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Comparative analysis of red skin Tilapia and bovine gelatins as halal alternatives in food industry

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Abstract

Gelatin plays a vital role in the food industry, serving as a thickening agent, emulsifier, wetting agent, and stabiliser. However, conventional sources like mammalian gelatin pose health and societal issues, while poultry gelatin can present risks related to avian flu. Our work was motivated by recent studies focusing on alternative gelatin sources, which prompted further investigation. Our study aimed to extract gelatin from red-skin Tilapia and bovine sources. Both types of gelatin underwent pre-treatment using 0.2 M sodium hydroxide (NaOH) and 0.05 M acetic acid (CH₃COOH) at 27°C, followed by water extraction at 60°C for 3 hours. Fourier-transform infrared (FTIR) analysis confirmed that the extracted gelatins exhibited peaks similar to commercial gelatin. The extracted fish gelatin (EFG) demonstrated superior gel strength compared to commercial fish gelatin (CFG), whereas commercial bovine gelatin (CBG) exhibited superior gel strength than extracted bovine gelatin (EBG). The protein content of EFG and EBG was comparable, but the fat content was significantly higher in EFG. The foaming capacity was also evaluated, with EFG showing greater capacity than EBG. Our work demonstrates excellent potential of alternative gelatin for usage in various applications and creates new opportunities for the food sector, particularly for halal food production.

Keywords:

Gelatin; Pre-treatment; Red Tilapia; Bovine; Gel strength.

1. Introduction

Global demand for gelatin is expected to increase by 230 million metric tonnes over the next five years, with a consistent compound annual growth rate (CAGR) of 5.6%. The global gelatin market is projected to grow from \$3.20 billion in 2024 to \$5.51 billion by 2032, reflecting a CAGR of 7.03% (Gelatin Market Report, 2023). Recent research has explored various gelatin sources, including camel. (Al-Hassan, 2020), rabbit (Liu *et al.*, 2019), goat (Zilhadia *et al.*, 2022), and porcine (Sha *et al.*, 2019). Despite its rich collagen content, mammalian gelatin faces significant limitations for Muslim consumers due to its halal status and the risk of diseases such as foot and mouth disease (FMD).

Different sources of gelatin, such as fish, bovine, and pig, exhibit unique compositions and structures that significantly impact their physicochemical and functional properties, such as protein content, gel strength, foaming, and emulsifying abilities. Cold-water fish commonly have low gelling properties due to low amino acid compositions, low molecular weight distributions, and low melting points, resulting in less stable gels at room temperature (Wu *et al.*, 2023). However, recent advancements in processing methods have begun to address these limitations. Techniques such as suitable acid/alkaline ratios, enzymatic catalysis, and cross-linking fish gelatin with transglutaminase (TGase) have enhanced fish gelatins' gel strength and stability (Huang *et al.*, 2020). Furthermore, acidic pre-treatments have proven effective in improving gelatin yield

and consistency, as demonstrated in studies involving smooth hound tissue (*Mustelus mustelus*) (Silva *et al.*, 2014). These improvements underscore the potential for broadening the applicability of fish gelatin in various industrial applications.

Warm-water fish such as Black Tilapia possess qualities similar to mammalian gelatin, including comparable gel strength and thermal stability, making it a viable alternative for halal food applications (Zheng *et al.*, 2024). This suitability is essential given the dietary guidelines observed in Muslim communities, which restrict the use of traditional mammalian sources. The study on gelatin extraction from Red Tilapia is still limited compared to Black Tilapia. Our previous work indicated that acid-alkaline pre-treatments yield gelatin with high gel strength and excellent functional properties (Fazial *et al.*, 2024). This indicates the practicality of Red Tilapia as an alternative gelatin source and highlights the effectiveness of specific processing techniques in optimising its properties for broader commercial use. Further studies could explore the difference between Tilapia species and refine extraction methods to maximise yield and functional characteristics, thereby broadening the scope for its application in the halal food industry.

This study focuses on the potential of using crude collagen derived from Red Tilapia skin as an alternative to traditional mammalian and poultry-based gelatins, comparing its properties with those of local Malaysian bovine skin. Given that Malaysia is rich in aquaculture and livestock activities, which are significant contributors to the national income, the

potential utilisation of by-products like gelatin presents significant economic benefits. Additionally, this approach could decrease the need to export bovine skin to neighbouring countries, such as Thailand, by maximising local value creation. Our research explores the chemical compositions and structure-function interactions in gelatins derived from warm-water fish and mammals, aiming to assess their potential to deliver improved gelling and functional properties.

2. Materials and methods

2.1 Chemicals

Sodium hydroxide (NaOH), acetic acid (CH₃COOH) 96%, sulfuric acid (H₂SO₄) 98%, and hydrochloric acid (HCl) 36% were analytical grade and obtained from MERCK. Red Tilapia and bovine skins sourced from a local aquaculture farm and a regional abattoir were used to extract gelatin.

2.2 Chemical pre-treatment

Initially, the Red Tilapia and bovine skin are thoroughly cleaned with water to remove any dirt, debris, or other contaminants. The pre-treatment process involved a two-step protocol. First, the skins were soaked in a 0.20 M NaOH solution in a 1:3 ratio for approximately 2 hours, performed twice under continuous stirring at 27°C. Subsequently, the skins were thoroughly rinsed until they reached a pH of 7. A second pre-treatment was conducted using a 0.05 M CH₃COOH solution for an additional hour. The pre-treated Red Tilapia and bovine skin were washed with tap water until they reached a pH of 7, ensuring that any residual chemicals were removed and the skins were prepared for gelatin extraction.

2.3 Water extraction

Pre-treated Red Tilapia and bovine skin were then subjected to hot water extraction (60°C) in a beaker filled with distilled water for 3 hours in a 1:10 ratio. The gelatin solution was then filtered and dried before further analysis.

2.4 ATR-FTIR analysis

Fourier Transform Infrared (FTIR) Spectroscopy analysis was conducted using an FTIR spectrometer (Perkin Elmer) according to the method of Abedinia *et al.*, (2020) The sample was prepared by placing 5 mg of gelatin powder on the ATR plate. Scanning was conducted in the range of 400-4000 cm⁻¹ with 16 scans at a resolution of 4.

2.5 Gel strength

The method by Fazial *et al.*, (2024) It was used to determine the gel strength of gelatin. Gel strength was determined using a TA. XT-Plus texture analyser (Stable *et al.*, UK) where the maximum force (g) at a probe penetration at a depth of 4 mm of the gelatin gel.

2.6 Protein content

Determination of protein was conducted using AOAC International (2016) (AOAC International, 2016) using the Kjeldahl method. For the digestion step, the digestion unit was heated up to 420°C. Sample (2 g), two Kjeldahl tablets and 12 ml concentrated H₂SO₄ were inserted in the digestion tube and subjected to the digestion process for 1 hour. After digestion, the solution was left to cool for 10 minutes. For the distillation process, 80 ml deionised water and 50 ml 40% NaOH was

dispensed into the tube. This distillation process separates ammonia (nitrogen) from the digestion mixture. The last step was the titration process, where a volume of HCl was titrated into the distillate solution. The amount of HCl used was then recorded. The percentage of protein was calculated according to the following formula:

$$\%N = \frac{(T - B) \times 14.007 \times 100}{\text{sample weight}}$$

$$\%P = N \times F$$

T = Titrant volume for sample (ml).

B = Titrant volume for blank (ml).

N = Normality for HCl acid (0.1 N)

F = Conversion factor for Nitrogen to Protein-6.25 for General food and feed application.

2.7 Fat content

Fat was determined using AOAC International (2016) (AOAC International, 2016) using the Soxhlet method. Gelatin powder (2 g) was weighed and recorded as W₁. Then, pre-dried extraction cups were weighed and recorded as W₂. After the extraction (90 min), the cups were dried at 130°C for 30 minutes or until constant weight. The dried cups were weighed and recorded as W₃. The fat content in the sample was calculated using the following formula:

$$\text{Fat (\%)} = \frac{(W_3 - W_2)}{W_1} \times 100$$

W₁ = Sample weight

W₂ = Weight of empty extraction cup

W₃ = Weight of extraction cup containing fat.

2.8 Gelatin colour and clarity analysis

The gelatin colour and clarity gel were measured using a Hunter Lab colour meter. (Tinrat & Sila-asna, 2017). The analysis of the colour and clarity was based on CIE L* for lightness, a* indicates redness or greenness and b* for yellowness or blueness colour system.

2.9 Functional properties

2.9.1 Foaming capacity

Foaming capacity (FC) was assessed according to Tinrat & Sila-asna, (2017) Each sample of about 5 ml was homogenised and centrifuged for 1 minute. The percentage of increased protein scattered throughout blending was measured as the capacity for foaming following equation 1:

$$\text{Foam capacity} = \frac{\text{Volume of foam}}{\text{Volume of total solution}}$$

2.9.2 Emulsifying capacity

The emulsifying capacity was determined using a modified method following the Tinrat & Sila-and (2017) technique, where 1%, 2%, or 3% of each sample would be emulsified in sterile water to produce a gelatin solution. For 30 minutes, the solution was then homogenised with soybean oil in a 3:1 ratio and then centrifuged for about 15 minutes. The thickened coating height can be expressed as a proportion of the total tube

height of the material determined by equation 2:

$$\text{Foam capacity} = \frac{\text{Height of emulsion layer}}{\text{Height of whole layer}} \times 100$$

2.10 Statistical analysis

SPSS 26 was used to analyse the data in this investigation. Duncan's test was used for one-way variance analysis, with a confidence level of $p \leq 0.05$. All analyses and measurements were at least triplicate.

3. Results and discussion

3.1 FTIR analysis

FTIR spectroscopy is advantageous for identifying the intermediate structure, confirmation of rearrangements, structural dynamics, and the stability of gelatine (Mao *et al.*, 2022). Furthermore, comparing spectra with those of commercial standard gelatine samples can further confirm the identity and quality of the extracted gelatine. Matching peaks with known gelatin spectra can validate the extraction method and the integrity of the gelatin structure post-extraction. Figure 1 shows the FTIR analysis of extracted bovine skin gelatin (EBG), extracted fish gelatin (EFG), commercial fish gelatin (CFG) and commercial bovine gelatin (CBG).

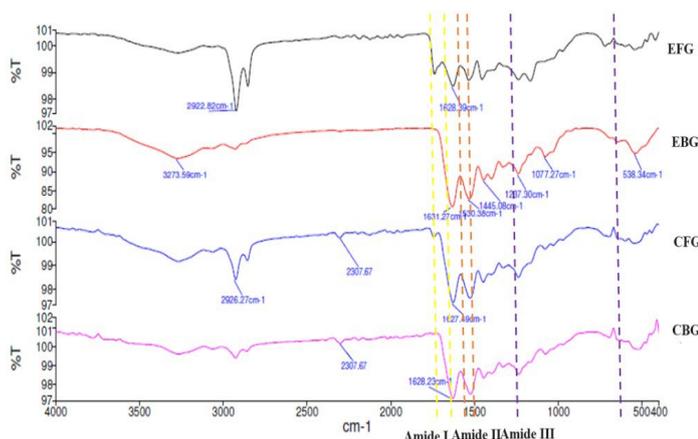


Figure 1: FTIR spectra of extracted fish gelatin (EFG), extracted bovine gelatin (EBG), commercial fish gelatin (CFG) and commercial bovine gelatin (CBG) along with represented amide I, amide II and amide III from wave numbers of 400-4000 cm^{-1} .

According to the FTIR spectrum, the extracted gelatin from bovine and Red Tilapia skin displayed a pattern comparable to that of commercial fish and bovine gelatin. Both extracted gelatins exhibited prominent protein functional groups at Amide A, Amide B, and Amide I, II, and III. In more detail, the extracted bovine gelatin (EBG) displayed peaks at 3273.59 cm^{-1} , 2918.35 cm^{-1} , 1631.27 cm^{-1} , 1530 cm^{-1} , and 1077.27 cm^{-1} for Amide A, B, I, II, and III, respectively. On the other hand, the extracted fish gelatin (EFG) exhibited peaks at 3198.34 cm^{-1} , 2922.82 cm^{-1} , 1631.27 cm^{-1} , 1530 cm^{-1} , and 1237.30 cm^{-1} for Amide A, B, I, II, and III, respectively. Amide I shows that the gelatin derivative with a characteristic coiled conformation contributes to the stability of the triple helical structure. This implies that a loose hydrogen bond created by N-H bonding during the acid solution soaking period may be the reason for reducing the C=O stretching vibration (Wang *et al.*, 2024). The amide group's C=O stretching vibration and the C-N stretching

vibration were disclosed by the absorption in the Amide I region, whereas the N-H bending and the C-N stretching vibration were revealed in the Amide-II region. The combination of C-N stretching vibrations, N-H deformations resulting from amide linkages, and absorptions brought on by CH_2 wagging vibrations out of the glycine backbone with proline side chains corresponded to the Amide III peaks. Solid amide I and II peaks are typical of gelatin and indicate that the extraction process successfully yielded a product containing proteinaceous material, likely gelatin from collagen sources (Hajlaoui *et al.*, 2024).

3.2 Gel strength

The most essential functional attribute of fish gelatin is its gel strength, which directly affects the quality of packaged foods. Figure 2 shows the gel strength of gelatin obtained from Red Tilapia skin, bovine skin, fish commercial, and bovine commercial.

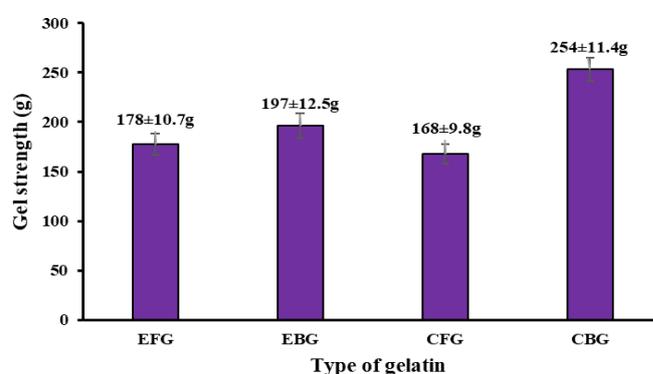


Figure 2: Gel strength (g) of extracted fish gelatin (EFG), extracted bovine gelatin (EBG), commercial fish gelatin (CFG) and commercial bovine gelatin (CBG).

The gelatin derived from CBG displayed the maximum gel strength (254 g), followed by EBG (197 g), EFG (178 g), and CFG (168 g). The gel strength of EFG was considerably higher than that of CFG. Due to its high gel strength, gelatin is valuable for promoting chewiness, texture, and foam stability in various culinary products, including confections (Tinrat & Sila-asna, 2017).

Because of pressure treatment, gelatin derived from acid extraction techniques often has more incredible gel strengths and viscosities (Zhang *et al.*, 2020). Due to gelatin's strong ability to make hydrogen bonds with water molecules, a robust three-dimensional gel is formed (Derkach *et al.*, 2020). They asserted that fish gelatin had a smaller molecular weight and a lower concentration of proline and hydroxyproline amino acids needed to stabilise collagen-like triple helices than mammalian gelatin. As a result, compared to mammalian gelatin, fish gelatin gels are often less robust and have lower gelation and melting temperatures.

Sulfuric acid and acetic acid help break down collagen's complex structures into simpler forms that can be more easily converted into gelatin. These acids also assist in the hydrolysis of peptide bonds within the collagen structure. Acetic acid, on the other hand, being a weaker acid compared to sulfuric acid, is often used to gently modify the collagen without overly degrading it, which can be crucial for maintaining the integrity of gel-forming sites (Kendler *et al.*, 2024). This controlled modification can lead to gelatin with better gelling properties.

Regarding consumers' interest in safe and excellent gelatin properties, Red Tilapia fish gelatin, which is being explored in this study, has promising potential future uses due to its improved gelling behaviour compared to CFG. This result can ensure that the extraction process can be scaled up efficiently without compromising the quality and properties of the gelatin.

3.3 Protein and fat compositions

In principle, the protein content of the gelatin produced may be classified as high when it exceeds 95% and low when it is less than 75% (Casanova *et al.*, 2020). The extracted gelatin's protein and fat content are presented in Table 1.

The findings indicated that both EFG and EBG have a high protein level of 98.78%, which attests to the high purity of gelatin, which is significantly higher than the protein content value of 21.3% for African catfish (*Clarias gariepinus*) skin gelatin as previously reported (Alfaro *et al.*, 2013). The high protein content in both extracted samples is due to the suitability of the pre-treatment process and efficient extraction procedure. In principle, the protein concentration of collagenous material indicates the maximum amount of gelatin that may be extracted from the material (Lan *et al.*, 2024). Thus, a high protein concentration in the extracted gelatin indicates a high gelatin yield. The results indicated that the high gelatin content of Red Tilapia skin (18.5 %) results in a high protein content (98.78%). Other chemically pre-treated connective tissues were found to have a high imino acid (total proline and hydroxyproline amino acid) concentration similar to that of Labeo Rohita and Cod Japanese (Wu *et al.*, 2023) and Black Drum (*Pogonia cromis*) as well as Sheepshead Seabream (*Archosargus probatocephalus*) bone collagens (Ogawa *et al.*, 2003).

Table 1: Protein content (%) and fat content (%) of extracted fish gelatin (EFG) and extracted bovine gelatin (EBG). Using an independent T-test, values are given as mean \pm standard deviation with different superscripts within the column indicating significant differences ($p \leq 0.05$)

Gelatin sample	Protein	Fat
EFG	98.78 \pm 0.98 ^a	4.01 \pm 0.294 ^a
EBG	97.91 \pm 1.52 ^a	1.36 \pm 0.618 ^b

As for fat content, EFG has a higher fat content (4.01%) than EBG (1.36%). Gelatin standards certified by certain countries, like the Indonesian National Standard (SNI), allow the fat content of gelatin not to exceed 5% (Taufik *et al.*, 2010). This might be due to specific conditions or types of fish used, which may inherently have higher fat content in their skins or other by-products. Moreover, modifying the concentrations of NaOH and acetic acid in pre-treatment could optimise gelatin recovery, colour, and solubility, suggesting that the manipulation of the acid-alkaline ratio can also impact the extraction efficiency and possibly the encapsulation and protection of lipids within the gelatin structure (Shahiri Tabarestani *et al.*, 2014). Collagen obtained from younger animals is more soluble in hot water; these qualities diminish with age. The extraction temperature used was also very low, preventing the degradation of fat contained in the skin (Delikanlı Kiyak *et al.*, 2024). Chemical compositions of skin change according to the animal's age and sex and how the skin is treated once it is removed from the carcass. Besides, gelatin's functional qualities depend on processing factors such as temperature, time, and pH, as well as the pre-treatment methodology and the characteristics and preservation method

of the original raw material. Fat content for other extracted gelatin, such as tuna head bones, was 3.2% \pm 0.5, and duck feet was 3.35% \pm 0.26 (Aksun Tümerkan *et al.*, 2019; Kuan *et al.*, 2017). It was also confirmed that if the gelatin is over-solubilized, the fat content will be washed away during the washing process.

3.4 Color and clarity of gelatin

According to the result acquired in Table 2, EFG has about 28.16 \pm 0.09 for lightness colour (L*) and 2.01 \pm 0.31, indicating yellowness colour (b*). As for EBG, the lightness colour (L*) and yellow colour (b*) are slightly lower at 27.89 \pm 0.39 and 1.68 \pm 0.05, respectively. Positive b* values indicate a degree of yellowness, while positive L* values indicate the lightness of the sample. The results show that EFG is lighter in colour and more yellowish than EBG.

Table 2: L* and b* values of extracted fish gelatin (EFG) and extracted bovine gelatin (EBG). Using an independent T-test, values are given as mean \pm standard deviation with different superscripts within the column indicating significant differences ($p \leq 0.05$)

Colour	Sample	
	EFG	EBG
L*	28.16 \pm 0.09 ^a	27.89 \pm 0.39 ^b
b*	2.01 \pm 0.31 ^a	1.68 \pm 0.05 ^b

When extracting gelatin, factors including the source material and extraction stage impact the final product's colour, as does how the gelatin was made. Colour is a significant factor in the consumer's acceptance of food goods. It is connected to the physical qualities of extracted gelatin that must be reported (Utomo & Suryanti, 2018). However, those functional aspects are unaffected by colour (Haddar *et al.*, 2011). Because the process of soaking in an acetic acid solution was prolonged, it created several loose triple helix chains within collagen molecules, which degraded the pigment in the Red Tilapia skin and resulted in a brighter tone.

A previous study discovered that bovine gelatin has better b* values (19.05) than tuna head bones gelatin (5.02) (Ahmad *et al.*, 2017). The L* and b* values of huge grouper skin gelatin gel were much higher than those of commercial Tilapia skin gelatin by Lin *et al.* (2015). Additionally, the same analysis suggested that the gelatin gel extracted from giant grouper skin was lighter in colour and had more yellowness than commercial gelatin.

3.5 Foaming capacity

Foaming capacity is the ability to incorporate air into a solution and stabilise the resulting foam. It is essential in various food products where air bubbles such as whipped creams, marshmallows, desserts and beverages enhance texture and volume. Figure 3 presents a detailed analysis of the foaming capacity of gelatin derived from EFG (extracted fish gelatin) and EBG (extracted bovine gelatin) across three gelatin concentrations: 1%, 2%, and 3%. The foaming capacity for EFG increased progressively with concentration, recording values of 1.25%, 1.35%, and 1.4% at 1%, 2%, and 3% concentrations, respectively. In contrast, EBG demonstrated a foaming capacity of 1.01% at 1% concentration, which gradually increased to 1.26% at 2% and peaked at 1.47% at 3%. This comparative analysis underscores the influence of source material and concentration on the foaming properties of

gelatin.

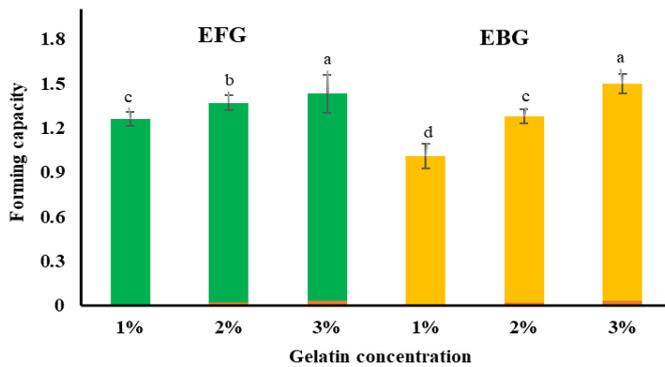


Figure 3: Foaming capacity (%) of EFG and EBG at 1%, 2% and 3% gelatin concentration.

The findings indicate that the foaming capacity of both EFG and EBG improves as the gelatin concentration increases. This enhancement in foaming capacity is facilitated by the dynamic behaviour of protein molecules in the gelatin when interacting with air and water. Transport, penetration, and structural modification of protein molecules at the air-water interface are necessary to produce foam. The exceptional foaming capacity of proteins allows them to quickly spread into the air-water interface, unfold, and reorganise themselves there. Because EFG contains more hydrophobic amino acids than EBG, it may have a somewhat larger foaming capacity. Adding hydrophobic residues that form a massive hydrophobic sphere on the polypeptide's surface may improve the foaming ability (Li *et al.*, 2024).

Sulfuric and acetic acids used during pretreatments help unfold the protein structure and expose hydrophobic and hydrophilic groups. Some of the lower molecular weight peptides tend to be more surface active, which enhances their ability to reduce surface tension, thus facilitating foam stability (Dong *et al.*, 2024).

3.6 Emulsifying capacity

Emulsifying capacity is essential in creating and maintaining the stability of mixtures containing oil and water. It is used in mayonnaise, ice cream, and salad dressings to ensure a uniform and palatable texture. An emulsifier's ability to keep these immiscible phases mixed enhances the product's shelf life, appearance, and texture. The emulsifying capacity of gelatin recovered from EFG and EBG was investigated at three different gelation concentrations: 1%, 2%, and 3%, as shown in Figure 4.

The emulsifying capacity of EFG is 4.33%, 7.65%, and 8.24% for 1%, 2%, and 3% gelatin concentrations. On the other hand, EBG has an emulsifying capacity of 5%, 8.24%, and 11.9% at concentrations of 1%, 2%, and 3%, respectively. As observed, EFG has a slightly poorer emulsifying capacity than EBG. Even though EFG and EBG both exhibit a rising trend, there is a slight variation in the emulsifying capacity. As observed, the emulsifying capacity of EBG is slightly higher than EFG's at all gelatin concentrations. However, both gelatin emulsifying capacities increased from 1% to 3%. The hydrophobic regions on the peptide chains of gelatin give it its emulsifying and foaming capacity (Heidary & Soltanizadeh, 2024). Because of its exceptional active surface qualities, gelatin can be used as an emulsifier, foaming agent, and moisturising agent in culinary,

pharmaceutical, medical, and technical applications. Enormous droplets occur when gelatin emulsifiers are employed alone in homogenisation because their surface-active qualities are lower than typical surface-active agents such as globular proteins and gum Arabic.

The capacity of a protein to form adsorption films on oil globules and reduce interfacial tension at the oil-water interface is referred to as its emulsifying ability. Solubility in the dispersion phase is a critical factor in increasing emulsifying effectiveness (Aksun Tümerkan *et al.*, 2019). This is because the protein molecules should be able to quickly migrate to the lipid droplets' surfaces. Because of their differing amino acid compositions, polar and nonpolar amino acids, EBG was shown to have more extraordinary emulsifying ability and emulsion stability ($P < 0.05$) than duck feet gelatin (Kuan *et al.*, 2017). Studies for emulsion and foaming properties, the emulsion stability (ES) of chicken bone gelatin, which ranged from 9.82 to 61.19%, has shown that increased concentration and extraction times resulted in higher emulsion stability (ES) (Abedinia *et al.*, 2020). The results of the bovine skin gelatin emulsifying capacity satisfied this statement as the emulsifying capacity and gelatin concentration increased. As for the treatment used for extracting the gelatin, gelatines recovered from mackerel and blue whiting bones after using alcalde and flavoursome pre-treatment had a greater EAI than gelatines produced with the lowest EAI after the chemical pre-treatment (Khiari *et al.*, 2013).

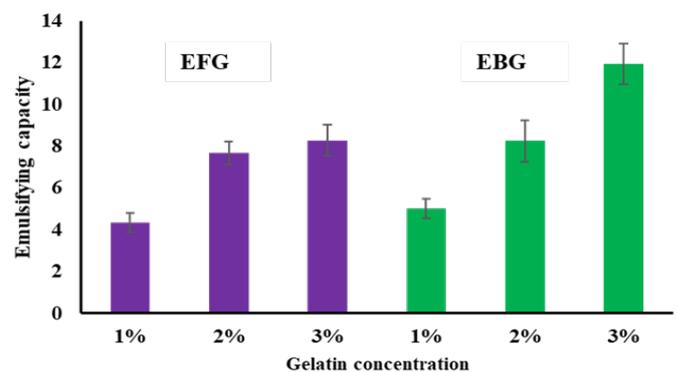


Figure 4: Emulsifying capacity of EFG and EBG at 1%, 2% and 3% gelatin concentration.

4. Conclusion

In conclusion, this study explored the potential of gelatin extracted from red-skin Tilapia and bovine sources, demonstrating that extracted Red Tilapia fish gelatin could serve as a viable alternative to traditional gelatins in the food industry, especially for halal products. Both fish and bovine showed high protein content (>90%). EFG has superior gel strength compared to CFG, which contradicts EBG, which has lesser gel strength than CBG. The high gel strength of EFG shows the high potential of EFG to be commercialised and could be applied for various applications. Foaming and emulsifying capacity increased as gelatin concentrations increased, signifying the stability of gelatin in reducing the surface tension of water and oil. However, challenges must be addressed, including fish gelatin's inherently lower gel strength and stability than mammalian sources, which could limit its use in specific applications. The colour and clarity of the gelatins also varied, potentially affecting consumer acceptance. Future research should focus on improving the functional properties of these gelatins through advanced processing techniques and

conducting consumer acceptance studies to understand market potential better. Overall, the study highlights the significant potential of alternative gelatin sources to meet the needs of the halal food industry and contribute to more sustainable food production technologies.

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HALALSPHERE

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The importance of halal-labelled meat for Muslim consumers, producers and government in Brunei Darussalam: A preliminary results

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Halal logo; Halal meat; Integrity; Quality; Regulations.

Abstract

Halal logo has played an essential role in bringing the end product to market with trust and confidence given by producers to the consumers. Hence, labelling the halal logo on meat is crucial in Brunei Darussalam, as Muslims are required to consume only halal food. Thus, this study aims to determine the importance of halal-labelled meat towards Muslim consumers, producers and the government in Brunei Darussalam in the eyes of the local producers. A qualitative method is employed to satisfy the objective. Data were collected using primary data sources, and semi-structured interviews were conducted. Literature was reviewed to support the interview. Three local abattoirs of halal meat production were chosen, and two persons who held the halal officer and plant manager positions from the first company, farm controller and director of the second and third companies, respectively, were selected to be interviewed. Findings showed that when the halal logo is displayed, it will play a vital role in convincing the consumers, mainly Muslims, to purchase the meat without having any suspicions about the integrity and quality. Muslim consumers need to seek halal-labelled meat as it is guaranteed that the procedures from farm to consumption point were observed.

1. Introduction

Halal logo has played an essential role in bringing the end product to market with trust and confidence given from producers to the consumers. Without a halal logo, the product may seem to be doubted by the consumer as it might contain non-halal ingredients or be contaminated by non-halal things (Wel *et al.*, 2022). Hence, labelling the halal logo on meat is vital in Brunei Darussalam, as Muslims are required to consume only halal food because Islam has its dietary laws for food consumption. The fundamental element is that the food must be both halal (lawful or permitted) and also toyyib, which means wholesomeness (hygienic, safe, quality and healthy) (Aghwan, 2018; Aghwan, 2022; Aghwan, 2019). It has been mentioned in *Al-Qur'an, Surah al-Baqarah* verse 168;

يَا أَيُّهَا النَّاسُ كُلُوا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا خُطُوتَ الشَّيْطَانِ ۚ إِنَّهُ لَكُمْ عَدُوٌّ مُبِينٌ

It means:

"O mankind, eat from whatever is on earth [that is] lawful and good and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy."

Thus, before meat has been certified halal by the government, the producers first need to confirm the halal integrity of meat, where every aspect of the food chain (farm to consumption point) must adhere to halal rules (Wel *et al.*, 2022; Soon *et al.*, 2017). These aspects cannot be taken lightly, but they must be thoroughly checked, from the slaughtering procedure to any processes the meat goes through (Wel *et al.*, 2022; Soon *et al.*, 2017). However, to reduce the possibility of contamination, meat should be stored separately throughout the supply chain (Aghwan, 2018; Aghwan, 2019). Hence, producing halal and high-quality meat must satisfy the various requirements of consumer groups and food safety authorities (Aghwan, 2021).

Therefore, the study aims to determine the importance of halal-labelled meat on Muslim consumers, producers and the government in Brunei Darussalam in the eyes of a local producer. Thus, the objective could be achieved by finding the answers to the following questions;

What is the importance of halal-labelled meat;

- Muslim consumers;
- Producers; and
- Government.

Hence, the study is significant in providing information to Muslim consumers, producers, and the government on the importance of consuming meat that has a halal logo, as the

procedures have been thoroughly checked by the producers and government. It also gives insight to the new stakeholders who desire to cater meat for public consumption and label it with a certified halal logo before putting it on the market.

2. Materials and methods

A qualitative method is employed to satisfy the objective mentioned above. Data were collected using primary data sources, and semi-structured interviews were used. Aside from that, the literature was reviewed to support the interview. The reason behind this chosen method is the limited resources focusing on the importance of halal-labelled meat to Muslim consumers, producers, and the government from the point of view of local producers. Hence, the researcher believes that a field study in the form of an interview must get specific and detailed information to fulfil the research objective. An interview is an effort to gather information either orally by asking some questions or via email, and it is to be answered orally or via email. The main feature of the interview is between the information seeker, known as an interviewer or the informant, and the interviewee, known as the information source. (Azizi Yahya, 2017).

The researcher used a method of a semi-structured interview, which means the questions were created prior to the interview and based on the relevance of the scope of the interviewee's job descriptions to the research objective, also adopting open-ended questions, which let the selected respondents concentrate on issues brought by them instead being limited to or restricted to researcher's question. The questions were designed in accordance with the field of the respondents, where the interview will be absorbed in the research objective, which is to determine the importance of halal labelled meat towards Muslim consumers, producers and government in Brunei Darussalam. Their responses were then recorded, transcribed, organised, thematically analysed and presented per the research objective (Creswell, 2014). For this reason, the researcher hoped to have systematised and comprehensive data from the interview.

Also, in the research, the researcher explicitly chose 'Producers' as the primary respondents because the abattoir producers were responsible for labelling each of the meat before it was sold to the supermarket and market. They are the first ones that need to confirm the halal integrity of meat, where every aspect of the food chain (farm to consumption point) must adhere to halal rules (Wel *et al.*, 2022; Soon *et al.*, 2017). These aspects cannot be taken lightly, but they must be thoroughly checked, from the slaughtering procedure to any processes the meat goes through (Wel *et al.*, 2022; Soon *et al.*, 2017). Secondly, the reason for this is that they need to abide by the rules and regulations stated by the authority of Brunei Darussalam. The third reason is that producers need to know the comprehensive reason behind the importance of the halal logo, as they are responsible for catering meat to Muslim consumers in Brunei Darussalam, and most Brunei consumers are Muslim consumers. Lastly, apart from the other reasons, being an Islamic country that has also imposed Sharia law has ensured that Brunei Darussalam's Halal Certification is very strict, rigorous and stringent (Brunei Today, 2010). Officially, government certification and auditing are also conducted by qualified and experienced members of the Islamic Religious Council of Brunei Darussalam. On the contrary, private organisations issue some halal certificates, and third-party auditors audit them. Hence, producers must follow the guidelines and regulations and set an example for other countries.

With that, three local abattoirs of halal meat production, namely, Golden Chicks Abattoir Sdn. Bhd., Mufairif farming and Syarikat Hussyn Rahman CMS Sdn. Bhd. has been chosen via purposive/judgmental sampling, where two persons who held the positions of halal officer and plant manager from the first stated company, one person who held the positions of farm controller and director from the second and third company stated respectively were selected to be interviewed via email and were given a duration of one week to answer the interview questions. The chosen abattoir is because it is one of the abattoirs well known for supplying their meat (poultry) to the supermarket and market. They also customise orders from local fast-food restaurants in Brunei. Hence, the researcher believes that the abovementioned abattoir is best suited to answer the research objective. Below is the table that mentions the local abattoirs and their positions;

Table 1: Selected respondents in this research

Name of Company	No. of respondents	Position held
Golden Chicks Abattoir Sdn Bhd.	2	Halal Officer Plant Manager
Mufairif Farming	1	Farm controller
Syarikat Hussyn Rahman CMS Sdn Bhd.	1	Director

Therefore, to summarise the data analysis process for both interviews and the literature review process, the participants' responses from the interviews gathered by the researcher were subsequently documented, transcribed, categorised, thematically examined, and presented in alignment with the research goal (Creswell *et al.*, 2014). Before that, the researcher needs to examine the literature reviews first to find what is in common among the journals and articles that the researcher has used, of which the researcher has roughly examined fifteen journals and articles in this research. In this research, the researcher has employed thematic analysis to examine fifteen journals and articles related to the significance of halal-labelled meat to ascertain the research objective (Creswell *et al.*, 2014). The researcher can determine the recurring patterns or themes that emerge consistently (Creswell *et al.*, 2014). This method was also employed in the participants' responses to identify recurring patterns or themes. From here on, the researcher created themes for each of the responses gathered from the interview and data gathered from supported literature reviews.

3. Results and discussion

This section presents a detailed analysis of the findings from the interview approach, supported by a review of past literature regarding the importance of halal-labelled meat for Muslim consumers, producers, and the government in Brunei Darussalam. The findings are structured to provide insights into each stakeholder's perspective.

3.1 From the interview approach

Tables 1, 2, and 3 below show information related to the importance of halal-labelled meat towards Muslim consumers and producers. These details were taken from interviews conducted with one local abattoir for halal meat production in Brunei Darussalam.

Table 1: Importance of halal labelled meat towards Muslim consumers

Muslim consumers	Importance of halal labelled meat	
	Consumers' awareness (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufairif Farming, 2024a; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a)	<ul style="list-style-type: none"> It is essential to consume meat that complies with Islamic law.
	Consumers' purchasing decision (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufairif Farming, 2024a; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a)	<ul style="list-style-type: none"> The halal logo assures consumers to purchase the meat without hesitation/do ubt. No halal logo-cast suspicion on consumers.
	Consumers' protection (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufairif Farming, 2024a; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a)	<ul style="list-style-type: none"> Protect consumers from purchasing meat from ambiguous sources.
	Assurance	<ul style="list-style-type: none"> Belief in the governments

(Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufairif Farming, 2024a)	and the producers' ability to provide halal and high-quality meat.
Branding tool (Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a)	<ul style="list-style-type: none"> The Halal logo acts as a branding tool representing reliable sources and hygienic meat products.

Source: (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufairif Farming, 2024a; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a).

Table 2: Importance of halal labelled meat for producers

Producers	Importance of halal labelled meat	
	Trust and confidence (Interview, Golden Chicks Abattoir Sdn Bhd., 2022b; Interview, Mufairif Farming, 2024b; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024b)	<ul style="list-style-type: none"> The halal logo represents quality assurance, encompassing meat safety, hygienic and proper procedures.
	Awareness to the producers (Interview, Mufairif Farming, 2024b; Syarikat Hussyn Rahman CMS Sdn Bhd., 2024b)	<ul style="list-style-type: none"> Importance of producing meat by <i>hukm syara'</i> and the government-stated regulations.
	Potential market (Interview, Mufairif Farming, 2024c)	<ul style="list-style-type: none"> Attract consumers to only purchase meat that has a halal logo.
	Traceability (Interview, Mufairif Farming, 2024b)	<ul style="list-style-type: none"> Verify the halal integrity of meat at every stage of the food chain from farm to consumer's plate.

Source: (Interview, Golden Chicks Abattoir Sdn Bhd., 2022b; Interview, Mufairif Farming, 2024b; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024b).

Table 3: Importance of halal labelled meat for government

Government	Importance of halal labelled meat	
	Inspection (Interview, Golden Chicks Abattoir Sdn Bhd., 2022c; Interview, Mufaiirif Farming, 2024c; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024c)	<ul style="list-style-type: none"> Not containing any non-halal substances prohibited by <i>Shari'ah</i> law.
	Public assurance (Interview, Mufaiirif Farming, 2024c)	<ul style="list-style-type: none"> Meat products meet strict religious and safety standards.

Source: (Interview, Golden Chicks Abattoir Sdn Bhd., 2022c; Interview, Mufaiirif Farming, 2024c; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024c).

3.2 Evidence from past literature

Tables 4, 5, and 6 below show information related to the importance of halal-labelled meat for Muslim consumers, producers, and the government in Brunei Darussalam. The information is extracted from a compilation of past literature.

Table 4: Importance of halal labelled meat for Muslim consumers

Muslim consumers	Importance of halal labelled meat	
	Consumers' awareness (Wel <i>et al.</i> , 2022; Abdul Raufu Ambali and Ahmad Naqiyuddin Bakar, 2014; Ruslan <i>et al.</i> , 2018)	<ul style="list-style-type: none"> It is essential to consume meat that follows Islamic guidelines.
		<ul style="list-style-type: none"> To only purchase meat that has a certified halal logo.
	Consumers' purchasing decision (Wel <i>et al.</i> , 2022; Aghwan, 2022; Ruslan <i>et al.</i> , 2018; Darwanto and Usmandani, 2021; Perdana <i>et al.</i> , 2018; Ishak <i>et al.</i> , 2016)	<ul style="list-style-type: none"> With a halal logo, consumers will gain confidence to purchase without doubts.
		<ul style="list-style-type: none"> No halal logo-raises consumers' doubt.
Time management (Fadholi <i>et al.</i> , 2020)	<ul style="list-style-type: none"> Purchasing makes it easier when the halal logo is displayed. 	

