# EMPOWERING ISLAMIC HOSPITALITY: DESIGNING A HALAL TOURISM INFORMATION SYSTEM FOR MUSLIM TRAVELERS IN BALI INDONESIA

**Yordan Yasin[1], Dana Indra Sensuse[2], Deden Sumirat Hidayat[3], Erisvaha Kiki Purwaningsih[4], Rika Ekawati[5]**

[1,2,4,5]Universitas Indonesia, Indonesia
[3]Badan Riset dan Inovasi Nasional (BRIN), Indonesia
Email: yordan.yasin@ui.ac.id, dana@cs.ui.ac.id, dede025@brin.go.id, erisvaha.kiki@ui.ac.id, rika.ekawati@ui.ac.id

## ABSTRACT

*Indonesia has great potential as a halal tourism destination, and based on the 2023 Global Muslim Index, Indonesia is ranked first as a halal tourism destination. Bali, as one of the favorite tourist destinations in Indonesia, is, of course, also attractive for Muslim travelers. Unfortunately, there is still limited information regarding various Muslim Friendly tourist attractions and facilities there. The existing halal tourism information system also still has a low rating. This study uses a prototyping approach to design a halal tourism information system that is easy to use and access, especially for halal tourism in Bali. The prototype tested with the usability test obtained an average value of 3.9 on a 5 scale and got a higher score of 4.3 on ease of use and application expectations. The score shows that the system fulfilled its proposal to create an information system for halal tourism in Bali, Indonesia, which is easy to access and use.*

| KEYWORDS | *Halal Tourism, Information System, Muslim Friendly Tourism, Islamic Hospitality.* |
|---|---|

## INTRODUCTION

HE tourism sector in Indonesia remains a lucrative business domain with ample room for growth. In 2019, tourism contributed a noteworthy 4.80% to the country's Gross Domestic Product (GDP) (Pramana et al., 2022). Furthermore, Indonesia anticipated that tourism would emerge as the foremost contributor to foreign exchange earnings in 2020 (Kristiana et al., 2021).

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Unfortunately, this projection was rendered unattainable due to the outbreak of the COVID-19 pandemic. Remarkably, the tourism sector experienced a significant downturn during this crisis (Ntounis et al., 2022).

The World Tourism Organization (UNWTO) reports that the pandemic profoundly impacted over 121 million jobs in the travel and tourism industry, thus precipitating the most severe economic and social crisis to date (Gössling & Schweiggart, 2022). Nevertheless, the post-pandemic era has witnessed a resurgence in the tourism industry, including in Indonesia, where the number of foreign tourist arrivals has surged by a staggering 503.34% from January 2022 to January 2023 (Vrablikova et al., 2023). In addition, Indonesia has garnered the esteemed distinction of being the top-ranked destination for Muslim travelers, as per the Global Muslim Travel Index 2023 (Pranika et al., 2023); (Harun et al., 2024). These developments underscore Indonesia's immense potential in the tourism sector, particularly Halal Tourism.

In recent years, there has been an increase in Muslim travelers, as evidenced by the data provided by GMTI 2023. This trend can be attributed to the growth in the Muslim population. Such a development highlights the promising potential of the halal tourism industry. When embarking on a journey, Muslim travelers must consider the various provisions pertaining to halal practices in the Islamic religion (Katuk et al., 2021). Halal tourism, by definition, entails tourism activities that adhere to the prescribed Halal regulations and are in accordance with the sacred teachings of the Quran [8]. This form of tourism is currently flourishing in numerous Muslim- majority nations, including Malaysia and Indonesia (Berakon et al., 2023).

As mentioned in the preceding paragraph, Indonesia exhibits substantial potential for the advancement of Halal Tourism, which is evident from the escalating number of Muslim voyagers and the nation's designation as a favored Halal tourism destination. When discussing Indonesia as a tourist destination, it is imperative to acknowledge Bali as the globally favored tourist hotspot. Despite Bali being situated in Indonesia, where Muslims constitute the majority, the Muslim faith remains a minority in Bali, and the amenities for Muslim travelers remain relatively sparse (Perguna et al., 2021). These limited amenities pose a challenge for Muslim travelers during their sojourn in Bali, as they are compelled to seek out diverse information pertaining to Muslim friendly facilities and attractions in the region.

