Intention to consume halal pharmaceutical products: evidence from Indonesia

Rahmatina Awaliah Kasri
Center for Islamic Economics and Business and Department of Economics,
Faculty of Economics and Business, Universitas Indonesia, Depok, Indonesia

Abdillah Ahsan
Department of Economics, Faculty of Economics and Business,
Universitas Indonesia, Depok, Indonesia

Dono Widiatmoko
University of Derby, Derby, UK, and

Sri Rahayu Hijrah Hati
Department of Management, Faculty of Economics and Business,
Universitas Indonesia, Depok, Indonesia

Abstract

Purpose – Despite the importance of pharmaceutical products in everyday life, particularly after the coronavirus outbreak in early 2020, only a few studies have attempted to analyse consumer behaviour with regard to halal pharmaceutical products. Therefore, this study aims to investigate the factors influencing purchase intention for halal pharmaceutical products among Indonesian Muslims.

Design/methodology/approach – This study uses a theory of planned behaviour approach, in which religiosity and knowledge of halal product variables are added to attitude, subjective norms and perceived behavioural control variables. Primary data were collected from 225 Indonesian Muslims in Jakarta, the capital city of Indonesia and analysed using structural equation modelling.

Findings – The study found that the intention to purchase halal pharmaceutical products is positively affected by attitude, religiosity, knowledge of halal products and perceived behavioural control. However, the influence of the subjective norm variable was found to be insignificant in this study.

Research limitations/implications – It is possible to improve the empirical model by including more explanatory variables and investigating the mediating effect of the variables. The study could also be scaled up to reach more respondents in different regions and countries. These additional aspects would provide better insights into the behaviour of consumers when considering halal pharmaceutical products.

Practical implications – The findings suggest the importance of designing and implementing appropriate strategies and campaigns to enhance knowledge of halal products, of positive attitudes and of better resources/opportunities to consume halal pharmaceutical products. The industry needs to highlight its products' halal and tayyib aspects through proper branding and promotion strategies. The government and

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other stakeholders could also implement education campaigns to increase halal products and halal literacy knowledge. These are ultimately expected to enhance the effectiveness of halal regulations and meet Muslim consumer expectations in the country.

Originality/value – Despite the importance of halal pharmaceutical products, this area has received limited attention in the academic literature. Thus, this study attempts to elaborate on consumer behaviour in this niche area.

1. Introduction

Halal assurance is increasingly important in Muslim countries and societies, including for pharmaceutical products. The importance of *halal* products is initially derived from the requirement for Muslims to consume products that are *halal* (permissible) and *tayyib* (clean and good to consume) according to Islamic teaching (Nurhayati and Hendar, 2019; Amalia *et al.*, 2020). With the spread of coronavirus in early 2020, which is believed to have originated in animals, the cleanliness and quality of consumable products are now more important than ever. An emphasis on *halal* products can be considered a preventive measure to avoid future outbreaks and could reduce the risk of future epidemics (Amalia *et al.*, 2020). From product standardisation to *halal* certification, various attempts have been made to ensure that consumable products comply with *halal* requirements.

Given the large size of the *halal* markets involved, such attempts are challenging. The Global Islamic Economic Report 2020/2021 estimated the value of the global *halal* product market at around US$2.02bn in 2019, reflecting a 3.2% year-on-year growth from 2018. It has been reported that Muslim spending on *halal* pharmaceutical products increased from US$92bn in 2018 to US$94bn in 2019. Because of the COVID-19 pandemic, Muslim expenditures are estimated to decrease to $87bn by 2020 but recovery to the 2019 level is expected in 2021. Muslim consumer spending in the pharmaceutical sector is expected to increase by 2.3% from 2019 onwards, reaching $105bn by 2024 (Thomson-Reuters, 2020).

As the world's largest Muslim country, Indonesia is concerned about *halal* assurance. In 2013, the Indonesian Muslim Scholar Council (known as the MUI or *Majelis Ulama Indonesia*) issued Fatwa No. 30/2013 regarding "medicine and treatment", which encouraged consumers to consume only halal medicine (MUI, 2013). However, the fatwa permitted temporary consumption of non-*halal* medications (without a *halal* label) under certain conditions. In 2014, the Indonesian Government issued Law No. 33/2014 regarding halal *product* guarantees (MORA [Kementrian Agama Republik Indonesia], 2019). The law's first article stated that products that enter, circulate and trade in Indonesia must be *halal* certified to improve the products' safety standards and strengthen consumer protection. The scope of *halal* products includes products that have been declared *halal* or that are in line with Islamic law. The law applies to all *halal* products, including food and pharmaceutical (medicine) products, as mentioned in Government Regulation No. 31/2019, the technical regulation of the Indonesian *Halal* Law (LPPOM MUI, 2020). Notably, the exclusion mentioned in the MUI fatwa is also stated in the technical regulation.

However, the Indonesian Government also realises that implementing *halal* regulations for pharmaceutical products is more complicated than for other products because of many factors, including complex manufacturing processes and traceability issues (Aziz and Chok, 2013; Norazmi and Lim, 2015). People's awareness of *halal* or Sharī'ah-compliant products is

also relatively low. It is suggested that only 16.3% of Indonesian Muslims know about Islamic economic concepts and practices, including those related to *halal* products (Bank Indonesia, 2019). Furthermore, early implementation of *halal* assurance has been limited by the large proportion of raw materials imported from abroad [1]. Moreover, only a small number of institutions are eligible to conduct *halal* assurance or *halal* audit processes [2]. Therefore, the government has provided the pharmaceutical industry with additional time to prepare and comply with *halal* regulations [3].

Currently, very few empirical studies have attempted to discuss consumer behaviour with regard to *halal* pharmaceutical products. Instead, most behavioural studies related to *halal* products and services have discussed topics such as *halal* food (Alam and Sayuti, 2011; Raheem and Demirci, 2018; Amalia *et al.*, 2020), *halal* cosmetics (Ahmad *et al.*, 2015; Majid *et al.*, 2015; Aisyah, 2016) and *halal* travel and tourism (Chandra, 2014; Battour and Ismail, 2016; Vargas-Sánchez and Moral-Moral, 2019). Furthermore, in the Indonesian context, studies on consumer behaviour around *halal* intentions are dominated by *halal* food products (Soesilowati, 2011; Ratanamaneichat and Rakkarn, 2013; Vanany *et al.*, 2019), *halal* cosmetics (Haro, 2018; Adiba, 2019; Saifudin *et al.*, 2020) and *halal* fashion (Indarti *et al.*, 2019; Leonnard *et al.*, 2019).

