Faith on the Move: A Deep Dive into Muslim Traveller Food Experiences Through the Lens of IR4.0

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Abstract

Purpose: The global Halal tourism sector is experiencing remarkable growth, with market value projected to rise from USD 256.5 billion in 2023 to USD 410.9 billion by 2032. This conceptual paper aims to explore the intersection of Muslim traveller food experiences, Halal assurance, and Industry 4.0 (IR4.0) technologies within Taiwan's tourism context. The study is guided by the Travel Decision-Making Process (TDMP) theory and anchored in an Extended ESG framework enriched by Maqasid Shariah principles.

Design/methodology/approach: A Systematic Literature Review (SLR) methodology is employed to synthesise existing scholarship on Muslim travel behaviour, Halal integrity, and the integration of digital technologies in tourism services. The study examines Muslim travellers' navigation of Halal food choices across the pre-travel, during-travel, and post-travel stages.

Findings: The review highlights religious commitment, perceived assurance of Halal integrity, and trust in certification bodies as key determinants of Muslim travel behaviour. Furthermore, IR4.0 technologies—including artificial intelligence (AI), the Internet of Things (IoT), and blockchain—emerge as critical enablers in enhancing Halal transparency, service accessibility, and cultural sensitivity in Muslim-friendly tourism.

Research limitations/implications: As a conceptual study, the findings are limited to insights derived from the existing body of literature. Future empirical research is needed to validate the proposed framework and assess its applicability in real-world settings.

Practical implications: The study provides actionable guidance for Halal food providers and tourism stakeholders in Taiwan, advocating for a technology-driven yet ethically grounded approach to Muslim-friendly tourism. The recommendations support the alignment of service innovation with the religious and lifestyle expectations of Muslim travellers.

Originality/value: This paper contributes by integrating IR4.0 technologies, TDMP theory, and Maqasid Shariah within the Halal tourism discourse. It offers a novel perspective on how ethical, sustainable, and technologically advanced strategies can strengthen Taiwan's position as a Muslim-friendly destination.

Keywords: Halal Food, Muslim Traveler, Halal Certification, Muslim Friendly Tourism, IR4.0, Taiwan

Introduction

In an increasingly connected world, the Halal industry has proven remarkably resilient, demonstrating sustained growth even amidst global economic challenges, the disruptions of the COVID-19 pandemic and politically instability. This momentum is largely driven by two

major forces: the expanding disposable income of the global Muslim population, now estimated at 2.2 billion, and rising consumer demand for ethical, transparent, and sustainable consumption (SGIER, 2023; Elasrag, 2016). Within this broader ecosystem, Muslim-friendly tourism (MFT) has emerged as a significant niche, presenting both economic opportunities and socio-cultural benefits for destinations that are prepared to meet the expectations of Muslim travellers.

One of the most dynamic areas within this landscape is the global Halal food industry, which recorded a 9.6% increase—from US$1.28 trillion in 2021 to US$1.4 trillion in 2022—and is projected to reach US$1.89 trillion by 2027 (SGIER, 2023). In parallel, Muslim travel expenditure stood at US$133 billion in 2022 and is expected to grow to US$225 billion by 2028, with projected arrivals exceeding 230 million (GMTI, 2022). These figures not only reflect the commercial vitality of Muslim tourism but also its potential to foster inclusivity, intercultural understanding, and sustainable development, particularly in Muslim-minority destinations.

From an Islamic perspective, travel is not purely transactional but it is both spiritual and transformative to the traveller. The Qur'an and Hadith both advocate travel as a means of acquiring wisdom, fostering humility, and seeking knowledge. As the Qur'an reminds us:

"Do they not travel through the land, so that their hearts may thus learn wisdom and their ears may thus learn to hear? Indeed, it is not their eyes that lack sight, but rather the hearts that reside within their chests."

(Qur'an 22:46)

The Prophet Muhammad (PBUH) also encouraged the pursuit of knowledge through travel:

"Whoever travels a path in search of knowledge, Allah will make easy for him a path to Paradise."

(Sahih Muslim, Hadith 2699)

This spiritual dimension reinforces the indication that for Muslim travellers, the journey is a holistic experience as it integrates faith, learning, cultural exploration, and adherence to religious obligations such as Halal food consumption.

In this context, access to Halal food is not merely a convenience but a cornerstone of religious observance and personal comfort while travelling. The definition of Halal goes beyond ingredients; it includes hygiene, sourcing, preparation, and adherence to Islamic law. In Muslim-minority contexts like Taiwan, however, several barriers persist: limited availability of Halal-certified options, inconsistent standards, and low awareness among service providers (Masood, 2022; Adham, 2020; Rasul, 2019).

While Taiwan has made notable strides in branding itself as a Muslim-friendly destination through government support and the promotion of Halal certification, gaps remain. Travellers often encounter fragmented certification systems, inconsistent understanding of Halal standards among businesses, and a general lack of supporting infrastructure (Azam, 2020; De, 2023). These shortcomings are particularly acute among SMEs, which frequently find Halal certification difficult to access due to its complexity, costs, or lack of technical guidance (Hidayat, 2022; Khan, 2016). These limitations place a cognitive and emotional burden on

Muslim travellers, who often resort to mobile apps, blogs, or peer recommendations to locate trustworthy food options. Yet even with advanced planning, the uncertainty around certification and preparation processes can diminish the travel experience, inhibit culinary exploration, and reduce repeat visitation (Al-Teinaz, 2020; Akhtar, 2020). Thus, Halal food functions not only as a necessity but as a critical trust factor in shaping Muslim travel satisfaction.

