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EXPLORING THE HEADMASTERS' PERCEPTIONS REGARDING THE ICT INTEGRATION IN SECONDARY SCHOOLS OF UPPER SINDH, PAKISTAN

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ABSTRACT

This qualitative phenomenological study explores the lived experiences of how headmasters view ICT integration in Secondary Schools of Sukkur, Pakistan while examining their leadership responsibilities and obstacles they encounter. The study used an interpretivist paradigm to conduct semi-structured interviews with seven headmasters who were selected by using purposive sampling. Thematic analysis was used to interpret the data that revealed that headmasters maintained positive attitudes regarding ICT's ability to improve teaching methods and learning processes and school administrative functions. The headmasters' success in implementing ICT depended on their digital literacy level and their access to training and technical support and the availability of school infrastructure. The headmasters demonstrated two different approaches to ICT implementation because some actively used technology while others failed because of insufficient resources and limited autonomy. The research demonstrates how school leadership plays a vital part in ICT integration while showing the necessity of systemic backing and capacity development for meaningful ICT implementation in under-resourced public schools.

Keywords: *ICT integration, school leadership, headmasters' perceptions, digital literacy, secondary education*

INTRODUCTION

The advent of technology has opened doors of opportunity through its remarkable impact on nearly every field worldwide. Its integration in education has been termed as a driving force in achieving the goals of educational transformation, improving pedagogical practices and overcoming numerous educational challenges of the 21st century (Cetinkaya, 2017; Seraji, 2017). Owing to its integration in education, a paradigm shift has been witnessed in teaching and learning processes as its effective use can facilitate learner-centered teaching and enhance collaboration in classrooms through interactive practices (Beauchamp, 2010).

The educational process has undergone significant transformation through Information and Communication Technologies (ICTs) because they transitioned traditional classrooms from passive learning to interactive learning environments where students actively participate (Kapur, 2019). Research indicates that ICT-based instructional methods effectively fulfill educational requirements by boosting student concentration while sustaining their motivation, which plays a vital role in their academic development (Xu et al., 2021). Roshan et al., (2022) discovered that classroom ICT implementation resulted in higher student

enrollment and attendance and better academic performance and transformed teaching methods from teacher-centered to student-centered approaches which boosted both student engagement and teaching efficiency. The implementation of technology-based instructional practices leads to better teaching quality and student skill development and increased motivation and robust knowledge construction according to Akram et al., (2021) and Chen et al., (2018). The Information Age requires individuals to possess problem-solving abilities together with critical thinking and higher-order thinking competencies to succeed in every domain. The integration of ICT serves as the primary force to develop essential skills according to Hopson et al., (2001) and Supardi et al., (2021). The integration of ICT in teaching-learning represents an essential requirement of our time because it meets student learning needs while supporting teachers in their instruction according to global standards (Akram et al., 2022).

The government of Pakistan recognizes ICT's value for education, so it has incorporated ICT into teaching methods according to national educational policies (Akram et al., 2022). The National Education Policy of Pakistan (2017-2025) emphasizes ICT integration to transform educational management services and teaching and learning and individual development and sustainable intellectual capital and innovation sector expansion (Nisar et al., 2024). The Government of Pakistan recommends ICT integration at every educational level because of its numerous educational advantages to enhance teaching and learning quality. The fourth Sustainable Development Goals (SDGs) goal of quality education requires ICT integration for teaching and learning to achieve (Roshan et al., 2022).

PROBLEM STATEMENT

The integration of ICT in schools remains ineffective in Pakistan because of multiple obstacles including inadequate ICT infrastructure and unreliable electricity and internet and untrained teachers and weak technological competencies (Akram et al., 2021a; Asad et al., 2020; Abbasi et al., 2021). The research by Hassan & Sajid (2013) and Majoka et al. (2013) shows that teacher capacity building and leadership support can help overcome these barriers but there is a lack of studies about how headmasters view their role in facilitating ICT integration at the secondary school level in regional areas such as Sukkur, Pakistan. The research shows that school leaders determine the success of ICT adoption in schools through their leadership practices and decisions and attitudes (Memon et al., 2000; Niazi, 2012). This study investigates how headmasters view ICT integration in Sukkur secondary schools to determine their leadership impact on ICT practice implementation in their educational institutions.

RESEARCH OBJECTIVES

1. To explore headmasters' perceptions of ICT integration in secondary schools of Sukkur
2. To examine how headmasters lead ICT integration in their secondary schools
3. To identify the challenges headmasters face in ICT integration in secondary schools

RESEARCH QUESTIONS

1. How do headmasters perceive integrating ICT in secondary schools of Sukkur?
2. How do headmasters lead ICT integration in secondary schools?
3. What challenges do headmasters face in the integration of ICT in secondary schools?

DELIMITATIONS AND LIMITATIONS OF THE STUDY

The research focuses on headmasters' perceptions about ICT integration within secondary schools of Sukkur. The research excludes teachers and students from its scope and will use qualitative semi-structured interviews to gather data. The study delivers detailed findings, but its results cannot be applied to all Pakistani regions because it uses a restricted sample size and specific geographic area. The participants' answers could be affected by their individual biases together with social desirability effects.