Consumers' protection (Abdul Raufu Ambali and Ahmad Naqiyuddin Bakar, 2014; Darwanto and Usmandani, 2021; Rahman <i>et al.</i> , 2018; Fadholi <i>et al.</i> , 2020)	<ul style="list-style-type: none"> Protect consumers from dishonest, deceitful or unjust business practices.
	Assurance (Ruslan <i>et al.</i> , 2018; Darwanto and Usmandani, 2021; Sumpin <i>et al.</i> , 2019).

Source: (Wel *et al.*, 2022; Aghwan, 2022; Abdul *et al.* Bakar, 2014; Ruslan *et al.*, 2018; Darwanto and Usmandani, 2021; Perdana *et al.*, 2018; Ishak *et al.*, 2016; Rahman *et al.*, 2018; Mohamed *et al.*, 2008; Fadholi *et al.*, 2020; Sumpin *et al.*, 2019).

Table 5: Importance of halal labelled meat for producers

Producers	Importance of halal labelled meat	
	Trust and confidence (Wel <i>et al.</i> , 2022; Darwanto and Usmandani, 2021; Fadholi <i>et al.</i> , 2020; Sumpin <i>et al.</i> , 2019).	<ul style="list-style-type: none"> The Halal logo is a symbol of quality assurance.
	Awareness to the producers (Aghwan, 2022; Ministry of Industry and Primary Resources, 2010)	<ul style="list-style-type: none"> The importance of producing meat is aligned with <i>hukum syara'</i> and government regulations.
	Potential market (Ahmad <i>et al.</i> , 2013)	<ul style="list-style-type: none"> Attract consumer.
	Traceability (Wel <i>et al.</i> , 2022; Soon <i>et al.</i> , 2017; Ruslan <i>et al.</i> , 2018; Sumpin <i>et al.</i> , 2019; Alqudsi, 2014)	<ul style="list-style-type: none"> Confirm the halal integrity of meat in every phase of the food chain from farm to plate.
Big profit (Ruslan <i>et al.</i> , 2018; Darwanto and Usmandani, 2021; Perdana <i>et al.</i> , 2018).	<ul style="list-style-type: none"> Consumers purchase meat, which leads to an increase in profit for the producers. 	

Source: (Wel *et al.*, 2022; Soon *et al.*, 2017; Ruslan *et al.*, 2018; Darwanto & Usmandani, 2021; Perdana *et al.*, 2018; Fadholi *et*

al., 2020; Sumpin *et al.*, 2019; Fatmi *et al.*, 2020; Aghwan, 2022; Ministry of Industry and Primary Resources, 2010; Ahmad *et al.*, 2013; Alqudsi, 2014).

Table 6: Importance of halal labelled meat for government

Government	Importance of halal labelled meat	
	Inspection (Rahman <i>et al.</i> , 2018)	<ul style="list-style-type: none"> Free from non-halal substances prohibited by Shariah law.
	Avoid illegal activities (Borneo Bulletin, 2021)	<ul style="list-style-type: none"> Importance of selling meat with the approval of the government.

Source: (Rahman *et al.*, 2018; Aghwan, 2022; Ministry of Industry and Primary Resources, 2010; Borneo Bulletin, 2021; Brunei Today, 2010).

3.3 Muslim consumers

With regards to the importance of halal labelled meat for Muslim consumers, firstly, the information collected during the interview revealed that the usage of the halal logo on meat has spawned Muslim consumer’s consciousness on the significance of consuming meat that adheres to the Islamic rules and principles (Wel *et al.*, 2022; Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufaiirif Farming, 2024a; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a; Abdul *et al.* Bakar, 2014). This indirectly has generated more awareness to only purchase meat that has been certified halal by the Brunei government (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufaiirif Farming, 2024a; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a). The interviewee highlighted that the meat will gain added value by incorporating a halal logo as an additional product feature. Hence, Muslim consumers must ensure their meat is certified as halal (Syarikat *et al.*, 2024a). Additionally, this has been stated in the previous literature where it showed that Muslim consumers uphold the religious duty/obligations given to them as it was prescribed for every Muslim individual to seek only “Halal/permissible” matters and avoid the “Haram/prohibited” things (Ruslan *et al.*, 2018). This was clearly stated in Surah al-Baqarah verse 168:

يَا أَيُّهَا النَّاسُ كُلُوا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا خُطُوَاتِ الشَّيْطَانِ ۚ إِنَّهُ لَكُمْ عَدُوٌّ مُبِينٌ

It means:

“O mankind, eat from whatever is on earth [that is] lawful and good and do not follow the footsteps of Satan. Indeed, he is to you a clear enemy.”

Secondly, in consumers’ decision to purchase meat, the halal logo has served its crucial function (Darwanto & Usmandani, 2021). From the statement gathered through the interview, and along with the findings from previous studies, accordingly, when the halal logo is displayed, it will play a vital role in convincing the consumers mainly Muslim to purchase the meat without having any suspicions about the integrity and quality (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufaiirif Farming, 2024a; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a; Ruslan *et al.*, 2018; Darwanto & Usmandani, 2021; Perdana *et al.*, 2018). One of the interviewees also asserted that the halal logo helps consumers select meat with complete assurance and is devoid of any reluctance (Syarikat *et al.*, 2024a). Thus, without any halal logo, it would immediately raise consumers’ doubt, which may influence their decision to purchase the meat. This could inadvertently result in the purchase being cancelled (Perdana *et al.*, 2018). The interviewees also accentuated the same thing that in the absence of a halal label on the meat, a significant number of Muslim consumers in Brunei Darussalam would probably be reluctant or even refuse to buy it (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufaiirif Farming, 2024a). Also, to add on, one of the interviewees pointed out that the absence of a halal logo on products will undermine trust in consumers and will demonstrate a lack of respect for our Muslim beliefs. It will also have an adverse reputation for the local producers’ brand and decrease demand in the market (Syarikat *et al.*, 2024a). It also has to be emphasized that the absence of a halal logo could naturally open up possibilities of mixing halal and non-halal things, where doubtful matters will arise, which then ultimately create confusion among consumers (Wel *et al.*, 2022; Aghwan, 2022; Ishak *et al.*, 2016). This doubtful matter should be avoided entirely as it could fall into haram categories. Based on the hadith Prophet Muhammad (PBUH) recorded in Sahih al-Bukhari:

((إِنَّ الْحَلَالَ بَيِّنٌ وَإِنَّ الْحَرَامَ بَيِّنٌ وَبَيْنَهُمَا مُشْتَبِهَاتٌ لَا يَعْلَمُهُنَّ كَثِيرٌ مِّنَ النَّاسِ فَمَنْ اتَّقَى الشُّبُهَاتِ اسْتَبْرَأَ لِدِينِهِ وَعَرْضِهِ وَمَنْ وَقَعَ فِي الشُّبُهَاتِ وَقَعَ فِي الْحَرَامِ كَالرَّاعِي يَرَعَى حَوْلَ الْحِمَى يُوشِكُ أَنْ يَرْتَعَ فِيهِ أَلَا وَإِنَّ لِكُلِّ مَلِكٍ حِمًى أَلَا وَإِنَّ حِمَى اللَّهِ مَحْرَمُهُ))

“Verily, the lawful is clear and the unlawful is clear, and between the two of them are doubtful matters about which many people do not know. Thus, he who avoids doubtful matters clears himself in regard to his religion and his honour, and he who falls into doubtful matters will fall into the unlawful as the shepherd who pastures near a sanctuary, all but grazing therein. Verily, every king has a sanctum and the sanctum of Allah is his prohibitions. Verily, in the body is a piece of flesh which, if sound, the entire body is sound, and if corrupt, the entire body is corrupt. Truly, it is the heart.”

Thirdly, Muslim consumers can minimize their time examining or verifying with the meat seller where the meat comes from to ensure that non-halal substances or materials are not found in the meat if the halal logo is displayed. As a consequence, the consumers will not experience any hassles when purchasing meat, thus leading to the purchase of the meat.

Fourthly, before consumers decide to purchase, they have a right to know what they consume. Thus, by the presence of the halal logo on meat, they are made to be aware and informed about the meat they are considering purchasing. The inference is that enforcing a halal logo on the meat will shield the consumers against dishonest, deceitful or unjust business practices (Abdul *et al.* Bakar, 2014; Darwanto & Usmandani, 2021; Rahman *et al.*, 2018). The interview conducted also can protect consumers from purchasing meat from ambiguous sources such as meat from illegal activities (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview). This is because Muslim consumers are known to be vigilant regarding the halal status of the food as consuming halal food is mandatory in Islam (Ruslan *et al.*, 2018; Mohamed *et al.*, 2008; Fadholi *et al.*, 2020).

Lastly, meat that has halal logo could provide imperative assurance to the Muslim consumers" (Interview, Golden Chicks Abattoir Sdn Bhd., 2022a; Interview, Mufaiirif Farming, 2024a; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024a; Ruslan *et al.*, 2018; Darwanto & Usmandani, 2021; Sumpin *et al.*, 2019). The interviewee has pointed out that the halal logo is not just a mere sticker; it acts as a verification that the meat has been processed and prepared by rigorous halal standards. When consumers perceive it, they acquire confidence that the product they purchase is genuinely halal. Furthermore, it signifies the adherence to proper hygienic practices and stringent quality control measures during meat processing, hence simplifying the buying experience (Mufaiirif Farming, 2024a). Also, to add on, the interviewee stressed that by prominently displaying the halal logo as a powerful branding tool, producers could directly instil confidence in Muslim consumers that their meat products, which are certified with the halal logo, are not only guaranteed to be halal but also sourced from a reliable supplier and clean production (Syarikat *et al.*, 2024a). From this point forward, consumers have built trust and confidence in the local producers as well as the government by providing them with halal and high-quality meat as they can purchase meat without any doubts or hesitation. This statement also aligned with what the literature has disclosed.

3.4 Producers

Regarding the significance of labelled meat towards producers, firstly, it showed that the use of a halal logo on the meat has built Muslim consumers' trust and confidence towards the producers (Wel *et al.*, 2022; Interview, Golden Chicks Abattoir Sdn Bhd., 2022b; Interview, Mufaiirif Farming, 2024b; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024b; Fatmi *et al.*, 2020). This is because halal logo is considered an essential tool in consumers' purchasing decisions as the halal logo reflects the symbol of quality assurance which represents the food's purity, security and quality (Wel *et al.*, 2022; Interview, Golden Chicks Abattoir Sdn Bhd., 2022b; Interview, Mufaiirif Farming, 2024b; Darwanto & Usmandani, 2021; Fadholi *et al.*, 2020; Sumpin *et al.*, 2019). To elaborate further on the meat quality from the past literature, it implies that the animals before slaughtering are free from defects, both physically and emotionally (Aghwan *et al.*, 2016). This has

indirectly enclosed all areas of animal handling, slaughtering, well-being, meat quality and consumption (Aghwan *et al.*, 2016). Consequently, it has served as a means of reassuring and informing consumers that the meats adhere to Shariah law (Sumpin *et al.*, 2019).

Secondly, the above statement indicates that local producers have proficiently produced and prepared meat according to what has been laid out by the rules and regulations stated by the government and also following the Islamic dietary law. Hence, they will necessarily imply the *farḍhu kifayah* to ensure that they are always compliant with the principles of Shariah (Aghwan, 2022; Ministry of Industry and Primary Resources, 2010). The interviewee also highlighted that in Brunei Darussalam, where the predominant religious affiliation is Islam, adhering to religious dietary guidelines is not only a recommended practice but also a crucial factor for the survival of the local businesses (Interview, Mufaiirif Farming, 2024b). Additionally, one of the interviewees also emphasised that local producers must adhere to Brunei government regulations by registering their company under the Islamic Religious Council of Brunei, known as "*Majlis Ugama Islam Brunei (MUIB)*" as a certified supplier of halal meat (Syarikat *et al.*, 2024b).

Thirdly, meat with an affixed halal logo has an advantage in acquiring a market requirement and a more extensive consumer base as most Bruneian consumers are Muslim (Interview, 2022b; Ahmad *et al.*, 2013). One of the interviewees also emphasised that to succeed in the local market, producers must ensure their products are certified as Halal to attract Muslim consumers (Interview, Mufaiirif Farming, 2024b). This is because, without a halal logo, meats are not allowed to be sold in Brunei Darussalam as the halal logo needs to be displayed by the producer, which must remain there throughout the sale of the meat as stated in the Halal Meat Act Chapter 183.

Fourth, the halal logo has played a pivotal role in consumers' decisions to purchase meat (Darwanto & Usmandani, 2021). When the halal logo is presented, it will be helpful for Muslim consumers to purchase their meat without having any doubts about its authenticity or quality. This could increase the profit of halal meat production (Interview, Golden Chicks Abattoir Sdn Bhd., 2022b; Interview; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024b; Ruslan *et al.*, 2018; Darwanto & Usmandani, 2021; Perdana *et al.*, 2018). Therefore, when no halal logo is displayed, it would immediately cast suspicion on consumers, which could then affect their decision to purchase the meat (Wel *et al.*, 2022; Interview, Golden Chicks Abattoir Sdn Bhd., 2022b; Interview, Mufaiirif Farming, 2024b; Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024b; Ishak *et al.*, 2016). Inadvertently, this can cause the purchase to be cancelled, which may result in a loss for the producers (Ruslan *et al.*, 2018; Darwanto & Usmandani, 2021; Perdana *et al.*, 2018). In fact, producers who provide the meat of exceptional quality and on time will receive credit from the end consumers (Aghwan, 2018). It also has to be emphasised that producers must recognise consumers as the link in the supply chain (Aghwan & Regenstein, 2019).

Lastly, meat with a halal logo indicates that the procedures adhere to the halal rules stated. To put it in another way, in order for the producers to confirm the halal integrity of the meat, every phase of the food chain from farm to consumption point must adhere to halal rules (Wel *et al.*, 2022; Soon *et al.*, 2017; Sumpin *et al.*, 2019). Accordingly, in preparing halal meat, the procedures will cover the preparation, slaughtering process, hygienic handling, packaging and labelling and

serving of the meat (Wel *et al.*, 2022; Ruslan *et al.*, 2018). This shows that the producers have given consideration to animal welfare (Aghwan, 2021; Aghwan *et al.*, 2016), for meat to be wholesome and hygienic to be consumed by the consumers, proper halal slaughtering procedure must be carried out (Aghwan *et al.*, 2016). Thus, if the outcome of the meat is halal, it will automatically reflect that all procedures in preparing for halal meat adhere to halal rules. In addition, one of the interviewees also emphasised that by displaying the halal logo on the meat, the producers indirectly conveyed to the consumers that they were adhering to the anticipated religious dietary law and the quality requirements. Also, establishing and preserving consumer relationships is highly dependent on this trust, especially in a market where religious observance and food safety are of utmost importance (Interview, Mufairif Farming, 2024b).

3.5 Government

In relation to the value of halal labelled meat towards the government, firstly, meat that has a halal logo shows that the slaughtering procedure and preparation have passed the inspection or safety check by the government and are free from any form of non-halal substances and also does not violate the Islamic precepts (Interview, Golden Chicks Abattoir Sdn Bhd., 2022c; Interview, Mufairif Farming, 2024c; Rahman *et al.*, 2018). From here, it indicated that the government responsible for the halal logo demands meticulous procedures from the producers so that the producers who cater meat for public consumption comply with the rules and regulations of Brunei Darussalam. One of the interviewees highlighted that the halal logo is a crucial tool for local producers in their interactions with the government. This tool serves as a standard for local producers to demonstrate their commitment to comply with Government authority regulations (Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024c). He also accentuated that this will directly demonstrate a solid working relationship with local producers and government agencies, as well as a robust network, by aligning their own ambitions and goals with the modernization of the country, particularly in the local halal meat industry (Interview, Syarikat Hussyn Rahman CMS Sdn Bhd., 2024c).

Secondly, the need to have a halal logo on the meat is to eradicate illegal activities done by any supplier or individual about the smuggling of meat and selling meat without government approval. It has been highlighted that smuggling activities are said to have a detrimental effect on the country's economic sector and weaken the nation's income stream (Borneo Bulletin, 2021). For this reason, the nation's consumers and producers must cooperate with the government to eradicate and eliminate unlawful smuggling operations (Borneo Bulletin, 2021). Thus, it is essential to label the meat with a halal logo so consumers can consume it safely.

Furthermore, when the halal logo is displayed on the meat, the government ensures that the meat products adhere to rigorous religious requirements and safety standards (Interview, Mufairif Farming, 2024c), as stated by one of the interviewees. The interviewees also point out that this will enhance consumer confidence and guarantee public health protection (Interview, Mufairif Farming, 2024c). As the government is responsible for catering halal meat to Bruneian Muslim consumers, it should be considered a collective obligation, better known as *Fardhu Kifayah* (Aghwan, 2022; Ministry of Industry and Primary Resources, 2010). In other words, it is the responsibility of the government to fulfil the religious

obligation of *Fardhu Kifayah* by producing halal and high-quality meat for the Muslim population (Aghwan, 2022; Brunei Today, 2010).

4. Conclusion

To conclude this study, it can be seen from the result and discussion above compiling information conducted from an interview with one local halal meat production in Brunei Darussalam and also findings from previous studies that labelling halal logos on meat is crucial to Muslim consumers, producers and government. This is because meat with a halal logo has a massive impact on consumers, producers, and the government regarding purchasing decisions, trust and confidence, awareness, quality assurance, and traceability. For this reason, all Muslim consumers, producers, and government must protect the country and the people from consuming ambiguous meats. Thus, it is important for Muslim consumers only to seek halal-labelled meat as it is guaranteed that the procedures from farm to consumption point were observed. This indirectly gives credit to the producers who are determined and diligently preparing for halal meat while abiding by the rules and regulations stated by the government. One hadith narrated by Anas *RadiyaAllahu anhu*, the Prophet (PBUH) said: "The striving to earn halal is compulsory for every Muslim". (*Riwayat Imam Ad-Dailani in Musnad al-Firdaus*).

Hence, the researcher would recommend that the government and producers construct research and development from this research. The need to allocate resources towards research and development is to foster innovation and enhance the local halal meat industry in Brunei Darussalam, giving importance to halal-labelled meat. This will involve investigating novel technologies, manufacturing techniques, and product options to satisfy Muslim consumers' changing demands and preferences. On the other hand, the researcher would also recommend that the government enhance the regulations, supervision and enforcement to guarantee adherence to halal standards and deter fraudulent activities and misrepresentation. This encompasses routine inspections, sanctions for failure to comply, and cooperation with local halal meat stakeholders in Brunei Darussalam to maintain the authenticity of halal labelling. In addition, the government should offer incentives and assistance to promote the growth of the halal industry in Brunei Darussalam. Examples of support that can be provided include financial aid, research and development grants, and infrastructure establishment to manufacture, deliver, and market halal-certified products.

Furthermore, the researcher would also suggest that future research assess the halal certification base in Brunei Darussalam, encompassing the functions of government agencies, halal certification bodies, and any related industry involved in halal certification processing. Research can investigate methods to optimise certification procedures, create uniformity in halal criteria, and foster cooperation among relevant parties to uphold the authenticity of halal labelling. Furthermore, future research should also analyse the regulatory structure and enforcement procedures for halal labelling in Brunei Darussalam. Research might centre on finding deficiencies in current legislation, enhancing enforcement mechanisms to deter fraud and mislabelling, and guaranteeing adherence to the halal standards throughout the meat business. On the other hand, future research should also create instructional initiatives and campaigns to educate Brunei Darussalam's Muslim consumers on the value of halal certification, the authenticity of halal products, and the importance of having halal-labelled meat. This research may

evaluate the efficiency of various instructional techniques in changing consumer behaviour.

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HALALSPHERE

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Competency and recognition of the halal supervisor in Brunei Darussalam

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Abstract

Inefficient and inadequate qualification assessment for the requirements of halal supervisors has attracted more attention in the halal industry field, which led to the withdrawal of the halal certificate following the discovery that the restaurant violated halal certification requirements. Furthermore, there is a lack of research discussing the halal supervisor's credibility procedure in Brunei Darussalam. This research aims to identify the efficiency and adequacy of the current qualification assessment for the requirements for halal supervisors by Syariah principles and laws in Brunei. This research adopted a qualitative method, using a semi-structured interview and library research method. The finding reveals that a halal supervisor is qualified by passing a written and oral test prepared by the Halal Food Control Division (HFCD), with supplementary talks or briefings given. However, no specific halal training is offered to halal supervisors. This finding indicated the need to improve the qualification system. It can aid in suggesting the necessary ecosystem for the credibility of the competency and recognition of the qualification of a halal food supervisor. This study can benefit future research and industrial players and improve the qualification procedure for halal supervisor.

Keywords:

Adequacy;
Assessment;
Ecosystem; Efficient.

1. Introduction

The Brunei Vision 2035 and the Ninth and Tenth National Development Plans plan to grow and diversify the economy through strategic halal projects. Given the vast potential of the halal business, the government's focus on the halal industry is essentially to achieve a dynamic and sustainable economy (Mohamed Syazwan, 2020). Brunei Darussalam is positioning itself as a halal hub, and the Brunei Halal Certification is the most authentic and stringent halal product certification (Khalid *et al.*, 2018). To ensure that halal integrity is maintained and monitored by experts. The Brunei Halal Certification play an essential role in maintaining the integrity of its halal-certified product as it is internationally renowned for its credibility. Business owners who wish to apply for a halal certificate or halal permit must apply through the HFCD, which has the authority to handle the certification procedure, and then through the Brunei Islamic Religious Council (BIRC) at the Ministry of Religious Affairs of Brunei (MORA) (Raffi, 2019).

Following the commencement of the Halal Certificate and Halal Label (Amendment) Order, 2017, it is now compulsory for all businesses that produce, supply, and serve food and beverages in Brunei to obtain a halal certificate and permit (Mohammad Rozaiman, 2022). The business must apply the halal certification process to ensure that processing and handling at food premises are by the halal standard. It also ensures that the premise of the business complies with halal legal standards and requirements. It indicates that the food service industry can embrace this unique concept by using a

halal logo, labelling it, and correctly displaying the halal certification. The halal certificate and permit symbolise assurance and guarantee for consumers on a product's halal authenticity (Norkhairiah Hashim *et al.*, 2022; Syed Marzuki, 2016). Thus, potential consumers can be assured of the halal integrity of the product since they have the right to expect the food they eat to be safe and suitable for consumption. This will boost consumer confidence and trust.

According to regulations in Chapter 4 (1) of the Halal Certificate and Halal Label Order (2005), the business owner must have at least two halal supervisors who are acknowledged by the Brunei Islamic Religious Council (BIRC). This supervisor is essential and responsible for the product's halal status and all food processing at the premises (Norkhairiah Hashim *et al.*, 2022). A halal food supervisor is an essential position in the company to ensure the integrity of halal certification. This is because they are responsible for ensuring that the food premise aligns with the halal standard and requirements of halal certification (*Jabatan Hal Ehwal Shari'ah* 2008).

However, issues have been raised concerning their credibility in terms of compliance with the law, such as the withdrawal of the halal certificate because of a violation of the certification requirement (Azlan, 2021a). Recently, in September 2023, one of the eatery's halal certificates and halal food supervisor certificates in a restaurant in Gadong's commercial area were cancelled after a 25-litre barrel of pork fat (refined fat), 35 solid packets of duck blood and 58 other types of doubtful food items that were found and used as cooking ingredients (Azlan, 2023b). This happened because of the lack of knowledge,

understanding, and adequate practice on halalan toyyiban. As a result, the halal certification has been revoked from some premises. Conducting ethical duties as a halal food supervisor is very important and should be practised by all halal food supervisors. Hence, this study aims to explore the expanded potential of halal supervisors, particularly in the halalan toyyiban aspect and to provide practical implications in improving the effectiveness of halal management systems, especially in the assessment procedures to become a qualified halal supervisor.

2. Materials and methods

This study adopted a qualitative method where a semi-structured interview was conducted with two food officers from HFCD as primary data and government reports as secondary data. In this study, purposive or judgmental sampling was chosen, where the researcher organised and analysed the data manually from the interview results according to sub-categories to help interpret results. The secondary data collection method is from legal documents such as official reports such as halal standards guidelines and acts related to halal supervisors, which have been extensively utilised to gather relevant information for this research.

3. Results and discussion

3.1 Halal certification

Brunei Halal Accreditation covers the source of the ingredients, and only manufacturers that meet the halal standard and have high quality and safety would be awarded the Brunei Halal Certification. To enforce the implementation of halal certification, the Brunei Government created a committee consisting of officers from BIRC, HFCD, Ministry of Health (MOH), (MORA), State Judiciary Department, Agriculture Department, and Islamic Judicial (Nor Surilawana Sulaiman, et al., 2023). The halal certification aims to provide consumers with assurances of the authenticity of the halal product in terms of production, materials, and processing. Enduring the process to get the halal certification can also strengthen the status of halal foods as well as services in Brunei are following the halal standard as stated by the officer:

“Halal certifications include the halalan toyyiban, so they must ensure the restaurant is always clean despite ensuring the food they serve is halal.”

As mentioned, the business owner must have at least two halal food supervisors whom BIRC acknowledges. Halal food supervisors must be on duty at the place of business where they applied. They cannot be assigned to any other branches except with permission from BIRC. There should always be one stationed on the premises. The officer said:

“Each business premises requires two halal food supervisors, who will account for each premises. They are not allowed to work at various branches; however, the applicant could write a letter to BIRC requesting permission for the halal food supervisor to be allowed to work in rotation.”

3.2 Roles and responsibilities of halal food supervisors

According to the halal supervisor's guideline book, the person who can apply as a halal food supervisor is a Muslim from *Mazhab Shafei'*. Other Mazhabs such as *Hanafi*, *Maliki* or *Hambali* are also considered with the condition that they must understand the shariah law, especially from *Mazhab Shafie'*. In addition, according to the guidelines of a halal food supervisor, the duties of a halal food supervisor are stated below (*Jabatan Hal Ehwal Shari'ah*, 2008):

- a. The halal food supervisor must be on duty at the place of business, which is applied only. They cannot be assigned to other branches except with the permission of the BIRC, and one of them must always be present at the place of business.
- b. The halal food supervisor controls halal food products at the business location.
- c. The halal food supervisor is responsible for controlling matters related to preparing and handling cooked ingredients, including tools and appliances used in the business's place of business.
- d. The halal food supervisor is responsible for ensuring that the business place only prepares, sells, or serves halal products.
- e. The halal food supervisor is responsible for ensuring only halal food or drink that should be brought inside the place of business, including those carried by its employees.
- f. The halal food supervisor is responsible for ensuring that only halal ingredients are used in the place of business.
- g. The halal food supervisor is responsible for informing BIRC of any changes in food ingredients.
- h. The halal food supervisor is responsible for ensuring that all equipment and utensils used in the place of business are pure and permitted by *Hukm Syara'*.
- i. It is the responsibility of the halal food supervisor to clean any area, place, vehicle, goods or equipment used in preparation, storage, and transportation that is ever in contact with or near faeces according to the procedures set out in the Standard Brunei Darussalam PBD 24:2007.

It is the responsibility of the halal food supervisor to ensure the requirements of Brunei Darussalam standards PBD 24:2007 on Halal Food and Guideline for Halal Certification (BCG Halal 1) must be fulfilled. They must carry out their tasks to protect Muslims' interests and ensure that the premise's products and utensils are safe, clean, pure, and in compliance with protocols established by HFCD (*Jabatan Hal Ehwal Shari'ah*, 2008). Besides, the role of the halal supervisor is essential and encourages all committee members to acquire extensive knowledge and undergo halal training. As Fischer (2016) states, halal training plays an important role because it increase awareness, understanding and knowledge of standards and standardisation in halal practicess.

3.3 The assessment of halal food supervisors

The HFCD officer said that in order to become qualified halal supervisors, they must pass the written and oral tests that the HFCD prescribes:

“The assessment will take place 5 days after the application has been received and processed by the examiners; the question

includes their knowledge of filth, how to perform ablution and practical religious components will also be tested, and the technical questions will cover hygiene, such as general cleanliness, utensils.”

Hence, the tests are divided into two categories: oral and written tests. Ultimately, all halal supervisors must pass their oral and written tests with a passing mark of 50% or above:

“The passing mark is 50%, and there are two types of tests: written and oral. However, there are no assessment levels. As long as the candidate obtains the 50%, it is considered a pass.”

A halal food supervisor must have halal expertise in *Shari’ah* and technical areas. Halalan toyyiban is knowledge of certainty, and there are several verses in the Qur’an that mention halal and haram, and *Sunnah* discusses the merits or wisdom of eating halal foods. Aside from that, they should comprehend the technical aspects of handling halal matters, such as managing halal documents in which they must clearly explain the halal products they used and submit them to BIRC. If there are any changes in food products, they must notify BIRC. The supervisors are encouraged to participate in the Halal Supervision Strengthening Program Session conducted by HFCD, and during this session, the halal supervisors were briefed and guided:

“We will explain the duties and responsibilities of a halal food supervisor. We also conduct case studies so participants can imagine what they would do if a certain situation occurred, such as food contamination.”

The benefits of attending this program are that it enhances the understanding of halal food supervisors regarding their roles and responsibilities. To encourage them to practice halalan toyyiban principles of halal food in their daily tasks and practice good attitudes and values as Muslims. More importantly, this program ensures halal food supervisors can make wise choices in the use of ingredients and ensure there are no contaminations or mixing of non-halal materials with halal. However, the application for a halal certificate can be rejected by BIRC if the conditions for the appointment of a supervisor are not complied with, other than health and hygiene factors, and employees found to be unwell are not

allowed to work in restaurants. See Figure 1.

Figure 1 summarises the roles and responsibilities of halal food supervisors in restaurants from the preliminary research interview with HFCD. In addition, the principle of trust and honesty is an important business transaction and should be practised by halal food supervisors; it is enacted between two parties: the one who trusts the consumer and the one who is trusted, the halal supervisor and the applicant. The consumer is not sure about the status of the halal food product in the restaurant and consequently seeks assurance by asking the halal supervisor. The latter ensures the consumer that the food served is halal, and the consumer trusts the halal food supervisor in turn. The relationship between them will be analysed from the perspective of the consumer. In running any company or business, these two morals are crucial because the company or business could have problems without them. Consequently, the halal food supervisors must ensure they serve halal and tayyib food, do not bring prohibited food, and maintain the restaurant’s cleanliness.

In addition, the halal food supervisor has to prove that they are knowledgeable about halal regulations and procedures in terms of food preparation. Thus, the most crucial factor influencing human behaviour and actions is the value of knowledge and thought. Halal science is a subset of Islamic science philosophy when classifying Islamic science. This is because halal products cover various social activities in Islam. They include, among other things, *mualamat*, family, economics, religion, morals, attire, entertainment, and so forth (Saadan Man, 2014).

Consequently, halal food supervisors must be well-versed in Islamic dietary principles, including what constitutes permitted and prohibited food, and it is necessary to have a background in food science and nutrition, along with specialised training or certification in halal standards and regulations. They must know halal regulations, product handling, packaging, and labelling. Furthermore, they must be trustworthy and professional in doing their work to maintain the credibility and trustworthiness of halal food supervisors.

4. Recommendation

Halal supervisors in Brunei Darussalam must be credible, knowledgeable, and proficient in their field to achieve the qualities and level of competency they need. Therefore, in this section, several steps can be taken to improve the competency of the halal food supervisors, and their roles must be competent enough to ensure consistency in their adherence to the halal standards and requirements.

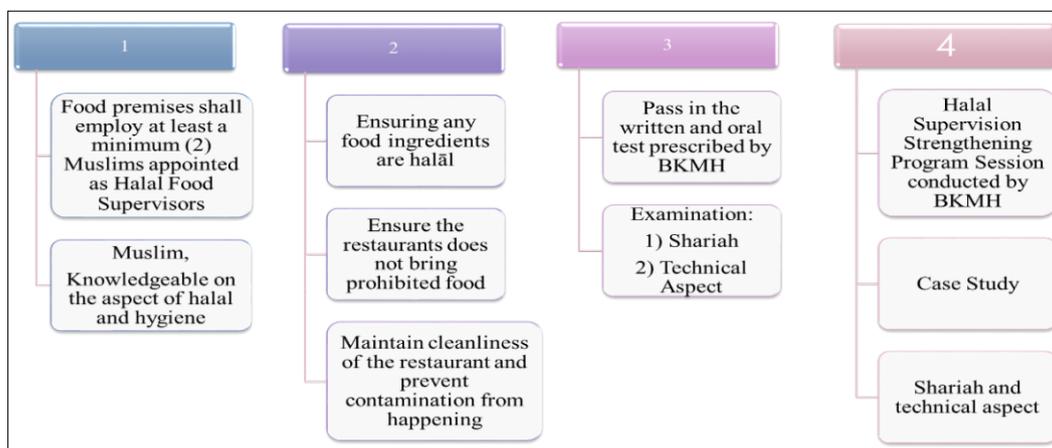


Figure 1: The role and responsibilities of halal food supervisors in restaurants.

Qualified candidates should be chosen for positions; this practice dates back to early Islamic management. As a result, only those who are genuinely capable are permitted to assume leadership roles. This was crucial in accepting accountability (Ab Aziz Yusof, 2019). In particular, the authority must ensure that the employees' qualifications match the tasks that must be completed. This guarantees that every supervisor of halal food can give their all to the establishment and has an official record of achievement given upon successfully finishing a training programme, passing an exam, and possessing the required skills. For instance, halal food supervisors should deeply understand *Shariah's* knowledge and technical knowledge, such as food safety management systems.

Implement continuous and specialised halal training and education by conducting comprehensive training programmes for halal food supervisors. Training programmes should cover various topics, such as Islamic dietary regulations and food safety measures. An organisation such as the private sector can establish a culture of continuous learning and professional development that can enable the halal food supervisors to manage complex problems, adapt to new requirements, and adhere to halal standards and compliance. The halal food supervisor should be fully committed to continuous learning. According to Riaz and Chaudry (2003), continuous training is essential, ensuring that supervisors remain current on changing industry norms.

Strengthen assessment procedures for halal food supervisors, including theoretical and practical, to ensure a thorough evaluation of their qualification and capabilities. Furthermore, it emphasises transparency and accountability in the qualification system for halal supervisors. For instance, clear evaluation criteria for assessing the qualifications of halal supervisors should be established, outlining the specific knowledge and skills required for their role. Implementing standardised assessments, such as written and oral tests with defined passing marks, ensures consistency and fairness in evaluating the competency of halal food supervisors.

5. Conclusion

The professional efficiency of these assessments is also an important asset that determines the success of operational performances. In order to become halal food supervisors, it is essential to have an assessment that covers both theoretical and practical aspects. Halal food supervisors must have specialised knowledge, especially in the *Syariah* and technical aspects. Therefore, they can practice in restaurants and improve their competency performances by having that valuable knowledge. In addition, regular monitoring and oversight by regulatory bodies, such as the HFCD and BIRC, help ensure that halal food supervisors fulfil their duties effectively, promoting transparency and accountability in the qualification system. To conclude, this research can make a real contribution to marketers and policymakers in improving their service, which can be gained from successful and effective performances to make competent halal supervisors.

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HALALSPHERE

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Holistic approach to personalised medicine: A focus on halalopathy

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Abstract

Halalopathy, a revolutionary healthcare paradigm, aims to innovate personalised medicine by combining medical interventions with individual lifestyle choices, values and energy. This holistic approach recognises the multiple influences on health, including lifestyle factors and environmental aspects. The inadequacy of conventional medicine in addressing the impact of lifestyle and personal values often leads to suboptimal outcomes for patients. Halalopathy applies a comprehensive methodology that combines medical interventions, lifestyle changes and immune system activation to address the root causes of disease and improve overall well-being. Halal-Toyyib principles strengthen the therapeutic alliance and ensure customised interventions and optimal therapeutic results. The placebo effect, the compatibility effect and the synergy effect enhance the effectiveness of halalopathy and lead to remarkable healing results. In summary, halalopathy is an inspiring, personalised and holistic approach that harmonises medicine with lifestyle, optimises therapeutic outcomes and introduces a new era in healthcare.

1. Introduction

Personalised medicine, a transformative paradigm shift in healthcare, is moving away from a one-size-fits-all approach towards tailored care that considers the unique characteristics of each individual (Stefanicka & Kurpas, 2023). By embracing a comprehensive approach encompassing genetics, lifestyle, environmental influences, and individual preferences, personalised medicine offers targeted and precise treatments that optimise patient outcomes and revolutionise healthcare delivery (Qoronfleh *et al.*, 2020). Contrary to the common misconception that personalised medicine solely focuses on genetic testing and gene therapies (Fournier *et al.*, 2021), it goes beyond genetics and deeply delves into the intricacies of an individual's lifestyle, environmental factors, and personal preferences (Goetz & Schork, 2018). By integrating these multifaceted variables, personalised medicine crafts individualised treatment plans that meticulously consider the complex interplay of factors that influence an individual's health. This holistic approach, recognising the need for comprehensive healthcare, holds immense potential for improving patient outcomes (Stefanicka & Kurpas, 2021).

The intricacies of human personality and lifestyle are deeply intertwined, mutually influencing and shaping one another. Personality, encompassing our psychological traits, behaviours, and thought patterns, shapes our daily choices and habits, while lifestyle, in turn, moulds our personality development and expression. Healthy lifestyle choices foster well-being and promote positive personality traits, while unhealthy choices can contribute to negative ones. Recognising

this dynamic interplay is crucial to aligning lifestyle with desired personality characteristics and overall well-being (Alzeer & Benmerabet, 2023).

In pursuing enhanced treatment efficacy and personalised healthcare, the convergence of medicine and lifestyle has emerged as a transformative paradigm shift for healthcare. This approach acknowledges that physical factors do not merely define health but are profoundly influenced by lifestyle choices and beliefs. The ultimate aim is to deliver comprehensive and personalised healthcare that encompasses every facet of an individual's life, from dietary preferences and social connections to cultural and spiritual values (Beach & Inui, 2006). By considering these factors when designing treatment plans, personalised medicine ensures that medical interventions are compatible with an individual's lifestyle, enabling them to adopt healthy practices and achieve better health outcomes (Chiapperino & Testa, 2016).

This article will introduce halalopathy as a transformative approach to personalised medicine (Alzeer, 2018; Alzeer, 2019). Halalopathy aims to create a harmonious relationship between medical treatments and individual lifestyles, respecting our cultural and religious practices and adapting treatments to our unique preferences. This approach offers a fresh perspective on personalised medicine by emphasising the importance of lifestyle in overall health and wellness. It recognises that each individual has unique needs and preferences and strives to create treatment plans that seamlessly fit into their daily lives. This personalised approach can potentially improve patient outcomes and foster a more holistic approach to healthcare.

2. Materials and methods

A comprehensive methodology was employed to carry out this review. A literature search was conducted to gather relevant information from various sources, including scientific articles, research papers, and scholarly publications. Logical thinking and idea comparison were employed to analyse and synthesise the gathered information, identifying patterns and drawing parallels between medication and beliefs/lifestyles in the Halal context.

Analogy thinking drew insights from related fields and concepts, expanding the understanding of halalopathy. Data analysis techniques were employed to examine empirical evidence and evaluate the impact of medication on individuals' beliefs and lifestyles. Additionally, conceptual idea generation was employed to contribute to the current body of knowledge and identify potential areas for future research.

The methodology employed in this study aimed to delve into the compatibility between medication and the beliefs/lifestyles of individuals within the Halal context. By examining the interplay between medication and personal beliefs/lifestyles, we seek to understand the concept of halalopathy and its implications for healthcare. Furthermore, we aim to explore how entropy and potential energy can provide insights into the mechanisms underlying halalopathy, shedding light on its holistic approach to personalised medicine.

3. Halalopathy

In the realm of healthcare, halalopathy emerges as a relatively new concept that blends the Arabic words "halal" (permissible) and "pathy" (study of nature and its healing properties), signifying a holistic approach to well-being that aligns with life sciences and Islamic principles. Unlike conventional medicine, which primarily focuses on physical health, halalopathy encompasses the interconnectedness of physical, mental, emotional, and spiritual well-being. This holistic perspective, rooted in Islamic principles, encompasses preventive measures and curative interventions (Alzeer, 2018; Alzeer, 2019). It embraces the concept of duality, recognising the harmonious coexistence of opposing yet complementary forces within the body, echoing the ancient principles of yin and yang in traditional Chinese medicine (Huang *et al.*, 2018). At the heart of halalopathy lies a delicate balance between opposing forces, namely potential energy and entropy, akin to the dynamic forces that maintain equilibrium within the body. The harmonious interplay of these opposing forces is crucial in maintaining optimal health and preventing disease. Potential energy, analogous to the "yang" force in traditional Chinese medicine, drives the body's restorative processes, stimulating the immune system and promoting growth. On the other hand, entropy, representing the "yin" force, plays a vital role in health maintenance by driving the breakdown of complex molecules, releasing energy for cellular processes and generating heat to regulate body temperature.

