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The Adoption and Utilization of Technology in the Mosques: a case study of Islamabad

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Abstract
In the past, religious segment of the society regarded technology with suspicion, seeing it as a possible danger to customs and spiritual rituals. Nevertheless, mosques have embraced technology in recent years, moving over their initial reluctance to actively benefit from these developments. This research investigates how technology is being adopted and used in mosques, looking at how digital technologies are changing mosque's religious services, administration, and community engagement. In order to better understand the phenomenon, the study is limited to the Islamabad Capital Territory. This lemmatization will make us able to effectively emphasize how technology through social media, Smartphone apps, and audio-visual systems etc are improving accessibility, communication, and involvement. Furthermore, the study adopts qualitative research methodology that includes surveys of worshiper/visitors and interviews with Imam/Heads/care takers of the mosques. The results demonstrate that although issues like budgetary limitations and a lack of digital literacy still exist. Technology has not only unquestionably increased the role of mosques in contemporary society by making them more inclusive and community-responsive but it also has changed the attitudes of the religious clergies towards the modernity with relation to technological advancements. In order to bridge the gap between tradition, modernity and innovation, this study contends that the religious sector, which was previously opposed to technology integration, has not only adapted to it but also benefited from it. This case study will further help religious clergies, legislators, and most importantly academics to promote a healthy coexistence of the tradition and modernity.

Keywords: Technology in religious institutions, Digital Transformation in mosques, Technology in mosques, Faith and technology, Ulema and technology.

Introduction
Mosques are particularly significant in the life of Muslim communities because they serve as centers for social welfare, education, and community building in addition to being places of prayer. Even these traditionally conventional areas are changing, though, at a time of swift technological growth. Once regarded with suspicion by religious clergies, technology is now starting to play a significant part in improving mosques' use and accessibility. Integration of the technology is somehow a new development in Pakistan, where mosques are an integral part of the country's culture and religion. The capital city of the Pakistan, Islamabad, is a special example because of its fusion of modernism and heritage. Here, mosques are progressively using technologies such as digital contribution systems, social media platforms for community involvement, Smartphone

applications for prayer scheduling, and audio-visual systems for speeches. In addition to updating religious rituals, these developments are opening up mosques to younger, tech-savvy generations. Despite these advancements, the mechanics of this technological change have not received much attention from academics. There are still many unsolved questions regarding the adoption and use of technology in mosques, the difficulties they encounter, and the wider effects of these developments. In order to close this gap, this research examines how technology is being adopted and used in Islamabad's mosques, exploring how these hallowed places are negotiating the nexus of modernity and tradition. This study is important for comprehending how mosques' roles in urban areas have changed over time, offering guidance to religious leaders, decision-makers, and academics who are interested in the relationship between religion and technology. This study intends to add to larger discussion on how technology may be successfully used to fulfill both spiritual and community needs by looking at the case of Islamabad.

Significance of the study

This study is important because it looks at how mosques in Islamabad, a city where modern urbanization and tradition meet, are embracing and using technology to improve their outreach and functionality. Through investigating the incorporation of technologies like digital communication platforms, audio-visual systems, and management software, the study offers significant perspectives on how these hallowed locations adjust to modern needs while maintaining their spiritual character. It emphasizes how technology may modernize religious activities, enable religious administrators and leaders to increase accessibility and efficiency, and strengthen ties within the community—especially with younger, tech-savvy generations. The study also dispels myths regarding the incompatibility of religion and technology, showing how mosques can successfully use technological innovations to better serve their communities. By filling in gaps in the literature, the findings not only advance scholarly discussion but also provide useful advice for religious leaders, decision-makers, and other organizations attempting to strike a balance between tradition and technological progress.

Literature Review

In recent years, there has been a growing interest among academics in the incorporation of technology into religious organizations. Studies on the use of technology in mosques show that modernity and tradition interact in a complicated way. With an emphasis on mosques and the particular difficulties and advantages they encounter in adjusting to the digital era, this section examines the body of research on the use of technology in religious settings.

Challenges in digital Integration

Ali (2023) offers a critical analysis of the obstacles that mosques face while implementing technology, especially in South Asia. His research pinpoints a number of barriers to the successful adoption of digital tools in Mosques. Financial limitations are one of the biggest obstacles, preventing mosques from investing in cutting-edge technology infrastructure like mobile app development, surveillance cameras, or cutting-edge sound systems. Mosques that are smaller and lack resources frequently depend on donations from the community, which are not enough to pay for technology advancements. Furthermore, Ali emphasizes how important computer literacy is as a barrier. The technical expertise needed to properly operate and maintain digital systems is sometimes lacking among mosque administrators and religious authorities, particularly in more conservative areas. Congregants are also affected by this knowledge gap, as many of them are not accustomed to using apps or internet platforms for religious purposes. Although they are more noticeable in rural regions, same problems are also present, albeit to a lesser degree, in urban areas like Islamabad. The author also emphasizes the opposition from conservative social groups that

see the use of contemporary technology as a possible danger to long-standing religious customs. Some imams and members of the congregation are concerned that relying too much on technology may weaken the spiritual component of worship or cause holy customs to become more commercialized, such as holding virtual sermons or using online platforms for fundraising. The speed of digital integration is slowed by the cultural reluctance brought on by this conflict between tradition and modernization. Moreover, he points out that despite these obstacles, creative solutions are starting to help urban mosques in places like Islamabad get over them. Promising outcomes have been observed via capacity-building programs targeted at educating mosque employees, partnerships with local tech companies, and collaborations with tech-savvy volunteers. However, the study comes to the conclusion that structural adjustments are necessary before technology can become a common instrument for improving the operations of mosques. These include a cultural shift that views technology as an enabler rather than a threat to religious traditions, more money, and focused digital literacy initiatives.

