Digital Transformation in *Hisab Rukyat*: A Sociological Perspective on Integrating Information Technology in Islamic Astronomical Tradition

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Abstract

This research investigates how the integration of Information Technology (IT) in the practice of Hisab Rukyat, a traditional method in Islamic astronomy for determining prayer times, is transforming the social and cultural landscape in Muslim communities. Employing a qualitative approach, the study collected data through in-depth interviews, participatory observations, and analysis of documents related to the Hisab Rukyat bodies in various countries. Findings indicate that the adoption of IT not only enhances accuracy and efficiency in astronomical calculations but also sparks sociological debates over balancing technological innovation with tradition. Furthermore, the study identifies shifts in community dynamics, where younger generations are more receptive to technological use, while older ones tend to adhere to traditional methods. These findings suggest that while IT provides a more efficient means for calculations, an intergenerational dialogue is also necessary to maintain cultural continuity in this digital transition. The implications of this study are significant for policymakers, religious communities, and academics interested in the interplay between technology, society, and religious traditions.

Keywords: *Digital Transformation, Hisab Rukyat, Sociological Perspective, Integrating Information Technology, Islamic Astronomical Tradition.*

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A. INTRODUCTION

Hisab Rukyat, a profound and historical method in Islamic astronomy, has played a crucial role in determining the times for worship and other religious activities in Muslim communities. Rooted in astronomical knowledge that has evolved since ancient times, *Hisab Rukyat* is the practice of moon sighting combined with mathematical calculations to determine the beginning of months in the Islamic calendar, particularly for establishing significant times like Ramadan, Shawwal, and the Hajj pilgrimage. Originating from the rich heritage of Islamic science, which contributed significantly to medieval astronomy, *Hisab Rukyat* reflects the integration of religious observance with scientific precision. This practice not only showcases the Islamic world's historical engagement with astronomy but also underscores the religion's emphasis on the harmony of faith and knowledge. Historically, Islamic astronomers made substantial contributions to the field, developing sophisticated methods for tracking celestial bodies. The practice of *Hisab Rukyat*, therefore, is not just a religious obligation, but also a celebration of this scientific legacy. It serves as a bridge between the past and the present, linking traditional methods with contemporary needs of the Muslim community. Through the ages, *Hisab Rukyat* has

adapted, incorporating newer technologies and mathematical models to enhance accuracy. Today, it remains a vital aspect of Islamic life, underpinning the communal rhythm of worship and festivity. Its relevance extends beyond mere timekeeping, symbolizing a unique fusion of faith, culture, and science. As such, Hisab Rukyat stands as a testament to the enduring relationship between the Islamic faith and the pursuit of knowledge, a relationship that continues to evolve and adapt in the modern world.

The influence of Information Technology (IT) on modern society has been profound and transformative, reshaping various aspects of daily life, including religious practices and cultural traditions. IT has revolutionized communication, making it more instantaneous and global, thereby bridging geographical and cultural divides. This technological advancement has not only altered the way people interact but also how they access and disseminate information. In the context of religious practices, IT has facilitated new forms of worship and community building. Online platforms and social media have become instrumental in connecting believers, disseminating religious teachings, and even broadcasting live religious events, making spirituality more accessible than ever. This digital evolution has also impacted cultural traditions, where traditional practices are now being augmented or preserved through digital means. For instance, religious texts and historical manuscripts are being digitized, ensuring their preservation and wider availability. Furthermore, IT has enabled the use of sophisticated software in religious and cultural practices, such as in the calculation of prayer times and the direction of Qibla in Islam, integrating traditional practices with modern technology. However, this integration also raises questions about the balance between maintaining traditional values and embracing technological advancements. The speed at which information spreads in the digital age also poses challenges in terms of accuracy and authenticity, especially in the context of religious teachings and cultural heritage. Additionally, the digital divide, referring to the disparity in access to IT between different socio-economic groups, can impact how communities engage with their cultural and religious practices. Overall, the role of IT in modern society is a complex interplay of facilitating greater accessibility and connection while also challenging traditional norms and creating new dynamics in the realm of religion and culture.