2. LITERATURE REVIEW

2.1. Importance of ICT Integration in Education

Education worldwide underwent a significant transformation when Information and

Communication Technologies (ICTs) integrated into teaching processes thus establishing itself as an essential educational improvement and innovation tool. ICT integration leads educational institutions to evolve from traditional teacher-based classrooms toward student-centered classrooms that enable active student involvement in learning processes (Beauchamp, 2010). The educational approach supports teaching methods which improve student participation together with their interest levels and teamwork abilities. Various research findings demonstrate that ICT produces beneficial effects on educational performance. The research conducted by Roshan et al. (2022) shows that classroom implementation of ICT resulted in higher student enrollment and attendance together with improved academic results. Teachers' instructional methods evolved from conventional lectures to student-centered teaching methods according to their research which improved student learning experiences. The research conducted by Xu et al., (2021) discovered that student concentration together with motivation levels increased through ICT-based teaching approaches thus enabling better academic development. The educational transformation achieved through ICT goes beyond traditional academic achievement improvement. The educational field requires ICT to develop essential skills for the 21st century which include critical thinking and problem-solving and higher-order cognitive abilities (Hopson et al., 2001). These abilities form the basis for student success in a world that constantly changes and relies on information. The educational environment benefits from ICT deployment because students develop essential skills through interactive technology-based learning activities (Supardi et al., 2021). The implementation of ICT stands as a fundamental educational quality improvement approach according to both national and international educational policies. The National Education Policy of Pakistan (2017–2025) adopts ICT as an essential tool to change educational administration systems while enhancing educational delivery methods and intellectual capital growth (Government of Pakistan, 2017). The United Nations Sustainable Development Goal 4 (Quality Education) underlines the need for inclusive quality education through modern technologies according to UNESCO (2015). Modern educational systems throughout the world identify ICT integration as an essential component. Educational reform alongside innovation depends on ICT because it helps develop teaching methods while motivating students and teaching necessary skills for future success.

2.2. ICT Literacy as a Foundation for Effective ICT Integration

ICT literacy functions as an essential foundation which enables successful integration of technology in educational settings. Headmasters require both technical understanding and educational and administrative support capabilities to successfully use digital tools for teaching innovation and administrative efficiency. School leaders in Pakistan need to demonstrate strong ICT competence because digital access and skills disparities continue to persist in the educational environment (Farid et al., 2015). Multiple research studies show that public school heads in Pakistan demonstrate minimal ICT literacy skills. According to Asad et al. (2020) most headmasters lack basic computer operation skills which prevents them from implementing teaching methods that incorporate technology. School leaders demonstrate inadequate digital abilities because of which they fail to provide ICT guidance to teachers while developing institutional digital approaches. According to Ullah et al. (2021) school leaders must demonstrate instructional leadership and technological expertise to establish effective ICT integration in educational institutions. New headmasters in Pakistan lack formal ICT training programs either before their appointment or after taking office. Public education institutions lack updated or existing professional development programs focused on ICT according to Abbasi et al. (2021). The absence of necessary competencies prevents school leaders from properly managing and evaluating and sustaining ICT integration throughout classrooms.

Research on a global scale demonstrates that leadership with ICT literacy generates enhanced

digital practice across entire schools (Claro et al., 2012). The Pakistani educational setting demands special attention to ICT literacy because most public schools operate without sufficient ICT infrastructure and technical assistance. The absence of ICT literacy in headmasters causes teachers to implement technology adoption randomly and without coordination thus teachers primarily depend on individual initiative instead of institutional backing. The National Education Policy 2017–2025 of Pakistan identifies ICT as essential for education quality improvement but leadership implementation of these policies remains insufficient (Government of Pakistan, 2017). The policy vision exists in a gap with on-ground readiness because schools lack digital competency training for their leaders who would lead meaningful change initiatives. Headmasters who demonstrate ICT literacy serve as the essential factor for successful technology integration in educational institutions. Through digital competence headmasters guide their institutions to develop positive ICT attitudes which leads to effective technology implementation in educational activities.

2.3. Status of ICT Integration in Pakistan's Education Sector

The educational sector of Pakistan faces difficulties integrating Information and Communication Technology (ICT) despite national support for digital transformation. The Pakistan Bureau of Statistics (PBS, 2021) reveals that computer labs exist in 26% of public sector schools yet internet access remains extremely limited especially in rural and underserved areas. The insufficient infrastructure blocks the execution of ICT-based educational practices. The integration process of ICT into Pakistani schools shows slow progress along with inconsistent results according to research data. Many secondary schools report having ICT facilities, but Riaz and Qamar (2019) discovered that these resources remain largely unused in classroom teaching. Teachers dedicate ICT usage to administrative responsibilities instead of employing it for interactive educational approaches that center on student involvement. The study reveals that inadequate training together with insufficient institutional support stands as the main explanation for this problem.