Technology for operational and community engagement

Haryono (2022) the useful advantages of mobile phones for overseeing mosque operations are discussed in this study. The main benefits of using technology into mosque management are noted to be precise prayer timings, increased community awareness, and attendance tracking. Haryono highlights that a mosque's strength lies in its capacity to successfully engage with its community and address societal challenges, presenting technology as a useful instrument in carrying out these responsibilities.

Integration of Artificial Intelligence in Mosques

Naveed et al. (2022) the growing use of artificial intelligence (AI) in mosque's administration is covered in this paper. Their study brought to light advances like AI-powered crowd control during congregational prayers, automated methods for collecting charitable donations, and sermon analytics enabled by AI. Even though these technologies are still in their infancy, they offer mosques in Islamabad potential for the future.

Technology and women's participation in religious activities

Ayesha and Shahid (2022) this study examined how women's participation in religious activities is facilitated by technology. They noted that live-streamed sermons, online courses, and apps targeted specifically at women are making mosque attendance more accessible to women who might otherwise encounter obstacles. Given how gender dynamics affect mosque participation in Islamabad, this viewpoint may be extremely pertinent.

Digitalization and Mosques

Cinjee (2021) investigates how digitization affects mosques, especially in Western Europe's secularized setting. The study emphasizes how mosques and other religious institutions use social media sites like Facebook, Instagram, YouTube, and Twitter to disseminate Islamic teachings, communicate prayer times, and build a sense of community among their followers. This online presence exemplifies how technology can improve religious involvement while preserving Muslim identity in increasingly secularized cultures.

Digital Literacy among Mosques administrators

Farooq and Siddiqui (2021) in this work the difficulties mosque administrators encounter in implementing and overseeing technology are investigated. This research shows that although a large number of imams and mosque employees acknowledge the advantages of digital tools, they frequently lack the technical know how to make efficient use of them. This realization highlights

the necessity for capacity building initiatives and is essential to comprehending the obstacles to technology adoption in Islamabad's mosques.

Technology in inclusivity of mosques

Rana et al. (2021) investigated how meeting the requirements of various worshippers through technology integration in mosques promotes inclusion. Their study, which was carried out in Lahore's urban mosques, found that mosques are now more accessible to people with disabilities thanks to the installation of projectors, Braille Quran, and hearing aids. This identifies a potential area for mosques in Islamabad to develop, since technology may also be used to increase inclusivity.

Role of Social Media in Religious Outreach

Al-Fahad and Khan (2021) investigated how mosques advertise religious activities and connect with younger audiences on social media. Facebook, Instagram, and TikTok are platforms that are used to broadcast sermons, share prayer schedules, and spread Islamic knowledge. An aspect that is becoming more and more pertinent to Islamabad's diverse urban population is the study's emphasis on social media's capacity to promote cross cultural interactions among Muslim groups.

Adoption of Mobile Application in religious practices

Hussain and Qasim (2020) study, examined how mobile apps support Islamic customs like prayer and reciting the Quran. They discovered that the popularity of apps like Muslim Pro and iQuran can be attributed to their accessibility and user friendly interfaces, which facilitate religious activities in contemporary lives. Mobile applications can be used to supplement conventional worship rituals in Islamabad's urban mosques, which make this finding pertinent.

Historical and Political Role of Mosques

Totonchi (2020) the historical and political importance of mosques in the Islamic heritage is emphasized in this paper. Mosques have always been hubs for political organization, social cohesiveness, and religious activities. According to Totonchi, constructing a mosque is regarded as a prophetic act, and these buildings continue to be essential to Muslim life. This historical viewpoint emphasizes how mosques have a profound impact on the communal and individual facets of faith.

Adoption of technology in Muslim majority societies

Khan and Rana (2020) According to research conducted in Muslim-majority nations like Pakistan, Malaysia, and Indonesia, technology is frequently viewed as a tool to improve community interaction rather than as a replacement for customs. According to this study on mosques in Pakistan, digital apps and social media are being used more and more for event planning, sermon scheduling, and prayer alerts. However, there are major obstacles due to mosque managers' lack of computer knowledge and financial limitations.

Challenges and benefits of technological Integration

Malik (2019) although the advantages of technology, like enhanced efficiency and broader reach, are well-recognized, the difficulties should not be ignored. This paper as contend that the alignment of technology with religious principles is a vital factor influencing its acceptance in mosques. Correspondingly, research on rural and urban mosques in Pakistan shows differences in access to and use of technology, underscoring the necessity for customized strategies for integration.

Technology and Religious Practices

Davies (2019) explores the transformative role of smart phones in religious practices, arguing that they are now the primary medium connecting the religious and secular worlds. With individuals interacting with their phones an average of 80 times daily, the relationship between technology and spirituality has evolved. Smartphone facilitate digital spiritual connections, offering hundreds of applications that enable practices like prayer, scripture reading, and other rituals regardless of location. Davies contends that even agnostics find smart phones stimulating a sense of the spiritual, underscoring the profound influence of technology on both religious and secular lives.

Broader Implications of Technological Integration

Khan and Rana (2020), the relationship between religion and technology has been studied before by academics such as these scholars who have highlighted the advantages and disadvantages of using digital technologies into religious settings. These studies demonstrate how technology can update ancient behaviors while preserving cultural and spiritual authenticity, which is in line with findings by Davies, Totonchi, Cinjee, and Haryono.