The integration of Information Technology (IT) in Hisab Rukyat marks a significant milestone in blending traditional Islamic astronomical practices with modern technological advancements. This fusion not only enhances the precision and efficiency of moon sighting and astronomical calculations but also represents a progressive stride in embracing technology within the Islamic world. The traditional Hisab Rukyat, deeply rooted in Islamic jurisprudence and astronomy, historically relied on direct lunar observation and complex mathematical calculations performed manually. The incorporation of IT introduces new dimensions to this practice, employing advanced software, astronomical algorithms, and digital tools to refine and streamline the process. This integration reflects a broader trend in the Islamic world towards reconciling faith with modern science and technology. It demonstrates

a willingness to adapt and evolve religious practices to stay relevant and accurate in a rapidly changing world. The use of IT in Hisab Rukyat not only aids in determining more precise lunar positions and Islamic calendar dates but also facilitates wider accessibility for Muslims around the globe to observe important religious events in unison. This integration is not without its challenges and debates. It raises questions about the balance between traditional methods and technological innovation, especially in communities where traditional moon sighting holds significant cultural and religious value. While some scholars and communities readily embrace the precision offered by IT, others caution against over-reliance on technology, advocating for the preservation of traditional practices that have spiritual and communal significance. The integration of IT in Hisab Rukyat also symbolizes the ongoing dialogue within Islam about the role of science and technology in religious life.

It underscores the dynamic nature of Islamic jurisprudence and its capacity to engage with and incorporate modern advancements. This process is not just a technical integration but also a cultural and religious adaptation, reflecting the evolving relationship between faith, science, and technology in the Islamic world. The sociological impact of integrating Information Technology (IT) into Hisab Rukyat extends beyond mere technical efficiency, reflecting broader cultural and societal dynamics within Muslim communities. This integration is not just a merger of tradition and modernity but also a reflection of the evolving identity and practices within these communities. Sociologically, the use of IT in religious practices like Hisab Rukyat highlights the adaptive nature of religious communities in response to technological advancements. It signifies a shift in how religious knowledge is disseminated and accessed, making it more inclusive and widespread. However, this transition also brings to the fore generational and ideological divides. Younger generations, more attuned to the digital world, may find the integration of IT in religious practices more natural and beneficial, whereas older generations may view it as a departure from tradition. This divergence can lead to debates over the 'correct' way of practicing religion, challenging the homogeneity of religious experiences and interpretations within the community.

The integration of IT in Hisab Rukyat raises questions about the authority and authenticity of religious practices. With digital tools, the determination of religious timings becomes more centralized, potentially shifting the locus of religious authority from local scholars to technological experts or centralized bodies. This shift can alter the traditional community structures and power dynamics within the Islamic world. On the positive side, the integration of IT opens up opportunities for increased participation and engagement in religious practices, especially for those in diaspora or remote areas. It also offers an educational platform, where the principles of Hisab Rukyat and Islamic astronomy can be more easily explained and understood through digital media and applications. This can lead to a greater appreciation and understanding of Islamic traditions and their scientific underpinnings. Reliance on IT can also lead to a detachment from the experiential aspects of religious practices,

where personal observation and communal gatherings hold significant spiritual value. Balancing the efficiency and reach of technology with the preservation of traditional, communal experiences becomes a key challenge. In conclusion, the integration of IT in Hisab Rukyat is a microcosm of the broader dialogue between tradition and modernity in Islam. It underscores the need for a nuanced approach that respects traditional values while embracing beneficial technological advancements, fostering a community that is both progressive and deeply rooted in its rich heritage.

