



THE ADOPTION OF VIRTUAL HAJJ INNOVATION IN THE FUTURE: POTENTIALS AND CHALLENGES

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Abstract: Virtual Hajj represents a form of religious innovation arising from the integration of virtual reality (VR) technology into discourse on Hajj rituals. While prior studies have examined Virtual Hajj from technological, educational, or normative Islamic legal perspectives, limited attention has been given to its diffusion as a socio-religious innovation shaped by communication processes, religious authority, and jurisprudential norms. This study offers a conceptual and analytical prediction, rather than an empirical measurement, of the potential adoption or rejection of Virtual Hajj using Everett M. Rogers' Innovation Diffusion Theory. Employing a qualitative literature-based approach, the study analyzes academic publications, authoritative Islamic legal opinions, and selected contextual media sources through the Miles and Huberman analytical framework. The findings indicate that the diffusion of Virtual Hajj depends on the interaction between perceived relative advantages and compatibility with Islamic normative frameworks governing ritual validity, as mediated by religious authority. The study proposes two trajectories: acceptance as a supplementary medium for ritual education or discontinuance if perceived as incompatible with established legal and ethical norms. These findings contribute to Islamic jurisprudential discourse and future Hajj policy considerations.

Keywords: Virtual Hajj, Innovation Diffusion Theory, Islamic Jurisprudence, Religious Authority, Technology-Based Religious Innovation

Abstrak: Haji virtual merupakan bentuk inovasi keagamaan yang muncul dari integrasi teknologi virtual reality (VR) dalam wacana ritual ibadah haji. Selama ini, kajian mengenai haji virtual umumnya ditelaah dari perspektif teknologi, pendidikan, atau hukum Islam normatif, sementara perhatian terhadap difusinya sebagai inovasi sosial-keagamaan yang dibentuk oleh proses komunikasi, otoritas keagamaan, dan norma yurisprudensial masih terbatas. Penelitian ini menawarkan prediksi konseptual dan analitis, bukan pengukuran empiris, mengenai potensi adopsi atau penolakan haji virtual dengan menggunakan Teori Difusi Inovasi Everett M. Rogers. Penelitian ini menggunakan pendekatan kualitatif berbasis studi kepustakaan dengan menganalisis publikasi akademik, pandangan hukum Islam yang otoritatif, serta sumber media terpilih yang diposisikan sebagai konteks pendukung melalui kerangka analisis Miles dan Huberman. Temuan penelitian menunjukkan bahwa difusi haji virtual ditentukan oleh interaksi antara persepsi keunggulan relatif dan tingkat kesesuaiannya dengan kerangka hukum Islam normatif yang mengatur validitas ritual, sebagaimana dimediasi oleh otoritas keagamaan. Penelitian ini mengajukan dua kemungkinan arah: haji virtual berpotensi diterima sebagai media pendukung edukasi

manasik atau mengalami putus adopsi apabila dipersepsikan bertentangan dengan norma hukum dan etika keagamaan. Temuan ini berkontribusi pada diskursus yurisprudensi Islam serta pertimbangan kebijakan penyelenggaraan haji di masa depan.

Kata Kunci: *Haji Virtual, Teori Difusi Inovasi, Yurisprudensi Islam, Otoritas Keagamaan, Inovasi Keagamaan Berbasis Teknologi*

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Introduction

The digital transformation of religious practices has intensified alongside the rapid development of immersive technologies such as virtual reality (VR). In various fields, VR has been widely adopted for educational,¹ professional,² and training purposes due to its capacity to simulate complex environments and experiences.³ Within Islamic discourse, this technological development has generated renewed debates concerning the legitimacy, function, and boundaries of technology-mediated religious experiences.⁴ One of the most contested manifestations of this transformation is the emergence of Virtual Hajj, a technology-based simulation that reproduces the spatial and ritual elements of the Hajj pilgrimage.

Existing studies on Virtual Hajj have predominantly approached the phenomenon from technological, educational, or normative Islamic legal perspectives. Several scholars emphasize its potential as an instructional medium for *manasik* education and ritual familiarization through immersive simulation.⁵ Other studies critically examine Virtual Hajj from the standpoint of Islamic jurisprudence, particularly in relation to the fulfillment of *rukun haji* and the permissibility of technology-mediated rituals.⁶ While these approaches provide valuable insights, they tend to conceptualize Virtual Hajj as a static technological artifact rather than as a dynamic socio-religious innovation whose acceptance or rejection is shaped by communication processes, religious authority, and normative frameworks.

This study argues that Everett M. Rogers' Innovation Diffusion Theory offers a critical analytical framework for examining the prospective adoption of Virtual Hajj.

¹ Sella Lestari, "Penerapan Virtual Reality dalam Pendidikan: Masa Depan Pembelajaran Interaktif," *Circle Archive* 1, no. 6 (2024): 1–8.

² Ali Imron et al., "Adaptation of Employee Development with Artificial Intelligence Virtual Reality in a Power Generation Company," *Widya Cipta : Jurnal Sekretari Dan Manajemen* 8, no. 1 (2024): 80–85, <https://doi.org/https://doi.org/10.31294/widyacipta.v8i1.20342>.

³ Punia dan I Gede Eka Agung Agastya, "Penggunaan Virtual Reality dan Augmented Reality dalam Pendidikan Kedokteran," in *Prosiding The 3rd National Conference on Applied Business, Education, & Technology (NCABET)* (Serang: Universitas Bina Bangsa, 2023), 806–15, <https://doi.org/10.46306/ncabet.v3i1>.