Previously, an information system was developed with the purpose of enabling the discovery of information pertaining to halal tourism. Regrettably, this particular application has garnered unfavorable evaluations (Nahdliyah et al., 2021). At present, there is a conspicuous absence of an information system that is specifically tailored to address the needs of halal tourism in the region of Bali, as far as the researchers are aware. To rectify this issue, the present research endeavors to establish an information system that caters to the requirements of halal tourism, particularly in the tourist areas of Bali, Indonesia, intending to facilitate easy accessibility for Muslim tourists.

According to a study entitled Halal Tourism Destination Ecosystem as a

Container for Developing Muslim Friendly Tourism Destinations (Rahtomo, 2018). This study discusses the development of a halal tourism destination ecosystem as a container for improving destinations that are friendly to Muslim tourists.

There is also a study entitled Halal Tourism Village: Concept and Implementation in (Adinugraha et al., 2018). This study examines the concept and implementation of halal tourism villages in Indonesia, which are relevant to the development of halal tourism in Bali.
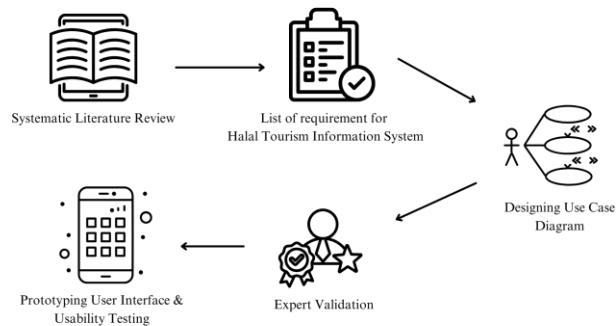
This study aims to provide easy access to information for Muslim tourists regarding Muslim Friendly services and destinations in Bali, Indonesia. While the benefits of this study are able to provide centralized information regarding Muslim Friendly services, thus helping Muslim tourists get a more comfortable experience in Bali.

## RESEARCH METHOD

Before formulating an information system for halal tourism in Bali, it is imperative to conduct an extensive literature review to ascertain the specific requirements for halal tourism. Subsequently, the ascertained requirements are translated into a use case diagram. Several essential features are also included in this list; however, the primary emphasis of the created information system will be on its main function, which is to furnish comprehensive information about halal tourism, particularly in the enchanting region of Bali, Indonesia.

The subsequent stage entails the expert validation process after creating the use case diagram. To ascertain experts' comprehension of the use case diagram, questionnaires consisting of open-ended inquiries were crafted, thereby facilitating the inclusion of their input and suggestions. These experts will be selected from the pool of IT professionals across multiple companies. Validation was carried out to guarantee the inclusion of all requisite functions within the use case diagram prior to the commencement of the prototyping phase.

The prototyping methodology was selected due to the potential for integrating additional information or functionalities as demanded by the user within this particular information system. During the prototyping phase, usability evaluation will be conducted using an established questionnaire. The prototype will undergo multiple revisions until it attains an acceptable level of satisfaction in the usability evaluation. The comprehensive conceptual framework of the halal tourism information system for Muslim travelers in Bali, Indonesia, can be observed in Fig. 1.

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**Figure 1. Framework of Thinking**

**Data Analysis Techniques**

Data from the questionnaire were analyzed descriptively to calculate the average of each item in the questionnaire, especially at the usability testing stage. The results of the descriptive analysis help in evaluating the level of usability of the system from the user's perspective.

Data obtained from interviews and observations were analyzed qualitatively using thematic analysis methods. This technique involves grouping data into relevant themes (e.g., ease of access, completeness of information, system responsiveness) to provide a deeper understanding of user needs.

**Data Collection Techniques**

The data collection techniques used in this research are Literature Study, Expert Interviews, Questionnaires, and Observations.


## RESULT AND DISCUSSION

**Analysis Halal Tourism Information System Requirement**

The researcher found there are 13 pieces of information and 9 features that may be required for the system. From the list of requirements, the researcher focuses on providing information on halal tourism. Therefore, the researcher included 11 pieces of information that will be used in the system. The 11 pieces of information, namely Halal Products, Halal-friendly destinations and travel options, Halal facilities/prayer facilities and services, Halal culinary, Halal appraisal & certification, Halal at Airport, Prayer times & Qibla direction, Islamic tourism spot, Halal hotel, Halal logo, and Halal terms.

