

# **SOCIAL SCIENCES & HUMANITIES**

Journal homepage: http://www.pertanika.upm.edu.my/

# Applying the Fuzzy Delphi Method (FDM) to Analyze the Expert Consensus Values for Instrument of Shariah-Compliant Gold Investment

# Najahudin Lateh<sup>1\*</sup>, Salmy Edawati Yaacob<sup>2</sup> and Siti Noobiah Md Rejab<sup>1</sup>

<sup>1</sup>Academy of Contemporary Islamic Studies (ACIS), Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia

#### **ABSTRACT**

The objective of this study is to describe the process of development of Shariah-compliant Gold Investment (SCGI-i) instrument using the Classical Delphi Technique (CDT) and Fuzzy Delphi Method (FDM). The research instrument is based on questionnaire with 4-point Likert scale consisting of three dimensions and 34 items. A total of 13 Islamic Muamalat experts were selected as participants of CDT to obtain consensus. The results showed a high consensus among the participants with a score IQR = 0.00 to 1.00; Mdn = 4.00 to accept these three-dimensional, 32 of the original items and the new item (C11) and rejected two original items (B05; B15). The acceptance score is also supported by the empirical evidence of FDM analysis that shows the value of the threshold (d  $\leq$  0.2) and the percentage of expert agreement ( $\geq$ 75%). These instruments can be used by Islamic financial institutions to create new products or sharia audit of existing gold investments to comply with the requirements of Islamic Muamalat.

Keywords: Delphi, fuzzy Delphi, gold investment, shariah-compliant

ARTICLE INFO

Article history: Received: 1 March 2017 Accepted: 23 November 2017

E-mail addresses:

najahudin@salam.uitm.edu.my (Najahudin Lateh) salmy1001@ukm.edu.my (Salmy Edawati Yaacob) sitinoorbiah@salam.uitm.edu.my (Siti Noobiah Md Rejab)

\* Corresponding author

#### INTRODUCTION

Gold is a precious metal that is also a symbol of power, wealth and beauty as well as a measure of value, medium of exchange and a store of value (Al-Ghazali, 1993; Ibn Khaldun, 2002). These features have sparked public interest in making gold as an investment instrument. In fact, gold-based investment is considered as a good investment compared with others based on a

<sup>&</sup>lt;sup>2</sup>Department of Shariah, Universiti Kebangsaan Malaysia (UKM), 43600 Bangi, Selangor, Malaysia

variety of factors, such as less risk, liquidity and a good long-term record (Umar Azmon, 2002). In Malaysia, a gold investment is carried out in the form of physical gold coins and ingots (Louis, 2009; Shukor, 2009), dinar, gold decoration (Saat, 2011), an account of gold (Mohd Yusra, 2012; Shukor, 2009) and in form of virtual money (Lokmanulhakim, Fairooz, & Bahroddin, 2012).

Public interest has led to the mushrooming of companies that offer a wide range of gold investment products and models. However, many of these companies fail to comply with existing laws (Norlaili, 2012). Bank Negara Malaysia (BNM) alone until October 2015 has listed more than 180 companies and websites under surveillance for not having a license to operate and most of these are gold investment companies (BNM, 2015). For Muslims, the rules of Islamic law on gold transactions have not been taken into account. Thus, this study aims to develop Shariah Compliant Gold Investment (SCGI-i) instrument agreed by experts as an added value for the benefit of gold investors, investment institutions and society.

# **Gold Investment Guidelines**

Guidance for reviewing the existing Shariah-compliant products do not cover investment gold specifically. Shariah-compliant criteria developed by standard bodies worldwide including in Malaysia is only suitable for retail markets for different criteria apply for classification of Shariah-compliant securities (Derigs & Marzban,

2008; Suruhanjaya Sekuriti Malaysia, 2013). A different standard from various parties show different Shariah-compliant outcomes. Khatkhatay and Nisar (2007) who analysed three entities, namely Dow Jones Islamic Market (DJIM), Meezan and SC, found that the criteria governing DJIM is very different from Meezan and SC for the hotel industry, broadcasting and media as well as properties to the list of non Shariah-compliant products. This has prompted Ho, Masood and Abdul Rehman (2012) proposed an international standard as a guide to investors.