⁴ Salbiah Mohamed Salleh et al., "Teknologi Virtual Reality Amali Haji: Satu Inovasi Masa Hadapan," *JIMK: Jurnal Islam Dan Masyarakat Kontemporer* 22, no. 2 (2021): 56–63, <https://doi.org/https://doi.org/10.37231/jimk.2021.22.2.577>.

⁵ Mhd Amru Hidayat, Ali Ikhwan, dan Muhamad Alda, "Aplikasi Virtual Tour Manasik Haji Pada Asrama Haji Menggunakan Metode MDLC Berbasis Android," *Resolusi: Rekayasa Teknik Informatika dan Informasi* 3, no. 5 (2023): 231–38, <https://doi.org/https://doi.org/10.30865/resolusi.v3i5.751>.

⁶ Aisyah Nurherviyanti et al., "Menelaah Penggunaan Virtual Reality (VR) dalam Pelaksanaan Ibadah Haji dari Sudut Pandang Rukun Haji," *Moderasi: Jurnal Kajian Islam Kontemporer* 1, no. 1 (2023): 1–25.

Diffusion theory emphasizes that innovation adoption is influenced not merely by technological sophistication, but by social processes such as perceived relative advantage, compatibility with existing values, complexity, and the role of opinion leaders. Previous applications of diffusion theory have demonstrated its relevance in analyzing technology adoption intentions across diverse sectors.⁷ Research on the adoption of the *Haji Pintar* digital application further demonstrates that perceptions of usefulness and ease of use significantly influence the acceptance of technology-based services among Hajj pilgrims, indicating that future innovations such as Virtual Hajj may encounter similar adoption dynamics.⁸

In Islamic societies, religious scholars, fatwa institutions and normative jurisprudence principles function as key opinion leaders whose evaluations significantly influence communal responses to religious innovation. Despite the relevance of diffusion theory, previous research has rarely applied this framework to analyze technology-based religious innovations within Islamic jurisprudential contexts, particularly in relation to ritual practices such as Hajj. While existing legal studies focus on permissibility and prohibition, they seldom examine how religious authority and normative Islamic law interact with social communication processes in shaping innovation diffusion. This gap is significant because Hajj is not merely a symbolic act of devotion, but a legally defined ritual (*ibadah mahdah*) whose performance is governed by strict jurisprudential requirements.⁹

Accordingly, this study seeks to address the following research problem: *How can the potential adoption or rejection of Virtual Hajj be analytically understood through the lens of innovation diffusion theory when examined alongside Islamic jurisprudential norms and religious authority?* By reframing Virtual Hajj as a socio-religious innovation rather than a purely technological phenomenon, this research offers a conceptual and analytical prediction of its future trajectory within Muslim communities.

By integrating innovation diffusion theory with Islamic jurisprudential discourse, this study contributes to communication scholarship by demonstrating how normative religious frameworks shape innovation adoption processes. Furthermore, it provides analytical insights relevant to Islamic legal debates and policy considerations concerning the governance and future positioning of technology-based religious practices, particularly in the context of Hajj management and religious education.

Theoretical Approach

The Diffusion of Innovation Theory was developed by Everett M. Rogers, a sociologist and renowned communication scholar, in his seminal book *Diffusion of Innovations* published in 1962. Rogers introduced the concept of diffusion of innovation,

⁷ Bertha Yunita Permatasari dan Charlotte Manilyn Amanda Ulyana Kesaulya, "Penerapan Innovation Diffusion Theory terhadap Niat Mengadopsi Penggunaan Fashionable Medical Scrub," *The Journalish: Social and Government* 5, no. 1 (2024): 95–105.

⁸ Miftahul Hadi et al., "User Behavior in the Haji Pintar Application Using the Technology Acceptance Model Approach," *Multazam: Jurnal Manajemen Haji dan Umrah* 5, no. 2 (2025): 104–25.

⁹ Sabrina Diana, Muhammad Akasyah Jatisari, dan Nur Lailatul Musyafa'ah, "Haji Virtual melalui Metaverse untuk Mencegah Penyebaran Covid-19 Perspektif Hukum Islam," *Ma'mal: Jurnal Laboratorium Syariah dan Hukum* 4, no. 1 (2023): 20–39, <https://doi.org/https://doi.org/10.15642/mal.v4i1.151>.

which explains the process by which an innovation spreads and is accepted by members of a society.¹⁰ Diffusion of innovation is also regarded as a form of social change within a social system. Through this process, an innovation may be either adopted or rejected by members of the system. An innovation is adopted when a decision-making process concludes that the innovation is beneficial. However, after some time, an innovation that was once adopted may later be rejected due to dissatisfaction with its outcomes or the emergence of a newer, superior innovation. In such a case, the innovation is said to experience “discontinuance.”¹¹

The Diffusion of Innovation Theory is highly relevant for understanding how new innovations, such as virtual reality (VR) technology, can be introduced and adopted within society. Tamitiadini and Pradheksa (2022) explain that Rogers classified society into five distinct groups based on their openness to innovation: innovators, early adopters, early majority, late majority, and laggards. These five adopter categories help illustrate how VR technology can be accepted across various media and communication sectors, as well as the challenges it faces in achieving mass adoption, where all segments of society can utilize the technology without concerns regarding device cost or accessibility.