Security Technologies in Mosques

Ahmed (2019) investigated the use of security systems in mosques, in response to growing safety concerns in South Asia Digital attendance systems, metal detectors, and CCTV cameras are now widely used. Mosques in Islamabad have embraced these technologies for both security and effective congregation management, demonstrating this trend.

Evolution of Technology in Religious spaces

Bunt (2018) investigates how the dissemination of religious activities and teachings has changed as a result of the internet. According to his research, mosques all over the world are depending more and more on digital platforms, such Zoom for virtual sermons and WhatsApp for congregation administration. This shows how religious organizations are adapting to the demands of modern technology. The report emphasizes how digital platforms can help keep imams and followers connected, particularly in cities like Islamabad.

Technology in the religious institutions

Campbell (2010) and Cheong et al. (2012), historically, religious organizations have been hesitant to adopt new technologies because they believe they are incompatible with spiritual activities. But according to this research, a growing number of people are using technology to meet their practical and social demands. Studies for example, show how digital tools and platforms are used in churches, temples, and mosques to improve communication, spread religious teachings, and handle administrative duties.

Mosques and Digital Transformation

El-Nawawy & Khamis (2013), mosques are especially well suited to the integration of technology because of their function as communal centers. According to this research mosques have used technology for a number of things, such as event planning, donation management, and sermon broadcasting. These studies highlight how, while maintaining their traditional functions, technology has made mosques more accessible to younger and tech-savvy worshipers. Nonetheless, issues like reluctance to adapt and worries about technology abuse continue to be common.

Research Gap

The literature on how technology and religion interact is expanding, but most of it concentrates on global or Western settings, paying little attention to the unique experiences of Islamic religious organizations in South Asia, especially Pakistan. The impact of digitalization on mosques in Western Europe and Asia, respectively, is examined in studies such as those by Cinjee (2021) and Haryono (2022), but they do not take into consideration the distinct sociocultural and religious dynamics of Pakistani culture. Similar to this, studies on smartphone use in religious engagement (Davies, 2019) and mobile applications for Islamic practices (Hussain & Qasim, 2020) emphasize the potential of technology but do not discuss how these tools are actually used within the operational and structural frameworks of mosques. Furthermore, without sufficiently examining the socio-religious ramifications, the introduction of technology in mosques has frequently been explored from a technical or logistical standpoint. For example, although Ali (2023) notes that financial limitations and digital illiteracy are obstacles, little is known about how mosque leaders and members see technology, particularly in a culturally conservative country like Pakistan. As briefly mentioned by Ayesha and Shahid (2022), there is also a significant knowledge vacuum on the ways in which technology affects inclusivity in religious settings, especially for women and underprivileged groups. By investigating how technology is used in Islamabad mosques, this study seeks to close these disparities. It looks into the attitudes and difficulties surrounding their adoption in addition to the existing tools and methods. Insights into the wider ramifications for Islamic institutions in comparable environments are provided by this research's case study technique, which offers a comprehensive knowledge of how technology is incorporated into religious activities in an urban Pakistani milieu.

Research Methodology

In-depth interviews are the main technique used in this study to obtain data. To ensure that it fully addresses the important aspects of the research topic, the interview guideline was painstakingly created with all study objectives and questions in mind. To obtain comprehensive, contextualized, and in-depth information about the acceptance and use of technology in mosques, a qualitative research approach is used. The research was conducted in Islamabad, focusing on three specific mosques: Jamia Masjid Faizan-e-Madina (G-11 Markaz), Masjid Usman bin Afan (G-11/2), and Jamia Masjid Gulberg Green D-Markaz. The interviews were carried out with key respondents, including mosque heads (imams) and students (both male and female) studying in these mosques and their affiliated madrasas. The respondents represented diverse ethnic identities and regions to ensure a variety of perspectives.The study specifically focused on examining access to and the use of technological tools such as internet access, loudspeakers, cameras, security gates, computer labs, laptops, mobile devices, mobile applications, and websites. These technological elements served as the core dimensions of the research, providing a comprehensive understanding of their role and impact in mosque operations and community engagement.

Research Questions

- How technology has adopted and utilized in the mosques of Islamabad?
- What types of technological tools and devices are mostly used in these mosques?
- What role do mosques' administrators play in facilitating the adoption of technology?
- How does access to internet services and mobile devices impact mosque operations and daily religious practices?
- What challenges and barriers hinder the integration of technological tools into mosque functions?
- How has the use of technology influenced religious practices, community engagement, and administrative operations in the mosques of Islamabad?

Theoretical Framework

This research uses Diffusion of Innovations Theory (DOI) given by Everett Rogers as a framework to examine how technology is being adopted and used in Islamabad mosques. Diffusion of Innovations Theory offers an organized method for comprehending the gradual introduction, acceptance, and integration of innovation for instance, digital tools and technical systems into a social system. According to this theory innovation's adoption is influenced by five essential characteristics:

i. **Relative advantage:** The alleged advantages of technology adoption in mosques, including improved accessibility, communication, and operational effectiveness.
ii. **Compatibility:** The degree to which mosque leaders and members' use of technology is consistent with their religious beliefs, customs, and practices.
iii. **Complexity:** How simple and complex these technologies are to use, which could influence their uptake, particularly among less tech savvy masses.
iv. **Trialability:** Before complete integration, mosque leaders and preachers have the chance to test technology on a lesser scale.
v. **Obervability:** The ability to see the benefits of implementing technology, which may inspire others to do the same.

