



**FACTORS INFLUENCING MUSLIM CONSUMER BEHAVIOR TOWARD  
HALAL NUTRACEUTICAL PRODUCTS**

**By**

**SITI NURUNNAJWA BINTI SHAMSUDIN**

**Thesis Submitted to the School of Graduate Studies, Universiti Putra  
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of Philosophy**

**February 2024**

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**February 2024**

**Chairman : Assoc. Prof. Elistina Abu Bakar, PhD**

**Institute : Halal Products Research Institute**

The consumption behavior of Muslims toward halal products has garnered considerable attention in recent years. While halal traditionally referred to permissible food and beverages, its scope has significantly broadened to encompass various sectors, including financial services, logistics, cosmetics, pharmaceuticals, and nutraceuticals. Among these sectors, nutraceutical products have grown in popularity due to their perceived health benefits and natural origins. Despite the rising popularity of nutraceuticals, existing research on halal predominantly focuses on food products, leaving a notable gap in understanding Muslim consumer behavior in this area. Therefore, this research aims to bridge this gap by investigating Muslim consumer behavior regarding halal nutraceutical products.

In Islam, it is compulsory for Muslims to consume halalan tayyiban products. Therefore, choosing nutraceutical products that align with Islamic principles is

crucial. However, there are concerns regarding the halal status, safety, and legal issues of nutraceuticals, emphasizing the need for empirical research in the field. Hence, the primary objective of this research is to examine the determinants influencing Muslim consumer behavior when selecting halal nutraceutical products. This study also intended to analyze the impact of the halal logo as a mediator between the independent variables and consumer behavior towards halal nutraceutical products. This study adopted the Theory of Islamic Consumer Behavior (ICB) and Stimulus Organism Response (SOR) as the underpinning theory. The research framework for this study consists of two dimensions, which are the Shariah and legal dimensions. The Shariah dimension encompasses several factors, including religious commitment, maqasid al-Shariah, Islamic values, perceived safety, perceived quality, perceived benefits, and halal literacy. Meanwhile, the legal dimension consists of legal literacy and trust in government. This study applied a quantitative approach that used a cross-sectional survey method. The probability sampling method was utilized, and a multistage proportional stratified random sampling approach was employed. Data from 400 samples from Muslim nutraceutical consumers in Malaysia were gathered and analyzed using descriptive analysis and Structural Equation Modeling (SEM).

The findings of this study revealed that perceived safety is the main determinant of consumer behavior toward halal nutraceutical products, followed by Islamic values, religious commitment, trust, maqasid al-Shariah, and halal literacy. Although perceived quality and perceived benefits were not directly influenced consumer behavior, they did have an indirect relationship

with consumer behavior through the halal logo. The findings also demonstrated that the halal logo fully mediated the relationship between halal literacy and consumer behavior. In addition, the halal logo also partially mediates the relationship between Islamic values, religious commitment, trust, and perceived safety towards consumer behavior. Overall, the result provided substantial support for the model.

In conclusion, this study significantly contributes to the empirical research on halal within Shariah and the legal field of study. The findings revealed that Muslims' behavior toward halal nutraceuticals was strongly influenced by their understanding of halal and the level of their religious commitment and practice. Additionally, the study highlights the importance of the halal logo as a trusted indicator of halalan tayyiban standards, emphasizing its role in helping Muslim consumers make informed choices of nutraceutical products.

**Keywords:** consumer behavior, halal, Muslims, nutraceuticals

**SDG:** GOAL 12: Responsible Consumption and Production

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia  
sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**FAKTOR-FAKTOR YANG MEMPENGARUHI TINGKAH LAKU PENGGUNA  
MUSLIM TERHADAP PRODUK NUTRASEUTIKAL HALAL**

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Tingkah laku penggunaan pengguna Islam terhadap produk halal telah mendapat perhatian yang besar sejak beberapa tahun kebelakangan ini. Walaupun halal secara tradisinya merujuk kepada makanan dan minuman yang dibenarkan, namun skopnya kini telah meluas dan merangkumi pelbagai sektor termasuk perkhidmatan kewangan, logistik, kosmetik, farmaseutikal dan nutraseutikal. Di antara sektor-sektor ini, populariti produk nutraseutikal telah melonjak naik disebabkan oleh manfaat kesihatan yang ada padanya dan bersumberkan bahan semula jadi. Walaupun produk nutraseutikal semakin melonjak naik, namun penyelidikan sedia dalam kajian halal lebih tertumpu pada produk makanan, dan meninggalkan jurang yang ketara dalam memahami tingkah laku pengguna Muslim dalam bidang ini. Oleh itu, kajian ini bertujuan untuk merapatkan jurang yang sedia ada ini dengan mengkaji tingkah laku pengguna Islam berhubung produk nutraseutikal halal.

Dalam Islam, adalah menjadi kewajiban bagi individu Muslim untuk mengambil produk yang halal dan tayyiban. Oleh itu, pemilihan produk nutraseutikal yang selaras dengan prinsip Islam adalah amat penting. Walau bagaimanapun, terdapat kebimbangan mengenai status halal, keselamatan dan isu undang-undang berkaitan dengan produk nutraseutikal, menjadikan penyelidikan empirikal di lapangan mengenai topik ini adalah merupakan satu keperluan. Maka, objektif utama kajian ini adalah untuk mengkaji faktor penentu tingkah laku pengguna Islam terhadap produk nutraseutikal halal. Kajian ini juga bertujuan untuk menganalisis peranan logo halal sebagai pengantara antara pembolehkan bebas dan tingkah laku terhadap produk nutraseutikal halal. Kajian ini menggunakan teori Tingkah Laku Pengguna Islam (ICB) dan Tindak Balas Organisme Rangsangan (SOR) sebagai teori asas. Kerangka kajian bagi kajian ini terdiri daripada dua dimensi, iaitu dimensi Syariah dan perundangan. Dimensi Syariah merangkumi beberapa faktor yang dinamakan komitmen agama, maqasid al-Syariah, nilai Islam, persepsi keselamatan, persepsi kualiti, persepsi manfaat dan literasi halal. Manakala dimensi perundangan pula terdiri daripada literasi undang-undang dan kepercayaan kepada kerajaan sebagai faktornya. Kajian ini menggunakan pendekatan kuantitatif yang menggunakan kaedah tinjauan keratan rentas. Kaedah persampelan kebarangkalian telah digunakan, dan pendekatan persampelan rawak berstrata berkadar pelbagai peringkat telah digunakan. Data daripada 400 orang sampel pengguna nutraseutikal Muslim di Malaysia telah dikumpul dan dianalisis menggunakan analisis deskriptif dan Pemodelan Persamaan Struktur (SEM).

Dapatan kajian ini mendedahkan bahawa persepsi keselamatan merupakan penentu utama bagi tingkah laku pengguna terhadap produk nutraseutikal halal, diikuti oleh nilai Islam, komitmen agama, kepercayaan, maqasid al-Syariah, dan literasi halal. Walaupun persepsi kualiti dan persepsi manfaat tidak mempengaruhi tingkah laku pengguna secara langsung, ia mempunyai hubungan tidak langsung terhadap tingkah laku pengguna melalui logo halal. Hasil kajian juga menunjukkan bahawa logo halal menjadi pengantara sepenuhnya hubungan antara pengetahuan halal dan tingkah laku pengguna. Selain itu, logo halal juga sebahagiannya menjadi pengantara hubungan antara nilai Islam, keagamaan, kepercayaan dan persepsi keselamatan terhadap tingkah laku pengguna. Secara keseluruhan, hasil kajian menyokong model yang telah digunakan.