Innovators are the earliest group to adopt an innovation. They tend to be open to change and receptive to new ideas in media and communication technologies offered by VR. Early adopters are those who follow the innovators and typically possess significant social influence within their communities. They are relatively quick to adopt innovations once there is evidence of their benefits. The early majority represents a large portion of society who adopt an innovation only after observing concrete results from early adopters. The late majority is another large segment of society, but one characterized by greater uncertainty and a need for convincing proof before adopting an innovation. Finally, the laggards are the most resistant to change; they are typically the last group to accept new ideas.¹²

In the context of this research, the Diffusion of Innovation Theory is used to analyze the adoption patterns of virtual hajj in the future, examining both the potential acceptance and the social, technological, and religious challenges faced by Muslim communities. The five adopter categories serve as an analytical framework to understand how Muslims, from innovative to conservative groups, respond to the emergence of virtual-based religious practices. Thus, this theory provides the main conceptual framework for mapping the dynamics of acceptance and resistance toward the innovation of virtual hajj.

Research Methods

Research Design

¹⁰ Firman Muhammad Abdurrohman Akbar, “Analisis Tantangan dan Peluang Pengembangan UMKM Halal dalam Era Pasar NAsional,” *Zhafir: Journal of Islamic Economics, Finance, and Banking* 2, no. 2 (2020): 105–30.

¹¹ Andin H. Taryoto, “Telaah Teoritik dan Empirik Difusi Inovasi Pertanian,” *FAE* 14, no. 1 (1996): 41–53.

¹² Moh. Hamzah, “The Optimization of Muzāra’ah Contracts in Islamic Financial Institutions for Alleviating Poverty and Empowering the Community’s Economy,” *Al-Mustashfa: Jurnal Penelitian Hukum Ekonomi Syariah* 9, no. 1 (2024): 60–77, <https://doi.org/http://dx.doi.org/10.24235/jm.v9i1.16716>.

This study employs a qualitative, literature-based research design¹³ situated within communication studies. Rather than conducting empirical measurement, the research adopts a conceptual and analytical approach to examine Virtual Hajj as a prospective socio-religious innovation. The analytical framework is grounded in Everett M. Rogers' Innovation Diffusion Theory to explore how communication processes, religious authority, and Islamic jurisprudential norms shape the potential adoption or rejection of technology-based religious practices.

Data Sources

The data for this study consist of three categories of sources. First, peer-reviewed academic journal articles related to Virtual Hajj, religious innovation, innovation diffusion, and Islamic jurisprudence were selected as the primary analytical materials. Second, authoritative Islamic legal opinions, including fatwas and scholarly views issued by recognized religious institutions and prominent scholars, were examined to represent normative Islamic perspectives on ritual validity and religious innovation. Third, selected online media sources were used solely as contextual illustrations to capture public discourse surrounding Virtual Hajj and were not treated as primary analytical data. To ensure methodological rigor, inclusion criteria for academic sources comprised relevance to the research topic, publication in reputable journals, and thematic alignment with innovation diffusion or Islamic legal analysis. Media sources were included only when they provided contextual clarification of debates or institutional initiatives related to Virtual Hajj. Sources that lacked clear authorship, institutional affiliation, or academic credibility were excluded from the analysis.

Analytical Framework

The analysis is guided by the core attributes of Innovation Diffusion Theory, particularly relative advantage, compatibility, complexity, and the role of opinion leaders. In this study, religious scholars, fatwa councils, and Islamic institutions are conceptualized as key opinion leaders whose interpretations and evaluations significantly influence communal responses to religious innovation. Islamic jurisprudence (*fiqh*) is positioned as a normative framework that mediates the diffusion process by determining the boundaries of ritual legitimacy and ethical acceptability.

Data Analysis

Data analysis followed the interactive model proposed by Miles and Huberman, encompassing data reduction, data display, and conclusion drawing.¹⁴ Relevant textual data were systematically categorized according to diffusion attributes and jurisprudential themes. During the data reduction stage, overlapping background information and purely descriptive content were minimized. In the data display stage, analytical patterns were

¹³ Miza Nina Adlini et al., "Metode Penelitian Kualitatif Studi Pustaka," *Edumaspul Jurnal Pendidikan* 6, no. 1 (2022): 974–128, <https://doi.org/https://doi.org/10.33487/edumaspul.v6i1.3394>.

¹⁴ Sugiyono, *Metode Penelitian Pendidikan (Pendekatan Kuantitatif, Kualitatif, dan R&D)* (Bandung: Alfabeta, 2015).

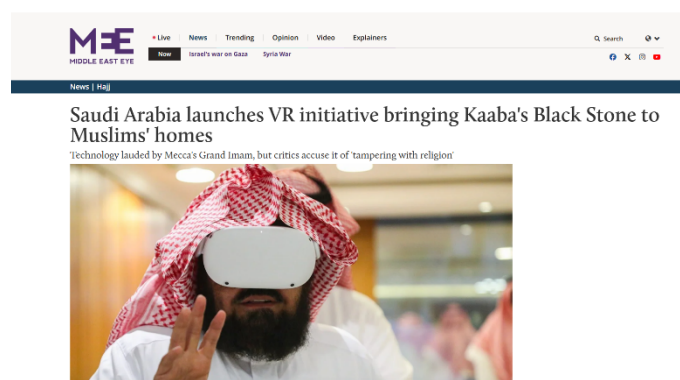
organized to distinguish descriptive findings from theoretical interpretation. Finally, conclusions were drawn by synthesizing diffusion theory with Islamic jurisprudential analysis to generate conceptual predictions regarding the future trajectory of Virtual Hajj adoption.

