Virtual hajj as a response to demographic and geopolitical pressures

Song Niu[1,2]

Abstract

Hajj is the most important one of the Five Pillars in Islam. Islam makes the Kaaba as the orientation of daily prayers (*salat*), and hajj as the linkage to maintain the global Muslim faith community. The sanctity of hajj rituals is of positive significance for global pilgrims to transcend the boundaries of countries and ethnic groups. In the era of globalization, hajj quota has long been a scarce resource. It is difficult for most Muslims to obtain hajj permits from Saudi Arabia in a short term. Even non-Muslims are full of concern about Islam, especially the hajj. Then, the "virtual hajj," which is similar to the real hajj in the sacred city Mecca, came into being. It is mainly divided into several types: (1) building the real scenes of Kaaba and other hajj sites, and Muslims participating in the "virtual hajj" through role-playing; (2) the "virtual hajj" apps developed through 3D digital technology and their upgraded versions; (3) the "virtual hajj" live broadcasting the real hajj to non-pilgrims through the pilgrim's smartphone with the 5G network technology; and (4) the "virtual hajj" software developed by VR and AR technology in the Metaverse era. The main functions of "virtual hajj" are embodied in four aspects: protest against Saudi Arabia, Islamic education, universal effect, and the COVID-19 fighting. All types of "virtual hajj" have positive effects on both the Muslims and non-Muslims. However, there are different voices from religious circles on how to treat "virtual hajj."

✉ Song Niu
phd_niusong@163.com

1   Middle East Studies Institute, Shanghai International Studies University, Shanghai, China

2   Center for Religion and China's National Security, Fudan University, Shanghai, China

🖄 Springer

Introduction

Hajj is one of the five pillars of Islam, and its religious significance to Muslims around the world is self-evident. Even non-Muslims are full of concern about this annual large-scale cross-border movement of religious believers. Since its establishment, the Kingdom of Saudi Arabia has adopted various ways to ensure the safety of pilgrims in the sacred cities (Mecca and Medina) and the continuity of the performance of hajj rituals, and to continuously expand the number of global pilgrims and the broader representation of their origins. These have indeed better sustained Islam as a community of believers and kept it in the process of continuous expansion. As the population of global Muslims continues to grow, the demand for some form of participation in the hajj has also increased. In order to further expand the reception capacity of pilgrims, the expansion of the al-Masdjid al-Haram (Sacred Mosque) surrounding the Kaaba and the construction of a large number of new hotels in Mecca have created disruptive large-scale construction zones, which have affected the number of global pilgrims Saudi infrastructure can accommodate. In order to deal with this situation, Saudi Arabia unilaterally announced the reduction of the annual hajj quota, which has triggered anxiety and even resentment in some Islamic countries with large Muslim population. The desire to perform the hajj physically in Mecca is a powerful impulse especially among elderly Muslims. People with enough travel expenses and good health to perform the hajj have been denied access due to the shrinking quotas allocated to their home countries or their countries' deterioratingnation relations with Saudi Arabia. Adherents to Islam around the world are eager to strengthen the faith of their children. Vividly conveying doctrine and traditions is in part a practical challenge. After the outbreak of COVID-19 pandemic, Saudi Arabia just provided scaled-down hajj quotas for pilgrims in 2020 and 2021, which had a huge impact on the rights of hajj applicants outside Saudi territory.

How to make up for the shortcomings and appease the anger of Muslims who are excluded from their country's hajj quota after being wait-listed for a long time? How to teach understanding of the hajj among Muslim youth and increase their commitment to it? How to introduce Islamic perspectives to non-Muslims? And how to alleviate the regret of believers who lost their hajj passes during COVID-19 pandemic? Various forms of "virtual hajj" provide new solutions. "Virtual hajj" allows believers to remain at home while going to Mecca spiritually. Although it cannot replace the real journey, it is a positive expression based on faith whose ultimate goal is to emulate a real hajj and participate in its rituals immersively.

There are mainly two aspects of the study on "virtual pilgrimage." Firstly, the study of "virtual pilgrimage" in pre-modern time, for example, medieval monks and nuns obtained sensory cognition from some manuscripts about the Holy Land and the pilgrimages to it, and internalized these experiences to realize "virtual pilgrimage."[1] Secondly, the study on "virtual pilgrimage" in the Internet era, such as the "virtual pilgrimage" realized by using Internet technology and its influence, is

---

[1] See Connolly, 1999; Ehrenschwendtner, 2009; Rudy, 2011.

mainly reflected in the "virtual pilgrimage" of Christianity and Islam, including the Shia.[2] This paper systematically combs the "virtual hajj" in Islam since the twenty-first century, and highlights that it is essentially an important way to response to the democratic and geopolitical pressures by presenting different forms and evolutions of "virtual hajj." This paper uses the methods of religion and technology, religion and international relations, religious anthropology, and comparative study, and it is divided into three parts: introduction, the forms of "virtual hajj," and conclusion, of which the forms of "virtual hajj" is divided into four parts.