Shariah standards for existing Islamic finance at the international level have only focused on public investment, especially in the capital markets and securities (Derigs & Marzban, 2008; Suruhanjaya Sekuriti Malaysia, 2013). In Malaysia, the religious authorities through the Committee of the Muzakarah of National Fatwa for Islamic Religious Affairs Malaysia received Gold Investment Parameters (Jabatan Kemajuan Islam Malaysia [JAKIM], 2012a) which act as a guideline. The Parameters containing 23 items were approved after a briefing and explanation by two experts from the International Shariah Research Academy for Islamic Finance (ISRA). Nevertheless, the guidelines are too general and do not have a significant impact on gold investment practices. This is evidenced by a growing number of gold investment institutions supervised by BNM (Bank Negara Malaysia [BNM], 2015) as well as the ban on gold investment company such as Genneva Malaysia Sdn Bhd in July 2012 involving 50,000 customers and RM5 billion in funds since 2007 (Berita Harian, 2012).

This has prompted the Shariah-Compliant Council of the Islamic Financial Institution (IFI) in Malaysia in a dialogue session on May 29, 2012 urging the authorities to update and study further these parameters (JAKIM, 2012b). The Dialogue also recommended "a set of guidelines and investment gold transactions to provide guidance to investors and the general public". These parameters must be reinforced with comprehensive guide by more experts.

#### LITERATURE REVIEW

Previous studies focused on the debate on use of gold as a function of the gold itself (Al-Ghazali, 1993; Ibn Khaldun, 2002), the law of gold transactions (Ibn Baz, 2013; Ibn Khaldun, 2002) and the implementation mechanism of gold as currency (Salmy, 2011). Islamic jurisprudence in all schools, whether Hanafi, Maliki, Shafi'i and Hanbali, emphasise on the function of gold as a medium of exchange, equipment, jewellery, weapons of war, clothing, rings, replacement of limbs, payment of zakat, usury and gold transactions among others (Salmy, 2011).

Specific studies on gold investment are few. Saat (2011) and Muhaimin (2009) discussed techniques of gold investment in Malaysia and Indonesia respectively, but the shariah-compliant method was not described. There have studies in some gold investment institutions, but the debate exists over the application of such instruments, for example in Kuwait Finance House (Mohd

Yusra, 2012), Public Gold (Louis, 2009) and in some other institutions (Shukor, 2009). However, there are some studies on the concept of shariah investment gold. Jakim (2012b) and Salmy (2011) examined gold investment according to Islamic perspective through contracts or agreements, such as sale and purchase. Meanwhile, there are two forms of analysis to the study of gold investment products, namely Lokmanulhakim et al. (2012) which analysed the aspects of shariah-compliance and Lokmanulhakim, Fairooz and Bahroddin (2013) which analysed aspects of zakat payment obligations.

Some Muslim scholars disputed these gold investment activities claiming to violate the objectives of Islamic law (maqasid al-syari'ah) as a measure of value and medium of exchange (Al-Ghazali, 1993; Ibn Taymiyyah, 1995). There are Muslim scholars who argue that gold purchased at a low value and then resold at a higher price when there is an increase in gold prices is not something that is forbidden by Islamic law. This is stated by a number of scholars such as Ibn Baz (2013) and Ibn 'Uthaymin (2013), as long as the transaction complies with all the criteria for sale and purchase of currencies or al-sarf (Lokmanulhakim et al., 2012).

Criteria for the use of gold in general is stated in the Quran (al-Tawbah, 9: 34; Hud, 11: 87; ali-Imran, 3: 75) and detailed in many authentic hadith of the Prophet Muhammad SAW. Gold has a specific ruling relating to usury compared with other metals such as copper and iron. The Prophet

Muhammad said: "(Convert) gold for gold, silver for silver, wheat for wheat, barley for barley, dates by dates, and salt by salt, same (amount) for the same, equal (quantity) for equal, hand (delivered) for hand. If these kinds differ, sell as you want and do not delay the delivery." (Narrated by Muslim (2010) from 'Ubadah bin al-Samit)

There are two categories: (a) currency such as gold, silver, dollar and so on; and (b) staple food items such as wheat, rice and barley. There are three conditions in gold transactions, according to Shariah: (i) gold transactions with gold must be delivered hand for hand immediately when the contract is signed as well as having the same weight; (ii) gold transactions with other currencies must be delivered hand for hand immediately when the contract is signed without delay or debt, but without value or the same weight; and (iii) gold transactions with other items do not have any conditions. Methods of gold transaction are shown in Table 1.