Result and Discussion

Virtual Hajj

Virtual Hajj can be identified as a technology-based religious innovation that integrates Virtual Reality (VR) technology into the representation of Hajj-related spaces and ritual sequences. This innovation is primarily positioned as an immersive simulation that enables users to experience Hajj environments virtually, rather than as a legally valid substitute for the pilgrimage. VR is commonly categorized as immersive technology because it is designed to blur the boundary between real and virtual experiences through sensory engagement and simulated environments.¹⁵ In this context, VR replaces the user's physical surroundings with a fully simulated virtual environment, enabling immersive religious and educational experiences. Studies on VR in learning and religious contexts show that immersive technology enhances cognitive engagement and procedural understanding of ritual actions, especially in pre-ritual training.¹⁶

Figure 1. Screenshot of an online news article from Middle East Eye about the Virtual Blackstone initiative (personal documentation, 2024)



One of the most visible implementations of Virtual Hajj is the Virtual Blackstone Initiative, which utilizes 360° VR-based simulation to recreate the experience of being near the Kaaba and interacting with the Black Stone (*Hajar Aswad*).¹⁷ This initiative illustrates how Virtual Hajj is operationalized through institutional projects aimed at enhancing

¹⁵ M. Claudia Tom Dieck dan Dai-in Danny Han, "The Role of Immersive Technology in Customer Experience Management," *Journal of Marketing Theory and Practice* 30, no. 1 (2022): 108–119.

¹⁶ M. Slamet Yahya, Novala Arum Salsabillah, dan Muhammad Umar Ibnu Malik, "Virtual Reality-Based Interactive Learning Media For Fiqh Ibadah In Indonesian Islamic Education: A Systematic Literature Review," *At-Turats* 19, no. 2 (2025): 194–205, <https://doi.org/https://doi.org/10.24260/atturats.v19i2.5037>.

¹⁷ Mustafa Abu Sneineh, "Saudi Arabia launches VR initiative bringing Kaaba's Black Stone to Muslims' homes," Middle East Eye, 2021.

accessibility and engagement with sacred sites.¹⁸ Saudi Arabia has also institutionalized this technological direction through public initiatives and forums. For instance, the organization of a Virtual Forum in September 2020 by the Saudi Ministry of Hajj and Umrah indicates an effort to explore strategic partnerships with the private sector to support new forms of Hajj-related experiences. Such institutional support reflects the role of organizational endorsement in the early visibility and observability of Virtual Hajj.

According to Middle East Eye, Saudi Arabia launched a VR initiative allowing Muslims to virtually experience the act of touching the Black Stone from their homes. This initiative is publicly framed as an accessibility-oriented innovation, particularly for Muslims who face physical or logistical constraints in reaching Mecca. The Virtual Blackstone Initiative was reported to originate from the Haramain religious organization and was implemented by Saudi institutions in collaboration with Umm Al-Qura University, with its inauguration in December 2021. The involvement of religious authorities and state-linked institutions indicates that Virtual Hajj diffusion is closely tied to institutional legitimacy and public religious communication.¹⁹

Furthermore, Haramain's official social media promotion highlights the communicative dimension of this innovation by explicitly presenting Virtual Hajj as a tool to simulate pilgrimage sites before visiting Mecca.²⁰ This suggests that the early diffusion of Virtual Hajj is largely supported through mediated communication channels, contributing to its public visibility and observability. Overall, these findings indicate that Virtual Hajj has been developed and disseminated as an immersive religious experience and educational simulation within broader Saudi digital modernization initiatives, including smart city projects and digital heritage preservation.²¹ Research on virtual pilgrimage and immersive learning supports the view that such innovations are situated more strongly in preparatory and educational domains than in ritual substitution.²²

The Potential and Challenges of Virtual Hajj

1. Diffusion Potential: Virtual Hajj as a Supplementary Socio-Religious Innovation,

From the perspective of diffusion dynamics, Virtual Hajj demonstrates adoption potential mainly because it offers perceived functional benefits that respond to contemporary religious needs in a technologically mediated society.²³ Rather than functioning as a replacement of worship, Virtual Hajj is more plausibly diffused as a

¹⁸ Hasse Jubba et al., "Between Reality and Virtuality: A Study of Muslim Perceptions of Metaverse Hajj as a Religious Practice," *Khazanah Theologia* 6, no. 1 (2024): 13–26, <https://doi.org/https://doi.org/10.15575/kt.v6i1.33244>.

¹⁹ Zainal Asril et al., "Advancing Educational Practices: Implementation and Impact of Virtual Reality in Islamic Religious Education," *Jurnal Pendidikan Islam* 9, no. 2 (2023), <https://doi.org/https://doi.org/10.15575/jpi.v9i2.20567>.

²⁰ "Haji di Metaverse, Proyek Arab Saudi dengan Teknologi VR," TomoNews Indonesia, 2022.