"Virtual hajj" as a form of protest: "virtual hajj" in Istanbul as a case

As a country with a large Islamic population, Turkey has spared no effort in promoting its Muslims to perform the hajj in Mecca. After the Kemalist revolution, Turkey embarked on the radical secularization road characterized by "Westernization," but this does not mean de-Islamization. Kemal insists on the separation of religion and state; that is, Islam returns to the field of private belief, and maintains more non-religious characteristics in clothing in public space, and this is similar to the French style separation of politics and religion and religious policy.[3] Even so, Turkey has cultivated a stable middle-class group in the process of democratization, "the pious middle classes of the provincial towns have steadily strengthened their organisational and electoral power. The growth and stability of the hajj is a stunning example and by-product of their success."[4] Due to the existence of hajj quota, Turkey's hajj lottery has also made way for elderly applicants in recent years, which has actually intensified domestic contradictions on the hajj issue, "in 2013, the Saudis angered every Hajj board in the world by imposing a last-minute quota reduction of 20 percent despite the fact that most of the excluded pilgrims had already paid for their trips."[5] In this context, Istanbul launched a "virtual hajj" in July 2013 as a protest against the hajj management of Saudi Arabia and the highlighting of the desire of Turkish Muslims for the hajj in Mecca.

On July 18, 2013, Turkey held a "virtual hajj" in the square near the Ottoman Mosque on the Bosporus shore in Istanbul for those Turkish Muslims who were eligible for hajj but were unable to go to Mecca due to the unilateral reduction of hajj quota by Saudi Arabia. In the center of the square, there is a model of the Kaaba. Around the square, there are three huge screens scrolling the pictures of Mecca. A real hajj guide leads seven actors. Thousands of quasi-pilgrims who suddenly lost their hajj qualification participated in this "virtual hajj." According to İsmail

---

[2] See MacWilliams, 2002; Mohd Fitri Bin Yusoff, Abdul Nasir Zulkifli, Fadziana Faisal, "Virtual Hajj (V-Hajj)—Adaptation of Persuasive Design in Virtual Environment (VE) and Multimedia Integrated Approach Learning Courseware Methodology", *2011 IEEE Conference on Open Systems (ICOS2011)*, September 25-28, 2011, Langkawi, Malaysia; Moslem & Mahdi, 2014.

[3] About Turkish republican religious governance, see Yakar, 2019. About Turksih democratization, see Seal, 2021; Aslan, 2018.

[4] Bianchi, 2015.

[5] Ibid., 79.

Kavuncu, district mayor of Eyüp, Istanbul, "This is the first virtual umrah (pilgrimage) staged in the world that we know of," "all we hope is that it is some relief to our people who do not have the means or were left out of lists to visit the Islamic holy sites."[6] In 2013, 14,800 Turkish quasi-pilgrims lost their hajj opportunities. "While the virtual tour falls short of fulfilling religious obligations, it at least offered some solace to those unable to make the journey to Saudi Arabia." A 47-year-old housewife Suheyla Yildirim said, "We've been on the list for four years and to make things worse now the quota has been reduced. It's not the same as being there in person, but this is just so beautiful."[7]

Turkey's "virtual hajj" is not its main tool against Saudi hajj management. Its main ways are still concentrated in the political and economic fields, that is, playing a more active role in the G20, the Organization of Islamic Cooperation, the other international organizations and in the Islamic finance field, and cooperating with other Islamic countries with large Muslim population to jointly compete with Saudi Arabia. They tried to gain a dominant position in these fields in exchange for Saudi compromise in hajj management. Compared with these more targeted ways of protest, "virtual hajj" has limited effect, but its visual impact is obvious. It is different from both political struggle and religious confrontation. It simulates the non-politicized hajj itself. Therefore, there is no direct criticism of Saudi Arabia in the process of "virtual hajj," but simply simulates part of the hajj rituals in behavior.

"Virtual hajj" as a form of education: "virtual hajj" for children education in Islamic countries as a case

For Islamic communities, the inheritance of faith is inseparable from the religious education of children. Muslims in most countries attach great importance to the religious education of Muslim children according to their national realities. In Islamic countries, certain religious courses are mainly provided in the teaching of kindergartens and schools. Especially for preschool children, families and society promote the improvement of their Islamic knowledge through multiple ways. Hajj is not only the most sacred practice among the Five Pillars, but also its rituals carried out in Mecca have strong symbolic significance and visual impact. Therefore, Hajj education is of positive and important significance to the education of Muslim children in various countries. In addition to fairy tale books, illustrated books, model-making, videos, and other means related to hajj, the most intuitive experience is to perform the simulated hajj. According to Qamruz Zaman, a Mufti in London, UK, "To be Baligh, (to be physically matured) is one of the conditions that make Hajj compulsory. In the case of the male, it is from when the signs of puberty appear, e.g. wet dream, growing of beard, etc. If there are no signs, then from the age of 15 lunar years. In the case of a female, it begins at menses or if there is no menses then at 15 lunar years," "If a child performs Hajj, then his/her

[6] "Turkey Find Solace in Virtual Pilgrimage as Saudi Cuts Haj Quotas," *Reuters*, July 18, 2013.

[7] Ibid.