One of the few studies related to *halal* pharmaceutical products was conducted by Sadeeqa and Sarriff (2014), who found that pharmacists had relatively good knowledge and positive attitudes towards *halal* pharmaceutical products. However, the coverage of this study was limited to hospital pharmacists in Malaysia. In the context of Indonesia, although a few studies have discussed *halal* pharmaceutical products, most were qualitative studies. For example, Rahmah and Barizah (2020) attempted to evaluate the systemic challenges facing *halal* certification for medicines. Another study by Syahrir *et al.* (2019) investigated pharmacists' perceptions of the *halal* logo in Malang City, Indonesia. Rusmita *et al.* (2021) attempted to examine knowledge about and attitudes towards *halal* pharmacy products, but the study was aimed only at students in East Java. Thus, very few studies have explored issues related to *halal* pharmaceutical products using a quantitative approach. Behavioural frameworks, such as the theory of planned behaviour (TPB), are also rarely used for such issues.

In light of these previous studies, this study tries to fill the gap and extend the literature regarding the intention to purchase *halal* pharmaceutical products, using a quantitative approach with Indonesian respondents. Specifically, this study aims to empirically scrutinise the factors influencing consumer behaviour and intention to consume *halal* pharmaceutical products in Indonesia. This quantitative approach uses the TPB, in which religiosity and knowledge are added to the three original variables of TPB, namely, attitude, subjective norms and perceived behavioural control. Primary data were collected from 225 Indonesian Muslims living in Jakarta city (the capital of Indonesia) and analysed using structural equation modelling (SEM).

The findings of this study are expected to contribute in both theoretical and practical respects. Firstly, the study is expected to provide more insights into the factors influencing Indonesian consumers' intention to purchase *halal* pharmaceutical products, and thus, to contribute to the larger literature on consumer behaviours towards *halal* products. Secondly, the model is expected to enrich larger empirical studies on TPB implementation. Thirdly, understanding the preferences of Muslim customers could directly benefit the pharmaceutical industry in the country because it would enable adjustment to meet consumer needs and improve marketing and branding strategies for the industry's products. It is anticipated that the manufacturers would be able to develop a branding strategy that incorporates *halal* positioning through image, identity, personality and slogan creation to produce goods that are

attractive and memorable to Muslim customers (Wilson, 2020). Fourthly, the behavioural aspect of the demand side would also help the government, industry and other stakeholders to design appropriate strategies to increase *halal* awareness or *halal* literacy and improve consumer resources/access to *halal* products. This would help in developing strategies for effectively implementing the *Halal* Product Assurance Law in the country. Finally, it is hoped that the findings will provide insights and lessons for other Muslim countries, primarily those currently developing *halal* pharmaceutical industries and will enrich the literature in the area of *halal* industries.

2. Literature review and hypothesis development

2.1 Halal pharmaceuticals

Halal is an Arabic word derived from the Quran, meaning "allowed" or "lawful". It refers to anything permissible under Islamic law (Mukhtar and Butt, 2012; Wilson, 2014). The word is often used in the context of consumption, following Islamic principles. The importance of consuming *halal* products is emphasised in many articles of the Qur'an and other sources of Islamic teaching (Kamali, 2013). The word *halal* is mentioned 30 times in the Qur'an. For example, one can read, "O people, eat what is halal (lawful) and good from what is on the earth, and do not follow the footsteps of the devil; for the devil is a real enemy to you" (QS Al-Baqarah: 168). Another verse reads, "They ask you: 'What is allowed (halal) for them [to eat]'? It is allowed for you to eat good things..." (QS Al-Ma'idah, p. 4). Another legal source related to *halal* consumption is the hadith of the Prophet Muhammad SAW. In one hadith, the importance of eating *halal* food is mentioned, for example, by emphasising that "A believer will be in the adherence to his religion as long as he does not eat illegal food" (HR Bukhari, in Mahmud, 2017).

Besides *halal*, Muslims are also encouraged to consume everything that is *tayyib*. Indeed, the word *halal* is often followed by the word *tayyib* in Qur'anic verses. The word *tayyib* means "good", "delicious" and "lawful". It usually refers to the hygiene and safety of food consumed by Muslims (Raheem and Demirci, 2018). The recommendation to consume such hygienic and safe food is clearly stated in the Qur'an "Eat of the good (tayyib) and lawful (halal) things provided by Allah. And be mindful of Allah in Whom you believe" (QS. Al-Ma'idah, p. 88). The Prophet SAW is also reported as saying, "Allah is pure, and He accepts only what is purely good" (HR Muslim). Furthermore, because of the rapid growth and development of the *halal* food sector, the expectation of *halal* credence quality and perception seems to extend to include the principle of *tayyib* [4]. This is reflected in recent academic work, especially on *halal* integrity and Islamic economy reports suggesting *tayyib* to be a new trend and a value-adding factor in the marketing of *halal* products (Raheem and Demirci, 2018).

However, Islamic teaching also recognises that there may be some circumstances in which *halal* product consumption might not be possible. It is clearly expressed in the following verse of the Qur'an: "O you who have believed, eat from the good things which We have provided for you, and be thankful to Allah if it is He alone whom you worship. Indeed, what He has only forbidden to you is the flesh of dead animals and blood and the flesh of swine, and that which has been dedicated to other than Allah. Nevertheless, whoever is forced [by necessity], neither desiring [it] nor transgressing [its limit], there is no sin upon him" (QS Al-Baqarah 2, pp. 172–173). This implies that under certain conditions, such as emergencies (e.g. in life-or-death situations) or the absence of *halal* materials or *halal* products, consumption of non-*halal* products is allowed from an Islamic perspective. This also suggests that the consumption of *halal* products is not something tautological, such that the exclusion is derived from the Qur'anic teaching. Therefore, most scholars have given

Muslims permission to consume non-*halal* products, including non-*halal* pharmaceutical products, in the above-mentioned circumstances [5]. In Indonesia, this is reflected in the issuance of Fatwa No. 30/2013, which encouraged consumers to consume only *halal* medicine but acknowledged emergencies that allowed the consumption of non-*halal* substances and products (MUI, 2013).

In regard to the *halal* pharmacy, Saha *et al.* (2019) defined *halal* pharmaceuticals as drug products derived from a permissible source that follows an Islamic method of preparation, manufacturing and extraction. On a similar note, Norazmi and Lim (2015) explained that the *halal* status of the pharmacy ensures that the product does not contain non-*halal* ingredients, where each step of pharmaceutical preparation also fully adheres to Islamic requirements, from the source of strains of microorganisms to the media used for culturing, the containers and membranes used in the production process, the steps involved in the filling and finishing processes and the packaging and transportation to the consumer. Accordingly, a mechanism such as *halal* certification is deemed necessary to ensure the permissibility (*halalness*) of a product, including *halal* pharmaceutical products. Indeed, according to Mukhtar and Butt (2012), the pharmaceutical sector has been the subject of scrutiny by Muslim scholars because of the suspicion of many international brands' use of enzymes extracted from pork meat and alcohol. Thus, it appears that it is necessary to investigate *halal* pharmaceutical products.