²¹ Nur Aisyah Fadillah dan Ahmad Nailul Murad, "Virtuality of Online Religion in Cyberspace: Study of Virtual Hajj in Metaverse Discourse," *FITRAH: Jurnal Kajian Ilmu-Ilmu Keislaman* 10, no. 1 (2024): 29–44, <https://doi.org/10.24952/fitrah.v10i1.10866>.

²² Yahya, Salsabillah, dan Malik, "Virtual Reality-Based Interactive Learning Media For Fiqh Ibadah In Indonesian Islamic Education: A Systematic Literature Review."

²³ Song Niu, "Virtual Hajj as a Response to Demographic and Geopolitical Pressures," *Contemporary Islam* 17 (2023): 95–108, <https://doi.org/https://doi.org/10.1007/s11562-023-00512-1>.

supplementary innovation that supports religious learning, engagement, and symbolic connection to sacred spaces.

In educational contexts, Virtual Hajj is frequently framed as a preparatory tool that familiarizes prospective pilgrims with ritual sequences and sacred locations prior to the actual pilgrimage. This framing strengthens the innovation's perceived relative advantage, since immersive simulation can improve comprehension and readiness while reducing dependence on physical rehearsal facilities.²⁴ This educational positioning also increases the innovation's compatibility with Islamic religious norms because it does not claim to replace the legally valid pilgrimage, but rather functions as *manasik* support. Therefore, in diffusion terms, the strongest adoption pathway for Virtual Hajj is not as a substitute ritual, but as a supporting innovation with limited scope and clear boundaries.

2. Pandemi-Related Narratives and the Expansion of Digital Religious Experience,

The diffusion of Virtual Hajj has also been reinforced by narratives of disruption and restriction during the COVID-19 pandemic, which intensified interest in digital religious alternatives. Under conditions of limited mobility and physical access, Virtual Hajj initiatives provided Muslims with a mediated experience of sacred proximity, including virtual interaction with the Kaaba and the Black Stone.²⁵

Moreover, smartification and digitalization projects in Makkah reflect broader institutional modernization that enables technology-based religious services to expand beyond traditional physical infrastructures. In this context, Virtual Hajj can be interpreted as part of a wider digital transformation strategy that aims to improve accessibility, urban resilience, and service management in pilgrimage settings. This suggests that Virtual Hajj is not merely an isolated technological artifact, but a socio-technical extension of Saudi Arabia's broader digital transformation in pilgrimage governance and urban service systems.²⁶

3. Economic Narratives and Metaverse-Based Religious Commodification,

Beyond education and symbolic engagement, Virtual Hajj is also associated with emerging economic narratives, particularly through the metaverse framework. The prospect of creating a "virtual pilgrimage experience" with interactive features suggests the potential development of virtual economic exchanges, branding, and commodification of religious experiences.²⁷ This aligns with wider global marketing trends in which immersive technologies are increasingly used to generate new customer experiences and monetizable digital services. From a diffusion perspective, such economic potential can increase perceived relative advantage among institutions,

²⁴ Jubba et al., "Between Reality and Virtuality: A Study of Muslim Perceptions of Metaverse Hajj as a Religious Practice."

²⁵ Sneineh, "Saudi Arabia launches VR initiative bringing Kaaba's Black Stone to Muslims' homes."

²⁶ Yusuf A Aina et al., "Digitalization and Smartification of Urban Services to Enhance Urban Resilience in the Post-Pandemic Era: The Case of the Pilgrimage City of Makkah," *Smart Cities* 4 (2023): 1974–95, <https://doi.org/https://doi.org/10.3390/smartcities6040092>.

²⁷ "Haji di Metaverse, Proyek Arab Saudi dengan Teknologi VR."

platform developers, and users seeking affordable access to immersive religious tourism experiences.

However, diffusion theory suggests that economic attractiveness alone does not guarantee adoption when the innovation intersects with strong normative and sacred value systems. In the case of Virtual Hajj, economic framing may even intensify resistance if it is perceived as undermining the sanctity of worship or turning sacred rituals into commercial simulations. Therefore, the economic narrative may function as a double-edged factor: it can accelerate diffusion among certain adopter groups, while simultaneously strengthening rejection among audiences with strong sensitivity toward sacred commodification.²⁸

4. Jurisprudential Boundaries: Ritual Validity as the Core Diffusion Constraint,

The most decisive barrier to the diffusion of Virtual Hajj lies in the jurisprudential boundaries of Hajj as *ibadah mahdah*, a legally defined ritual that requires embodied performance, specific timing, and sacred spatial boundaries. Consequently, the compatibility attribute of diffusion theory becomes the key determinant: Virtual Hajj may be viewed as beneficial for learning, but incompatible as a substitute for legally valid worship. Public controversies further show that Virtual Hajj triggers resistance when interpreted as a replacement of pilgrimage rather than an educational simulation. This supports the argument that the diffusion of religious innovations depends not only on technological design but also on the normative interpretation of the innovation's religious meaning.²⁹

Institutional religious authorities play a critical role as diffusion gatekeepers. Turkey's Presidency of Religious Affairs (Diyanet), for example, reportedly concluded that virtual visits to the Kaaba cannot be considered a valid pilgrimage because they lack physical presence in sacred space. Similar arguments appear in Indonesian discourse: the Indonesian Ulema Council (*Majelis Ulama Indonesia*, MUI) clarified that metaverse or virtual representations of the Kaaba should be understood strictly as simulation and preparation, not as performance of the actual Hajj ritual.³⁰ In addition, MUI emphasized that circumambulating the Kaaba virtually cannot be classified as part of Hajj because it does not fulfill physically defined ritual requirements.

