced education, better healthcare, and socio-economic progress.

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