Kesimpulannya, kajian ini menyumbang secara signifikan kepada kajian empirikal berkaitan halal dalam bidang Syariah dan undang-undang. Dapatan kajian menunjukkan bahawa tingkah laku Muslim terhadap produk nutraseutikal halal sangat dipengaruhi oleh pemahaman mereka tentang halal serta tahap komitmen dan amalan agama mereka. Di samping itu, kajian ini juga menekankan kepentingan logo halal sebagai simbol yang boleh dipercayai bagi piawaian halalan tayyiban, dan membantu pengguna Islam membuat pilihan terbaik bagi produk nutraseutikal halal.

**Kata Kunci:** halal, Muslim, nutraseutikal, tingkah laku pengguna

**SDG:** MATLAMAT 12: Penggunaan dan Pengeluaran Bertanggungjawab



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## LIST OF ABBREVIATIONS

AMOS	Analysis of Moments Structures
CFA	Confirmatory Factor Analysis
CPA	Consumer Protection Act
DOSM	Department of Statistics Malaysia
DSM	Department of Standard Malaysia
FDA	Food Drug Administration
FDI	Food Drug Interphase
FSQD	Food Safety and Quality Division
GHP	Good Hygiene Practice
GMP	Good Manufacturing Practice
HACCP	Hazard Analysis Critical Control Point
HAS	Halal Assurance System
HDC	Halal Industry Development Corporation
HTMT	Heterotrait-monotrait ratio
IAIS	Institute of Advanced Islamic Studies
IKIM	Institute of Islamic Studies Malaysia
JAIN	State Islamic Religious Department
JAKIM	Department of Islamic Development Malaysia
MATRADE	Malaysia External Trade Development Corporation
MITI	Ministry of Investment, Trade and Industry
MOH	Ministry of Health
NCP	National Consumer Policy
NPRA	National Pharmaceuticals Regulatory Agency
KPDNHEP	Ministry of Domestic Trade, Cooperation and Consumerism
KPDN	Ministry of Domestic Trade and Cost of Living

PCA	Principle Component Analysis
SCT	Social Cognitive Theory
SEM	Structural Equation Modeling
SLR	Systematic Literature Review
SOR	Stimulus Organism Response
TDA	Trade Description Act
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action



## CHAPTER 1

### INTRODUCTION

This chapter begins with the research background that presents the overview of halal nutraceuticals and their issues. Then, the problem statement addresses the factors that influence Muslims behavior toward nutraceutical products and the gaps identified for the study. The chapter then presents the research questions that guide the inquiry and the objectives that the study seeks to achieve. Additionally, it articulates the hypotheses formulated to be tested. The scope of this study and its contributions are also highlighted. Conceptual and operational definitions of key terms are provided to ensure clarity and precision. Finally, the last section provides the organization of this thesis.

#### 1.1 Research Background

The word Halal originates from an Arabic word حلال or حَلَّ, which means to be or become lawful, legal, licit, legitimate, permissible, permitted, allowable, allowed, admissible, unprohibited and unforbidden (Al-'Ayid et al., 1989; Al-Jallad, 2008). From the Islamic point of view, Al-'Izzi (1989) explained halal as anything that is allowed and not being punished for doing so. Meanwhile, Al-Qaradawi (1999) defined halal as something that is permissible, with no restrictions, and is something Allah has authorized. In brief, halal refers to anything permissible according to Islamic law.

The opposite word of halal is haram. It is derived from the phrase ح-ر-م, which means to forbid, prohibit, interdict, proscribe, ban, bar, outlaw, declare unlawful, taboo, and make illegal (Al-Jallad, 2008). In Islamic law, haram can be defined as anything that Allah prohibits, and anyone who commits it can be punished by legal punishment in this world as well as by Allah in the hereafter (Al-Qardawi, 1999). In essence, the term haram denotes any form of conduct, communication, clothing, demeanor, or behavior that is proscribed by Islamic law. This includes the consumption of any food or drink that is considered unlawful.

According to Saadan and Zainal Abidin (2014), the concept of halal and haram aims to preserve the basic things essential for the human being, namely preserving religion, mind, life, property, and lineage, as well as maintaining integrity and dignity. These five objectives are also known as the five fundamental needs, or '*ad-dharuriyat al-khams*,' and one part of the maqasid al-Shariah. Generally, all the halal and haram in Islamic law are derived from the Quran, *Sunnah*, *Ijma'*, or *Qiyas*. For Muslims, adhering to halal dietary guidelines is of utmost importance as it is a divine mandate from Allah SWT and a part of the fundamental aspect of their Islamic faith. The consumption of haram, or forbidden food and drink, is considered a transgression against Allah SWT and can hinder the acceptance of prayer and admittance into Paradise in the hereafter. This is highlighted in the hadith by Ka'ab bin Ujah, who relayed that the Prophet Muhammad ﷺ said: "A body that is nourished with haram will not be permitted to enter Jannah" (Tirmidhi).

In the Quran, Allah emphasizes the importance of halal in multiple verses. Interestingly, the term halal is always accompanied by the word '*tayyib*,' which can be translated as good or wholesome. One such verse can be found in surah al-Baqarah, specifically in verse 168, "O humankind, 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."

According to Ibn Kathīr (2000), in this verse, Allah has allowed His followers to consume any food as long as it is halal and '*tayyib*'. The term '*tayyib*' denotes food that is wholesome, healthy and not harmful. This proves that Islam has always emphasized the importance of good health and well-being. It is reflected in the Islamic dietary laws prioritizing prevention over cure by prohibiting harmful products and promoting the consumption of safe and beneficial ones with the *halalan tayyiban* concept. Therefore, Muslims must be mindful of consuming not only halal but also high-quality, safe, and beneficial products and services, including foods, cosmetics, pharmaceuticals, and nutraceuticals.

#### **1.1.1 Nutraceutical Products in Malaysia**

In Islam, living a healthy lifestyle is considered essential, as health is a great gift from Allah SWT to all human beings. The Prophet Muhammad ﷺ has highlighted the importance of good health in a hadith reported by Abu Bakar, "After certitude, no one has ever received a blessing greater than health and wellbeing" (Sahih al-Bukhari).



The above hadith emphasizes Muslims preserving their health to gain Allah's blessings. In recent years, many people, including Muslims, have consumed numerous nutraceutical products throughout recent years to improve their health. These amazing products are used to enhance their bodily functions, boost their mental performance, and facilitate weight loss. As a result, there has been a rise in the demand for nutraceutical products. The global demand for these products reached USD 429.5 billion in 2021, and it is expected to grow at a steady rate of over 4% during the forecast period of 2022-2030 (Market Watch, 2022).

Nutraceutical products have grown in popularity among Malaysian consumers due to their beneficial health effects, and these products are common among Malaysians (Institute for Public Health (IPH), 2017). Herbal nutraceutical products have been gaining market share, and their consumer base is expanding. Among the well-known Malaysian companies in this industry are DHerbs, VAsia, Vida Beauty, Seri Ayu, Mustika Ratu, Orang Kampung, Nona Roguy, Dunia Herbs, White Pearl, Jamu Ratu Malaya and many more.

The term 'nutraceutical' was introduced by Stephen DeFelice in 1989, which came from the combination of nutrition and pharmaceuticals. He defined nutraceutical as "a food, or parts of a food, that provide medical or health benefits including the prevention and treatment of disease" (DeFelice, 1997). The concept of nutraceuticals emerged due to the evolution and link between 'nutrition' and 'health.' Nutraceutical products are often classified into four categories: dietary supplements, functional food, medicinal food, and pharmaceuticals. Table 1.1 provides the nutraceutical categories in detail.