The education sector lacks an organized approach to implement ICT according to Khokhar and Javaid (2020). According to their research findings schools introduce ICT tools through unplanned measures that do not include proper teacher training or maintenance structures. The integration process exists as separate efforts from individual teachers rather than functioning as a centralized system. The National Education Policy 2017–2025 has established policy-level goals for ICT integration but these targets have not achieved complete implementation. The Ministry of Federal Education and Professional Training (2018) published a government report which demonstrated that policy documents emphasize ICT integration as vital yet schools face barriers from insufficient funding and bureaucratic delays and insufficient technical expertise. According to Shah et al. (2022) surveys in various Punjab and Khyber Pakhtunkhwa districts showed that most public schools do not implement ICT-based subject-specific instruction. The adoption of multimedia projectors alongside educational software and digital content remains restricted because teachers maintain their preference for chalk-and-talk teaching due to their lack of experience with digital tools. The official support for ICT integration in Pakistan's education policies exists but practical implementation reveals a significant difference between intended goals and actual accomplishments. The public education system faces hurdles in effective ICT adoption because of limited infrastructure combined with inadequate training and insufficient digital transformation leadership.

2.4. Headmasters as Key Actors in School Leadership

The teaching and learning environment in any education system gets its form from school leadership. Headmasters serve as school leaders who execute administrative functions and instructional tasks which leads them to be essential for launching and sustaining educational reforms including Information and Communication Technologies (ICT) adoption. The integration of ICT depends heavily on school

leaders' vision along with their support and commitment as research demonstrates (Anderson & Dexter, 2005). Headmasters need to be proactive in their leadership roles during the Pakistani context because systemic obstacles remain present. Nazir et al. (2021) demonstrate how headmasters drive teacher perceptions of ICT implementation because they lead the process of acceptance and classroom implementation of ICT. The research indicates that teachers implement ICT in their teaching practices more effectively when headmasters show strong instructional leadership and offer professional development and technological support. Teachers only use ICT superficially or minimally when administrative encouragement is lacking.

The Pakistani educational system confines school heads to administrative work while denying them both freedom to lead transformationally and necessary training to do so (Niazi, 2012). School improvement alongside ICT adoption becomes more effective when headmasters demonstrate leadership styles which prioritize collaboration and empowerment and innovation. The removal of practical barriers and support in creating an ICT-friendly school culture becomes possible through their backing. The research conducted by Ali et al. (2022) revealed that leadership training for headmasters at many Pakistani secondary schools fails to prepare them for digital initiative leadership. A lack of specialized training about ICT leadership creates a competency deficiency which negatively impacts their ability to make technology integration choices and build their confidence levels. The implementation of ICT benefits most from transformational leadership which concentrates on inspiring followers to accept change (Leithwood & Jantzi, 2006). The integration of technology in teaching and learning becomes meaningful when headmasters demonstrate transformational leadership because they encourage experimentation and develop shared visions and trust staff members. Headmasters function as key decision-makers who determine the digital direction of their schools. ICT initiatives in Pakistan's public schools depend on the leadership approach and technical knowledge and resource mobilization abilities of headmasters to either succeed or remain underused.

2.5. Headmasters' Attitudes Toward ICT Use and Integration

The effective implementation of ICT in schools depends significantly on how headmasters view and use technology in their institutions. School leaders who display favorable attitudes toward ICT adoption enable their educational institutions to achieve successful technology implementation throughout teaching and administrative tasks (Tondeur et al., 2008). The willingness and enthusiasm of headmasters to adopt ICT in developing countries like Pakistan determines whether these schools will innovate through technology or become obstacles to progress (Khan et al., 2015). Studies show that headmasters who hold positive attitudes about ICT will dedicate resources to training and implement technology in their school plans and encourage teachers to adopt ICT in their instructional practices (Afshari et al., 2009). Their understanding of ICT tools' practicality and simplicity influences their personal teaching practices and drives changes in both teacher attitudes and behaviors. Headmasters who maintain unfavorable attitudes and technological apprehension together with resistance to change often lead to unsuccessful implementation despite having available resources (Shah, 2014).

Ullah et al. (2020) investigated how headmasters in Pakistan developed their attitudes through their ICT experience combined with training exposure and institutional support perception. Headmasters who experienced ICT training during their pre-service or in-service education displayed better confidence to lead digital transformation initiatives within their schools. Headmasters with minimal digital literacy skills choose to prevent ICT use or implement it under their direct supervision. The attitudes of headmasters are influenced by both cultural elements and the age differences within their generation. The younger generation of headmasters who entered their roles recently show more passion for digital tools yet older headmasters experience anxiety about quick technological transformations (Qureshi et al.,

2016). A persistent professional development program and peer mentoring system helps to reduce this gap. Headmasters develop their attitudes through a combination of policy guidance and institutional vision and support systems. Sustained ICT integration requires headmasters to maintain positive attitudes which can be achieved through continuous capacity building and recognition programs along with ICT exposure.

3. METHODOLOGY

3.1 Research Paradigm

The study used an interpretivist paradigm because it focuses on understanding how people perceive their experiences. The research paradigm acknowledged that social constructs shape reality and that people's experiences are personal. The research required examining headmasters' first-hand experiences and their understanding of specific contexts as it focused on their perceptions of ICT integration.