**Analysis Requirement or Needs of Halal Tourism Information In Bali, Indonesia**

Bali, known for its rich cultural tourism, faces inevitable resistance to the idea of halal tourism despite its significant potential for development in this area [9]. The study also highlights Bali's potential as a halal tourism destination, especially regarding the need for halal food, which aligns closely
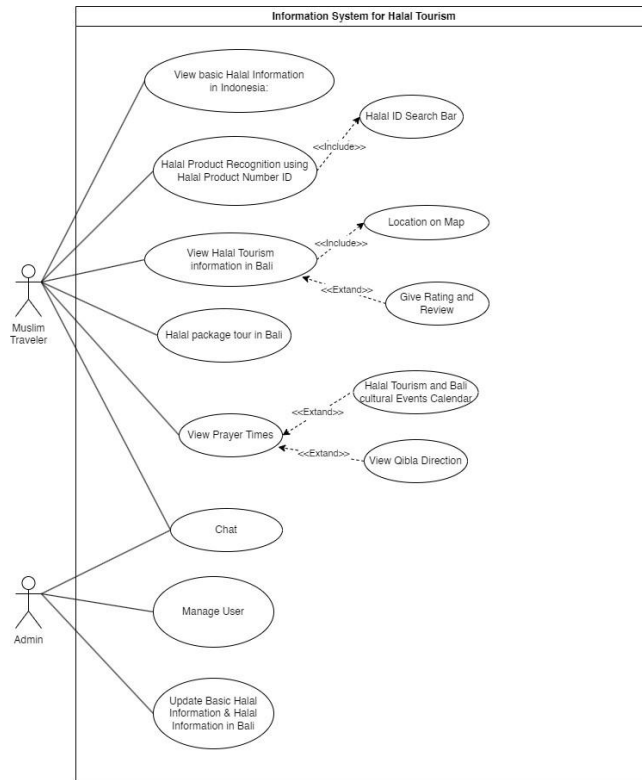
with the preferences of tourists visiting Bali. Another study by Khairudin 2022 introduces Wali Pitu in Bali Province as an innovative tourism approach for Indonesian halal tourism destinations (Raya, 2022); (Khairudin, 2022). This emphasizes both the potential of halal tourism in Bali and the importance of providing information about halal tourism destinations in the region. To bridge the gap and help Muslim travelers understand and respect Bali's cultural norms, implementing event calendars and including Bali's culture in mobile apps can be effective strategies. The researcher adds 1 more piece of information, namely the Halal Tourism and Bali Cultural Events Calendar.

**Use Case Diagram**

The design of the use case diagram is utilized to elucidate the interaction between the system and its environment. The process commences with the definition of actors and their corresponding activities, as well as the functionalities performed by the systems. A use case delineates an activity carried out by the user, constituting a pivotal component of the system's operation. The connections between actors and use cases are established through lines that encapsulate various relationships, including association, inclusion, extension, or generalization relationships.

In the halal tourism information system for Muslim travelers in Bali, Indonesia, there are two main actors: Muslim Travelers and Admin. To access the system, Muslim travelers must log in and verify the password before they can access the halal tourism information, but this feature will not show in the use case diagram. After the actor's Muslim travelers log, they can see halal information in Indonesia, including information about the halal logo and halal-friendly facilities in the airport. They can also view information on halal tourism in Bali, such as the destination and prayer facilities. Restaurants and hotels that is Muslim Friendly, the system also displays the location of the facilitate. The other features are viewing prayer time, Qibla Direction, cultural events calendar, and chat with the admin.

The actor admin's main role is to provide information in the system by updating halal and halal tourism information in Bali. The admin can also chat with Muslim travelers if they need any information and manage the Muslim traveler account. Admin needs to focus on providing information quality and accuracy in the Halal Tourism Information System. Six experts with IT validated the use case diagram.