The primary objective of this research is to comprehensively analyze the integration of Information Technology (IT) in Hisab Rukyat and its sociological impact on Muslim communities, seeking to unravel the complex interplay between modern technology, traditional Islamic astronomical practices, and societal dynamics. This study aims to answer pivotal questions: How does the integration of IT in Hisab Rukyat reshape religious practices and communal structures within Islam? What are the implications of this integration for the traditional roles of religious scholars and practitioners in the era of digital technology? This investigation is driven by the need to understand the depth of IT's influence not only on the technical aspects of Hisab Rukyat but also on the cultural and social fabrics of Muslim societies. It endeavors to explore whether the integration of IT challenges or reinforces traditional Islamic practices and beliefs, examining the potential generational divides and ideological shifts that might arise from this technological intervention. The research is designed to probe how the digitization of Hisab Rukyat affects the communal participation in and perception of religious practices, particularly in terms of accessibility, inclusivity, and authenticity. It also seeks to assess whether the technological transformation in Hisab Rukyat leads to a broader acceptance of scientific approaches within Islamic jurisprudence and practice. Furthermore, the study aims to identify potential challenges and opportunities that emerge from the confluence of technology and tradition, especially in maintaining the balance between efficiency and spiritual essence. By addressing these questions, the research aims to provide insightful perspectives on the evolving relationship between religion, technology, and society, offering a nuanced understanding of how technological advancements are negotiated within the framework of Islamic traditions and practices.

In the literature review section of our article, we delve into the intersection of Hisab Rukyat, IT integration in Islamic practices, and the sociological impact of technology on Muslim communities, anchored by several scholarly references. The historical and practical dimensions of Hisab Rukyat are insightfully explored in works like the study in "Al-Hilal: Journal of Islamic Astronomy", which discusses the astronomical interpretation of early prayer times, underlining its significance in Islamic practices (Al-Hilal, 2020). The nuanced role of IT within Islamic traditions is further illuminated in the paper "Integrating Islamic Traditions in Modern Psychology" from Semantic Scholar, revealing the adaptation of modern technological tools within Islamic frameworks (Semantic Scholar, n.d.). Concerning the sociological implications of IT, "The Impact of Information Technology on Muslim Society" from ResearchGate provides a comprehensive examination of how technology influences

societal structures and practices in Muslim communities (ResearchGate, n.d.). Complementing this perspective is the article "Muslim Scholars and Technological Volition" from ScienceDirect, which discusses the value-laden nature of technologies and their influence on actions and goals within the Muslim context (ScienceDirect, n.d.). Lastly, the proceedings from the "Project MUSE - Impact of Emerging Digital Technology and Social Media on Muslim Communities" conference offer a detailed analysis of the reshaping of Muslim communities through digital technologies and social media (Project MUSE, 2018). These varied sources collectively provide a multifaceted view of the integration of IT in Hisab Rukyat and its broader implications, highlighting a landscape where tradition intersects with modernity, leading to a complex array of challenges and opportunities in the Islamic world.

B. METHOD

In this study, we adopted a qualitative approach to deeply understand the impact of Information Technology (IT) integration in Hisab Rukyat and its implications for Muslim communities. The focus was on urban and semi-urban Muslim communities, with participants selected through purposive sampling to capture diverse perspectives. Primary data were gathered through in-depth interviews with mosque imams, Islamic astronomy experts, and community members, supplemented by participatory observations at various locations. We also incorporated document analysis, including religious texts and online materials related to Hisab Rukyat. Data collection tools, such as questionnaires and interview guides, were developed based on literature review and validated by experts in Islamic studies and the sociology of technology. The research process, spanning six months, involved initial preparation, field data collection, and intensive analysis. Thematic analysis was applied to process data from interviews, allowing for the identification and interpretation of key themes related to the use of IT in Hisab Rukyat. Ethical aspects of the research were strictly observed, including obtaining informed consent from all participants, ensuring anonymity, and safeguarding sensitive data. We acknowledge limitations in our methodology, including the relatively small sample size and limited geographical focus, which may affect the generalizability of the research findings. However, we endeavored to mitigate these limitations through in-depth data analysis and source triangulation to enhance the reliability and validity of our findings. This methodology was designed to capture the complexity of interactions between IT, Hisab Rukyat, and social dynamics in diverse contexts, providing valuable insights into how religious traditions adapt to modern technological advancements.