To explore this dynamic more deeply, this study poses the guiding research question:
"What do Muslim visitors consume while visiting Taiwan, a destination with a Muslim minority population?"

To address this question, the research applies a Systematic Literature Review (SLR) to examine existing scholarship on Muslim travel behaviour, Halal food accessibility, sustainable tourism frameworks, and the role of emerging technologies. This method provides a structured approach for synthesising knowledge across disciplines while highlighting conceptual gaps, especially in the context of Muslim-minority destinations.

The study is grounded in the Travel Decision-Making Process (TDMP) theory (Martin & Woodside, 2012), which maps the travel journey through three key phases: pre-travel planning, on-trip experiences, and post-travel reflection. This model enables a nuanced understanding of how Halal food influences the decision-making and satisfaction of Muslim tourists across the entire travel lifecycle.

To enrich this behavioural framework, the study integrates the Extended ESG (Environmental, Social, Governance) model, aligned with Maqasid Shariah. This integration introduces an Islamic ethical dimension to sustainable tourism, covering:
1. *Hifz al-Māl* (economic integrity and protection of wealth),
2. *Hifz al-Nafs* and *Hifz al-'Aql* (personal well-being and intellectual capacity),
3. *Hifz al-Bīʾah* (environmental stewardship).

This holistic lens ensures that Halal food practices are evaluated not only from a regulatory or operational viewpoint, but as part of a broader framework of faith-driven, responsible tourism. Moreover, the study acknowledges the transformative potential of Industry 4.0 (IR4.0) technologies such as Artificial Intelligence (AI), Blockchain, the Internet of Things (IoT), and Big Data Analytics in enhancing transparency, traceability, and traveller confidence. These innovations can improve digital Halal verification, streamline certification processes, and offer SMEs cost-effective tools for market entry and scalability.

The proposed conceptual framework, shaped through the SLR, brings together behavioural, ethical, technological, and sustainability perspectives. It offers a comprehensive view of how Muslim travellers navigate Halal food decisions, how these experiences impact trust and satisfaction, and how digital transformation can bridge service gaps.

Ultimately, this study aims to contribute a practical, theory-informed model for policymakers, Halal certifiers, tourism authorities, and local businesses. By aligning spiritual, social, and technological considerations, it supports Taiwan's ambitions to evolve into a more inclusive and competitive destination for Muslim-friendly travel in the IR4.0 era.

Method

This study adopts a **Systematic Literature Review (SLR)** methodology to explore the dynamics of Halal food consumption among Muslim travellers within Taiwan's Muslim-friendly tourism ecosystem. The SLR is particularly suited for this research, as it allows for a comprehensive synthesis of existing literature across diverse fields, including Halal consumption behaviour, travel decision-making processes, Industry 4.0 technologies, and sustainable tourism practices.

While the conceptual framework of this study is grounded in the **Travel Decision-Making Process (TDMP)** theory and enriched by the **Extended ESG principles** reflecting Maqasid Shariah, alongside the integration of **Industry 4.0 (IR4.0)** technological drivers, the SLR serves to validate and refine this framework. By systematically reviewing and analysing relevant literature, the study ensures that the framework is not only theoretically robust but also empirically grounded.

The SLR process follows established guidelines, involving the identification, selection, analysis, and synthesis of peer-reviewed journal articles and grey literature pertinent to the study's focus. This approach is consistent with methodologies outlined by Massaro et *al*. (2016), who emphasise the importance of treating academic literature as a valid data source in SLRs. The review encompasses studies that examine how Muslim travellers make Halal food choices across different decision-making stages (pre-travel, during travel, post-travel), the impact of Halal assurance on trust, and the role of IR4.0 technologies such as Artificial Intelligence (AI), Internet of Things (IoT), and Blockchain, in augmenting or impeding Muslim-friendly service delivery.

Furthermore, the SLR aims to identify research gaps and contextual limitations, particularly within Muslim-minority travel destinations like Taiwan, where empirical studies are relatively scarce. By consolidating insights across disciplines, the SLR aids in refining the research direction, confirming key constructs, and ensuring that subsequent recommendations for policymakers and tourism providers, are evidence-based and contextually relevant.

Overview of SLR Protocol

This methodological approach ensures rigour and comprehensiveness, aligning with best practices in tourism research where SLRs are employed to synthesise fragmented knowledge and inform future studies (Xiao & Watson, 2019). By integrating diverse perspectives and findings, the study contributes to a nuanced understanding of Halal tourism in the context of digital transformation.

This study adopts a Systematic Literature Review (SLR) approach to explore Muslim traveller experiences with Halal food in non-Muslim majority destinations, specifically through the lens of IR4.0 technologies. The review focuses on the intersection of Halal food availability, certification credibility, consumer behaviour, technological applications, and Islamic sustainability values.

The literature search was conducted using five bibliographic platforms: SCOPUS, Google Scholar, SpringerLink, MDPI, and ResearchGate. Keywords such as Halal food, Muslim traveller satisfaction, Halal certification, IR4.0, blockchain, and Islamic sustainability were used in various Boolean combinations.