This theory is especially helpful for examining how community members and officials view and handle the incorporation of technology in places of worship in the context of mosques in Islamabad. Acceptance and adoption are greatly influenced by religious leaders or ulema, who frequently serve as opinion leaders in the community. The theory also aids in identifying adoption hurdles, such as doubts about how well technology aligns with Islamic principles or difficulties with affordability and digital competence. Through the application of the Diffusion of Innovations Theory, this research offers a thorough perspective on the interaction between tradition and modernity, providing information about the elements that promote or impede the use of technology in places of worship. This approach guarantees a methodical examination of the trends, procedures, and effects of technology integration in Islamabad's mosques.

Findings and Analysis

The data collected from interviews with mosque administrators and observations in Islamabad highlights the multifaceted adoption and utilization of technology in religious settings. Thematic analysis revealed eight overarching themes: technology integration, restricted access, community engagement, challenges in adoption, operational and educational benefits, focuses on tradition and spirituality, inclusivity and accessibility, and future outlook. These themes reflect the dynamic relationship between tradition and modernity in the context of mosque operations.

Technology Integration in Mosques

The study found that all three mosques present in Islamabad have come a long way in taking in modern technologies inclusion with the trend of adopting technical interventions for making the mosque more functional. These systems range from CCTV cameras and walk through gates to help guarantee the safety of worshipers and monitor activities within or outside the mosque compound. Because congregation management and safety are more important than ever in urban environments, these systems are particularly critical. Besides, the advanced sound system of the mosques is indispensable, for it is required to ensure that sound sermons and prayers are delivered. These systems are CAPABLE OF COVERING BIG AREA WHICH PROVIDES CLEAR AND UNINTERRUPTED COMMUNICATION TO PEOPLE DURING RELIGIOUS OCCASION. Additionally, IT based systems have revolutionized mosque operations by the coordination of IT based systems for administrative tasks. Digital finance systems, for example, are used to

administer precise, transparent donations, salaries and expenses. At the same time, these systems have attendance tracking for employees, to hold them accountable and also remain efficient. At the larger mosques, for example, Jamia Masjid Faizan-e-Madina, a dedicated IT department has meant operations have been streamlined even more. Such departments are in charge of a diversity of digital activities, for example, keeping up online courses, social media platforms, mobile applications, and others. These mosques become modern religious institutions able to fulfil spiritual and administrative needs thanks to such infrastructures. To relieve reliance on conventional energy sources and support applicable sustainable practices, other technologies such as solar power systems have also been introduced. Solar systems provide uninterrupted supply of power to critical functions such as sound systems and CCTV cameras and this is also balance sheet to environmental conservation goals. In addition biometric attendance systems are utilized to monitor the attendance of mosque staff, enhance labor management and prompt reporting. This integration of technology underlines the changing role of mosques beyond their traditional identity as worship houses, into becoming bustling sources of engagement, learning as well as management efficiency. This then is the proactive adoption of these technologies which reflects the change in the ethos of operating the mosques in tune with contemporary society and at the same time upholding the traditions. These advancements can be a blueprint for other mosques modernizing operations in compliance both with religious values and community expectations.

Restricted Access to Technology

The mosques in Islamabad have employed a multitude of modern technologies, but they strictly police their implementation to conform with sacred religious practice. Highly controlled, internet access in particular is mainly available at administrative level and in selected educational purposes. The limitation is deliberate, to help ensure the environment in which to experience spiritual focus and discipline is maintained. Internet access isn't made available during worshippers' time in the mosque, as administrators feel it may distract from the core reason for visiting the mosque: to go to prayer and to reflect. The view behind the policy is that unrestricted use of technology may divert worshippers' attention from worship itself and undermine the sanctity of the religious space. Thus it encourages Namazis (worshippers) to pray and listen to sermons with full dexterity without any external interruptions. In the case of madrassa students, internet access is also watched and tightly controlled. It is sometimes allowed for educational ends (e.g., obtaining course material, Islamic books, contact with relatives), but is not generally for general browsing. Thus, for example, mobile phones are not allowed, and access to the Internet, can be only accessed in certain controlled environment, such as the mosque's digital library. This simply ensures that students use technology only for educational or real personal purposes, and so continue to promote the ethos of discipline in religious education. Attached madrassas are limited in the exact same ways, barring female students and teachers from using the internet unless necessary. These are policies consistent with the reluctance of the mosque administrators to equate the integration of technology with blunt disruption of the traditional educational environment as well as with the introduction of distractions. Mosque employees themselves are also restricted, in that Wi-Fi is reserved mainly for management and operational uses. Administrative functions include such as recording keeping, facilitating online communications and coordinating community outreach activities through digital platforms. When you have such controls, mosque authorities try to maintain a balance between reaping the advantages of modern technology while securing the integrity, sanctity of religious practices. The policy clears that technology is meant to be used as a means to further religious goals not to be a diversion or bring in secular influence. Additionally, it explains how mosque administrators need to steer people in the direction where technology is deployed in accordance with Islamic values and the spiritual goal of the mosque. This strengthens the traditional role of the mosque as an enclave of focused worship, disciplined education and spiritual growth.