3.2 Research Approach

The research adopted a qualitative approach to study intricate social phenomena by deeply understanding participants' individual views and life experiences (Creswell, 2013). The qualitative research approach delivered detailed information about contextual realities and subjective meanings which quantitative methods would have overlooked.

3.3 Research Design

The research used a qualitative phenomenological study design to investigate headmasters' perceptions at Sukkur's secondary schools. This study research design served the purpose of studying contemporary phenomena inside their native environment (Yin, 2014). The study analyzed the bounded case of secondary schools and their headmasters to understand leadership-level factors affecting ICT integration.

3.4 Research Context

The study took place in Sukkur, Sindh, Pakistan where it focused on government secondary schools. The study used these schools because they encompassed various economic and technological environments to effectively investigate ICT implementation from a leadership perspective. Headmasters from these schools made administrative choices and actively influenced whether their teachers adopted ICT technology. The research population consisted of headmasters who managed government secondary schools throughout Sukkur. The participants were chosen because they led their schools while directly implementing or supervising ICT-based practices.

3.5 Sample Size and Sampling Technique

The research used purposive sampling to choose headmasters who actively worked on ICT integration projects at their educational institutions. Seven participants made up an appropriate number for qualitative research because it produced deep data that remained easy to handle.

3.6 Data Collection

The researcher used semi-structured interviews that enabled participants to share their perceptions while maintaining direction toward the research objectives. The semi-structured interview method serves best for studying human opinions together with personal experiences. The interviewer can provide explanations about the questions when necessary while interviewees give important information that supports the research (Brinkmann, 2013). The recorded interviews underwent transcription followed by anonymization procedures to protect participant identities.

3.7 Data Analysis

The researchers employed thematic analysis to analyze participant responses for interpretation. The method of thematic analysis helps researchers discover meaningful patterns and themes within qualitative research data (Braun, 2006). The research process involved coding data followed by pattern and theme detection and then interpretation based on the research questions.

3.8 Ethical Considerations

The research maintained every ethical requirement which academic research needs to follow. The study participants received details

about research goals before the data collection process began while receiving permission to proceed. The research protected participant privacy through complete anonymity and confidentiality while giving participants full freedom to leave the study at any point. All collected data received secure storage and existed only for research activities.

Chapter 4: Results and Findings

4.1 Introduction

This study investigates headmasters' perceptions about the implementation of Information and Communication Technology (ICT) within secondary schools of Sukkur. The study conducted semi-structured interviews using a qualitative design for thematic analysis. The results present themes along with participant quotes that demonstrate the depth of their responses. The research questions will be answered in this chapter through headmasters' perceptions of ICT integration along with their leadership methods for this process and their encountered challenges.

4.2 Perceptions of ICT Integration in Education

The headmasters maintained positive attitudes toward the educational benefits of Information and Communication Technology. Participants viewed ICT as an essential teaching and learning element that goes beyond its status as a modern addition or luxury item. The participants explained how technology enhances classroom instruction and student participation while offering modern educational resources. Participant 1 explained:

"ICT makes learning more interesting. Students become more focused when they watch visual content instead of relying only on teacher explanations."

The visual nature along with interactive features of ICT enhance student interest in learning activities.

Participants associated ICT integration with academic performance improvements because students can learn independently and grasp complex ideas better. Several participants mentioned that ICT develops digital literacy in students which remains crucial for their future educational pursuits and job prospects.

The headmasters did not maintain uniform positive views. Several headmasters acknowledged the importance of ICT yet emphasized that its effectiveness depends on adequate training and sustained technical support. The participant 2 expressed this view when he said:

"Just giving computers or other technological tools are not enough. Proper training about effective classroom technology usage is necessary for both teachers and myself.

The study reveals an essential reality where ICT offers potential benefits, but its actual effect depends on the readiness and ability of users to adopt it so headteachers alongside all teaching and non-teaching staff must receive continuous professional development.

The headmasters demonstrated positive attitudes toward ICT integration, but their views were based on their practical understanding of existing limitations. Although they acknowledged ICT's educational potential they expressed doubts about its support structure as well as its successful integration and continued operation in real school settings.

4.3 ICT Literacy Among Headmasters

The evaluation process demonstrated that participants displayed different levels of competence in ICT literacy. The headmasters demonstrated varying digital competency levels because some had moderate to strong digital skills which allowed them to operate computers and create PowerPoint presentations and send emails. The school leaders demonstrated digital competence through their basic technology skills which made them confident in their leadership abilities. Participant 3 described his usage of PowerPoint software for meetings and occasional classroom presentations by saying:

"I use PowerPoint for meetings and sometimes for classroom presentations. It gives a good example to my teachers."

The interviewee utilized ICT as both an operational instrument and as an indicator of professional achievement. Their personal experience with technology served as an example to their employees, which demonstrated the importance of leadership by example during technology adoption in schools.

The headmasters demonstrated awareness of their lack of competence in ICT skills. The headmasters demonstrated minimal experience with computers and formal training while depending on both clerical staff and younger teachers for their basic digital needs. Participant 4 stated:

"My career has not included any computer education.". Most of us use mobile phones, but that's it. There should be training for headmasters too."