Therefore, claims that Virtual Hajj could replace the actual Hajj are likely to produce rejection and discontinuance, as they violate compatibility with Islamic legal requirements of ritual validity (*ṣaḥiḥ/baṭil*).³¹ In academic terms, rather than using rhetorical labels such as *bid'ah* without *fiqh* classification, the issue should be framed as a jurisprudential evaluation concerning whether simulation can fulfill legal ritual conditions.

²⁸ "Kontroversi Ibadah Haji di Metaverse," CNN Indonesia, 2022.

²⁹ Jubba et al., "Between Reality and Virtuality: A Study of Muslim Perceptions of Metaverse Hajj as a Religious Practice."

³⁰ "Kaaba Presence on Metaverse Platform only to Simulate Rituals: MUI," Antara: Indonesian News Agency, 2022.

³¹ "MUI: Mengelilingi Ka'bah di Metaverse tak Dianggap sebagai Bagian Haji," Antara: Indonesian News Agency, 2022.

5. Social Contestation and Authority-Mediated Diffusion,

The diffusion of Virtual Hajj is also shaped by contested public discourse across Muslim communities. Some audiences perceive the integration of immersive technology into sacred contexts as religious disturbance or trivialization, which reflects high interpretive complexity and weak compatibility in normative framing. This contested meaning demonstrates that Virtual Hajj diffusion is highly dependent on framing and authority endorsement. When framed as “training/education,” it is more likely to gain acceptance; when framed as “replacement,” it is more likely to face rejection.³² Furthermore, media narratives and online controversy function as diffusion channels that can simultaneously increase observability while amplifying resistance. Thus, Virtual Hajj diffusion is mediated not only through technological adoption but also through social negotiation of religious meaning and legitimacy.

6. Digital Security Risks: Metaverse as a New Threat Landscape,

In addition to jurisprudential constraints, Virtual Hajj diffusion also faces challenges related to digital ethics and security. Research on the metaverse as a future threat landscape highlights that immersive platforms can be exploited for extremist propaganda, recruitment, training simulations, and operational coordination. Such risks raise concerns that religious virtual environments may become vulnerable targets of symbolic attacks or digital violence, particularly when access control and platform governance remain weak.³³

Accordingly, governance of Virtual Hajj should not only address theological legitimacy but also incorporate cybersecurity regulation and risk mitigation, especially when sacred sites are digitally replicated and opened to public virtual interaction. This indicates that future diffusion trajectories depend on institutional capacity to regulate both normative religious boundaries and the digital security architecture of immersive religious platforms.³⁴

Analysis of the Adoption of Virtual Hajj Innovation in the Future

The previous discussion shows that the integration of Virtual Reality (VR) into Hajj-related practices has been positioned across several domains, particularly education, health-related narratives during mobility restrictions, and emerging metaverse economic imaginaries. These patterns indicate that Virtual Hajj is increasingly visible as a socio-religious innovation, although its diffusion remains contested due to jurisprudential boundaries and ethical concerns.³⁵

³² Abdillah dan Dandy Syaiful Fahri, “Fenomena Praktik Ibadah Haji Secara Virtual Melalui Teknologi Metaverse: Perspektif Ulama Kontemporer,” *Shautuna: Jurnal Ilmiah Mahasiswa Perbandingan Mazhab* 4, no. 1 (2022): 72–87.

³³ Sam Hunter et al., “The Metaverse as a Future Threat Landscape: An Interdisciplinary Perspective,” *Perspectives on Terrorism* 18, no. 2 (2024): 100–118.

³⁴ Aina et al., “Digitalization and Smartification of Urban Services to Enhance Urban Resilience in the Post-Pandemic Era: The Case of the Pilgrimage City of Makkah.”

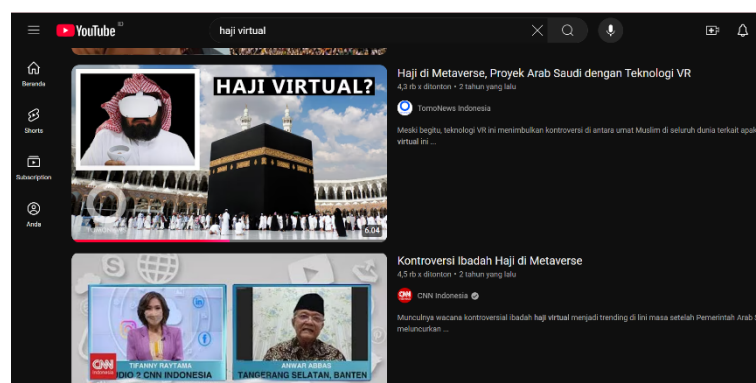
³⁵ Niu, “Virtual Hajj as a Response to Demographic and Geopolitical Pressures.”