**Table 1.1: Nutraceutical categories**

Category	Items
Dietary supplement	i) Nutrients (vitamins, minerals, amino acids, fatty acids, and antioxidants) ii) Herbal and botanical products (Herbs or botanical products as concentrates and extracts such as Aloe Vera, Chamomile, Garlic, Ginger, and Ginko). iii) Phytochemicals (polyphenols, isoflavonoids, anthocyanidins, phytoestrogens, carotenoids, phytosterols, terpenoids, glucosinolates, limonoids, and polysaccharides). iv) Probiotics and prebiotics. v) Nutraceutical enzymes. vi) Dietary fibers.
Functional food	Food, whether it is natural or processed, may contain biologically active components that are either known or unknown (such as Milk enriched with vitamin D, cereal flour added with fiber and folic acid, and orange juice fortified with calcium).
Farmaceutical/ Recombinant Nutraceuticals	Farmaceutical is a combination of "farm" and "pharmaceuticals," which refers to the medically useful substances obtained from genetically modified crops using biotechnological techniques.
Medicinal Food	Medicinal foods are meant to be consumed with the guidance of a physician. They are created to manage certain diseases or conditions that have unique nutritional needs, as determined by medical evaluation.

(Adapted: Nawsheen Bee & Rahmanpoor, 2019; Sreeramya et al., 2018)

According to Food and Drug Administration (FDA) regulations, most nutraceutical products are considered dietary supplements. These products may contain extracts, concentrates, or combinations of vitamins, minerals, botanicals, herbs, or other dietary substances that are used to supplement the diet by increasing total dietary intake (*How the FDA Regulates Nutraceuticals*, 2019). Based on the National Health and Morbidity Report of 2017, two out of five adolescents in Malaysia have reportedly consumed vitamins, minerals, and food supplements (Institute for Public Health (IPH), 2017). Berita Harian (2018) reported that approximately 80% of Malaysians are believed to consume nutraceutical products at certain times in their lives. This is consistent

with the data obtained by Rakuten Insight in July 2022 regarding dietary supplements in Malaysia, which found that most respondents across older and younger age groups believed that dietary supplements were effective (Statista Research Department, 2022). These supplements can include nutraceuticals like herbs and botanicals, minerals, and vitamins.

### **1.1.2 Nutraceutical Products Issues**

In recent times, various issues have arisen, causing nutraceutical products to be the precedence in this study. This study has identified three crucial nutraceutical concerns: halal status, safety, and legal issues.

#### **Halal Issues**

Nutraceutical products are generally created from botanical and plant extracts. Numerous botanical and herbal extracts, like lingzhi, long jack, and turmeric, have been developed into nutraceutical products. The use of animal-derived ingredients in the formulation of nutraceutical products should be avoided. It is important to remember that while some ingredients may be halal, others used for flavoring, stabilizing, or coloring might not be. These non-halal ingredients often come from sources such as pork, improperly slaughtered animals, genetically modified organisms, ethanol extraction, or blood (Alzeer et al., 2020). So, it is essential to double-check the source of all the ingredients before consuming them. Table 1.2 summarizes the potential non-halal ingredients used in nutraceutical products.

**Table 1.2: Potential of non-halal ingredients in nutraceutical products**

<b>Ingredients</b>	<b>Comments</b>
Flavors and colorants	Might have hidden alcohol or ingredients of haram animal origin, such as civet oil, ambergris, and castoreum, in the formulations.
Gelatin	Capsule production often uses gelatin, which can be derived from animals, particularly pigs. However, halal gelatin or alternative substances such as cellulose or starch can be used instead to avoid using non-halal gelatin.
Glycerin	It is used as a laxative and made from tallow, a type of beef. It is also used in the production of capsules and other products. If glycerin is derived from plants, it is considered as halal.
Stearates	It possesses qualities that can serve as effective free-flow agents in powders or tablet aids in tablets, offering binding and lubricating properties. In the case of halal products, manufacturers have the option to utilize plant-derived stearates instead of those obtained from animals.
Tweens	It is employed to coat and polish tablets. In halal products, it is preferable to utilize tweens derived from vegetables rather than those derived from animals.
Ethanol	To enhance the therapeutic benefits of herbal extracts and extend their shelf life, they are often used as preservatives. Any ethanol produced through anaerobic fermentation, with alcohol content between 1% to 5%, is considered haram. On the other hand, ethanol produced naturally through fermentation, with less than 1% alcohol content, is permissible and halal.

(Adapted: Alzeer & Hadeed, 2020; Riaz et al., 2019)

According to Mariod and Adam (2013), several nutraceutical products utilize gelatin for producing both soft and hard shell capsules, as well as for tableting, granulation, tablet coating, encapsulation, and microencapsulation purposes. Gelatin is beneficial as it helps prevent oxidation, makes it easier to swallow, and masks unpleasant flavors, resulting in a more palatable product (Uddin et al., 2021). Usually, gelatin is manufactured by specifically breaking down collagen sourced from animal remains like skin, hides, white connective tissues, and bones (Abdullah Amqizal et al., 2017). For halal consumers, it is advisable to use gelatin that is derived from slaughtered cattle's bones and skins. There are also alternative halal gelatine options derived from seaweed (Adam et al., 2020) and fish (Karim & Bhat, 2009).

Alzeer and Hadeed (2020) reported that the halal status of gelatin is highly critical as it may be derived from a non-halal source. It is important to note that there is a substantial amount of gelatin derived from pork on the market, which makes it unsuitable for Muslim consumers. As stated by Demirhan et al. (2012), approximately two-thirds of edible gelatin in Europe is derived from pig skin. Alarming, an overwhelming majority of gelatin found in food and pharmaceutical products, including nutraceuticals, is derived from pigs, with over 90% (Erwanto et al., 2018). Moreover, Sultana et al. (2020) also discovered that of 35 halal-branded supplements, two were positive for porcine species.

Apart from gelatin, other ingredients that are commonly found in most capsules and tablets, like glycerine, stearates, and tweens, can also be considered non-halal. Glycerine serves as a carrier in numerous medications and as a plasticizer in gelatin capsules (Stout & McKessor, 2012). Meanwhile, tweens are utilized for coating and polishing tablets (Riaz et al., 2019) and function as a lubricant to enhance tablet brittleness (Paul & Sun, 2017). These three components are typically derived from plant and animal sources, making their halal status a concern for Muslim consumers (Alzeer & Hadeed, 2020). Nevertheless, it is advisable to avoid animal-based ingredients to ensure that they do not originate from non-halal sources.

Additionally, alcohol is another ingredient with a highly critical halal status used in the nutraceutical industry. There are numerous liquid formulations that utilize ethyl alcohol (ethanol) as a preservative or solvent (Ismail & Ehsan, 2008). The halal status of ethanol remains a controversial topic among Muslim scholars.

While some consider it non-halal, recent studies have found that its halalness depends on the source and concentration. Alzeer and Abou Hadeed (2016) state that ethanol produced through anaerobic fermentation with a concentration between 1% and 15% should not be considered halal. Meanwhile, ethanol produced through natural fermentation with a concentration below 1% is classified as a preserving agent and considered halal. In a recent study by Qomariah et al. (2021), six of 18 herbal products sold in the Indonesian market contain high amounts of alcohol, making them non-halal. In the nutraceutical industry, liquid formulations, particularly in herbal products, have been found to contain high alcohol content, which may render them non-halal. This poses a challenge in ensuring that such products meet the dietary and religious requirements of Muslim consumers.