The varied ICT literacy levels among school leaders create a major challenge because they impact the confidence and effectiveness of ICT adoption in educational institutions. The digital skill level of leaders determines their ability to promote classroom technology adoption and their capacity to direct staff implementation of ICT strategies. The research indicates an urgent requirement for targeted capacity-building initiatives that focus on enhancing digital leadership skills of school heads.

4.4 Leadership Roles in ICT Integration

The majority of headmasters understood that their leadership serves as a key factor which either supports or obstructs ICT implementation. Teachers who displayed higher digital proficiency together with initiative demonstrated how they started ICT-based improvements at their educational institutions. The headmasters achieved ICT-related progress by either creating or transforming computer laboratories and by supporting multimedia instructional approaches as well as designating staff members for ICT coordination responsibilities. Participant 5 emphasized this by saying:

"Headmaster interest motivates teachers to implement ICT practices. Leadership sets the example."

According to this statement people believe that leadership behavior and attitude create an overall school atmosphere for technology utilization. Headmasters who lack transformational leadership qualities find it challenging to make positive alterations in school culture.

The study data showed that headmasters were willing to lead but they lacked the necessary authority to execute their plans. Some headmasters expressed their disappointment about their restricted authority to manage ICT resources and training programs. Participant 6 shared,

"We want to do more, but we don't have enough budget or say in ICT planning."

This statement shows that headmasters face the responsibility to lead ICT integration, yet they frequently lack both institutional independence and sufficient financial resources to execute substantial changes. The leadership role develops through the combination of personal capabilities with broader organizational systems and financial resources. The success of ICT leadership requires both personal visionary leadership and adequate systemic backing.

4.5 Challenges in ICT Implementation

Every participant confirmed that their schools encountered multiple obstacles which obstructed successful ICT deployment. Several types of obstacles presented themselves to ICT implementation including infrastructure problems alongside capacity limitations and systemic barriers. The persistent problem mentioned by all participants was unstable power supply and weak internet connection. Participant 7 commented,

"Sometimes we have computers, but no electricity. Or the internet is not working. These are regular problems."

The unreliable state of fundamental utilities in numerous public schools results in unpredictable and challenging ICT usage.

A major obstacle preventing progress was the insufficient technical training along with insufficient support for both headmasters and teachers after ICT equipment distribution. The participants mentioned that ICT equipment provision did not accompany any plans for future maintenance or teacher training programs. Participant 6 explained,

"They provided us with computers and projectors at first, but no visitor checked our use of these devices. Support from others makes everything operational."

Teachers' unwillingness to change presented itself as an important yet unobtrusive obstacle to successful ICT implementation. Some headmasters reported that older teachers along with less confident staff members avoided incorporating ICT into their classrooms because

they feared technology and the possibility of failure.

These challenges demonstrate how multiple institutional barriers merge with personal and institutional obstacles to create a complex environment. ICT integration requires both material resources along with continuous professional development and school-level autonomy and robust technical infrastructure to achieve success.

4.6 Summary of Findings

Headmasters in Sukkur displayed optimistic perspectives about ICT implementation because they understand its dual purpose for educational instruction and administrative management. Headmasters face different obstacles in their ability to lead successful integration because of their ICT skills range and insufficient institutional backing and multiple external barriers including infrastructure issues and training deficits. The leadership efforts of headmasters face restrictions from the broader system which restricts both their ability to lead and the extent of their impact. The research findings provide essential knowledge about school leaders' real-life situations while demonstrating the necessity of providing them with essential capabilities and resources and governing power for successful ICT integration.

Chapter 5: Discussion

5.1 Introduction

This chapter discusses the findings presented in Chapter 4 in light of the existing literature and research questions. It interprets how the headmasters of secondary schools in Sukkur perceive and lead the integration of Information and Communication Technology (ICT) in education, as well as the challenges they encounter. The discussion is structured thematically to reflect the key areas of interest and to offer insights into how the study's findings align with or differ from existing research.

5.2 Headmasters' Perceptions of ICT Integration

The study found that most headmasters had positive perceptions about ICT integration, viewing it as essential for modern education. They emphasized its role in improving student engagement, facilitating better understanding through multimedia, and providing access to updated resources. These views align with the findings of Younis and Iqbal (2018), who noted that school leaders in Pakistan recognize ICT as a valuable tool for enhancing teaching quality and student learning outcomes. Similarly, Kozma (2005) highlights that ICT can contribute significantly to educational improvement when integrated meaningfully.

However, despite favorable perceptions, some headmasters in the present study expressed concerns about the lack of training and technical support. This is consistent with Mahmood (2009), who identified the absence of professional development as a key obstacle to ICT effectiveness in Pakistan's public schools.

5.3 ICT Literacy Among Headmasters

The varying levels of ICT literacy among headmasters impacted their confidence and leadership in technology integration. While some demonstrated moderate proficiency, others relied on staff due to limited digital skills. This variation reflects the findings of Afzal and Sadaqat (2021), who reported inconsistent ICT capabilities among educational leaders in Sindh and emphasized the importance of ongoing digital training for school heads.