Hajj is valid and he/she will be rewarded for it, Insha Allah. However, this Hajj will not count as the obligatory Hajj. Therefore, they will be obliged to do the Hajj e Fardh again once they reached maturity."[8] In other words, children can go to Mecca to perform the hajj, which is effective but not obligatory, and they still need to perform an obligatory hajj after they grow into adulthood.

From the actual situation, due to the increasing scarce of the hajj quota, the requirements for the health and economic conditions of pilgrims, and the fact that children still need to perform the hajj again after adulthood, the vast majority of pilgrims are adult Muslims, and the actual number of children performing the hajj is very small. In order to enhance children's understanding of Islamic most sacred pillar, hajj, the children's role-playing "virtual hajj" came into being. Boys often wear ihram to participate in the "virtual hajj." The core ritual is to perform tawaf, circling the Kaaba seven times counterclockwise, and take the Kaaba as the coordinate to understand the orientation of other hajj sites. In Islamic countries such as Jordan, Indonesia, and Palestine, "virtual hajj" is relatively widely reported. Indonesia pays particular attention to the "virtual hajj" education for juveniles, and simulated hajj for junior middle school students is also carried out from time to time. In 2013, in the Gaza Strip, one of local primary schools organized a "virtual hajj," which involves hajj rituals such as tawaf, head shaves, and sacrifice. Role playing "virtual hajj" for children is often used as an integral part of routine education in many Islamic countries, and its effect is also obvious.

Different from the one-day continuous simulation of some rituals of hajj, there is also a multi-day simulated hajj with the theme of "hajj week." Take the kindergarten of the Manarat Al Riyadh Schools International as an example. Founded in 1979, the school initially provided secondary English education for the children of Western employees of King Saud University. The school mainly adopts British and American textbooks and examination systems. At present, the school has more than 3500 students from more than 40 countries and more than 100 teachers and staffs. Most of the students are the children of Egyptian and Pakistani employees of universities, hospitals, embassies, and commercial institutions in Riyadh, and also many Saudi children. The kindergarten of the school carries out the "hajj week" every year. A special room is used to describe the miniature version of all hajj steps and rituals. Children perform all the hajj rituals according to the order under the guidance of their teachers. When they gather every morning in the "hajj week," children will chant talbiya like real pilgrims, "I am present, O Allah, I am present…"[9] Because international schools are generally Western education and students are not all Muslims, the "hajj week" is beneficial for strengthening the religious identity of Muslim children while enhancing the awareness of non-Muslim children about Islam.

---

[8] Qamruz Zaman, "Hajj for Childs," December 4, 2007, http://www.muftisays.com/qa/question/1889/hajj-for-childs.html.

[9] Manarat Al Riyadh International Sections. (n.d.) "Academic Activities," https://manaratriyadhen.maarif.com.sa/Details.aspx?id=21.

"Virtual hajj" as a form of universal effect: digital "Mecca 3D" as a case

Hajj is one of the Five Pillars of Islam. Pious Muslims are proud to perform the hajj in Mecca. However, there are health and economic preconditions for pilgrim candidates. Even if these requirements are met, it is still not easy to obtain the opportunity of hajj. With the alienation trend of Islamic role in international relations becoming more and more obvious, the over-politicization of the annual large-scale hajj is an indisputable fact in many countries. Due to the restriction of Islamic doctrines, non-Muslims cannot visit Mecca. Although there are many hajj-related TV programs at present, this can only be a passive experience with limited depth. People cannot personally grasp the whole picture of hajj personally through them, and even keep a distance from such programs due to the suspicion of propaganda. Role playing "virtual hajj" is often for children.

With the development of international space technology and Internet technology, human beings have been more and more affected by such high and new technologies. On the whole, the average age of pilgrims is declining and their educational level is improving.[10] In other words, Muslims with rich Internet experience are growing in the pilgrim candidates. Since the 1990s, with the popularity of Internet, many world religions begun to carry out religious activities with Internet, "the changes brought by religions online are even known as the 'second Reformation,'" "there are many revolutionary characteristics of network media, such as three 'mosts' (most rapid, most intensive and most direct in communication), three 'nos' (no law, no borders and no control), as well as low threshold, low cost and immediacy, which greatly improves the ability of religious groups to mobilize at the grass-roots level, influence the political agenda, preach directly and participate in global affairs," "in fact, the borderless character of internet helps to shape the identity of social organizations beyond religious sectarian and national border distinctions, which is a prerequisite for religion to participate in the global agenda and form global mobilization."[11] As the world's largest annual transnational religious movement, hajj has an inherent momentum for the combination with Internet technology. "With a 'digital native' generation educated and brought up using the Web, has had a profound impact on Muslim individuals and communities."[12] Hajj has been closely combined with Facebook, YouTube, Twitter, Google Earth, etc., and the mobile map guide uses GPS technology to help the pilgrims. In addition, the mobile AMIR hajj app and "3D Kaaba" also provide guidance for the pilgrims to accurately perform various hajj rituals.[13] "Second Life" developed and released its "virtual hajj" through the website "Islam Online," and the avatar will appear in the costumes of the pilgrims.[14] This means that anyone, regardless of their religious background (or none), can start the journey online.[15] The emergence of

---

[10] Bunt, 2016.