Table 1
Gold transaction methods in Islam

|                      |        |      | rencies<br>tegory | Staple for | od category | Other ite | m category |
|----------------------|--------|------|-------------------|------------|-------------|-----------|------------|
|                      | ,      | Gold | Dollar            | Wheat      | Rice        | House     | Car        |
| C                    | Gold   | *    | **                | ***        | ***         | ***       | ***        |
| Currencies category  | Dollar | **   | *                 | ***        | ***         | ***       | ***        |
| C4 1 - C 1 4         | Wheat  | ***  | ***               | *          | **          | ***       | ***        |
| Staple food category | Rice   | ***  | ***               | **         | *           | ***       | ***        |
| 0.1                  | House  | ***  | ***               | ***        | ***         | ***       | ***        |
| Other items category | Car    | ***  | ***               | ***        | ***         | ***       | ***        |

Source: Muslim (2010)

*Note:* \* Sale and purchase or transaction delivered hand in hand immediately when a contract is signed as well as having the same weight; \*\* Sale and purchase or transaction delivered hand in hand without delay or debt, without having a value or the same weight; \*\*\* Sale and purchase or transaction can be delayed or debted instantly, without having a value or the same weight.

#### **METHODS**

# Delphi Technique

This study used the Delphi Technique (DT), proposed by a panel of experts (Adler & Ziglio, 1996) to reach a consensus (Helmer, 1968) on an decision. Experts and previous studies have proved that the DT is more effective for generating ideas compared with other methods (Ludwig, 1997; Ulschak, 1983). According to Dalkey,

Rourke, and Lewis (1972), "several heads are better than one" for the best view will be obtained through a variety of responses from knowledgeable experts. Therefore, the DT is designed as voting procedure and a judgement tool, to make a decision (Rowe & Wright, 1999) and to improve forecasting methods (Dalkey et al., 1972).

Historically, the DT was developed in the early 1950s by Norman Dalkey and

Olaf Helmer for the United States Air Force, sponsored by the RAND Corporation. It was very helpful especially when it was not easy to meet the experts personally (Dalkey & Helmer, 1963; Ludwig, 1997; Miller & Salkind, 2002; Rand, 2013). Currently, of Delphi is used in the fields of education, administration, evaluation of policies, plans and programmes among others. This technique allows experts to deal systematically about a particular problem or complicated task by combining individual decisions to obtain a consensus (Helmer, 1968). An expert participant is more likely to express an opinion freely and without being bound by other people's opinions (Helmer, 1968).

# **Participant**

The DT was implemented to achieve a high level of agreement among the expert participants, namely individuals with special knowledge and experience in a particular field (Ludwig, 1997; Martino, 1983). Thus, the selection of study participants was made carefully to minimise errors and to ensure reliability of findings. This is because the success of DT depends on the views and based on the information provided. Therefore, a panel of experts was identified through the nomination process, rather than randomly selected (Ludwig, 1997). Previous research suggested a panel of experts should be composed of those who have knowledge of the issues and perspectives on the subject to be studied in addition to be motivated to remain until the completion of the study (Linstone & Turoff, 1975).

Previous researchers suggested a minimum of seven experts for the DT expert panel, which is according to the original experiment by Dalkey and Helmer (1963). There are different views about the maximum size of the panel, which is not more than 12 participants (Cavalli-Sforza & Ortolano, 1984; Phillips, 2000), 15 participants (Delbecq, Van de Ven, & Gustafson, 1975; Linstone & Turoff, 1975; Martino, 1983) and 50 participants (Adler & Ziglio, 1996; Linstone & Turoff, 1975). Thus, this study has chosen 13 participants for the DT who meet the following conditions: (i) have at least a Master's degree in shariah; and (ii) government mufti; or shariah advisers in IFI's; or Muamalat researchers in Shariah research institutions; or Shariah professors at public universities. The size of these participants meets the size recommended by the majority of researchers, ranging from seven to 15 persons and it is in line with the average sample size, namely between 10 and 15 persons as proposed by Delbecq et al. (1975), and Adler and Ziglio (1996). The proposed number is also suitable for researchers because if the number of participants is too small, it does not reflect the targeted issue and if it is too large, it takes too much time of participants (Hsu & Sandford, 2007) and complicate the process of summarising their views (Linstone & Turoff, 1975; Ludwig, 1997).

#### Rounds

To reach an agreement, DT did not set rounds to be followed. Delphi rounds will end only when the panel of experts have reached an agreement. This technique is usually done in three rounds (Ludwig, 1997) but it can be done between two to 10 rounds to get a strong consensus (Martino, 1983). This study used two rounds of the Delphi technique with the same expert panel. It only went through two rounds because it received agreement among the participants (Martino, 1983). This amount is also considered adequate because of differences in the views of experts have been reduced in the second round (Helmer, 1968).