2.2 The theory of planned behaviour

This study's main constructs are taken from the TPB developed by Ajzen (1991), which extends the theory of reasoned action (Ajzen and Fishbein, 1973). According to the TPB, consumer intention to carry out a particular behaviour depends on three main factors, namely, attitude, subjective norms and perceived behavioural control. Together, these variables have been used to analyse behavioural changes in the social sciences field, including social psychology, sociology and economics.

In behavioural economics, the TPB is often seen as a powerful tool for analysing individual consumer behaviour because it examines the logical process of thinking influenced by attitude, subjective norms and behavioural control, which will ultimately affect decision-making related to consumption (Kashif *et al.*, 2015). The TPB model is arguably the most widely used framework for analysing and predicting an individual's intention to engage in a behaviour at a specific time and place (Alam and Sayuti, 2011; Iranmanesh *et al.*, 2019). It is also notable that the TPB framework allows for other variables to predict individuals' intentions and behaviour (Armitage and Corner, 2001). Indeed, Ajzen (1991) stated that the model was open to further elaboration if other important proximal determinants were identified [6].

In the context of *halal* products, a study by Iranmanesh *et al.* (2019) suggested that attitude, subjective norms and perceived behavioural control account for approximately 48.7% of a person's intention and willingness to pay for certified *halal* food, which is a specific behaviour related to *halal* products. When religious self-identity and religious commitment are added to the model, it is suggested that the TPB model can explain 63.4% of the variance in willingness to pay for certified *halal* food. This implies that researchers can add new variables to strengthen the explanatory factors. Furthermore, various studies suggest that the TPB framework has enabled the inclusion of additional variables, such as injunctive and descriptive norms (Kashif *et al.*, 2017; Andam and Osman, 2019), moral norms (Armitage and Conner, 2001; Kashif *et al.*, 2017) and past behaviour (Kashif *et al.*, 2017; Kasri and Ramli, 2019). In relation to *halal* products and *halal* finance, additional variables that are often included are religiosity (Rahman *et al.*, 2015; Kashif *et al.*, 2017;

Elseidi, 2018; Iranmanesh, 2019; Vanany *et al.*, 2019; Amalia *et al.*, 2020) and knowledge (Sadeeqa and Sarriff, 2014; Rahman *et al.*, 2015; Alami *et al.*, 2019).

Although most studies related to *halal* products have investigated *halal* food, the logic and framework developed could be applied to other *halal* products, such as *halal* pharmaceutical products, which must be *halal* and *tayyib* according to Islamic teaching. Therefore, from this perspective, the TPB is considered an appropriate framework for investigating the factors influencing the intention to purchase *halal* pharmaceutical products in Indonesia.

2.3 Previous studies and hypothesis development

Studies investigating the intention to consume *halal* pharmaceutical products are limited. One of the few studies related to *halal* pharmaceutical products was conducted by Sadeeqa and Sarriff (2014) in Malaysia, which found that hospital pharmacists had relatively good knowledge about and positive attitudes towards *halal* pharmaceutical products. However, the coverage of this study was limited to hospital pharmacists in Malaysia. Other studies are mostly qualitative (Norazmi and Lim, 2015; Saha *et al.*, 2019), as is much the case in Indonesia. For example, Rahmah and Barizah (2020) attempted to evaluate the systemic challenges facing *halal* certification for medicines. Another study was conducted by Syahrir *et al.* (2019), which aimed to discover pharmacists' perceptions of *halal* labels/logos in Malang City, East Java. Finally, Rusmita *et al.* (2021) attempted to examine knowledge about and attitudes towards *halal* pharmacy products, but it aimed only at students in East Java. Thus, studies have been limited and restricted to certain areas only.

In light of these previous studies, this study tries to fill in the gap and extend the literature regarding the intention to consume *halal* pharmaceutical products, using a quantitative approach by applying the TPB framework to Indonesian consumers. In this study, *halal* pharmaceutical products comprise over-the-counter and prescribed medicine products with a *halal* label/logo. This definition is in line with the *halal* products' scope as mentioned in Indonesian Government regulations (i.e. Law No. 34/2014 regarding *halal* product assurance and Government Regulation No. 31/2019 regarding operational guidelines of the Law). In this respect, the issuance of *halal* labels/certificates of particular pharmaceutical products can be seen as compliance with government regulations.

Furthermore, as previously explained, the TPB is considered an appropriate framework for investigating the factors influencing the intention to consume *halal* pharmaceutical products. With the TPB approach, intention can be defined as an individual's willingness to make an attempt or effort to perform a behaviour (Ajzen, 1991). In the TPB, an individual's intention to perform a certain behaviour is considered a central factor, as it is presumed to capture motivational factors influencing certain types of behaviour (Ajzen, 1991). In this study, intention refers to the extent to which an individual is willing to make an attempt or effort to consume pharmaceutical products. Moreover, drawing on many similarities between *halal* food and *halal* pharmaceutical products, the intention to consume *halal* pharmaceutical products can be investigated by looking at the influence of other factors, such as religiosity (Said *et al.*, 2014; Rahman *et al.*, 2015; Kashif *et al.*, 2017; Elseidi, 2018; Kasri and Ramli, 2019; Amalia *et al.*, 2020) and knowledge (Sadeeqa and Sarriff, 2014; Rahman *et al.*, 2015; Alami *et al.*, 2019). In most cases, these variables directly influence intentions. However, some might act as moderating variables (Suhartanto *et al.*, 2019b; Atal *et al.*, 2020).

2.3.1 Religiosity and attitude. Religiosity has many conceptualisations. It is often defined as "the degree to which beliefs in specific religious values and ideals are held and practised by an individual" (Delener, 1990). Religiosity can also be defined as the extent to which an

individual is committed to his religion and the extent to which that religion is reflected in the individual's attitudes and behaviour (Johnson *et al.*, 2001). Religion is considered the most universal cultural factor that influences social institutions and affects the behaviour, attitudes and values of both an individual and society in general (Mokhlis, 2009). Therefore, it is important to investigate and gauge the role of religion in consumption behaviour.

