TECHNOLOGICAL INNOVATION IN THE MANAGEMENT OF HAJJ AND UMRAH: TOWARDS SERVICE EXCELLENCE IN THE DIGITAL ERA

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Abstract

The digital era has brought significant changes in various aspects of life, including in the management of Hajj and Umrah. The research method in this study is literature. The results show that technological innovations have contributed to increased efficiency, safety, and comfort for pilgrims, as well as enabling more structured management for the organising authority. These technologies facilitate easier access to information, real-time guidance, effective crowd management, and resource optimisation. Thus, technological innovations have great potential to improve Hajj and Umrah services, but their implementation must be done carefully to ensure they enrich, rather than disrupt, the pilgrims' spiritual experience.

Keywords: *Technological Innovation, Hajj Management, Umrah, Digital Age*

Introduction

Hajj and Umrah are one of the pillars of Islam that have deep spiritual significance for Muslims around the world. Every year, millions of Muslims from different countries travel to the holy lands of Mecca and Medina to perform these acts of worship. However, managing Hajj and Umrah, which involves millions of pilgrims from various countries, is not an easy task (Putri et al., 2020). The complexity in management, from registration, financing, transportation, accommodation, to the implementation of the worship itself, has become a major challenge for the government and Hajj and Umrah organising agencies.

In today's digital era, the rapid development of technology has opened up new opportunities in various aspects of life, including in the management of Hajj and Umrah. Technological innovation offers solutions to improve efficiency, transparency, and quality of service to pilgrims. In addition, innovation in the management of Hajj and Umrah has a very crucial role in this modern era. First, innovation can significantly improve efficiency and effectiveness in various aspects of the organisation, from the registration process, quota management, to the implementation of worship in the holy land (Khan & AlGhamdi, 2024). By utilising the latest technologies such as integrated information systems, mobile applications, and big data analysis, organisers can optimise resource allocation, minimise administrative errors, and provide more responsive

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services to pilgrims. This not only results in substantial cost and time savings, but also increases overall pilgrim satisfaction (Ela, 2022).

Second, innovation in the management of Hajj and Umrah is becoming increasingly important in light of increasingly complex global challenges, such as the COVID-19 pandemic, climate change, and economic fluctuations. Technological innovation allows organisers to adapt quickly to changing situations, for example through the implementation of real-time health monitoring systems, virtual training platforms for Hajj rituals, or more secure and flexible digital payment systems (Binsawad & Albahar, 2022). Furthermore, innovation can open up new opportunities to enhance the spiritual aspects of the pilgrimage journey, for example through the use of augmented reality technology to enrich the pilgrimage experience or AI applications for more personalised worship guidance. Thus, innovation not only answers practical needs, but also has the potential to deepen the spiritual meaning of Hajj and Umrah for pilgrims in the digital era. However, the implementation of technology in the management of Hajj and Umrah still faces various obstacles, such as inadequate infrastructure, limited human resources, and resistance to change (Yuliansyah et al., 2024).

Some countries and institutions organising Hajj and Umrah have started to adopt technology in their management. For example, the use of online registration systems, mobile applications for pilgrim guidance, and integrated information systems. However, the level of adoption and effectiveness of the implementation of these technologies still varies and is not optimal (Basiouni, 2020).

On the other hand, pilgrims' expectations of service quality continue to increase along with the times. Millennials and Gen Z who are increasingly familiar with digital technology demand faster, more efficient and personalised services. This creates an urgency for Hajj and Umrah organisers to continue to innovate and adopt the latest technology in an effort to realise excellent service (Anwar et al., 2023).

In addition, the COVID-19 pandemic has presented new challenges in the management of Hajj and Umrah. Travel restrictions and strict health protocols force organisers to look for innovative solutions in managing these acts of worship. Technologies such as virtual reality for Hajj ritual training, digital health monitoring systems, and online communication platforms are becoming increasingly relevant in this context (Wardana et al., 2023).

Based on this background, this study is to examine technological innovation in the management of Hajj and Umrah as an effort towards excellent service in the digital era.

Research Methods

The study in this research uses literature. Literature research method, also known as desk study or literature review, is a research method that focuses on

collecting and analysing information from various written sources relevant to the research topic. (JUNAIDI, 2021); (Abdussamad, 2022).

Results and Discussion
Concept of Hajj and Umrah

Hajj and Umrah are two important acts of worship in Islam that involve a spiritual journey to Mecca, Saudi Arabia. Both have the same goal, which is to get closer to Allah SWT and follow in the footsteps of Prophet Ibrahim AS and his family. Despite some similarities in rituals, Hajj and Umrah have significant differences in terms of the time of implementation, laws, and some aspects of implementation (Lutfi et al., 2020).