Halalopathy's essence lies in its emphasis on homeostasis, the body's natural state of equilibrium (Alzeer, 2023d). This harmonious balance encompasses a multitude of elements, both physical and non-physical: excitatory and inhibitory neurotransmitters, potential energy and entropy, and anabolic and catabolic metabolic processes. Values within the body may manifest in material and non-material forms, while behaviours can be categorised as permissible or prohibited. Halalopathy aligns with personalised medicine principles by recognising the profound impact of individual lifestyle choices, including

dietary restrictions and religious practices. This personalised approach fosters trust and harmony in the healing process, improving patient engagement and adherence to personalised treatment plans.

In essence, halalopathy represents a paradigm shift from symptom-centric conventional medicine to a holistic approach that nurtures the inherent balance within the body. This paradigm recognises the profound influence of spirituality on overall well-being, fostering tranquillity within the body, thereby adjusting the delicate balance and activating the inherent potential to combat and cure diseases. Despite its promise, halalopathy faces several challenges. These challenges stem from the need for scientific validation, harmonising diverse beliefs, integrating with conventional medicine, navigating religious sensitivities, and establishing standardised practices. Successfully navigating these challenges requires continuous research, constructive dialogue, and collaborative efforts within the healthcare community to ensure the effective and ethical implementation of halalopathic principles. By addressing these challenges, halalopathy can fulfil its potential as a valuable and accessible form of healthcare, not just for Muslims but for individuals of all backgrounds seeking a holistic approach to well-being.

4. Holistic approach to prevention in Islam

In Islam, health is paramount, recognising the profound connection between physical and spiritual well-being. Islam emphasises our responsibility towards our bodies, advocating for their care and preservation. A *hadith* of Prophet Muhammad underscores this importance:

"Your body has a right over you".

To achieve this, Islam provides a comprehensive framework of guidelines, guiding individuals towards a harmonious path of physical and spiritual well-being. These guidelines encompass a preventive approach to health, aiming to preserve and enhance overall well-being. By adhering to these principles, individuals can aspire to achieve a balanced and harmonious health, as Islam envisioned.

Islam advocates for an anabolic mindset, fostering positivity, optimism, and resilience in the face of adversity. While Islam provides valuable guidance for maintaining good health, it also acknowledges the importance of physical well-being. In this regard, Islam emphasises the advantages of certain natural substances scientifically proven to promote health and prevent diseases. These include dates (Al-Mamary *et al.*, 2014), pumpkin (Valdez & Ramírez, 2019), pomegranate (Braidy *et al.*, 2016), grapes (Pezzuto *et al.*, 2022), olives (Angeloni *et al.*, 2017), figs (Byeon & Lee, 2020), ginger (Mashhadi *et al.*, 2013), and bananas (Dita *et al.*, 2018), all of which offer valuable nutrients and medicinal properties (El-Seedi *et al.*, 2019). Furthermore, Islam encourages the consumption of specific drinks known for their health-promoting properties. Milk (Kaplan *et al.*, 2022), honey (Pena *et al.*, 2022), and vinegar (Altizer *et al.*, 2014) are among the recommended beverages that contribute to overall well-being (Etera & Najafi, 2013; Anwar *et al.*, 2015). Including these drinks and natural substances in Islamic teachings highlights the importance of incorporating physical elements into a comprehensive approach to health and wellness. By embracing these principles and integrating them into our daily lives, we can cultivate a balanced and nourishing lifestyle that resonates with our faith and promotes optimal health. Through the harmonious integration of information and natural products, we can

nurture a healthy body and strive towards holistic well-being as guided by Islam (Alzeer & Abou Hadeed, 2020; Alzeer, 2021).

5. Holistic approach to cure in Islam

Islam recognises the importance of a comprehensive approach to healing that encompasses both spiritual and physical aspects. This holistic approach, rooted in Islamic principles, emphasises integrating two crucial elements: information and medicine.

5.1 Information: the foundation of healing

In Islam, information is considered an essential tool for promoting cure. Three sources of information are particularly emphasised: supportive information, positive expressions, and recitations from the *Qur'an*.

5.1.1 Supportive information

Supportive information provides a balanced perspective on a situation, acknowledging its positive and negative aspects. This balanced approach helps maintain a healthy mental state, promoting excitatory and inhibitory neurotransmitter activity. Islam discourages excessive consumption of information that exclusively promotes either excitatory or inhibitory neurotransmitters, as this can lead to anxiety or depression (Alzeer, 2022b). Instead, Islam encourages individuals to adopt a positive mindset and avoid dwelling on negative emotions. The *Qur'anic* verse from *Surah Fussilat* (*Qur'an*, 41:30) highlights the comforting message delivered by angels to those who proclaim:

"Our Lord is Allah, and follow a righteous path. The angels descend upon them, urging them not to fear or grieve but instead rejoice in the glad tidings of the paradise that has been promised to them".

5.1.2 Positive expressions

Positive expressions are significant in the healing process. As stated in the *Qur'an*:

"O humanity! Good advice has come to you from your Lord, and a cure for what is in your hearts, as well as guidance and mercy for the believers (Qur'an, 10:57)."

Positive expressions, referred to as "*kalimah toyyibah*" in Islamic tradition, act as a remedy for the ailments that reside within our hearts. They promote anabolic thinking, which enhances potential and fosters productivity. Negative expressions, on the other hand, accelerate catabolic processes and increase entropy (Alzeer, 2020; Alzeer, 2022e; Alzeer et al., 2021; Alzeer, 2022c; Alzeer, 2022a). Islam compares positive expressions and a productive tree with solid roots and spreading branches, symbolising their ability to enrich potential and foster a harmonious environment. "A goodly word is like a goodly tree, whose root is firmly fixed, and its branches reach to the heavens, from its Lord" (*Qur'an*, 14:24).

5.1.3 Recitations from the *Qur'an*

The *Qur'an*, considered the ultimate source of information in Islam, encompasses supportive and positive elements that can enrich individuals, promote tranquillity, and strengthen

spirituality. Two verses from the *Qur'an* highlight the healing and guiding qualities of the *Qur'an*:

"We have revealed the Qur'an as a cure and a source of mercy for the believers, but for the unjust, it only leads to their destruction" (Qur'an, 17:82)

And also:

"Say, it is a guidance and cure for those who believe, but for those who do not believe, it is deafness in their ears and blindness for them. They are being called from a far-off place (Qur'an, 41:44)."

5.2 Medicine: complementary to information

Information is a powerful tool to enhance the body's inherent healing abilities. Information can effectively prevent and cure diseases by stimulating the immune system's defence mechanisms (Alzeer, 2022f). In simple cases, information alone can lead to complete recovery. However, for complex ailments, additional intervention is required. Islam recognises this need and advocates for integrating medicine into the healing process (Alzeer, 2022d). *Qur'an* draws attention to honey's medicinal qualities, using it as an example of natural medicine prepared through a classical method. *Surah Al-Nahl* (*Qur'an*, 16:69) states:

"You (bees) shall eat from the flowers and fruits, and follow the path your Lord has made easy for you. From the bellies of the bees comes a drink of different colours, which contains a cure for humanity."

This verse highlights the remarkable process by which bees extract important metabolites from flowers and formulate them within their stomachs to create the semi-solid substance we know as honey. The *Qur'an* emphasises that honey's therapeutic properties are activated when consumed as a drink. Therefore, honey should be dissolved in water to benefit fully from its healing potential. The *Qur'anic* verse acknowledges the diverse colours of honey, which can range from light to dark depending on the source of nectar. Each hue reflects the unique combination of floral elements contributing to its medicinal properties. Honey is not merely a sweet treat but a natural remedy bestowed upon humanity by the divine.

Islam's holistic approach to healing emphasises the integration of information and medicine to achieve comprehensive well-being. By incorporating supportive information, positive expressions, *Qur'anic* recitations, and physical medicine, individuals can tap into their innate potential for healing and experience the profound interconnectedness of mind, body, and soul.

6. Personalised medicine

The pharmaceutical market offers a diverse array of drugs. However, often, when new medications are developed and compared to existing ones, there is a lack of significant improvement in therapeutic effect. As a result, it becomes crucial to explore avenues for enhancing the effectiveness of existing medicines (Alzeer & Benmerabet, 2023a). A potential solution to consider involves establishing a solid connection between the field of medicine and an individual's lifestyle. This connection can pave the way for a more personalised approach

to healthcare and treatment, tailoring medical interventions to suit each person's unique needs and circumstances. Within any society, many individuals with varied lifestyles and dietary preferences exist. Some may adhere to gluten-free, lactose-free, or glucose-free diets, while others follow vegetarian or vegan principles. Religious backgrounds can also influence lifestyle choices, such as observing halal practices (Alzeer & Abou Hadeed, 2016; Alzeer *et al.*, 2020). For Muslim patients, providing medicines that align with a halal-toyyib lifestyle (Alzeer *et al.*, 2018), containing permitted (halal) ingredients, and adhering to pure and clean (toyyib) manufacturing processes can foster a sense of trust. By labelling these medicines as halal-toyyib, patients can have confidence that their nutritional requirements are met and that the medication has been produced consistently with their values. This compatibility creates a harmonious system in which patients can be confident that their medications are consistent with their lifestyle preferences (Edwards, 2012).

Integrating medicine and lifestyle this way creates a more profound and meaningful connection between patients and their treatment (Figure 1). This personalised approach not only addresses the physical aspects of healthcare but also acknowledges and respects individuals' cultural and religious beliefs. It recognises that patients' well-being is not solely dependent on the therapeutic properties of the medication but also its alignment with their broader lifestyle choices. Halal-toyyib-labelled medicine illustrates this integration, instilling a profound sense of reassurance and confidence among Muslim patients concerning their treatment. By integrating medicine and lifestyle as described, in addition to experiencing a therapeutic effect, we can unlock the healing potential. The trust placed in patients through the use of halal-toyyib medicines can even create a placebo effect, where the patient's belief in the treatment contributes to their recovery. When combined with the drug's compatibility with lifestyle and its inherent therapeutic properties, the placebo effect can synergise to produce an enhanced effect, surpassing the independent effects of any single factor. Similar to a miraculous phenomenon, this synergistic effect can lead to remarkable and complete recovery (Saniotis, 2012; Alzeer, 2023a).

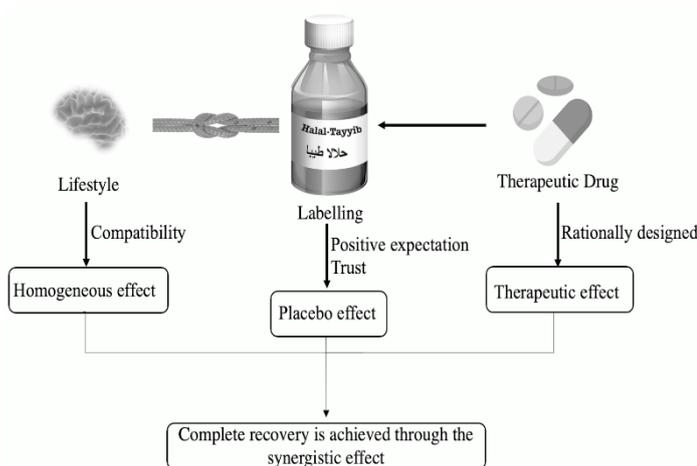


Figure 1: The pathway to complete recovery through personalised medicine.

The principle of synergy, deeply embedded in biology, highlights the remarkable outcomes that can arise from various factors' combined and cooperative action. When medicine and lifestyle converge, this synergistic effect unleashes a transformative power, propelling individuals towards a state of well-being far exceeding the capabilities of either component alone. It is as if we unlock a hidden potential reservoir and witness this integrated approach's extraordinary potency (Alzeer, 2023c; Alzeer, 2023b).

7. Discussion

Islam encourages Muslims to embrace a holistic approach to well-being, encompassing both spiritual and physical aspects. This approach emphasises the importance of preventive measures, such as eating nutritious foods and engaging in regular exercise, as well as curative interventions, such as using natural remedies and pharmaceutical medicines and seeking medical attention when necessary.

Central to the concept of halalopathy is the profound belief that the human body inherently possesses the remarkable ability to heal itself. This natural healing power can be amplified by cultivating a positive mindset and embracing a lifestyle that embodies Islamic principles. Spirituality, which fosters a profound connection between the individual and the divine, cultivates tranquility within the heart, thereby enriching the potential required to activate the body's defence mechanisms. Without serenity and composure in the heart, individuals risk either dissipating or suppressing their innate healing potentials, activating the body's 'fight or flight' responses. This hinders the immune system's effectiveness and diminishes its ability to combat disease (Alzeer, 2022f).

Muslims are encouraged to use halal-toyyib medicine, which is produced in a way that is consistent with Islamic principles. This means that the ingredients used in the medicine are halal or permissible, and the manufacturing process is toyyib, or pure and clean. Halal-toyyib medicine is not merely a therapeutic tool but a gateway to a harmonious balance between Islamic teachings and medicine. By using halal-toyyib medicine, we can enrich our spiritual connection and empower ourselves to unlock the full potential of our bodies' healing mechanisms.

Halalopathy encourages Muslims to explore a comprehensive range of healing options, encompassing not just natural remedies but also rationally designed medicines developed by pharmaceutical companies. While acknowledging the benefits of natural remedies, halalopathy emphasises the importance of these medicines adhering to halal-toyyib principles, ensuring a harmonious synergy that activates the body's innate healing potential. By integrating halal-toyyib medicine into an overall holistic approach to well-being, Muslims can cultivate holistic health that encompasses physical and spiritual well-being. This synergistic approach aligns with Islamic principles, emphasising the interconnectedness of the body, mind, and soul.

8. Conclusion

Halalopathy emerges as a transformative paradigm in healthcare, offering a personalised, holistic approach that respects and aligns with individual values and beliefs. This integrative approach harmonises medical interventions with lifestyle choices, values, and energy, recognising the intricate interplay of factors influencing health. By integrating halal-toyyib principles into medicine, halalopathy fosters a deep

connection between patients and their treatment, promoting patient adherence and enhancing therapeutic outcomes. Additionally, halalopathy activates the compatibility effect, stimulating the patient's potential energy and bolstering their immune system. This personalised approach extends beyond mere treatment efficacy, encompassing holistic well-being. By promoting confidence, activating potential, and harnessing the placebo effect, halalopathy empowers individuals to take charge of their health and well-being. The adoption of halalopathy marks a new era in healthcare, signifying a departure from conventional medicine's limited focus on symptoms and towards a holistic approach that addresses the root causes of diseases and promotes optimal health and well-being. By harnessing the synergistic effects of various values, we can optimise the efficacy of medicines and pave the way for a truly transformative and seemingly miraculous path to recovery. This integrated approach respects the duality of physical and non-physical elements in healthcare and acknowledges the impact of diverse lifestyles and dietary preferences on personalised treatments. Through halal-toyyib labelling, we can connect medicine and lifestyle, integrating the physical aspect of medicine with the non-physical aspect of information. This connection embraces the therapeutic effect of aligning treatments with our deeply held beliefs and values, further promoting the healing process through the placebo effect and the homogeneous effect. By embracing this synergistic approach, we can witness the remarkable potential of our bodies and the miraculous outcomes that can be achieved, leading to a more inclusive and patient-centred healthcare system that prioritises the holistic well-being of individuals.

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HALALSPHERE

International Islamic University Malaysia - INHART



The significance of halal logo on cosmetic products: A review

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Abstract

A stretching amount of Muslim consumers' awareness towards their religious duties has led to a greater demand for halal products, especially in the Asia Pacific region. The rapid growth of the halal cosmetic industry is seen as one of the outcomes resulting from this progressing change in consumer mindset. However, halal certification for cosmetic products in most countries is not required as solidly as it is for food matters. Despite the blossoming potential of the halal cosmetics industry, the development is relatively slow. This study is conducted to lay out the significance of having a halal logo on cosmetic products. A qualitative research method via article review has been carried out. The finding of this study has enclosed the following aspects of significance; - a) religious commitment, b) quality, c) reassurance, d) consumer awareness, and e) economy. The outcome of this paper should enable related parties to comprehend the importance of halal-certified cosmetic products and drive them to gain the most out of the benefits offered by the halal certification applied to cosmetic items.

1. Introduction

The halal cosmetic sector's growth is projected to be from USD33.3 billion in 2021 to USD77.34 billion by 2028, with a 7-year CAGR of 12.75% during the given interval. (Insights, 2020). The blooming progress of the halal cosmetic market is driven by the growth of consumer knowledge regarding the ingredients used and product awareness, which is mainly fostered by social media. The swelling demand for halal cosmetic products is primarily impacted by the demographic of the young, religiously conscious, and dynamic Muslim population. (Asrag, 2016). However, in this globalising era, halal is no longer bounded purely by religious adherence but is also recognised as a global symbol for quality assurance and lifestyle. (Ramezani, 2011). Despite the promising potential of the halal cosmetics sector, as reported, the development and progress are rather slow in certain countries such as Brunei.

This research aims to determine the significance or advantage of certifying cosmetic products with a halal logo in favour of understanding the relevance of implementing halal on cosmetic goods. The essential findings are purely conceptual, as the study does not deeply examine purchase intentions, purchase behaviours, or purchasing decisions regarding cosmetics carrying the halal label. Moreover, no link between any variables about halal cosmetics is being conceptualised in this work. In other words, this paper merely enumerates the notable attributes associated with incorporating the halal logo into cosmetics without measuring any correlation between variables such as trust, loyalty and purchasing behaviour. The five significant factors identified in the research are qualities

frequently referenced in the literature about halal cosmetic products, yet these mentions are typically scattered across articles. Thus, by compiling a comprehensive list of the general significance of halal cosmetic goods, this study could contribute to academic research as an extensive resource to the existing literature. Additionally, this study's limitation lies in lacking a systematic literature review to identify patterns, trends, and gaps in the existing knowledge.

Primarily, the article addressed the following inquiry: "What are the advantages associated with endorsing cosmetic items with the halal logo?". To answer the question, the paper employed a qualitative research method by performing descriptive document analysis that involved reviewing and evaluating conference papers, scientific journals, global business reports, and articles sourced from online publications. The study is anticipated to provide a comprehensive analysis that extends beyond the conventional focus on halal food products to the rise of the halal cosmetics market. By examining the roles played by the halal logo on cosmetics, the article illuminates the broader implication of halal certification in a global consumer market, offering practical insights on the strategic importance of halal certification to relevant stakeholders such as manufacturers, marketers, and policymakers. This paper also emphasises the potential of halal cosmetics as a catalyst for economic growth by furthering discussions on the intersection of religious principles with global business practices in the 21st century.

2. Literature review

2.1 Halal cosmetics

Halal is defined as “something that is permitted, concerning which no restriction exists, and the doing of which the Law-Giver, *Allah*, has allowed” (Qardhawi, 2007). A cosmetic refers to a treatment or product that is applied to the human body, particularly the face, to change the appearance, cleansing, beautifying or improving the appearance of the individual (Shahid, 2018). Cosmetics are defined as products with beautifying purposes without affecting or changing the body to make it look attractive, and cosmetics should also cover a broad scope of items such as cleaning body products. These products enhance features and change skin tones, complexions, and shades, such as makeup, fragrance, toothpaste and even deodorant. (Kumar, 2006). This is also how (Brunei Darussalam Guidelines for Manufacturing and Handling of Halal Cosmetic Products, 2016) Alternatively, PBD26:2016 defines cosmetic products:

“Any substance or preparation intended to be placed in contact with the various external parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance and correcting body odours and protecting them or keeping them in good condition.”

Halal cosmetic refers to cosmetic goods that do not contain any components derived from porcine, reptile, blood, carrion, human body parts, or predatory animals. (Yusuf, 2017). Within the realm of the halal industry, halal products refer to any services or goods that have obtained official recognition from a governing body in accordance with *Shari'ah* law. These products are distinguished by the halal logo, which accredited certification agencies issue. (Markovic, 2022).

Therefore, halal is not bound only to ingredients but also involves the manufacturing, storing, packaging, and delivering processes. (Bujang, 2023). Halal products should also be of good quality and prioritise safe consumption. (Ali, 2018). (Alserhan, 2010) Halal is also a religious requirement for Muslim consumers as it plays a cardinal role in ensuring permissible and lawful consumption. There is a *hadith* that emphasises the paramount importance of consuming halal products:

(إِنَّ الْحَلَالَ بَيِّنٌ وَإِنَّ الْحَرَامَ بَيِّنٌ وَبَيْنَهُمَا مُشْتَبِهَاتٌ لَا يَعْلَمُهُنَّ كَثِيرٌ مِنَ النَّاسِ فَمَنْ اتَّقَى الشُّبُهَاتِ اسْتَبْرَأَ لِدِينِهِ وَعَرْضِهِ وَمَنْ وَقَعَ فِي الشُّبُهَاتِ وَقَعَ فِي الْحَرَامِ كَالرَّاعِي يَزْعَى حَوْلَ الْحِمَى يُوشِكُ أَنْ يَرْتَعَ فِيهِ أَلَا وَإِنَّ لِكُلِّ مَلِكٍ حِمًى أَلَا وَإِنَّ حِمَى اللَّهِ مَحْرَمُهُ أَلَا وَإِنَّ فِي الْجَسَدِ مُضْغَةً إِذَا صَلَحَتْ صَلَحَ الْجَسَدُ كُلُّهُ وَإِذَا فَسَدَتْ فَسَدَ الْجَسَدُ كُلُّهُ أَلَا وَهِيَ الْقَلْبُ)

“What is lawful is evident, and what is unlawful is evident, and in between them are the things doubtful which many people do not know. So, he who guards against

doubtful things keeps his religion and honour blameless. He who indulges in doubtful things indulges in fact in unlawful things, just as a shepherd who pastures his animals round a preserve will soon pasture them in it. Beware, every king has a preserve, and the things God has declared unlawful are His preserves. Beware, in the body, there is a piece of flesh; if it is sound, the whole body is sound, and if it is corrupt, the whole body is corrupt, and hearken it is the heart.”
(Al-Bukhari, 2012)

Accordingly, as a Muslim, finding a halal alternative for daily consumption is obligatory as it is said to increase our religious faith along with getting our prayers quickly accepted and granted by *Allah Subhanahu Wa Ta'ala*. Consuming haram products may also hinder the acceptance of our prayers (Kathir, 1998). A statistic by Fortune Business Insight 2020 disclosed that the global cosmetics market size is projected to reach USD 438.38 billion by the end of 2026 (Insight, 2020). This massive growth was due to the Muslim population developing an interest in halal cosmetics, and their buying power led them to spend more on cosmetics and personal goods (Swidi, 2010). With the rising concern and consciousness regarding their obligation and responsibility to utilise halal products, Muslim consumers have now started to search for products that are in line with the *Shari'ah* law (Wilson, 2010). Not only that, brands serving halal cosmetics have also started to focus on society's demands for change by highlighting inclusivity as part of their brand, aiming to cater for individuals of different ethnicities. Cruelty-free products are also seen as a consumer demand, particularly regarding morals and ethics (Standard, Global Islamic Economic Report, 2020 & 2021).

3. Materials and methods

Extensive reading of past literature and research was adopted, scanning through repetitive vital points to identify essential themes regarding the significance of the halal logo in cosmetics. This process involved careful examination of conference papers, scholarly journals, global business reports, and articles from reputable websites. By thoroughly analysing the existing literature and secondary data sources, the research aimed to extract and synthesise recurring key points and overarching themes that shed light on the importance and implications of the halal logo in the cosmetics industry.

4. Results and discussion

The extensive reading of the past literature has led to the finding of repetitive keywords, which enabled the author to categorise them into five predominant categories which are a) Religious Commitment, b) Quality, c) Reassurance, d) Consumer Awareness, and e) Economy.

4.1 Religious commitment

Halal is a term introduced in the *Qur'an* that refers to something permissible in religious, faith, and spiritual aspects. (Rahim, 2015). In the context of halal cosmetics, it should indicate that the cosmetic does not involve derivation from pig, carrion, blood, human body parts, predatory animals, reptiles, and insects as the ingredients. (Yusuf, 2019). However, the permissibility of alcohol use in cosmetics varies based on the specific type of alcohol that is incorporated into the products

above. As per (Brunei Darussalam Guidelines for Manufacturing and Handling of Halal Cosmetic Products PBD26:2016, 2016), ethanol, a type of alcohol generated through chemical synthesis, is deemed non-*najs*. In the case of an external application, the product is considered halal. On the contrary, alcohol (ethanol) derived from *khamr* (i.e., liquor or any form of intoxicant) shall be regarded as *najs*.

According to a study conducted in Brunei, consumers understood how using halal cosmetics preserves the five objectives of *Shari'ah*. (Hussin, 2021) Moreover, how highly attached it is to Islamic principles. (Farida Bhanu, 2020). The increasing demand for halal cosmetic products was also reported to keep the halal cosmetic market eagerly driven, mainly by young and religiously conscious, dynamic Muslim consumers. (Farida Bhanu, 2020). Muslim consumers have also started to focus on products that balance harmonious and peaceful living, and halal products could achieve this. Therefore, their choices of products are not restricted solely to items that satisfy their shared preferences, indicating their concern about their faith. (Sutono, 2010). (Arbak, 2019) Muslim consumers' increasing awareness of halal has supported them in seeking products that meet their cultural and religious requirements.

Adopting a similar position, two studies from China and India have pointed out that religion correlates with consumers with high religiosity. According to Muslims residing in China, the motivation behind presenting their religiosity in their purchase stems from their faith and actions. (Hong, 2018). Consumers in India, on the other hand, will not make concessions to their religious beliefs in favour of purchasing halal brands only to catch up with the latest trends. (Shahid, 2018).

Following a systematic review of fourteen articles, a recent paper concluded that in light of the perception that halal cosmetics ensure quality and safety, the review indicates that consumers prioritise their religious beliefs over brand, price, and marketing strategies (Raihan, 2022). Nonetheless, as tested by (Zakaria, 2017), an increase in customers' religiosity does not necessarily result in a greater propensity to purchase halal-certified products; however, there is still a positive correlation between customers' religiosity and their intention to buy. The paper also disclosed that only religiosity influences customers' attitudes toward halal purchases compared with the other two variables: halal awareness and marketing communication. In other words, although religiosity appears to be closely associated with consumer's purchase preference for halal cosmetics, it does not guarantee that consumers will ultimately decide to make a purchase.

Muslim consumers also seem to perceive that Islamic principles and regulations produce products labelled with the halal logo. (Musa, 2014). (Lada, 2009) They claimed that the booming demand for halal products is influenced by consumers' budding knowledge of their religion and information about halal. This suggests that the reflection of Muslim consumers' beliefs towards the usage of halal cosmetic products positively affects their religious commitment and adherence. A study conducted in Brunei revealed that the primary determinant impacting consumers' preferences for halal cosmetics is their conviction that such products will enhance their religious devotion (*ibadah*) (Abdul Halim; Aghwan, 2023). As a matter of fact, the paper also discovered that the consumers hold a high perception that the consumption of halal cosmetics shall be a form of religious obedience refraining them from incorporating the use of haram ingredients in their cosmetics' uses. Therefore, these findings

may be taken to further indicate that religious commitment would influence them to prioritize the use of halal cosmetics over conventional alternatives.

This further corroborates the previous findings supporting how important religious commitment is to the consumers not only in food context but also in cosmetic products. The order of eating only halal is clearly mentioned in the *Qur'an* (*Al Baqarah*:168):

يَا أَيُّهَا النَّاسُ كُلُوا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا خُطُوَاتِ الشَّيْطَانِ ۖ إِنَّهُ لَكُمْ عَدُوٌّ مُّبِينٌ

"O humanity! Eat from what is lawful and reasonable on the earth and do not follow Satan's footsteps. He is genuinely your sworn enemy."

This verse's instruction on eating halal is comprehensively implied in topical products such as cosmetics. (Abd Rahman, 2015) Stresses on the usage of halal-labelled cosmetic products are equally crucial as the consumption of halal food products in the life of a Muslim. However, the accessibility of halal cosmetics would also affect consumers' ability to buy them, as reported by (Kaur, 2018), when all other options are unavailable, consumers will almost certainly purchase cosmetics without halal certification.

A widely known *hadith* by Imam Al-Bukhari has stated:

عَنْ أَبِي عَبْدِ اللَّهِ التُّعْمَانِ بْنِ بَشِيرٍ رَضِيَ اللَّهُ عَنْهُمَا قَالَ: سَمِعْتُ رَسُولَ اللَّهِ صَلَّى اللَّهُ عَلَيْهِ وَسَلَّمَ يَقُولُ: إِنَّ الْحَلَالَ بَيِّنٌ وَإِنَّ الْحَرَامَ بَيِّنٌ وَبَيْنَهُمَا أُمُورٌ مُشْتَبِهَاتٌ لَا يَعْلَمُهُنَّ كَثِيرٌ مِنَ النَّاسِ، فَمَنْ اتَّقَى الشُّبُهَاتِ فَقَدْ اسْتَبْرَأَ لِدِينِهِ وَعِرْضِهِ، وَمَنْ وَقَعَ فِي الشُّبُهَاتِ وَقَعَ فِي الْحَرَامِ، كَالرَّاعِي يَرَعَى حَوْلَ الْحِمَى يُوشِكُ أَنْ يَرْتَعَ فِيهِ، أَلَا وَإِنَّ لِكُلِّ مَلِكٍ حِمَى أَلَا وَإِنَّ حِمَى اللَّهِ مَحَارِمَهُ أَلَا وَإِنَّ فِي الْجَسَدِ مُضْغَةً إِذَا صَلَحَتْ صَلَحَ الْجَسَدُ كُلُّهُ وَإِذَا فَسَدَتْ فَسَدَ الْجَسَدُ كُلُّهُ أَلَا وَهِيَ الْقَلْبُ [رواه البخاري ومسلم]

"What is lawful and unlawful is evident; between them are the doubtful things many people do not know. So, he who guards against doubtful things keeps his religion and honour blameless. He who indulges in doubtful things indulges in fact in unlawful things, just as a shepherd who pastures his animals round a preserve will soon pasture them in it. Beware, every king has a preserve, and the things God has declared unlawful are His preserves. Beware, in the body; there is a piece of flesh; if it is sound, the whole body is sound, and if it is corrupt, the whole body is corrupt, and hearken it is the heart." (Al Bukhari, 2012)

The *hadith* above clearly noted that Muslim consumers should consider the consumption of halal goods, as what is put into the

body affects the entire body's soundness and health. Hence, Muslim consumers need to adhere to religious obligations, not limiting them to halal foods only but also extending them to the use of halal-certified cosmetic products. (Laluddin, 2019). *This* conscious action of consuming halal goods will be deemed as a source of good deeds for Muslims.

Given that Islamic-compliant cosmetics are likely to be favoured by Muslim consumers (Hong, 2018), in the context of marketing strategy (Al-Hajla, 2021), they are further suggested that cosmetic firms that target Muslim markets should acquire knowledge on how to develop their marketing initiatives based on consumer's behavioural standpoint. Muslim consumers' preferences should be considered during the development of marketing strategies. In order to satisfy the demands of Muslim consumers, the marketing strategies should prioritize on promoting the benefits of their halal-certified products, focusing on awareness and Islamic compliance.

On the other hand, although religiosity is considered a determining factor stimulating the growth of halal cosmetics, (Hong, 2018) halal stakeholders such as marketers, producers, and manufacturers must genuinely understand the halal concept rather than merely perceiving the industry as a means to generate wealth. In addition to its affiliation with Islamic regulations, halal certification is also significant for economic reasons. Enterprises, especially halal cosmetics SMEs (Small and Medium Enterprises), that have obtained halal certificates can proudly claim that they are contributing towards several Sustainable Development Goals (SDGs) (Masood, 2023). By doing so, halal cosmetic companies would be able to enhance their competitive advantage not only in the Muslim market but also for non-Muslims comprehensively.

4.2 Quality

Halal cosmetic goods are produced with only halal materials by the halal system. The production of cosmetics usually involves a complicated mix of substances that requires diligent perusal of the ingredients. (Sugibayashi, 2019). The process of manufacturing halal cosmetics follows stringent requirements such as the involvement of Good Manufacturing Practice (GMP) and other quality standards to ensure product quality and safety. Contamination is rigorously avoided at all costs by segregating potential non-halal elements away from halal substances used in the production. (Sugibayashi, 2019) She also added that halal cosmetic packaging must also comply with halal requirements not to endanger human health by the use of it. Labelling should also be done clearly as required by the regulatory bodies. The products must stay uncontaminated during distribution and not be affected by *najis* and impure substances. These requirements are also enlisted in Brunei Darussalam Guidelines for Manufacturing and Handling of Halal Cosmetic Products (PBD26:2016) under 3.6.4 (Brunei Darussalam Guidelines for Manufacturing and Handling of Halal Cosmetic Products PBD26:2016, 2016). (Tahlani, 2023) stated that consumers' perceptions of halal-labelled cosmetics typically encompass their assessment of the reliability of the certification bodies, product quality, and their understanding of the halal certification itself. This demonstrates that consumers are keenly aware that halal-certified cosmetics are distinguished by their superior product quality.

The symbolism of health-related quality, cleanliness, and safety is also associated with halal certification. (Asa, 2017) as well as encompassing extensive values such as social responsibility, earth stewardship, economic and social justice, animal welfare and ethical investment (Asrag, 2016). A recent paper by

(Pratiwi, 2023) It has also greatly emphasised conformity with religious teachings regarding halal principles, rigorous testing and inspection of the ingredients, the manufacturing process, and the production process, all components of halal certification for cosmetics. Several more papers by (Asa, 2017), (Hashim, 2013) and (Hussin, 2013)'s papers are also found to be consistent with the previous statements affirming how the halal logo is linked closely to the quality of the products. The findings above provide insight into how the quality of products offered by halal cosmetics would subsequently inspire consumer confidence and assurance. Another recent study by (Ariesya, 2023) Who employed quantitative research methods on the clientele of Wardah Cosmetics, has discovered that product quality and religiosity positively impact consumer loyalty. These findings reveal something about the nature that consumer often seeks assurance that their purchases will not only meet their immediate needs but will also endure over time. In this way, consumers would develop a sense of trust in the brand, which in turn would encourage repeated purchases.

On another note, (Anggadwita, 2019) It has conducted a study on young women from two different areas, urban and rural, which interestingly revealed that product quality has no effect on cosmetic purchases. This is presumably because Indonesian women experiment with different brands out of curiosity and impulsive purchasing; consequently, price appears to be of considerable importance to them. The paper also underlines that product quality affects brand image but not purchasing decisions. Nevertheless, the purchasing decision was found to be significantly impacted by brand image. Within the framework of halal certification, including the halal logo seems to enhance the product's brand image, which subsequently impacts consumers' purchasing decisions. Although (Anggadwita, 2019) It has been proven that product quality does not influence consumers' purchasing decisions on halal cosmetics, and this does not negate the fact that quality remains one of halal's strengths.

4.3 Reassurances

The global cosmetic industry is known to be heavily dominated and monopolized by non-Muslim companies. (Laluddin, 2019) due to several reasons, risking the halal cosmetics market to remain niche, losing out to vegan and organic-certified cosmetics (Standard, Global Islamic Economic Report, 2022) and even to kosher produced goods (Izberk-bilgin, 2016). According to a study, Muslim consumers believed the halal logo on a product signified that its production adhered to Islamic principles. Hajipour, 2015 mentioned that this study examines the significance of the halal label in influencing consumer purchasing decisions. On the other hand, non-Muslim consumers regarded the products as high-quality and also perceived assurances regarding safety. (Musa, 2014). Similarly, Zalina Zakaria et al. concluded: "halal certification reassures Muslim consumers that the products they use are from pure and hygienically manufactured ingredients." (Zalina Zakaria, 2019). A study in Brunei seemed to agree that it has outlined the critical role of the halal logo on cosmetic products. The consumers appeared to propound that the presence of a halal logo is vital to ensure the ingredients of the cosmetics are halal. (Hussin, 2021). Nurul Aina Ahmad Anuar also pointed out that the halal label on products acts as halal assurance for the consumers. (Nurul Aina, 2022). On top of that, the marketers and manufacturers also seem to comprehend the potential of the halal logo in marketing their goods as halal and *Shari'ah*-compliant, which, in a way, may help widen their target market. (Azreen Jihan, 2014).

According to (Mustaqim & Mulyana, 2023), halal certification is cardinal in playing its role in building consumer confidence, and that includes a) providing assurances to consumers as well as b) offering certainty and security. The former provides further details regarding the stringent testing and inspection procedures that halal-certified cosmetics undergo in order to guarantee their halal status. This ensures that consumers can confidently utilise halal-certified cosmetics, as they are free from Haram-enumerated ingredients. On the latter, consumers will feel at ease with the certainty and security that halal cosmetics provide, given that the products in question adhere to the halal criteria instituted by accredited religious bodies to issue the halal logo. Thereby, (Mustaqim & Mulyana, 2023) They discovered that halal certification significantly affects consumer confidence in cosmetics. Halal certification is a determining factor in establishing consumer confidence and instilling a sense of assurance. This consequently mitigates their hesitations and scepticism regarding the composition of the products. In contrast to (Mustaqim & Fazriani, 2023) Our research paper examines the impact of halal certification specifically on consumer confidence in cosmetics, including purchase decision-making, trust, and customer loyalty; our paper provides a mere enumeration of the notable attributes associated with incorporating the halal logo onto cosmetics, with no specific emphasis on consumer confidence. Consequently, readers would not discover information regarding purchasing intention or decision-making to be conceptualized in this paper as it only pertains to the significance of cosmetics carrying the halal logo generally.

4.4 Consumer's awareness

Introducing a halal logo is a pivotal step in fostering awareness among consumers about halal products. This logo signifies that a product meets the *Shari'ah* criteria in order to be considered halal. According to (Putri, 2018) and (Farooqi, 2017), the increasing level of trust in halal-labelled products leads to a positive purchase intention on halal cosmetics, especially when the authenticity of the halal logo can be easily identifiable by customers. Additionally, it makes it easy for consumers to identify halal-certified goods and feel confident about their choices. With the endorsement of halal certification on products, consumers are more inclined to place their trust and feel safe in using the products, given the perception that they have successfully undergone strict halal inspections. (Ni'mah, 2019) supervised and verified by authorized agencies (Mustaqim, 2023). This may be taken to indicate that the halal logo is a straightforward way to share information, shape how consumers see products, and help them understand halal practices. In short, it encourages people to make thoughtful choices when shopping.

It was discussed in (Farida Bhanu, 2020)'s paper that the halal logo/certification and halal awareness have somehow created a cycle that when the halal logo is made known progressively, it will create halal awareness purposively to the public through intensive halal promotional campaign. Consumers with an extensive awareness of halal were found to have a higher intention towards purchasing halal products. However, the article in question centred on understanding the role of race and awareness, proposing that a correlation exists between race and the intention to buy halal cosmetics. The research indicates a strong interest in purchasing halal cosmetics among respondents from diverse ethnic backgrounds, specifically Malay, Chinese, and Indian. This implies that individuals from these ethnic groups are more likely to express a keen interest in buying halal cosmetics than those from other ethnic backgrounds. In addition to the consideration of race, the

research also highlighted the appeal of halal cosmetics to both Muslims and non-Muslims. (Zakaria, 2017) has demonstrated a similar result outlining that halal awareness can drive consumers' purchases of halal products. (Al-Hajla, 2021) statement complemented Zakaria's study, highlighting that awareness of the features and ingredients of halal cosmetics positively influences the intention to purchase them. These studies indicate that the inclusion of the halal logo on cosmetic products appears to increase awareness of the halal label, specifically regarding cosmetic products. This statement suggests to consumers that halal should not be limited to food products alone, but should be applied universally to cosmetic and beauty care items.

4.5 Economy

Implementing the halal logo on cosmetics can significantly bolster a country's economy through various channels. Firstly, it taps into the burgeoning global halal market, which is not only limited to food but also extends to personal care and beauty products. (Ardiani Aniqoh, 2020). By certifying cosmetics as halal, manufacturers can cater to the vast and growing Muslim population who are conscientious about adhering to halal standards in all aspects of life, including skincare and makeup. The broadened market appeal has the potential to stimulate business growth, generate interest from consumers, and establish fresh markets. (Markovic, 2022).