[11] Xu, 2010.

[12] Bunt, 2016.

[13] "New Smartphone app to help Muslims navigate in Makkah", June 1, 2012, https://www.ummid.com/news/2012/June/01.06.2012/smartphone_appl_fr_makkah.htm.

[14] Gary R. Bunt, "Decoding the Hajj in Cyberspace," 235.

[15] Ibid., 235.

"Mecca 3D" provides an opportunity for both Muslims and non-Muslims who cannot go to Mecca, as well as Muslims who are about to make a pilgrimage to Mecca, to experience the hajj immersively.

In fact, before the emergence of "Mecca 3D," the "Islamic Online" (IOL) hosted by the famous Egyptian Islamic scholar Yusuf Al-Qaradawi funded the simulated hajj project.[16] This simulated hajj was launched in December 2007 to provide guidance for Muslims to participate in the hajj and non- Muslims curious about the hajj rituals and steps. This is also the largest scale designer project launched by "Islamic Online" through "Second Life" (SL). The simulated hajj reproduces the sacred sites related to hajj in Mecca, which are marked with numbers in sequence. Once you touch these numbers, you will get the information of the specific hajj site, and its languages include English, French, Spanish, Dutch, Italian, and Japanese. During the experience, "there is a blurring of the two Meccas … the space in Second Life … is treated as sacred and though purporting only to be an educational tool, is shown by user testimony to be a site of emotional experience of the sacred."[17]

"Mecca 3D" is a "virtual hajj" app developed by Brainseed Factory, a well-known software and game development team. The founder of the app is Bilal Chbib. The goal of "Mecca 3D" is to immerse the people in a fascinating Islamic 3D world. Dive into a virtual world of knowledge and experience the basic principles of real worship. The app covers some functions that have been developed or will be put into operation in the near future, mainly including (1) guidance for hajj and umrah, which is mainly used to guide the hajj rituals, prayers, and help understand the meaning and rewards of hajj; (2) time machine, which is mainly used to observe the hajj of the Prophet Muhammad and his companions, even dating back to the era of Ibrahim; (3) real knowledge, which is mainly used to obtain education from Islamic major events, such as the Battle of the Year of Elephant and the Battle of Khandaq; (4) virtual reality technology (VRT), which is mainly controlled by fingertips with the VRT headphones, then the Kaaba will be like in front of the users; and (5) interactive world, which is mainly used to interact with other characters, made the user become part of an intoxicating virtual environment and learn how and why to worship through buttons. "Mecca 3D" can run on iPad, iPhone, and Android.[18]

"Virtual hajj" as a form of COVID-19 fighting: the "virtual hajj" in the era of 5G and metaverse as a case

Since the outbreak of COVID-19 in the beginning of 2020, it has had a great negative impact on the world. Muslims are distributed all over the world, so hajj is especially influenced by the COVID-19. Because the epidemic continues to rage in 2020–2021, and there are great differences in the concept of epidemic prevention

---

[16] Global Muslim Brotherhood Daily Watch, "Further Details on Second Life and Islam Online", September 17, 2007, https://www.globalmbwatch.com/2007/09/17/further-details-on-second-life-and-islam-online/.

[17] Derrickson, 2008.

[18] From the former official website of Mecca 3D: http://mecca3d.net.

and control and the governance level among countries, it is different for Saudi Arabia to bear the potential health security risks. Under such circumstances, in 2020, Saudi Arabia stopped Muslims outside its territory from going to Mecca to participate in the hajj for the first time, and the pilgrims' selecting confined to Muslims of different nationalities within its territory. Due to the severe epidemic situation in 2020, Saudi Arabia had no choice but to organize a symbolic scaled-down hajj with only 1000 pilgrims on the premise of its achievements in domestic epidemic prevention and control. To a great extent, this has better balanced the huge contradiction between ensuring the smooth running of hajj as an Islamic religious obligation and maintaining Saudi and global health security.[19] Entering 2021, there are dangerous variants of COVID-19 virus. The overall international situation of COVID-19 fighting is still not optimistic. Saudi Arabia continued the 2020 hajj policy in 2021, and the selecting of pilgrims is still limited to Muslims within its territory, but the number has expanded to 60,000, which also reflects the steady improvement of the level and effectiveness of Saudi epidemic prevention and control. In the context of the COVID-19, "virtual hajj" has gained more acceptance from Muslims, and the even the "Virtual Black Stone Initiative" officially introduced by the Saudi government.