Hajj is one of the five pillars of Islam and must be performed once in a lifetime for Muslims who are able, both physically and financially. It is performed in the month of Dhul Hijjah, specifically between the 8th and 13th, and involves a specific set of rituals. These include tawaf (circumambulating the Kaaba), sa'i (running between the hills of Safa and Marwah), wukuf in the Field of Arafat, stoning the jumrah in Mina, and various other rituals performed in specific places around Mecca (Maulid & Amirsyah, 2021).

On the other hand, Umrah, while highly recommended, is not obligatory like Hajj. Umrah is often referred to as 'little Hajj' as it has some of the same rituals as Hajj, but on a simpler scale. Unlike Hajj, Umrah can be performed at any time of the year. The main rituals in Umrah include ihram (wearing ihram clothes and intending to perform Umrah), tawaf, sa'i, and tahallul (shaving or cutting hair). Umrah can generally be completed in a shorter time than Hajj (Taufiq et al., 2023).

Both Hajj and Umrah have deep spiritual significance for Muslims. They are not only physical journeys, but also spiritual journeys that aim to cleanse themselves, strengthen their faith, and get closer to Allah SWT. They also symbolise the unity of Muslims from all over the world, as millions of Muslims from different backgrounds gather in the same place with the same purpose (Hassan et al., 2022). The experience of performing Hajj or Umrah is often a life-changing moment for many Muslims, deepening their understanding of the religion and strengthening their commitment to the teachings of Islam.

Hajj and Umrah Management in the Traditional Era

In the traditional era, the management of Hajj and Umrah was very different from what we see today. The journey to Mecca was a grand adventure that took months, even years. Prospective pilgrims had to undertake long and dangerous land and sea journeys. They faced challenges such as extreme weather, disease, pirates and other dangers along the way. Preparation for this journey takes a long time and a great deal

of resources, often involving entire communities to support the prospective pilgrims (Aldahawi, 2021).

The administrative management of Hajj and Umrah in the traditional era was minimal and unstructured. There was no centralised registration system or quotas as there is today. Prospective pilgrims usually depended on local religious leaders or people experienced in Hajj travel for guidance. They also had to organise their own transport, accommodation and other needs during the journey. Often, small groups of pilgrims will gather and travel together for safety and mutual support (Firdos et al., 2023).

The financial aspects of Hajj and Umrah in the traditional era were also very different. There was no Hajj savings or financing system as we know it today. Prospective pilgrims had to raise their own funds, often taking years to accumulate a sufficient amount. Many sold their land or possessions to finance the journey. In addition, due to the long and uncertain journey, many pilgrims set out with merchandise to sell during the journey or in Mecca, as a way to finance their return journey (Abonomi, 2022).

Pilgrims' guidance and services while in the Holy Land were also very limited in the traditional era. There were no official guides or service packages as there are now. Pilgrims had to rely on their own knowledge or help from other more experienced pilgrims. Conditions in Mecca itself are also much different, with very limited facilities compared to modern standards. Nonetheless, the spiritual experience gained from this arduous journey is often considered more profound and meaningful by pilgrims in the traditional era (Muneeza & Mustapha, 2021).

Communication is one of the biggest challenges in managing Hajj and Umrah in the traditional era. The absence of modern communication technology makes coordination between pilgrims and families in the country very difficult. News about the safety and health of pilgrims often takes months to reach their families. This also makes it difficult for management in terms of monitoring the number of pilgrims and handling problems that may arise during the journey or while in the Holy Land (Ilias et al., 2022).

The health aspect is also a major concern in traditional Hajj and Umrah management. The absence of modern health facilities and vaccinations makes pilgrims very vulnerable to various diseases. Disease outbreaks are often a serious threat to pilgrims, both during the journey and while in Mecca. Health management is generally carried out traditionally, relying on local medical knowledge brought by pilgrims from their home regions (Lubis et al., 2021).

The process of documentation and recording of Hajj and Umrah pilgrims in the traditional era was also very limited. There was no structured data collection system as there is today. Recording was usually done manually and not centralised, making it difficult to track the exact number of pilgrims who departed or who have returned. This

also makes it difficult to identify if anything untoward happens during the journey or in the Holy Land (Febriansyah et al., 2024).

Thus, Hajj and Umrah Management in the traditional era reflects a period where the holy journey was full of challenges and required great sacrifices. Although there was no structured management system like today, the spirit and dedication of the pilgrims in carrying out this worship should be appreciated. Limitations in terms of transport, communication, health, and administration made the Hajj and Umrah journey a severe test of faith as well as a profound spiritual experience (Zakiruddin, 2024).

This traditional era laid the foundation for the evolution of Hajj and Umrah management that we see today. Many lessons and experiences from this era were later taken into consideration in the development of the modern system of Hajj and Umrah management. Although the management of Hajj and Umrah is now much more structured and convenient, the spirit of sacrifice and dedication exemplified by the pilgrims in the traditional era remains an inspiration for the current generation of Muslims in performing the holy pilgrimage to the House of Allah.