Community Engagement through Digital Platforms

Mosques within Islamabad have embraced the role of digital platforms in order to better reach the Muslim congregation and facilitate community outreach and interaction, and to adjust to a modern, tech savvy population. Using a whole range of digital tools, these mosques are able to offer their religious services beyond their physical spaces, thereby strengthening ties with their congregations. Social Media Platforms are the key players in this engagement strategy. Live sermons are broadcast on platforms like Facebook, Instagram, WhatsApp and YouTube; seeing prayer schedules while making community announcements. The benefit of these platforms is impressive as it makes it possible for the mosques to be able to communicate with the younger generations, which more accustomed to receiving information on digital channels. For instance, Friday sermons (Jumma Khutbas) and other momentous occasions frequently take the form of online livestreaming with a purpose to involve the worshippers who cannot attend the venue of worship virtually. Furthering community involvement, mobile applications like the Dawate Islami apps, are also in use. They feature the schedules for prayer times, Quran recitation, Islamic learning modules and most recently, the capability to donate through these apps. The existence of these tools in both the Android and iOS format makes them easily available for a wide variety of users. In addition, they allow users to interact with religious content in a multicultural language environment. Another considerable medium of digital engagement that helps to reach the mind of the youth is dedicated websites. But these websites are comprehensive portals that include such things as prayer schedules, event calendars and mosque service information. They also offer registration for Islamic education courses online, so that users can sign up for programs from home. Dawate Islami's key initiative, Madani channel is a multilingual broadcasting platform where religious content is delivered in Urdu, Arabic and English. The channel's role in offering programmes specifically for different audiences like children, women and non Muslims alike, has made it instrumental in spreading Islamic teachings and building interfaith accord. It is a medium easily reached by television and online streaming platforms making it widely reaching for touching minds locally and globally. In addition, there are community led campaigns through digital platforms carried out in mosques such as charity drives, disaster relief and programs for health awareness. Social Media and apps are used to promote these initiatives so that the number of participants and donation is generated. Digital tools have made such campaigns more transparent and accountable and thus more trustful and involved by the community. Education and counsel services are also offered online, through mosques featuring virtual classes, webinars and Q&A sessions on Islamic jurisprudence, family matters and personal development. People have largely found this very impactful when you can't physically gather like in the time of the COVID-19 pandemic. Digital platforms have become integrated for the way in which mosques in Islamabad reach out to their communities. Through these tools mosques have been able to overcame these physical limitations and provide services to a broader more inclusive audience. Rather than running from technological advancements, mosques are adapting and staying true to their role as places of worship and guidance while also becoming spirited hubs of community engagement in the digital world.

Challenges in Technology Adoption

The deployment of technology in mosques is confronted with many critical hurdles, a testament to a lively interrelationship between tradition, economic burden and technological processes. Limited financial resources are one of the most prominent barriers to achieving LEED certification: Smaller mosques are reliant on community donations and may therefore struggle to raise sufficient capital. And for many of these, the cost of acquiring and maintaining advanced tools like biometric attendance systems, CCTV cameras, Solar Panels, and advanced sound systems often prove too high just to cover the costs needed. This has posed a significant challenge for smaller mosques for

whom such expenditures have to be prioritized over operational needs such as staff salaries or building maintenance and generally leads to a disparity between larger, better funded mosques and smaller, less well funded mosques. A second major barrier is that mosque administrators, religious leaders and congregants simply lack digital literacy. Older generations, or many imams and caretakers, or having difficulty effectively using tools like digital finance systems, social media platforms, or educational apps. Under utilising of available resources (online sermon broadcasts or website management) is brought about by this gap in technical knowledge. Additionally, these technologies have a low reach because many congregants, especially lower income or aged segments from the community, do not know how to use apps or online platforms used for religious purposes. And given the resistance to the process by conservative factions in the community, it is no wonder things are so difficult. Groups filled with skepticism about the compatibility of modern technology with traditional religious practices commonly worry about such things as the technology somehow diluting the spiritual essence of worship or commercializing sacred rituals. Such as, online fundraising is sometimes considered taking away from the authentic religious experiences achieved in person. Yet, concerns about potential misuse of the technology, including fear of internet distraction while in prayer, and of exposure to inappropriate content, also lead to cultural resistance. Other problems include infrastructure and maintenance. Thanks to many digital tools, reliable internet connectivity is crucial – but can be unreliable in less developed areas. Systems like sound, solar panels and CCTV are often difficult to maintain because technical expertise and resources do not always exist to facilitate operations which are frequently disrupted. On top of this, mosque staff do not have many opportunities to receive training, and thus will remain dependent to external technicians to come solve technical problems and therefore increase both the cost and the time it will take to correct technical problems. A second barrier is in technological inclusivity and gender specific needs. However, the development and implementation of such women and differently abled focused tools – like live streamed sermons and female focused online courses – is blunted by cultural resistance and financial constraints. Often, technology to improve inclusivity towards mosque services is curtailed by conservative attitudes toward gender roles. In addition, stakeholders may have misaligned priorities for the delay of technological integration. Progressive leaders may promote rapid modernization, but there is a clash between these progressive leaders and less progressive administrators and community members, who wish to continue traditional practice. While these challenges appear daunting, certainly there exists measures for enabling smoother technology adoption in mosques. Promising steps include capacity building programs to improve digital literacy among administrators, partnerships with tech companies to offer lower cost solutions, and community engagement programs to boost trust in technology. Education and dialogue around cultural concerns can further facilitate the acceptance of technology as a supplement and not a replacement of traditional religious practices. Yet significant barriers exist which must be overcome for Muslims to modernize services and operations in an inclusive manner, preserving the spiritual and cultural integrity of the mosque.