Some studies have examined the role of religiosity in the context of *halal* products. Previous behavioural researchers have found that there is a significant positive relationship between a consumer's religious affiliation and behavioural variables such as attitude and intention (Rahman *et al.*, 2015; Iranmanesh *et al.*, 2019; Jana *et al.*, 2019; Vanany *et al.*, 2019; Amalia *et al.*, 2020; Atal *et al.*, 2020). Amalia *et al.* (2020) investigated the determinants of youth Muslim purchasing behaviour for *halal* food in Indonesia using the TPB framework. They found that religiosity had a positive and significant impact on *halal* food attitudes. Atal *et al.* (2020) investigated the determinants of Muslims' attitudes and intentions towards *Murabaha* financing by considering religiosity as a moderator and found that religious obligation positively affects attitudes towards *halal* financing. Similar findings were reported by Rahman *et al.* (2015) for the use of *halal* cosmetic products in Malaysia and by Iranmanesh *et al.* (2019), who found that religious commitment serves as a strong predictor of Muslims' intention to pay more for *halal*-certified foods.

Interestingly, this relationship is also found among Muslims in Muslim-minority countries. According to Bonne *et al.* (2008), religiosity positively influences Muslims' intention to buy *halal* meat. Billah *et al.* (2020), in their study investigating the determinants of *halal* consumption behaviour in Thailand, also found a positive relationship between religiosity and attitude in consuming *halal* food. Suhartanto *et al.* (2019a) found, similarly, that religiosity directly affects customers' intention to remain loyal to Islamic banks. On the other hand, Iranmanesh *et al.* (2019) found that religiosity had no significant effect on Muslim medical tourists' attitudes.

In this study, the term "religiosity" refers to a person's self-reported (perceived) perceptions regarding the degree to which they commit to their religion and how religion affects their life and behaviour in consuming *halal* pharmaceutical products. Furthermore, in light of the studies mentioned above, it is generally believed that religiosity has a positive relationship with attitudes towards consuming *halal* pharmaceutical products. As more empirical evidence supports the role of religiosity as an antecedent of attitude rather than as a moderating variable, the current study does not investigate the role of religiosity as a moderating variable. On the basis of the literature detailed above, the following hypothesis is proposed:

H1. Perceived religiosity has a positive influence on attitude towards consuming halal pharmaceutical products.

2.3.2 Knowledge of halal products and attitude. The concept of knowledge refers to the facts, feelings or experiences of a person or a group of people. It can also be defined as awareness, consciousness or familiarity gained through experience or learning (Rahman *et al.*, 2015). Knowledge also refers to the expertise and skills acquired by a person or a group of people through a theoretical or practical understanding of a subject (Sinclair, 2010; Ahmat *et al.*, 2011). In the context of this study, knowledge is defined as individuals' understanding of the concept of *halal* pharmaceutical products, which is believed to influence attitudes towards consuming *halal* pharmaceutical products.

According to previous studies, knowledge of *halal* products positively influences consumer attitudes and behaviours related to *halal* products (Aziz and Chok, 2013; Hamdan *et al.*, 2013; Vanany *et al.*, 2019; Billah *et al.*, 2020). Sadeeqa and Sarriff (2014) reported that hospital

pharmacists in Malaysia had good knowledge of *halal* pharmacy issues. Their study also showed that better knowledge related to *halal* pharmaceuticals led to more positive attitudes towards such products.

Therefore, in light of the studies mentioned above, the perceived level of understanding related to the concept of *halal* pharmaceutical products is generally believed to be an important factor that positively influences attitudes towards *halal* pharmaceuticals. Therefore, the following hypothesis was developed:

H2. Knowledge of halal products has a positive influence on attitudes towards consuming halal pharmaceutical products.

2.3.3 Attitude, subjective norms and perceived behavioural control. Attitude can be defined as the degree of a person's favourable or unfavourable reaction (evaluation and appraisal) to performing a particular behaviour (Ajzen, 1991). In other words, attitude is a person's tendency to evaluate a particular behaviour, either positive or negative. Attitudes are considered part of the expectations for behavioural beliefs and can be measured on the basis of an evaluation of outcomes (Smith and McSweeney, 2007). In this study, an attitude refers to a person's tendency to evaluate a behaviour specifically related to their intention to consume *halal* pharmaceutical products. A study conducted by Iranmanesh *et al.* (2019) showed that attitude significantly influences willingness to pay for *halal* products. These results align with those of a study by Vanany *et al.* (2019), who investigated the determinants of *halal* food consumption in Indonesia. Another study in Malaysia, conducted by Khalek and Ismail (2015), showed that attitude significantly influences consumers' intention to consume *halal* food. Thus, it is expected that, in the context of *halal* pharmaceuticals:

H3. Attitude has a positive influence on intention to consume halal pharmaceutical products.

Subjective norms refer to the perceived responses to a person's particular behaviour, be it from another person, a group or social referents, where the approval or disproval displayed affects the person's behaviour (Ajzen, 2005). These social referents can include families, friends and communities. Hence, if a person believes that others think that the behaviour must be performed, then the person is more likely to perform that particular behaviour. In this study, subjective norms are expressed as a function of the extent to which social pressure from others affects individuals' opinions towards the intention to consume *halal* pharmaceutical products. To date, very few studies have examined the impact of subjective norms on customers' intention to consume *halal* medicine. However, with regard to *halal* food, Khalek and Ismail (2015) found that subjective norms significantly influence consumers' intention to consume *halal* food. Therefore, the following hypothesis is developed:

H4. Subjective norms have a positive influence on intention to consume halal pharmaceutical products.

Perceived behavioural control refers to an individual's perception of the ease or difficulty of performing a certain behaviour (Ajzen, 2005). It can also be defined as the degree of someone's confidence in their ability to carry out a behaviour within a given situation (Bashir, 2019). Perceived behavioural control is also closely related to the availability of resources and opportunities necessary to carry out a particular behaviour. Thus, in this study, perceived behavioural control refers to conditions in which individuals perceive that

consuming *halal* pharmaceutical products is an easy task that enables them to have the freedom to choose and make decisions. It also reflects the availability of the resources needed to consume *halal* products, both in terms of personal materials and the *halal* product itself. This view implies that a person will be more likely to consume *halal* pharmaceutical products than will other individuals who perceive consuming them as a difficult task because of a lack of resources or opportunities. In the context of *halal* pharmacy or medicine, a recent study by Suryani and Ahkmam (2020) has shown that the intention of Muslim consumers to consume *halal* drugs is influenced by perceived behavioural control.

In light of the above-mentioned literature, the following hypothesis is proposed:

H5. Perceived behavioural control has a positive influence on intention to consume halal pharmaceutical products.