Firstly, the "virtual hajj" of smartphone video live broadcast was supported by 5G technology, which is adopted by Faridah Bakti Yahra, an Indonesian living in Saudi Arabia in her hajj 2020. In the smallest scale 2020 hajj, the 39-year-old Yahra was lucky to get the qualification for hajj, while her husband took care of their three daughters at home in Saudi Arabia. Yahra made video live broadcast for her family during the hajj with her smartphone. She claimed, "I am so happy he joined me virtually, spiritually, with my daughters also. May my dear husband come here together with me again for Hajj – inshallah (God will)." Especially when she arrived at the Kaaba, her husband Hendra Samosir was very excited and immersive to see this scene through wife's smartphone, claiming that, "when my wife entered the Kaaba area and she showed me the Kaaba, I felt very, very cheerful, joyful, with tears," "It was very truly a holy journey I would say, even though I was there." The husband who lost his job in the Saudi oil industry due to the COVID-19 concluded that the "virtual hajj" "like an empty bowl filled up with water".[20] "Virtual hajj" gave this family great spiritual hope for their future life. Yahra's family participated in the "virtual hajj" through smartphone was not an isolated case. It was an epitome of many pilgrims' practices in hajj 2020. There are two reasons for the realization of "virtual hajj" by smartphone. On one hand, "the hajj has been at the centre of an acceleration in the growth of digital warfare" in Saudi Arabia, especially "super high speed 5G technology was rolled out in Mecca last year, allowing pilgrims to transfer data at breakneck speeds, and the network is now preferential across much of Saudi Arabia."[21] On the other hand, Saudi Arabia has relaxed the restrictions on the use of mobile phones during the Hajj. In fact, there have been strict restrictions on the use

---

[19] Niu & Li, 2022.

[20] "A Virtual Hajj Is the Best Case Scenario for Many", *AFP*, July 31, 2020.

[21] Ibid.

of mobile phones in specific areas of Mecca during the hajj for a long time. Previously, many pilgrims "carefully placed their mobile phones in their ihrams."[22]

Saudi Arabia paid early attention to communication safeguard system during the hajj and carried out deep cooperation with relevant international enterprises. Saudi Arabia cooperates with Huawei to guarantee the smooth communication during the hajj. Huawei entered Saudi Arabia in 1999. By December 2007, Huawei has become the largest cooperative supplier of hajj communication services; it "has defeated the international competitors such as Ericsson and Nokia in switch equipment supply, base station construction and internet services, and occupied the largest market share in the field of hajj communication services."[23] Since then, Huawei has played an extremely key role in the guarantee of hajj communication services, and escorted hajj smooth communication together with Mobily, the second largest operator in Saudi Arabia. "During the hajj, millions of users simultaneously make services calls, send SMS or and updates location information. In this specific period of time, telephone traffic impact will seriously damage the network load balancing," "with the joint efforts of Mobily and Huawei, hajj communication guarantee has been successfully realized. Millions of Muslim pilgrims can smoothly share this sacred joy with their relatives and friends at the most important moment of their life experience! At the same time, the stable communication network has effectively supported the Saudi government to achieve the goal of 'Peaceful Year of Hajj' for four years in succession."[24] The realization of 5G technology and smartphone "virtual hajj" is inseparable from the close cooperation between the leading telecommunications provider of Middle East and North Africa Zain and leading global ICT solutions provider Huawei. In May 2017, the fourth annual Zain-Huawei MBB Summit under the theme of "4G Evolution towards 5G" was held in Saudi Arabia, and the two signed strategic MoU promising further collaboration in the field of 5G. In March 2018, Zain and Huawei announced the release of a new network strategy in Saudi Arabia, Sultan Abdulaziz AlDeghaither, acting chief operations officer at Zain Saudi Arabia commented, "we are also excited to make further inroads in the cutting edge field of 5G, an exciting technology with the potential to be a driving force in the digitization of the Kingdom."[25]

Secondly, the global "virtual hajj" app under the COVID-19 is upgraded and developed. In 2019, Bigitec Studio of Germany developed "Muslim 3D"[26] related to Kaaba. After the outbreak of COVID-19, this app was downloaded more than one million times, which prompted the co-founders of Bigitec Studio Bilal Chbib and Muhammad Chbib to upgrade the product. The latest version was released in September 2021 to explore more hajj sites. Muhammad Chbib pointed out: "I don't think this will every replace the real experience, and this comes from someone who's done the real experience. This is something that is life changing," but

[22] Bunt, 2016.

[23] "Huawei Has become the Largest Cooperative Supplier of Hajj Communication Services", *International Financial News*, December 18, 2007.

[24] Lin & Qin, 2010.

[25] Zain, "Zain KSA and Huawei announce the release of a New Network Strategy", March 6, 2018, https://sa.zain.com/en/all-news/zain-ksa-and-huawei-announce-release-new-network-strategy.