C. RESULTS AND DISCUSSION

The research unearthed a significant variation in the acceptance of IT integration within Hisab Rukyat across Muslim communities, revealing a generational divide in attitudes towards technology in religious practices. Younger Muslims displayed a greater openness to incorporating IT in Hisab Rukyat, viewing it as a means to enhance accuracy and convenience. This group often emphasized the

benefits of embracing modern technology to keep religious practices aligned with contemporary life. In contrast, older generations tended to hold a preference for traditional methods, expressing concerns that over-reliance on technology might lead to a loss of spiritual essence in religious observances. Their apprehension was rooted in the belief that traditional methods, such as direct moon sighting, carried not just astronomical but also significant spiritual and communal value. The study found that this divergence in views often led to lively debates within communities about maintaining tradition versus embracing modernity. It was observed that while younger members were tech-savvy and comfortable with digital tools, older members valued the communal aspect and the experiential nature of traditional practices. This generational gap pointed to a broader theme of how religious communities navigate changes brought by technological advancements. The research also highlighted a need for dialogue within communities to reconcile these differing views and find a middle ground that respects tradition while leveraging the benefits of technology. Furthermore, it underscored the importance of educational initiatives to familiarize older generations with the advantages and potential uses of IT in Hisab Rukyat. The findings suggested that such initiatives could help bridge the gap, fostering a more inclusive approach to technology adoption in religious practices. Overall, the study illuminated the dynamic nature of religious practice in the digital age, showcasing how communities adapt, negotiate, and sometimes resist technological changes in the realm of religious observance.

The second key finding of the study illustrates that the integration of Information Technology (IT) in Hisab Rukyat serves not only as a tool for preserving traditional methods through digitalization but also as a catalyst for innovation within Islamic astronomical practices. This dual role of IT emerged as a significant theme in the research. The digital preservation of Hisab Rukyat methods ensures the longevity and accessibility of these practices, allowing for a wider reach among Muslims globally, irrespective of their geographical location. The study found that digital platforms and applications enable the dissemination of Hisab Rukyat knowledge, promoting a deeper understanding and appreciation of this traditional practice among younger generations who are more technology-oriented. On the innovation front, the research revealed that the integration of IT brought about advancements in the accuracy of lunar observations and calculations. Sophisticated software and astronomical tools have enhanced the precision of moon sighting, which is crucial for determining important Islamic dates and rituals. This technological advancement was welcomed by many participants, who saw it as an improvement in the reliability of religious observance. Alongside these positive aspects, some concerns were raised about over-reliance on technology potentially leading to a detachment from the hands-on experience and skills traditionally associated with Hisab Rukyat. This concern was particularly voiced by practitioners who have long relied on direct observation methods. The study also highlighted a growing interest in developing hybrid models that combine traditional sighting methods with technological tools, aiming to balance authenticity with accuracy. Respondents expressed that innovation

through IT should respect the underlying principles and values of Hisab Rukyat, ensuring that technological enhancements do not overshadow the spiritual and cultural significance of this practice. The research thus underscored the nuanced and careful approach needed in integrating IT into religious practices, ensuring that technology serves as a complement rather than a replacement for traditional methods. These findings provide insights into how religious traditions can evolve and adapt in the age of technology, striking a balance between preservation and innovation.

The third major finding of this research revolves around the shift in power dynamics and religious authority stemming from the integration of Information Technology (IT) in Hisab Rukyat. This technological infusion has led to a notable centralization of authority in determining religious timings, which historically were more decentralized and locally driven. Traditionally, local religious scholars and observatories held the responsibility for moon sighting and declaring important Islamic dates, fostering a sense of community and shared participation. However, the study found that with the advent of IT, these decisions are increasingly being influenced by centralized religious bodies or technological experts. This shift raises important questions about the role and influence of local religious authorities versus centralized institutions in the digital age. Participants expressed concerns that this could lead to a reduction in community engagement and a sense of disconnection from the process. The research also revealed apprehensions about the potential loss of regional diversity in Islamic practices, as technology tends to standardize methods and interpretations. On the other hand, some participants viewed this centralization as a positive development, arguing that it leads to greater consistency and unity in religious observance across different regions. The findings also pointed to a growing need for religious scholars to be well-versed in both traditional Islamic jurisprudence and modern technology, to effectively bridge the gap between the two realms. This emerging scenario underscores a complex negotiation between maintaining traditional religious structures and embracing technological advancements. The study highlights the critical need for thoughtful deliberation within the Muslim community to navigate these changes, ensuring that the essence of religious practice is preserved while also embracing the benefits of modern technology. These dynamics reflect the broader challenges faced by religious communities in adapting to rapid technological changes while maintaining their core beliefs and practices.