On the basis of the above discussion, this study proposes the conceptual framework shown in Figure 1. The framework is empirically tested in this study.

3. Research methods
3.1 Measurement and empirical model
The main objective of this study was to investigate the factors influencing consumers' intention to consume *halal* pharmaceutical products. Because of the nature and objectives of the study, a quantitative approach was considered the most appropriate to meet the research objectives. Such an approach is commonly used to establish, confirm or validate relationships and develop generalisations that contribute to theory (Leedy and Ormrod, 2001).

A questionnaire was constructed as a research instrument based on the conceptual framework discussed above. The questionnaire consists of two main parts, namely, information regarding respondents' demographic characteristics and their perceptions of the factors influencing *halal* pharmaceutical product consumption. In line with the definition of *halal* products described in the *halal* assurance regulations in Indonesia, in this study, *halal* pharmaceutical products comprise over-the-counter and prescribed medicinal products that
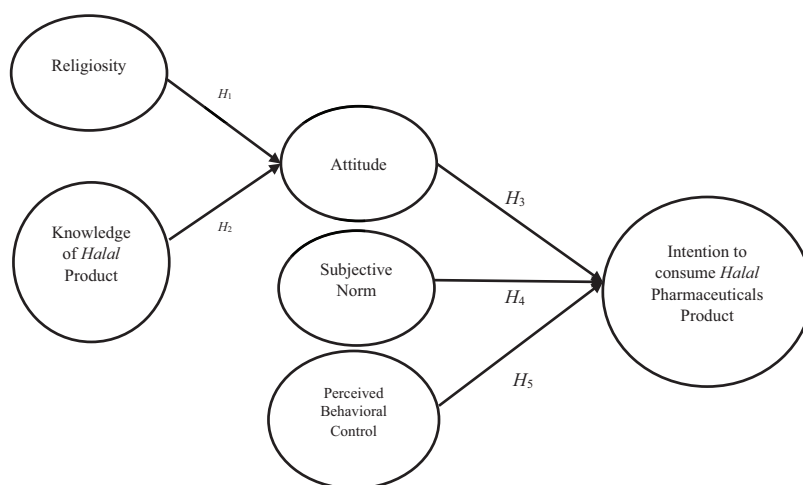
Figure 1.
Conceptual
framework

have *halal* labels/certificates. The scope of the study is explained in the introductory part of the questionnaire.

The items used in the questionnaire were adapted and modified from previous studies. The items for religiosity were modified from the four items used by Iranmanesh *et al.* (2019), such as, "My whole approach to life is based on my religion". The knowledge of *halal* products variable was measured by eight items adopted from Sadeeqa and Sarriff (2014), such as, "I know that there is an ethical obligation for a practitioner to take consent from the patient before dispensing any medicine that has any non-*halal* content". The attitude scale consisted of four items adapted from Ajzen (2005), Sadeeqa and Sarriff (2014), Haque *et al.* (2015) and Alam and Sayuti (2011), such as, "I feel comfortable and safe consuming *halal*-labelled medicines". Subjective norms were measured using items developed by Ajzen (2005) and Haque *et al.* (2015), such as, "Most people who are close to me prefer *halal*-labelled medicines". Measurement of perceived behavioural control was conducted with the four items developed by Haque *et al.* (2015), such as, "I believe that *halal*-labelled medicines are easy and safe to get". The intention variable was measured using the four-item purchase intention scale developed by Rahman *et al.* (2015), such as, "I will definitely consume *halal*-labelled medicines when needed". The items were subsequently measured using a six-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (6). This type of scale has primarily been used to prevent neutrality bias in answering questions, as Garland (1991) has pointed out.

Upon constructing the questionnaire, a pilot study was conducted to assess the items' validity and reliability. A draft of the questionnaire was sent to the respondents' representatives and the pilot test managed to collect data from 48 respondents. The reliability coefficient used for this pilot test was Cronbach's alpha. In addition, for the validity test, the key statistics used were the measurement of sample adequacy, Kaiser-Meyer-Olkin (KMO) and the factor loading value in the component matrix. The results suggested that the overall data were reliable because all variables had a Cronbach's alpha above 0.7. The questionnaire was also assessed as valid as the KMO of all variables and the factor loadings of each item were above 0.5. Therefore, no variables were omitted from the model. Modifications were made only to some of the wording that pilot testers felt were unclear.

3.2 Sampling and data collection

In the next stage, primary data collection was conducted through the online distribution of a self-administered questionnaire, conducted in March 2020. A purposive sampling strategy was used because the respondents had to fulfil certain eligibility criteria for the study. According to Sekaran and Bougie (2016), purposive sampling is considered the most suitable approach in such circumstances. In this study, the respondents' criteria required them to be nationals of Indonesia, Muslims and inhabitants of Jakarta city. Jakarta is the capital of Indonesia, which is also considered a "mini Indonesia" because it is home to almost all ethnic groups in Indonesia (BPS, 2012) [7]. It is, thus, presumed that the choice of the capital city as a research location would represent the Indonesian population's diversity.

The primary data obtained were analysed using an SEM regression model. According to Hair *et al.* (2006), in the SEM model, the minimum sample size should be at least five times the number of indicators. It is also notable that a more acceptable sample size would be 10 observations per indicator (Zou and Fu, 2011). Hence, with the 24 indicators used, the minimum sample suggested by Hair *et al.* (2006) should be 120. As this study collected valid responses from 225 respondents, the number of samples obtained met the minimum target sample size as suggested by Hair *et al.* (2006) and was very close to the requirement

indicated by Zou and Fu (2011). Descriptive statistics of the respondents' demographic characteristics are summarised in Table 1.

3.3 Data analysis

The primary data gathered were analysed using SEM with LISREL 8.8 software. SEM is a statistical technique that describes the relationship between several latent variables and simultaneously tests dependency relationships (Hair *et al.*, 2014). The analysis was preceded by a confirmatory factor analysis used to test the validity and reliability of the measurement model, a robustness test and a structural model test to examine the relationships between the study's latent variables. A research model is considered a good fit if at least one absolute fit index and one incremental fit index meet the criteria. This study also examined robustness by analysing the covariance matrix for discriminant validity constructs. A good construct is derived when an indicator's outer loadings on a construct are higher than all its cross-loadings with other constructs, and the square root of each construct's average variance extracted (AVE) is greater than its highest correlation with any other construct (Hair *et al.*, 2014).

Table 2 reports the results of the validity and reliability of the measurement model. On the basis of the validity test performed, it was found that four out of 28 indicators in the questionnaire (namely, PBC2, K3, K4 and K5) had a standardised loading factor (SLF) below 0.5.