[26] Its predecessor is "Mecca 3D".

he also gave an example to illustrate the effect of the app, he "see people cry while wearing the VR headers and virtually 'walking through' Muslim 3D's digital reactions of the holy sites."[27] One Pakistan startup company developed a new app that contains "world's first virtual reality hajj and umrah simulator." Adnan Maqbool, the project director of the app, pointed out that, "The Labbaik VR simulator offers the most accurate and realistic experience of the great pilgrimage. You will feel as if you are actually walking along the paths of Safa and Marwa, feel the environment of Jamarat and experience the Tawaf around the Kaaba," "We also took some 80,000 photographs of the holy sites in ultra-high-resolution 8 K (7,680×4,320 pixels) for the project which makes it possible to see small details such as the intricate textures on the pillars."[28] The key features of Labbaik VR offer interactive virtual hajj pilgrimage experience to guide and train hajjis; include all hajj tutorials, guides, and visual demos in the VR 3D model; cover all rituals including Tawaf around the Kaaba, walking between Safa and Marwa, as well as holy locations including Arafat grounds, Muzdalifah, Jamarat; and contain tracking and location device features to guide the pilgrim during hajj and help locate someone lost.[29]

Labbaik VR also developed high-resolution virtual reality tour with the name Wuzu about Kaaba in 2021. Labbaik's CEO Shehriar Ashraf pointed out that, "Our models are drawn to scale and very precise, so you actually feel like you're really in the place," "I don't think that hajj can ever be replaced but I think that this can give you the same emotional and spiritual connection and hopefully improve a few lives." In addition, Labbaik VR also developed a hajj training app for the Saudi Ministry of Islamic Affairs before the 2021 hajj.[30]

Thirdly, Saudi Arabia officially launched the "Virtual Black Stone Initiative" in the metaverse era. Neal Stephenson created the term "Metaverse" in his 1992, and nowadays, the world is moving towards a real metaverse, "an online virtual world which incorporates augmented reality, virtual reality, 3D holographic avatars, video and other means of communication," "it will offer a hyper-real alternative world for you to coexist in."[31] Metaverse has natural technological advantages in its combination with religious architecture, landscape, and rituals, which is also in line with the development trend of digital religion. In September 2020, the Saudi Ministry of Hajj and Umrah organized a Virtual Forum. Minister Mohammed Salih Bentin pointed out: "With holding this forum, the ministry seeks to identify and link opportunities by building strategic partnerships with the private sector that will contribute to the haj experience."[32] In December 2021, Saudi Arabia officially launched the "Virtual Black Stone Initiative," which is an important part of Saudi building of smart cities. It also has a special religious significance. The halt of the 2020 and 2021 hajj for overseas Muslims under the COVID-19 accelerated the

---

[27] Layla Maghribi, "Experiencing Hajj – in virtual reality", *National News*, July 8, 2021.

[28] S. Jamal, "Pakistani Startup Develops World's First Virtual Reality Hajj Simulator", *Arab News*, July 31, 2019.

[29] Ibid.

[30] Layla Maghribi, "Experiencing Hajj – in virtual reality", *National News*, July 8, 2021.

[31] Mike Snider, Brett Molina, "Everyone Wants to Own the Metaverse Including Facebook and Microsoft. But What Exactly Is It?" *USA Today*, November 10, 2021.

[32] "Saudi Arabia Launches Virtual Hajj Forum", *Mi'raj News Agency*, September 14, 2020.

landing of the initiative. The "Virtual Black Stone Initiative" was launched by Sheikh Abdul Rahman Al Sudais, head of the Presidency for the Affairs of Two Holy Mosque. Al Sudais said, "We have great religious and historical sites that we must digitise and communicate to everyone through the means of latest technology."[33]

"Virtual Black Stone Initiative" follows the Virtual Forum of the Saudi Ministry of Hajj and Umrah. The official Haramain[34] Facebook account also publicly promoted the "Virtual Black Stone Initiative," pointing out that it allows Muslims to "experience the Hajr Aswad[35] virtually prior to the pilgrimage to Makkah [Mecca]," and Sheikh Abdul Rahman Al Sudais' institution is separate from but collaborates with the Haramain organization; "Virtual Black Stone Initiative" is also a project working with Umm Al-Qura University located in Mecca, and Turki bin Suleiman Al-Amro, the head of the institute at Umm Al-Qura University that was involved in the creation of "Virtual Black Stone Initiative" was present at the opening event.[36] It can be seen that the "Virtual Black Stone Initiative" has been jointly supported by Saudi political, religious, and academic circles. But this initiative has also been questioned by some Internet users: Yasir Saaduddin wrote: "Virtual Black Stone!! How long will the scholars of the ummah remain silent on this nonsense entering the religion?"; Al-Hass ibn Ali Al-Kitabi wrote: "This innovation turned out to be the dirtiest and ugliest innovation that has played with the rites of Allah."[37]

The initiative also includes VR simulations of major hajj sites. Although the "Virtual Black Stone Initiative" has obvious advantages in technology, it has also attracted many criticisms and cautions from religious circles outside Saudi Arabia. Unlike the spontaneity and commerciality of the "virtual hajj" carried out by nongovernmental civilians through modern technology, Saudi Arabia, as the land of the two major Islamic sacred cities, has been suspected by Turkish and Indonesian religious and theological scholars for its official issued "Virtual Black Stone Initiative." In Turkey, Hatice Boynukalın pointed out: "Just as if you do not feel satisfied when you eat in the virtual universe, the opportunities offered in the Metaverse for the fulfillment of pilgrimage do not cause one to become a pilgrim"; Hayri Kırbaşoğlu also stressed that "One of the conditions of pilgrimage is to be able to go there. If it becomes impossible to make a pilgrimage there or to make the pilgrimage there, you are not responsible. However, people with good financial and health conditions should go if the pandemic is over. Then they become responsible. This application satisfies the emotions, it can be exciting. Therefore, those who cannot go on pilgrimage, take advantage of this opportunity and satisfy their spiritual feelings."[38] In Indonesia, Asrorun Niam Sholeh, the Chairperson of the Fatwa division of Indonesian

[33] Tawfiq Nasrallah, "Saudi Arabia: Muslims Can Virtually Touch Kaaba's Black Stone from Home", *Gulf News*, December 14, 2021.