A total of 1,030 records were identified: SCOPUS (n=826), Google Scholar (n=130), MDPI (n=40), SpringerLink (n=20), and ResearchGate (n=15). After removing duplicates and screening titles and abstracts, 80 articles were selected for full-text assessment. Of these, 26 peer-reviewed articles met the inclusion criteria and were analysed thematically (refer to Table 1). Additionally, 3 grey literature sources (CrescentRating, Halal Food Council, and F&N ESG report) were included for contextual insights. The review process was guided by the PRISMA protocol (Preferred Reporting Items for Systematic Reviews and Meta-Analyses).
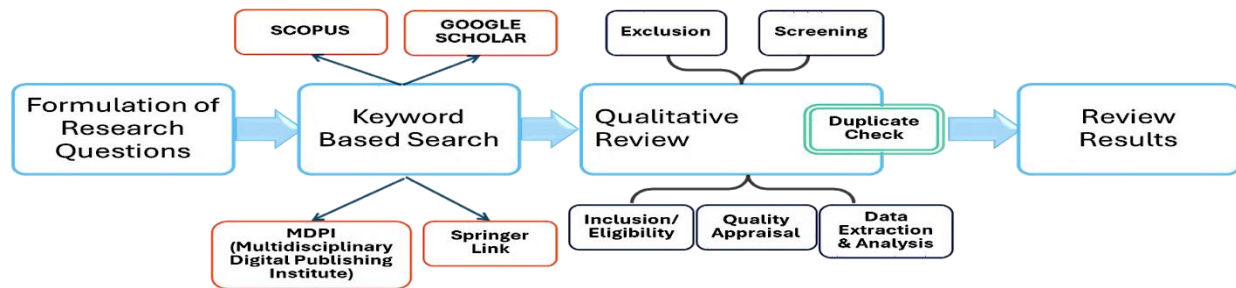
Systematic Literature Review Protocol

Figure 1: Process Flow of Systematic Literature Review
Source: Authors own model

Objective
The objective of the SLR is to synthesise existing studies on:
- Halal food consumption among Muslim travellers in Muslim-minority destinations
- The role of trust, certification, and cultural expectations in shaping consumption
- The application of Industry 4.0 technologies in tourism and Halal assurance
- Tourism sustainability frameworks informed by ESG and Maqasid Shariah

Research Questions
The main research question guiding the review is: What are the key attributes influencing Halal food consumption behaviour among Muslim travellers in non-Muslim destinations like Taiwan and how can IR4.0 and ESG principles enhance this experience?
Sub-questions include:
- What Halal food-related challenges do Muslim travellers face in non-Muslim countries?
- How are Halal certifications perceived and trusted?
- How can digital tools (AI, blockchain, IoT) facilitate transparency and convenience?
- In what ways do Islamic ethical values align with sustainable tourism goals?

Database Selection
To ensure academic rigour and comprehensiveness in the systematic literature review, this study employed a mix of bibliographic platforms including SCOPUS, Google Scholar, SpringerLink, and MDPI. Each platform was strategically chosen to serve a specific purpose within the review process, helping to capture the multidisciplinary and evolving nature of Halal tourism research.

SCOPUS was prioritised as the primary database due to its reputation as one of the largest and most reputable abstract and citation indexing platforms for peer-reviewed literature. It offers

extensive coverage of journals from diverse disciplines, including tourism, Islamic studies, and technology. One of its key strengths is its built-in tools for citation analysis and author impact, which help researchers identify high-quality sources. To capture a wider range of materials, Google Scholar platform was used as it includes grey literature, conference papers, and regional studies often missed by SCOPUS. While invaluable for emerging Halal tourism topics, its lack of robust filters required careful source verification. SpringerLink was selected for its strong holdings in interdisciplinary studies, especially those related to sustainability, consumer behaviour, and applied technology. The platform's advanced filtering features and access to full-text content provided valuable theoretical and empirical studies relevant to this review's conceptual framework. MDPI, an open-access platform, was included to ensure current and accessible publications on emerging topics like IR4.0 technologies, digital innovation, and ESG frameworks in tourism. Its rapid publication process and emphasis on interdisciplinary and applied research made it useful for identifying recent trends and pilot studies.

Together, these four platforms combined use ensured that the review could draw from a diverse pool of literature, strengthening the study's depth, contextual relevance, and theoretical alignment.

Table 1: Number of research article from bibliographic platforms

Database	Status
SCOPUS	Primary source of peer-reviewed articles (n = 826)
Google Scholar	Used for region-specific and emerging research (n = 130)
SpringerLink	Source of scholarly book chapters and journal articles (n = 20)
MDPI	Used for open-access sustainability-focused journals (n = 40)
ResearchGate	Used for retrieving relevant grey and regional literature (n = 15)

Keyword Search Strategy
To enhance the precision and relevance of the literature search, Boolean operators (e.g., AND, OR, NOT) were used to combine keywords effectively and filter out unrelated results. Truncation symbols (e.g., * or ?) were applied to capture variations of root words, ensuring broader coverage (e.g., "tour*" retrieves "tourism," "tourist," "tours"). Additionally, database-specific filters—such as publication year, subject area, and document type—were employed to narrow the results to peer-reviewed articles published between 2016 and 2024, aligning with the scope of this review.