The potential of the halal cosmetic sector has surfaced with the increase of consciousness and accessibility of halal beauty products, improving the global market. (Al-Harran, 2008). Halal products also comprehensively encompass cleanliness and safety, and other than the religious requirements, the halal logo enables the products to reach local and global markets, approaching Muslim and non-Muslim consumers. (Sriviboone, 2017). Moreover, the halal certification process often necessitates higher standards of purity and quality throughout the manufacturing process, which can drive innovation and improve the overall benchmark of the cosmetic industry in the country.

According to Global Data as reported by (Omar, 2022), the cosmetics sector in Malaysia is projected to increase by 2.8% annually through 2024. Skincare products are one of the largest industries, with a selling value of RM1.96 million in 2019. Makeup and beauty sector sales are expected to increase, followed by the skincare sector. The high profitability of the halal cosmetics sector can be attributed to an increase in manufacturer investment in halal-certified products; this indicates that businesses are beginning to recognize the potential financial benefits of manufacturing and selling halal cosmetics. A considerable number of companies in Malaysia aspire to certify their products with the halal logo in order to penetrate the OIC cosmetics market, which Muslims predominantly populate. In light of these events, their acquisition of the halal logo demonstrates their dedication and commitment to catering to the needs and preferences of Muslim markets. (Naseri, 2022).

Several factors contributed to the swift growth of the global halal industry, including the rapid growth of the Muslim population worldwide, the GDP growth of Muslim countries, and emerging halal markets beyond Muslim countries. These Muslim lifestyle offerings have instilled the utilization of halal products to align with their beliefs and values, and lastly, the growth of the halal ecosystem (Azam, 2020). These advantages should be able to attract foreign investment and boost the sector's contribution to the national economy. Additionally, the

halal logo enhances brand credibility and trust among Muslim consumers and non-Muslims who associate halal with ethical consumerism, potentially broadening the scope of the customer base. In the case of Brunei, the mandatory requirement for food businesses in obtaining halal certification for their products has led to an increase in the quantity of establishments that have obtained such certification (Sulaiman, 2023) including the local MSMEs, and this consequently has spurred the issuance of halal certification in Brunei. (Wei Hin, 2011) concurred that the development of

SMEs would substantially impact the economy by increasing national income, generating tax revenue, creating employment opportunities, and facilitating economic expansion, demonstrating halal certification's profound effect on the economy. This is a crucial move for countries with high unemployment rates or a need for job opportunities for particular demographic segments of the population like Brunei. As of 2017, Brunei, a rentier economy, has exhibited the highest youth unemployment rate of 24.50 in the preceding 26 years. Conversely, the lowest recorded rate was 14.10 in 1991

Table 1: ASEAN Youth Unemployment Rate (2019-2023) [Source: International Monetary Fund]

ASEAN Youth Unemployment Rate (2019-2023)						
		2019	2020	2021	2022	2023
1.	Brunei	6.8	7.3	4.9	5.2	4.9
2.	Indonesia	5.2	7.1	6.5	5.9	5.3
3.	Malaysia	3.3	4.5	4.7	3.8	3.6
4.	Philippines	5.1	10.4	7.8	5.4	4.7
5.	Singapore	2.3	3	2.7	2.1	1.8
6.	Thailand	1	1.7	1.9	1.3	1.2
7.	Vietnam	2.2	2.5	3.2	2.3	2.1

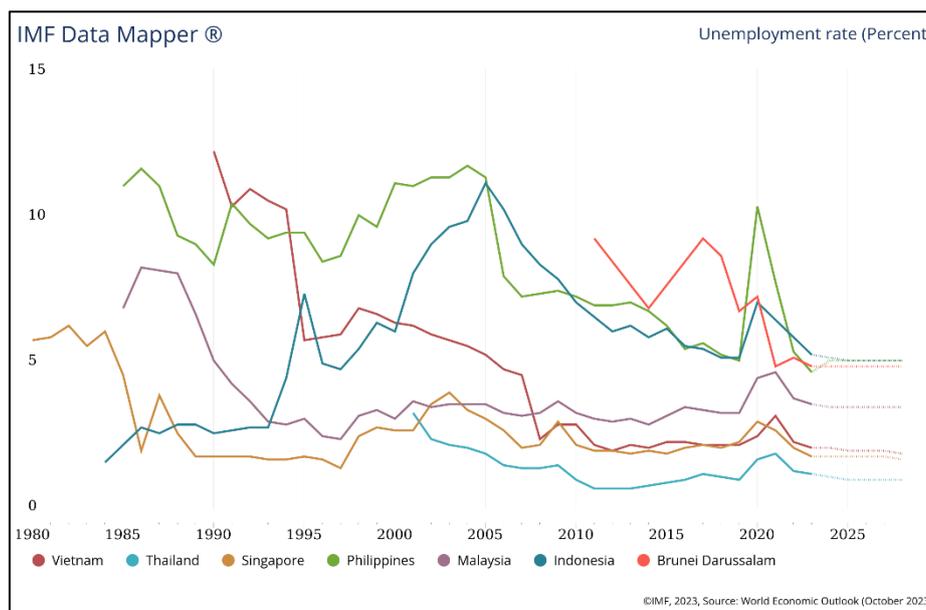


Figure 1: Unemployment Rate among ASEAN 1980-2023 (Source: International Monetary Fund).

(Musa & Idris, 2020). Additionally, the unemployment rate in Brunei increased dramatically from 6.9 per cent in 2014 to 9.3 per cent in 2017, according to available data from (Ministry of Finance and Economy, 2019). A marginal increase of 0.3 per cent, from 4.9 per cent to 5.2 per cent, was also documented in the Labor Force Survey conducted by MOFE from 2021 to 2022, with the most recent data available as of 2022 (Ministry of Finance and Economy, 2022). According to Table 1, based on an IMF report, Brunei's unemployment rate has decreased from 6.8% to 4.9% during the past five years. However, it is still the highest among Southeast Asian peers (Figure 1), irrespective of the declination. On top of that, the overall stagnation of the unemployment rate is inferred from the fact that the labour

market has improved only for lower-paying positions (IMF Country Report, 2023).

5. Conclusion

The halal industry has captured various areas of commodities that are not bounded solely on food products anymore, with cosmetics being one of the current interests. Cosmetics being dominated by non-Muslim countries has indisputably made halal cosmetics stay niche in its market. However, the increasing awareness from halal-conscious consumers has manifested their growing demand for halal cosmetic products.

This study has classified the results into 5 prominent categories, demonstrating the importance of having cosmetic products be halal certified. The five significance of the halal logo on cosmetic products touches on fulfilling religious requirements, signifying the best quality, acting as a product assurance, promulgating halal awareness, and driving countries' economies. Producers and prospective stakeholders should be driven to comprehend the significance of cosmetics being halal certified, aiming halal cosmetics to penetrate international markets, enabling further engagement towards not only the Muslim markets but also targeting non-Muslim consumers comprehensively. This could be a way of extending exposure that halal products' benefits are not narrowed to Muslim consumers only but should also inclusively benefit non-Muslim consumers. Future research could also take several directions to further understand and optimize its benefits by incorporating a systematic review to ensure a comprehensive synthesis of the existing literature and enhance the generalizability of findings. Exploration of consumer behaviour and preferences among various demographic segments with regard to halal-certified cosmetics is an exciting field of study, particularly for the population of Brunei, where research on the halal cosmetic business is scarce. This could involve investigating the factors influencing purchase decisions beyond religious compliance, such as environmental concerns, ethical production, and the perception of quality associated with halal certification. Additionally, examining the challenges and opportunities faced by cosmetic companies in obtaining halal certification can reveal best practices and barriers to entry, offering guidance for policymakers, industry players, and certifying bodies. This may also provide insight into how industry participants evaluate the significance of the halal logo on cosmetic goods.

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HALALSPHERE

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The contribution of natural foods to the sustainability of halalan toyyiban lifestyle based on *Maqasid Shari'ah* in Brunei Darussalam

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Abstract

Natural foods are free from additives and modifications. It is considered a nutritious and wholesome food that provides benefits for well-being. However, despite its role in contributing to excellent health, the environment, and the economy, and considering factors such as modernisation, modernised products, and technological advancements, the consumption of natural foods takes a back seat among the population, as the demand for modern and processed foods has increased. Hence, this study examines the significance of natural foods in achieving a sustainable halalan toyyiban lifestyle, aligning it with the objectives of *Maqasid Shari'ah*. This study employs qualitative research through a library research method to demonstrate how natural foods sustain the five goals of *Maqasid Shari'ah*: safeguarding faith, intellect, wealth, health, and offspring. In addition, this study highlights the importance of prioritising natural foods to promote positive health outcomes and overall well-being.

Keywords:

Natural foods;
Sustainability;
Halalan toyyiban
lifestyle; Brunei
Darussalam.

1. Introduction

Natural foods are free from additives and modifications and contain no colour, artificial flavours, or synthetic substances (Braun, 2022). Despite the availability of natural foods in Brunei Darussalam, adults in the country prefer processed and modern foods. As reported by the Ministry of Health in Brunei Darussalam, the preference and consumption of natural food options such as fruits and vegetables come second among most Bruneian adults. This preference was likely due to the significant influx of modern and processed foods imported into Brunei Darussalam. In addition, the consumption of highly processed foods led to an increase in salt intake. This, in turn, resulted in the development of unhealthy behaviours in childhood and adolescence. This trend is concerning and has heightened the risk of developing adverse health outcomes such as communicable and non-communicable diseases (NCDs) (Ministry of Health, 2021).

This has resulted in a rise in treatment costs, which could threaten economic stability. Hence, cost-effective and sustainable measures are essential to address these issues. A simple way to start addressing this is by implementing preventative measures, such as a balanced diet, consuming nutritious foods like natural and healthier options, and engaging in physical activities. Consequently, natural and nutritious foods possess the potential to be the key drivers for achieving a sustainable lifestyle, especially concerning health, environment, and economics. Adopting diets that are consistent with Islamic principles positively impacts overall

well-being. A halal toyyib lifestyle represents a way of living that follows Islamic principles and values, focusing on promoting personal significance and the well-being of oneself and others.

This study examines the contribution of natural foods, particularly nutritious ones, in achieving a sustainable lifestyle and their aligning with *Maqasid Shari'ah*, by linking them to the paradigm of halal and toyyib. This study also links the relationship between natural foods, halal toyyiban, and *Maqasid Shari'ah* to achieve a sustainable lifestyle.

2. Literature review

2.1 The concepts of sustainability

Sustainability is the ability to maintain or support a process over time continuously. The term sustainability is primarily associated with business and policy. However, it seeks to prevent the reduction of natural or physical resources and ensure their availability for an extended period. The concepts of sustainability suggest that without significant changes in the world, the future will be affected by issues such as climate change, biodiversity loss, and pollution (Mollenkap, 2023). Mollenkap further discussed that the idea of sustainability is often broken down into three pillars: economic, environmental, and social. The author explained that economic sustainability focuses on conserving natural resources used in economic production. Secondly, environmental sustainability emphasises maintaining life support systems, such as the atmosphere and soil, necessary for economic production and

human life. Thirdly, social sustainability focuses on addressing the human impacts of economic systems, including efforts to prevent poverty, hunger, and inequality. Hence, these three dimensions form the foundation of sustainability. It serves as a guide to meeting the needs of the present without compromising the ability of future generations to meet their own needs.

2.2 The concepts of natural foods

Braun (2022) described natural foods as wholesome foods that undergo minimal processing. According to the U.S. Food and Drug Administration (2022), natural foods are products that do not contain artificial flavours, colours, or preservatives. The Food Standards Agency (FSA) defines natural foods as those composed of natural ingredients, produced by nature, and untouched by human intervention.

Jorge *et al.* (2020) identified that various researchers have examined the concepts of natural foods to determine their characteristics. Parks and Ross (2014) and Steptoe, Pollard, and Wardle (1995) indicate that natural foods lack additives and harmful ingredients while containing natural ingredients. Natural foods are either unprocessed (Roininen *et al.*, 1999) or made with organically grown products (Backstrom *et al.*, 2004). There are several characteristics enumerated by Roman, Sanchez-Siles and Siegrist (2017) concerning the production of natural foods, including the absence of potentially harmful substances such as artificial ingredients, preservatives, additives, artificial colours and flavours, residues from pesticides, hormones, pesticides, and genetically modified organisms (GMO).

Galler (2022) has listed the category of foods considered natural, including fresh fruits, vegetables, fresh meat and fish, nuts and seeds, beans, legumes, lentils, quinoa, and whole grain products. Natural foods contain no added compounds, substances, or chemicals. According to Fatmawati (2020), all foods that come from natural substances are halal to be consumed except those that are hazardous such as poisonous, unclean, or intoxicating plants. She asserts that natural foods are considered halal unless there is a verse from the Qur'an or hadith prohibiting it. Supporting this notion, Imam Al-Ghazali stated that halal is generally everything good, and what is on earth is lawful (halal) and must (*mubah*), except for a few prohibited items mentioned in Islamic texts, in cases where there is no explicit prohibition (haram) stated in a religious context, then it returns to the original law, which is a must (*mubah*).

Furthermore, it is not prohibited (haram) to consume natural resources like plants, herbs, or shrubs. However, the ruling changes to unlawful when there is a presence of causing damage to a person's well-being, negatively impacting their intellect, health, or life. For instance, the use of drugs such as marijuana, alcohol (*khamr*), and other intoxicating substances can affect one's intellect. In terms of preserving life, consuming harmful plants can pose a threat. Additionally, one's health can be compromised by consuming medicine in a manner that deviates from the prescribed timing and conditions. The same applies to plants that are contaminated with impurities (*najis*).

2.3 The concept of halal and toyyib

Al-Qardawi (2001) defined halal as permitted, with no restriction imposed, and allowed by the lawgiver, *Allah Subhanahu Wa Ta'ala*. Halal encompasses anything legal, licit, legitimate, permissible, allowable, permitted, admissible, and

non-prohibited. (Ambali & Bakr, 2013). Halal refers to anything permissible for human consumption and unquestionably beneficial to them. Toyyib means excellent and wholesome. Therefore, the term *halalan toyyiban* signifies that it is both permitted and wholesome. According to Hasan and Othman (2018), the concepts of halal and toyyib encompass both the physical and spiritual aspects of food for human consumption. It donates permissible food (Halal) and is beneficial for the body and mind. For requirements: firstly, it must be halal in terms of its origin and production, and secondly, it must be of high quality and beneficial to humanity. If these conditions are not met, the food cannot be considered halal, and Muslims are advised to abstain from it.

Furthermore, before consuming food, it is essential to ensure that it is halal, of high quality, hygienic, and safe. These requirements apply throughout the entire supply chain, from procurement and management to preparation, production, storage, and distribution. Additionally, the concept of toyyib, which goes beyond halal, emphasizes the importance of food being good, delicious, tasty, pure, healthy, and non-detrimental to the body. Toyyib ensures that food is not only permissible but also beneficial for overall well-being. Imam Al-Ghazali believed that what is beneficial to the physical body is also beneficial to the mind and spirit, underscoring the importance of consuming nourishing and wholesome food.

Moreover, in the study by Hasan and Othman (2018), it extends to refer to the findings of Sazelin and Ridzwan, (2011), who assert that the entire supply chain, from the farm to the table, must be taken into consideration when evaluating *halalan toyyiban* food. Additionally, findings from Omar *et al.* (2013), have highlighted the importance of ensuring that food remains uncontaminated throughout the entire production process to safeguard human health. The concept of halal toyyib relates to the proper procurement of consumables by *Shari'ah* law. Hence, the writings by Hasan and Othman (2018) summarise four characteristics of foods considered *halalan toyyiban*: quality, health, cleanliness, and environmental friendliness.

According to Alzeer *et al.* (2017), the concept of halal encompasses all aspects of human actions and deeds, including eating, wearing, seeing, and talking. The researchers further emphasize that when discussing halal food, it is essential to associate it with another concept, which is toyyib explicitly. Therefore, to classify food as halal, it must also meet the criteria of being toyyib. Arif and Ahmad (2011) define toyyib as something good, pure, clean, wholesome, and of superior quality. Kamali (2021) explains that the term toyyib adds a dimension of quality and natural appeal to products. Hence, when it comes to natural foods, it is not enough for them to be halal; they must also be toyyib. Additionally, Alzeer *et al.* (2018) state that toyyib implies a process that upholds maximum hygiene (cleanliness), minimal contamination (purity), and the absence of potentially toxic, unclean (*najis*), and impure (habit) ingredients. Therefore, all halal food products should adhere to the concepts of toyyibat as they are interconnected. While a food item may be halal, it does not automatically make it toyyib.

2.4 The concept of Maqasid Shari'ah

Maqasid Shari'ah encompasses all aspects of life, including socio-economic and human development. Its purpose is to promote goodness, benefit human beings, and protect them from evil. In defining *Maqasid Syari'ah*, *Maqasid* is the plural form of *maqad* and *maqsid*, derived from the word *qasada*,

which means heading towards a direction (in Arabic). *Shari'ah* refers to the comprehensive guidance provided by *Allah Subhanahu Wa Ta'ala*, encompassing faith, rulings, religious practices, and the opinions of Islamic jurisprudence.

Some scholars have presented various definitions. Allamah Muhammad Thahir ibn 'Asyur defined *Maqasid Shari'ah* as "meanings and wisdom focused by Sara comprehensively or in most situations of the revelation of the commandments without the specify in specific Shariah rulings. (*Maqasid Syari'ah al-Islamiyyah*, p.55 in Tarmizi, 2019). According to Dr. Ahmad ar-Raysonuni, *Maqasid Shari'ah* is the purpose set by *Shari'ah* for the welfare of the people (*Nazhariyyatul Maqasid 'indah* Imam as-Syathibi, pg.7 in Tarmizi, 2019).

According to Imam Al-Ghazali, the objectives of *Maqasid Shari'ah* are aimed at promoting the well-being of all humanity, which includes safeguarding their faith (*al-din*), self (*nafs*), intellect (*al-aql*), posterity (*al-nasal*), and wealth (*al-mal*). Those who ensure the preservation of these five objectives serve the public interest and act in a desirable manner. The *Maqasid Shari'ah* encompass the fundamental aims and objectives of Islamic law, typically categorized into five key areas:

- a) Sustaining the Faith (*al-Din*);
- b) Sustaining the Intellect (*al-aql*);
- c) Sustaining the Wealth (*al-mal*);
- d) Sustaining the Health (*al-nafs*); and
- e) Sustaining the Offspring (*al-nasl*).

2.5 The relationship between natural foods, halal and toyyib and *Maqasid Shari'ah*

In Islam, halal and toyyib are two crucial aspects when it comes to choosing foods. Halal pertains to foods that are permissible according to Islamic law, while toyyib emphasizes the quality and wholesomeness of the food. Toyyib must be aligned with the concept of halal. Failing to meet the requirements of both halal and toyyib can result in severe repercussions, including harm to humanity, degradation of societal values and moral integrity, and other unforeseen adverse outcomes. To achieve a halal toyyiban lifestyle regarding food and drink consumption, it is necessary to consume natural foods that are both halal and toyyib.



Figure 1. The relationship of natural foods and halalan toyyiban lifestyle.

Natural foods are an example of a cuisine category that adheres to the halal principle (Dalal & Ahmad, 2019; Mohamad Khairuldin (2018) found the criteria of natural foods that satisfy the four requirements established by the halalan toyyiban, which are they are beneficial to people, produced from allowed sources, free of ingredients that are forbidden by Islamic law, and does not harm the body or mind. Hence, by choosing natural foods, it indicates the person is practicing and implementing a halal lifestyle. Furthermore, Elgharbowy and Azmi (2022), emphasise that food serves a purpose beyond merely satisfying cravings. The consumption of natural foods not only adheres to the principles of halal, but also aligns with

and preserves the five objectives of *Maqasid Shari'ah*, which encompass the preservation of faith, self, intellect, lineage, and wealth. Hence, safeguarding these five objectives of *Maqasid Shari'ah* also becomes a form of worship to *Allah Subhanahu Wa Ta'ala*.



Figure 2. The link between natural foods, halalan toyyiban, and *Maqasid Shari'ah*.

According to *Maqasid Shari'ah*, the consumption of natural foods contributes to the attainment of a sustainable lifestyle. *Maqasid Shari'ah* plays a crucial role in establishing fundamental principles and values related to human welfare. These principles aim to meet people's basic requirements while safeguarding the sanctity of life, which includes protecting individuals from harm and evil. Therefore, the concepts of *Maqasid Shari'ah*, halal, and toyyiban lifestyles and natural foods are interconnected and collectively fulfil the prerequisites for achieving a sustainable lifestyle.

The Food and Agriculture Organization of the United Nations (2019) defined sustainable healthy diets as dietary patterns that promote all dimensions of individual health and well-being, have low environmental pressure and impacts and are accessible, affordable, safe, equitable, and culturally acceptable. In Othman *et al.*, (2018), the term sustainable halal lifestyle indicates that halal and toyyib are inherent components of a diet that adheres to *Maqasid Shari'ah* principles (pp. 75-86). *Maqasid Shari'ah* ensures the enhancement of human well-being and the prevention of harm. Therefore, consuming foods in their natural state is essential for building a sustainable halal lifestyle that aligns with the *Maqasid Shari'ah* principle. By making natural foods the foundation of their diet, individuals can embrace healthy eating practices, ethical consumption, environmental preservation, and mindful eating. In doing so, they can align their dietary choices with Islamic law principles and contribute to a more sustainable and peaceful way of life.

3. Materials and methods

This study employs a qualitative method to explore the topic. Given the exploratory nature of the research, a library research approach was adopted, relying on secondary data collection. Thematic content analysis, a qualitative analysis technique, including books, journals, online articles, conference papers, and government documents (e.g., newspapers and official reports) spanning the years 2013 to 2023, was selected for the study. The data selection process focused on sources from countries beyond Brunei Darussalam to provide a broader perspective on the topic. Online journal articles were accessed from accessible databases like ResearchGate and Google Scholar. Additionally, government documents from Brunei Darussalam covering the years 2020 to 2022 were utilized to provide a local context for the study.

The materials were collected and presented using a descriptive method, in which they were thoroughly examined and studied. The selection of materials was based on relevant keywords related to the study, such as sustainability, natural foods, halal and toyyib food, a halal lifestyle, and the contributions of natural foods to *Maqasid Shari'ah*.

Thematic analysis was employed to identify these potential themes, aligning with the primary objective of examining the contributions of natural foods to achieving a sustainable halalan toyyiban lifestyle by linking it with the five objectives of *Maqasid Shari'ah*. The collected materials were presented descriptively, allowing for a comprehensive study. Thematic analysis is a qualitative research method utilised to identify patterns or themes within the data, which in this case refers to the text of research papers. Through text analysis, researchers can identify themes related to the contributions of natural foods to the sustainability of the halalan toyyiban lifestyle based on *Maqasid Shari'ah* in Brunei Darussalam. These themes serve as a basis for drawing conclusions and making recommendations based on the research findings.

In conducting the thematic analysis, the researcher used Braun & Clarke's (2006) 6 framework, which is widely acknowledged as the most influential approach, especially in social sciences, as it offers a clear and usable framework for doing thematic analysis. Hence, the thematic analysis process is shown in Table 1.

Table 1. 6-step Framework in thematic analysis

Step 1	Familiar with the data
Step 2	Generate initial Codes
Step 3	Search for themes
Step 4	Review themes
Step 5	Define themes
Step 6	Write-up

The first step involves thoroughly reading and re-reading the transcripts or data articles spanning from 2013 to 2023. Once researchers are familiar with the data, the second step is to create initial codes, which may include sub-codes and focused codes. This process aims to organize the data systematically and meaningfully by condensing large amounts of information into smaller, meaningful units. To ensure the validity of the analysis and minimize any bias, supervisors review the generated codes and themes. Subsequently, themes are developed, representing patterns that capture significant or exciting aspects of the data or research questions. This study identified four themes: Sustainability, halal and tayyib Foods, Challenges and Issues of Natural Foods, and The Contributions of Natural Foods to *Maqasid Shari'ah*. Following the formation of themes, the researcher reviews and refines them, engaging in a process of modification, development, and definition with a brief analysis.

4. Results and discussion

Four key themes were identified while exploring the content related to the studies. The final themes were (1) content related to sustainability, (2) content related to halal and toyyib foods, (3) content related to natural foods, and (4) Content related to the contributions of natural foods to *Maqasid Shari'ah*. These themes respond to our main research objectives: to examine the significance of natural foods in achieving a sustainable halalan toyyiban lifestyle and align it with the objectives of *Maqasid Shari'ah*. The focused codes (FC) and sub-codes (SC) of thematic analysis can be used to expand the knowledge about the content reported in the articles from (2013-2023). The focused codes and sub-codes under each theme are presented in Table 2 – Table 5.

4.1 Theme 1: content related to sustainability

There are four focused codes discussed in the first theme 'sustainability': (1) Sustainable practices benefit the environment, (2) Sustainable economic adaptation, (3) Sustainable social impacts, and (4) Negative impacts.

FC 1: Sustainable practices benefit the environment

Recent research proposes how circular economy principles can tackle climate change. Yang *et al.* (2022) propose cost-effective pathways across waste management, energy, and mitigation efforts, aiming for a 45% carbon reduction by 2030 and net zero by 2050. Building on this, Ghosh *et al.* (2020) emphasise greener practices throughout entire supply chains, not just within individual companies. Their work highlights the crucial link between sustainable practices and reduced emissions. Both studies converge on the key goals: reducing resource consumption, minimizing waste, and achieving a cleaner environment (Environment, 2021). By implementing their strategies, we can pave the way for a more sustainable future for all.

FC 2: Sustainable economic adaptation

Sustainability's "triple bottom line" - social well-being, economic growth, and ecological health - demands careful navigation, especially in climate change. (Prurvis *et al.*, 2019). Adapting to new realities requires infrastructure and behaviour shifts, often involving costly technologies and resilient systems (US EPA *et al.*, 2016). Minimizing these costs and their community impacts is crucial (Hub, 2020).

However, tackling climate change also opens doors to green-tech and sustainable practices, presenting economic opportunities. Balancing these economic realities with social and environmental well-being demands collaboration and strategic planning to ensure everyone thrives in a sustainable future.

FC 3: Sustainable social impact

While environmental and economic factors are crucial, true sustainability extends beyond them. Businesses committed to this ideal recognize the importance of social impact, actively contributing to the goals of the Social Sustainability and Inclusion Global Practice (SSI). This translates to fostering inclusive societies where everyone feels valued and empowered, alongside building resilient communities prepared to face future challenges. In essence, they understand that a sustainable future requires a holistic approach, addressing the well-being of both people and the planet (World Bank Group, 2020).

FC 4: Negative impact

The ecosystem is imbalanced due to overexploitation of fisheries, livestock, water, and energy, climate changes, and the ability to produce foods in line with competition over land. The increasing demand for halal products and services may increase resource production and consumption (Nordin *et al.*, 2022).

Table 2 : The focused codes and sub-codes under the theme sustainable

Extracts of Data	Sub-Codes Identified	Focused Codes	Themes
<p>1) Circular economy strategies for combating climate change and addressing environmental issues (Yang <i>et al.</i>, 2022)</p> <p>2) Sustainable practices strive to mitigate resource consumption, minimize waste production and alleviate pollution, thereby fostering a cleaner and healthier environment (Environment, 2021)</p> <p>3) The management of carbon footprint within sustainable supply chains where it underscores the importance of adopting greener practices both internally and across supply chains to reduce emissions (Ghosh <i>et al.</i>, 2020)</p>	<ul style="list-style-type: none"> • Sustainable practices • Resource consumption mitigation • Waste production minimization • Pollution alleviation • Greener practices adoption • Carbon footprint management • Sustainable supply chains 	(1) Sustainable Practices benefit the environment	
<p>1) The concept of sustainability is often symbolized by three intersecting circles, known as the three pillars: social, economic, and environmental sustainability, which aims to balance economic growth with social well-being and ecological health (Prurvis <i>et al.</i>, 2019)</p> <p>2) The economic aspects of climate change adaptation and mitigation involve adjusting our behaviour and adapting infrastructure to cope with changing weather patterns and the timing of climate change impacts on the economy and their differential effect on various groups (US EPA, OAR, OAP, CPPD, 2016)</p> <p>3) Cost-effective adaptation that balances economic considerations with environmental and social impact (Hub, 2020)</p>	<ul style="list-style-type: none"> • Economic aspects of climate change adaptation and mitigation • Behavior adjustment and infrastructure adaptation • Differential effects on various groups • Cost-effective adaptation • Balancing economic, environmental and social considerations 	(2) Sustainable economic adaptation	Sustainability Related Content
<p>1) Beyond economic and environmental concerns, sustainable businesses actively contribute to positive social outcomes, aligning with the SSI's mission of creating inclusive societies, empowering citizens, and building resilient communities (World Bank Group, 2020)</p>	<ul style="list-style-type: none"> • Positive social outcomes • Inclusive Societies • Empowering citizens • Resilient communities 	(3) Sustainable Social Impacts	
<p>1) The ecosystem is imbalanced due to overexploitation of fisheries, livestock, water, and energy, climate changes, and the ability to produce foods in line with competition over land (Nordin <i>et al.</i>, 2022)</p>	<ul style="list-style-type: none"> • Overexploitation 	(4) Negative Impact	

Table 3: The focused codes and sub-codes are under the themes of halal and tayyib foods

Extracts of Data	Sub-Codes Identified	Focused Codes	Themes
1) Halal products are produced from farms, forests, factories, and various environmental or ecological sources. (p.121, p. 2, line 3-4) (Nordin <i>et al.</i> , 2022)	<ul style="list-style-type: none"> Natural resources extracted from environmental or ecological sources 	(1) Natural Resources	
2) Halal products and services are accepted in the world market due to their practice of the universal concept that includes the process of storage, packaging, transportation, and delivery, which contribute to the benefit of its end products, which are good quality, fresh, clean, and healthy (p. 121, p.1 7-8) (Nordin <i>et al.</i> , 2022)	<ul style="list-style-type: none"> Accepted universally Good quality, fresh, clean, and healthy 	(2) Good quality of Food Products	Halal and Toyyib Foods Products Related Content
<p>1) Impurities must not contaminate the materials needed to produce Halal products. Raw materials must be safe from biological, chemical, physical, and haram contaminations. The production process must have clean tools and places to avoid uncleanness. The use of additional materials used in production shall also follow the provisions permitted by it (Nafis, 2019)</p> <p>2) Hygiene, sanitation, and safety are essential prerequisites, and good manufacturing (GMP) or good hygiene (GHP) is a compulsory requirement when preparing halal foods. Mufizur <i>et al.</i> (2017) in Idha <i>et al.</i> (2018)</p>	<ul style="list-style-type: none"> Materials are not contaminated with impurities Raw Materials are safe from biochemical, chemical, physical, and haram contamination The production process must have clean tools and places to avoid uncleanness Hygiene, sanitation and safety 	(3) Food Safety	

Table 4: The focused codes and sub-codes under the theme natural foods

Extracts of Data	Sub-Codes Identified	Focused Codes	Themes
1) In some regions, fresh natural or organic foods are sometimes unavailable. Fruits and vegetables are metabolically active, perishable fresh commodities with a shorter shelf life (Sandarani, et. al, 2018) 2) Processed foods are becoming more available and affordable in Brunei Darussalam (Ministry of Health, 2021)	<ul style="list-style-type: none"> • Foods not readily available in some regions • Processed foods 	(1) Lack of Accessibility and Availability of Natural Foods in the Market	
1) Certified natural or organic foods are generally more expensive than conventional foods. This is due to the cost of production, greater labour, and post-harvest handling of relatively small quantities of foods, which resulted in higher costs in processing and transportation. The marketing and distribution chain is inefficient, and costs are higher because of small volumes 2) While the extent of non-certified natural and organic foods is difficult to quantify as they exist outside certifications and formal market systems, they are usually consumed by households or sold locally at the same price as their conventional counterparts (FAO, n.d)	<ul style="list-style-type: none"> • Expensive • Higher production costs 	(2) Affordability Cost of Production	Natural Foods Related Content
1) Concerns about pesticide use, contamination, and proper storage of natural foods require vigilance and education to ensure safety and minimise health risks (Garnett, 2013)	<ul style="list-style-type: none"> • Concerns and educations 	(3) Lack of Awareness and Technique Preparation on Natural Foods	
1) Combining halal and toyyib elements can fulfil physical and spiritual health (Salmon <i>et al.</i> , 2021 in Fadzlillah, <i>et al.</i> 2022) 2) Sufficient to fulfil the nutrients needed in the human body (Fadzlillah <i>et al.</i> , 2022)	<ul style="list-style-type: none"> • Nourishment for body and soul 	(4) Positive Impacts to Health	

<ol style="list-style-type: none"> 1) Natural foods are frequently derived from sustainable and environmentally favourable sources. Organic and locally produced foods decrease the carbon footprint caused by transportation and promote equitable trade practices. Supporting ethical agricultural practices is consistent with the Maqasid Syari'ah goal of promoting justice and equity (The Importance of Ethical Consumption, 2022) 2) Organic farming is commonly used to cultivate natural foods in an environmentally conscious manner. (aid in maintaining soil fertility, reducing water pollution, and minimising the use of hazardous pesticides and synthetic fertilisers) (Sustainable Agriculture Practices & Their Management, 2022) 3) Sustainable agricultural practices are commonly employed in producing natural foods, demonstrating a commitment to environmental stewardship. Natural foods support a green lifestyle (Noor, 2020) 	<ul style="list-style-type: none"> • Organic Farming • Sustainable Agricultural Practices • Sustainable to Environment 	<p>(5) Impacts on Environment</p>
<ol style="list-style-type: none"> 1) Natural or organic foods do not contain any artificial additives, tastes, or colours, nor do they use any preservatives 2) Consuming minimally processed foods reduces exposure to potentially hazardous chemicals (Processed Food and Health, 2023) 	<ul style="list-style-type: none"> • No dangerous ingredients, artificial additives, tastes, colours, or preservatives in natural foods • Reduce exposure to hazardous chemicals 	<p>(6) Food Safety</p>

Table 5: The focused codes and sub-codes under the themes contributions of natural foods to *Maqasid Shari'ah*

Extracts of Data	Sub-Codes Identified	Focused Codes	Themes
<p>(1) <i>Allah Subhanahu Wa' Ta'ala</i> commanded Muslims to eat food that fulfils the qualities of <i>Toyyib</i>; pure, clean, wholesome, nourishing, and pleasing to the taste (Nurdeng, 2006)</p> <p>(2) The consumption of food is connected to worshipping <i>Allah Subhanahu Wa' Ta'ala</i>. Natural foods embody the principles of halal and <i>toyyib</i> while abstaining from haram and <i>syubhah</i>. Natural foods are closely linked to halalan <i>toyyiban</i> lifestyles, leading to <i>taqwa</i> towards <i>Allah Subhanahu Wa' Ta'ala</i> (Elgharbawy & Azmi, 2022)</p>	<ul style="list-style-type: none"> • Worshipping <i>Allah Subhanahu Wa' Ta'ala</i> • Responsibilities as a Muslim, adherence to <i>Allah Subhanahu Wa' Ta'ala</i> • Principles of halal, <i>toyyib</i>, haram and <i>Syubhah</i> • <i>Taqwa</i> towards <i>Allah Subhanahu Wa' Ta'ala</i> 	(1) Natural Foods Sustain the faith	
<p>(1) Natural foods contain good nutrition; these nutrients contribute to souls minds and intellect by providing essential nutrients. They play a crucial role in cognitive development during young children's physical development. Donna Ricketts (2018), The American Psychological Association discussed established that adopting healthy eating habits at an early age can lead to good behavior as individuals progress into adulthood</p> <p>(2) A healthy diet promotes a healthy gut, which later transfers to the brain through what is known as the gut-brain axis. Microbes in the gut produce neurotransmitters like serotonin and dopamine, which regulate moods and emotions (Connor, 2021)</p>	<ul style="list-style-type: none"> • Good nutrients to minds and intellects • good cognitive development in young children development 	(2) Natural Foods Sustain the Intellect	Contributions of Natural Foods to <i>Maqasid Shari'ah</i>
<p>(1) Natural foods maintain individual and nation's wealth; they generate income and productivity, it can be grown, produced, and used as a means in business, and profit-gaining practices, and consumed individually and collectively. less expensive and easily accessed</p> <p>(2) Department of Agriculture and Agrifood: Ministry of Primary Resources and Tourism (2020) report, Brunei Darussalam's food industry is advancing significantly within its economy, particularly in food production for both local consumption and international trade, the growth and production of natural foods contribute to job creation, especially within the agriculture and related sectors</p>	<ul style="list-style-type: none"> • Generate incomes, business, profit-gaining practices • less expensive and easily accessed, • Job opportunities in agricultural practices • production and cultivation of natural foods 	(3) Natural Foods Sustain the Wealth	

- (3) Food contains vital elements; such as proteins, carbohydrates, fats, minerals, and vitamins. It offers energy for living and developing, but most importantly, it preserves the health of each individual; it contributes to the mental, and physical well-being of the body, emotional state, and soul (Lim, 2018)
- (4) High levels of fiber, vitamins, minerals, and antioxidants which are essential to the health and body
- (5) Natural foods are sustainable for health and are used remedies in treating various ailments, diseases, and sicknesses. It reduces the risk of chronic diseases, specifically non-communicable diseases such as hypertension, obesity, cholesterol, and diabetes (jigischoice, 2023)

- Preserve health
- contains proteins, carbohydrates, fats, minerals, and vitamins, antioxidants
- Functions as remedies in treating various ailments, diseases, sickness, and non-communicable diseases

- (4) Natural foods
Sustain the health

- (6) No presence of chemicals involved in natural foods, as it is grown naturally. Natural foods emit no pollutants and contribute to the protection and conservation of biodiversity, ecosystem, and ecological cycle, and habitat diversity for future development and generations (Ricketts, 2013; Johnson & Holland, 2019)
- (7) The contribution of natural foods contributes to an essential role in the growth and well-being of future generations (Koletzko, 2015).
- (8) Sustainable Development Goals Brunei Darussalam Development Goals Annual Report in 2021, the Prime Minister's Office in Brunei Darussalam has addressed the importance of investing in our children's health to prevent chronic diseases and risk factors in the future. It focuses on encouraging and emphasizing that children to eat natural foods to boost their immune systems, mental, and physical development, and future health

- No chemicals, grown naturally
- No pollutants
- protection and conservation of biodiversity, ecosystem, ecological cycle, and habitat
- growth and well-being of future generations
- Investing in children's health to prevent chronic diseases and reduce risk factors in the future, boost their immune systems, mental, and development

- (5) Natural Foods
sustain the
offspring

Analysis of the content related to sustainability

Sustainability requires more than just profit and environmentalism. Businesses must actively build inclusive societies and empowered communities. While circular economies and green supply chains offer valuable tools, we need a deeper focus on the social dimension. Balancing climate action with affordability is complex, but innovative solutions prioritising efficiency and equity are critical. Proactive measures like sustainable sourcing and awareness campaigns can address potential downsides like increased resource consumption.

To build a future where environmental health and social well-being thrive together, businesses must weave social impact initiatives into their core strategies, champion circular economies and green supply chains, develop cost-effective climate solutions that prioritise both affordability and social good and mitigate potential negative impacts through ongoing research and implementation of effective strategies. By shifting from analysis to action and embracing these crucial steps, we can forge a path toward a truly sustainable future for all.

4.2 Theme 2: Content related to halal and toyyib food products

Three focused codes were discussed in this theme. (1) Natural resources, (2) Good quality of food products, and (3) Food Safety.

FC 1: Natural resources

Halal products are derived from various natural resources, such as farms, forests, factories, and various environmental or ecological sources (Nordin *et al.*, 2022). Extracting from natural resources that are environmentally friendly, natural, and organic not only aligns with the Islamic principles of halal and toyyib but is also sustainable within the *Maqasid Shari'ah*. Storage, packaging, and transportation processes have shown that they are suitable and efficient in supply chain management. Reasonable procedures and standards can help reduce waste, energy consumption, and environmental impacts for the long-term sustainability of the halalan toyyiban lifestyle.