[34] It means "the two sanctuaries".

[35] It means the "Black Stone".

[36] "Can't go to Mecca? Saudi Arabia Brings Hajj to the Metaverse with 'VR Black Stone' Experience", December 14, 2021, https://english.alaraby.co.uk/news/saudi-brings-hajj-metaverse-vr-black-stone.

[37] Saman Siddiqui, "KSA's 'Virtual Black Stone Initiative' Sparks a Debate on Social Media", December 17, 2021, https://www.oyeyeah.com/news/ksas-virtual-black-stone-initiative-sparks-a-debate/.

[38] Zachary Pearce, "From the Theologians, 'Is Virtual Hajj Acceptable with Metaverse?' controversy", January 30, 2022, https://www.arover.net/2022/01/30/from-the-theologians-is-virtual-hajj-acceptable-with-metaverse-controversy/.

Ulema Council (MUI), said, "Hajj and Umrah rituals must be performed only at the physical location, with the physical presence of pilgrims required," "We cannot perform the Hajj and Umrah ritual only through the virtual media, as it would not be valid."[39]

Conclusion: the influence of "virtual hajj"

From the four functions of "virtual hajj," they have played their due role to a certain extent, that is, "virtual hajj" as a response to demographic and geopolitical pressures.

Firstly, in terms of its function of protest, Turkey soothed the disappointment of Turkish Muslims who were unable to perform the hajj in Mecca as planned due to Saudi temporary reduction of the number of pilgrims by organizing a "virtual hajj" in Istanbul. Through large-scale participants and the reproduction of Kaaba's real scenes, the hajj is presented in a concrete and ritualized way, which conveys the self-evident religious and political meaning to the Islamic world. This also publicly revealed the phenomenon of the difficulties in obtaining hajj permits in the Islamic world and put pressure on Saudi Arabia. Although the Organization of Islamic Cooperation is in a dominant position in the allocation of hajj quota, Saudi Arabia, as a sovereign state, still has its national interests in the allocation of them.

Secondly, in terms of its function of Islamic education, although Muslim children have no hajj obligation, cultivating them as qualified Muslims and enhancing their sense of Islamic identity, the "virtual hajj" is undoubtedly an important part of teaching and religious experience. From Indonesia to Saudi Arabia, many kindergartens and schools have improved Muslim children's understanding of hajj rituals through the live experience of the *tawaf* circling the Kaaba.

Thirdly, in terms of its function of universal effect, with the advent of the digital era, whether Muslims are full of expectations but it is difficult for them to obtain hajj permits, or non-Muslims want to deeply understand the important rituals of Islam, they choose to experience "virtual hajj" through early developed apps such as "Mecca 3D." For Muslims, this is the latest attempt to apply high technology to religious practices, which can be regarded as a warming up before going to perform the hajj, or making up for the regret of not being able to go to Mecca. For non-Muslims, they can also obtain immersive experiences of the hajj rituals and preliminarily understand hajj's global significance.

Fourthly, in terms of the function of current COVID-19 fighting, not only the pilgrims use their smartphones to broadcast their performance of all the hajj rituals to their relatives and friends in real time through the 5G network, which gives them intuitive feelings and empathy, but also the usage of updated technical version of the "virtual hajj" apps, which are more accepted by Muslims who are unable to perform the hajj in Mecca due to the impact of the COVID-19. In addition, the "Virtual Black Stone Initiative" in the Metaverse era actively promoted by the

---

[39] Asep Firmansyah, Nabil Ihsan, "Kaaba Presence on Metaverse Platform only to Simulate Rituals: MUI", *Antara News*, February 12, 2022.

Saudi government represents a trend; that is, Saudi Arabia takes the VR technology related to hajj as the starting point to drive the construction of Saudi smart cities, and maximizes the Muslim populations who can obtain the hajj experience through the metaverse technology "virtual hajj." "Virtual Black Stone Initiative" has great possibility to continue to exist in the post-COVID-19 era.

Data availability Not applicable

Declarations

Ethics approval Not applicable

Competing interests The author declares no competing interests.

References

"A virtual Hajj is the best case scenario for many", *AFP*, July 31, 2020.

Aslan, O. (2018). *The United States and Military Coups in Turkey and Pakistan*. Palgrave Macmillan.

Bianchi, R. (2015). "The Hajj and politics in contemporary Turkey and Indonesia". In L. Mols, & M. W. Buitelaar (Eds.), *Hajj, Global Interactions through Pilgrimage* (69, 79). Sidestone Press.

Bunt, G. R. (2016) Decoding the Hajj in cyberspace. In E. Tagliacozzo, & S. M. Toorawa (Eds.), *The Hajj: Pilgrimage in Islam* (231, 235). Cambridge University Press.