Table 2: Keywords used during search at bibliographic platforms

Database	Search Syntax / Combinations Used	Notes
SCOPUS	"Halal food" AND "Muslim travel" AND "food behaviour" "Halal certification" AND trust AND tourism	Used quotation marks for exact phrases and Boolean operators. Applied filters by year, subject area.
Google Scholar	Halal food tourism Muslim travellers Halal food digital tools trust blockchain	Phrasing was broader; quotation marks optional. Search sensitivity to keyword order noted.
SpringerLink	"Maqasid Shariah" AND "sustainability tourism" "ESG" AND Muslim-friendly travel AND IR4.0	Limited phrase matching; used broad terms for exploratory review.
MDPI	"Halal certification" AND "blockchain" "Halal Food" AND "Industry 4.0"	Emphasis on sustainability and traceability in open-access literature

Inclusion and Exclusion Criteria

To ensure rigour and relevance in this Systematic Literature Review (SLR), a set of clearly defined inclusion and exclusion criteria was applied during the article screening process. Studies were included if they directly addressed Halal food consumption behaviour among Muslim travellers, with a particular focus on tourism in Muslim-minority destinations. Research that incorporated IR4.0 technologies, ESG frameworks, or Islamic ethical considerations such as Maqasid Shariah was also prioritised.

Conversely, studies were excluded if they lacked empirical evidence, focused purely on general tourism without a Halal or Muslim-friendly dimension, or were not published in peer-reviewed journals between 2013 and 2024. Non-English publications and articles with inaccessible full texts were also removed to maintain consistency and academic reliability. This screening process helped ensure that the final pool of literature was both thematically aligned and methodologically sound for answering the research question.

Screening and Appraisal

A total of 1,030 records were initially retrieved. After removing duplicates (manual and software-assisted), 900 records were screened based on title and abstract. 80 full-text articles were assessed for eligibility, of which 26 met the inclusion criteria. Each article was evaluated for: conceptual clarity, methodological rigor, relevance to halal food, tourism, or technology-enhanced travel.

Additionally, 3 grey literature sources (CrescentRating, Halal Food Council, F&N ESG Report) were included for contextual and policy-level insights.

Table 3: Overall process followed the PRISMA 2020 protocol

Stage	Details
Identification	1030 records identified through: SCOPUS (826), Google Scholar (130), MDPI (40), SpringerLink (20), ResearchGate (15)
Screening	900 records screened after duplicates removed 820 records excluded
Eligibility	80 full-text articles assessed 54 excluded (off-topic, low quality)
Included	26 peer-reviewed articles + 3 contextual grey literature sources

Findings

Data Extraction and Analysis

During the data extraction phase, relevant details were systematically drawn from each selected article to facilitate thematic synthesis and comparison. The key data points included the author(s), year of publication, and the geographical or cultural context of the study. Each article was examined for its research objectives and methodological approach, whether qualitative, quantitative, or mixed methods. Particular attention was given to the main findings that contributed to an understanding of Halal food consumption behaviour, the role of digital integration such as IR4.0 technologies, and alignment with sustainability or ethical tourism practices. Additionally, theoretical frameworks underpinning the studies—such as the Theory of Planned Behaviour (TPB), Technology Acceptance Model (TAM), or Maqasid Shariah—were considered to help map conceptual alignments across the literature.

Table 4: Resulted Themes and Sub-themes

Author (Year)	Title / Focus	Keywords	Summary	Source Platform	DOI / URL
Halal Food Availability and Trust					
Fernando & Dewi (2025)	Influence of Halal Credence, Halal Awareness, Halal Certification, and Health Consciousness to Halal Purchase Intention through STHF	Halal credence, Halal awareness, Halal certification, Health consciousness, Purchase intention, Satisfaction towards halal food	Investigates how halal-related beliefs and health consciousness impact purchase intentions, mediated by satisfaction towards halal food.	Google Scholar	10.55214/2576 8484.v9i4.5974
Han et al. (2021)	Halal Food Performance and Patron Retention	Halal food, performance, retention, trust	Studies how Halal food quality and trust influence loyalty in non-Muslim destinations.	SCOPUS	https://doi.org/ 10.1016/j.ijhm. 2021.102937
Jeaheng et al. (2022)	Halal-Friendly Attributes and Visit Intention	Halal attributes, Muslim-friendly, perceived value	Links Halal-friendly service features to Muslim travelers' visit intentions.	MDPI	https://doi.org/ 10.3390/su141 912002
Gunawan et al. (2021)	Emotional Experience in Indonesian Halal Tourism	Emotions, Halal travel, behavioral intentions	Highlights the role of emotional experience in Halal tourism satisfaction.	SCOPUS	https://doi.org/ 10.1016/j.tmp.2 021.100830