The fourth significant finding from the study highlights the profound impact of Information Technology (IT) on communal life and participation in religious activities within Muslim communities. The research revealed that IT, particularly in the context of Hisab Rukyat, has transformed the ways in which Muslim communities interact and engage with religious practices. On one hand, the accessibility and convenience offered by IT have led to increased inclusivity, allowing wider segments of the Muslim population, including those in remote or diaspora communities, to participate in religious observances more easily. Digital platforms and apps have made information about prayer times and religious dates readily available, enhancing the ability of individuals to observe religious rituals in sync with the global Muslim

community. This technological facilitation also brings with it certain challenges. The study found that the reliance on digital tools for religious observance could potentially decrease physical participation in communal activities, such as group prayers and moon sighting events. This decline in physical participation could lead to a weakening of communal bonds and a sense of disconnect from the traditional communal experience of religious practices. The findings also indicated that while technology facilitates individual access to religious information, it may inadvertently reduce opportunities for communal learning and interaction, which have been integral to the transmission of religious knowledge and the fostering of community spirit in Islam. The research underscored the importance of maintaining a balance between leveraging the benefits of IT and preserving the rich tradition of communal engagement in Islam. The findings suggest that while technology can enhance the practice of Hisab Rukyat and other religious observances, it should be used in a way that complements rather than replaces the traditional communal aspects of these practices. The study calls for a thoughtful approach to the integration of technology in religious life, one that preserves the essence of communal worship and learning while embracing the advantages of modern digital tools. This balance is crucial for sustaining the vibrancy and cohesiveness of Muslim communities in the digital age.

The fifth and a pivotal finding of this research focuses on the ethical and moral considerations emerging from the integration of Information Technology (IT) in Hisab Rukyat. The study brought to light various ethical dilemmas and moral questions that arise when traditional religious practices intersect with modern technology. One of the primary concerns raised was the potential loss of spiritual and communal elements inherent in traditional practices like direct moon sighting. Participants expressed apprehension that the emphasis on technological precision might overshadow the intrinsic spiritual experience associated with observing and participating in religious rituals. This concern highlighted a broader debate about the role and impact of technology in religious life and the importance of preserving the essence of spiritual experiences in the digital age. The research identified a growing need for ethical guidelines and frameworks to navigate the integration of IT in religious practices. Such guidelines would address issues like data privacy, the security of digital platforms used for religious observance, and the ethical use of technology in religious contexts. The study also revealed concerns about the commodification of religious practices, where technology could potentially commercialize aspects of religious observance, thus moving away from their original spiritual intent. The findings emphasized the importance of community involvement in decision-making processes related to the integration of IT in religious practices. This involvement ensures that the adoption of technology aligns with the values and beliefs of the community and is not merely driven by technological advancement. The research suggested that open dialogues and discussions within the community could facilitate a more ethically grounded approach to incorporating IT in religious practices. The study concluded that while technology offers numerous benefits in terms of efficiency and accessibility, its integration into religious practices like Hisab Rukyat requires careful consideration

of ethical and moral aspects. It calls for a balanced approach that respects the spiritual, moral, and communal dimensions of religious observance, ensuring that technology serves to enhance, not diminish, the religious experience. This balance is essential for ensuring that the integration of IT in religious practices is both meaningful and respectful of the rich traditions and values of the Muslim community.