Operational and Educational Benefits

Technology has played a big role in improving both the service of the mosques in terms of operational efficiency and educational capacity of the mosques, improving the memebership in the community and adhering to religious principle. Modern tools like biometric attendance systems have brought a revolution on operational side of workforce management. These systems allow mosque administrators to check the attendance of their employees with accuracy, minimizing they amounts of errors and making sure employees are held accountable. Likewise, finance management software has allowed for smooth running of financial affairs in matters such as, processing of donations, expenses and payroll. Such tools increase transparency and accuracy, in

turn encouraging that community to trust more. Technology has wrought not only administrative improvements but also substantial improvements in educational offerings at mosques and its attendant madrassas. Pay for religious education has been made available online, allowing students to learn in classes remotely. This has been especially useful in periods of disruption such as the COVID-19 pandemic, when we couldn't meet in person. In this respect, the presence of the computer labs in some mosques allows providing students (besides religious studies) with some kind of access to digital tools and hands-on experience, and therefore getting them skills that are valuable in a way across the field. In addition, most of these labs keep the internet also available to students under supervision for maximum access to abundant online resources. Another important resource that has come to the rescue is the digital libraries which are made accessible to students and scholars with extensive collection of Islamic texts, research materials and other educational content. In fact, these libraries served the purpose of self directed learning and preserving the religious knowledge and helping it move from one place to another. Materials available for downloading via the school program of the mosque include e-books and study guides and are accessible to students under their teachers' guidence so as to enable student's complete use of the technology in line with the educational objectives of the mosque. Furthermore, such mosques benefit from the technology by providing specialized courses about for example Quranic recitation, Islamic jurisprudence and Arabic language studies. These courses, which are available through dedicated platforms or mobile apps, make it easier for a much wider audience to access them—women and people who can't attend in person. In this article, you will find how this inclusivity allows diverse segments of the community to gain religious education whilst in such circumstances. Mosques have also been able to improve their ability to innovate curriculum, through combining Islamic studies with modern educational practices. For example, lessons are becoming more engaging and interactive using more digital presentations and multimedia tools. This allows a gap between the old and the new ways of teaching to fill, so that pupils are gaining a full education. At a broader level, these technological innovations make it possible for mosques to respond to the changing educational needs of their serving communities whilst staying faithful to their spiritual and ethical values. Through thoughtful integration of contemporary tools, mosques are seen to be able to accommodate modern requirements without selling out of their very fundamental religious identity. Not only do these improvements enhance the centricity of mosques as a hub of learning and spiritual guidance, but they also tie in to the growing importance of mosques in an ever more digital world. The benefits to technology integration in mosques are many and varied operational and educational benefits. These advancements help streamline administrative processes and they are forward looking and forward thinking in using the best of what's traditional and traditionalism with the best of what's modern

Balancing Tradition and Spirituality

A number of Mosques in Islamabad are taking a calculated approach in which they seek to combine the convenience of modern technology with reverence to spiritual values. The administrators treading a fine line illustrates their desire to preserve lines of religious sanctums, yet use technology in service of how they run and facilitate community. One of the most important aspects of this balance is the limitation of utilization of technology for worshippers in prayer times as well as in premises of mosques. As an example, the provision of Wi Fi in prayer halls is intentionally not done so that worshippers focus completely at their spiritual practice. Without restriction, administrators believe, digital devices will provide distractions, which will throw off the atmosphere of reverence and devotion at the centre of the mosque's reason for being. In this policy, spiritual integrity is above convenience; the mosque is a place for reflection and connecting to God. Secondly, the utilization of mobile phones is occasionally prohibited in the mosque in order to obstruct interference as they are meant to be utilized in prayers, sermons, and any other perform

of religion. And, although signs and announcements are constant reminding both attendees to turn off or at least silence their devices, the need to foster an environment that is tranquil is emphasized. Apart from enabling worshippers to concentrate on their prayers, these measures create a general sense of respect for the sacred place. At the same time, mosque administrators have taken a selective and deliberate use of technological means for operational and educational purposes, while, at the same time, limiting technology use among worshippers. For example, technology is used to increase efficiency in administration, enhance the educational program and improve community outreach, but with careful control that it does not intrude on the spiritual experience. But, of course, this selective integration means that the technology serves as a help and not a hindrance to the practice of religion. The same balance is kept at madrassas attached to mosques. To enable students to use digital tools such as computer labs or digital libraries they are given limited and supervised inclusion. But personal devices such as mobile phones are not allowed to be used freely as they are interruptions to learning, and encourage a disciplined learning environment. This method makes certain that technology is employed to assist the madrassa's spiritual and training goals and this is not due to a technology. Rather, the administrators are apparently well versed with the diverseness of the mosque's community, and so, their approach is nuanced towards technology. Younger, tech savvy generations will continue to want to more integrate digital tools into service while more elderly worshippers or conservative members will continue to appreciate the more traditional practices. Through a careful management of diverging expectations, mosque leaders manage to hold to core religious values as they accommodate shifting congregant needs. Along with this balance of tradition and modernity, mosques similarly take on a unified design, or repurposing, and layout in their spaces as well. Numerous mosques elect to modernize with modern infrastructure like air conditioning, sound systems, or more lighting, while maintaining the architectural, and spiritual aesthetics of the sacred space. The eclecticism of these elements reinforces the mosque's dual function as a timeless place of worship and a responsive community hub. In this age of technology, it is indispensable to balance tradition and spirituality, and these must be done with all caution and deliberation. Restricted use of technology, which preserves the spiritual environment of the mosque while strategically incorporating technology for operational, education purposes proves the mosque administrator's respect for their tradition and honor of their past and present. But in this nuanced approach to digital technology, the new mosque manages to protect the sanctity of the mosque while allowing itself to play a part — an increasingly contemporary and very complex role — in the new, increasingly digital world and meanwhile establishes a model for other religious institutions as they face similar challenges.