Omar (2018)	Travel Apps and Halal Food Search	Mobile apps, Halal food, Muslim travellers	Evaluates mobile app effectiveness in helping tourists locate Halal food.	Google Scholar	https://scholar. google.com
Lin et al. (2022)	Muslim-Friendly Restaurant Attributes in Taiwan	Restaurants, Halal, Muslim-friendly, Taiwan	Analyses restaurant service attributes influencing Muslim traveller satisfaction.	SCOPUS	https://doi.org/ 10.1016/j.ijhm. 2022.103123
Certification Standards and Gaps					
Masood (2022)	Halal Certification: A Bibliometric Analysis (2004 - 2021)	Halal certification, bibliometric analysis	Provides a holistic overview of Halal certification research globally between 2004–2021.	SCOPUS	https://doi.org/ 10.1016/j.foodr es.2022.111123
Abuhamou d et al. (2022)	Drivers of Halal Standard Adoption	Certification, implementat ion, performance	Analyses drivers and impacts of Halal standards on food business performance.	SCOPUS	https://doi.org/ 10.1016/j.jhtm. 2022.03.005
Wong et al. (2020)	Challenges in Multinational Halal Certification	Cross-border, certification, regulation	Highlights the issues multinational food providers face in maintaining Halal status.	SCOPUS	https://doi.org/ 10.1016/j.tmp.2 020.100745
Zulkifli (2021)	Blockchain in Halal Certification	Blockchain, traceability, Halal integrity	Shows how blockchain enhances trust through transparent certification processes.	SCOPUS	https://doi.org/ 10.1016/j.foodc ont.2021.10812 3
Muslim Traveller Planning and Behaviour					
Hashim et al. (2019)	Muslim Traveller Satisfaction in Japan	Muslim travel, satisfaction, Halal services, destination	Investigates satisfaction levels among Muslim travellers visiting Japan and how Halal services affect their loyalty.	SCOPUS	https://doi.org/ 10.1016/j.tmp.2 019.100657
Nur et al. (2021)	Halal Awareness and Tourist Expectations	Awareness, Halal tourism, food, expectations	Focuses on the gap between Muslim tourist expectations and Halal offerings.	SCOPUS	https://doi.org/ 10.1016/j.jhtm. 2021.04.002
Adel, A.M., Dai, X., Roshdy, R.S., & Yan, C. (2021)	Muslims' travel decision-making to non-Islamic destinations: perspectives from information-seeking models and theory of planned behavior	Theory of Planned Behavior, Halal Tourism, Halal Food, Information Seeking Models, Muslim Travelers, Muslim Decision Making,	Highlights pre-travel information reliance, reference groups, and coping mechanisms in Halal-scarce environments. Investigates decision-making by Muslim travellers to non-Islamic destinations using TPB and information-seeking models	SCOPUS	https://doi.org/ 10.1108/JIMA-04-2020-0095
Akhtar (2020)	Cultural Confidence in Halal Tourism	Culture, Halal tourism, Muslim confidence,	Examines the role of culture in Muslim traveller confidence and destination image.	SCOPUS	https://doi.org/ 10.1016/j.tmp.2 020.100743

		non-Muslim destinations			
Sulaiman (2019)	Halal Assurance and Food Safety	Food safety, Halal integrity, assurance system	Explores food safety systems and Halal assurance in restaurants and food courts.	SCOPUS	https://doi.org/ 10.1016/j.foodc ont.2019.10678 9
IR4.0 Technology Applications in Halal Tourism					
Di Gregorio et al. (2022)	Halal Certification vs Blockchain	Halal certification, blockchain, sustainabilit y	Assesses blockchain as a tool for Halal transparency and compliance.	SCOPUS	https://doi.org/ 10.1016/j.foodc ont.2022.10812 3
Rahman et al. (2020)	Smart Muslim-Friendly Tourist Destinations	Smart tourism, Muslim-friendly, sustainabilit y	Proposes a model for developing smart Halal destinations.	SCOPUS	https://doi.org/ 10.1016/j.tmp.2 020.100742
Yusof (2021)	Role of Big Data in Halal Tourism	Big Data, Halal tourism, analytics, trends	Investigates how Big Data can help anticipate Halal travel needs and preferences.	SCOPUS	https://doi.org/ 10.1016/j.jhtm. 2021.03.004
Zahari (2020)	Halal Tourism and IR4.0 in Malaysia	Halal tourism, IR4.0, tech adoption	Explores the integration of IR4.0 technologies in Malaysia's Halal tourism sector.	SCOPUS	https://doi.org/ 10.1016/j.tmp.2 020.100741
Islamic Sustainability Values Aligned with ESG					
Chia et al. (2023)	ESG and Halal Synergies in Food Companies	ESG, Halal, sustainabilit y, food industry	Explores how Islamic values intersect with ESG principles in Halal-certified F&B operations.	SCOPUS	https://doi.org/ 10.3390/su150 21034
Hassan et al. (2023)	Islamic Values in Halal Entrepreneursh ip	Halal business, Maqasid Shariah, ethical tourism	Reviews ethical dimensions of Halal tourism aligned with Islamic values.	SpringerLi nk	https://link.spri nger.com/book/ 10.1007/978-981-99-6427-7
Adham (2020)	Halal Tourism Readiness in Taiwan	Halal tourism, Taiwan, Muslim-friendly infrastructur e	Analyses Taiwan's halal readiness, infrastructure and strategic gaps for Muslim travellers.	Google Scholar	https://www.res earchgate.net/p ublication/3458 78767_Halal_T ourism_Readin ess_in_Taiwan
Grey Literature and Contextual Sources					
CrescentRa ting (2023)	Muslim Travel Market Insights & Halal-Friendly Rankings	Muslim-friendly, destinatio n trust	Provides annual benchmarking of Muslim-friendly destinations and market trends.	Industry Report	https://www.cr escentrating.co m
Halal Food Council (2024)	Future of Halal Certification: Trends and Technologies	Halal certificati on, AI, blockchai n	Highlights future certification strategies using IR4.0 technologies.	White Paper	https://halalfoo dcouncilusa.co m
Fraser & Neave (2021)	Sustainability Report	ESG, Halal, food industry	Outlines ESG compliance and halal certification alignment in corporate strategy.	Corporate ESG Report	https://www.fn. com.my/invest ors/ar2021