It is also possible that some flavorings and colorants used in nutraceuticals may contain hidden alcohol. This includes artificial flavors and colors, vanilla extracts, and vanillin extracts (Chaudry et al., 2000). However, the use of industrial ethanol as a flavor extractor is acceptable, with an amount of less than 0.5%. (Riaz et al., 2019). Additionally, colorants and flavorings such as oleoresins, glutamic acid, civet oil, ambergris, and castoreum may also be derived from haram animals (Chaudry et al., 2000; Riaz et al., 2019). Hence, animal-based ingredients should be avoided unless those ingredients have been certified as halal. Muslim consumers need to be mindful that nutraceutical products containing ingredients that might come into contact with non-halal should be steered clear of.

## **Safety Issues**

Despite the benefits of nutraceuticals, there were also many safety issues related to these products. Berita Harian Online reported that dozens of chemical compounds in herbal-based health supplements were produced and sold in the market. Some have not been clinically tested and do not have approval from the Ministry of Health (MOH) (Berita Harian, 2018). In 2018, a 73-year-old man passed away due to acute drug liver failure caused by drinking thirteen 1.5-liter bottles of herbal mixture for three months. The herbal practitioner who created the concoction claimed that her blend of 33 herbs could cure various illnesses, ranging from the flu to cancer, in a herbal magazine. However, the herbs consumed by the man affected his health and caused liver failure (The Star Online, 2018). Therefore, not all nutraceutical products are safe to consume.

According to a study by Geller et al. (2015), there were more than 20,000 emergency department visits annually in the United States from 2004 to 2013 due to adverse events caused by dietary supplements. These visits often resulted in hospitalizations and were primarily linked to cardiovascular issues related to weight loss or energy herbal products consumed by younger adults. Additionally, unsolicited child ingestions of dietary supplements were also a common cause of emergency department visits. These findings emphasize the severity of the safety concerns associated with these products.

According to Nasri et al. (2014), people have been consuming thousands of species of plants for many decades in order to meet their basic nutritional



needs. Nevertheless, only a limited number of them have received significant safety studies. According to Gupta et al. (2018), many nutraceuticals are derived from plant extracts, making them likely to become contaminated with other plant alkaloids, metals, pesticides, and mycotoxins. Some popular nutraceutical ingredients, like St. Johns wort, goldenseal, and Ginkgo biloba, have the potential to be toxic. There are a number of toxic contaminants that can be found in both foods and nutraceuticals, including phytotoxins, metals, mycotoxins, pesticides, radiation, and therapeutic drugs. When these contaminants are present at high levels, they can cause serious health problems or even death. It is important to note that vulnerable subpopulations like pregnant women, children, and the elderly are at greater risk if exposure to these contaminants exceeds safe levels.

Another primary concern is the possibility of them being mixed with illegal substances or drugs. In 2017, the National Pharmaceutical Regulatory Agency (NPRA) banned 162 products that contain illegal substances and scheduled poisons. Note that 78 of these products were in nutraceuticals categories (Aziz et al., 2020). A recent study by Nounou et al. (2021) found that six male enhancement nutraceuticals claiming to be 100% natural are adulterated, poor quality, and hazardous. Furthermore, interactions between herbal medicines and prescribed drugs can occur and may lead to severe clinical consequences, including death (Anadón et al., 2021). For example, *Hypericum perforatum* (St. Johns wort) has been discovered to decrease the blood concentrations of certain medications, including ciclosporin, midazolam, and digoxin. This can have implications for the effectiveness of these medications and may lead to organ rejection or other adverse effects (Hu et al., 2005). Moreover, *Salvia*



*miltiorrhiza* (danshen) has been associated with enhanced anticoagulation and bleeding when taken with long-term warfarin therapy. *Allium sativum* (garlic) has been found to interact with medications such as saquinavir, warfarin, and chlorpropamide, affecting their plasma concentrations and potentially leading to adverse effects (Hu et al., 2005).

Therefore, consumers must be extra careful and consult healthcare professionals when considering nutraceuticals, especially in specific populations or individuals with underlying health conditions. In addition, to guarantee the safety of nutraceuticals, it is imperative to establish well-defined regulations and standards. A regulatory framework can assist in tackling the difficulties associated with substantiating safety and health claims (Santini et al., 2018). Nevertheless, there are also legal and regulatory concerns regarding nutraceutical products in Malaysia, which will be explored in the following section.

## **Legal Issues**

The previous studies have highlighted several issues concerning the regulation of nutraceutical products in Malaysia. One of the most significant issues related to nutraceutical regulation in Malaysia is the definition of nutraceutical under Malaysian law. Nutraceuticals fall into a gray area between pharmaceuticals and food, posing challenges in regulation and safety (Ismail et al., 2020). Until now, this term has yet to be appropriately defined (Daud et al., 2017). Due to that reason, the legal system in Malaysia is still unclear related to the regulation of nutraceutical products (Safuan et al., 2020).

Therefore, nutraceutical products may be regulated by different regulatory bodies, such as the NPRA or the Food Safety and Quality Division (FSQD).

Both NPRA and FSQD are departments under the Ministry of Health (MOH). The NPRA oversees quality control for pharmaceutical products, while the FSQD coordinates food quality control activities. In Malaysia, most nutraceutical products fall under the category of food products and are registered under the FSQD. When a product is registered under the FSQD, it must comply with the provisions of the Food Act 1983 and not be subjected to the strict registration requirements enforced by the Control of Drugs and Cosmetics Regulation 1984. As a result, the manufacturer may not have to undergo rigorous clinical evaluations, which could result in inaccurate health claims on product labels and advertisements (Safuan et al., 2020), and the product can be sold freely on the market.

Furthermore, Daud et al. (2017) claimed that nutraceutical products often assert that they are capable of treating, reducing, or even preventing serious illnesses like high blood pressure, asthma, and heart disease. It should be noted that not all nutraceutical products have been registered as pharmaceuticals. Most nutraceutical products currently available on the market are categorized as food products. Following the guidelines in Section 17(1) of the Food Act of 1983, it is considered illegal to make health claims on food products. In 2017, D'Herbs Holdings (M) Sdn Bhd, a well-known seller of nutraceutical products in Malaysia, was penalized for promoting two products through misleading advertisements. The company falsely asserted that its products could enhance immune function and blood circulation. However, this

statement goes against Section 17(1) of the Food Act of 1983, and the Magistrate's Court imposed a fine of RM11,000 on the company for this violation (Daud et al., 2017). Unlike pharmaceutical products, nutraceutical products that are registered as food are not mandated to undergo clinical testing to prove their effectiveness. Thus, it is improbable that the health claims made by the manufacturers are true, and their products may even contain illicit substances or poisons that can cause harm or even death. Consequently, consumers may be exposed to health risks due to false health claims made by the producer. Therefore, some researchers urged the authorities to establish stricter regulations and standardized nutraceutical definitions (Daud et al., 2017; Ismail et al., 2020; Safuan et al., 2020). However, until the existing regulations can be improved, nutraceutical products will be readily available for purchase in the market. Therefore, consumers must protect themselves by making well-informed choices when selecting these products.

