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...
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.

**Keywords** The Muslim consumer, Theory of planned behaviour, Islamic economics, Islamic pharmaceuticals’ cosmetics and toiletry, Indonesia halal industry, Halal pharmacy, Consumer behaviours

**Paper type** Research paper

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 Sharīʿah-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 Demirici, 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; Ratanamaneachat and Rakkarn, 2013; Vanany et al., 2019), halal cosmetics (Haro, 2018; Adiba, 2019; Saifudin et al., 2020) and halal fashion (Indarti et al., 2019; Leonard 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;
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 previous 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 disapproval 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
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”. 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

| 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
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.

| 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|
|                                 | PBC2       | 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)
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**   | 0.229**     | 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 focusing 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. Consequently, given the resources and opportunities available, individual Muslims find it relatively easy to consume halal pharmaceutical products.

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