Themes were then analysed and grouped into five categories:
1. Halal food availability and trust
2. Certification standards and gaps
3. Muslim traveller satisfaction and behaviour
4. IR4.0 technology applications in Halal tourism
5. Islamic sustainability values aligned with ESG

Key Themes from the Literature
Halal Food Availability and Trust

Halal food is not merely a dietary preference but a religious obligation for Muslim travellers. Its availability, accessibility, and perceived authenticity are often the most critical determinants of destination selection (Han et al., 2021; Jeaheng et al., 2022). Studies have shown that Muslim tourists prefer destinations that offer not just Halal-certified food, but also environments where Halal assurance is visible and verifiable (Gunawan et al., 2021).

In the context of Taiwan, although efforts have been made to build Muslim-friendly facilities such as Halal-certified eateries and prayer rooms, knowledge gaps among food providers and inconsistent use of Halal logos still create uncertainty (Adham, 2020; Lin et al., 2022). This trust gap highlights the need for stronger awareness campaigns and provider-side training.

Certification Standards and Cultural Confidence

Certification remains a cornerstone of Halal credibility, but its effectiveness varies significantly across regions. Disparities in Halal standards, logos, and certifying bodies can confuse consumers and hinder cross-border acceptance (Masood, 2022; Wong et al., 2020). Inconsistencies in certification mechanisms reduce cultural confidence, especially when consumers cannot verify the certifying authority or when non-standard visual cues are used (Zulkifli, 2021).

Research calls for harmonised benchmarking of Halal certification processes to enhance traveller assurance and support international tourism flows (Abuhamoud et al., 2022). In Taiwan's case, the lack of a widely recognised certifying body poses additional barriers to scaling up Halal tourism.

Muslim Traveller Behaviour and Planning

Due to religious obligations such as prayer timing, food access, and modesty requirements, Muslim travellers engage in extensive pre-travel planning more so than non-Muslim counterparts (Hashim et al., 2019; Nur et al., 2021). Some even rely heavily on online tools like Halal travel apps, UGC platforms, and social media communities are crucial in shaping destination image and decision-making (Omar, 2018; Adham, 2020).

Halal food, in particular, serves as a pivotal anchor in the Travel Decision-Making Process (TDMP), influencing destination choice, itinerary design, and even accommodation selection. Research in Japan, Korea, and Taiwan confirms that Halal dining options are among the top three priorities for Muslim travellers.

IR4.0 Technology Applications in Halal tourism

The Fourth Industrial Revolution (IR4.0) introduces a range of digital enablers that can address Halal assurance challenges. Artificial Intelligence (AI) supports personalised travel recommendations based on dietary and religious preferences (Yusof, 2021). Blockchain

technology offers transparent and immutable records of Halal certification and supply chain integrity (Di Gregorio et *al*., 2022; Zulkifli, 2021), while IoT devices allow food providers to gather real-time feedback from Muslim guests.

Importantly, these technologies reduce reliance on physical labels and trust proxies thereby bridging the gap between digital-savvy Muslim travellers and Halal-compliant service providers (Zahari, 2020). IR4.0 tools also facilitates access to SMEs seeking entry into Halal tourism supply chains.

ESG Frameworks and Maqasid Shariah

There is a growing body of research exploring the alignment between Islamic ethical principles and Environmental, Social, and Governance (ESG) frameworks. Core values such as cleanliness (*taharah*), justice (*ʿadl*), and trustworthiness (*amanah*) correspond well with ESG pillars of sustainability, inclusiveness, and accountability (Chia et *al*., 2023; Hassan et *al*., 2023).

From the *Maqasid Shariah* lens, *Hifz al-Māl* (preservation of wealth) supports fair business practices, *Hifz al-Dīn* (protection of faith) demands transparent Halal assurance, and *Hifz al-Bīʾah* (protection of the environment) promotes eco-conscious travel choices. However, few tourism studies have applied these constructs systematically, especially within digital tourism and Halal travel contexts.

Summary and Literature Gap

The reviewed literature consistently highlights five interrelated factors critical to the Muslim travel experience: (1) Halal food accessibility and trust, (2) reliable and visible certification, (3) culturally attuned decision-making, (4) digital transformation in Halal assurance, and (5) alignment with Islamic sustainability values and ESG. However, several gaps persist:

- Limited studies focus explicitly on Muslim travellers in Taiwan, despite its increasing Muslim-friendly branding.
- There is a lack of holistic analysis across the full Halal food journey—from pre-travel planning to post-travel evaluation—using a structured model such as the TDMP.
- Integration of IR4.0 tools, ESG principles, and Maqasid Shariah into a unified tourism framework remains underexplored in both theoretical and empirical research.