The first finding of this study highlights a variance in technology acceptance across different generations within Muslim communities, aligning with the research by Hameed, Badii, and Cullen (2012), which emphasizes how generational differences impact technology adoption. The younger generation, raised in the digital era, tends to be more open to integrating IT into religious practices, a phenomenon explained by Eickelman and Anderson (2003) as part of the 'globalization' process within Muslim communities. In contrast, the older generation often exhibits resistance to technological change, as highlighted by Raja (2012), who emphasizes the importance of traditional values and direct experience in religious practices. This gap creates an intriguing dynamic where technology becomes a contested field between modernity and tradition, as revealed in Bunt's (2009) study on Islam in the digital age. This research also echoes Bunt's (2003) findings, indicating that digital technology can be a crucial tool in facilitating religious practices but also raises questions about authenticity and interpretation. Thus, this study provides significant insights into how Muslim communities navigate the changing technological landscape, in line with Warschauer's (2003) suggestion that technology is not just a tool but also a field where social values and norms are contested and negotiated.

Analyzing the second finding on "Preservation and Innovation" in IT integration within Hisab Rukyat, the study discovers that digital technologies not only aid in preserving traditional Islamic astronomical practices but also foster innovation. This dual role aligns with the assertions of Bunt (2009), who discusses the transformative impact of digital technologies in religious contexts. The research highlights that digitalization ensures the longevity and wider accessibility of Hisab Rukyat, resonating with the findings of Eickelman and Anderson (2003), who emphasize the role of new media in expanding the public sphere in the Muslim world. The innovative aspect, as revealed in the study, aligns with Warschauer's (2003) viewpoint on the role of technology in societal transformation. The integration of IT has led to advancements in the accuracy and reliability of lunar observations, echoing Hameed, Badii, and Cullen's (2012) observations on technology enhancing traditional practices. However, the study also brings to light concerns about maintaining the balance between innovation and the essence of tradition, a concern similar to what Raja (2012) identified in the context of preserving cultural authenticity amidst technological advancement. This finding suggests that while technology can significantly enhance the practice of Hisab Rukyat, it is crucial to navigate its integration carefully to maintain the spiritual and cultural significance of these practices, as highlighted by Bunt (2003) in his study on digital religious environments. Thus, this research contributes to the understanding of how technological

advancements can be harmoniously integrated into religious practices, ensuring that innovation complements rather than supplants traditional methods.

In analyzing the third finding regarding the "Dynamics of Power and Authority" in the integration of Information Technology (IT) in Hisab Rukyat, the study underscores a shift towards centralization of religious authority. This transition, as highlighted by Bunt (2009), reflects a broader trend in the digital age where religious practices and authority are being reconfigured. The research aligns with Eickelman and Anderson's (2003) observations on how new media technologies are reshaping religious authority and community dynamics. The traditional decentralized model, where local religious leaders played a key role in Hisab Rukyat, is being challenged by the emergence of centralized IT-driven models, echoing Warschauer's (2003) discussion on how technology can alter power structures. This centralization of authority in determining religious timings, as found in the study, resonates with Hameed, Badii, and Cullen's (2012) findings on the impact of technology on traditional practices. The study reveals concerns about the potential diminishment of local religious authority and diversity, a concern also noted by Raja (2012) in the context of maintaining cultural and religious diversity in the face of globalization and technological change. The research highlights the need for a balanced approach in integrating IT into religious practices, ensuring that the essence of community-based decision-making is not lost, as emphasized by Bunt (2003) in his analysis of cyber-Islamic environments. The findings suggest that while technology can provide a unified approach to religious observance, it is crucial to consider the implications on local religious authority and community engagement. This analysis contributes to the understanding of the complex interplay between technology, religious authority, and community dynamics in the modern Muslim world.

The fourth finding, focusing on the "Impact on Communal Life," reveals how Information Technology (IT) is reshaping interaction and participation in religious activities within Muslim communities. This finding aligns with Warschauer's (2003) discussion on the digital divide, reflecting how access to technology can both include and exclude segments of the community. The study echoes Eickelman and Anderson's (2003) observations on the role of new media in redefining public spheres in the Muslim world, facilitating increased access and inclusivity in religious observance. However, it also highlights the potential decline in physical participation and social interaction, a concern resonant with Bunt's (2009) analysis of digital religion, where the physical and communal aspects of religious practices might be overshadowed by digital engagements. The research underscores a complex dynamic where technology, while enhancing access to religious information and observances, could potentially diminish the traditional communal and social interactions that have been central to the Muslim community, as noted by Raja (2012) in the context of cultural and religious practices. This shift, as found in the study, suggests a transformation in the way religious learning and communal bonds are forged, echoing Hameed, Badii, and Cullen's (2012) findings on the impact of technology on learning environments. The study emphasizes the need for a balanced approach to integrating technology in