This study supports the argument by Pelgrum (2001) that personal competency in ICT among school leaders is crucial for successful technology integration. Without such competency, headmasters may struggle to support their teachers and make informed decisions about ICT use in schools.

5.4 Leadership Roles in ICT Integration

Participants acknowledged the importance of their leadership in promoting ICT integration. Some took proactive steps, like initiating multimedia classrooms or encouraging teachers through example. This mirrors findings by Khan and Shah (2015), who argue that school leaders play a pivotal role in shaping teacher attitudes toward ICT and fostering a technology-friendly environment.

Nonetheless, several headmasters reported limited authority in resource allocation and ICT planning, restricting their ability to implement changes. This

is consistent with the UNESCO (2022) policy review, which points out that centralization and lack of autonomy in decision-making often hinder the efforts of school leaders in developing countries.

5.5 Challenges in ICT Implementation

Headmasters faced numerous challenges including unreliable electricity, poor internet access, lack of training, and inadequate technical support. These challenges are not unique to Sukkur; Farooq et al. (2011) and Mahmood (2009) also noted similar systemic barriers in Pakistani schools. The persistence of such infrastructural and capacity-related issues suggests a gap between policy and practice.

Resistance to change among teachers, especially those unfamiliar with digital tools, was another noted barrier. According to Younis and Iqbal (2018), such resistance is often rooted in fear of technology and lack of confidence, underlining the need for sustained professional development and a supportive school culture.

5.6 Summary of Discussion

This chapter discussed the findings in light of existing literature and the study's research questions. Overall, headmasters in Sukkur expressed largely positive perceptions toward ICT integration, recognizing its potential to enhance teaching quality, student engagement, and school administration. However, their leadership capacity in this domain was influenced by differing levels of ICT literacy, limited institutional support, and systemic barriers such as unreliable infrastructure and insufficient training.

These findings confirm and extend previous research, particularly in the Pakistani context, by highlighting the complex interplay between individual readiness and institutional constraints. Notably, the study reinforces the importance of school leadership in driving ICT integration but also underscores the need for targeted capacity-building and decentralized decision-making.

In summary, the study contributes to a deeper understanding of the practical realities faced by school heads in integrating ICT, offering valuable insights for policymakers, education planners, and training providers. These implications are further explored in the following chapter.

Chapter 6: Conclusion and Recommendations

6.1 Introduction

This final chapter presents the conclusions drawn from the study exploring headmasters' perceptions, leadership roles, and challenges related to ICT integration in secondary schools of Sukkur. It also outlines practical recommendations for policymakers, education departments, and school leaders, followed by suggestions for future research.

6.2 Summary of the Study

The aim of this qualitative study was to investigate how headmasters perceive and lead the integration of Information and Communication Technology (ICT) in their schools and to identify the key barriers they encounter. Semi-structured interviews were conducted with headmasters from selected secondary schools in Sukkur. The data were analyzed thematically using a deductive approach, guided by prior literature and research questions.

6.3 Key Findings

- **Positive Perceptions of ICT**: Headmasters generally viewed ICT as beneficial for enhancing teaching quality, student engagement, and access to modern resources.
- **Varying Levels of ICT Literacy**: Some headmasters had basic to moderate ICT skills, while others relied on support staff due to limited proficiency.
- **Leadership Influences ICT Integration**: The effectiveness of ICT integration was strongly influenced by the headmaster's attitude, initiative, and ability to lead by example.
- **Significant Challenges**: Common barriers included poor infrastructure, lack of training, insufficient follow-up support, and resistance from less tech-savvy teachers.

6.4 Conclusions

The study concludes that while the headmasters of secondary schools in Sukkur show willingness and awareness regarding ICT integration, their efforts are constrained by limited digital competencies

and systemic barriers. Leadership plays a pivotal role, but without adequate resources, training, and policy support, the potential benefits of ICT in education remain underutilized.

6.5 Recommendations

For Educational Policy Makers

- Develop continuous ICT training programs for headmasters and teachers tailored to local needs.
- Ensure reliable infrastructure, including electricity, internet connectivity, and technical support in all secondary schools.
- Provide autonomy and flexible funding models to school leaders for ICT planning and implementation.

For School Leadership

- Encourage collaborative learning among staff through peer training and ICT workshops.
- Serve as role models by using ICT tools in school administration and communication.
- Advocate for their school's technological needs within their respective education departments.

6.6 Suggestions for Future Research

- Conduct similar studies in rural and urban districts beyond Sukkur to compare ICT integration trends across regions.
- Explore students' and teachers' perspectives on ICT use in classrooms to gain a holistic understanding.
- Assess the impact of ICT training programs on school improvement over time through longitudinal research.

REFERENCES

Abbasi, G., Panhwar, F., & Soomro, A. (2021). Leadership and ICT implementation: A study of public secondary schools in Sindh. *Journal of Research in Social Sciences, 9*(2), 123–135.