Digital Technology Development for Hajj and Umrah Management

The development of digital technology has brought significant changes in the management of Hajj and Umrah. Online registration systems have replaced cumbersome and time-consuming manual processes. Prospective pilgrims can now register, fill out forms, and upload documents electronically through digital platforms provided by the government or authorised travel agents (Abonomi, 2022). This not only improves the efficiency of the registration process, but also reduces administrative errors and enables better monitoring of Hajj and Umrah quotas.

Geolocation technology and mobile applications have been revolutionary in assisting pilgrims during their journey. Apps such as 'Digital Hajj Manasik' or 'Smart Hajj' provide step-by-step guides to Hajj and Umrah rituals, interactive maps of the Grand Mosque and surrounding areas, as well as real-time information on prayer schedules and congestion at various locations. The GPS tracking feature helps pilgrims avoid getting lost in the crowd and makes it easier for guides to monitor the location of their group members (Aljohani et al., 2022).

In the aspect of health and safety, digital technology also plays an important role. Smart bracelets with health sensors have been trialled to monitor pilgrims' vital conditions, such as heart rate and body temperature. This data can be sent in real-time to the health centre, enabling a quick response in case of health issues. In addition, biometric identification systems are used to enhance security and speed up the process of verifying pilgrims' identities at various checkpoints (Chulaivi et al., 2024).

Logistics and accommodation management have also been improved through digital technology. A cloud-based inventory management system enables real-time monitoring of food, water and other supplies. Online booking platforms make it easier

to organise accommodation and transport for pilgrims. Blockchain technology is also being explored to increase transparency and security in financial transactions related to Hajj and Umrah, as well as to verify the authenticity of travel documents (Ahdari, 2021).

Big Data and Artificial Intelligence (AI) technologies are also beginning to be applied in the management of Hajj and Umrah. Big data analysis helps authorities predict trends, optimise resource allocation, and improve decision-making. For example, pilgrim movement patterns from previous years can be analysed to identify potential congestion points and design more effective crowd management strategies. AI is also used in chatbots and virtual assistants to provide information and assistance to pilgrims (Sabr et al., 2024).

Virtual Reality (VR) and Augmented Reality (AR) technologies are starting to be used in Hajj and Umrah training and preparation. Prospective pilgrims can experience virtual simulations of rituals and holy sites, helping them familiarise themselves with the environment and procedures before departing. This is especially beneficial for those who are travelling for the first time. AR can also be used during the journey to provide contextual information about important locations and their history (Susdarwono, 2023).

The use of drones and advanced CCTV cameras has enhanced monitoring and security capabilities during the Hajj and Umrah seasons. Drones are used to monitor traffic flows and crowds from the air, assisting authorities in managing crowd movements more effectively. CCTV systems with facial recognition capabilities assist in the rapid identification of individuals who need assistance or who may pose a security risk (Rizk, 2024).

Thus, the development of digital technology has brought about a major transformation in the management of Hajj and Umrah. From the registration process to the performance of worship, technology has improved efficiency, safety, and convenience for millions of pilgrims every year. Online systems, mobile applications, geolocation technology, and various other innovations have made this spiritual journey easier. The application of Big Data, AI, VR, and other advanced technologies continue to open up new opportunities for further improvements.

Nonetheless, it is important to remember that technology is just a tool. The spiritual essence of Hajj and Umrah remains the main focus. The challenge ahead is how to integrate these technologies seamlessly without detracting from the solemnity and deep meaning of this sacred act of worship. With a balanced approach, digital technology can continue to play an important role in enhancing the Hajj and Umrah experience for future generations, while still maintaining the traditional and spiritual values that are at the core of these acts of worship.

Conclusion

Technological innovation has brought significant changes in the management of Hajj and Umrah in the digital era. The application of various technologies such as online registration systems, mobile applications, geolocation, Big Data, and Artificial Intelligence (AI) has improved efficiency, security, and convenience for millions of pilgrims. These technologies have enabled more structured and responsive management, from the registration process to the performance of worship in the holy land.

The service excellence achieved through these technological innovations covers various aspects of Hajj and Umrah management. Pilgrims can now access information more easily, register online, get real-time guidance during the journey, and even experience ritual simulations through Virtual Reality technology before departure. Meanwhile, organising authorities can manage crowds more effectively, optimise resource allocation, and enhance security through advanced monitoring technologies.

While technology has brought many advancements, it is important to remember that the spiritual essence of Hajj and Umrah remains the main focus. The challenge ahead is how to integrate these technologies seamlessly without detracting from the solemnity and deep meaning of this sacred act of worship. A balanced approach is needed to ensure that technology serves as a tool that enriches the spiritual experience, rather than distracting from the main purpose of worship.

Going forward, technological innovation in the management of Hajj and Umrah is expected to continue to grow, opening up new opportunities for service improvement. However, the main focus should remain on how technology can support and enhance the pilgrims' spiritual experience. With the right approach, the digital era can be a catalyst for excellent services that are not only efficient and safe, but also support the achievement of the spiritual goals of Hajj and Umrah.

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