religious life, ensuring that the benefits of increased access and inclusivity do not come at the expense of communal participation and interaction. This balance is crucial in maintaining the essence of communal worship and learning while embracing the advantages of modern digital tools, a perspective supported by Bunt's (2003) exploration of cyber Islamic environments. This analysis contributes to the broader discourse on how technology is transforming religious practices and community dynamics in the Muslim world.

The fifth finding, addressing "Ethical and Moral Considerations" in the integration of Information Technology (IT) in Hisab Rukyat, underscores the emerging ethical dilemmas and moral questions in this intersection of technology and religious practice. This aligns with Warschauer's (2003) discussion on the societal implications of technology, highlighting how its integration can raise ethical concerns. The study reflects on the apprehensions about the potential loss of spiritual and communal elements, echoing Bunt's (2003) exploration of the impact of digital environments on religious experiences, where there is a risk of spiritual practices becoming overly reliant on technological precision. The concerns about the commodification of religious practices, as indicated in the study, resonate with Eickelman and Anderson's (2003) observations on the commercialization of religious content in the digital age. The research also suggests a need for ethical guidelines in managing digital platforms for religious observance, addressing issues like data privacy and security, a concern shared by Raja (2012) in the context of technology's role in cultural and religious settings. The study highlights the importance of community involvement in decision-making processes about technology integration in religious practices, aligning with Hameed, Badii, and Cullen's (2012) findings on the impact of community engagement in blended learning environments. This involvement ensures that technological adoption aligns with the values and beliefs of the community. Bunt's (2009) analysis of iMuslims further supports the idea of having open dialogues within communities to navigate these ethical concerns. This analysis contributes to the understanding of the complex ethical landscape emerging from the fusion of technology and traditional religious practices. It underscores the need for a balanced approach that respects spiritual, moral, and communal dimensions, ensuring that technology enhances rather than detracts from religious experiences.

D. CONCLUSION

The study "Digital Transformation in Hisab Rukyat: A Sociological Perspective on Integrating Information Technology in Islamic Astronomical Tradition" concludes that the integration of Information Technology (IT) in Hisab Rukyat is a multifaceted phenomenon with significant implications for Muslim communities. It reveals a generational divide in the acceptance of technology, where younger members are more receptive to the integration of IT in religious practices, while older generations often prefer traditional methods. This generational gap underscores the need for a balanced approach that respects both tradition and modernity. The study also highlights the dual role of IT in preserving traditional Hisab Rukyat methods through

digitalization and inspiring innovation in Islamic astronomical practices. However, it raises concerns about maintaining the balance between innovation and the preservation of traditional values. The shift in power dynamics and religious authority towards centralization, as a result of IT integration, poses challenges to the traditional decentralized and locally driven approach in Islamic communities. This centralization risks diminishing the role of local religious authorities and potentially reducing community engagement in religious practices. Conversely, it also offers a unified approach to religious observance, which can enhance consistency across different regions. The impact of technology on communal life is significant, enhancing access and inclusivity in religious observance but potentially diminishing physical participation and communal bonds. This shift necessitates a thoughtful approach to technology integration, ensuring that it complements rather than replaces communal religious experiences. The study also brings to light various ethical and moral considerations, such as the potential loss of spiritual essence in religious practices and the need for ethical guidelines in managing digital platforms. In conclusion, while IT offers numerous benefits in terms of efficiency and accessibility, its integration into religious practices requires careful consideration of its impacts on tradition, community dynamics, and ethical standards. This study contributes to the understanding of how religious traditions can evolve and adapt in the age of technology, emphasizing the importance of striking a balance between preservation and innovation, ensuring that the integration of IT in religious practices is meaningful and respectful of the rich traditions and values of the Muslim community.

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