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**Figure 2. Use Case Diagram of Halal Tourism Information System for Muslim Travelers in Bali, Indonesia**

**Table 1. Main Activities of Halal Tourism Information System for Muslim Travelers in Bali, Indonesia**

| Actors | Activities | Descriptions |
|---|---|---|
| Muslim Traveler | View basic Halal Information in Indonesia | Traveler can view halal information in Indonesia. The information available is halal terms, logo, certification, and Muslim Friendly facilities in Bali airport. |
| | Halal Product Recognition | Traveler can search the halal ID on the product to check whether the product is halal or not. |
| | View Halal Tourism information in Bali | Traveler can view halal tourism information in Bali, Indonesia. The information available is Destination, Prayer |

|  |  |  |
|---|---|---|
|  |  | Facilities, Restaurant, and Hotels in Bali airport that are Muslim Friendly. |
|  | View Prayer Times | Traveler can view information on prayer times, Qibla direction based on their location. Also, can view Bali event calendar. |
|  | Chat | Traveler can chat or talk with the admin either to ask about halal information or need recommendations on their halal tourism experience. |
|  | Halal package tour in Bali | Traveler can choose the package tours in Bali which are Muslim Friendly. |
| Admin | Update Basic Halal Information & Halal Information in Bali | Admin can update information about halal terms, logo, certification, and Muslim Friendly facilities in Bali airport. Also can update information about Destination, Prayer Facilities, Restaurants, and Hotels in Bali airport that are Muslim Friendly. |
|  | Manage user | Admin can approve the user account or delete it. |
|  | Chat | Admin can chat with the traveler to provide information that meets their needs. |

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## User Interface

In the user interface and making of a prototype design, the process is done using the Figma application. We named the Halal Tourism Information System for Muslim Travelers in Bali, Indonesia "HalBal.id". The user interface and prototype were made based on use case diagrams that were created and validated by experts. In Fig. 3, there are Login, Home Screens, and Halal Basic Information in Indonesia. On the home screen, the Muslim traveler can choose the information they want to access. Fig. 4 shows Prayer Time, Qibla Direction, and the Bali event calendar. The chat feature and halal product recognition are shown in Fig. 5. After the Muslim traveler inputs the halal ID in the halal identifier, the app will show the data from Indonesia's Halal Provider and indicate whether the halal ID is on the list or not. Lastly, in Fig. 6, the Muslim traveler can get information on halal tourism in Bali, including detailed information, and the location also gives a review of the halal tourism destination.
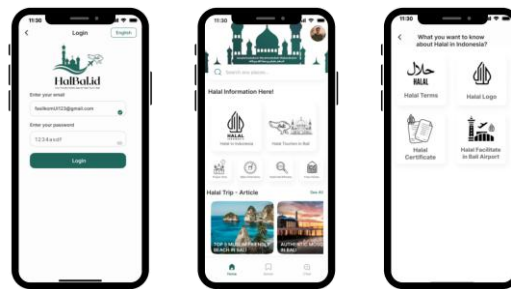


**Figure 3. Login, Home, and Halal Basic Information in Indonesia**
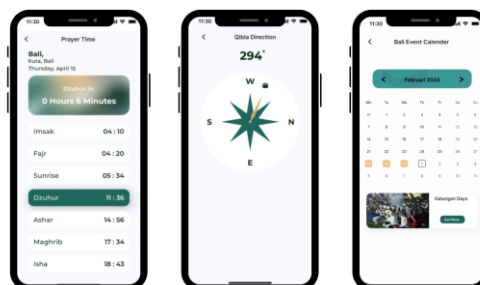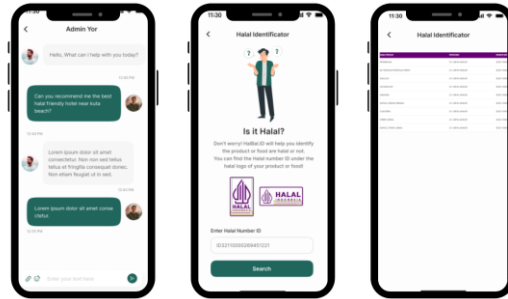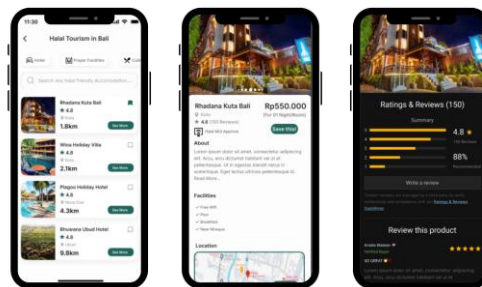