FC 2: Good quality of food products

One significant thing about food products is their quality. halal products and services are accepted in the world market due to their practice on the universal concept that includes the process of storage, packaging, transportation, and delivery that contribute to the benefit of its end products being of good quality, fresh, clean, and healthy (Nordin *et al.*, 2022). A manufacturer that produces food products should deliver high-quality, nutritious, and wholesome products to consumers worldwide. The commitment to practising this has promoted a healthy eating habit, safety, and a sustainable food system.

FC 3: Food safety

In food production and processing, several procedures and guidelines have been set. Some food safety applications include ensuring that impurities do not contaminate the materials needed to produce halal products. Raw materials must be safe from biological, chemical, physical, and haram contaminations. The production process must utilise clean tools and places while avoiding any form of uncleanness. Additional materials used in production must comply with permitted provisions (Nafis, 2019). Adherence to specific hygiene standards is also essential in halal food preparation, necessitating thorough cleaning and sanitation procedures. Strict sanitation practices in the production facility are necessary to ensure food products' safety, cleanliness, and hygiene during production and processing. Therefore, hygiene, sanitation, and safety are essential prerequisites and compliance with Good Manufacturing Practices (GMP) or Good Hygiene Practices (GHP) is a compulsory requirement in preparing Halal foods (Idha *et al.* (2018).

Analysis of the content related to halal and toyyib food products

Halal and toyyib foods resonate with sustainability for several reasons. Firstly, their production often adheres to ethical practices, respecting the environment and workers' rights. This alignment with responsible sourcing and social justice makes them a natural choice for environmentally conscious consumers. Secondly, halal and toyyib emphasise cleanliness, quality, and nutrition, fostering physical and spiritual well-being. They avoid harmful substances like alcohol and additives, contributing to healthier lifestyles.

Furthermore, halal and toyyib products prioritise natural and organic resources, minimising environmental impact. Sustainable practices extend to storage, packaging, and transportation, reducing waste and energy consumption. Ultimately, embracing halal and toyyib principles empowers individuals to make food choices that benefit their well-being and the planet.

4.3 Theme 3: Content Related to natural foods

The principal focused codes related to the content of natural foods that were clustered in the process are (1) Lack of accessibility and availability of natural foods in the market, (2) Affordability (cost of production), (3) Lack of awareness on nutritional properties of natural foods and preparation techniques, (4) It impacts on the environment, (5) positive impacts to health, and (6) Food Safety.

FC 1: Lack of accessibility and availability of natural foods in the market

One of the common issues in natural foods is their accessibility and unavailability. Fresh natural or organic foods are sometimes not readily available, making it difficult to include them in one's diet, which could be a barrier to adopting a sustainable healthy lifestyle (USDA,

2020). Some of the reasons are geographical barriers, distance to grocery stores, and lack of transportation, which can inhibit access to healthy food options. Lack of storefronts, distribution, demand, and location. These factors prevent consumers from accessing natural foods in the market (Disease *et al.*, n.d.).

The shelf-life of a food product is the time between production and packaging when it reaches unacceptable under environmental conditions. In shelf life, quality must be focused on a few aspects: product design (hazard and risk assessment), manufacturing process, transportation, storage and retail display, and storage at home (Awulachew, 2022). Natural foods such as fruits and vegetables are perishable products that contain living issues; hence, the quality of retention and prevention of post-harvest has the potential to be lost during handling, storage, and retailing. (Ashrey, 2008). According to Sandhya (2010), production of fruits is lost due to spoilage at various post-harvest handling stages. Fruits and vegetables are metabolically active, perishable fresh commodities with a shorter shelf life (Sandarani *et al.*, 2018).

Other factors are the presence and demand for processed foods. In Brunei Darussalam, highly processed foods are becoming more available and affordable, leading to an increase in the consumption of energy-dense foods high in saturated fats, trans fats, sugars, and salt (Ministry of Health, 2021).

Nowadays, through rapid evolution, food processing has also contributed to the increasing variety of foods that are subject to various types of food processing and have different impacts on human health. It is to be noted that processed foods are easier to handle and have longer shelf life (Mole, 2018). Besides the role played by businesses, consumers have also been increasingly interested in purchasing and consuming processed foods because processed foods are practical, arguably delicious, attractive, accessible, and affordable (Monteiro *et al.*, 2010). As they are highly available, easily accessible, and with variations, processed foods in diets of all age groups are difficult to avoid (Albuquerque *et al.*, 2022). There are ways to overcome this challenge, such as supporting local farmers and producers, growing one's food, and exploring alternative sources of natural foods. Working together as a community can promote access to healthy and nutritious foods for all. (Roser *et al.*, 2013).

FC 2: Affordability – cost of production

One significant challenge associated with the role of natural foods is the expense associated with organic or naturally sourced options. These foods can be more costly than conventionally produced alternatives, posing affordability challenges for certain communities (Francis, 2013).

FC 3: Lack of awareness on nutritional properties of natural foods and preparation techniques

Challenges in adopting natural foods in one's diet are multifaceted. Limited awareness of the nutritional properties and preparation techniques of natural foods can hinder their optimal utilization. Misconceptions about the intellectual benefits of specific natural foods may lead to unbalanced diets and require careful dietary planning or supplementation (Lairon, 2010).

Moreover, misinformation about the religious significance of particular natural foods can create confusion and discourage their adoption, posing a barrier to achieving a healthy and balanced diet that aligns with one's religious beliefs. Unfounded claims and conflicting information can also lead to poor decision-making and judgment, impacting cognitive health and brain development (Gardener & Rainey-Smith, 2018). To overcome these challenges, it is crucial to debunk myths and misinformation and promote accurate, evidence-based information (Muhammad *et al.*, 2020; Pinilla, 2008). By providing reliable sources of information and encouraging critical evaluation of claims, individuals can make informed choices and avoid potential harm.

Additionally, while natural foods are generally considered healthy, some may lack certain nutrients essential for optimal health, necessitating careful dietary planning or supplementation (Lairon, 2010). Concerns about pesticide use, contamination, and proper storage of natural foods also require vigilance and education to ensure safety and minimize health risks (Garnett, 2013). Ensuring nutrient intake with natural foods for children can require extra planning and supplements, especially for picky eaters or those with specific dietary needs. Integrating these foods into existing family meals while navigating cultural preferences can be a challenge, demanding sensitivity and a gradual introduction to build acceptance among younger generations. (Reddy & Anitha, 2015).

FN 4: Positive impacts to health

Natural foods, such as fruits, vegetables, whole cereals, and lean proteins, provide the body with the essential nutrients it needs to thrive. Following the Maqasid syari'ah objective of preserving and enhancing life, eating minimally processed, wholesome foods support in the maintenance of good physical health (jigischoice, 2023). Hence, the consumption of natural foods contributes to the health and nourishes the mind and body.

FN 5: Impacts on the environment

Incorporating natural foods into one's diet not only supports personal health but also promotes environmental conservation. Natural foods are frequently derived from sustainable and environmentally favorable sources, such as organic farming and permaculture. Choosing organic and locally produced foods reduces the carbon footprint caused by transportation and promotes equitable trade practices. This preference for organic and eco-friendly food options helps minimize environmental impact and

aligns to preserve the world as outlined in *Maqasid Shari'ah* (The Importance of Ethical Consumption, 2022; Sustainable Agriculture Practices & Their Management, 2022). Moreover, supporting organic farming and ethical agricultural practices is consistent with the *Maqasid Shari'ah* goal of promoting justice and equity. Sustainable agricultural practices, including agroforestry, crop rotation, and water conservation, contribute to the preservation of ecosystems and biodiversity. These methods aid in maintaining soil fertility, reducing water pollution, and minimizing the use of hazardous pesticides and synthetic fertilizers (Burchi *et al.*, 2011; Kolkowska, 2023).

FN 6: Food safety

Natural foods keep away from potentially dangerous ingredients. Natural foods do not contain any artificial additives, tastes, or colours, nor do they use any preservatives. Consuming minimally processed foods reduces exposure to potentially hazardous chemicals. This is consistent with the objective of the *Maqasid Shari'ah* to protect human well-being and preserve bodily integrity (Processed Food and Health, 2023).

Analysis of the content related to natural foods:

Several themes are intricately linked when it comes to processed foods: their prevalence and affordability, dietary patterns and health, food awareness and preparation, environmental impact, and food safety and integrity. Affordable processed foods often lead to unhealthy diets, negatively impacting health and straining healthcare systems. This fuels the need for accessible natural foods. However, these are often perceived as expensive due to production costs and factors like environmental protection. Addressing affordability requires raising awareness about the health benefits of natural foods and supporting sustainable farming practices that align with *Maqasid Shari'ah* principles of justice, equity, and environmental stewardship. Additionally, promoting the safety and integrity of natural foods bolsters their appeal as healthier alternatives. By tackling these interconnected issues holistically, individuals and communities can make informed dietary choices that prioritize health, environmental sustainability, and adherence to Islamic principles. Hence, addressing challenges related to awareness, misinformation, nutritional adequacy, safety, and cultural acceptance is essential for promoting the adoption of healthy and sustainable dietary practices centered around natural foods.

4.4 Theme 4: Content related to the contribution of natural foods to the *Maqasid Al-Shari'ah*

FC. 1: Natural foods in sustaining the faith (*al-din*).

Ibn 'Ashur defines *al-din* as the preservation of one's Islamic faith through refraining from actions that could undermine and disrupt the faith, potentially leading to behaviour contrary to its principles (JAKIM, 2015). Each

practicing Muslim is obligated to ensure their well-being by consuming only what has been made lawful and refraining from what is unlawful. *Allah Subhanahu Wa Ta'ala* has emphasized the need to consume halal and *toyyib* foods. many verses in the al-qur'an have stated the commands of *Allah Subhanahu Wa Ta'ala* about eating. For example, in surah al-Baqarah, verse 168, *Allah Subhanahu Wa Ta'ala* mentioned;

“O mankind, eat from whatever is on earth [that is] lawful and good and do not follow the footsteps of satan, indeed, he is to you a clear enemy.”

Imam al-Ghazali pointed out that *Allah Subhanahu Wa Ta'ala* has commanded Muslims to eat food that fulfils the qualities of *toyyib*; pure, clean, wholesome, nourishing, and pleasing to the taste. (Nurdeng, 2006). Hence, the consumption of halal and *toyyib* foods is crucial in everyday life. In addition, Elgharbawy & Azmi (2022) highlighted food is not just to satisfy one's desire, but it is a way of maintaining one's health and striving to worship *Allah Subhanahu Wa Ta'ala*. The consumption of food is intrinsically connected to worshiping *Allah Subhanahu Wa Ta'ala* as it impacts one's spiritual, mental, and physical well-being. When the concepts of halal and *toyyib* are applied in one's life, it nourishes the soul with positivity and rewards. Natural foods embody the principles of halal and *toyyib* while abstaining from haram and *Syubhah*. Therefore, natural foods are closely linked to halal *toyyib* lifestyles, leading to *taqwa* towards *Allah Subhanahu Wa Ta'ala*.

Preparing and consuming natural foods often require more effort, highlighting the blessings of nourishment. People can express gratitude to *Allah Subhanahu Wa Ta'ala* by being mindful of the source and quality of their food. Mindful eating encourages individuals to slow down, savour each bite, and appreciate the flavours and textures of natural foods. This fosters gratitude and strengthens the connection between faith and food. Natural, unprocessed, and nutritious foods promote moderation and self-control in eating habits. Islam advocates for moderation in all aspects of life, including food. Natural foods and moderation help individuals cultivate self-discipline and adhere to their faith. This approach prevents overindulgence and promotes balanced living (Godman, 2022). In addition, the consumption of natural foods is considered as following the practice of the *Sunnah* of Prophet Muhammad *Shallahu Alaihi Wa Sallam*. Natural foods such as honey, black seeds, and pumpkins, have not only been mentioned in *Hadith* but were also favoured and consumed by Prophet Muhammad *Shallahu Alaihi Wa Sallam* during his lifetime.

The presence of nutrients, vitamins, and minerals found in natural foods contributes to overall health and vitality. Healthy eating enables individuals to fulfill their religious duties and worship. A healthy body makes it easier to engage in prayer, fasting, pilgrimage, and other religious acts. Moreover, natural foods, particularly those rich in nutrients such as omega-3 fatty acids, antioxidants, and B vitamins, can improve mental and cognitive functions. A

clear and focused mind helps individuals focus on worship, contemplation, and faith. Nourishing the mind enhances spirituality (NHS Health Scotland, 2023).

FC.2: Natural foods in sustaining the intellect (*al-aql*)

Imam al-Ghazali (2015) stresses the connection between food and spirituality. He argues that overindulgence in worldly pleasures, including food, can obscure the intellect and impede spiritual growth. Instead, he advocates for moderation and mindful eating, choosing simple, natural foods that nourish the body without burdening the digestive system.

Renowned Islamic scholars Imam Ghazali and Ibn Sina both championed mindful consumption, emphasizing its impact on both physical well-being and spiritual growth. While Ghazali viewed it as a tool for both bodily health and spiritual development, Ibn Sina, a celebrated physician, explored the intricate connection between diet and cognition in his famous "Canon of Medicine." He believed fruits, vegetables, and whole grains enhanced memory, focus, and overall brain health while cautioning against excessive meat and processed foods, which he linked to sluggishness and impaired mental function. Ultimately, Ibn Sina's perspective underscored the crucial role of food choices in cognitive well-being, offering specific dietary recommendations for optimal brain function (Laleh Bakhtiar *et al.*, 1999).

Modern scholars like Yusuf al-Qaradawi (1999) and Hamza Yusuf (2012) echo the Islamic emphasis on mindful eating, connecting diet to spiritual and mental well-being. They encourage Muslims to choose food that nourishes both body and mind, recognising that what we consume shapes not just physical health but also spiritual and intellectual growth. The human mind deserves special protection from harm like intoxication. Natural foods, rich in nutrients, offer optimal brain health and cognitive function, boosting memory, and focus, and even protecting against age-related cognitive decline.

Pinilla (2008) discussed that natural foods significantly contribute to the sustenance of intellect (*al-aql*) by providing the brain and mind with the essential nutrients they need to function optimally. The vitamins, minerals, and antioxidants present in natural foods promote optimal brain health and enhance cognitive abilities. Individuals can improve their cognition, memory, concentration, and mental acuity by consuming a diet rich in fruits, vegetables, whole grains, and lean proteins. These healthy nutrients protect the brain from age-related cognitive decline and reduce the risk of neurodegenerative diseases.

Therefore, a diet primarily composed of natural foods is essential for maintaining and enhancing cognitive function. Natural foods contain good nutrition; thus, these nutrients contribute to sound minds and intellect by providing essential nutrients. Moreover, they play a crucial role in cognitive development during young children's physical development. According to Donna Ricketts (2018), The American Psychological Association

has established that adopting healthy eating habits at an early age can lead to good behaviour as individuals progress into adulthood.

The effect of food on intellect as stated by Donna Ricketts (n.d) from the Healthy Eating Website claimed in a study from the Prevention Institute that good nutrition not only leads to the physical growth of young children but also influences their cognitive development. In addition, children who eat unhealthy food can have difficulty focusing, become easily exhausted, irritable, and more likely to face learning problems, which can lead to behavioural and social difficulties. As a result, the American Psychological Association has established that healthy eating habits styles at an early age will lead to positive behaviour as people develop into adulthood. Director of the Food and Mood Centre at Deakin University in Australia and President of the International Society for Nutritional Psychiatry Research, Dr Jacka mentioned,

“Eating a salad is not going to cure depression. But there's a lot you can do to lift your mood and improve your mental health, and it can be as simple as increasing your intake of plants and healthy food.”

Hence, a healthy diet promotes a healthy gut, which later transfers to the brain through what is known as the gut-brain axis. Microbes in the gut produce neurotransmitters like serotonin and dopamine, which regulate moods and emotions (Connor, 2021).

FC 3: Natural foods in sustaining the wealth (*al-mal*)

Imam Ibn Qayyim al-Jawziyyah (2010) stresses the importance of moderation in food consumption. He advocates for a simple diet based on natural foods to avoid extravagance and promote financial well-being. In other words, Ibn Qayyim al-Jawziyyah is encouraging a balanced and mindful approach to eating that not only benefits one's health but also helps prevent unnecessary extravagance, thereby promoting financial stability. Imam al-Ghazali (2015), emphasises the significance of contentment and avoiding desires that lead to overconsumption. According to Al-Ghazali, choosing a simple lifestyle that includes natural foods plays a role in cultivating financial discipline. Living in such a way not only helps in managing one's finances but also contributes to inner peace, ultimately enhancing overall well-being.

In his book "Building Social Business" (2011), Dr. Muhammad Yunus champions eco-friendly production and mindful consumption as pillars of a just and sustainable society. He urges support for local farmers and consuming local, natural food to empower communities and create economic opportunities. This, he argues, fosters both community well-being and environmental preservation through sustainable and socially responsible business practices, particularly in food consumption.

Tariq Ramadan's "Islam and the Arab Awakening" (2012) stresses the significance of ethical consumption and avoiding exploitation in food production. According to him, making choices such as opting for natural and ethically sourced food aligns with Islamic values of justice. By advocating for these principles, he argues that such choices contribute to a more equitable distribution of wealth.

Natural foods fuel both individual and national prosperity. They generate income and productivity through cultivation, processing, and trade. Not only are they a source of personal sustenance, but they can also form the basis of profitable businesses. For instance, bananas, the world's most exported fruit, support countless rural families in developing countries (Health and Safety of Workers in the Banana Industry, n.d.). Furthermore, natural foods contribute significantly to wealth sustainability (*al-mal*) by providing essential nutrients for health. This leads to a more productive workforce and lowers healthcare costs, ultimately bolstering economic growth. By empowering individuals to earn income and stay healthy, natural foods become a cornerstone of national well-being.

According to the Department of Agriculture and Agrifood: Ministry of Primary Resources and Tourism (2020) report, Brunei Darussalam's food industry is advancing significantly within its economy, particularly in food production for both local consumption and international trade. In 2020, the Agriculture, Forestry, and Fishery sectors collectively saw a notable growth of 27.5%. This increase is primarily attributed to the rise in fishery production, livestock, and poultry, as well as the cultivation of vegetables, fruits, and various other agricultural products.

The Ministry of Primary Resources and Tourism (MPRT) reported that Brunei Darussalam achieved a self-sufficiency rate of 100% in chicken eggs and 99% in whole chicken (broiler meat) in the year 2020. Furthermore, the country attained self-sufficiency rates of 62% in beef and buffalo meat, 20% in mutton, 67% in tropical vegetables, 46% in tropical fruits, and 8% in rice. Concerning the productivity of the agriculture and fishery sectors, statistics as of June 2021 indicate positive growth compared to the same period in the preceding year. The agriculture sector witnessed a notable increase of 38%, rising from \$212 million in 2020 to \$292 million in 2021. Similarly, the fishery sector demonstrated a growth of 42%, advancing from \$60 million in 2020 to \$85 million in 2021.

Moreover, the growth and production of natural foods contribute to job creation, especially within the agriculture and related sectors. The Ministry of Primary Resources and Tourism (MPRT) entered into a partnership with Muara Port Company Sdn Bhd (MPC) to boost fisheries production, to increase output from 100 million in 2019 to 175 million in 2022. This expansion is expected to provide over 200 employment opportunities for the local population. Additionally, the Ministry established a protocol regarding the examination, quarantine, and

sanitary requirements for farmed aquatic products such as fish and prawns, enabling their export from Brunei Darussalam to the People's Republic of China. This arrangement is set to benefit 68 aquaculture companies, including three foreign direct investment (FDI) companies from China. These initiatives invigorate economic operations, empower communities, and enhance overall prosperity.

Moreover, as reported by Burchi, Fanzo, and Frison (2011), natural foods often involve the implementation of sustainable agricultural practices, leading to reduced environmental degradation and ensuring the long-term availability of resources. This is crucial for preserving the wealth and prosperity of future generations. In Brunei Darussalam, as reported in the Sustainable Development Goals Brunei Darussalam Development Goals Annual Report 2021, by prime minister offices, the Agricultural Training Programme (PROPAP) was introduced to provide training in vegetable and fruit cultivation, pest control, post-harvest management, and business matching. Hence, the production, cultivation, and initiative have demonstrated that the production of natural foods is sustainable and beneficial to the nation. Natural food production contributes to long-term agricultural sustainability, empowering individuals through the cultivation of plants that can be grown over extended periods and repeated cycles.

FC 4: Natural foods in sustaining the health (*al-nafs*)

From Imam al-Ghazali's (2015) emphasis on pure, natural foods nourishing both body and soul for spiritual well-being, to Ibn Sina's (1999) advocacy for a balanced diet of natural foods based on Islamic principles of moderation and harm avoidance for optimal health, and Ahmad Hussein's (1989) call for mindful eating of natural foods to promote holistic well-being by nourishing body and mind, Islamic scholars consistently highlight the interconnectedness of food choices and well-being across physical and spiritual dimensions.

Muslims are obligated to preserve their lives and well-being, including through wise food choices. As al-Shatibi (2012) explains, this involves avoiding harm to oneself, aligning with the concept of self-preservation. Food, as Lim (2018) highlights, is essential for physical and mental health, encompassing both body and soul. Therefore, choosing safe, healthy food is crucial for overall well-being. Natural foods, rich in fiber, vitamins, and antioxidants, offer numerous benefits. They support health sustainably, reduce chronic disease risk, and can even act as remedies for various ailments (Jigischoie, 2023). By opting for natural foods, Muslims fulfill their responsibility to their well-being while aligning with principles of sustainability and healthy living.

There is extensive research on natural foods' benefits, effects, and significance. The most often discussed in the literature are honey and black seed. Accordingly, it was narrated that Abu Said al-Khudri said:

“A man came to the Prophet and said, ‘My brother has some abdominal trouble.’ The prophet replied to him ‘let him drink honey.’ The man came for the second time and the Prophet replied to him, ‘let him drink honey’ He came for the third time and the Prophet replied, ‘let him drink honey’ He returned again and said, ‘I have done that. The Prophet then said, ‘Allah has said the truth, but your brother’s abdomen has told a lie. Let him drink honey. So, he made him drink honey and he was cured.’” (al-Jauziyah, 2003, p. 43).

Honey has unique antioxidants and antibacterial properties, and it is a source of carbohydrates. According to Iqbal, Jan, Mufflih & Jaswir (2021), honey can heal wounds, burns, and ulcers, and kill germs in 48 hours. Manisha & and Shyampada (2011) added that honey has a complex property that could be used to cure a variety of human diseases. Secondly, black seed is regarded as one of the most powerful herbs for healing. In a religious context, according to Abu Hurairah Radhiallahu Anhu related to the Prophet Muhammad *Shallallahu ‘Alaihi Wa Sallam* Narrated that He Said:

“Use the Black Seed, because it contains a cure for every type of ailment, except death.” [At-Tirmidhi, Ahmad and Ibn Hibban]. (Al-Jauziyah, 2003, p.86).

Accordingly, black seeds function as an anti-inflammatory as well as analgesic, hepatoprotective, neuroprotective, and gastroprotective properties. (Salah, 2021). In another finding, Musharraf and Arman (2018) stated that black seed could effectively cure 129 ailments, including 17 types of cancer, diabetes, AIDS, and hypertension (non-communicable diseases). In their literature review findings, it was noticed that modern science has begun to acknowledge black seeds as potential natural medications in the world.

Other natural foods such as dates, bananas, and pumpkins have also been studied and proven to contribute to health. For instance, in a report by Farsi & Lee, 2008; Umer *et al.*, n.d) dates are high in energy, moderate in fats and protein, and rich in fructose and glucose carbohydrates. It functions as an antioxidant, anti-ulcer, anti-tumor, anti-cancer, anti-microbial, anti-diabetic, anti-inflammatory, and antifungal properties. Leklem (1999) mentioned Banana is a source of nutrients and rich in pyridoxine vitamin B6 and protects against cancer of the esophagus, (World Cancer Research Fund/American Institute for Cancer Research, 2007; Fahasmane, Parfait, & Aurore, 2014) According to Schaffer & Paris, 2016; Ceclu *et al.*, 2020, pumpkin which is known as gourds, melons, and squash has significantly contributed in medicinal features such as anti-diabetic, anti-hypertension, anti-tumor and anti-bacterial.

Although natural foods are generally considered healthy, some may not contain all the nutrients necessary for optimal health. This may require careful dietary planning

or supplementation (Lairon, 2010) Additionally, concerns about pesticide use, contamination, and proper storage of natural foods require vigilance and education to ensure safety and minimize health risks (Garnett, 2013).

FC 5: Natural foods in sustaining the offspring (*al-nasl*)

Imam Ghazali (2015) emphasizes the obligation of parents to offer their children food that is pure and beneficial. He links this responsibility to the idea that providing such nourishment is crucial for the development of robust bodies and minds in children. The implication is that the quality of the food given to children directly has a direct impact on their physical and mental well-being. Imam Ghazali emphasizes the importance of parental responsibility in ensuring the health and strength of future generations through the provision of wholesome and beneficial nutrition.

Natural foods apply to all humankind regardless of their skin, religion, ancestry, or geographical surroundings. In addition to its role in providing benefits and nutrients to human health, these natural foods contribute to the environment for future generations. There is no presence of chemicals involved in natural foods, as it is grown naturally. Natural foods emit no pollutants and contribute to the protection and conservation of biodiversity, ecosystem, ecological cycle, and habitat diversity for future development and generations (Ricketts, 2013; Johnson & Holland, 2019)

The contribution of natural foods to the sustenance of offspring (*al-nasl*) is of the uttermost importance, as they play an essential role in the growth and well-being of future generations. Natural foods, such as fresh fruits, vegetables, whole cereals, and lean proteins, provide children with the essential nutrients required for optimal growth, cognitive function, and overall health. These unprocessed, nutrient-dense foods contain a variety of vitamins, minerals, and antioxidants essential for the development of healthy organs, bones, and tissues. By incorporating natural foods into the offspring's diet, we foster their physical and mental development, strengthen their immune system, and set the groundwork for a healthy and prosperous future (Koletzko, 2015).

In the Sustainable Development Goals Brunei Darussalam Development Goals Annual Report in 2021, the Prime Minister's Office in Brunei Darussalam has addressed the importance of investing in our children's health to prevent chronic diseases and risk factors in the future. It focuses on encouraging and emphasizing the children to eat natural foods to boost their immune systems, mental, and physical development, and future health. As part of this effort, various preventive measures have been implemented, particularly focusing on enhancing existing school health services and introducing school-based interventions. For instance, in 2020 – 2021, Nutrition and Physical Activity Guidelines for Childcare Centres were introduced as well as the Code on Responsible Marketing of Food and Beverages to Children in Brunei Darussalam was implemented.

Providing children with all the necessary nutrients through natural foods may require additional planning and supplementation, particularly for picky eaters or those with specific dietary requirements. Additionally, integrating natural foods into traditional family meals while navigating cultural preferences can be challenging. It requires sensitivity and gradual introduction to foster acceptance among younger generations (Reddy & Anitha, 2015).

Analysis of the content related to the contribution of natural foods to the *Maqasid Shari'ah*

Natural foods resonate beautifully with *Maqasid Shari'ah*, the Islamic principles, encompassing life's five pillars: faith, intellect, wealth, health, and offspring. More than mere dietary choices, they embody halal and *toyyib* principles, nurturing mindful eating and deepening the spiritual connection with food. Their rich nutrients bolster brain health and cognitive function, fostering sharp minds and intellect. Choosing natural foods promotes responsible spending and empowers communities by supporting local farmers and ethical practices, aligning with *Maqasid Shari'ah*'s emphasis on justice and fair trade, ultimately contributing to a more equitable and environmentally conscious society. Increased production and consumption can create jobs, boost local economies, and encourage sustainable agriculture, preserving resources for future generations.

These nutrient-rich natural foods promote both physical and spiritual well-being, echoing *Maqasid Shari'ah*'s focus on safeguarding health and nurturing future generations. They empower parents to fulfill their responsibility to nourish children for optimal development. Individual needs and challenges call for sensitivity and adaptation, but the benefits of natural foods far outweigh the difficulties. Commendable examples of collective action, like school-based programs, offer promising paths toward a healthier future for all.

Embracing natural foods is a commitment to personal well-being, encompassing body, mind, and spirit. It embodies *Maqasid Shari'ah*'s values of faith, justice, and sustainability, leading to a healthy and sustainable future for ourselves and generations to come. Let's advocate for and consume these choices, collectively embodying our faith's values and securing a healthier future for all.

5. Conclusion

In future studies, it is recommended to employ other qualitative methods, such as conducting interviews and observations, as it helps in gathering comprehensive data on the availability of natural foods in Brunei Darussalam. Despite a significant body of literature on the sustainability and contributions of natural foods, challenges persist in maintaining and ensuring the adherence of natural foods to the principles of *Toyyiban*. The principles of halal and *toyyib* extend far beyond the act of eating—they encapsulate a way of life that encompasses mindful consumption, ethical considerations, and a deep appreciation for the blessings

provided. As Muslims embrace these principles, they harmonize their faith with their actions, striving for a holistic and purposeful existence. As a practicing Muslim, it is the responsibility of each individual to adhere to Islamic principles in food selection. Attention should be given not only to the concepts of halal but also to the *toyyib* aspects of their food choices.

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Muslim-friendly tourism in Australia: Challenges and prospects

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Abstract

In recent years, the Muslim travel market has been recognised as an untapped and promising segment by tourism destinations worldwide, including OIC (Organization of Islamic Cooperation) and non-OIC countries. As a result, these destinations have started to develop Muslim-friendly environments for visitors and have tailored their products and services to meet the interests and needs of Muslim travellers. Currently, there is a growing demand for Muslim-friendly tourism globally. Australia is one of the destinations that is demonstrating an interest in positioning itself as a Muslim-friendly destination. However, minimal research has been conducted in this area within Australia. Consequently, there is a lack of awareness among tourism stakeholders in Australia about the true potential of this rapidly growing segment. As a result, no established systems or guidelines are in place to promote this lucrative tourism sector. Therefore, the possibility of developing, managing, and positioning Australia as a Muslim-friendly tourism destination has not yet been explored. This paper examines the challenges and prospects of Muslim-friendly tourism in Australia and provides recommendations for developing this lucrative sector. A literature review and other document reviews were undertaken in this study.

Keywords:

Halal; Tourism;
Australia; Challenges;
Prospects; Muslim-
friendly.

1. Introduction

Today, Muslim-friendly tourism is experiencing significant growth worldwide, driven by the increasing number of Muslim tourists each year. According to Eddahar (2018), numerous non-Muslim countries, including the United Kingdom, Germany, France, and more recently, Japan, Australia, and South Korea, have started catering to the needs of Muslim tourists. This includes providing halal food, prayer facilities, and other amenities aligned with Islamic practices (Eddahar, 2018). Muslim-friendly tourism expenditures substantially rose from US\$58 billion to US\$102 billion in 2021. Projections for 2022 indicated a 50% increase, reaching US\$154 billion, with expectations of further growth to US\$189 billion by 2025. This reflects a compound annual growth rate (CAGR) of 16.5% over four years (Dinar Standards, 2022). This trend highlights the lucrative potential of the Muslim-friendly tourism market and the increasing importance of destinations to accommodate the needs of Muslim travellers.

Australia's tourism industry is an essential sector of the country's economy, contributing significantly to employment, income, and economic growth. Australia's natural beauty and diverse cultural experiences make it a popular destination for international and domestic tourists. The country has numerous iconic attractions, such as the Great Barrier Reef, Uluru National Park, the Sydney Opera House, Blue Mountains National Park, and the Great Ocean Road. According to Abodeeb *et al.* (2015), "Australia has long been a competitive global tourism destination, successfully attracting inbound tourists from diverse countries and cultures for many

decades". Australia is a world-leading tourist destination, and the tourism sector contributes \$152 billion to national economic growth, supports more than 300,000 businesses, and employs more than 660,000 Australians (Australian Government, 2021). Moreover, Australia is currently one of the highest-yielding destinations in the world, with international visitors spending \$44.6 billion in 2018-19 (Australian Government, 2021). Australia is one of the countries that have begun introducing itself as a Muslim-friendly tourism destination. It has gained recognition in the Muslim travel market over the years and has secured the 08th position among non-OIC destinations in the global Muslim Travel Index 2024 rankings (CrescentRating, 2024). However, to maintain its appeal as a Muslim-friendly destination, several shortcomings need to be addressed, including the limited availability of halal food in regional areas and the scarcity of Muslim-friendly service facilities.

2. Types of tourism promoted by tourism Australia

There are several agencies responsible for promoting tourism in Australia at the international, national, and state levels. At the national level, Tourism Australia is the government agency responsible for promoting Australia as a tourism destination to international and domestic markets. Tourism Australia is responsible for attracting international visitors to Australia for leisure and business events. Tourism Australia (Tourism Australia, *n.d.*) promotes various types of tourism to cater to a wide range of interests and preferences. Here are some types of tourism Australia promotes: Nature and Wildlife Tourism, Coastal and Beach Tourism, Adventure

Tourism, Indigenous Tourism, Food and Wine Tourism, City and Cultural Tourism, Eco-Tourism, Outback, and Indigenous Cultural Experiences. Another government agency, the Australian Trade and Investment Commission (Austrade), is responsible for promoting Australia as a global trade, investment, and education partner. It also provides research and policy support to Tourism Australia's efforts in promoting the export of Australian tourism services (Austrade, *n.d.*). Tourism Australia is promoting Muslim-friendly Tourism through its official website and at travel trade shows in Indonesia and Malaysia, such as the Malaysian Association of Tours and Travel Agents (MATTA) (Tourism Australia, *n.d.*).

3. Muslims in Australia

Islam is a significant minority religion in Australia, with a diverse and growing Muslim community. Contact between Muslim Indonesian fishermen from Southern Sulawesi and Indigenous people in northern Australia from around the 1750s is the earliest evidence of a Muslim connection to Australia. However, it was not until the 1860s, with the arrival of the Afghan cameleers, that Muslims settled in more significant numbers in Australia. Islam in Australia is a minority religious affiliation. Today, mosques, Islamic schools, halal food outlets, and various Islamic organisations and cultural centres across Australia cater to the needs of the Muslim community. According to the 2021 Census in Australia, the combined number of people who self-identified as Muslims in Australia from all forms of Islam constituted 813,392 people, or 3.2% of the total Australian population (Australian Bureau of Statistics - Census 2021).

Muslims in Australia are diverse, coming from various cultural backgrounds and practising different Islamic traditions. They contribute to Australian society in various ways, including education, healthcare, business, arts, and sports. Overall, Islam is an integral part of the multicultural fabric of Australia, and the Muslim community continues to make significant contributions to the nation's diversity and social fabric. Local Muslim communities enhance the tourism hospitality industry by opening Halal eateries and restaurants in major cities and suburbs. Muslim-friendly restaurants in Australia are plenty and prominently display the halal sign, although be mindful that they are self-certified (Snapkauskaite, 2018). Another significant contribution by the local Muslim community in Australia to enhancing tourism was the establishment of The Islamic Museum of Australia. Founded in May 2010, the museum aims to showcase Muslims' rich artistic heritage and historical contributions in Australia and internationally through various artworks and historical artefacts (The Islamic Museum of Australia, *n.d.*).

4. Defining Muslim-friendly tourism

The concepts of 'Halal tourism' and 'Muslim-friendly tourism' are often used interchangeably by academics and practitioners, suggesting they are similar. Muslim-friendly tourism specifically caters to the needs and requirements of Muslim travellers who adhere to Islamic principles and practices. The core idea behind 'Muslim-Friendly' tourism is to enhance the travel experience for observant Muslims. It closely aligns with the 'Halal Tourism' concept but encompasses a broader context, including provisions for performing religious duties (Battour, 2018). Therefore, Muslim-friendly tourism offers essential halal services, such as halal food and drinks or separate swimming pools and

provides comfortable spaces for Muslims to perform their daily prayers.

5. Muslim-friendly tourism in Australia

Australia has been trying to project its image as a Muslim-friendly tourist destination for several years. The first visitor guide was launched by Tourism Australia in 2015, which is a significant milestone for Australia in promoting itself as a Muslim-friendly destination. Building a positive image of a destination is of prime importance for every country because "destination image has a significant impact on decision-making in tourism or travel, both prior to and during the visit. Tourists often have little knowledge of places not yet visited, and the pictures held by tourists of these places can have a significant impact on their selection of a destination" (Govers *et al.*, 2007). According to Abodeeb *et al.* (2015), marketers promoting Australian destinations must develop a strong image, identity, and brand to reduce any potential negative perceptions that current and prospective Arab tourists may have.

There are several places that Muslim tourists would prefer visiting during their trip, such as the Islamic Museum of Australia (IMA), situated in Melbourne, which provides insights into Islamic art, culture, and history through various exhibits and interactive displays. Islamic Cultural Centres and prominent mosques in the main cities, including the Auburn Gallipoli Mosque, an Ottoman-style Mosque in a suburb of Sydney. In addition, the Broken Hill Mosque in NSW is one of the most intriguing heritage sites built in 1887; it is now the only surviving mosque built by Afghan cameleers in Australia (Broken Hill City Council, *n.d.*).

11.4 Short-term visitor arrivals, Australia — Top 10 source countries(a) — 2021-22			
Rank	Country of Residence	'000	2020-21 to 2021-22 change ('000)
1	New Zealand	191.64	107.93
2	India	134.47	131.25
3	UK	133.85	125.74
4	Singapore	121.06	117.20
5	USA	100.10	89.90
6	China(b)	35.56	32.16
7	Canada	27.34	25.84
8	Indonesia	26.89	25.46
9	Germany	22.12	20.79
10	Malaysia	20.98	20.03
	All countries	1191.83	1040.96
a. Top 10 source countries based on year ending June 2022.			
Source: Australian Bureau of Statistics, Overseas Arrivals and Departures, Australia November 2022			

Figure 1: Short-term visitor arrivals, Australia - Top 10 source countries - 2021-22.

In addition to the Muslim visitors from Middle Eastern, African, American and European countries, the data is equally compelling for the heavily Islamic southeast Asian tourist market to Australia. Indonesia was Australia's 08th largest inbound market for visitor arrivals and the 15th largest market for total visitor spends and visitor nights. Visitors from Indonesia generated \$0.8 billion in total expenditure in 2018. Malaysia was Australia's seventh largest inbound market for visitor arrivals, the ninth most significant market for total visitor spends, and 10th for visitor nights. Visitors from Malaysia generated \$1.3 billion in total expenditure in 2018 (Australia *et al.* Asia, 2019).

Despite the growing number of inbound Arab tourists, there is limited knowledge about how Australia is marketed to and

perceived by the "Arab world". This is particularly relevant for the Gold Coast in Queensland, which Arab visitors increasingly favour due to its famous beaches, shopping opportunities, and family-friendly apartment-style accommodation (Michael *et al.*, 2011; Mick, 2007).

6. Challenges and barriers to developing Muslim-friendly tourism in Australia

Australia is one of the world's leading tourist destinations, boasting stunning landscapes, diverse wildlife, vibrant cities, and a rich multicultural environment. However, literature and document reviews conducted in this study reveal several potential shortcomings that could hinder Australia's attractiveness as a Muslim-friendly tourist destination.

6.1 The lack of Muslim-friendly tourism and hospitality service offerings

The CrescentRating Faith-Based Service Needs 2.0 (CrescentRating 2021) assists service providers in identifying the most critical service experiences for Muslim travellers. These needs are categorised as "Need to have," "Good to have," and "Nice to have." The availability of halal food falls under the "Need to have" category, and any destination promoting Muslim-friendly tourism must prioritise this aspect.

One of the shortcomings in promoting Australia as a Muslim-friendly destination is the limited availability of halal food, particularly in regional areas, as finding halal food options can be challenging. In Australia, socioeconomic, housing, and employment precariousness stressors and difficulties in accessing halal foods were identified as challenges (Kavian *et al.*, 2020). Increasing the halal food availability and improving its attribute quality is indisputably becoming essential to fulfilling Muslim travellers' Muslim-friendly tourism needs and providing them with pleasant tourism experiences, especially in non-Islamic countries and tourism destinations (Jia & Chaozhi, 2021). Although Australia has been producing halal meat since the 1950s, there is a need to improve the current understanding of halal food principles (Zulfakar, 2015).