Characteristics	Demographic characteristics	N (%)
Gender	Male	94 (41.8%)
	Female	131 (58.2%)
	Total	225 (100%)
Age	16 to 25 years old	100 (44.4%)
	26 to 35 years old	41 (18.2%)
	36 to 45 years old	60 (26.7%)
	46 to 55 years old	18 (8%)
	55 years old and above	6 (2.7%)
	Total	225 (100%)
Marital status	Married	109 (48.5%)
	Single	116 (51.5%)
	Total	225 (100%)
Education	High school	43 (19.2%)
	Graduate	118 (52.4%)
	Post-graduate	64 (28.4%)
	Total	225 (100%)
Occupation	Not working	30 (13.33%)
	Student	69 (30.67%)
	Government officials	50 (22.22%)
	Private employees	52 (23.11%)
	Entrepreneur	19 (8.44%)
	Others	5 (2.22%)
	Total	225 (100%)
Income	Less than IDR 2,000,000	71 (31.56%)
	IDR 2,000,000–4,999,999	50 (22.22%)
	IDR 5,000,000–9,999,999	54 (24%)
	IDR 10,000,000–19,999,999	24 (10.67%)
	IDR 20,000,000 or more	26 (11.56%)
	Total	225 (100%)

Table 1.
Demographic
characteristics

Variable	Indicators	SLF	t-value	Error	CR	VE
Religiosity	R1	0.76	12.54	0.42	0.737	0.732
	R2	0.82	13.81	0.33		
	R3	0.69	10.92	0.53		
	R4	0.71	11.40	0.50		
Knowledge of *halal* products	K1	0.63	9.42	0.54	0.655	0.616
	K2	0.61	9.07	0.56		
	K6	0.54	7.80	0.71		
	K7	0.70	10.79	0.22		
	K8	0.72	11.26	0.22		
Attitude	A1	0.87	15.97	0.25	0.875	0.872
	A2	0.85	15.53	0.27		
	A3	0.80	14.21	0.35		
	A4	0.79	13.82	0.38		
Subjective norm	SN1	0.88	16.48	0.23	0.883	0.865
	SN2	0.89	17.01	0.20		
	SN3	0.72	12.21	0.49		
	SN4	0.91	17.50	0.17		
	SN5	0.76	13.12	0.43		
Perceived behavioural control	PBC1	0.57	8.90	0.67	0.796	0.758
	PBC3	0.83	14.60	0.31		
	PBC4	0.91	16.71	0.18		
Intention	I1	0.88	15.91	0.23	0.907	0.902
	I2	0.89	16.14	0.22		
	I3	0.79	13.78	0.37		

Table 2.
Results of validity
and reliability tests

Notes: Average variance extracted (AVE) = (summation of the square of the factor loadings)/(summation of the square of the factor loadings + summation of the error variances); composite reliability (CR) = (square of the summation of the factor loadings)/(square of the summation of the factor loadings + square of the summation of the error variance)

Therefore, these indicators were removed from the model. Once removed, the validity test showed that all SLFs were above 0.5 and that *t*-values were greater than 1.645 (one-tailed). This implies that all the indicators were valid for explaining the variables. In regard to reliability, all indicators had composite reliability values above 0.6 and AVE values above 0.5. Therefore, it can be assumed that all indicators were valid for explaining the variables and were reliable measures of latent variables.

Discriminant validity checking of the model was conducted. Table 3 shows that all the outer loadings for each construct's indicator were higher than their cross-loadings with other constructs. In addition, the square root of each construct's AVE was greater than its highest correlation with any other construct. These results indicate that the criteria for discriminant validity were satisfied. Therefore, it can be suggested that the constructs had good discriminant validity.

After the validity and reliability of the measurement model were confirmed, a goodness-of-fit index (GOFI) calculation of the measurement and structural models and path analysis were conducted. As shown in Table 4, the results suggest that the GOFI values of the measurement and structural models had a good fit. Therefore, it can be concluded that the proposed measurement and structural models represented the data appropriately.

In the last step of the analysis, a structural equation model was estimated using the maximum likelihood method to explain the relationships between the latent variables. The results are reported and discussed in the next section.

4. Result and discussions

Figure 2 summarises the SEM results. The findings show that four of the five hypotheses in this study are statistically significant. It was also found that the intention to consume *halal* pharmaceutical products can be explained by attitude, subjective norms and perceived behavioural control variables to a degree of 31%. In addition, it is suggested that the

Variable	Attitude	Intention	Religiosity	Knowledge	Subjective norms	Perceived behavioural control
Attitude	*0.94*					
Intention	0.589**	*0.95*				
Religiosity	0.476**	0.358**	*0.86*			
Knowledge	0.297**	0.206**	0.220**	*0.78*		
Subjective norms	0.698**	0.503**	0.471**	0.422**	*0.93*	
Perceived behavioural control	0.619**	0.392**	0.406**	0.404**	0.548**	*0.87*

Note: **Correlation is significant at the 0.01 level

Table 3.
Discriminant validity of constructs

GOFI	GOFI indicators	Standard of good model	GOFI value of measurement model	GOFI value of structural model	Conclusion
Absolute fit measures	RMSEA	≤0.08	0.07	0.078	Good fit
Incremental fit measures	NFI	≥0.9	0.95	0.94	Good fit
	NNFI	≥0.9	0,96	0.96	Good fit
	CFI	≥0.9	0.97	0.96	Good fit
	IFI	≥0.9	0.97	0.96	Good fit
	RFI	≥0.9	0.94	0.93	Good fit

Notes: RMSEA = root mean square error of approximation, NFI = normed fit index, NNFI = non-normed fit index, CFI = comparative fit index, IFI = incremental fit index, RFI = relative fit index
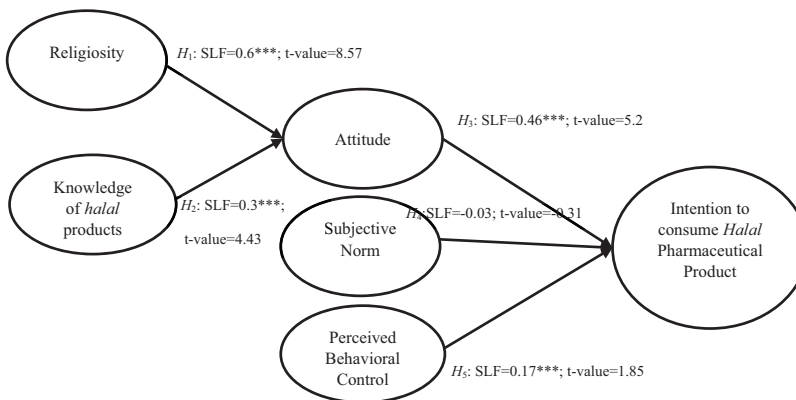
Table 4.
Results of goodness-of-fit test

Figure 2.
Summary of SEM results

attitude variable can be explained by religiosity and knowledge of *halal* product variables to a degree of 55%.