The first round of Delphi sought to validate the data and to obtain consensus among the experts on the 34 items which are built based on a literature review. This process used a questionnaire through open response and closed response that can serve to obtain specific information about the content of the study. Data obtained was used to design the questionnaire for the next round. The second round of Delphi aimed at achieving agreement among experts about items that have not been agreed upon as well as new items proposed in the questionnaire for the previous round. Thus, a questionnaire on this round consisted of three parts, namely: (i) items that have not been agreed; (ii) items that have changed the structure of sentences; and (iii) new additional items. The instruments distributed to the panels for this round also contained feedback from the first round. Each participant may change their existing level of agreement in the first round so the score for the disparity of agreement among the experts can be bridged. However, they were not allowed to add any new items in the second round.

#### **Instrument**

This study questionnaire was designed from Shariah-Compliant Gold Investment instrument (SCGI-i) containing threedimensions: (i) Investors and investment institutions (5 item); (ii) Products and prices (19 item); and (iii) Bidding contract (10 item). The questionnaire was used in each round of Delphi and suitable to analyse a large population (Konting, 1998). Before conducting the Delphi survey, the instrument was tested through a pilot study on two respondents. One of them is shariah advisory officer involved with the industry and the other is an expert involved in the academic field in Higher Education Institution (HEI). After updating the questionnaire, it was distributed to all experts which included two rounds of analysis.

The questionnaires contained items on the enclosed response in the form of a 4-point Likert scale, ranging from 'Strongly agree', 'Agree', 'Disagree' and 'Strongly disagree'. The first round of the Delphi consisted of 34 items, while the second round contained 33 items. The main purpose of the questionnaire at this stage was to get the consent of experts through the questionnaires. Therefore, the researchers removed the questionnaire item that was not agreed upon which was later tested on the second round.

#### **DATA ANALYSIS**

# Analysis of the Classical Delphi Technique (CDT)

Descriptive statistical analysis method is often used for CDT through the Measures of Central Tendency MCT (mode and median) and Interquartile Range Score (IQR). Data for descriptive statistics was analysed using SPSS software. Green (1983) puts the median at least 3:25 for a four-point scale. Size statistics for dispersion through the IQR was also used to determine the level of agreement among the experts. This study will use the level of the experts based on the IQR score agreement recommended by Siraj and Paris (2005) as shown in Table 2.

Table 2
Level of agreement among the experts according to
Interquartile Range (IOR) score

| Interquartile Range | Level of Agreement |
|---------------------|--------------------|
| (IQR) Score         |                    |
| 0.00 - 1.00         | High               |
| 1.01 - 1.99         | Medium             |
| $\geq$ 2.00         | None               |

# Analysis of the Fuzzy Delphi Method (FDM)

The FDM technique was introduced by Murray, Pipino and Gigch (1985), and adapted by Kaufmann and Gupta (1988) as a form of measurement for future research. It is an improvisation of the existing DT (Ridhuan, Siraj, & Zaharah, 2014) and generated effectively to obtain consensus among the experts without going through many rounds (Mohd Nazri, 2014). This study uses FDM to analyse data obtained in any round of DT. It is an analytical support

to data obtained from DT expert panels. This study will use FDM to analyse data obtained in any round of DT. This method is done to maintain or drop an item. The item will be maintained if it meets two conditions, namely: (i) the value of d threshold of the item is equal to or less than 0.2 (d≤ 0.2) (Chen, 2000; Cheng & Lin, 2002); and (ii) the percentage of agreement among experts is equal to or exceeds 75 percent (≥75%) (Chu & Hwang, 2008; Murry & Hammons, 1995). The value of d threshold is obtained by determining the distance between two fuzzy numbers using the following formula:

$$d(\overline{m}, \overline{n}) = \sqrt{\frac{1}{3} [(m_1 - n_1)^2 + (m_2 - n_2)^2 + (m_3 - n_3)^2]}$$

#### **RESULTS**

### The First Round of the Delphi

The results of the first round of the Delphi analysis showed reception, maintenance, improvements and additions to some SCGI-i items. In the "Investor and Institutional Investment", the majority of participants had reached an agreement at a higher level on all items with the median score of 4.00 (mdn=4) and the value of IQR at 0.00 to 1.00 (IQR=0-1). High agreement was obtained for items A02, A04 and A05 which achieved a score of IQR=0, while the items A01 and A03 scored IQR=1. The majority of participants had also agreed that the "Goods and Gold Prices" with a high level of agreement to approve most of the items listed by mdn=4 and score IQR=0, namely for all the items except B05 and B17. There is a consensus among the experts at a moderate level to not accept the two items with a score mdn=2 and IQR=1.5. However, both of these items are still retained in the questionnaire for the second round of analysis. In the "Gold Investment Offer Contract", all the experts have reached an agreement to accept a high level for all the items, namely mdn=4 and IQR=0.