Abbasi, W. T., Ibrahim, A. H., & Ali, F. B. (2022). Perceptions about English as second language teachers' technology-based English language teaching in Pakistan: Attitudes, uses of technology and challenges. In *Proceedings of International Conference on Emerging Technologies and Intelligent Systems: ICETIS 2021 (Vol. 1, pp. 314–325)*. Springer International Publishing.

Afshari, M., Bakar, K. A., Luan, W. S., Samah, B. A., & Fooi, F. S. (2009). Factors affecting teachers' use of information and communication technology. *International Journal of Instruction, 2*(1), 77–104.

Afzal, M. T., & Sadaqat, M. (2021). ICT integration in education: A case study of teacher training in Sindh. *Journal of Research and Reflections in Education, 15*(1), 68–84.

Akram, H., Abdelrady, A. H., Al-Adwan, A. S., & Ramzan, M. (2022). Teachers' perceptions of technology integration in teaching-learning practices: A systematic review. *Frontiers in Psychology, 13*, 920317.

Akram, H., Aslam, S., Saleem, A., & Parveen, K. (2021b). The challenges of online teaching in COVID-19 pandemic: A case study of public universities in Karachi, Pakistan. *Journal of Information Technology Education: Research, 20*, 263–282.

Akram, H., Yingxiu, Y., Al-Adwan, A. S., & Alkhalifah, A. (2021a). Technology integration in higher education during COVID-19: An assessment of online teaching competencies through technological pedagogical content knowledge model. *Frontiers in Psychology, 12*, 736522.

Ali, M., Khan, H. A., & Shahbaz, M. (2022). Challenges faced by school heads in integrating ICT in teaching practices: Evidence from secondary schools in Pakistan. *Pakistan Journal of Education, 39*(1), 21–38.

Anderson, R. E., & Dexter, S. L. (2005). School technology leadership: An empirical investigation of prevalence and effect. *Educational Administration Quarterly, 41*(1), 49–82. https://doi.org/10.1177/0013161X04269517

Asad, M. M., Hussain, N., Wadho, M., Khand, Z. H., & Churi, P. P. (2021). Integration of e-learning technologies for interactive teaching and learning process: An empirical study on higher education institutes of Pakistan. *Journal of Applied Research in Higher Education, 13*(3), 649–663.

Asad, M. M., Zafar, M. J., & Kiran, S. (2020). ICT integration in education: A case of Pakistani school leaders. *Journal of Education and Educational Development, 7*(1), 93–106. https://doi.org/10.22555/joeed.v7i1.3131

Beauchamp, G., & Kennewell, S. (2010). Interactivity in the classroom and its impact on learning. *Computers & Education, 54*(3), 759–766.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Brinkmann, S. (2013). *Qualitative interviewing*. Oxford University Press.

Cetinkaya, L. (2017). An educational technology tool that developed in the natural flow of life among students. *International Journal of Progressive Education, 13*(2), 29–47.

Chen, S. Y., Hung, C. Y., Chang, Y. C., Lin, Y. S., & Lai, Y. H. (2018, August). A study on integrating augmented reality technology and game-based learning model to improve motivation and effectiveness of learning English vocabulary. In *2018 1st International Cognitive Cities Conference (IC3)* (pp. 24–27). IEEE.

Claro, M., Preiss, D. D., San Martín, E., Jara, I., Hinostroza, J. E., Valenzuela, S., & Nussbaum, M. (2012). Assessment of 21st-century ICT skills in Chile: Test design and results from high school level students. *Computers & Education, 59*(3), 1042–1053. https://doi.org/10.1016/j.compedu.2012.04.004

Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches* (3rd ed.). Sage Publications.

Farid, S., Ahmad, R., Alam, M., & Jan, T. (2015). Effect of e-learning on development of students' critical thinking: A case study of virtual university of Pakistan. *Asian Journal of Distance Education, 13*(2), 1–10.

Farooq, M. S., Chaudhry, A. H., Shafiq, M., & Berhanu, G. (2011). Factors affecting quality of education in Pakistan. *Pakistan Journal of Commerce and Social Sciences, 5*(2), 272–284.

Government of Pakistan. (2017). *National Education Policy 2017–2025*. Ministry of Federal Education and Professional Training.

Hopson, M. H., Simms, R. L., & Knezek, G. A. (2001). Using a technology-enriched environment to improve higher-order thinking skills. *Journal of Research on Technology in Education, 34*(2), 109–119.

Khan, S., & Shah, I. M. (2015). Teachers' perceptions of the use of ICT in a Saudi secondary school. *International Education Studies, 8*(11), 180–191. https://doi.org/10.5539/ies.v8n11p180

Khan, S., Hasan, M., & Clement, C. K. (2015). Barriers to the introduction of ICT into education in developing countries: The example of Bangladesh. *International Journal of Instruction, 8*(1), 61–80.

Khokhar, A., & Javaid, S. (2020). Barriers to effective ICT integration in government schools of Pakistan. *Asian Journal of Distance Education, 15*(1), 102–110.

Kozma, R. B. (2005). National policies that connect ICT-based education reform to economic and social development. *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments, 1*(2), 117–156.