**Figure 4. Prayer Time, Qibla Direction, and Bali event calendar**

**Figure 5. Chat, Halal Identification, and Result from Halal Identification**



**Figure 6. Halal Tourism in Bali, Detailed Information, and Review**

**Usability Testing**

The prototype will undergo usability testing to verify the proper functionality of all features. The usability testing questionnaire comprised 10 statements derived from stan darted usability questionnaires (Sauro & Lewis, 2012), and The questionnaire uses a Likert scale. The employed analytical technique is a straightforward descriptive analysis which involves the computation of the mean value for each statement. In this examination, a total of 10 individuals were selected as respondents. The test results obtained an average number of 3.9 from a total score of 5, which indicates that the features of the Halal Tourism Information System for Muslim Travelers in Bali, Indonesia application can run well and are okay to use. The lowest score of the usability test is on the statement concerning the interface, which indicates there is a need for improvement in the interface. The highest score is on ease of use and application expectations; this is in accordance with the research objective of creating an information system that is easy to access and use. The usability test result can be seen in Table 2.

**Table 2. Usability Test Result**

| No | Statement | Score |
|---|---|---|
| 1 | It was simple to use this system. | 4 |
| 2 | I was able to complete the tasks and scenario quickly using the system. | 4.2 |
| 3 | I felt comfortable using this system. | 3.9 |
| 4 | It was easy to learn to use this system. | 4 |
| 5 | The information provided with this system was clear. | 4 |
| 6 | It was easy to find the information I needed. | 4.3 |
| 7 | The interface of the system was pleasant. | 3.3 |
| 8 | I like using the interface of this system. | 3.3 |
| 9 | This system has all the functions and capabilities I expect it to have. | 4.3 |
| 10 | Overall, I am satisfied with this system. | 3.7 |
| **Average score** | | **3.9** |

**Limitations of Existing Halal Information Systems**

Previous studies have developed several halal tourism information applications or systems, but many of them still have limitations in the quality of the interface and accessibility for users. For example, several existing halal applications have received negative reviews regarding ease of use and completeness of information. This study attempts to bridge this gap by designing an information system that prioritizes ease of access and completeness of features, including information related to halal facilities in popular destinations such as Bali.

**Lack of Muslim Friendly Information in Muslim Minority Destinations**

Previous studies on halal tourism often focus on countries or regions with a dominant Muslim population. However, in tourist destinations such as Bali, where Muslims are a minority, adequate information regarding Muslim Friendly facilities (such as places of worship, halal restaurants, and supportive hotels) is still very limited. Therefore, this study fills the gap by providing a special information system designed for tourist destinations with a low Muslim population but with great halal tourism potential.

**Lack of Interactive Features and User Engagement**

Many previous studies have not included interactive features, such as halal tour packages, event calendars, and user review systems, which can increase user engagement in the application. In this study, a comparison is made by including these interactive features to provide a more immersive experience for users, as well as allowing them to share experiences and reviews related to halal tourism in Bali.

**Lack of User Validation and Usability Testing**

Most previous studies did not involve comprehensive usability testing or were limited to internal evaluations without involving end users. In this study, there is an effort to fill this gap by conducting usability testing through questionnaires and user observations to ensure that the system truly meets user expectations in terms of ease of use and accessibility.

**Lack of Collaboration with Local Stakeholders**

Although halal tourism is growing rapidly, previous studies generally lack involvement of related parties, such as local governments and local Muslim communities, in the design of information systems. This study highlights the importance of collaboration with local stakeholders to ensure that the features provided are relevant to the needs of Muslim tourists, as well as helping to promote local Balinese culture and traditions within the framework of halal tourism.

Thus, this study stands out in terms of feature innovation, focusing on destinations with minority Muslim populations, and a user-centric approach that prioritizes user and stakeholder involvement. This is a significant differentiator from previous studies and fills the gap in the development of a more optimal halal tourism information system.

## CONCLUSION

The usability test with an average score of 3.9 shows that the system is okay to use but needs improvement, especially on the interface, because the lower score was on the interface. Therefore, this study has fulfilled its proposal as a reference to the development of the Halal Tourism Information System. This study is also in accordance with the research objective of creating an information system for halal tourism in Bali, Indonesia, that is easy to access and use.

It is recommended to add other features that can enrich the user experience, such as special event information on the calendar, payment integration features, and a more personalized recommendation system according to traveler preferences. This system can be used as an effective halal tourism marketing tool for the government and tourism industry players in Bali. By providing complete and easily accessible information, this system has the potential to attract more Muslim tourists to Bali.

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