### **1.1.3 Muslim Consumer Protection**

Despite the issues of nutraceuticals, their demand is rapidly growing, underscoring the urgent need for comprehensive consumer protection measures. Fortunately, there are dedicated organizations and regulatory bodies that are actively involved in developing and enforcing laws and regulations pertaining to halal products in Malaysia (Anis Najiha et al., 2018). Since 1974, the halal affairs have been fully managed by the JAKIM, MAIN, and JAIN with support from other government agencies in enforcing halal laws such as the Ministry of Domestic Trade and Costs of Living (KPDN), Department of Malaysian Standard (DSM), Ministry of Health (MOH),

Department of Veterinary Services (DVS), Royal Malaysian Customs (RMC) Department, and the Local Authority (Hamid et al., 2018; Soraji et al., 2017).

These entities work tirelessly to promote transparency, integrity and safeguard the rights and interests of halal consumers. However, this study only emphasizes three main agencies that govern laws and regulations related to halal nutraceutical products in Malaysia, which are JAKIM, MOH and KPDN. In the context of nutraceutical products, JAKIM plays a central role in overseeing halal certification processes to ensure that the certified halal products adhere to Islamic dietary regulations and standards (Muhammad et al., 2020). The MOH is accountable for ensuring that all registered nutraceutical products meet high safety, effectiveness, and quality standards. Meanwhile, the KPDN is responsible for safeguarding consumers from deceptive or potentially harmful nutraceutical products. Table 1.3 lists the roles and responsibilities of these three government agencies.

**Table 1.3: Halal authorities in Malaysia**

<b>Authority</b>	<b>Role and Responsibilities</b>
Department of Islamic Development Malaysia (JAKIM)	<ul style="list-style-type: none"> <li>• The main regulatory body that is responsible for developing and promoting the halal industry in Malaysia.</li> <li>• Oversees the halal certification process and sets halal standards and guidelines on halal matters to ensure that halal products are safe and authentic for consumers.</li> </ul>
Ministry of Health (MOH)	<ul style="list-style-type: none"> <li>• Regulate and monitor food safety and hygiene.</li> <li>• Responsible for regulating pharmaceutical products in Malaysia.</li> <li>• To ensure that all registered products are safe, effective, and high-quality.</li> <li>• Conducts inspections and enforces food and pharmaceutical product regulations, including halal certification requirements.</li> <li>• Ensure that consumers have access to safe and authentic halal products.</li> </ul>

**Table 1.3: Continued**

Ministry of Domestic Trade and Cost of Living (KPDN)	<ul style="list-style-type: none"><li>• Formerly known as the Ministry of Domestic Trade and Consumer Affairs (KPDNHEP).</li><li>• Responsible for enforcing consumer protection laws in Malaysia, including those related to halal products.</li><li>• Conducts inspections and investigations to ensure that businesses comply with halal standards and supports consumers who have been misled or harmed by false claims about halal products to ensure that consumers are protected from fraudulent or harmful products.</li></ul>
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In Malaysia, the government takes halal consumer protection very seriously and has implemented strict legislation and regulations to ensure the authenticity and integrity of halal products. Various regulations and standards are in place to protect Muslim consumers rights and interests in Malaysia (see Table 1.4). These regulations and standards cover every aspect of the production, processing, and distribution of halal products, from the source of ingredients to the labeling and packaging of the final product. They are designed to uphold the highest standards of halal certification and assure consumers can purchase products that comply with halal requirements. Additionally, these regulations are regularly updated and enforced to ensure that they remain current and effective in maintaining the integrity of halal products. Furthermore, it also helps to build trust and confidence in halal products and services among consumers, which is essential for the growth and sustainability of the halal industry. However, there are no specific halal standards governing nutraceuticals. At this time, halal nutraceutical products must comply with either MS1500:2019 for halal food or MS2424:2019 for halal pharmaceuticals to meet the halal requirements. Aside from standards, there are also several laws and regulations that must be followed, such as the Food

Act of 1983, Food Hygiene Regulation of 2009, Food Regulation of 1985, Poisons Act of 1952, Sales of Drugs Act of 1952, and other relevant guidelines and regulations (JAKIM, 2020).

In order to safeguard consumers' health and ensure compliance with halal standards, regulatory bodies must take a proactive approach to monitor the production and distribution of halal-certified nutraceutical products. The current legal framework necessitates that authorities play a key role in upholding consumer safety and preventing any potential harm caused by non-compliance or substandard products. Therefore, the authorities must remain vigilant and enforce strict regulations to ensure the availability of safe and halal nutraceutical products in the market.

**Table 1.4: Regulation and standards related to halal in Malaysia**

<b>Regulation &amp; Standards Related to Halal</b>		<b>Authority</b>
<b>Halal Regulations</b>		
1. Consumer Protection Act 1999	KPDN	
2. Trade Description Act 2011		
3. Trade Description (Definition of Halal) Order 2011		
4. Trade Description (Certification and Marking of Halal) Order 2011		
5. Food Act 1983	MOH	
6. Food Regulation 1985		
7. Food Hygiene Regulations 2009		
8. Poisons Act of 1952		
9. Sales of Drugs Act of 1952		
10. Manual Procedure for Malaysia Halal Certification 2020	JAKIM	
11. Malaysian Halal Management System Manual 2020		
14. Animals Act 1953 (Revised 2006)	Department of Veterinary Services (DVS)	
15. Abattoirs (Privatisation) Act 1993		
16. Animals Rules 1962		
17. Animals (Importation) Order 1962		
18. Local Government Act 1976	Local Authority	The State Fatwa Council
19. Fatwa		



**Table1.4: Continued**

<b>Halal Standards</b>	
1.	MS1500:2019 Halal food – General requirements (Third revision)
2.	MS1500:2009 Halal food – Production, Preparation, Handling and Storage – General guidelines (Second revision)
3.	MS1900:2014 Shariah-based quality management system – Requirement with guidance (First Revision)
4.	MS2200:Part 1:2008 Islamic consumer goods – Part 1: Cosmetic and personal care – General guidelines
5.	MS2200-2:2013 Islamic consumer goods – Part 2: Usage of Animal Bone, Skin and Hair – General guidelines
6.	MS2300:2009 Value-based management system – Requirement from an Islamic perspective
7.	MS2393:2013 Islamic and halal principles – definitions and interpretation of terminology
8.	MS2400-1:2019 Halal supply chain management system – Part 1: Transportation – General requirements (First revision)
9.	MS2400-2:2019 Halal supply chain management system - Part 2: Warehousing - General requirements (First revision)
10.	MS2400-3:2019 Halal supply chain management system - Part 3: Retailing - General requirements (First revision)
11.	MS2424:2019 Halal pharmaceutical – General requirements (First revision)
12.	MS2565:2014 Halal packaging – General guidelines
13.	MS2594:2015 Halal chemical for use in portable water treatment – General guidelines
14.	MS2610:2015 Muslim-friendly hospitality services – Requirements
15.	MS2634:2019 Halal cosmetics – General requirements (First revision)
16.	MS2636:2019 Halal medical device – General requirements
17.	MS2691:2021 Halal profession – General requirements

Department of  
Standard  
Malaysia  
(DSM)

Furthermore, it is also important to note that consumers can take proactive steps to safeguard themselves against fraudulent activities, scams, and other forms of exploitation that could lead to financial losses and negative outcomes that may adversely affect their health, safety, and overall quality of life

(Muhammad Arif et al., 2021). This aligns with the National Consumer Policy (NCP), which prioritizes consumer self-protection and aims to equip consumers with the necessary knowledge and tools to make informed purchasing decisions. Therefore, consumers must be aware of their rights and responsibilities. In halal nutraceutical consumption, consumers must also be informed and knowledgeable about halal products. Hence, consumer literacy is crucial as it enables consumers to be more aware of halal products, understand their rights and responsibilities, identify potential risks, and make informed purchase decisions (Donoghue et al., 2016).