The limited availability of Muslim-friendly facilities is another challenge for Muslim tourists. This other important element falls under the "Need to have" category. The availability of appropriate prayer facilities, such as mosques or designated prayer rooms at critical places such as airports and tourist destinations, is essential for Muslim tourists. In some areas of Australia, limited or no dedicated prayer facilities may be available. Besides consumable products and services, having places of worship (i.e., mosques) at destinations adds to Muslim tourists' confidence about travelling to these places (Moshin *et al.*, 2020). According to Nurdiansyah's (2018) research findings, the failure to recognise and fulfil the growing global demand for Muslim-friendly travel experiences means that many international tourism destinations, particularly those located outside of Muslim-majority localities, have been unable to benefit from the segment's burgeoning potential fully.

In many non-Muslim countries where Muslims are the minority, such as Australia, New Zealand, Japan, Korea, the United Kingdom, Europe and the United States, finding halal food and beverages as well as "Shari'ah compliant"

accommodations and hotels as well as touristic products and activities may prove to be challenging (Ramli & Zawawi, 2017).

6.2 The lack of resources and other challenging factors

No certification bodies offer certification for halal restaurants, halal kitchens (food preparation areas in hotels), or halal food storage facilities in Australia. Moreover, no agencies in Australia offer a Muslim-friendly hotel rating system. Their services are limited to removing alcohol from the mini-bars, catering halal food and providing information on Muslim-friendly restaurants in their area. Muslim-friendly restaurants in Australia are plenty and prominently display the halal sign. However, be mindful that they are self-certified, as currently, there is no official restaurant certification body in Australia (Snapkauskaite, 2018).

Another area of concern is the shortage of halal industry-trained professionals in Australia. This shortage affects the Muslim-friendly tourism and hospitality industry and the Australian halal meat supply chain, including halal slaughterhouse workers, supervisors, auditors, laboratory technicians, and so forth. According to Zulfikar (2015), his study found that there is a shortage of halal auditors and inspectors at the halal certifier organisations in Australia.

Many countries have faced a massive challenge in obtaining visitor visas to visit Australia, which has a direct impact on tourism arrivals. According to the Tourism and Transport Forum Australia (Visitor visa reform—reducing the barriers for travel to Australia, 2014), the cost and inconvenience of obtaining a visa to visit Australia represent one such barrier. Therefore, Australia cannot afford to lose the competitive advantage of our proximity to the rest of the world through complacency.

In recent years, the competition for Muslim-friendly tourism market share in the Australasian region has intensified. Six countries, Singapore, Taiwan, Thailand, Hong Kong, Japan, and the Philippines, are on top of the GMTI 2022 ranking list and are ahead of Australia. Traditionally, countries like Singapore, the United Kingdom, Germany, and France attract Halal tourists; however, new trends such as Japan, Korea, and Australia are current players in the competitive sector (Liberato *et al.*, 2020).

6.3 The lack of awareness and support systems

Tourism Australia, the national tourism organisation, is responsible for promoting Australia as a travel destination for domestic and international travellers. They took the lead on this front by launching a visitor guide 2015 for Muslim tourists in Australia, reaching out to the Muslim travel market, especially from Malaysia, Indonesia, and Singapore. However, there has been a gap in targeting other Muslim-majority countries by Tourism Australia, particularly the MENA region (Middle East and North African countries). As a result, this has been seen as a lost opportunity. Abodeeb *et al.* (2015) state there is still a limited understanding of how to market to and accommodate Arab visitors effectively. Gaining insights into Arab culture, along with Arab tourists' perceptions and motivations, can help tourism businesses develop and deliver successful tourism products. Tourism Australia cannot ignore the significant portion of Muslim-friendly tourism from the OIC member countries.

The lack of awareness, a challenge amongst tourism service providers about the needs and expectations of Muslim travellers, is crucial. Cultural sensitivity, language barriers, knowledge about Islamic practices, and familiarity with dietary requirements play critical roles in the Muslim-friendly tourism and hospitality industry. Abodeeb *et al.* (2015) insist on their research findings on “the importance of culture in tourism marketing from a supply-side perspective”. This can enhance the effectiveness of marketing Australia as a tourism destination in Arab countries. There has been a notable increase in studies examining cultural influences on consumer behaviour in tourism, hospitality, and leisure, especially in Australia, the USA, Europe, and New Zealand (Reisinger & Moufakkir, 2015).

Due to the limited research on opportunities for Muslim-friendly tourism in Australia, businesses, destination management organisations, and tourism stakeholders lack awareness and understanding of the potential benefits of developing this sector in the country. In the twenty-first century, the number of Arab tourists visiting countries worldwide, including Australia, has increased. However, very little academic research has been conducted on how Western destinations can effectively market to Arab visitors and adequately prepare for a more mobile Arab population (Abodeeb *et al.*, 2015). According to the study conducted by Nurdiansyah (2018), Muslim travellers remain relatively under-served due to factors such as a lack of awareness amongst tourism authorities and service providers of the market's significant growth potential, as well as poor understanding of this demographic's specific needs and preferences.

7. Muslim-friendly tourism and the prospects for Australia

Muslim-friendly tourism is one of the fastest-growing segments in the global tourism industry, with many countries and regions recognising the economic potential of serving Muslim travellers. Australia has also been making efforts to tap into this market. Given below are some prospects for Muslim-friendly tourism in Australia:

7.1 Boosting the local tourism

Developing Muslim-friendly tourism products and services will benefit the Australian economy and its destination image more significantly. Australia's geographical location, natural beauty, and religious and cultural inclusiveness are some of the critical selling propositions for marketing Australia as a Muslim-friendly destination. In addition, the existing 813,392 Muslim population in Australia (Australian Bureau of Statistics, 2021) will benefit. It will help boost local tourism since the tourism industry stakeholders meet Muslim-friendly tourism requirements. According to (Fathan *et al.*, 2022), research findings indicate the development of Muslim-friendly tourism can catalyse empowering the local economy. It creates more job opportunities, thereby reducing unemployment. By opening businesses and employment prospects, it improves people's welfare. Additionally, it can increase individuals' income, enhancing the community's overall ability to achieve a higher standard of living.

7.2 Improve strategic economic relationships with the OIC member countries

Australia is a close ally of the Organization of the Islamic Cooperation (OIC) and appointed its first-ever Australian Envoy to the OIC in June 2011 (Australian Bureau of Statistics – Yearbook 2012). This initiative aims to foster bilateral relationships and promote a strategic economic outlook with the OIC's 57 member countries. It also presents a significant opportunity to promote Australia as a Muslim-friendly destination. Moreover, Australia could begin implementing the Halal Tourism Services standards developed by the Standards and Metrology Institute for Islamic Countries (SMIIC), an affiliated institution of the Organization of Islamic Cooperation (OIC). The OIC/SMIIC 9:2019 Halal Tourism Services standards provide comprehensive guidelines for developing and managing Muslim-friendly tourism facilities, products, and services (The Standards and Metrology Institute for Islamic Countries, *n.d.*). These standards are designed to meet the specific needs of Muslim travellers, ensuring their faith-based requirements are accommodated, even in non-Muslim countries. Therefore, tourism industry stakeholders in Australia can use these standards to develop Muslim-friendly tourism products and services.

7.3 Opportunity to seek support from the Muslim-majority countries

Understanding the true impact that the halal industry can create, Australia is currently making some genuine efforts to secure a place in the global halal industry. For example, Australia is known as the first and only country in the world which has a government-supervised halal meat programme (Zulfikar *et al.*, 2013). All Australian meat processing establishments exporting to Islamic countries must conform to the Australian Government Authorised Halal Program (AGAHP) – this is a collaborative programme jointly administered by Islamic Societies and the Australian governmental organisation (The Department of Agriculture, Fisheries and Forestry, 2023) in order to successfully produce a high-quality standard of meat production that meets both the international food safety standards and Islamic religious requirements. Therefore, Australia's longstanding commitment and support over the past four decades in exporting quality halal meat to Muslim-majority countries, along with the established supportive relationships, can be leveraged by Australia to position itself as a Muslim-friendly tourism destination.

7.4 Prospects to engage with the global halal industry stakeholders

Governmental organisations in Australia have been engaging with global stakeholders for several years to promote the halal industry. In September 2022, Austrade, one of the leading Governmental organisations, partnered with Malaysia's Halal Development Corporation (HDC) in organising the World Halal Business Conference Circuit in Melbourne, Australia (Austrade, *n.d.*). Several halal industry segments and discussions were held during this conference, and MOUs were signed. Malaysia ranked as the top Muslim-friendly destination in the Global Muslim Travel Index for eight consecutive years, from 2015 to 2023 (The Edge Malaysia, 2024). Malaysia has been one of the pioneering countries in developing Muslim-friendly tourism. Therefore, such partnerships and

collaborations will undoubtedly help Australia develop a Muslim-friendly tourism sector through knowledge sharing, establishing industry standards and best practices, certifying service providers, and offering training and development opportunities for industry players, all of which are crucial areas for implementation.

7.5 Marketing and the destination image

Marketing Australia as a Muslim-friendly destination can attract more visitors from Muslim-majority countries. Japan's tourism industry and the government have collaborated to attract more Muslim tourists. As a result, it is believed that Muslim tourists now find visiting Japan more convenient than before. In addition to infrastructure, Japan offers airlines with relatively affordable prices and free visas for several countries visiting Japan, such as countries with Muslim-majority populations, namely Indonesia and Malaysia, which flooded Japan with Muslim tourists (Damhuri, 2020). To optimise services for Muslim tourists, Japan has launched the "JNTO" (Japan National Tourism Organization) website, making it easier for Muslim visitors to find halal options (JNTO, 2023). The website includes features such as the locations of halal restaurants, Muslim-friendly accommodations, and places of worship. These strategies help Japan maintain its position among the top 10 destinations in the non-OIC destinations in the Global Muslim Travel Index rankings (CrescentRating, 2024). Japan got 23rd place on its first GMTI ranking in 2013, then moved up significantly every year to 17th (2014), 11th (2015), eighth (2016), sixth (2017), and fourth (2018), and third place in 2019 (Food diversity today 2019).

Australia has recently positioned itself as a Muslim-friendly tourism destination compared to Japan. It has quickly gained recognition in the Muslim travel market, securing the eighth position among non-OIC destinations in the Global Muslim Travel Index 2024 rankings (CrescentRating, 2024). Australian governmental organisations like Tourism Australia and Austrade can play a pivotal role in promoting Muslim-friendly tourism to Muslim-majority countries. In addition to featuring a section dedicated to Muslim-friendly tourism on the official Tourism Australia website, the organisation can strategically target its global promotional campaigns towards Muslim-majority countries. Tourism Australia's global campaign, "Come and Say G'day," has been launched in key tourism markets worldwide, welcoming international travellers to Australia and supporting its visitor economy (Tourism Australia, *n.d.*). These campaigns can be expanded to Muslim-majority countries in the Middle East and North Africa to draw Muslim visitors to Australia. Meanwhile, Abodeeb *et al.* (2015) state in their research findings, "facilitate more effective destination marketing of Australia as a tourism destination in Arab countries, understanding Arab culture and Arab tourists' perceptions and motivations that can assist tourism businesses to create and deliver successful tourism products, especially at the regional level". Furthermore, Australia can join the prestigious Arabian Travel Market (ATM), an esteemed international travel and tourism event held annually in Dubai (Arabian *et al.* Dubai, *n.d.*). This event offers an excellent opportunity for Australia to present its Muslim-friendly tourism and hospitality products and services to a global Muslim audience.

7.6 Air connectivity to bring Muslim travellers from the Middle Eastern region

Another excellent opportunity to attract Muslim travellers from the Middle East and North African regions is Air

connectivity. Direct flights from Middle Eastern destinations such as Dubai, Abu Dhabi, and Doha are available. For example, Qatar Airways operates 40 weekly flights to six Australian cities, offering travellers more options and enhanced connectivity via Hamad International Airport in Doha (Qatar Airways, *n.d.*). Emirates Airlines operates 63 weekly services to Australia, with the capacity to transport more than 55,000 passengers per week to and from its major cities (Emirates, *n.d.*). Air connectivity is a crucial driver for growth, especially for attractive tourist destinations (Dimitriou *et al.*, 2018).

7.7 Conducting academic research and enhancing halal knowledge

Conducting academic research on Muslim-friendly tourism in Australia is of utmost importance. Such research helps understand and address Muslim travellers' specific needs and preferences, representing a significant segment of the rapidly expanding market. By studying their cultural, dietary, and religious requirements, academia can assist tourism industry stakeholders, including government policymakers and service providers, in developing products and services that align with the principles of Islamic travel. As a multicultural society, Australia stands to gain both economically and socially from the insights and recommendations produced by academic research on Muslim-friendly tourism.

In Japan, the Japanese government and local agencies, such as the JTA (Japan Tourism Agency); JNTO ((Japan National Tourism Organization), Ministry of Agriculture, Forestry and Fisheries, local tourism associations, and local chambers of commerce, have started providing grants to support the creation of halal knowledge platforms. These grants have dramatically expanded the available information and activities related to halal knowledge. These initiatives promote seminars, training courses, and classes to manage the flow of halal knowledge rather than focusing solely on promoting halal standards and certification systems in tourism activities. Some universities and students also contribute to developing halal knowledge management platforms (Yasuda, 2017). These platforms connect stakeholders such as tourism companies and consultants, government institutions, and local administrations, facilitating sharing experiences in managing halal knowledge within the Muslim-friendly tourism sector.

The Taiwanese government, the local Muslim community, and Halal institutions are crucial in developing Muslim-friendly tourism in Taiwan. The government leverages its soft power through public diplomacy to brand Taiwan as a Muslim-friendly destination. Meanwhile, the local Muslim community contributes by organising educational seminars, introducing halal products at various events, and disseminating information about Muslim-friendly tourism and the industry via social media (Mahendra, 2021).

Therefore, Australia can adopt various strategies its neighbouring countries employ to raise awareness and implement Muslim-friendly tourism.

8. Conclusion

This paper examined the challenges and prospects of Muslim-friendly tourism in Australia and recommended further developing this lucrative sector. Muslim-friendly tourism can significantly enhance the tourism industry through job creation, infrastructure development, and improved cultural exchange. Positioning Australia as a Muslim-friendly

destination will boost the tourism industry and promote a more inclusive and tolerant society.

Despite the fast-growing potential of this market segment, there is a notable lack of awareness among Australian tourism stakeholders about its true potential. Consequently, no existing systems or guidelines are in place to support this sector. Further research is needed to identify the full potential of Muslim-friendly tourism. The findings will further help establish a governance framework and design, develop, and manage the Muslim-friendly tourism sector in Australia. This framework will guide policymakers and industry stakeholders in devising strategies to advance this rapidly growing tourism sector. As the global travel landscape continues to evolve, accommodating the needs of Muslim travellers is both a strategic initiative and a reflection of Australia's commitment to providing enriching experiences for all tourists.

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The potential risks related to halal and toyyiba in the poultry supply chain integration system: A review

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Abstract

Halal chicken supply is typically acquired by following the slaughtering process according to Islamic *Shari'ah* law and according to the procedures and requirements established by halal certification agencies. However, implementing halal concepts, particularly in the chicken processing industry, only focuses on downstream halal and toyyib (HT) concepts, specifically during the slaughter and processing phases of chicken-based products. Attention is not given to the live chicken care phase in poultry farms, especially in determining the potential risks of halal and toyyiba that may arise in every commercial chicken farming activity. This paper used a narrative review approach to analyse articles, journals, guidelines, and relevant standards to explore the potential risk of the HT concept that may occur throughout chicken farming operations. Six potential risks of halal non-compliance were identified, including farm location selection, design of housing system, chicken feed meal source, medication source, farm biosecurity systems and environments capable of negatively impacting the quality of chicken meat products, potentially affecting the halal status of the produced chicken meat. Furthermore, this paper can significantly impact integrated poultry industry players and regulatory authorities. JAKIM is a primary guide and adds value in maintaining halal integrity to benefit Muslim and non-Muslim consumers by ensuring the sourcing of halal chicken meat.

1. Introduction

The foremost aspect of nutrition and the local food industry in Malaysia revolves around poultry-based food products, offering a vital source of high-quality animal protein for daily consumption among Malaysians, encompassing processed chicken products and fresh chicken meat (Jamilah, 2015). As guided by *Shari'ah* law, ensuring adherence to halal slaughtering procedures is imperative in regulating and monitoring the production of chicken products, including slaughtered chickens and processed derivatives, as outlined by the *Qur'an*, *hadith*, and *fatwas*. They adhere to *Shari'ah* law, and slaughtering chickens is essential to upholding the standards of toyyib (pure and wholesome) and halal (permissible). This ensures the production of high-quality, premium halal products (Jamaludin & Ramli, 2023). To uphold the integrity of halal practices in chicken meat production, stakeholders such as the Department of Islamic Development Malaysia (JAKIM) have spearheaded initiatives to establish standards like the Malaysian Halal Management System (MHMS), ensuring compliance with halal requirements (Abdullah & Rahman, 2018).

In this regard, the production of chicken meat products, whether slaughtered chicken products or by-products of chicken meat, must be regulated and strictly monitored through the verification of halal certificates from JAKIM; the aspects of halal assurance and the implementation of the halal

concept are not given more focused attention in the broiler supply chain, especially at the live chicken rearing stage as well as the care process in the livestock farm. Accordingly, this review paper discusses the implementation and implications if halal and toyyiba (HT) is implemented at the broiler-rearing stage in a commercially integrated farming system.

2. Background

The demand for food sources containing chicken meat, whether in raw meat or chicken meat-based products, is increasing in Malaysia. Additionally, the population of Malaysia is growing at a rate of 0.2% every year. As of 2021, the total population is 32.67 million (Department of Statistics Malaysia, 2022). The self-sufficiency rate through poultry production has remained above 100%, which is in line with the high demand for chicken meat supply. As a result, the commercial broiler farming sector operated by integrated company organizations has also increased to meet the country's demand for raw chicken meat (Jeffrey, 2020; Suzalina & Fahmy, 2022). The integrated farming chain includes a business run by a company organization called an "integrator" that owns the entire chain in the broiler production system, starting from the breeding process of egg hatching to the processing and marketing of chicken meat to consumers (Mohd Syauqi, 2015; Nurshuhada *et al.*, 2021). The integrator company also has an animal feed processing plant, one of the main requirements for productive and efficient poultry-rearing activity (Chye, 2020; Mohd Syauqi *et al.*, 2015).

Issues related to meat consumption have raised concerns among the Muslim community regarding the halal integrity of chicken meat products, particularly about the slaughtering process. A recent report in KOSMO! Revealed that chickens sold in Manir, Kuala Terengganu, were not slaughtered according to legal requirements. This is an alarming issue, and the Department of Religious Affairs of Terengganu inspected the matter to confirm whether the chicken sold was not slaughtered correctly (Adlan, 2021). Similarly, in Bangladesh, farmers inject tens of millions of cattle with a steroid substance called 'Dexamethasone' to fatten them up quickly and reduce operating costs. This practice has a negative impact on the animal's health and poses serious health risks to consumers, which is unacceptable. In Malaysia, pig enzymes in the form of protein hydrolysis are used as a catalyst for the growth of farmed chickens, raising concerns among the public and the Malaysian Consumer Association (FOMCA). They have urged authorities to investigate the matter, and it is essential to address this issue in the broader context of broiler production, particularly in terms of animal feed provided during the animal husbandry stage on the farm (Berita Harian, 2014). These issues highlight the need for stricter regulations and more comprehensive monitoring to ensure that the meat products available in the market are both halal and safe for human consumption. It is crucial to take immediate action to address these concerns and ensure the well-being of both animals and consumers.

The implementation of the concept of HT is crucial, especially when it comes to rearing broilers on farms. This ensures that halal integrity is maintained in terms of halal slaughtering procedures as prescribed by Islamic *Shari'ah* law and other aspects such as the sources of animal feed meal, and the veterinary drugs administered to the animals. Compliance with the concept of HT is examined to ensure that all external factors that may impact halal compliance are addressed, including giving kindness or welfare to animals during rearing on the farm (Ramli *et al.*, 2020). This is because factors such as a conducive environment, logistics transport, and health management have the potential to impact the integrity of the halal status at the initial stage of the supply of chicken meat products (Mokhtar & Munir, 2017). This paper aims to investigate the halal management requirements necessary during the broiler production stage in the commercial broiler integration sector. Additionally, the researcher will discuss and propose the potential risks of non-compliance with halal or shariah law in farming activities. This approach can be used to develop a more holistic halal management system that aligns with the 'From Farm to Fork' concept.

This paper explores the halal management requirements necessary during the broiler production stage in the commercial broiler integration sector. Additionally, this study will identify and discuss the potential risks of non-compliance with halal or *Shari'ah* law in farming activities. This approach helped identify HT's needs and potential risks, enabling the researchers to determine the best course of action. Overall, implementing the halal assurance system at the farm level can positively impact the industry players in the broiler farming sector, and the potential risk of HT can be used as a new approach to implementing the halal management system at the level of broiler farming.

3. Literature review

3.1 Halal and toyyib

The term "halal" is derived from Arabic; its essential words are 'halla, Cahill, and Hillan' (Man & Yahya, 2014). The term refers to something legal and permissible under Islamic teachings. Conversely, the opposite of halal is "haram", which means forbidden or prohibited in Islam. Haram is something that is strictly prohibited by religion, and those who engage in it will face punishment from *Allah* The Almighty (Kamisah, 2016). It is important to note that halal is closely related to the demands of *Shari'ah* as it is a significant aspect of Islamic teachings and practice. From an Islamic perspective, the concept of 'halal' is a crucial aspect of the lives of Muslims. 'Halal' refers to what is allowed or permissible according to *Shari'ah*, and it encompasses not only dietary aspects but also other aspects of life in various fields, including religion, health, and economics (Idris *et al.*, 2022). This aligns with *Allah* The Almighty's command regarding the importance of consuming what is halal as a religious duty and emphasizes that the intake of halal and wholesome food is for the health and well-being of human life, as mentioned in His words:

يَأْتِيهَا النَّاسُ كُلُّوْا مِمَّا فِي الْأَرْضِ حَلَالًا طَيِّبًا وَلَا تَتَّبِعُوا خُطُوَاتِ الشَّيْطَانِ إِنَّهُ لَكُمْ
عَدُوٌّ مُّبِينٌ

"O humanity! Eat from what is lawful and good on the earth and do not follow Satan's footsteps. He is truly your sworn enemy."
(*Surah al-Baqarah* verse 2:168)

"Toyyib" is a term that describes something good, beautiful, or the opposite of evil. It can also mean something delicious and healthy, bringing peace to the human soul (Idris *et al.*, 2022; Ismail & Ahmad, 2021). When talking about food, it refers to the harmful effects of unsafe food on consumers. Modern toyyib is centred around food safety, cleanliness, and nutritional value that can benefit a healthy mind and body (Alzeer *et al.*, 2018). In this study, toyyib is closely related to handling methods, using clean equipment, and managing halal livestock that conform to Islamic law. This concept needs to be followed to ensure that farmed chicken is free from illegal or dubious elements and is considered halal, clean, and pure for consumption.

In the context of applying the concept of HT in selecting food and beverage sources entails multiple benefits and wisdom, particularly in prioritizing halal and wholesome options. This practice not only contributes to the Muslim community's physical, emotional, and spiritual well-being but also serves as an act of worship to *Allah* The Almighty. Furthermore, opting for quality and safe food promotes a healthy and productive society, devoid of the potential risks associated with consuming non-halal and unsafe food. In the context of Islam, the importance of consuming halal food and beverages has a profound impact on human life, both in terms of physical and spiritual aspects. As the foundation of purity of the soul and the body, the *Qur'an* emphasizes the necessity of choosing excellent and pure sustenance, as *Allah* says:

يَأْتِيهَا الَّذِينَ ءَامَنُوا كُلُّوْا مِنْ طَيِّبَاتِ مَا رَزَقْنَاكُمْ وَأَشْكُرُوا لِلَّهِ إِنْ كُنْتُمْ إِيَّاهُ
تَعْبُدُونَ

"O believers! Eat from the good things We have provided for you. And give thanks to Allah if you truly worship Him alone".
(*Surah al-Baqarah* verse 2:172)

The *Qur'anic* verses emphasize the Islamic principle of cleanliness, encompassing both physical and spiritual purity. Consuming halal food ensures adherence to this principle, safeguarding physical and spiritual well-being according to *Allah* The Almighty's demands (Abdullah & Rahman, 2018). Prohibited foods in Islam, like pork, present health hazards (Khan, 2023), reinforcing the prohibition from the *Qur'an* and *hadith* sources to uphold individual life quality. Halal food selection fosters ethical development among Muslims, instilling values like discipline, responsibility, and integrity (Khoirul Anwar, 2018). Thus, halal principles promote health and purity and nurture moral and spiritual growth.

3.2 Halal food management in Malaysia

The halal food industry in Malaysia has been expanding since the 1970s, parallel to the growth of the manufacturing industry and the advancements in food technology. JAKIM, which is the government body responsible for halal certification, began a halal certification system as early in the year 1974, and now the system is increasingly expanding to meet the needs of the Muslim industry and consumers, particularly in the halal verification of food products and Islamic use. (JAKIM Portal, 2024). To ensure the quality of halal food, JAKIM references the MS1500:2019 standard, which was first developed in 2004 and revised in 2019 to align with evolving certification requirements (Department of Standards Malaysia, 2019). The Malaysian Standards Department developed the Halal Standard as the primary guideline for halal food preparation and handling. Halal certification applications now require adherence to the halal assurance system, which incorporates standards such as MS1480 (Hazard *et al.* Points) and MS1514 (Good *et al.* for Food) to strengthen product requirements (Sani & Dahlan, 2015). The introduction of the 'Malaysian Halal Management System- MHMS manual in 2019, based on JAKIM guidelines, further enhances halal product integrity and quality (JAKIM, 2020; Hassan *et al.*, 2015).

The Halal Assurance System (HAS) has the goal of obtaining the Malaysia Halal Certification Certificate and increasing the trust of Muslim consumers, strengthening the halal integrity, and preventing potential contamination in the production process of halal products (Khoirul Anwar, 2018). Although HAS primarily focuses on the halal food industry and Islamic products, it can have a significant impact if extended to the halal animal husbandry sector. Therefore, this study primarily focuses on identifying and explaining the importance and implications of implementing HT on the initial supply chain of chicken meat, before the live chicken undergoes the halal slaughtering process. The implementation of the Halal Assurance System (HAS) can be categorized into two scopes: Internal Halal Control System (IHCS) for small industries and HAS for large and medium-scale industries. IHCS involves essential elements of the halal management system to obtain halal certificates, while HAS requires compliance with 10 more comprehensive elements. However, there are differences in the elements of HAS requirements published in earlier versions, particularly in the aspect of documentation requirements. The HAS procedure proposed by JAKIM integrates halal standards such as MS1500, Malaysia's Halal Certification Procedure Manual (MPPHM), MHMS, and other standards related to food safety systems to ensure halal integrity and effective halal traceability. (Dahlan *et al.*, 2016; Razaly & Zakaria, 2018).

After a thorough analysis of JAKIM HAS's scope, it can be concluded that it has a more specific scope in determining the requirements for halal certification in the Islamic consumer product manufacturing sector. This study aims to develop the HAS management manual and highlight the impact of implementing the HT concept in every broiler chicken farming activity while identifying elements of halal non-compliance that may occur. Therefore, the following section will elaborate on explanations and discussions related to the integrated broiler chicken farming system.

3.3 Broiler poultry farming integration chain system in Malaysia

Malaysia's poultry farming and processing sector is proliferating due to the high demand for chicken meat. This growth has been chiefly driven by companies that supply broiler chickens to the integrated chicken meat supply chain sector, which caters to the needs of the chicken meat-based food processing industry (Rasak & Sallahuddin, 2016; Shaban & Alaboodi, 2019). Broiler farming integration chain now contributes to almost 75% of the national economy, surpassing other farm animals (Majid & Hassan, 2014; The Poultry Site, 2018). This study focuses on the upstream chain of broiler livestock integration, as the breeding sector plays a crucial role in the upstream system of chicken meat supply. In this regard, this section provides an overview of the concepts, approaches, and goals in livestock farming to help researchers meet the objectives of their study.

Furthermore, the term broiler chain integration refers to a commercially oriented business. Industry players pioneer this integration concept to supply livestock and chicken meat products in the broiler industry chain (Serin *et al.*, 2011). As explained in the previous section, the integration of the broiler chain aims to increase the efficiency and effectiveness of the flow of chicken meat in the domestic and overseas markets (Hassan *et al.*, 2019; Majid & Hassan, 2014; MyCC, 2014; Mohd Syauqi *et al.*, 2015). Therefore, the integration of broiler farming involves various levels in the chain from upstream to downstream, as briefly illustrated in Figure 1, which involves joint venture cooperation between companies as integrators and farmers through contractual agreements (Benalywa, 2019).

This study focuses on the breeding phase of broiler chickens up to the production of fourth-generation broilers for commercial broiler farms. It also investigates the animal feed production process. The care of broiler breeding chickens is crucial at the initial stage of broiler chicken farming to ensure the supply of high-quality breeding generations, particularly for the final generation of broiler chickens. This includes the care of broiler chick offspring imported from foreign companies managing cross-breeding processes. The breeding parent stock, typically the third generation, produces fertile breeding eggs and, ultimately, the fourth-generation broiler chickens, the final products in the upstream chain. Quality and care of chicken breeds are vital for producing high-quality broiler eggs. Selection of chicken breeds is crucial as it influences the quality of chicken meat at the end of the production chain and affects disease resistance and overall poultry meat production.

4. Materials and methods

This paper employs a narrative review approach to identify HT's potential risks on the broilers' integrated supply chain. Data was collected by carrying out specific searches on reputable and high-quality databases. The databases used

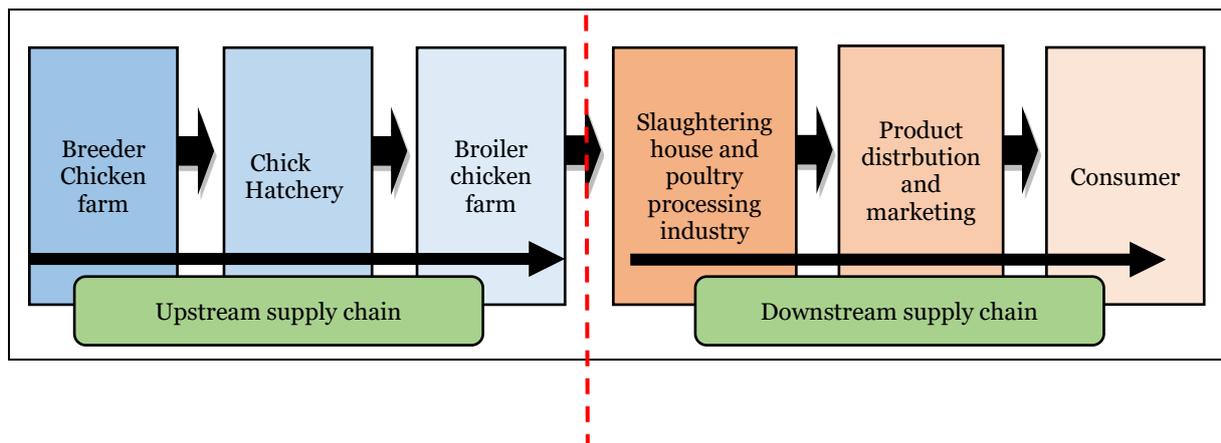


Figure 1: Poultry integration supply chains described by Serin *et al.* (2011).

included journals and articles indexed by SCOPUS, Web of Science, MyCite and MyJurnal, academic literature collections published in Malaysia. The selection of secondary data was taken through the SCOPUS website and Google Scholar, where accessibility of the data allowed the researcher to analyse the requirements of the study's scope and discuss the study's final findings. Meanwhile, the data search uses keywords and phrases relevant to the study context. Among the general keywords used in the search for data sources are "Halal and Tayyiba", "Integration Poultry System", "Broiler Chicken Farming" and "Poultry Halal Integrity". Apart from that, analysis was also made against primary and secondary reference sources to know in detail so that the discussion of the findings can be explained more clearly and coherently.

This paper also used various reference sources such as the Malaysian halal management system guidelines by JAKIM Malaysia, Malaysian standards related to halal, guidelines from the Malaysian Veterinary Services Department related to broiler farming, and the commercial farming system management manual. It also involved sources from the *Qur'an*, *hadiths*, and published *fatwas* related to the halal context to identify and suggest potential halal risk elements in broiler chicken production. The analysis and discussion aim to emphasize the importance of halal integrity and the consideration of food safety (toyibba) in ensuring that halal chicken meat products are produced in line with the 'From Farm to Fork' concept throughout the broiler chicken supply chain.

5. Potential halal risk in chicken broiler farming management

Factors such as farm location, animal feed and medication sources, biosecurity, logistics, and environmental management in broiler chicken farming are discussed. The paper also addresses elements related to halal compliance to ensure that farming activities maintain halal integrity and adhere to the concept of HT.

5.1 Farm location selection

To achieve the best production results and minimise operating costs, it is essential to adhere strictly to many elements in broiler farming. Two of the most critical aspects of the livestock operation are the design of the chicken housing system and the farm location. These factors impact the quality and productivity of the poultry products produced by the livestock farm. Choosing a suitable site for infrastructure and facilities is a crucial aspect of the commercial poultry farming sector. To

ensure the proper operation of the processes involved in maintaining the health and care of farm animals, a good location is crucial and necessitates adherence to many conditions (Giriraj, 2014). Thus, the choice of a strategic livestock farm location permits the growth of chickens at an optimum rate and guarantees the comfort of the livestock. Therefore, choosing the right place may result in lucrative profits for the breeder. The choice of agricultural regions must also incorporate biosecurity measures to safeguard animals from external influences, including environmental conditions, human interference, and threats from pests or predatory animals that may compromise livestock health (Susanti *et al.*, 2016). According to the study by Maduka *et al.* (2016), inadequate infrastructure for livestock management can lead to animal disease outbreaks. This could potentially harm the overall functioning of the poultry farm.

When selecting a farm location for broilers, it is essential to consider specific prerequisites. It is inadvisable to establish these farms in places that are shielded by steep terrain since this can result in inadequate ventilation, which could disrupt the growth process of the birds. Furthermore, the farm's proximity to neighbouring animal farms must be considered. The fundamental objective of selecting a farm location should be to ensure access to neighbouring farms, thereby minimising the risk of transmitting zoonotic illnesses to surrounding farms. The guidelines provided by Aviagen (2018) and Poultry Hub (2019) state that the optimal distance between livestock farms and other farms should range from three to five kilometres. In contrast, the regulations provided by the *Jabatan Perkhidmatan Veterinar* (2006) specify that the distance between farms should not exceed 0.5 kilometres. Hence, it is apparent that the proximity of broiler farms plays a pivotal role and carries a significant risk of transmitting disease outbreaks to neighbouring farms.

According to halal standards, farms that produce halal food must not be located near pig farms, which are considered haram (forbidden) or "*mughallazah*" animals. This requirement is highlighted in the Halal Standard MS1500:2019, which states that halal premises should be situated away from food processing facilities and non-halal animal farms (as outlined in subsection 4.2.6). It is also vital that the premises involved in halal food production are far away from pork processing areas and pig farms to avoid any risk of contamination. However, these guidelines only cover the manufacturing process of food products and do not focus on the level of halal animal husbandry. If a chicken farm is located near a pig farm, there is a risk of cross-contamination through equipment and human contact, which could result in haram

food. Environmental concerns exist, as natural water sources and artificial ponds may become contaminated with excrement and sewage waste from pig farming facilities.

Not only is this matter essential and emphasised in the existing halal standard, but this aspect of selecting the location of livestock farms is also closely related to the concept of '*Maqasid al-shari'ah*' in Islamic teachings. *Maqasid al-shari'ah* coincides with the realization of the main objective or purpose of the Islamic religion, which is to provide goodness and benefit to humans in this world and the hereafter. Ramli *et al.* (2017) explained that *maqasid al-shari'ah* is more focused on things that bring good (*maslahah*) and prevent harm (*mafsadah*) in human life on earth. The application of the concept is not only specific to the community but also to human beings of different races and religions. In general, the concept of *maqasid al-shari'ah* includes five essential criteria for safeguarding the interests of Muslims, which include protection and preservation of life, faith, intellect, lineage and finally, protection of property (Mohd *et al.*, 2018; Tuan Muda, 2021).

Livestock farms should be located in areas that meet the necessary standards to ensure the well-being of human life. This is because the location of the farm is considered a '*Dharuriyyat*', which means a fundamental and essential obligation in terms of *maqasid al-shari'ah*. If the set standards are not met, there is a risk of diseases spreading among the animals or contamination with harmful elements. This can lead to an increase in operation costs and negatively impact the breeder's economy. Additionally, it has the potential to spread zoonotic diseases to humans, which can be a significant health risk. For example, flies from livestock farms can disturb life and give adverse health to humans. Therefore, ensuring that the farm's location complies with halal standards is crucial, as it can affect the quality of meat produced and the well-being of the surrounding communities. Omar *et al.* (2012) emphasized that halal production should not only focus on the production of halal products but also ensure that it does not have a negative impact (*mafsadah*) on the environment and the lives of the surrounding communities.

5.2 Design of the housing system

It is widely known that nearly 60% of poultry farms in Malaysia use the intensive livestock housing system, also known as closed houses (Mohd Syauqi *et al.*, 2015). This system offers various benefits, especially in terms of management. It utilizes modern technology in designing cages and farm infrastructure, as well as bacteria and pest control and pollution control. According to Mohd Syauqi *et al.* (2015), the closed cage system is a well-organized livestock housing system that provides a more comfortable coop environment and can positively impact the success of broiler production operations. It involves good animal health management, an effective biosecurity system, and efficient food and drink management for livestock.

The closed cage system differs from the open coop system as it confines the broilers within the coop at all times to regulate their movement and behaviour during the care process. Typically, this closed house features a building structure with walls made of non-perishable materials like concrete (Appleby *et al.*, 2004; Cobb, 2018). The coop's construction structure has an exit and entry air space to ensure smooth airflow inside because it can impact the chickens' growth rate (Nawab *et al.*, 2018; Martins, 2019). Keeping in mind the concept of *maqasid al-shari'ah*, providing a comfortable chicken coop is a '*Hajiyyat*' requirement, where it is vital to ensure the chickens' comfort during their stay. Suppose the chickens feel

uncomfortable due to high or low temperatures. In that case, it can impact their growth rate and invite diseases to the poultry, leading to abnormal body shapes and not meeting the weight specifications. This, in turn, can affect the operation cost of the broiler's livestock. The Department of Veterinary Services (2006) reinforces this by insisting that the appropriate cage factor is a crucial element in increasing the productivity of the livestock farm by producing the optimal body weight of the chicken before marketing it to the slaughterhouse.

The closed coop-type poultry housing system that most breeders commonly use has many benefits for the chickens and the breeders. It not only produces a high number of chickens and provides comfort to the poultry, but it also helps avoid the occurrence of diseases, reduces the death rate of chickens, avoids wastage of animal feed, and controls the cost of medicines. Moreover, it provides better infrastructure, which is essential for environmental protection. Providing a housing system for broiler chickens is crucial as it significantly impacts the chickens' health and promotes animal welfare practices, which is highly demanded in Islam. Therefore, it is essential to highlight the potential risks associated with chicken coops to ensure the production of high-quality poultry that conforms to the concept of HT.

5.3 Feedmeal source

According to Nurulaina *et al.* (2017) and the Department of Veterinary Services (2012), it is crucial to regulate and ensure the quality of animal feed in terms of food safety. This is necessary to guarantee that the nutritional needs of farm animals are met, without causing any harm to humans or animals. Furthermore, according to Youn (2012) and Giriraj (2014), most chicken feed is composed of plant sources and animal waste products such as blood, bones, meat, chicken feathers, and fish meat. According to the *Shari'ah* concept, there are concerns about feeding animals with non-compliant ingredients, such as internal organs, pig faecal waste and sewage from illegal animal husbandry farms, which intentionally become the leading food of farm animals. This occurs because most farmers opt for the easy way to reduce operating costs and do not understand the concept of producing halal food products. The animal feed manufacturing industry, particularly poultry farming, mainly uses raw materials from grain sources. Mead (2004) and Iram *et al.* (2015) explain that animal feed consisting of grain sources can provide enough energy and metabolism for the growth process of broiler chickens. There are guidelines for good animal feeding practices, such as the Codex Alimentarius guide (2008), which ensures that animal food is safe to eat and meets safety standards at the production and farm levels. However, Malaysia's halal certification and standards do not pay enough attention to the production of halal animal feed products despite various issues raised by the Muslim community. Therefore, further research should be conducted to ensure that the source of animal food, especially broiler chicken, which is a popular chicken meat product among Malaysians, is free from any questionable elements according to *Shari'ah* law.