Inclusivity and Accessibility

Mosques in Islamabad have already taken steps in embracing technology but the scope of inclusivity and accessibility has not been maximised. Differently abled people can access more welcoming religious spaces, becoming more functional due to technology's powerful tools. That said, putting the measures into practice is still in its infancy and there are many opportunities to grow. The most promising application of technology for inclusivity is providing Braille Qurans to visually impaired worshippers. With these resources, visually impaired individuals are able to engage directly with the text of the Quran enhancing their relationship with their faith. Likewise, the incorporation of hearing aids or assistive listening devices in mosques can provide a great boost to worshippers with hearing deficiency by allowing them to fully join sermons, prayers and community assemblies. These tools, in conjunction with sophisticated mosque sound systems, will make mosques accessible to people of all abilities and with no one feeling excluded from the spiritual and community benefits of the mosque. Digital platforms have tremendous potential, too, to improve accessibility. Take, for example, sermon and classes live streamed with sign language

interpretation added so that hearing impaired can make religious content accessible to them. Mobile applications could also provide text to speech Quran recitations or font size customization tailored to the users with visual challenges. In addition to this, these platforms are providing the mosque with the ability to reach out beyond physical boundaries and provide those with disabilities the chance to experience worship on their own terms. Technology can also improve inclusivity design and infrastructure of mosques. Take, for example, digital wayfinding systems that can guide visually impaired worshippers in moving around mosque premises or they elevators and ramps which have automated accessibility features that help physically disabled in easy movement around mosque premises. Access could also be improved by smart technologies including motion-sensor doors, voice activated systems, etc, that are particularly useful for elderly or people with mobility problems. Making mosques inclusive through technology is not just for people with physical disabilities, but also for marginalized or underrepresented people – women, for example. Mobile apps or platform dedicated to women could give them access to religious classes, live streamed sermons and community updates tackling cultural or logistic barriers not otherwise permitting them to attend mosques. We could also similarly equip women through female specific digital resources such as prayer guides and counseling services as well. Although these advancements have tremendous potential, their use comes with many hurdles. Significant barriers to implementing inclusive technologies are passive and active barriers, the lack and limited digital literacy of mosque administrators and financial constraints, as well as cultural resistance. Further, mosque management is generally often unaware or downplays addressing accessibility needs, and that slows progress in this area. Solutions to these challenges must function proactively, such as reviews in the community, fundraising for projects to provide accessibility, and relationships with technology providers who can develop affordable solutions. In the future, development in mosques through technology for inclusivity will be a key area. Adopting tools that fulfill the varied needs of their congregants can help mosques to continue to be platforms for inclusive communities. These efforts are not only compatible with Islamic ethics that advocate for compassion and equality but also represent a future oriented effort that recognizes the significance of making religious spaces inclusive for all. There's not yet full realization of inclusivity and accessibility in mosques through technology however the potential for tremendous change is vast. Bridging the gap, you can do things like gifting Braille Qurans or making assistive listening devices, digital platforms, to ensure that you welcome and value all worshippers. Mosques can thrive as exemplary spaces where tradition meets the needs of a diverse and modern community – as long as those in leadership positions can show a real commitment to innovation and inclusivity.

Future Outlook

In fact, the interviewed mosque administrators showed a forward looking mentality by being very ready to adopt more modern technologies in the future. Clearly, this approach of thinking forward evidences their understanding of the power of innovation to benefit of mosques, to engage more with the community and to address the challenges existing in the future. These administrators remain vigilant about their continued commitment to preserving the sanctity and the spiritual essence of religious practice while exploring how new tools may support their religious values. The administrators also note that the crowd control systems will be integrated with Artificial Intelligence (AI) in the future. These systems might prove very useful in controlling large crowds, especially on Fridays, Ramadan and in the celebrations of Eid in the mosques where a huge amount of people attend. Facial recognition, real time occupancy tracking and predictive analytics powered by AI – can allow a church to optimize space utilization, ensure safety of people and streamline the flow of people in the premises of a church. For example, AI could retain community density figures and alert administrators in real time if its crowd density peaks so that administrators can act swiftly to contain overcrowding or bottlenecks.Another possibility is an automatic donation

system. These systems would make it possible for worshippers to seamlessly contribute through digital kiosks, mobile apps or online portals with full transparency and ease. These systems, by integrating features such as automatic receipts, customizable donation plans and real time progress tracking for charitable campaigns, could help create more trust and engagement among congregants. AI driven insights to inform administrators on trends in donations while allocating resources better for community projects and operational needs could also be included in automated systems. Along with these innovations, mosque administrators are looking into the future with the potential for AI based smart environmental controls like intelligent lighting and climate management. On the top of that, these technologies would help optimize energy consumption and would become sustainable. Integrating AI with solar energy systems allows real time monitoring and adjustment, which could further minimize carbon footprint and keeps power uninterruptedly running to perform for the essential operational functions. They, too, were interested in widening digital educational platforms to a larger audience. It could also involve creating AI assisted tools to create personalised learning experiences for oneself like interactive Quranic studies, proser translation in local languages, or adaptive modules aimed at madrassa students. The community would include users from young children all the way to adults seeking a deep religious education and have functionality for use by individuals with disabilities. While excited about these advancements, administrators made sure to keep Islamic values and principles intact. And they know they need to be very cautious and cautious with every technological innovation, make sure it is going to add to rather than subtract from spiritual atmosphere, from the goal and objective of religion in the Mosque setting. For example, in culturally sensitive environments privacy concerns related to AI powered systems would need to be considered. Second, like the mosque building itself, automated tools and digital platforms meant to facilitate mosque work must be designed with user friendly interfaces that fit the cultural and religious context of the mosque. A move towards greater prise is a forward thinking approach that can be found in mosque leaders who understand that in the correct way technology can be used as a powerful enabler for a mosque to be more operationally efficient and a key factor in a mosque being of greater service to the community. They reveal their openness to innovation alongside the preservation of core principles in their faith, so that mosques stay relevant and sensitive to community needs in the fast changing digital landscape. However, the openness of mosque administrators to integrate advanced technologies like AI based crowd control, automated donations systems and smart environmental solutions, is giving promising signs of a future where technology will be integrated into religious spaces. Through the synergistic melding of modernity with tradition, these initiatives have the capacity to augment the functionality, inclusivity, and sustainability of mosques — cementing their value as central hubs of worship, education and communal service.