In summary, the first round of the Delphi showed a total of 33 items reached a high level of agreement among a majority of experts except the items with (IQR=0-1). Therefore, all these items were accepted as an instrument of CGI. There were two items (B17, C02) which experienced improvements in terms of sentence structure and two items (B05, B16) showing medium agreement among the experts. In addition, this round also gained a new dimension of proposed items "Gold Investment Offer Contract":

"C11 Contract is no requirement to re-rent the gold to be sold to other parties."

# Fuzzy Delphi Method (FDM)

The results of the analysis for the value of  $d_{item}$  are shown in Table 3. Table 3 shows the value of d threshold for each item  $(d_{item})$  as well as a construct threshold value  $(d_{construct})$  based on the expert consensus. A total of 32 out of 33 items was agreed by the panel of experts based on the condition  $d \le 0.2$  which means all the experts have reached consensus on the item. Only two items, namely B05 and B15, which did not reach an agreement because the value of d for items that is 0.261 and 0.338, exceeded

0.2. Therefore, these items should be dropped or retained for the second round of Delphi analysis (Chen, 2000; Cheng & Lin, 2002). Ruling to reject items B05 and B15 according to the value of d≤0.2 is also supported based on the percentage of agreement among experts. The analysis of the number and percentage of agreement on the items is shown in Table 4.

Table 4 shows that 32 items have been accepted and two items have been rejected based on the percentage of agreement among experts; the latter is B05, which shows 46% agreement among the experts and 38% for B15. This decision is based on Chu and Hwang (2008), and Murry and Hammons (1995). The consensus of the experts is assumed to be achieved if the percentage of agreement between them is about  $\geq 75\%$ . Therefore, the analysis of FDM has supported the MCT in the first round of DT that there are 32 items which have reached provisional agreement for two items, namely B05 about "Gold transactions as separate items of gold, which is transacted" and items B15 about "Gold prices offered are not too expensive than the value of the current gold price", which did not receive consensus among the experts.

# The Second Round of the Delphi

The second round consists of 35 items including a new item (C11) have reached a high agreement (IQR=0) among experts, whether to accept or reject it. Two items that have not been agreed in the first round of the Delphi, namely B05 and B15 have reached a high agreement among the experts

Table 3 Value of d threshold item in the first round of Delphi Technique

|       |     | Experts |     |     |     |     |     | Value |     |     |     |     |     |            |
|-------|-----|---------|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-----|------------|
| Items | 1   | 2       | 3   | 4   | 5   | 6   | 7   | 8     | 9   | 10  | 11  | 12  | 13  | of d items |
| A01   | 0.2 | 0.1     | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1   | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.130      |
| A02   | 0.2 | 0.1     | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1   | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.130      |
| A03   | 0.3 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.043      |
| A04   | 0.3 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.080      |
| A05   | 0.3 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.080      |
| B01   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B02   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B03   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B04   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B05   | 0.3 | 0.1     | 0.6 | 0.1 | 0.3 | 0.6 | 0.1 | 0.3   | 0.3 | 0.1 | 0.1 | 0.6 | 0.1 | 0.261      |
| B06   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B07   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B08   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B09   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B10   | 0.3 | 0.0     | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.080      |
| B11   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B12   | 0.0 | 0.0     | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.043      |
| B13   | 0.0 | 0.0     | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.043      |
| B14   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B15   | 0.4 | 0.4     | 0.4 | 0.2 | 0.4 | 0.2 | 0.2 | 0.4   | 0.4 | 0.2 | 0.4 | 0.4 | 0.2 | 0.338      |
| B16   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B17   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B18   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| B19   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.043      |
| C01   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.043      |
| C02   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.043      |
| C03   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3   | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.080      |
| C04   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.043      |
| C05   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.000      |
| C06   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.043      |
| C07   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.043      |
| C08   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.3 | 0.0 | 0.3 | 0.080      |
| C09   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.043      |
| C10   | 0.0 | 0.0     | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0   | 0.0 | 0.0 | 0.3 | 0.0 | 0.3 | 0.080      |