Consumers need to be extra cautious when purchasing products that claim to be halal. Some products may use terms like 'halal-friendly' or 'halal-like,' which can be misleading. Therefore, they are responsible for ensuring that the products they purchase and consume meet their standards for halal compliance (Maison et al., 2019). They must also read the products labels and check for halal certification logos, indicating that it has been inspected and approved by a recognized certification body. In addition, it is highly beneficial for consumers to become well-versed in differentiating between halal and non-halal ingredients (Karimah & Darwanto, 2021). This knowledge can prove invaluable when it comes to making informed choices about the products they use and consume. Therefore, taking the time to educate oneself on this subject can be a wise and empowering decision.

In case of any concerns or complaints, consumers should contact the relevant certification organization or a government agency to report the issue and seek resolution. If consumers come across products claiming to be halal but not



meeting the necessary standards, they should report them and seek legal recourse if they have been harmed or misled by false halal claims or products (Ruslan et al., 2018). This can help to ensure that halal products are authentic and meet the necessary standards. Consumers are the key players in the market and play a vital role in the growth and success of halal nutraceutical products. By being aware of their rights and responsibilities, they can protect themselves and positively impact the industry. Consumers need to educate themselves on halal knowledge, understand the ingredients used in the product, and be aware of any potential ethical or environmental concerns. With this knowledge, consumers can make informed decisions and support the growth of the halal market.

## **1.2 Problem Statement**

Islam places a great deal of importance on the maintenance of good health and well-being as part of its religious obligation. One of the ways to achieve this is by consuming nutraceuticals, which are recognized for their ability to preserve and enhance health. The nutraceutical market has seen a significant surge in growth as more and more people become health-conscious and seek natural and healthy alternatives (Ashraf et al., 2020). Recently, various issues have arisen, causing nutraceutical products to be the precedence in this study. This can be a real concern for Muslim consumers who want to make sure they are getting the best for their health. Hence, they are strongly encouraged to consume halal-certified nutraceutical products to overcome those issues. Halal certification ensures that the products adhere to Islamic dietary guidelines and meet safety and cleanliness standards during the processing process (Afendi,

2020). However, halal certification is not mandatory for all producers under the law (Abdullah et al., 2018; Soraji et al., 2017). Therefore Hence, Muslim consumers should be particularly careful when consuming halal nutraceutical products. Furthermore, there is a pressing need to closely examine consumer behavior toward halal product consumption to understand the underlying factors that shape their choices and preferences.

In the past, scholars have extensively studied consumer behavior by combining various research streams to obtain a comprehensive comprehension of consumer choices. They reflect consumer behavior as the choices made by consumers over time regarding acquiring, using, and getting rid of goods and services through the decision-making processes (Hoyer et al., 2023; Stephen, 2017). Additionally, some researchers include the motives behind consumer behavior, such as to satisfy their own or someone else's personal needs (Schiffman & Wisenblit, 2019; Solomon & Russell, 2023) and wants or to solve personal marketplace problems (Lantos, 2015).

However, the definition provided by Western scholars could be considered too narrow and not fully applicable to the Muslim consumer context. Muslim consumption ought to serve a higher purpose beyond mere self-gratification. It should be guided by the Shariah satisfaction standards, which ultimately leads to obtaining Divine approval (Adnan et al., 2017). Hence, the Muslims consumption is closely linked to the concept of halal and haram. As such, any discussion on Muslim behavior should be determined within the Islamic framework.

Despite the vast amount of research conducted on Muslim behavior, there is still a dearth of empirical studies that employ an Islamic framework as their basis. As a result, there is a pressing need to conduct further research in this area to gain a better understanding of the subject matter. Muslims consider several factors when deciding to consume halal products. Numerous studies have revealed that consumers behavior towards halal products is mainly influenced by their attitudes and social norms (Adil et al., 2020; Ahmadova & Aliyev, 2020; Amalia et al., 2020; Che Shalifillizam et al., 2018; Kassim et al., 2018). However, most of the research in this area has centered around marketing strategies to improve halal product sales. There is a pressing need for more comprehensive studies from a Shariah and legal perspective to improve Muslim consumer behavior and help safeguard their interests. This is because Shariah law is an integral part of the Islamic religion and governs various aspects of Muslim life, including their dietary practices, which is halal consumption.

Many studies have explored the relationship between the Islamic religion and Muslim behavior (Iranmanesh et al., 2022). Most of the studies only focused on consumer religiosity, which covered Islamic beliefs and practices, leaving other significant factors related to the Islamic religion unexplored. These factors include Islamic values and maqasid al-Shariah, which require further examination, particularly their impact on consumer behavior. Although some studies have touched on these factors (Amin, 2021; Shompa et al., 2019), there is still a need for more comprehensive research, especially in halal studies.

Allah SWT specifically commands Muslims to consume halal and *tayyib* products in several verses of the Quran (al-Baqarah:168; al-Maidah:88; al-'Araaf:157; an-Nahl:114). Halal ensures that products are religiously permissible, while *tayyib* emphasizes their wholesomeness, safety, and quality. The combination of halal and *tayyib* ensures that the nutraceutical products are not only religiously permissible but also meet specific health and nutrition standards. It is generally acknowledged that Muslim consumers always prioritize products that meet halal standards in their purchase decisions (Iranmanesh et al., 2019). However, the role of *tayyib* in the Muslim behavior model is still not well established. Therefore, it is important to examine the role of *tayyib* elements (safety, quality, and benefits) in predicting Muslim behavior towards halal products.

From the legal perspective, the government of Malaysia, acting as the regulatory body, has implemented several regulations and standards to ensure the safety and halal compliance of nutraceutical products for Muslim consumers. They have also introduced a halal logo that consumers can look for to identify products that have been certified as halal. The halal logo is important, considering consumers do not always trust the producers and require a credible certification body to ensure halal products (Elistina et al., 2017). To ensure these standards are upheld, the government has established a number of departments, including the Department of Islamic Development Malaysia (JAKIM), the Ministry of Health (MOH), and the Ministry of Domestic Trade and Cost of Living (KPDN). These agencies work together to monitor the market and ensure that only safe and halal products are sold. Muslim consumers are expected to trust these authorities, but it remains uncertain

whether this trust truly affects their decision for halal nutraceutical consumption. Hence, there is a need to confirm the influence of trust on consumer behavior.

Moreover, legal protections for consumers in the halal industry are also addressed through legislation, such as the Consumer Protection Act 1999, Trade Description Act 2011, Trade Descriptions (Halal Definition) Order 2011, Trade Descriptions (Certification and Marking of Halal) Order 2011, Food Act 1983, Food Regulation 1985 and Local Government Act 1976 (Ab Halim & Mohd Salleh, 2020). These laws are designed to inform and safeguard consumers, ensuring they can make well-informed decisions and avoid deceitful practices. It is crucial for consumers to have adequate knowledge of these laws so that they can fully exercise their rights and reap the benefits they deserve. Jariah, Sharifah Azizah, et al. (2013) claimed that if consumers are not aware of their rights, they are less likely to comprehend their responsibilities as consumers. This lack of understanding can impede their capacity to safeguard themselves (Nurazlina et al., 2015). In the context of halal nutraceuticals, consumers must also have halal knowledge to raise awareness of halal products (Nurhayati & Hendar, 2019). According to Maryam and Sumar'in (2022), halal literacy will significantly impact the use of halal products if halal awareness is well established. Currently, there have been limited studies that focus on the legal and halal literacy of Muslim consumers, specifically when it comes to nutraceutical products. Thus, this study addresses this gap by assessing legal and halal literacy levels and their relationship with consumer behavior.