"Can't go to Mecca? Saudi Arabia brings hajj to the metaverse with 'VR Black Stone' Experience", December 14, 2021, https://english.alaraby.co.uk/news/saudi-brings-hajj-metaverse-vr-black-stone

Connolly, D. K. (1999). Imagined pilgrimage in the itinerary maps of Matthew Paris. *The Art Bulletin*, *81*(4), 598–622.

Derrickson, K. (2008). Second life and the sacred: Islamic space in a virtual world. In V. Sisler (Ed). Digital Islam (a research project). http://www.digitalislam.eu/article.do?articleId=1877. Accessed 23 Oct 2012.

Ehrenschwendtner, M.-L. (2009). Virtual pilgrimage? Enclosure and the practice of piety at St. Katherine's convent, Augsburg. *Journal of Ecclesiastical History*, *60*(1), 45–73.

Firmansyah, A., & Ihsan, N. "Kaaba presence on metaverse platform only to simulate rituals: MUI", *Antara News*, February 12, 2022.

Global Muslim Brotherhood Daily Watch, "Further details on second life and Islam online", September 17, 2007, https://www.globalmbwatch.com/2007/09/17/further-details-on-second-life-and-islam-online/

"Huawei has become the largest cooperative supplier of Hajj communication services", *International Financial News*, December 18, 2007.

Jamal, S. "Pakistani startup develops world's first virtual reality Hajj simulator", *Arab News*, July 31, 2019.

Lin, G., & Qin, S. (2010). "For Pilgrims' joy: Huawei multi-manufacturer management service help mobily realize high-performance network", *Huawei Service*, no.2: 23–24.

MacWilliams, M. W. (2002). Virtual pilgrimage on the internet. *Religion*, *32*(4), 315–335.

Maghribi, L. "Experiencing Hajj – In virtual reality", *National News*, July 8, 2021.

Manarat Al Riyadh International Sections. (2017). Academic activities. https://manaratriyadhen.maarif.com.sa/Details.aspx?id=21. Accessed 1 May 2020.

Moslem, A. M., & Mahdi, M. (2014). Conceptual modeling of virtual pilgrimage for holy places, virtual pilgrimage study of Imam Reza's (peace upon him) shrine. *Religion & Communication*, *21*(1), 119–157.

Nasrallah, T. "Saudi Arabia: Muslims can virtually touch Kaaba's black stone from home", *Gulf News*, December 14, 2021.

"New Smartphone app to help Muslims navigate in Makkah", June 1, 2012, https://www.ummid.com/news/2012/June/01.06.2012/smartphone_appl_fr_makkah.htm

Niu, S., & Li, X. (2022). Between religious obligation and health security: Saudi Hajj governance under COVID-19. *Asian Journal of Middle Eastern and Islamic Studies*, *16*(1), 1–16.

Pearce, Z. "From the Theologians, 'Is Virtual Hajj Acceptable with Metaverse?' controversy", January 30, 2022, https://www.arover.net/2022/01/30/from-the-theologians-is-virtual-hajj-acceptable-with-metaverse-controversy/

Rudy, K. M. (2011). *Virtual pilgrimages in the convent: imagining Jerusalem in the Late Middle Ages*. Brepolis.

"Saudi Arabia Launches Virtual Hajj Forum", *Mi'raj News Agency*, September 14, 2020.

Seal, J. (2021). *A Coup in Turkey*. Penguin Random House.

Siddiqui, S. "KSA's 'Virtual Black Stone Initiative' sparks a debate on social media", December 17, 2021, https://www.oyeyeah.com/news/ksas-virtual-black-stone-initiative-sparks-a-debate/

Snider, M., & Molina, B. "Everyone wants to own the metaverse including Facebook and Microsoft. But what exactly is it?" *USA Today*, November 10, 2021.

"Turkey Find Solace in Virtual Pilgrimage as Saudi Cuts Haj Quotas," *Reuters*, July 18, 2013.

Xu, Y. (2010). Religion and contemporary international relations. *International Studies*, *52*(2), 45.

Yakar, E. E. (2019). A critical comparison between the presidency of religious affairs (Diyanet Işleri Başkanlığı) and the office of Shaykh al-Islām. *Kilis 7 Aralık Üniversitesi İlahiyat Fakültesi Dergisi*, *6*(11), 421–452.

Yusoff, M. F. B, Zulkifli, A. N., Faisal, F. "Virtual Hajj (V-Hajj) - Adaptation of persuasive design in virtual environment (VE) and multimedia integrated approach learning courseware methodology", *2011 IEEE Conference on Open Systems (ICOS2011)*, September 25–28, 2011, Langkawi, Malaysia.

Zain. "Zain KSA and Huawei announce the release of a New Network Strategy", March 6, 2018, https://sa.zain.com/en/all-news/zain-ksa-and-huawei-announce-release-new-network-strategy

Zaman, Q. "Hajj for childs," December 4, 2007, http://www.muftisays.com/qa/question/1889/hajj-for-childs.html