Table 4
The percentage of agreement among experts in the second round of DT according to FDM analysis

| Items Value of <i>d</i> items |       | A number of d items $\leq 0.2$ | Percentage of d items $\leq 0.2$ | Result   |  |
|-------------------------------|-------|--------------------------------|----------------------------------|----------|--|
| A01                           | 0.130 | 13                             | 100%                             | Accepted |  |
| A02                           | 0.130 | 13                             | 100%                             | Accepted |  |
| A03                           | 0.043 | 12                             | 92%                              | Accepted |  |
| A04                           | 0.080 | 11                             | 85%                              | Accepted |  |
| A05                           | 0.080 | 11                             | 85%                              | Accepted |  |
| B01                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B02                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B03                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B04                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B05                           | 0.261 | 6                              | 46%                              | Rejected |  |
| B06                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B07                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B08                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B09                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B10                           | 0.080 | 11                             | 85%                              | Accepted |  |
| B11                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B12                           | 0.043 | 12                             | 92%                              | Accepted |  |
| B13                           | 0.043 | 12                             | 92%                              | Accepted |  |
| B14                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B15                           | 0.338 | 5                              | 38%                              | Rejected |  |
| B16                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B17                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B18                           | 0.000 | 13                             | 100%                             | Accepted |  |
| B19                           | 0.043 | 12                             | 92%                              | Accepted |  |
| C01                           | 0.043 | 12                             | 92%                              | Accepted |  |
| C02                           | 0.043 | 12                             | 92%                              | Accepted |  |
| C03                           | 0.080 | 11                             | 85%                              | Accepted |  |
| C04                           | 0.043 | 12                             | 92%                              | Accepted |  |
| C05                           | 0.000 | 13                             | 100%                             | Accepted |  |
| C06                           | 0.043 | 12                             | 92%                              | Accepted |  |
| C07                           | 0.043 | 12                             | 92%                              | Accepted |  |
| C08                           | 0.080 | 11                             | 85%                              | Accepted |  |
| C09                           | 0.043 | 12                             | 92%                              | Accepted |  |
| C10                           | 0.080 | 11                             | 85%                              | Accepted |  |

(IQR=0) to not accept the item with mdn=2. Thus, both items were dropped from SCGI instrument. The experts also agreed at a high level (IQR=0; mdn=4) to approve items B18 and C02 with the change in the structure of sentences. In fact, all of the Delphi experts also agreed, at a high level, to approve the proposed additional items in the first round, namely C11 with a score of IQR=0 and mdn=4. Two items (B18, C02) which amended the sentence structure is accepted in SCGI instrument in addition to the new item (C11). As a result, the study, through the first and second round, managed to secure a total of 33 items which was agreed at a high level (IQR=0-1; mdn=4) by all the experts.

#### **CONCLUSION**

This study achieved the objective of establishing a SCGI-i which managed to obtain consensus among the experts in the field of Islamic Muamalat. The consensus score obtained, namely IQR=0.00 or 1.00 and mdn=4.00 is higher than the level set for this study (mdn<3.25). Consensus among the experts, which includes three dimensions and 33 items are obtained in the second round of the (DT). The SCGI-i can be used by IFIs to create new products or sharia audit of existing gold investments to comply with the requirements of Islamic Muamalat.

#### REFERENCES

Adler, M., & Ziglio, E. (1996). Gazing into the oracle: The Delphi Method and its application to social policy and public health. London: Jessica Kingsley Publishers.

- Al-Ghazali, M. (1993). *Ihya' 'ulum al-din [Reviving the science of religion]*. Beirut: Dar al-Khayr.
- Bank Negara Malaysia [BNM]. (2015). Financial costumer alert's consumer information.

  Retrieved from http://www.bnm.gov.my/documents/2015/20151013 FCA EN.pdf
- Berita Harian. (2012, October 2). 50,000 pelabur terjerat [50,000 investors are trapped]. *Berita Harian*, p. 3.
- Cavalli-Sforza, V., & Ortolano, L. (1984). Delphi forecasts of land use: Transportation interactions. *Journal of Transportation Engineering*, 110(3), 324-339.
- Chen, C. (2000). Extensions of the topsis for group decision-making under fuzzy environment. *Fuzzy Sets and Systems*, 114(1), 1-9. doi: 10.1016/S0165-0114(97)00377-1
- Cheng, C., & Lin, Y. (2002). Evaluating the best main battle tank using fuzzy decision theory with linguistic criteria evaluation. *European Journal of Operational Research*, *142*(1), 174-186. doi: 10.1016/S0377-2217(01)00280-6
- Chu, H., & Hwang, G. (2008). A Delphi-based approach to developing expert systems with the cooperation of multiple experts. *Expert Systems with Applications*, *34*(4), 2826-2840. doi: 10.1016/j.eswa.2007.05.034
- Dalkey, N., & Helmer, O. (1963). An experimental application of the Delphi method to the use of experts. *Management Science*, *9*(3), 458-467.
- Dalkey, N., Rourke, D., & Lewis, R. (1972). *Studies in the quality of life: Delphi and decision-making*. Lexington, MA: Lexington Books.
- Delbecq, A., Van de Ven, A., & Gustafson, D. (1975).