To analytically interpret this phenomenon, this study applies Everett M. Rogers Diffusion of Innovation Theory, which explains how innovations are introduced and socially adopted through communication processes over time within a particular social system. Importantly, this analysis does not measure adoption empirically, but offers a conceptual prediction of future diffusion trajectories based on the interaction between innovation attributes, communication channels, religious authority, and normative Islamic legal constraints.³⁶

1. Communication Channels and Observability: Media-Driven Diffusion,

The diffusion of Virtual Hajj has been significantly accelerated by mediated communication channels that increase the innovation's visibility and observability. This is reflected in the extensive coverage of Virtual Hajj across mass media and digital platforms, including television networks and YouTube-based news circulation, as well as international reporting such as Middle East Eye. Within diffusion theory, mass media functions primarily at the knowledge and persuasion stages by shaping public awareness and initial attitudes toward innovations. In the case of Virtual Hajj, media exposure constructs Virtual Hajj not merely as a technical artifact but as a public religious discourse, thereby expanding the innovation's reach beyond Saudi Arabia and triggering transnational debate within Muslim communities.³⁷

Figure 2. News Coverage of Virtual Hajj on TV Channels and YouTube (personal documentation, 2024)



2. Innovation Development and the Role of Opinion Leaders,

The Virtual Black Stone Initiative represents an “innovation development” phase in which institutional actors introduce a VR-based religious simulation through state-linked initiatives and religious endorsement. The involvement of prominent religious figures in the Haramain environment illustrates the diffusion role of opinion leaders, who may legitimize the innovation and influence early-stage adoption attitudes.³⁸ However, diffusion in Islamic contexts cannot be interpreted only through technological enthusiasm. Religious authorities do not merely act as promoters; they also function as

³⁶ Taryoto, “Telaah Teoritik dan Empirik Difusi Inovasi Pertanian.”

³⁷ Abdillah dan Fahri, “Fenomena Praktik Ibadah Haji Secara Virtual Melalui Teknologi Metaverse: Perspektif Ulama Kontemporer.”

³⁸ Taryoto, “Telaah Teoritik dan Empirik Difusi Inovasi Pertanian.”

normative gatekeepers who determine whether the innovation is framed as (a) permissible educational media or (b) an illegitimate substitute for worship. This gatekeeping role becomes decisive because Hajj is classified as *ibadah mahdah*, which is bound by strict legal requirements regarding time, place, and embodied performance.³⁹

3. Innovation Attributes: Why Compatibility Becomes the Decisive Factor,

Rogers identifies five key innovation attributes influencing adoption: relative advantage, compatibility, complexity, trialability, and observability. In Virtual Hajj diffusion, relative advantage is evident in the innovation's ability to provide immersive learning and symbolic proximity to sacred spaces.⁴⁰ This advantage is further reinforced when Virtual Hajj is framed as a preparatory tool for pilgrims, particularly for *manasik* education and instructional simulation.⁴¹

Nevertheless, compatibility emerges as the most decisive attribute because Virtual Hajj intersects with normative Islamic jurisprudence concerning ritual validity. When Virtual Hajj is interpreted as an educational simulation, it tends to be more compatible with religious norms. However, when framed as a replacement for Hajj performance, it faces strong incompatibility due to the non-negotiable embodied requirements of pilgrimage rituals. Therefore, the diffusion of Virtual Hajj is predicted to depend less on technological sophistication and more on how religious legitimacy is negotiated through authoritative discourse and jurisprudential interpretation.⁴²

4. Time and Adopter Categories: Mapping Prospective Diffusion,

In diffusion theory, adoption occurs over time through five adopter categories: innovators, early adopters, early majority, late majority, and laggards.⁴³ Conceptually, Virtual Hajj diffusion can be mapped as follows:

- a. The innovators are represented by technology developers and institutions that produce immersive VR systems and metaverse infrastructures, including major global VR ecosystem actors.⁴⁴ In this context, Saudi Arabia's smart modernization agenda and digital heritage initiatives can be interpreted as institutional innovator-level behavior that supports experimentation with VR-based sacred-site simulation.
- b. Early adopters include institutions with religious and educational influence that adopt VR for *manasik* learning and training. Evidence of this can be found in academic and institutional work on VR-based Hajj training, including translation and

³⁹ Nurherviyanti et al., "Menelaah Penggunaan Virtual Reality (VR) dalam Pelaksanaan Ibadah Haji dari Sudut Pandang Rukun Haji."

⁴⁰ Dadan Sumardani et al., "The Free Hajj: Virtual Reality in ManasikHajj Training Education," *Al-Hayat: Journal of Islamic Education* 4, no. 2 (2021): 191–98, <https://doi.org/https://doi.org/10.35723/ajie.v4i2.136>.

⁴¹ Kholoud Munshi, "Virtual Reality Training for Hajj Pilgrims as an Innovative Community Translation Dissemination Medium" (Western Sydney University, 2022).

⁴² Niu, "Virtual Hajj as a Response to Demographic and Geopolitical Pressures."

⁴³ Taryoto, "Telaah Teoritik dan Empirik Difusi Inovasi Pertanian."

⁴⁴ Suzanne Kounkel, "Global Marketing Trends 2023" (United Kingdom, 2023).

instructional simulation models.⁴⁵ Early adopters play a critical persuasion role because they translate technological novelty into socially meaningful religious utility.

- c. The early majority stage is predicted to involve broader educational ecosystems and Hajj training organizers adopting VR as a standardized supplementary tool once the innovation is socially validated and practically demonstrated. This trajectory is supported by evidence that VR adoption expands when benefits are observable and implementation becomes more normalized.⁴⁶

However, this study predicts that diffusion beyond early majority will be constrained by normative resistance and uncertainty among late majority and laggards, especially if Virtual Hajj is publicly framed as a ritual substitute. These groups tend to require strong normative reassurance, lower cost, and minimal perceived religious risk before adopting innovations.⁴⁷ This explains why large-scale diffusion of Virtual Hajj as a mainstream practice remains difficult.