It is interesting to note that most legal and Shariah studies on halal nutraceuticals tend to focus on the legal analysis or Islamic perspective (Abdul Aziz, 2015; Alzeer & Hadeed, 2020; Daud et al., 2017; Mohamad et al., 2018; Umar et al., 2016; Zhari & Abdul Halim, 2008). However, there is a gap in research when it comes to using an empirical approach. It is also vital to consider the socio-legal studies that can help empower consumers and gauge their understanding of Islamic and public laws (Helveston, 2016). Therefore, this study used a quantitative approach to examine Muslim behavior towards halal nutraceutical products. Unlike most previous studies in halal product research that adopt the Theory of Planned Behavior (TPB) as their underpinning theory (Iranmanesh et al., 2022), this study combines several theories in the research framework. It is important to note that a single theory cannot fully explain consumer behavior. Several factors may contribute to the observed actions, and a comprehensive understanding will require thorough analysis and consideration of various perspectives (Ruiter & Crutzen, 2020). Furthermore, conventional marketing theories may not fully capture the Islamic perspectives of consumer behavior (Amin et al., 2014). It is essential to merge several theories, including Islamic theory, to increase the accuracy of explanations and predictions (Abutaleb et al., 2023). Therefore, this study adopts the Theory of Islamic Consumer Behavior (ICB) and Stimulus Organism Response (SOR) as the underpinning theories.

To sum up, it can be inferred that nutraceutical products pose significant concerns for consumers, necessitating them to be more mindful and informed when consuming these products. To ensure the highest standards of Muslim consumption, it is imperative to conduct empirical research, utilizing multiple

theories to gain a comprehensive understanding of their behavior towards halal nutraceutical products in Malaysia. This research should enable Muslim consumers to make informed and intelligent decisions when purchasing nutraceutical products, leading to a safer and healthier lifestyle.

### **1.3 Research Questions**

The research questions in this study focused on:

1. What is the level of halal and legal literacy of Muslim consumers in Malaysia?
2. What are the factors that influence Muslim consumers' behavior towards halal nutraceutical products?
3. What is the primary factor that influences Muslim consumers' behavior toward halal nutraceutical products?
4. Would the halal logo mediate the relationship between the predictors and Muslim consumers' behavior towards halal nutraceutical products?

### **1.4 Research Objectives**

The research objectives of this study:

1. To measure the level of halal literacy and legal literacy among Muslim consumers in Malaysia.



2. To examine the factors that influence Muslim consumers' behavior towards halal nutraceutical products.
3. To identify the primary factor influencing Muslim consumers' behavior toward halal nutraceutical products.
4. To analyze the role of the halal logo as a mediator on Muslim consumers' behavior toward halal nutraceutical products.

### **1.5 Research Hypotheses**

A hypothesis is typically derived from research objectives and is presented as a declarative statement that predicts the outcomes. The present study has two main hypotheses to achieve the second and fourth objectives of this study:

**H<sub>01</sub>:** Muslim consumers' behavior toward halal nutraceutical products is not influenced by halal literacy, legal literacy, Islamic values, religious commitment, maqasid al-Shariah, perceived safety, perceived quality, perceived benefits, and trust.

**H<sub>01a</sub>:** Religious commitment does not influence Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>01b</sub>:** Maqasid al-Shariah does not influence Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>01c</sub>:** Islamic values do not influence Muslim consumers' behavior toward halal nutraceutical products.



**H<sub>01d</sub>:** Perceived safety does not influence Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>01e</sub>:** Perceived quality does not influence Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>01f</sub>:** Perceived benefits do not influence Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>01g</sub>:** Halal literacy does not influence Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>01h</sub>:** Legal literacy does not influence Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>01i</sub>:** Trust in the government does not influence Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>02</sub>:** The halal logo does not mediate the relationship of halal literacy, legal literacy, Islamic values, religious commitment, maqasid al-Shariah, trust, perceived safety, perceived quality, and perceived benefits on Muslim consumers' behavior toward halal nutraceutical products.

**H<sub>02a</sub>:** Halal logo does not mediate the relationship between religious commitment and consumer behavior towards halal nutraceutical products.

**H<sub>0</sub>2b:** Halal logo does not mediate the relationship between maqasid al-Shariah and consumer behavior towards halal nutraceutical products.

**H<sub>0</sub>2c:** Halal logo does not mediate the relationship between Islamic value and consumer behavior towards halal nutraceutical products.

**H<sub>0</sub>2d:** Halal logo does not mediate the relationship between perceived safety and consumer behavior towards halal nutraceutical products.

**H<sub>0</sub>2e:** Halal logo does not mediate the relationship between perceived quality and consumer behavior towards halal nutraceutical products.

**H<sub>0</sub>2f:** Halal logo does not mediate the relationship between perceived benefit and consumer behavior towards halal nutraceutical products.

**H<sub>0</sub>2g:** Halal logo does not mediate the relationship between halal literacy and consumer behavior towards halal nutraceutical products.

**H<sub>0</sub>2h:** Halal logo does not mediate the relationship between legal literacy and consumer behavior towards halal nutraceutical products.

**H<sub>0</sub>2i:** Halal logo does not mediate the relationship between trust in the government and consumer behavior towards halal nutraceutical products.

## **1.6 Research Scope and Limitation**

The concept of halal is not just limited to food and drink but encompasses all aspects of life, including permissible actions, behaviors, and products that

abide by Islamic principles and values. However, this study specifically focuses on the factors contributing to Muslim consumers' behavior toward halal nutraceutical products in Malaysia. Hence, it is important to note that this study exclusively concentrates on halal nutraceutical products and does not encompass other halal products in the market.

Since this study is in the field of Shariah and law, this study does not include any variable related to the marketing and management field like most previous halal studies, such as customer satisfaction, loyalty, product availability, brand, place, price, and packaging. This study has identified nine independent variables that are related to legal and Shariah perspectives. The variables that relate to legal perspectives are legal literacy and trust. Meanwhile, the variables related to the Shariah are halal literacy, religious commitment, maqasid al-Shariah, and Islamic values. In addition, this study also added three variables related to *tayyib* elements, which consist of perceived safety, quality, and benefits.

In addition, this study only involved Muslim consumers who experienced consuming or purchasing nutraceutical products. This is due to the fact that only experienced consumers have valid reasons for consuming those products. This study also focuses on the role of the halal logo as the mediator in influencing consumer behavior. As this study is restricted to Muslim consumers of nutraceutical products in Malaysia, the findings and conclusions drawn from this study solely reflected Muslim behavior towards halal nutraceutical products in Malaysia.

## **1.7 Research Contribution**

The most important of this research are as follows:

### **1.7.1 Academic Contribution**

The significance of this particular study in the realm of Shariah and halal law lies in the fact that most nutraceutical research in this field has been conducted using qualitative methods. However, this study has utilized a different approach by employing a social-legal method, which is based on empirical data. The variables used in this study were based on Shariah and legal aspects. Furthermore, this is the first study that combines a few variables related to Islamic religion, such as maqasid al-Shariah and Islamic values, in halal research. This study's findings also contribute to the theoretical development of Islamic consumer theory by adopting the Theory of Islamic Consumer Behavior (ICB) as the main underpinning theory. The results of this study served as a valuable addition to the existing body of literature on factors contributing to halal nutraceuticals, the importance of the halal logo, and halal consumption behavior. It provides a useful reference for future researchers, academicians, and students who are interested in this research area.