From the perspective of *Maqasid al-shari'ah*, ensuring that poultry food is free from najis elements and is safe for consumption is a requirement for the importance of '*Dharuriyyat*'. If livestock feed is processed with raw materials whose halal status is not known, it can become doubtful (*syubhah*) from the point of view of *Shari'ah* law. Moreover, if the feed is contaminated with mycotoxin fungi, it can harm the poultry and even the health of the meat consumers. Additionally, livestock feed should be free from all the risks,

such as contamination by pathogenic microorganisms and physically and chemically dangerous substances that can threaten the health and life of poultry. Therefore, the concept of *maqasid al-shari'ah*, especially the importance of '*Dharuriyyat*', significantly impacts *maslahah* (goodness) to both poultry and human health. To ensure that animal feed is safe, there are standards used in animal feed management, such as the guidelines developed by the Food and Agriculture Organization of the United Nations (FAO).

Based on FAO guidelines recommendations include detailed information on the code of practice for optimal livestock nutrition, effective animal feed management, and the implementation of the HACCP system. These guidelines aim to ensure the production of animal feed products that adhere to the principles of food safety and quality control. Furthermore, the Codex Alimentarius (2008) specifies the guidelines for preventing animal food contamination caused by hazardous substances like dioxin and aflatoxin, pathogenic bacteria, and harmful additives. Furthermore, the Malaysian government implemented the Animal Food Act in 2009 and has subsequently released multiple guidelines to oversee and examine animal farms. These measures aim to ensure that livestock farms effectively manage the provision of animal feed and adhere to hygiene and food safety standards. This legislation enables authorities to oversee and regulate the quality of animal feed in the animal husbandry industry. The goal is to ensure that animals are healthy, produce high-quality meat, remain disease-free, and adhere to animal welfare standards. Based on the previous discussion, it is evident that investigating the source of ingredients in sacred and halal animal feed is essential for upholding the halal integrity of chicken meat products, as required by Sharia law. This study not only ensures food safety but also compliance with halal standards. This can potentially dissuade the population, particularly Muslim consumers, from acquiring chicken meat that adheres to Islamic law and is deemed halal and safe for consumption.

5.4 Medication source

In the process of raising chickens, both traditionally and commercially, medicinal materials need to be used to ensure the health and well-being of the birds. Vaccines and antibiotics are necessary during the broiler care phase to protect against and prevent diseases caused by pathogenic microorganisms and viruses (Youn, 2012; Department of Veterinary Services, 2015; Khim, 2018). According to Youn (2012), various types of drugs are administered to farm chickens from the chick phase onwards, including vaccines, antibiotics, vitamins, and worm medicine. Chicks are vaccinated as soon as they hatch, typically at one day old, as explained in Cobb's (2013) guidelines. One of the goals of administering vaccines to chicks is to maintain their immunity level against diseases before they are sent to the farm. Aviagen (2018) states that vaccinating farm chickens takes place in several stages, at 7 days, 14 days, and 18 days of age. Vaccination timing depends on the chickens' health level obtained from the chick hatchery. The effectiveness of vaccines on poultry, according to Cobb (2013) and Lohmann (2018), is affected by the level of cleanliness of the coop and the effectiveness of biosecurity measures. If farmed chickens are exposed to high stress and the conditions of the cage facility are not hygienic, then the effectiveness of the vaccine will decrease. Therefore, it is crucial to ensure the effectiveness of vaccines on farm animals, especially broiler chickens, to prevent the spread of infectious diseases that can subsequently spread to humans. This is an essential aspect of animal husbandry activities. It is important to follow a proper procedure while giving medicinal

substances, vaccines, or antibiotics to farm animals, particularly chickens. This involves prescribing medicine suitable for farm chickens, as stated by various guidelines including those from the Department of Veterinary Services (2015), Aviagen (2018), Cobb (2018), and Zsolt Hankovszky (2018). The dosage of vaccines or other medicinal substances must comply with the permitted limits and depend on the type of disease infection the broilers. Furthermore, only approved and authorized medication should be used, and a veterinarian appointed by the integrator company should supervise its administration.

According to *Maqasid al-shari'ah's* perspective, the provision and management of medicinal substances involve not only the health care of farm animals but also considerations for human safety and environmental protection. This aligns with the concept of *maqasid al-shari'ah*, which aims to prevent harm and maintain the well-being of human life and the environment, both of which are viewed as *Allah* The Almighty creation. From a halal perspective, the health care of farm animals is linked to animal welfare practices. It conforms to HT and *Shari'ah* law principles, prioritising the goodness and benefit of humans. If the administration of medication to farm animals does not follow the proper procedures and control measures are not adequately implemented, it may cause harm, indicating a failure to follow the concept of HT. The context of Malaysia's halal certification is a topic of concern. It has been observed that only a few sources of vaccines used on humans have been certified as halal by JAKIM. However, the vaccine material used on farm animals does not receive the same level of attention. This has prompted researchers to suggest that vaccine ingredients used on halal livestock should also be given due consideration. It is not enough to evaluate vaccines solely on their safety aspects. The ingredients used in the vaccine must also adhere to the halal concept. Furthermore, when evaluating medicinal substances such as vaccines used on broiler chickens, it is essential to consider whether they align with the principles of shariah in Islam. The source of the vaccine content is a crucial factor in this regard. The raw materials present in the vaccine should be thoroughly examined and evaluated in terms of the level of halal risk they may pose. The potential presence of haram materials, as per the *Qur'an* and *hadith*, must be scrutinised and evaluated.

5.5 Farm biosecurity

Modern intensive poultry farming implements biosecurity systems to ensure the production of high-quality and safe meat for consumers. These systems primarily focus on preventive measures to mitigate the risk of spreading infectious diseases among agricultural products and livestock (Department of Agriculture, Fisheries, and Forestry, 2009; Department of Veterinary Services, 2006; Farmbiosecurity, 2018). Maduka *et al.* (2016) emphasize that biosecurity aims to prevent or impede the transmission of zoonotic diseases from intrinsic or extrinsic sources within farm areas. Essential procedures include maintaining cleanliness and sanitation, eliminating bacteria, controlling chicken movement and transportation, and isolating infected poultry. Negro-Calduch *et al.* (2013) elaborate on how effectively implemented biosecurity systems can minimize disease prevalence in livestock, enhance farm management, and prevent avian influenza outbreaks. Cleanliness and sanitation are crucial aspects as they directly relate to preventing biological contamination.

Oliveira *et al.* (2018) identify internal and external biosecurity as pivotal factors in preventing endemic infections in livestock. Internal measures involve cleaning and eliminating bacteria

within facilities. In contrast, external measures focus on protecting livestock from environmental risks, such as wearing protective clothing, sanitizing before handling livestock, and quarantining diseased animals. Steenwinkel *et al.* (2011) affirm that visitors adhere to biosecurity protocols, including practising good personal hygiene and disinfecting boots before entering poultry farm areas. Proper management of poultry carcass waste, as highlighted by the Department of Veterinary Services (2010; 2019), is essential to prevent disease spread. Standard disposal methods include burying in the ground or incineration process (Dafwang *et al.*, 2011).

However, in the context of halal food sources, Nurulaina *et al.* (2017) emphasise that using end-products from the chicken carcass rendering process raises concerns regarding compliance with Islamic law, particularly in animal feed production. Therefore, the content of animal feed containing processed products from animal carcasses must be studied and refined in terms of the concept of '*istihalah*' which refers to the transformation of a substance into another substance in terms of its physical and chemical properties (Jamaluddin & Wan Mohamed Radzi, 2009). As a result, although the scope of Malaysia's halal certification and halal standards does not focus on the production of animal feed, the process of disposing of chicken carcasses or farm waste following the procedures established by the authorities can mitigate the risk of the spread of zoonotic infections, not only among farm chickens but also potentially affecting human health. Following the appropriate medicine prescription for broilers is essential when giving farm animals medicinal substances, vaccines or antibiotics. This is because guidelines from the Department of Veterinary Services (2015), Aviagen (2018), Cobb (2018) and Zsolt Hankovszky (2018) emphasize that the use of vaccines or other medicinal substances should adhere to the permitted dosage and depend on the type of disease infection faced by broilers. Additionally, the medication used must be approved and authorized by the Department of Veterinary Services (DVS) and monitored by a veterinarian appointed by the integrator company organization.

In Islamic teachings, the management and regulation of medicinal products are not only restricted to the well-being of livestock. They also take into account the safety of humans and the environment. This is in line with the *maqasid al-shari'ah* concept, which aims to eliminate harm and evil to safeguard human life and the environment, both of which are creations of *Allah* The Almighty. Concerning halal standards, the health of farm animals is closely tied to animal welfare practices. It adheres to HT and *Shari'ah* law principles, which promote human benefits and well-being. If the administration of medication to farm animals does not follow proper procedures and control measures, it can cause harm, indicating that the HT concept is not entirely followed.

5.6 Environment

The outbreak of diseases is a serious threat to the broiler farming sector and can be devastating for breeders if the livestock becomes infected. Therefore, every broiler farm or other farm animal should establish a livestock health program to ensure the health and safety of the chicken meat products they produce. Three main principles are practised in poultry health care: disease prevention, identification of the initial stages, and follow-up treatment of infected diseases (Cobb, 2018). The health management of poultry generally covers three components, namely the management of the coop's cleanliness and the coop equipment's facilities, the use of vaccine and antibiotic materials, and the farm biosecurity

system.

The coop they live in must be clean to ensure that broiler chickens are in a healthy condition and free from any disease outbreaks. The cleaning management method refers to a method of cleaning the infrastructure of buildings for livestock purposes, equipment used such as drink and food containers, ventilation systems of coop, and hygiene facilities for livestock farm workers. In this regard, chicken excrement is disposed of on a scheduled basis because the accumulated excrement can cause the spread of pathogenic bacteria such as *E. coli*, *Salmonella*, *Listeria monocytogenes* and *Campylobacter* contaminate the food and drink of livestock (Youn, 2012). To avoid any health problems for farmed chickens, the chicken excrement needs to be separated and disposed of away from the farm area so that the breeding activities of insects such as flies, which are the main vectors of pollution and sources of harmful microorganisms, can be contained.

It is essential to focus on pest control and the management of farmed broiler chickens' health for optimal conditions. Integrated pest management should be carried out on every livestock farm to prevent pests from entering farm areas and chicken coops (Maduka *et al.*, 2016). Velkers *et al.* (2017) also state that pests can transfer bacteria or viruses to livestock feed and drink, negatively affecting the safety of poultry food and drink. For example, rats are one pest that should be avoided entirely and controlled. They can cause damage to property and farm equipment, and their presence can also contaminate animal feed sources. Rats are carriers of viruses that are dangerous to humans, and they can carry up to 35 types of zoonotic infections (Mohan & Saktivel, 2015). Therefore, the cleanliness and management of food and drink resources should be emphasized. The food storage room must be clean and free from any biological contamination to prevent the spread of dangerous viruses and infections. The biosecurity practices related to raising poultry are crucial to ensure that the meat produced is safe for human consumption (Cobb, 2018). The biosecurity practice is closely related to the *maqasid al-shari'ah* concept from the HT perspective. If rodents spread infection, it could lead to the death of poultry and affect human health through meat products. This aligns with the concept of '*Dharuriyyat*' which requires maintaining cleanliness of the chicken coop area to prevent harm to chickens and spread to the environment. Farm biosecurity procedures stress the cleanliness of workers, who must wear dedicated clothing and sanitize their hands and boots before entering the coop area. This is also linked to *maqasid al-shari'ah* requirements that ensure worker safety from diseases caused by zoonotic infection vectors. The study's focus on broiler care activities in the farming chain covers aspects of health and food safety management, as well as external factors that may impact health levels and potential risks affecting the quality of chicken meat production at the end of the chain.

6. Conclusion and recommendations

The demand for chicken meat products is increasing in the Malaysian community. In response, JAKIM authorities have implemented various initiatives to strengthen the halal assurance system. These initiatives include developing procedures and manuals related to halal management and verifying Malaysia's halal certificate. However, research on halal integrity and compliance has only focused on chicken slaughtering activities in slaughterhouses and the manufacturing of downstream products of chicken meat. Little attention has been given to the supply of live chickens raised at commercial livestock farms that use integrated management

systems. The concept of halal integrity requires attention to all aspects of halal slaughtered chicken, such as the location of the farm, the design of the housing system, the source of feed, the source of medication, the biosecurity system of the farm, and also the care of the environment, which are seen as potential risks to halal non-compliance. Therefore, it is essential to analyze and explain the necessary elements in the management of broiler farming holistically. This will provide new insight and guidance to industry players, especially in the broiler farming industry, and enable them to use the findings of the study as a guide in implementing halal traceability.

The study will positively impact the authorities responsible for halal management, specifically JAKIM, by examining the process of supplying live chickens and the slaughter process. This study's results will contribute to improving and strengthening the halal management system. It will also increase halal awareness and trust among the community, particularly consumers, by ensuring that the halal integrity of meat sources begins at livestock farms. Additionally, this study presents a new approach for researchers in the field of halal management. Future studies can focus on other non-ruminant or ruminant animal farming activities to assess potential halal risks and develop a halal management system at the upstream level of halal animal husbandry, ensuring that meat-based food products adhere to the halal concept.

7. Copyright

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HALALSPHERE

International Islamic University Malaysia - INHART



INHART's research landscape: A case study of trends and patterns (2008-2023)

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Abstract

This study thoroughly examines publication trends at INHART from 2008 to 2023, employing quantitative and qualitative methodologies to analyse the institute's thematic evolution and scholarly contributions. Results reveal a significant increase in publication volume and a strategic diversification of research topics over the examined period. In recent years, I have witnessed a focus on addressing complex issues such as "halal risk" and "halal critical points," which is indicative of INHART's responsiveness to emerging challenges in the global halal market. Furthermore, INHART's research trajectory aligns with broader sustainability goals and demonstrates proactive integration of advanced technologies. These findings highlight INHART's significant influence on halal practices and its potential to shape policy-making and societal well-being. The study concludes with recommendations for INHART to continue fostering interdisciplinary collaboration, expanding international partnerships, and prioritising educational initiatives to solidify further its impact in promoting ethical and sustainable practices within the halal industry.

Keywords:

Halal; INHART; Publication; Halal studies; Alternative ingredients.

1. Introduction

The International Institute for Halal Research and Training (INHART) has become pivotal in halal research and development. This report presents a detailed analysis of INHART's publications from 2008 to 2023 to unravel the thematic concentration and evolution of the institute's scholarly endeavours. Through this period, INHART has demonstrated impressive growth in publication volume and a strategic diversification of research topics. The analysis utilises quantitative and qualitative data from the institute's extensive library of publications, focusing on the distribution of keywords that indicate core research areas.

The key findings from this analysis have been visualised through a word cloud that encapsulates the frequency and prevalence of specific terms, providing a graphic representation of INHART's research focus. The institute has shown a sustained emphasis on halal-related research, with a noticeable pivot towards "halal risk" and "halal critical points" in recent years. This shift indicates INHART's response to the complexities and growing sophistication of the global halal market, emphasising the need for rigorous risk assessment and control mechanisms in halal certification processes. Over the past fifteen years, the institute has expanded its research portfolio to include environmental science, technological innovation, and sustainability. This is evident from the consistent presence of keywords such as "environmental monitoring," "sustainability," and "technological application" throughout the publications. The year-wise trend analysis

reveals a strategic alignment with global sustainability goals and the incorporation of advanced technologies to enhance research outcomes in halal studies. The publication trend line chart elucidates a significant increase in research output, reflecting INHART's commitment to academic excellence and its role as a research hub. The upward trajectory in the number of publications is a testament to the institute's growing influence and capacity to engage with contemporary research challenges. In conclusion, INHART's research trajectory over the years reveals a multi-faceted scholarship approach that aligns with its foundational objectives and emergent global priorities. The institute has successfully established a niche in halal research while branching into interdisciplinary studies that address the intersection of technology, sustainability, and societal needs. As INHART looks to the future, fostering an integrative research environment that encourages innovative studies across various disciplines is recommended. Emphasising research that addresses contemporary global challenges, such as sustainability and technological innovation within the halal sector, can further solidify INHART's standing as a leading research institution. Additionally, expanding collaborations with international bodies can aid in disseminating INHART's research findings, contributing to the global discourse on halal practices and sustainable development.

The institute should also consider leveraging its research capabilities to influence halal standards and environmental stewardship policy-making. By doing so, INHART can play a critical role in shaping industry practices and consumer behaviour, reinforcing halal products and services' ethical and

health-related aspects. Moreover, the institute is encouraged to continue its investment in empirical research that directly impacts the Muslim community and beyond. Studies focusing on financial inclusion, student welfare, and healthcare, as evidenced by the recent surge in relevant publications, align with the institute's core values and contribute to societal well-being and economic prosperity. Finally, INHART's focus on educational advancement through research should remain a priority. Cultivating knowledge in halal sciences, coupled with exploring modern scientific methods and ethical considerations, will prepare the next generation of researchers and industry leaders. This will also help maintain the relevance and application of halal principles in an ever-evolving global landscape. By adhering to these recommendations, INHART can enhance its research impact, foster sustainable growth, and continue to provide valuable insights into the multi-faceted dimensions of halal research and practice.

2. Materials and methods

2.1 Data collection

The primary data for this analysis was collected from the IIUM library database, which includes a comprehensive record of all publications by the institute's researchers from 2008 to 2023. The data was also collected from INHART's responses to a distributed survey to identify INHART's niche area. This data included various types of publications such as journal articles, conference papers, book chapters, and report.

2.2 Data extraction

Relevant information, particularly the titles, abstracts, and keywords of the publications, was extracted for analysis. This extraction process was crucial to understanding the focus of each publication and identifying the main research themes. Each entry's publication year was also noted to facilitate a temporal analysis of the research trends.

2.3 Data cleaning and preparation

The extracted data underwent a cleaning process to ensure accuracy and consistency. This included standardising formats, correcting errors, and removing duplicates.

2.4 Quantitative analysis

The data was then aggregated and tabulated to facilitate an easy comparison and visualisation of trends. A quantitative analysis was conducted to count the frequency of publications per year and the occurrence of specific keywords. This helped identify the areas of research that emphasised the most and trends over time.

2.5 Qualitative analysis

A qualitative assessment was carried out on the publication titles and abstracts to understand the context and depth of the research topics.

2.6 Trend analysis

Year-wise trends were analysed to observe how research themes have evolved and shifted. This involved tracking the frequency and prominence of specific keywords and themes across different periods. The trends were then mapped against global developments in halal studies and related fields to

understand how INHART's research aligns with or responds to these broader trends.

2.7 Visual data representation

Key findings were visualised using various graphical tools for a more transparent and engaging presentation. This included the creation of a word cloud to illustrate the most frequently occurring keywords and a line chart to display the publication trends over the years.

2.8 Synthesis and reporting

The collected data and analyses were synthesised into a comprehensive report. This report presented the findings and interpreted them in the context of INHART's mission and the broader field of halal studies. The synthesis aimed to provide a holistic understanding of INHART's research trajectory, highlighting key achievements, identifying gaps, and suggesting future directions.

3. Results

3.1 General analysis

The word cloud (Figure 1) presented is a visual representation of the frequency and relevance of terms within the data set related to research interests in the context of "halal." In a word cloud, the size of each word corresponds to its frequency or importance in the context from which the data was drawn. More prominent words indicate topics of greater prominence among the respondents' research interests.

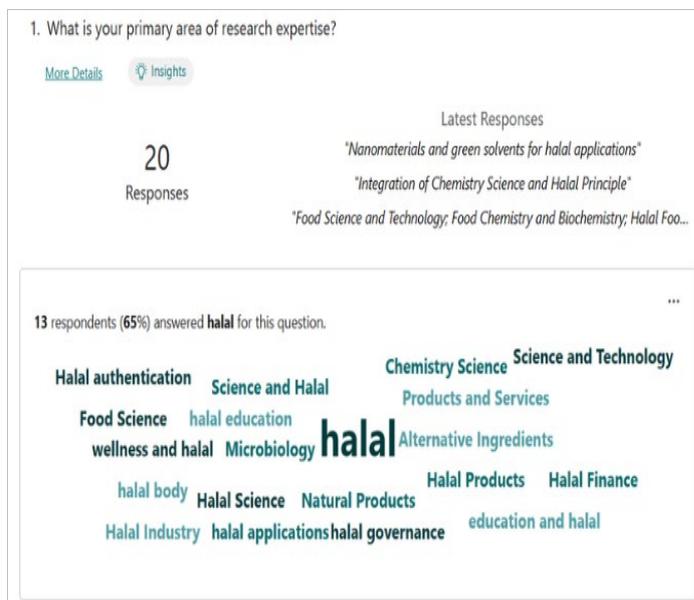


Figure 1: Word cloud presentation of primary area of research expertise.

The word cloud presented is a visual representation of the frequency and relevance of terms within the data set related to research interests in the context of "halal." In a word cloud, the size of each word corresponds to its frequency or importance in the context from which the data was drawn. More prominent words indicate topics of greater prominence among the respondents' research interests. The figure (Figure 2) below shows the sub-themes or sub-areas to which INHART has contributed.

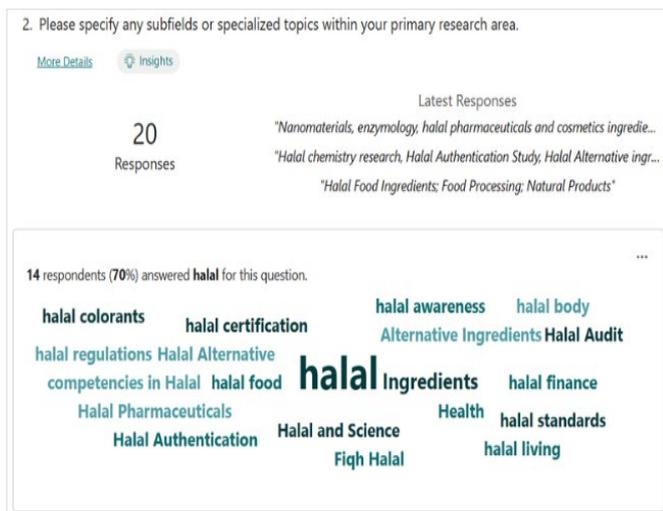


Figure 2: Word cloud presentation of sub-fields of research expertise.

The analysis noted that 100% of INHART staff have published in their area of expertise. In addition, 85% of INHART researchers are leading projects relevant to their research area, as demonstrated in Figure 3.

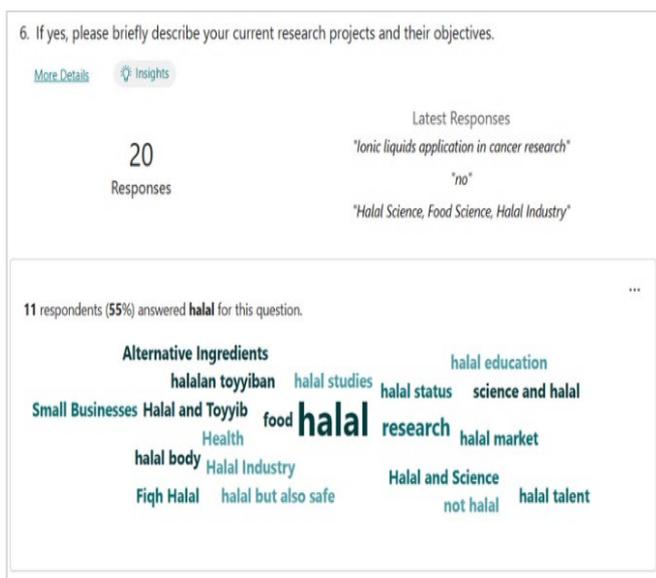


Figure 3: Current research projects by INHART researchers.

A summary of keywords identified by the researchers can be found in Figure 4.

The word cloud presented is a visual representation of the frequency and relevance of terms within the data set related to research interests in the context of "halal." In a word cloud, the size of each word corresponds to its frequency or importance in the context from which the data was drawn. More prominent words indicate topics of greater prominence among the respondents' research interests.

1. Central theme of 'halal':

The predominant term 'halal' in the centre of the cloud suggests that it is the most frequently mentioned keyword

across the responses. This indicates that 'halal' is a significant focus area within the research community, potentially spanning various applications and disciplines.

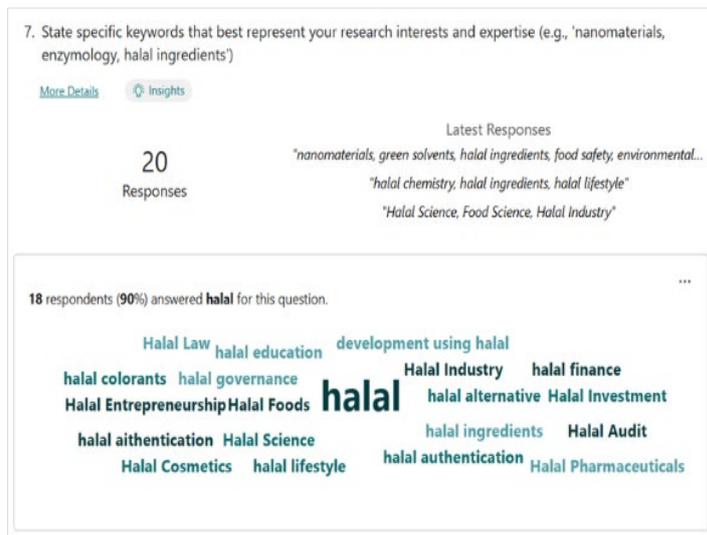


Figure 4: Specific keywords representation of INHART researchers.

2. Diversity in research topics:

The word cloud contains various terms associated with 'halal,' such as 'halal authentication,' 'halal education,' 'halal products,' and 'halal finance,' among others. This diversity illustrates that the research is not only centred on the concept of 'halal' as a singular theme but explores a range of subtopics that indicate a multidisciplinary approach within this overarching theme.

3. Interdisciplinary connections:

The presence of terms like 'Food Science,' 'Microbiology,' 'Chemistry Science,' and 'Science and Technology' adjacent to 'halal' suggests that the research has a solid interdisciplinary aspect. Researchers are not limiting their work to theoretical or theological aspects of halal but are also incorporating scientific and technological research to advance the field.

4. Application and industry relevance:

Words such as 'Products and Services,' 'Applications,' and 'Industry' point towards a practical research orientation with implications for commercial and industry applications. This could indicate an alignment with industry needs and a focus on translating research into practical solutions.

5. Educational aspect:

The mention of 'education' in conjunction with 'halal' implies that the research has an educational component, which could include the development of curricula, educational resources, or broader efforts to inform and educate about halal principles and practices.

6. Governance and policy influence:

The term 'governance' suggests that some research may be directed towards policy-making, regulation, and establishing standards in halal practices, which is critical for ensuring

compliance and ethical considerations in halal-related industries.

In conjunction with the earlier data, the analysis of this word cloud reinforces the conclusion that halal-related research is a prominent and multi-faceted field within the academic community. It underscores the potential for collaboration, the importance of industry partnerships, and the need for continued exploration of halal in various contexts to meet this field's educational, scientific, and commercial needs.

3.2 Keywords analysis

The detailed analysis of keywords from the subfields and research interests revealed the following top 10 most frequently mentioned keywords among the respondents:

Table 1: Top 10 Keywords

Rank	Keyword	Frequency
1	Halal Alternative Ingredients	4
2	Halal Ingredients	4
3	Halal Science	4
4	Halal Authentication	3
5	Halal Governance	3
6	Halal Education	2
7	Halal & Toyyib Lifestyle and Well-being	2
8	Consumer behaviour	2
9	Shari'ah Governance	2
10	Halal Cosmetics	1

Table 1 shows the top 10 keywords based on their frequency in the provided text. The presence of terms like "halal alternative ingredients" and "halal science" mentioned multiple times indicates a common interest or focus among researchers in the areas related to halal studies. Other keywords suggest interest in food authentication, health benefits of natural products, and environmental science topics such as bioremediation.

This information could be valuable for identifying common research themes and potential areas for collaboration among the researchers. It also highlights the diverse yet interconnected nature of the research interests within the academic community, which could be attractive to industry partners or sponsors looking for multidisciplinary research opportunities.

Based on the keywords you provided, several deductions can be made about the context and focus areas they represent:

1. Strong focus on halal sector: The prevalence of "halal" in the keywords indicates a primary focus on aspects related to halal products and services. This encompasses food, ingredients, cosmetics, pharmaceuticals, and lifestyle products.
2. Diverse applications in halal industry: The variety of keywords such as 'Halal Alternative Ingredients', 'halal Cosmetics', and 'Halal Pharmaceuticals' suggests a broad application of halal principles beyond just food. This indicates an expanding market and diversification in halal-compliant products and services.
3. Integration with science and technology: Keywords like 'Halal Science', 'Blockchain', and 'Nanomaterials' imply a significant integration of science and technology in the

halal sector. This could involve research and development in halal products, technological advancements in halal certification, and innovation in halal-compliant materials and processes.

4. Educational and governance aspects: The presence of 'Halal Education', 'Halal Governance', 'Shari'ah Governance', and 'Halal Audit and Certification' keywords suggest an emphasis on the educational, regulatory, and governance aspects of the halal industry. This points towards the importance of proper training, standardisation, and regulatory frameworks in maintaining halal integrity.
5. Ethical and sustainable practices: Keywords like 'Sustainability', 'Ethical', and 'Corporate Social Responsibility' indicate a growing awareness and integration of ethical and sustainable practices within the halal industry. This reflects a broader trend of environmental consciousness and ethical considerations in business and consumer choices.
6. Consumer behaviour and market trends: The mention of 'Consumer Behaviour' and 'Purchase Intention' suggests a focus on understanding how consumers perceive and choose halal products, which is crucial for market strategy and product development.
7. Financial aspects in halal sector: The presence of keywords like 'Halal Finance', 'Islamic Finance', and 'Halal Investment and Finance' highlights the financial dimensions of the halal industry, indicating a specialised niche in finance that complies with Islamic principles.
8. Interdisciplinary research and development: The diversity of keywords, ranging from 'Food Sciences' and 'Environmental Health' to 'Molecular Microbiology' and 'Psychological Experience', suggests that the field is interdisciplinary. This reflects the integration of various scientific, social, and environmental studies in understanding and developing the halal sector.
9. Health and lifestyle focus: Keywords like 'Halal & Toyyib Lifestyle and Well-being' and 'Food Safety' emphasise the importance of health, well-being, and safety in the halal sector, indicating a consumer base that is health-conscious and concerned about the quality and safety of products.
10. Technological and digital innovations: The mention of 'Blockchain', 'Virtual Reality Applications', and 'Gamification' indicates an exploration of digital and technological innovations in the halal sector, possibly in marketing, consumer engagement, or supply chain management.

In summary, these keywords paint a picture of a dynamic and growing halal sector that is diverse in its product and service offerings and deeply integrated with technological, educational, ethical, and financial dimensions.

3.3 Publications analysis (2008-2023)

Summary of the publication trends from 2008 to 2023 based on the data:

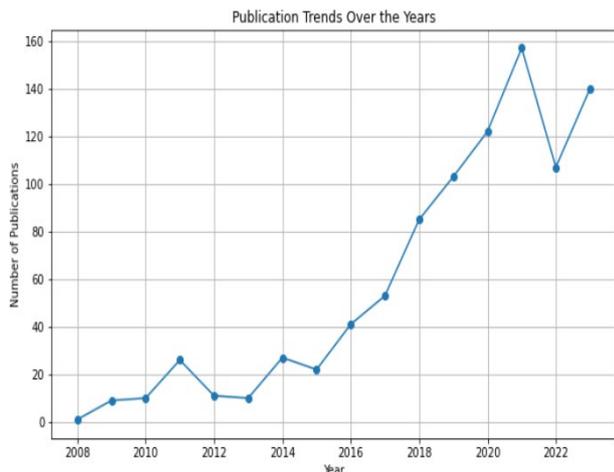


Figure 5: INHART publications 2008-2023.

1. Overall increase: The general publication trend significantly increased over the 16 years. Starting from just one (1) publication in 2008, there is a notable rise to 140 publications by 2023.
2. Initial growth (2008-2014): Between 2008 and 2014, the number of publications gradually increased. The period started with only one (1) publication in 2008 and gradually rose, reaching 27 publications by 2014. This phase is characterised by slow but steady growth.
3. Rapid expansion (2015-2021): From 2015 onwards, the number of publications significantly accelerated. The number more than doubled from 22 in 2015 to 157 in 2021, marking the peak of the trend. This period represents a phase of rapid growth and heightened activity.
4. Recent fluctuations (2021-2023): After reaching a peak in 2021, there was a slight dip in 2022, followed by a recovery in 2023. These fluctuations might suggest a stabilisation in the field or varying factors influencing publication rates.
5. Notable peaks and dips: The highest number of publications was in 2021 (157), while the lowest (excluding the starting year) was in 2009 and 2010 (both 10). The reasons behind these fluctuations could be multiple, including changes in research funding, shifts in research focus, or external global factors.

The overall publication trend is significant growth, with rapid expansion in the middle years and some fluctuations towards the more recent years. The data reflects an increasing interest and development in the field over time.

The provided pie chart (Figure 6), represents a distribution of the types of publications by the International Institute for Halal Research and Training (INHART) from 2008 to 2023. Here is an analysis based on the visible data:

1. Articles (63.5%):

The most significant portion of the chart is occupied by Articles, making up 63.5% of all publications. This indicates that journal articles are the most common publication type by INHART, suggesting a strong focus on contributing to academic journals

and disseminating research findings through peer-reviewed platforms.

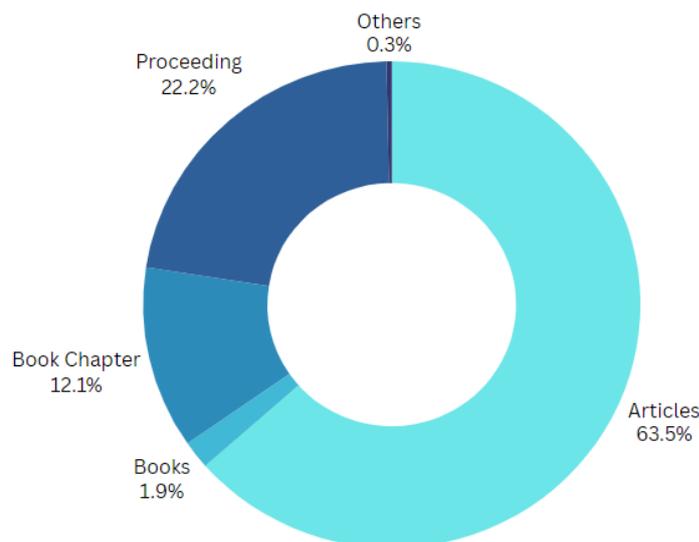


Figure 6: INHART publications type overview.

2. Articles (63.5%):

The most significant portion of the chart is occupied by Articles, making up 63.5% of all publications. This indicates that journal articles are the most common publication type by INHART, suggesting a strong focus on contributing to academic journals and disseminating research findings through peer-reviewed platforms.

3. Proceedings (22.2%):

Conference proceedings account for 22.2% of the publications, which is significant and shows active participation in academic conferences and symposiums. It reflects the institute's commitment to engaging with the scholarly community and sharing research outcomes in collaborative environments.

4. Book chapters (12.1%):

Book chapters comprise 12.1% of the publications, contributing to scholarly books. This could suggest a more in-depth exploration of specific topics within the field of halal studies that are suited to the format of book chapters.

5. Books (1.9%):

Books represent 1.9% of the publications, which is relatively small compared to articles and proceedings. This suggests that while INHART does create comprehensive works, the focus is more on articles and shorter pieces that contribute to collective volumes.

6. Others (0.3%):

The category labelled as others accounts for only 0.3% of the total publications. This could include other publication types, such as reports, monographs, working papers, or policy briefs. The small percentage suggests these outputs are a minimal part of INHART's overall publication strategy or are less frequent projects.

The pie chart provides a clear visual representation of INHART's prioritisation in publication types, with a strong emphasis on journal articles, which are often valued for their peer-reviewed status and academic rigour. The considerable portion of conference proceedings also highlights INHART's importance on academic discourse and networking within the research community.

The distribution suggests that while INHART contributes significantly to the body of knowledge through detailed articles and findings presented at conferences, there is a notable but minor engagement in creating comprehensive scholarly works and specialised book chapters. The minimal presence of 'Others' indicates niche or less conventional outputs, which may serve particular purposes or audiences within halal research.

Overall, the pie chart indicates a well-rounded approach to disseminating research with a clear preference for peer-reviewed articles, which may enhance the institute's academic credibility and impact within the halal research community. It also points towards strategic opportunities for increasing the production of books and other publications, which can provide more substantial contributions to the field and offer comprehensive insights into complex subjects related to halal studies.

3.4 Publication Type

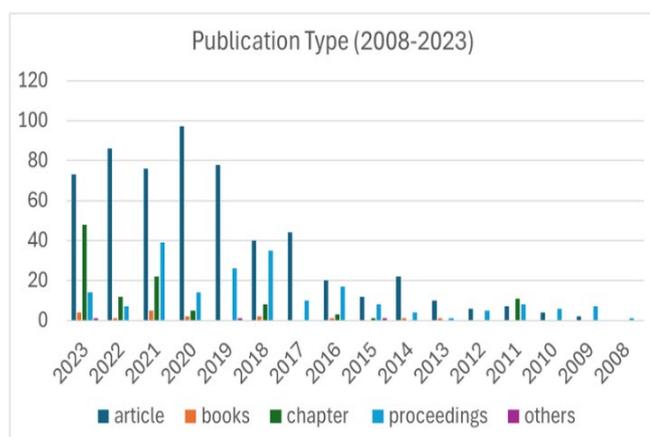


Figure 7: INHART publications type 2008-2023.

- **Publication trend over time:**

The chart indicates a fluctuating trend in the number of publications over the given period. There are years with high publication counts and others with relatively few.

- **Most common publication type:**

Articles are the most common type of publication throughout the entire period, with their numbers peaking significantly in specific years like 2021, 2020, and 2019.

- **Books and book chapters:**

Publications classified as books and book chapters are present but constitute a smaller portion of the output. Book production appears to have remained relatively steady, though low, across the years.

- **Conference proceedings:**

Conference proceedings are another category that has shown a sporadic presence over the years. Notably, there seems to be a peak in conference proceedings around 2019.

- **Other publications:**

The 'others' category suggests additional publications that do not fit the standard categories of articles, books, chapters, or proceedings. These occur less frequently but are a consistent part of the publication mix.

- **Overall output:**

The overall publication output shows significant variation from year to year. Notably, there is a visible peak in 2021, followed by a decrease in 2022 and a slight increase in 2023.

- **Recent years:**

In the most recent years, 2021 and 2023, the number of articles has remained high, indicating a strong focus on research articles as the primary mode of disseminating research findings.

- **Long-term trend:**

While the data fluctuates, there seems to be a general upward trend in the total number of publications over the years, with some fluctuations that could be attributed to various factors such as changes in research focus, funding, or external events impacting research productivity.

This chart provides valuable insights into INHART's publication practices, highlighting the preferred modes of research communication and how they have evolved. The predominance of articles aligns with academic trends of prioritising peer-reviewed journals for disseminating research. For a more comprehensive analysis, it would be essential to consider additional context, such as institutional priorities, changes in staff or strategy, and external factors that may have influenced these trends.

3.5 Keywords analysis

- **Year-wise keyword trends:** The research focus has progressively incorporated emerging trends, with recent years highlighting the significance of "halal risk" and "halal critical point analysis," showing a nuanced approach to the complexities of halal certification and compliance.

- **Frequency analysis:** "Halal" remains the overarching theme, with other keywords like "sustainability" and "halal integrity" gaining prominence.

- **Word cloud visualisation:** The updated word cloud for 2008-2023 provides a visual reflection of the institute's wide-ranging research focus, with "halal," "sustainability," and "risk" being notably prevalent. (Figure 6).

The comprehensive analysis of INHART's publications from 2008 to 2023 reveals significant trends and patterns in research topics. A year-over-year examination indicates a diverse and evolving research agenda punctuated by a sustained emphasis on halal-centric studies. The early years were characterised by a focus on environmental monitoring and the integration of technology, as demonstrated by keywords such as "microclimate," "sensors," and "AWS." This focus on technological applications points to an initial drive to harness scientific advancements in service of environmental stewardship and monitoring.