Discussion of Results

This study finds that mosques in Islamabad deliberately employ technology with an eye on conciliatory approach. This adoption is a reflection of an ongoing realization that modern tools can contribute to operations, education and community engagement but still in a manner that sincerely honors the deep traditions and spiritual sanctity of religious practice. It analyzes how these mosques negotiate a labyrinthine dance between tradition and innovation, using the opportunities and pitfalls of modernization. Technology integration is one of the most significant outcomes on operational efficiency. For example, biometric attendance (attendance) system, finance software and CCTV cameras have simplified administrative activities, been more accountable, transparent and secure. The deployment of these innovations subliminally emulates active participation of mosque administrators in fostering technology adoption in order to tackle the present dilemmas faced in the operation of the mosque while keeping it focused on it’s central feature of spirituality and community services. The use of technology in the education realm has has presented new ways

of delivering religious teachings and pebbling new audiences. Other forward thinking examples of education are introduced with online classes, Digital Libraries, and computer labs in madrassas connected to mosques. Not only do these tools add to the learning experience, but also they bring learning to theology into the modern world and equipping students with skills beyond theology. In addition, the study shows how technology could help make community engagement more transformative. Mosques have been able to reach out to the younger, tech savvy generations and worshippers from abroad by utilizing social media platforms, mobile applications, and websites. Live streamed sermons and interactive prayer schedule and religious content apps have made mosques more accessible and inclusive. In spite of this, they have been integrated with the tools, their sanctity has been carefully preserved, the tools while marching with the times have been handled with nuance. Whilst such advancements have been made, this work also shows some of the problems that are holding technology back from being adopted seamlessly. The biggest difficulty, however, has always been financial, and smaller mosques struggle to come up with the money to upgrade to these tools. Meanwhile, mosque administrators and congregants' digital illiteracy slows down adoption, cutting down the potential impact the technologies could have. Not only that, there's still cultural resistance from conservative elements in the community, because they worry that technology may not be compatible with their traditional religious values. Finally, the study identifies important themes that point out how mosque administrators can help in resolving these barriers and encourage the technology adoption. This is crucially important to maintain compatibility between Islamic principles and modernity together with the needs of the community. Through modelling the incorporation of technology in a thoughtful way, mosque leaders communicate that they are passionate about steamkeeping the spiritual aspect of the mosque alive while using innovation as a means of presenting mosque as a more relevant and functional institution. In so doing, this analysis contributes to a larger picture of how religious institutions in Pakistan are moving onto digital age. Valuable insights into the dynamics of technology adoption in a culturally and religiously sensitive context are offered with a model for other religious organizations facing comparable challenges. The results show therefore, the need to take a balanced and inclusive approach to modernization making the benefits of that technology available to all segments of the community. Islamabad's mosques have a long way to go in integrating technology. The results urge further development aimed at overcoming financial, educational, and cultural barriers to allow mosques to utilize fully the modern tools. Mosques can more effectively integrate their role as vibrant worship, education and engagement centers in the service of faith and society through a strategic and community centered approach showing that tradition and innovation can coexist in harmony.

Conclusion

This study examined how technology is changing mosques in Islamabad and concluded that it has significant effects on institutional operations, community involvement, and religious practices. Mosques are now able to meet the demands of the modern world while upholding their social and spiritual duties thanks to the adoption of digital tools including websites, mobile apps, security systems, and educational platforms. These developments have expanded access to religious resources, improved communication between mosque administrations and members, and promoted inclusivity in religious engagement. Notwithstanding the apparent advancements, difficulties still exist. The full potential of electronic integration is frequently hampered by a lack of funding, a lack of computer awareness among mosque leaders, and distrust among more traditional community elements. Furthermore, discrepancies in access to digital resources underscore the need for more equitable solutions to guarantee that everyone in society benefits from technology, irrespective of socioeconomic or geographic distinctions. The dual character of technology as a facilitator and a disruptor in religious situations is clarified by this study. It

highlights important issues regarding how to strike a balance between modernity and tradition, even as it presents chances for creativity and wider accessibility. The results highlight the significance of capacity-building and strategic planning, which includes educating mosque leaders and allocating funds to solve technology gaps. In summary, technology is becoming an essential part of religious institutions' development rather than an outside influence. Its thoughtful incorporation into mosque architecture has the ability to improve religious experiences, fortify ties within the community, and establish these establishments as vibrant centers of social cohesion and education in the digital age. Mosques can continue to play their traditional functions while adjusting to the demands of modern society by tackling present issues and seizing possibilities. This study lays the groundwork for future research into the ways that technology and spirituality can coexist peacefully, opening up new avenues for creativity while maintaining the core ideas of religion.

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