5. Social System and Normative Contestation: Islam as a Diffusion Filter,

Rogers emphasizes that diffusion is shaped by the social system, including norms, values, and institutional authority. In Virtual Hajj, the social system is strongly regulated by Islamic ethical and legal norms, making diffusion dependent on religious framing.⁴⁸ Public discourse across Muslim societies indicates normative contestation: some view Virtual Hajj as educationally beneficial, while others interpret it as ethically problematic if it blurs the meaning of worship. These debates show that the diffusion process is not linear; it is mediated by interpretive conflict over the innovation's religious meaning.

Additionally, the metaverse environment introduces ethical and security anxieties. Research on immersive platforms suggests that metaverse spaces can be exploited for extremist propaganda, recruitment, and operational simulation. Such risks intensify uncertainty, which diffusion theory identifies as a barrier to adoption, especially among conservative or risk-averse adopter groups.⁴⁹

6. Adoption Decision and Predicted Trajectories: Adoption vs Discontinuance,

In Rogers' framework, adoption decisions are shaped by perceived benefits and alignment with values. Based on the findings, this study predicts two possible diffusion trajectories:

- a. Supplementary adoption trajectory, If Virtual Hajj is framed as an educational tool - supporting ritual literacy, pilgrimage preparation, and symbolic spiritual engagement- its adoption is predicted to increase within institutional and training contexts.⁵⁰ This pathway strengthens compatibility and reduces theological risk.

⁴⁵ Munshi, "Virtual Reality Training for Hajj Pilgrims as an Innovative Community Translation Dissemination Medium."

⁴⁶ Kounkel, "Global Marketing Trends 2023."

⁴⁷ "8 Charts on Technology Use Around the World," Pew Research Center, 2024.

⁴⁸ Nurherviyanti et al., "Menelaah Penggunaan Virtual Reality (VR) dalam Pelaksanaan Ibadah Hajj dari Sudut Pandang Rukun Hajj."

⁴⁹ Hunter et al., "The Metaverse as a Future Threat Landscape: An Interdisciplinary Perspective."

⁵⁰ Sumardani et al., "The Free Hajj: Virtual Reality in ManasikHajj Training Education."

- b. Discontinuance/rejection trajectory, If Virtual Hajj is framed or claimed as a replacement for the legally valid pilgrimage, it is predicted to face strong rejection due to incompatibility with jurisprudential requirements of Hajj validity. In this scenario, the innovation may experience “adoption discontinuance,” where initial interest declines due to normative conflict and legitimacy crisis. Accordingly, the future diffusion of Virtual Hajj depends on synergy between technological innovation and ethical-jurisprudential responsibility.⁵¹ This requires governance frameworks addressing legal regulation, ethical safeguards, and digital literacy development to prevent misuse and reduce uncertainty.⁵²

Conclusion

This study analyzes Virtual Hajj as a technology-based religious innovation by applying Everett M. Rogers’ Innovation Diffusion Theory within the context of Islamic jurisprudential norms and religious authority. The findings suggest that the diffusion of Virtual Hajj is not primarily determined by technological advancement, but by its compatibility with Islamic normative frameworks governing ritual validity. Although Virtual Hajj offers relative advantages -particularly for ritual education, experiential learning, and accessibility- these benefits do not automatically translate into religious legitimacy when evaluated against the jurisprudential requirements of Hajj as *ibadah mahdah*.

Religious scholars, fatwa institutions, and other forms of socio-religious authority act as key opinion leaders who significantly shape communal perceptions and determine whether Virtual Hajj is framed as a permissible innovation or a problematic substitution of worship. Accordingly, this study proposes two diffusion trajectories: (1) Virtual Hajj may gain acceptance as a supplementary medium for manasik training and religious education; or (2) it may experience discontinuance if promoted as an alternative to the legally valid Hajj ritual.

Theoretically, this research extends innovation diffusion theory to the domain of technology-mediated religious practices by demonstrating that normative jurisprudence and religious authority function as decisive determinants in innovation adoption processes. Practically, the study offers implications for Hajj authorities, religious councils, and policymakers to regulate and position Virtual Hajj responsibly, emphasizing its educational function while maintaining clear boundaries regarding ritual validity. This research is limited by its conceptual and literature-based approach and does not measure empirical acceptance among Muslim communities. Future studies should employ empirical methods to examine how diverse Muslim groups negotiate Virtual Hajj in relation to authority, legal interpretation, and technological change.

⁵¹ Akbar Pamungkas, Rendi Saputra, dan Tata Sutabri, “Tinjauan Mendalam terhadap Dinamika Sosial dan Ekonomi dalam Metaverse: Peluang, Tantangan, dan Implikasi Masa Depan,” *Scientica: Jurnal Ilmiah Sains dan Teknologi* 2, no. 7 (2024): 6–10.

⁵² Christien Rozali, Afrizal Zein, dan Emi Sita Eriana, “Artificial Intelligence (AI) di Masa Depan: Tantangan dan Peluang,” *JITU: Jurnal Informatika Utama* 2, no. 2 (2024): 66–71, <https://doi.org/https://doi.org/10.55903/jitu.v2i1.177>.

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