This gap justifies the development of a conceptual framework that bridges these domains to help policymakers, tourism providers, and certification bodies better address the needs of Muslim travellers in non-Muslim countries.

Discussion

Theoretical Underpinnings and Conceptual Integration

The Theory of Planned Behaviour (TPB), developed by Ajzen (1991), has been widely applied to explain individual decision-making in areas such as ethical consumption, travel behaviour, and Halal product adoption. TPB posits that behavioural intention is shaped by three key constructs: attitude toward the behaviour, subjective norms, and perceived behavioural control. These dimensions collectively predict whether an individual is likely to perform a specific behaviour with regards to the selection of Halal food options during travel.

In the context of Muslim-friendly tourism, TPB has been utilised to understand Muslim travellers' decision-making processes related to destination choice, Halal food consumption, and service satisfaction (Jeaheng et *al*., 2022; Nur et *al*., 2021). For example, a positive attitude toward a destination's Halal offerings, the influence of religious social groups (subjective norm), and the perceived ease of accessing Halal food (behavioural control) all contribute to a stronger intention to visit a non-Muslim destination (Hashim et *al*., 2019). Therefore, TPB offers a robust psychological foundation to frame Halal travel behaviour.
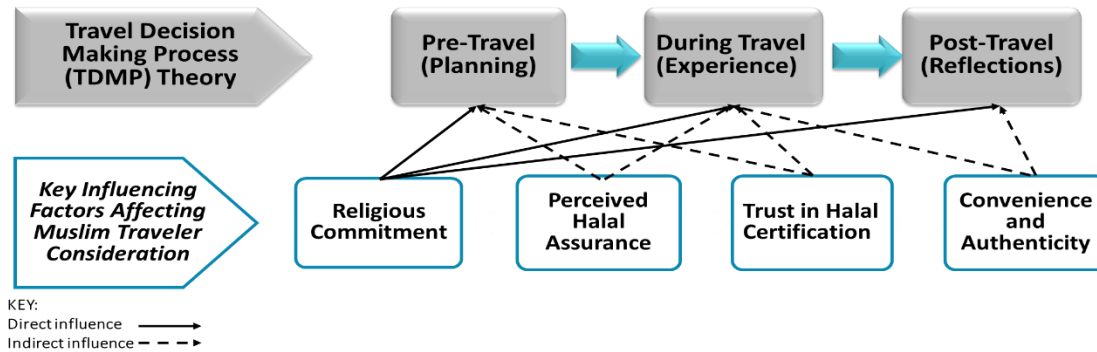

Figure 2: TDMP and TPB of Muslim Traveler
Source: Authors own model

Role of IR4.0 Enablers in Halal Tourism
The Fourth Industrial Revolution (IR4.0) introduces disruptive technologies such as Artificial Intelligence (AI), Blockchain, Big Data, and the Internet of Things (IoT), which are increasingly transforming service industries, including tourism. The key attributes offered by these technologies includes enhancing transparency, traceability, and personalisation, all of which are demanded by Muslim travellers (Yusof, 2021; Zahari, 2020).

Blockchain, for instance, enables immutable records of Halal certification thus enhancing traveller trust in food supply chains (Di Gregorio et *al*., 2022; Zulkifli, 2021). While AI-powered apps can offer personalised itineraries, Halal restaurant recommendations, and prayer-time alerts, thereby influencing travel behaviour in ways aligned with TPB constructs such as attitude and perceived control. Similarly, IoT-based systems provide real-time feedback loops that strengthen subjective norms through digital community validation (Rahman et al., 2020). Integrating IR4.0 enablers into TPB allows for a more dynamic and tech-enhanced interpretation of Muslim travel behaviour, particularly among Gen Z and Millennial Muslim tourists who are highly receptive to digital indications.

ESG Principles and Maqasid Shariah Alignment in Halal Food Consumption
The Environmental, Social, and Governance (ESG) framework has gained global prominence in sustainability discourses, while *Maqasid Shariah*, the higher objectives of Islamic law, provide an Islamic ethical lens for consumer and business behaviour. Scholars have increasingly drawn connections between ESG dimensions and *Maqasid Shariah* values (Chia et *al*., 2023; Hassan et *al*., 2023). This alignment reinforces Halal tourism as not only compliant but also ethical, inclusive, and sustainable.

Table 5: The Alignment of Maqasid Shariah in Halal Tourism

ESG Pillar	Maqasid Shariah Equivalent	Application in Halal Tourism
Environmental (E)	*Hifz al-Bīʾah* (protection of the environment)	Eco-conscious travel, low-carbon footprint
Social (S)	*Hifz al-Nafs, Hifz al-'Aql* (personal well-being and intellectual capacity)	Traveller well-being, ethical services
Governance (G)	*Hifz al-Māl* (economic integrity and protection of wealth) *Hifz al-Dīn* (protection of faith)	Halal certification integrity and compliance

Despite this conceptual compatibility, limited empirical research integrates Maqasid Shariah values and ESG within Halal tourism strategy or consumer frameworks (Hassan et al., 2023; Fraser & Neave, 2021).