  Group techniques for program planning: A guide to nominal group and Delphi process. Glenview, IL: Scott, Foresman and Company.
- Derigs, U. & Marzban, S. (2008). Review and analysis of current shariah-compliant equity screening practices. *International Journal of Islamic and*

- *Middle Eastern Finance and Management, 1*(4), 285-303. doi: 10.1108/17538390810919600
- Green, P. (1983). The content of a college-level outdoor leadership course for land-based outdoor pursuits in the Pacific Northwest: A Delphi consensus (Unpublished doctoral thesis), University of Oregon, Eugene, Oregon.
- Helmer, O. (1968). Analysis of the future: The Delphi Method. In J. Bright (Ed.), *Technological* forecasting for industry and government: Method and applications (pp. 116-134). NJ: Prentice-Hall.
- Ho, C., Masood, O., & Abdul Rehman, A. (2012). Shariah accounting and compliant screening practices. *Qualitative Research in Financial Markets*, 4(2/3), 240-254. doi: 10.1108/17554171211252556
- Hsu, C., & Sandford, B. (2007). The Delphi technique: Making sense of consensus. *Practical Assessment, Research & Evaluation*, 12(10), 1-8.
- Ibn Baz, A. (2013). *Hukm al-mutajarah bi al-dhahab* [*Islamic ruling on trading in gold*]. Retrieved from the 'Abd al-'Aziz bin 'Abd Allah bin Baz website: http://www.binbaz.org.sa/mat/3900
- Ibn Khaldun, A. (2002). Mukadimah Ibn Khaldun [The introduction of Ibn Khaldun] (Dewan Bahasa dan Pustaka, Trans.) Kuala Lumpur: Dewan Bahasa dan Pustaka.
- Ibn Taymiyyah, A. (1995). *Majmu' al-Fatawa* [*Total fatwas*]. Madinah: Majma' al-Malik Fahd li Taba'ah al-Mushaf al-Syarif.
- Ibn 'Uthaymin, M. (2013). Syarh hadith al-dhahab bi al-dhahab wa al-fiddah bi al-fiddahi [Explanation of the hadith: Gold in gold and silver in silver]. Retrieved from the Muhammad bin Salih al-'Uthaymin website: http://binothaimeen.net/ content/10713
- Jabatan Kemajuan Islam Malaysia [JAKIM]. (2012a).

  Hukum jual beli dan pelaburan emas yang dijalankan oleh syarikat Genneva Malaysia

- [Laws of sale and investment gold conducted by Genneva Malaysia]. Retrieved from the Malaysia e-Fatwa website: http://www.e-fatwa.gov.my/fatwa-kebangsaan/hukum-jual-beli-dan-pelaburan-emas-yang-dijalankan-oleh-syarikat-genneva-malaysia-s
- Jabatan Kemajuan Islam Malaysia [JAKIM]. (2012b). Parameter pelaburan emas [Gold investment parameters]. Retrieved from the Malaysia e-Fatwa website: http://www.e-fatwa.gov.my/fatwa-kebangsaan/parameter-pelaburan-emas
- Kaufmann, A., & Gupta, M. (1988). Fuzzy mathematical models in engineering and management science. New York: Elsevier Science Inc.
- Khatkhatay, H., & Nisar, S. (2007). Shari'ah compliant equity investments: An assessment of current screening norms. *Islamic Economic Studies*, 15(1), 47-73.
- Konting, M. (1998). *Kaedah penyelidikan pendidikan* [*Educational research methods*]. Kuala Lumpur: Dewan Bahasa dan Pustaka.
- Linstone, H., & Turoff, M. (1975). The Delphi method: Techniques and applications. Reading, MA: Addison-Wesley Publishing.
- Lokmanulhakim, H, Fairooz, A., & Bahroddin, B. (2012). Analisis shariah terhadap produk-produk pelaburan emas di Malaysia [Shariah analysis of gold investment products in Malaysia]. Kuala Lumpur: International Shari'ah Research Academy for Islamic Finance.
- Lokmanulhakim, H, Fairooz, A., & Bahroddin, B. (2013). Analisis kewajipan zakat emas terhadap pelaburan emas di Malaysia [Analysis of obligation of gold zakat on gold investment in Malaysia]. Kuala Lumpur: International Shari'ah Research Academy for Islamic Finance.
- Louis, N. (2009). Public gold: Kelebihan pelaburan emas fizikal [Public gold: Advantages of physical gold investment]. In M. Wan Kamal,