Leithwood, K., & Jantzi, D. (2006). Transformational school leadership for large-scale reform: Effects on students, teachers, and their classroom practices. *School Effectiveness and School Improvement, 17*(2), 201–227.

Mahmood, K. (2009). Use of ICT in public sector secondary schools of Pakistan: Problems and issues. *International Journal of Education and Development using ICT, 5*(2), 1–8.

Majoka, M. I., Fazal, S., & Khan, M. S. (2013). Implementation of Information and Communication Technologies (ICTs) in education course: A case from teacher education institutions in Pakistan. *Bulletin of Education and Research, 35*(2), 37–53.

Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass.

Ministry of Federal Education and Professional Training. (2018). *Education Sector Plan Implementation Grant: Progress Report*. Government of Pakistan.

Nazir, M., Sarwar, S., & Hussain, I. (2021). The role of school leadership in ICT integration: A study of public secondary schools in Pakistan. *Journal of Educational Research, 24*(2), 145–160.

Niazi, H. (2012). School leadership and educational change: The case of Pakistan. *International Journal of Educational Management, 26*(1), 55–65.

Nisar, A., Alam, A., & Shah, I. (2024). Higher education in 21st century: An analysis of ICT integration for teaching and learning in Pakistan. *Knowledge Management & E-Learning, 16*(4), 612.

Nisar, M. W., Munir, E., & Shad, S. A. (2011). Usage and impact of ICT in education sector: A study of Pakistan. *Australian Journal of Basic and Applied Sciences, 5*(12), 578–583.

Pakistan Bureau of Statistics. (2021). *Pakistan Education Statistics 2019–2020*. Ministry of Federal Education and Professional Training. http://www.pbs.gov.pk

Pelgrum, W. J. (2001). Obstacles to the integration of ICT in education: Results from a worldwide educational assessment. *Computers & Education, 37*(2), 163–178. https://doi.org/10.1016/S0360-1315(01)00045-8

Qureshi, I. A., Ilyas, K., Yasmin, R., & Whitty, M. (2016). Challenges of implementing e-learning in a Pakistani university. *Knowledge Management & E-Learning, 4*(3), 310–324.

Riaz, M., & Qamar, F. (2019). ICT integration in Pakistani schools: Challenges and prospects. *International Journal of Educational Technology, 6*(2), 55–64.

Roshan, M., Ahmed, M., Bano, S., & Hussain, N. (2022). Effectiveness of Information and Communication Technology (ICT) integrated teaching and learning in primary schools. *International Journal of Innovation in Teaching and Learning (IJITL), 8*(1), 53–69.

Seraji, N. E., Ziabari, R. S., & Rokni, S. J. A. (2017). Teachers' attitudes towards educational technology in English language institutes. *International Journal of English Linguistics, 7*(2), 176–185.

Shah, A. A., Khan, S., & Ahmad, I. (2022). Assessing ICT use in teaching practices: A survey of public secondary schools in Punjab and KP. *Journal of Educational Research, 25*(3), 88–97.

Shah, M. (2014). Impact of management information systems (MIS) on school administration: Role of ICT in school administration in Pakistan. *International Letters of Social and Humanistic Sciences, 35*, 118–126.

Supardi, S., Juhji, J., Azkiyah, I., Muqdamien, B., Ansori, A., Kurniawan, I., & Sari, A. F. (2021). The ICT basic skills: Contribution to student social media utilization activities. *International Journal of Evaluation and Research in Education, 10*(1), 222–229.

Taimur-ul-Hassan, A. R. S. (2013). ICTs in learning: Problems faced by Pakistan. *Journal of Research, 7*(1), 52–64.

Tondeur, J., van Keer, H., van Braak, J., & Valcke, M. (2008). ICT integration in the classroom: Challenging the potential of a school policy. *Computers & Education, 51*(1), 212–223. https://doi.org/10.1016/j.compedu.2007.05.003

Ullah, H., Ajmal, M., & Rahman, F. (2020). Secondary school administrators' perspectives on ICT integration: A case study from Khyber Pakhtunkhwa, Pakistan. *Journal of Research in Social Sciences, 8*(2), 1–17.

Ullah, H., Khalid, R., & Iqbal, H. (2021). Exploring the role of school principals in ICT integration: A qualitative study. *International Journal of Educational Management, 35*(4), 655–670. https://doi.org/10.1108/IJEM-07-2020-0334

UNESCO. (2015). *Education 2030: Incheon Declaration and Framework for Action*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000245656

UNESCO. (2022). *ICT in education: A critical review and a policy framework for developing countries*. United Nations Educational, Scientific and Cultural Organization. https://unesdoc.unesco.org

Xu, Z., Yuan, H., & Liu, Q. (2020). Student performance prediction based on blended learning. *IEEE Transactions on Education, 64*(1), 66–73.

Yin, R. K. (2014). *Case study research: Design and methods* (5th ed.). Sage Publications.

Younis, M., & Iqbal, H. M. (2018). Barriers to the effective use of ICT in teaching in public secondary schools in Pakistan. *Bulletin of Education and Research, 40*(2), 123–138.

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