Towards a Unified Framework: Linking TPB, IR4.0, ESG, and Maqasid Shariah
Bridging TPB with IR4.0 and Islamic sustainability principles creates a more holistic understanding of Muslim traveller behaviour in Muslim-minority contexts like Taiwan. While TPB explains the psychological predictors of behaviour, IR4.0 enablers enhance traveller confidence, convenience, and satisfaction. ESG and Maqasid Shariah values embed this behavioural process within a broader ethical and sustainability paradigm (Chia et al., 2023; Di Gregorio et al., 2022). This integrated model positions Halal travel experience as the outcome of:
1. Technological enablers (e.g., AI and blockchain),
2. Behavioural intentions shaped by TPB,
3. Islamic and global sustainability values guiding trust and perception.

Such a model addresses the literature gap by combining behavioural science, digital transformation, and Islamic values into a practical framework that can guide destination managers, Halal certification bodies, and technology developers.
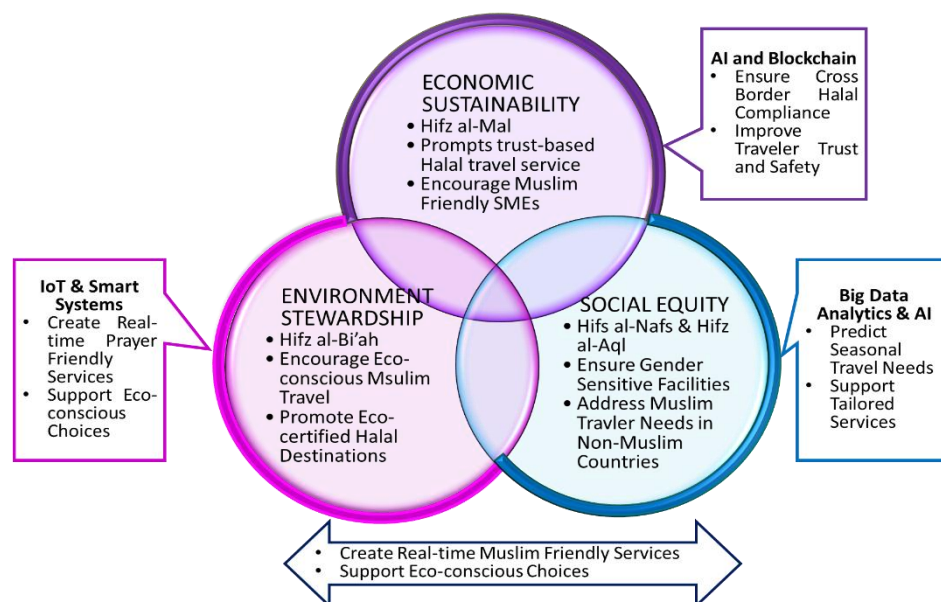

Figure 3: A Maqasid Shariah-ESG-IR5.0 Model for Muslim Traveler wellbeing towards a Halal Tayyib travel
Source: Authors own model

Conclusion

This conceptual study set out to explore Muslim travellers multifaceted experiences regarding Halal food in a Muslim-minority destination, specifically Taiwan, a nation that is actively positioning itself as a Muslim-friendly tourism hub. Guided by the Travel Decision-Making Process (TDMP) and anchored in the Extended ESG framework that is aligned with Maqasid Shariah, this research critically examined how Halal food influences travel satisfaction across the pre-travel, during-travel, and post-travel stages. The integration of IR4.0 technologies such as AI, blockchain, and IoT was shown to have transformative potential in bridging the trust gap and enhancing transparency, traceability, and service personalisation for Muslim travellers.

Through a Systematic Literature Review (SLR), the study identified five core themes that shape the Halal travel experience: Halal food accessibility and trust, certification credibility, culturally attuned behaviour, digital innovation, and the ethical alignment of Halal tourism with ESG and Maqasid Shariah values. Despite Taiwan's growing commitment to the Halal sector, findings suggest that more robust collaboration between certifying bodies, SMEs, and government stakeholders is needed to address the challenges concerning Halal assurance, certification harmonisation, and provider training.

These findings carry significant practical implications for stakeholders within the Halal tourism ecosystem. For policymakers, the study underscores the need to establish more cohesive certification governance and to streamline support mechanisms that enable SMEs to participate in Halal service provision. Tourism operators and local businesses can leverage IR4.0 technologies not only to enhance Halal food visibility and traceability but also to personalise services in alignment with Muslim travellers' faith-based needs. Meanwhile, technology developers and platform providers are encouraged to design culturally sensitive digital tools that build trust, simplify decision-making, and enrich the overall travel experience. Collectively, these practical insights contribute to strengthening Taiwan's positioning as a digitally advanced and ethically attuned Muslim-friendly destination.

By proposing a unified framework that combines behavioural theory (TPB), IR4.0 technologies, and Islamic ethical principles, this paper contributes to a more holistic understanding of Muslim travel behaviour in digital and non-Muslim contexts. The framework offers practical guidance for tourism providers, policy makers, and Halal authorities, helping them design inclusive and sustainable experiences that resonate with faith-based travellers.

Future research could further validate this framework through empirical studies involving Muslim tourists visiting Taiwan or similar destinations. Moreover, comparative analyses across different Muslim-minority countries could offer additional insights into best practices for Halal tourism infrastructure, certification governance, and digital integration.

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