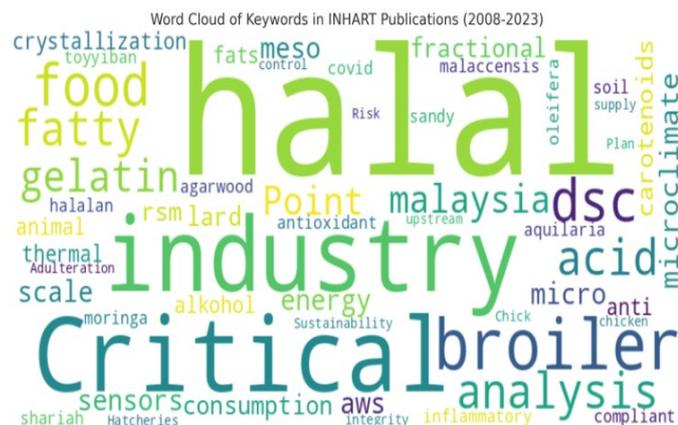


Figure 6: Word cloud of keywords in INHART publications (2008-2023).

As the years progressed, a distinct pivot towards halal studies became apparent, with keywords such as "halal," "gelatin," "shariah compliant," and "halal industry" surging to the forefront. This shift reflects the growing global demand for halal-certified products and the increasing complexity of the process. By 2023, the research had further specialised into nuanced areas of the halal sphere, with "Halal Risk," "Halal Critical Point," and "Halal Critical Point Analysis Plan" emerging as prominent themes. These keywords underscore a matured focus on risk assessment, critical control, and analysis within halal practice, highlighting the institute's commitment to leading-edge research in halal process integrity and certification.

- The frequency analysis of keywords across the fifteen years shows "halal" as the most recurrent keyword, indicating the central role of halal studies within INHART's research portfolio. However, the institute has not been insular in its focus. Keywords such as "sustainability," "risk management," and "financial inclusion" signal a broader engagement with interdisciplinary themes that intersect with the core halal research. Such a broadened scope suggests that INHART is looking at halal as a certification of products and as a comprehensive framework that encompasses ethical finance, sustainable business practices, and social responsibility.
- The word cloud generated from the keywords provides a visual testament to the breadth and depth of INHART's research interests. It illustrates the dominant themes and the interconnectivity between various research topics. The larger the word, the more frequently it appears in the dataset, allowing for an at-a-glance understanding of the research focus areas.
- The frequency analysis of keywords across the fifteen years shows "halal" as the most recurrent keyword, indicating the central role of halal studies within INHART's research portfolio. However, the institute has not been insular in its focus. Keywords such as "sustainability," "risk management," and "financial inclusion" signal a broader engagement with interdisciplinary themes that intersect with the core halal research. Such a broadened scope suggests that INHART is looking at halal as a certification of products and as a comprehensive framework that encompasses

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3.5 Discussion

The findings from the data analysis invite a nuanced discussion about the trajectory of INHART's research and its alignment with global trends. The consistent focus on halal topics reflects the institute's foundational mission but also indicates a responsive adaptation to the evolving needs of the Muslim community and global market demands. Halal research is prominent for its religious implications and economic and social impact, as halal products and services are increasingly sought after in international markets. The institute's pivot towards addressing complex issues within the halal sector, such as risk analysis and critical control points, suggests a deepening of expertise and a move towards thought leadership in creating advanced halal certification processes. This evolution mirrors the global trend towards greater scrutiny and standardisation in food safety and ethical practices.

INHART's engagement with sustainability issues intersects with the halal sphere, as both areas share common ethical considerations and a focus on stewardship. This is reflected in the rising frequency of sustainability-related keywords over recent years. The integration of these themes points to a holistic approach to halal studies, one that encompasses broader ethical and environmental concerns. The institute's foray into financial inclusion and modern analytical techniques, such as HPLC and GC-MS, indicates an interdisciplinary approach that bridges Islamic studies with modern science and economics. This blend of traditional and contemporary knowledge positions INHART as a progressive research entity capable of addressing current and future challenges.

Furthermore, introducing keywords related to pharmaceuticals, bioactive ingredients, and healthcare suggests that INHART is expanding its reach into the health sciences, potentially addressing the need for halal pharmaceuticals and healthcare services. This expansion indicates an awareness of the comprehensive needs of Muslim consumers and a commitment to serving those needs through research.

The analysis of publication trends shows a healthy and growing output, signifying a vibrant research environment at INHART. The increase in publication numbers aligns with the expanding scope of research topics and indicates a successful effort to foster a productive scholarly community. However, the fluctuation in publication numbers in recent years may suggest a need to consolidate research efforts or reflect global events that have impacted academic productivity.

In conclusion, the discussion reveals INHART's dynamic research approach, which reflects its core mission and adapts to emerging global challenges. By maintaining a balance between deepening its expertise in halal studies and exploring new interdisciplinary research avenues, INHART is well-positioned to contribute meaningful insights and solutions that

align with its vision and the needs of the broader community.

4. Recommendation

Considering the trends and insights gleaned from the publication analysis, the following strategic directions and initiatives are recommended:

1. Strengthening halal research leadership:
 - Continue to lead and innovate in the field of halal studies. Given the prominence of 'halal' in your research, further developing this niche can position INHART as a global thought leader.
 - Explore advanced halal certification processes and ethical standards, addressing emerging complexities in global halal markets.
2. Interdisciplinary research integration:
 - Foster interdisciplinary research that bridges halal studies with sustainability, technology, and health sciences. This approach can lead to more holistic and impactful studies addressing societal and environmental issues.
 - Encourage collaboration between departments to create synergy in research efforts, leading to innovative solutions that cut across traditional academic boundaries.
3. Industry and community engagement:
 - Increase engagement with industry partners to ensure research remains relevant and impactful. This can include collaborative projects, consultancy, and knowledge transfer programs.
 - Strengthen community outreach programs to raise awareness about halal practices and their benefits, enhancing societal understanding and acceptance.
4. Global collaboration and networking:
 - Establish and strengthen international collaborations with other leading institutions and research centres. This can lead to joint research projects, academic exchanges, and shared best practices.
 - Participate in global conferences and forums to showcase INHART's research, fostering international recognition and influence.
5. Research in emerging technologies:
 - Invest in research on the application of emerging technologies in halal certification and monitoring processes, such as blockchain, IoT, and AI.
 - Explore the potential of these technologies in enhancing traceability, transparency, and efficiency in the halal supply chain.
6. Student and young researcher development:
 - Nurture the next generation of researchers through mentorship programs, research internships, and workshops. Encourage student involvement in research projects from the early stages.
 - Offer specialised training and development programs in halal studies and related fields to equip young researchers with the necessary skills and knowledge.
7. Policy influence and advisory role:
 - Utilize the institute's expertise to influence policy-making in national and international halal standards.

- Serve as an advisory body to governments and international organisations on issues related to halal certification, regulation, and industry practices.
8. Funding and resource allocation:
 - Seek diversified funding sources to support and expand research activities, including grants, industry partnerships, and endowments.
 - Allocate resources strategically to prioritise high-impact research areas and to support emerging research fields.
 9. Publication and dissemination:
 - Encourage and support the publication of research findings in high-impact journals and platforms.
 - Develop a comprehensive dissemination strategy that includes open-access publications, digital repositories, and engaging with broader audiences through media and public forums.
 10. Monitoring and evaluation:
 - Implement a robust monitoring and evaluation framework to assess the impact and relevance of the research conducted.
 - Use these insights for continuous improvement and strategic planning of future research directions.

By embracing these recommendations, INHART can enhance its research impact, foster innovation, and continue to contribute significantly to the field of halal studies and beyond

5. Conclusion

The comprehensive analysis of the publication trends at the International Institute for Halal Research and Training (INHART) from 2008 to 2023 provides a vivid narrative of the institute's scholarly evolution and intellectual contributions to halal studies. The increasing volume of research outputs, coupled with the diversification of topics, underscores INHART's growing prominence and pivotal role in shaping the discourse on halal practices regionally and globally. The focus on "halal" as a central theme throughout the years has not only reinforced INHART's position as a leading authority in halal certification and compliance but has also demonstrated the institute's commitment to advancing halal as a comprehensive lifestyle concept that permeates various aspects of social and economic life. The recent progression into specialised areas such as "Halal Risk" and "Halal Critical Point Analysis" marks a significant advancement in the institute's research capabilities, addressing the increasingly sophisticated demands of halal certification processes and the associated industry standards. The alignment of INHART's research themes with broader global concerns such as sustainability, ethical finance, and healthcare innovation reflects a strategic foresight and a recognition of the interconnected nature of modern challenges. These are not isolated academic pursuits but critical issues that resonate with a global audience, providing valuable insights and pragmatic solutions catering to diverse stakeholders. Moreover, the institute's research trajectory effectively responds to the dynamic changes in the international landscape, including shifts in market needs, consumer behaviour, and regulatory environments. By embracing an interdisciplinary approach and integrating traditional Islamic principles with contemporary scientific methods, INHART has demonstrated the ability to remain relevant and influential in an ever-changing world. As INHART looks to the future, it is imperative to build on this solid

foundation and continue to push the boundaries of research. Encouraging innovative studies, fostering international collaborations, and influencing policy-making will amplify the institute's impact. There is also an opportunity to enhance the dissemination and application of research findings, ensuring that the knowledge generated leads to tangible benefits for society. In summary, INHART's research from 2008 to 2023 paints a picture of an institute deeply rooted in its core mission while dynamically adapting to new challenges. It is a testament to the institute's dedication to research excellence and its vision to be at the forefront of halal studies and related fields. Moving forward, the institute is well-positioned to continue its growth trajectory, influence, and contribution to the global halal industry and the broader context of ethical and sustainable practices.

5.1 Conclusion of INHART's niche area

Main Niche Area: Halal Studies INHART has firmly established its niche in halal studies, demonstrating a strong focus on the comprehensive aspects of halal certification, compliance, and integration with contemporary challenges. This area aligns with the institute's core mission and responds to the global interest in ethical and religiously compliant practices.

Major Sub-Niches:

1. Halal certification and compliance process:

- This sub-niche encompasses developing and refining standards and methodologies for halal certification. It covers the ethical, legal, and procedural dimensions of ensuring products and services meet halal requirements.
- Research in this area is critical for upholding the integrity of halal certification in diverse markets and adapting to changing regulatory environments.

2. Integration of halal with technology:

- A key area of focus is the intersection of halal studies with technological advancements, including alternative ingredients and modern tools and techniques in halal certification, monitoring, and enforcement.
- The institute's emphasis on technologies like blockchain for traceability, AI for product analysis, and IoT in supply chain management reflects its commitment to innovation in halal practices.

3. Halal and sustainability:

- Sustainability in halal practices represents a vital research area, focusing on halal production and consumption's environmental and ethical aspects.
- This sub-niche includes studies on sustainable business models in the halal industry and the environmental impacts of halal certification, promoting sustainable practices within halal frameworks.

These sub-niches under the broader umbrella of halal studies showcase INHART's role as a forward-thinking research institution. By embracing these areas, INHART not only

upholds its expertise in traditional halal studies but also addresses contemporary global challenges and technological developments. This multi-faceted approach positions INHART as a leader in research that is culturally significant and globally relevant. Figure 8 shows a mind map representing the above.



Figure 8: INHART niche areas and sub-areas based on the analysis.

6. Acknowledgement

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HALALSPHERE

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Embracing halal: Unraveling *Muallafs'* dietary transformation in Brunei Darussalam

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Abstract

With the increasing number of apostasies among *Muallaf*, driven by challenges in transitioning to devout Muslims and sudden shifts to halal dietary lifestyles, detrimental impacts on their social circles and relationships emerge. This qualitative study aims to analyse *Muallafs'* halal food practices, challenges, and adaptation. While respondents could adopt basic halal food practices, gaps in halal food consumption education persist among *Muallaf*, compounded by social challenges and a lack of support and awareness within their close social circles. Challenges include difficulties obtaining halal food while travelling abroad and *Muallafs'* vague understanding of Islamic teachings on halal food. Thus, challenges in halal food consumption among *Muallaf* in Brunei Darussalam predominantly arise during social eating with non-Muslim family and friends, during travel abroad, and regarding halal food issues.

1. Introduction

Corresponding to the increasing number of apostasies among the *Muallaf* due to their difficulties transitioning to become devoted Muslims indicates the importance of assisting them as new Muslims (Muhammad *et al.*, 2018; Majid & Muhammad, 2018). The predicament of the *Muallaf* does not improve, considering that most of them have arguments with their family members due to a sudden shift in their daily routine, such as changing their food consumption (Sintang & Hambali, 2018; Abdillah & Sjafe, 2019). Moreover, considering that the *Muallaf* are new to the concept of halal, it is evident that one of the challenges they face is revamping their dietary habits (Paolielli, 2019; Abdillah & Sjafe, 2019).

Supported by Maslow's hierarchy of needs, food and beverages are the most fundamental human needs in their daily lifestyle, categorising food as the first and most crucial stage of human necessity (Hopper, 2020). Equally, in Islam, halal is considered a ground rule for a Muslim. The *Muallaf* would need to preserve both their family ties and their faith in Islam to mitigate the problem of apostasies among the *Muallaf* and the detrimental impact on their social circle (Sintang & Hambali, 2018; Suki & Salleh, 2018; Abdillah & Sjafe, 2019). They need to be vigilant and willing to take appropriate action on the food they wish to consume.

As a consequence of an individual converting to Islam (*Muallaf*), they are expected to revamp their whole life, including necessities such as their daily consumption (Awang,

et al., 2017). Despite the widely held view that the event of a non-Muslim converting to Islam in Brunei Darussalam is not something out of the ordinary, there is little research about the *Muallafs'* behaviour towards halal food consumption. Even if there is, it is mainly conducted outside of Brunei Darussalam, such as the study done by Awang *et al.*, (2017) in Malaysia along with Lon and Widyawati (2019) in Indonesia. Furthermore, most studies in Brunei Darussalam, such as Hashim (2021), focus solely on customers' attitudes towards purchasing halal food.

How the *Muallaf* in Brunei Darussalam deals with the difficulties of implementing their halal food consumption practices into their daily life is a matter of concern. This paper aims to examine their halal food practices, evaluate the difficulties they have experienced, and investigate how they responded to the difficulties of implementing their halal food consumption practices. By obtaining a thorough understanding of how the *Muallafs* practice their halal food intake as recent converts, the researchers hope to contribute to the development of the halal food curriculum for the *Muallaf*, facilitating their dietary transition.

2. Materials and methods

Due to the nature of the research, which aims to understand better the phenomenon of the dietary transition of the *Muallaf* towards halal food consumption implementation, a qualitative research approach was chosen. The researcher managed to recruit five respondents for the research by utilising purposive sampling. The researcher gathered the respondents by

contacting the *Muallaf* Development Division (*Muallaf* Welfare) under the Islamic *Da'wah* Centre to obtain a list of *Muallaf* in Brunei Darussalam that fit the criteria of this research.

Referring to Table 1, the respondents consisted of two female converts, Naimah and Aisyah (pseudonyms used for this paper), and three male converts, Rasyid, Rawi, and Zaid (pseudonyms used for this paper). All respondents live in Brunei Darussalam, qualifying them for this research.

Table 1: Background of the respondents

Name of respondent	Previous religion	Duration of conversion
Naimah	Christianity	18 years
Rasyid	Buddhism	6 years
Aisyah	Christianity	27 years
Rawi	Free thinker	4 years
Zaid	Free thinker	4 months

The interview sessions were conducted between January 31, 2022, and February 10, 2022. Due to a surge in COVID-19 cases in Brunei Darussalam at the time of the interviews, most respondents preferred online interviews. Only one respondent agreed to a face-to-face interview.

Before the interview sessions, the respondents were briefed on the research objectives and purposes, and their consent was obtained. The researcher assured them their details and information would remain anonymous, confidential, and unpublished. Once consent was obtained, the researcher requested approval to record the interview sessions for research purposes, such as transcription and translation (Stausberg & Engler, 2021). Once approved, the semi-structured interviews were conducted in both English and Bruneian Malay.

Since this study focuses on examining subjective experiences and opinions about a sensitive matter, the respondents were interviewed individually to obtain data, allowing the researcher to gain new perspectives on their dietary transition towards halal food consumption (Milena *et al.*, 2008). Overall, the duration of the interview sessions ranged from approximately thirty to forty-five minutes, fulfilling the criteria for qualitative research as published by DiCicco-Bloom and Crabtree (2006), which states that interviews should be conducted for at least thirty minutes to more than an hour.

Among the questions included to analyse halal food practices were: "Can you define what halal food means to you?", "Is consuming halal food entirely your choice?", "Do you ensure your food is halal before purchasing?", and "Do you feel secure eating halal food without a halal logo provided by another Muslim?".

To assess the challenges faced by the *Muallaf* regarding their implementation of halal food consumption, questions included were: "Did you have any habits of consuming non-halal food before converting to Islam?", "Were there any moments where halal dietary concerns made you hesitant or worried before converting to Islam?", "What dietary challenges have you faced as a *Muallaf*?", "Was your family supportive of your implementation of halal dietary practices?", "Are there specific

situations that make halal consumption a challenge for you?", "Is it easy for you to obtain or consume halal food?", "Is knowledge or understanding the *hukm* of food a challenge for you?", and "If you were confused about the halal status of food, is it easy for you to obtain information about the *hukm*?".

To investigate how the *Muallaf* adapted to halal food consumption, the question was, "Based on the challenges mentioned, how did you overcome or adapt to them?".

During data processing, any identification of personal information was discarded and not published. The next section of this paper will disseminate the results using thematic analysis to convey the data collected from the interview sessions.

3. Results and discussion

This section of the paper thoroughly extracts the data gathered during the interview sessions. Readers will be able to understand the respondents' halal food practices, challenges, and adaptation to these challenges. As a result, this section will be divided into three subtopics to elucidate each research objective.

3.1 *Muallafs'* halal food practices

The respondents believed that they had begun practising halal food consumption even before converting to Islam (Ramadhan, 2018; Yulita & Ong, 2019). However, they admitted to not inspecting the ingredients of products or the slaughtering process of the meat they consumed. Consequently, most claimed to face little to no challenges in implementing halal food practices in Brunei Darussalam. This ease of dietary transition may be influenced by the country's national principles of *Melayu Islam Beraja* (Malay *et al.*) and Brunei Darussalam's strong image as a '*Negara Zikir*' (Ahmad Kumpoh, 2011).

When asked about the definition of halal, all respondents were able to provide an answer, which is crucial for identifying halal food when purchasing products. Their responses focused on describing halal in the context of halal meat, which involves animals slaughtered in accordance with *hukm syara'* (Yusoff *et al.*, 2015). Aisyah further defined halal by mentioning its benefits for human health and spiritual well-being (Kawangit & Guleng, 2016; Nazihah & Ariffin, 2020).

Despite Zaid converting to Islam in less than 5 months and Rawi in less than 5 years, they could identify that consuming flowing blood is prohibited and *syubhah* matter should be avoided (Regenstein *et al.*, 2006). This indicates their knowledge of halal food, especially since research by Rahman *et al.* (2021) found that Muslims in Malaysia are unfamiliar with the term *syubhah*.

When questioned whether consuming halal food was a personal choice, all respondents except for Zaid stated that apart from being mandated by religion, consuming halal food is entirely their choice, and they do not feel pressured. Their response aligns with the findings of Vanany *et al.* (2019), who concluded that respondents believed halal food was the most perfect and the best choice.

Table 2: List of respondents' halal food practices

Respondent/Questions	Naimah	Rasyid	Aisyah	Rawi	Zaid
Practiced consuming halal food prior to converting	✓	✓	✗	✓	✓
Knowledgeable in the definition of halal food	✓	✓	✓	✓	✓
Consuming halal food is their personal choice.	✓	✓	✓	✓	✗
Ensures the product is halal before purchasing	✓	✓	✓	✓	✓
Consuming halal food is essential to them.	✓	✓	✓	✓	✓
They felt secure consuming food without the halal logo given by another Muslim.	✓	✗	✓	✗	✓

Considering the importance of consuming halal food, respondents would not only inspect the halal logo but also check product ingredients (Shaari & Mohd Arifin, 2009; Kawangit & Guleng, 2016). Naimah only purchases brands she is familiar with, while Rawi inspects the product's origin (Kawangit & Guleng, 2016; Raffi *et al.*, 2022; Ahmad *et al.*, 2023). All respondents emphasised the importance of consuming halal food, consistent with the findings of Vanany *et al.* (2019).

Lastly, after gaining insights into their halal food practices, the researcher presented a scenario asking whether they would feel secure consuming halal food without a halal logo provided by a Muslim. All respondents except for Rasyid and Rawi indicated they would consume halal food given by another knowledgeable Muslim, even without a halal logo, based on specific personal principles. For instance, Zaid mentioned he would eat if "that person is wearing *topi haji* and *jubah*; I will think that they are doing it for alms, so I will just eat it". Naimah, Aisyah, and Zaid felt secure in consuming food without a halal logo, as they were not doubtful of food given by another Muslim. According to Ramli and Aminuddin (2017), food only becomes *Syubhah* if there is doubt, which was not the case for Naimah, Aisyah, and Zaid.

3.2 Muallafs' challenges to implementing halal food consumption

The challenges can be categorized as factors contributed by their social circle, difficulty obtaining halal food while travelling abroad, and halal food issues, along with the unconscious challenges that the *Muallaf* face. The researcher identified these unconscious challenges as the *Muallafs'* vague understanding and lack of access to resources in Islamic teachings.

3.2.1 Social circle

The challenges caused by their social circle can be categorised into two categories: those from their family members and their friends (Sintang & Hambali, 2018; Abdillah & Sjaf, 2019). The challenges from family members can be further divided into two categories: deceitful behaviour and a lack of awareness regarding halal food practices, especially concerning food and utensil contamination.

Beyond the expected dissatisfaction with her conversion, Naimah recalled a situation with her parents (Yusif, 2004; Sintang & Hambali, 2018; Paoliello, 2019). She mentioned, "My parents are aware of the concept of halal and knowledgeable about halal dietary practices, but sometimes they would purposely claim food is halal when it is not." Additionally, Naimah explained the challenges she faced living with her parents, cooking in her room and purchasing her equipment due to the absence of a separate kitchen. This intense challenge arose because she converted to Islam individually.

Similarly, Rasyid, who also converted individually, faced a similar situation where "my father understands, but the rest of my family does not fully grasp halal dietary practices, so if I wash my dishes, they still use them." This lack of understanding aligns with the findings of Rahim *et al.* (2011).

Regarding family members' lack of understanding, Aisyah faced the challenge of rejecting her family's home-cooked meals to avoid consuming contaminated food. During a celebratory party upon returning to her home country after getting married to a Bruneian, she had to explain to her disappointed mother that they did not need to prepare food for her.

Table 3: List of respondents' challenges to halal food consumption

Respondent/Challenges	Naimah	Rasyid	Aisyah	Rawi	Zaid
Social circle	✓	✓	✓	✓	✗
Difficulty of obtaining halal food abroad	✗	✗	✓	✓	✗
Halal food issues	✓	✓	✓	✓	✓
Vague understanding and lack of resources in Islamic teachings	✓	✗	✓	✓	✓

Table 4: List of respondents' challenges caused by social circle

Respondent/Challenges	Naimah	Rasyid	Aisyah	Rawi
Challenges related to family members				
Deceitful behaviour	✓	✗	✗	✗
Lack of awareness of halal food practices	✓	✓	✓	✗
Challenges related to friends				
Being persuaded to consume non-halal food	✗	✗	✗	✓

Apart from challenges with family members, Rawi mentioned non-halal food, not taking their conversion seriously. Such situations made Rawi uncomfortable, consistent with Yusif's (2004) assertion that pressure to consume non-halal food leaves *Muallaf* feeling vulnerable and pressured during gatherings with friends and family.

3.2.2 Difficulty of obtaining halal food abroad

Due to the ease of searching for and obtaining halal food in Brunei Darussalam, two respondents stated that they only encountered difficulties in finding and obtaining halal food while travelling abroad. Aisyah, who migrated to Brunei Darussalam after marrying a Bruneian, noted the contrast in obtaining halal food between Brunei Darussalam and her home country, stating, "It is difficult to obtain halal food in my home country except in some parts where there are Muslim majorities" (Yulita & Ong, 2019).

Similarly, Rawi had the opportunity to travel outside of Brunei Darussalam. He recounted his experiences in two places: Shanghai and Singapore. Rawi mentioned, "Even if there were halal food available in those countries, which Bruneians, Malaysians, and Indonesians often visit, I was still doubtful of the source of the food." This scepticism arose, especially when he encountered places serving halal food alongside non-halal food. Such perspectives are common, as Lon and Widyawati (2019) mentioned the Woni tradition, where Indonesian families from Manggarai would have communal meals, offering non-pork food separately from pork dishes.

3.2.3 Halal food issues

Interestingly, all respondents pointed out a similar challenge they faced regarding halal food issues. They noted instances where foods they had consumed for an extended period, even since childhood, suddenly became subject to claims of being non-halal following a press release from authorities (Zaharan, 2020). This situation mirrors the findings of Anir, Nizam, and Masliyana (2008), who illustrated how food manufacturers would fake halal certification to attract Muslim consumers.

Naimah expressed her disappointment "when a presumed halal food becomes viral for its uncertainty in halal integrity." This is particularly concerning for *Muallaf*, who are new to halal food, as some may struggle to differentiate between genuine and counterfeit halal logos. In a study by Shafiq *et al.*, (2015), it was found that most consumers lack knowledge about the genuine halal logo issued by the Department of Islamic Development Malaysia (JAKIM).

Additionally, Rasyid pointed out, "When you talk more in-depth about the ingredients, like all those scientific terms, I am not really aware of it and I do not really understand about it," expressing confusion about the scientific terminology used in food product ingredient lists (Hussain-Gambles, 2020).

3.2.4 Vague understanding and lack of resources in Islamic teachings

There are several hidden challenges faced by the respondents that were identified by the researcher but not directly stated during the interviews. These challenges include misconception

Table 5: List of respondents' challenges due to difficulty of obtaining halal food abroad

Respondent/Challenges	Aisyah	Rawi
Lack of availability of halal food because Muslims are a minority in the area	✓	✗
Doubtful of the source/ingredients	✗	✓
Contamination of halal and non-halal food	✗	✓

Table 6: List of respondents' challenges related to halal food issues

Respondent/Challenges	Naimah	Rasyid	Aisyah	Rawi	Zaid
Presumed halal products are rumoured to be non-halal	✓	✓	✓	✓	✓
Scientific ingredients terms are confusing	✗	✓	✗	✗	✗

about the term "*murtad*," the assumption that everything sold in Brunei Darussalam is halal, the mixing of utensils used for halal and non-halal food, and the prohibition of consuming medium-rare meat. The respondents' unawareness of these challenges could be attributed to their vague understanding and lack of access to resources about Islamic teachings in general.

Naimah had a misconception about the term "*murtad*," also known as apostate. The simplest explanation of "*murtad*" is when a Muslim has left Islam after previously embracing it (Muhammad *et al.*, 2018). Naimah recounted an incident in her family, stating:

"There was an incident that happened in my family. My aunt converted to Islam and married a born Muslim. After they got married, the husband apostatised (*murtad*) from Islam. **He chose to consume haram substances.** When I arrived at their house, the husband said, 'You can eat this meat because I slaughtered it myself.' After that, my parents said to me, '**Do not eat that because your uncle is no longer a Muslim since he consumed haram substances and stopped praying.**'"

Here, we can understand that Naimah was informed that her uncle had abandoned Islam because he willingly consumed non-halal food and did not perform the five daily prayers, which she then related to the term "*murtad*." Based on various definitions provided by Muhammad, Siren, and Yusoff (2018), "*murtad*" can be categorised into three cases: due to a person's tampered belief, due to a person's spoken words, and due to their actions. Consuming non-halal substances is not considered "*murtad*" but actions the *hukm syara'* despised (Pejabat *et al.*, 2021). Additionally, according to the *Irsyad Hukm* of Brunei Darussalam, abandoning daily prayers may be considered "*murtad*" only if the person does so due to disbelief in the obligation (not acknowledging the obligation of the law of prayer) (Brunei, 2019). However, in this case, it is unclear if the person mentioned abandoned their prayers due to disbelief in the obligation, if they did so out of laziness, being busy with worldly affairs, or following the lusts and whispers of the devil. If it is only due to the latter, then it is not considered "*murtad*."

The researcher found the second statement when Aisyah stated that all food sold in Brunei Darussalam is halal. Although Brunei Darussalam is a Muslim-majority country with a strong image of being a '*Negara Zikir*,' and non-halal food is rarely sold there, it is still possible to find non-halal food at grocery shops (Ahmad Kumpoh, 2011; Al-Fatih & Esfandiari, 2020). Aisyah's statement was:

"I do not have to question the halal integrity of the food because most people in Brunei are Muslim, and **all the food sold here is halal**, except for food sold by non-Muslims. However, I have never purchased food from a non-Muslim."

The third statement the researcher wanted to highlight is when Rawi was unaware that utensils used for consuming non-halal food should not be mixed with those used for halal food (Vanany *et al.*, 2019). Rawi shared his harrowing experience of finding halal food in Singapore and Shanghai. While dining at a restaurant in Singapore, he noticed that the "utensils used were mixed" for consuming both halal and non-halal food, remarking that "it looks clean though." This finding is

consistent with that of Sintang and Hambali (2018), who discovered that *Muallaf* still does not understand the proper guidelines of Islam.

Lastly, Zaid was unaware that halal meat, which is not cooked well and still has blood on the inside, is actually halal to consume (Al-Bakri, 2022). He stated:

"My father used to tell me that whenever I find cooked chicken with blood on it, I just dip it in chilli sauce and eat it because the blood will mix with the red sauce, and you will not notice it anymore. However, I am unsure if that is true or if he was too lazy to recook the chicken. **However, now I know that when blood is on the meat, it is haram to consume.**"

Zaid was unaware that if the meat is halal and has been cooked, and the blood is not flowing, then it is halal to consume (Al-Bakri, 2022). This can be supported by a verse from the *Qur'an*, *Surah Al-Anaam*, verse number 145, which states that only flowing blood is prohibited for Muslims:

"Say, 'I do not find within that which was revealed to me [anything] forbidden to one who would eat it unless it is a dead animal or **blood spilt out** or the flesh of swine - for indeed, it is impure - or it is [that slaughtered in] disobedience, dedicated to other than Allah. However, whoever is forced [by necessity], neither desiring [it] nor transgressing [its limit], then indeed, your Lord is Forgiving and Merciful'".

Therefore, referring back to the results of halal food practices for Rawi and Zaid, both of them were able to define halal theoretically by stating that *syubhah* should be avoided and flowing blood is prohibited in Islam. However, they were not able to demonstrate consistency in their practical application of halal food knowledge in real-world situations. For that reason, it shows that there is still a need to educate *Muallaf* when it comes to the practical aspect of halal food knowledge (Kawangit & Guleng, 2016). Therefore, it could be said that this paper has similar findings to those of Rahman *et al.* (2021) regarding the respondents' low level of knowledge about *syubhah* food.

According to Kawi *et al.*, (2020), the vague knowledge of Islamic teachings is due to the lack of resources or might be caused by the limited presence of preachers in the *Muallafs'* surroundings. This result complements the statement made by Zaid:

"As a Muslim, you have your parents to refer to about the *hukm* of something. I only have my friends, YouTube, and Google to refer to for information about the teachings of Islam... I wanted to join the *Muallaf* committee, but it was difficult because there was no information about it. That is why I am unsure if there is any, and it is not easy because I do not have anyone to refer to... It is fun to hang out and tell my experience because my parents would not understand if I were to discuss this (halal food consumption practices) with them. That is why I find it fun to have Muslim friends; it is easy to ask them questions."

Another factor that might contribute to vague knowledge of Islamic teachings is the essential syllabus provided to *Muallaf* by the Islamic *Da'wah* Centre when they first converted to Islam in Brunei Darussalam. Aisyah and Zaid support this statement:

“They did teach us about the halal diet at the Islamic *Da'wah* Centre, but it was just basic knowledge.”
(Aisyah)

“At first, I did my research because I was afraid of accidentally consuming haram food. Later, the people at the Islamic *Da'wah* Centre taught me a bit about it, but they only taught us the basics... If possible, they (the Islamic *Da'wah* Centre) should educate us more because I found most of these things (about halal and haram food) from the translation of the *Qur'an*. I have read it in *Surah Al-An'am* verse one hundred forty-something; I forgot.”
(Zaid)

Naimah and Aisyah claimed that although the Islamic *Da'wah* Centre provided them with only basic knowledge about halal dietary practices, they were free to inquire about questions to the authorities at the Islamic *Da'wah* Centre when needed. Aisyah stated, "There are usually forums that we can attend, and the *Ustaz* will answer our questions. I prefer it that way because they have a better experience and know better about the *hukm*" (Abdullah & Sjafe, 2019). Naimah also expressed her preference for obtaining explanations directly from the authorities of the Islamic *Da'wah* Centre because “they explain information that is easier for me to understand,” indicating their high dependency on the Islamic *Da'wah* Centre even after completing their mandatory courses.

3.3 *Muallafs'* adaptation to challenges on halal food consumption

The following section of this paper will describe the adaptations made by the respondents to overcome their challenges in implementing halal food consumption. This section is interconnected with the previous sub-topic, which discusses the challenges faced by the respondents in implementing halal food consumption. Therefore, the order of the adaptations will follow the sequence of the previous sub-topic.

3.3.1 Social circle

In dealing with the deceptive behaviour of her family members, Naimah overcame this challenge by stating: “I did not eat because I was full, and I just acted normally”. Sometimes, she would say to her relatives, “I will eat it later in order to please them so that it (the problem) will not be prolonged” (Awang *et al.*, 2017). A similar case can be seen in the study conducted by Lon and Widyawati (2019), where some respondents politely rejected eating during communal meals with their non-Muslim families.

Rasyid and Aisyah resolved the challenge of their family members' lack of understanding towards Islamic practices because their families were supportive and open-minded (Lon & Widyawati, 2019). This helped ease their implementation of halal dietary practices. Rasyid mentioned that “my father was the one who educated them (my family members) about it (contamination of utensils) because sometimes, there are times that my family members would unintentionally use my utensils. In the end, they (my family members) are the ones who adapted to my halal dietary practices, *Alhamdulillah*”. Meanwhile, Aisyah stated, “My family was very supportive. They understood me. They were delighted because they did not have to cook for us when we came to visit. My mom was disappointed when I came back to my home country because she cooked for us, but she understood after some time. My mother is very open-minded.” From these statements, it is evident that they resolved their challenges by communicating with their families regarding the implementation of halal food practices (Awang *et al.*, 2019).

Apart from that, although Rawi was pressured by the statement made by his friend to consume non-halal meat because what is halal and what is non-halal cannot be seen through the naked eye, he managed to overcome the challenge. He would “attend the gathering to keep peace with my family or friends so that I will not be falsely accused of forgetting my origin. I still have to take care of their feelings and my relationship with them even if I have converted to Islam”. He maintained a mindset of attending the gathering to maintain his relationship with his family and friends.

3.3.2 Difficulty of obtaining halal food abroad

After Aisyah and Rawi mentioned having difficulties finding and obtaining halal food while travelling abroad, they each have their ways of overcoming this challenge. For Aisyah, whenever she visited her family in her home country, she would “cook fish for her family using different cookware, and I would

Table 7: List of respondents' challenges due to their vague understanding and lack of resources in islamic teachings

Respondent/Questions	Naimah	Rasyid	Aisyah	Rawi	Zaid
Misconception of the term <i>murtad</i>	✓	✗	✗	✗	✗
Misconception that everything sold in Brunei Darussalam is halal	✗	✗	✓	✗	✗
Misconception that utensils used for halal food can be mixed with non-halal food	✗	✗	✗	✓	✗
Misconception of the prohibition of consuming medium-rare meat	✗	✗	✗	✗	✓

Table 8: List of respondents' adaptation to the challenges caused by social circle

Respondent/Adaptation	Naimah	Rasyid	Aisyah	Rawi
Challenges related to family members				
Stating they are "full/they will eat later" to avoid consuming non-halal food	✓	✗	✗	✗
Family members were supportive and open-minded.	✗	✓	✓	✗
Challenges related to friends				
Attended gatherings to maintain relationships with family and friends	✗	✗	✗	✓

Table 9: List of respondents' adaptation to the difficulty of obtaining halal food abroad

Respondent/Challenges	Aisyah	Rawi
Cook for non-Muslim family members.	✓	✗
Brought food from Brunei Darussalam	✓	✗
Eat out to vegetarian restaurants.	✓	✓
Consume halal food by default.	✓	✓

bring my food from Brunei Darussalam. Sometimes, we would go out to eat because there is a specific eating place for vegetarians." Meanwhile, Rawi would consume seafood, vegetables, and fruits when he found it challenging to obtain halal food. Therefore, both of them opt to consume food they know is halal by default. (Yusof & Shutto, 2014, Yulita & Ong, 2019, Said *et. al.*, 2022, & Ahmad *et. al.*, 2023).

3.3.3 Halal food issues

When faced with challenges related to not knowing the *hukm* or understanding the scientific terms of food ingredients, Rasyid turned to find the *hukm* "from a reliable source via the internet." Rawi would "consult a more knowledgeable person about halal and haram. I would ask my friend or *Ustaz*. If they told me not to eat it, then I would avoid it and move on to another food. I would usually refer to the press release from the

government." Meanwhile, Zaid would "usually ask my friends because one of my friends owns a convenience store ... Before I eat something and feel doubtful, I will search for it on Google and refer to their (the brand's) official website." Additionally, when Aisyah and Naimah encounter doubt about the *hukm*, they refer to the authorities from the Islamic *Da'wah* Centre for guidance due to their expertise in religious matters. Therefore, most of them would either rely on a reliable internet source or seek guidance from knowledgeable individuals regarding the *hukm* of the food (Yee *et al.*, 2019).

Regarding the issue of consuming presumed halal food only to discover later that it is claimed as non-halal by authorities via a press release, Aisyah expressed that she "could not do anything when I learned of the news. I said, 'Oh well, I have eaten it, but it is not halal.' I told my children about it, and once we were aware, we stopped buying that product." Rawi would also cease purchasing that product upon learning of its non-halal status.

Table 10: List of respondents' adaptation to challenges related to halal food issues

Respondent/Challenges	Naimah	Rasyid	Aisyah	Rawi	Zaid
Referring to reliable internet sources for the <i>hukm</i>	✗	✓	✗	✗	✓
Referring to a more knowledgeable person for the <i>hukm</i>	✗	✗	✗	✓	✗
Referring to a government press release for the <i>Hukm</i>	✗	✗	✓	✓	✗
Referring to their friends for the <i>hukm</i>	✗	✗	✗	✗	✓
Referring to authorities from the Islamic <i>Da'wah</i> Centre for the <i>Hukm</i>	✓	✗	✓	✓	✗

4. Conclusions

This research successfully achieved its objectives of identifying the respondents' halal food practices, challenges, and adaptation strategies. However, despite the respondents' ability to adapt basic halal food practices, the study reveals a gap in providing *Muallaf* with in-depth education on halal food consumption.

Furthermore, although *Muallaf* in Brunei Darussalam reported facing fewer challenges compared to those in Muslim minority countries, the analysis of collected data identified several challenges they encountered, including challenges in their social circle, difficulties obtaining halal food abroad, halal food issues, and vague understanding of Islamic teachings due to a lack of resources.

Regarding their adaptation to these challenges, the respondents found support from their social circles crucial. When facing difficulty obtaining halal food abroad, they opted for default halal options or brought food from Brunei Darussalam. In dealing with halal food issues, they consulted reliable internet sources or knowledgeable individuals and discontinued consuming questionable products.

While the research objectives were achieved, future studies could delve into *Muallafs'* knowledge of halal food consumption, their awareness of halal food products, their pre-conversion dietary habits, and their dining practices within their social circles. Additionally, publishing a book on scientific ingredient terms, including their derivatives and the *hukm* (Islamic rulings) of ingredients, could help educate *Muallaf* and alleviate confusion. The researcher believes this could mitigate challenges related to halal food issues and obtaining halal food while travelling abroad.

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