In general, the results of this study showed that most of the hypotheses tested were confirmed. It was found that the intention to consume *halal* pharmaceutical products in Indonesia was significantly and positively influenced by religiosity (SLF = 0.6; *t*-values = 8.57), knowledge of *halal* products (SLF = 0.3; *t*-values = 4.43), attitude (SLF = 0.46; *t*-values = 5.2) and perceived behavioural control variables (β = 0.17; *t*-values = 1.85). Attitude was found to be the most significant TPB factor influencing intention, followed by perceived behavioural control. However, the subjective norm variable was insignificant in this study (SLF = −0.03; *t*-values = −0.31).

The finding of a positive and significant influence of attitude on intention to consume *halal* pharmaceutical products suggests that the respondents' attitudes towards consuming *halal* products are determined by their positive views or judgements of the *halal* pharmaceutical products' benefits. This result is intuitive, considering that *halal* products are expected not only to be permissible, clean and good to consume but also healthy for the body and minds of Muslims. As mentioned in the previous section, this is possible because such products have followed a strict *halal* product assurance process, including the *halal* audit and traceability process outlined in the Indonesian *halal* assurance law and have subsequently received a *halal* label. This result is also consistent with previous studies by Alam and Sayuti (2011), Awan *et al.* (2015) and Amalia *et al.* (2020), who identified the positive influence of attitude on an individual's intention to consume a *halal* product.

The study also revealed that religiosity plays a significant role in building a positive attitude towards *halal* pharmaceutical products. The rationale for this lies in religious teaching, which advocates that people consume only *halal* products. The principles are instilled through various campaigns and are formally emphasised in *halal* product assurance regulation. This result also implies that complying with *halal* requirements for all aspects of Muslim life, including pharmaceutical products, signifies a Muslim individual's commitment to their religion (Johnson *et al.*, 2001). This commitment then creates an attitude and constructs the behaviour needed to consume *halal* pharmaceutical products (Mullen *et al.*, 2000; Mokhlis, 2009; Swimberghe *et al.*, 2009). This finding is consistent with those of previous studies (Rahman *et al.*, 2015; Amalia *et al.*, 2020; Billah *et al.*, 2020).

It is also found that knowledge of *halal* products significantly affects the positive attitude towards consuming *halal* products. More knowledgeable respondents appear to have more positive attitudes towards buying *halal* pharmaceutical products than less knowledgeable ones. This result arose because knowledge regarding *halal* and non-*halal* products must be possessed before deciding whether to consume pharmaceutical products. This finding is also in line with the conclusions of Hamdan *et al.* (2013), Sadeeqa and Sarriff (2014) and Billah *et al.* (2020). However, as Famiza *et al.* (2017) noted, in cases of hospital patients, asymmetric information may appear when a patient has less knowledge due to their reluctance to ask about the *halal* status of prescribed medicine. Thus, knowledge of *halal* products needs to be enhanced through literacy campaigns, persuasion and enforcement of regulations.

Interestingly, the study discovered that the subjective norm variable was not significant in the estimation results. This result implies that significant others' influence is not significant in determining the intention to consume *halal* products. This finding is contrary to the results of other studies, albeit not specifically focussing on *halal* pharmaceutical products, suggesting the importance of significant others such as family, employer and colleagues (Rahman *et al.*, 2015; Kashif *et al.*, 2017; Elseidi, 2018). This result suggests that

Indonesian Muslims' intention to consume *halal* pharmaceutical products is more affected by internal and self-reasoned factors, such as the commitment to one's religion, rather than by external factors such as social pressures. This result also seems to align with the findings regarding the influence of the religiosity factor described earlier. If an individual is highly religious, subjective norms play a less important role because religious individuals' decisions are highly affected by their religious rules and less affected by other people (Atal *et al.*, 2020).

It is also found that intention to consume *halal* pharmaceutical products is significantly and positively affected by the perceived behaviour control variable. This finding implies that the ease or difficulty of consuming *halal* pharmaceutical products plays an important role in influencing consumer intention to consume these products. This result is consistent with the conclusions of Elseidi (2018) and Amalia *et al.* (2020) regarding the intention and determinants of purchasing *halal* food. Furthermore, this result might indicate that individuals perceive that consuming *halal* pharmaceutical products is an easy task, in which they have the freedom to choose and decide and that they have the resources needed to perform the behaviour both in terms of personal materials and the availability of *halal* products. In terms of personal material, it appears that most of the respondents have the necessary resources, including money, to make independent decisions and purchase *halal* products. This result can be explained primarily by the fact that most respondents could be categorised as middle-income individuals, which is evident from their monthly income of more than INR 2m. In regard to the availability of *halal* products, it is argued that consumers can easily obtain *halal* products because of the country's extensive networks of drugstores. As of February 2021, there were approximately 25,000 drugstores and 3,000 hospital pharmacists in the country. This data excluded digital drugstores, which are predicted to grow by at least 10% annually[8]. Consequently, given the resources and opportunities available, individual Muslims find it relatively easy to consume *halal* pharmaceutical products[9].

5. Practical and theoretical implications
Several practical and theoretical implications can be highlighted from this study. Firstly, as attitude and religiosity are the most significant determinants of *halal* consumption intention, the pharmaceutical industry needs to highlight their products' *halal* aspects through appropriate branding and promotion/advertising campaigns. *Halal* aspects include the material/substances of pharmaceutical products and the process of producing the products. In addition to the *halal* aspects, the hygiene and safety aspects of the products need to be emphasised. In the post-COVID era, this is something that Muslim consumers need.

Secondly, the pharmaceutical industry needs to contribute to enhancing knowledge regarding *halal* pharmaceutical products because knowledge of *halal* products is found to have a positive and significant influence on attitude and intention to consume *halal* products. This contribution should be made through systematic, appropriate and large-scale education campaigns, as Indonesia is the world's largest Muslim country with a low Islamic or *halal* economic literacy index. Such campaigns should not only be conducted by the industry but also by the government, advocacy groups, communities and society at large.