### **1.7.2 Muslim consumers**

This study explored how the consumer behaves in accordance with the Shariah principle. Furthermore, this study examines whether the halal logo has an impact on consumer behavior toward halal nutraceutical products. In addition to its primary findings, this study has yielded valuable information

regarding the level of halal and legal knowledge of Muslim consumers in Malaysia, as well as the driving factors behind their choices regarding halal nutraceutical products. This study can potentially increase awareness among Muslim consumers about the significance of halal principles in their everyday lives.

### **1.7.3 The government of Malaysia**

Government agencies such as JAKIM, MOH, and KPDM could discover the extent of consumer trust in them for regulating and monitoring halal products. These agencies are responsible for ensuring the safety and integrity of halal products and play a very important role in protecting Muslim consumers in Malaysia. Furthermore, the information gained from this research also provides insight into Muslim consumers perception of the halal logo. It demonstrates the importance of the halal logo on nutraceutical products. The government could also enhance the perception of the halal logo by improving existing halal policies since the halal logo influences Muslim consumers behavior toward halal products.

Besides that, this study delves into halal and legal literacy among Muslim consumers to assess their knowledge and understanding in these areas. Through careful analysis of the gathered data, the study has uncovered valuable insights that can immensely help the government enhance consumer literacy. The recommendations drawn from the study include strategies such as consumer education programs and increased awareness campaigns about halal products. These interventions can play a significant role in boosting the

level of consumer literacy, which in turn can lead to better-informed choices and an overall improvement in consumer welfare.

#### **1.7.4 Nutraceutical manufacturers and entrepreneurs**

Nutraceutical manufacturers and entrepreneurs in Malaysia can benefit from this study by knowing the most critical factors contributing to nutraceutical purchase behavior. Hence, they can improve their product quality and sales. Additionally, the outcome of this study will demonstrate the utmost significance of obtaining halal certification in the nutraceutical industry. With a positive outlook, this research has the potential to raise the level of consciousness among manufacturers and entrepreneurs regarding the crucial role of certification in the nutraceutical industry.

### **1.8 Conceptual and Operational Definition**

The operational definition of terminologies used in this study is summarized in Table 1.5.

**Table 1.5: Operational definition**

<b>Terms</b>	<b>Conceptual Definition</b>	<b>Operational Definition</b>
Halal	That which is permitted, with respect to which no restriction exists, and the doing of which the Law-Giver, Allah, has allowed (Al-Qardawi, 1999).	Something lawful, permitted, and recommended by the Shariah (Islamic law) to be used or consumed by Muslims.

**Table 1.5: Continued**

Nutraceuticals	Food, or parts of a food, that provide medical or health benefits, including the prevention and treatment of disease (DeFelice, 1995).	Any type of dietary supplement, traditional herbs, and functional foods product that offers medical or extra health benefits apart from their basic nutritional value, for example, to improve health, delay the aging process, prevent chronic diseases, increase life expectancy, or support the structure or function of the body.
Consumer behavior	The study of Muslim consumers and the processes they undertake when selecting, purchasing, and consuming products (Solomon, 1995).	Individuals' actions and decision-making processes as they select and purchase halal nutraceutical products. This behavior can be evaluated by assessing the extent to which consumers agree with statements about their nutraceutical product selection and purchasing approaches.
Halal literacy	The ability to distinguish permissible (halal) and forbidden (haram) goods and services, which is based on a better understanding of Islamic laws (Shariah) (Salehudin, 2010).	The degree of consumers' knowledge of halal and haram according to Islamic principles. Consumers' level of halal literacy is determined by their ability to accurately answer questions related to halal and haram products and ingredients.
Legal literacy	Consumers' ability to know and be aware of their rights and responsibilities under Malaysian law (Norhafifah et al., 2020).	The degree to which individuals know their rights and obligations as consumers. Consumers' legal literacy level is measured by their ability to accurately answer questions about Malaysia's consumer laws and halal regulations.
Religious commitment	The degree to which an individual's adherence to particular religious values, beliefs, and practices (Worthington et al., 2003).	The degree of Muslims' commitment to their religious practice. This level of commitment is assessed by examining the extent to which they agree with statements related to their daily religious routine.



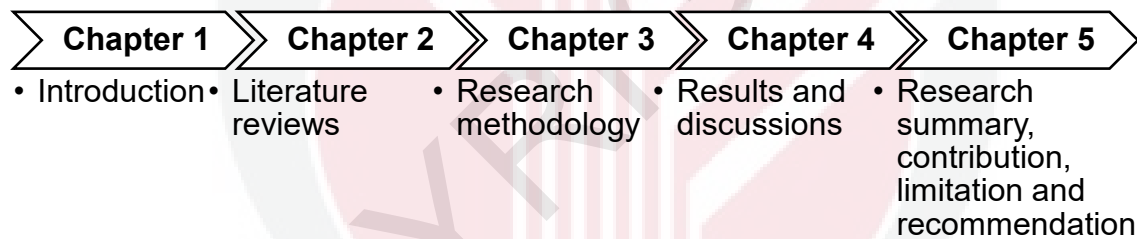
**Table1.5: Continued**

Maqasid al-Shariah	The objectives that are determined by Shariah to realize benefits for humankind (Al-Raysuni, 1992).	The degree to which consumers agree that purchasing halal nutraceutical products could achieve the objectives of Shariah in preserving faith, life, intellect, property, and lineage.
Islamic values	A set of ethics or good values grounded on the basis of the Quran and Prophetic traditions, which permeates all spheres of human life (Ishak & Osman, 2016).	The degree of Muslim morals and ethics based on Islamic teaching affects consumers' behavior. These values are measured based on the extent to which individuals prioritize and uphold specific Islamic ethics in their daily lives.
Trust in government	People's willingness to rely on government in the management of products' risks (Earle & Cvetkovich, 1995).	The consumers' confidence in government agencies that manage and monitor halal products for consumer protection. The level of trust is measured by evaluating the consumers' confidence in JAKIM, MOH, and KPDN.
Perceived safety	Consumers' perception or belief toward the product being safe and not harmful to people's health (Chang & Wong, 2015).	The degree to which consumers believe that halal nutraceutical products are safe in terms of source, process, and free from any contamination
Perceived quality	Consumers' perception of the overall quality or superiority of a product relative to other alternatives (Zeithaml et al., 1988).	The extent to which consumers believe that halal nutraceutical products meet their expectations in terms of their superior quality compared to non-halal products.
Perceived benefits	Perceived benefit refers to the perception of the positive consequences that are caused by a specific action (Leung, 2020).	The extent to which consumers believe that halal nutraceutical products have many benefits in improving health and preventing serious illness.
Halal logo	The degree of consumers' perception toward the halal logo.	The extent to which consumers acknowledge the importance of a halal logo in halal nutraceutical purchase decisions.



## 1.9 Structure of Thesis

The first chapter contains an overview of this thesis. Chapter two presents an overview of halal and consumer behavior towards halal products. A discussion on the underpinning of the theories of consumer behavior and the conceptual research framework is explained in the same chapter. In chapter three, the reader is provided with a clear explanation of the methodology used in conducting the study. Chapter four reveals the overall results from analyzing the respondents' feedback. The last chapter concludes with the research summary, contribution, limitations, and recommendations for future research. The thesis layout is illustrated in Figure 1.1.



**Figure 1.1: Thesis layout**

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