Thirdly, because of the positive and significant influence of perceived behaviour control variables on consumption intention, the industry and government have to make it easier for Muslims to consume *halal* pharmaceutical products. This can be achieved, for example, through strategies that encourage the production of more medicines with *halal* labels/

certificates and that encourage more drugstores or networks/outlets to obtain *halal* products. Furthermore, as *halal* products can be easily recognised from their *halal* certificates/labels, it may be necessary for the government to make the *halal* certification process easier and cheaper or even free, for the industry to follow. In return, the industry also needs to show more commitment to complying with *halal* assurance regulations. This aspect is increasingly important, as there is a perception in society that Indonesia's *halal* certification process is complicated and costly, and thus, contributes to a low level of compliance from industry and society.

Furthermore, as the COVID-19 pandemic continues to spread globally and across Indonesia, it is important to optimise the use of digital technology to educate consumers, improve the supply chain and ensure greater availability of *halal* products. It is hoped that digital education campaigns will make it possible to reach a higher percentage of the Indonesian population spread across more than 17.000 islands. Moreover, as drugstores are an important link in the chain of marketing and delivering *halal* products to consumers (end-users), it is important to establish more digital drugstores in the country.

Fifthly, in terms of theoretical implications, the current study attempted to extend the application of the TPB in the area of *halal* pharmaceutical products. Despite the importance of *halal* pharmaceutical products, this area has been given limited attention in the academic literature and most studies in this area have been qualitative. In addition, only a few studies have used the TPB framework in this area. By using the TPB model, this study explained the intention to consume *halal* pharmaceutical products. Therefore, this study could be considered an early attempt to elaborate on consumer behaviour in a niche area by using the TPB framework. This study also hoped to contribute to the larger literature on consumer behaviour towards *halal* products.

6. Conclusions, limitations and future research directions

As Indonesia develops its *halal* pharmaceutical industry, it is important to understand the factors influencing consumers' intentions to consume *halal* pharmaceutical products. Therefore, this study aims to investigate the important issues with regard to Indonesian Muslims. By using a TPB framework that incorporates religiosity and knowledge of *halal* product variables alongside the original TPB variables, the study found the positive influence of attitudes, religiosity, knowledge and perceived behavioural control factors in determining the intention to consume *halal* products. However, subjective norms were found to be insignificant in this study.

Notwithstanding the above results, this study has several limitations. In terms of the model, it is recognised that the current TPB model is limited in its capacity to explain the intention to consume *halal* pharmaceutical products in Indonesia. Therefore, future studies could extend the model by including more explanatory variables (such as safety, health consciousness, past behaviour, trust, price value and income) or more items in each variable (such as the inclusion of physician's influence in the subjective norm variable). It is also possible to investigate the moderating and mediating effects of the variables on customers' intentions and use other methods, such as experimental methods and sentiment analysis, to investigate the issue slightly differently. In terms of the sample, although Jakarta city could be considered a mini Indonesia because its population represents almost all big ethnic groups in the country, the results discussed above may have limited generalisability and must be interpreted carefully. In relation to this, it is recommended that future studies expand the scope of study to capture more variety in market conditions, geography and demography. It is also possible to scale the studies to reach more specific targets/areas (such as urban, rural and across genders) and

other countries. These additional aspects would provide more insights into the
behavioural intentions of consumers in consuming *halal* pharmaceutical products.

Notes

1. According to Ministry of Health officials, the proportion of imported raw materials accounted for
   more than 80%, and most of them have no *halal* label.

2. According to the *Halal* Authority, it needs at least 5,000 institutions to perform a *halal* audit.
   However, only 71 institutions are eligible to perform the task.

3. The Ministry of Religious Affairs suggested that the registration of *halal* pharmaceutical
   products will start in five to seven years after the effective implementation of the *halal*
   assurance products in 2019. The Minister of Religious Affairs emphasised this concession.
   However, with the rise of COVID-19, the pharmaceutical industry will likely be given more time
   to adhere to the requirement. Indeed, the COVID-19 vaccine could be used even without *a halal*
   label due to emergencies; thus, give the industry more time and resources to comply with the
   halal regulations.

4. This extension is reflected by recent academic works, especially on *halal* integrity and Islamic
   economy reports suggesting *tayyib* to be a new trend and a value-adding factor in the marketing
   of *halal* products. For more discussion, see Raheem and Demirci (2018).

5. Indeed, the basic tenets in Islamic jurisprudence hold everything as *halal* unless stated otherwise
   (Al-Qaradhawi and bin Daud, 2016; Kamali, 2013). The opposite of *halal* is haram, which means
   unlawful or prohibited, which can be divided into two categories, namely, haram lidzatihi and
   haram lighairihi. Haram lidzatihi prohibits consumption if the essence of a product contains
   pork, other nonpermitted animals, carcasses, blood and alcohol. Meanwhile, haram lighairihi is
   prohibition due to external factors that usually happen during the processing and handling stage
   of a product, such as slaughtering animals in the name other than Allah and contamination with
   non-*halal* products during storage or distribution. The latter condition serves as a necessity to
   ensure the *halal* status of a product throughout the supply chain of all the products consumed by
   Muslims, including pharmaceuticals (Wilson and Liu, 2010).

6. It is noted by Ajzen (1991) that "The theory of planned behaviour is, in principle, open to the
   inclusion of additional predictors if it can be shown that they capture a significant proportion of
   the variance in intention or behaviour after the theory's current variables have been taken into
   account" (p. 199).

7. Based on the latest available census data, the population of Jakarta amounted to 9,547,541 people
   consisting of Javanese (36.17%), Betawi (28.29%), Sundanese (14.61%), Chinese (6.62%), Minang/
   Melayu (4.81%), Batak (3.42%), Arabic (1.64%), Celebes and Borneo Islands (including Bugis,
   Banjar and Makassar) (1.02%), Ambon and Bali (0.36%), Dutch Peranakan (0.03%) and others
   (3.03%) (BPS, 2012).

8. available at: www.beritasatu.com/ekonomi/742291/industri-farmasi-online-masih-tumbuh-pesat-
   pada-2021.

9. Furthermore, it also appears that the industry shows an increasing commitment to comply
   with the *halal* assurance regulations. According to the Indonesia Pharmacist Association (GP
   Farmasi), the domestic pharmaceutical industry included 206 companies in 2019. This figure is
   dominated by 178 national private companies, 24 multi-national companies and 4 State-Owned
   Enterprises (BUMN). However, referring to data from the MUI, as of October 2019, only 53
   companies were registered to have obtained *halal* certification. This number is equivalent to
   25.7% of the companies in the industry. Although this figure seems to be relatively low, this
   shows that the industry commits to comply with the *halal* assurance regulation issued in 2014.
   However, the commitment needs to be strengthened as ¾ did not have a *halal* certificate for
   various reasons.

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Corresponding author

Rahmatina Awaliah Kasri can be contacted at: rahmatina@ui.ac.id