- Y. Noor Inayah, J. Ezad, Y. Salmi Y, & N. Noorsafuan. (Eds.), Proceedings of the Seminar Antarabangsa Penjanaan Ekonomi Melalui Transaksi Wang Dinar [International Seminar on Economic Generation Through Dinar Money Transaction] (pp. 417-427). Bangi, Malaysia: Universiti Kebangsaan Malaysia.
- Ludwig, B. (1997). Predicting the future: Have you considered using the Delphi methodology? *Journal of Extention*, *35*(5), 1-4.
- Martino, J. (1983). Technological forecasting for decision making. New York: Elsevier Science Publishing.
- Miller, E., & Salkind, N. (2002). *Handbook of research design & social measurement* (6<sup>th</sup> ed.). Thousand Oaks, CA: Sage Publications.
- Mohd Nazri, A. (2014). Pembangunan model homeschooling berasaskan nilai dan amalan masyarakat bagi kanak-kanak Orang Asli [Development of homeschooling models based on values and community practices for Orang Asli children] (Unpublished doctoral thesis), University of Malaya, Kuala Lumpur.
- Mohd Yusra, A. (2012). Pelaksanaan akaun pelaburan emas menurut perspektif ekonomi Islam: Kajian di Kuwait Finance House (Malaysia) Berhad [Implementation of gold investment accounts according to Islamic economic perspective: Study at Kuwait Finance House (Malaysia) Berhad] (Unpublished Master's disertation), University of Malaya, Kuala Lumpur.
- Muhaimin, I. (2009). Dinar the real money dinar emas, uang & investasiku [Dinar the real money dinar gold, money & my investment]. Jakarta: Gema Insani.
- Murray, T., Pipino, L., & Gigch, J. (1985). A pilot study of fuzzy set modification of Delphi. *Human Systems Management*, *5*(1), 76-80. doi: 10.3233/HSM-1985-5111

- Murry, J., & Hammons, J. (1995). Delphi: A versatile methodology for conducting qualitative research. The Review of Higher Education, 18(4), 423-436.
- Muslim, H. (2010). Al-Musnad al-sahih al-mukhtasar bi naql al-'adl ila Rasulillah [The authentic musnad and summary to the transfer of justice to the Messenger of Allah]. Beirut: Dar Ihya' al-Turath al-'Arabi.
- Norlaili, A. (2012, August 1). 77 Syarikat pelaburan tidak sah [77 Investment companies are invalid]. *Utusan Malaysia*, p. 16.
- Phillips, R. (2000). New applications for the Delphi technique. *Annual San Diego Pfeiffer and Company*, 2, 191-196.
- Rand, C. (2013). *Delphi method*. Retrieved from the Rand Corporation website: http://www.rand.org/topics/delphi-method.html
- Ridhuan, J., Siraj, S., & Zaharah, H. (2014).

  Pengenalan asas kaedah Fuzzy Delphi dalam penyelidikan rekabentuk pembangunan [The basic introduction of Fuzzy Delphi method in the development of research design]. Bangi: Minda Intelek Agency.
- Rowe, G., & Wright, G. (1999). The Delphi technique as a forecasting tool: Issues and analysis. *International Journal of Forecasting*, 15, 353-375.
- Saat, S. (2011). Pelaburan emas kaedah, pendekatan dan strategi [Gold investment methods, approaches and strategies]. Batu Caves: PTS Professional Publishing Sdn. Bhd.
- Salmy, Y. (2011). Dinar emas dan mekanisme pelaksanaannya dalam ekonomi semasa [Gold dinar and its implementation mechanisms in the current economy] (Unpublished doctoral thesis), National University of Malaysia, Bangi.
- Shukor, H. (2009). Pelaburan emas di Malaysia [Gold investment in Malaysia]. In M. Wan Kamal, Y. Noor Inayah, J. Ezad, Y. Salmi Y, & N. Noorsafuan. (Eds.), Proceedings of the Seminar

- Antarabangsa Penjanaan Ekonomi Melalui Transaksi Wang Dinar [International Seminar on Economic Generation Through Dinar Money Transaction] (pp. 417-427). Bangi, Malaysia: Universiti Kebangsaan Malaysia.
- Siraj, S., & Mohd Paris, S. (2005). Jangkaan masa depan terhadap aplikasi teknologi dalam pengajaran dan pembelajaran peringkat sekolah menengah: Pandangan pakar [Future projection of technology application in teaching and learning at the secondary level: Expert consensus]. Retrieved from http://www.ipbl.edu. my/portal/penyelidikan/seminarpapers/2005/saedahUM.pdf
- Suruhanjaya Sekuriti Malaysia. (2013). Senarai sekuriti patuh shariah oleh Majlis Penasihat Shariah, Suruhanjaya Sekuriti Malaysia [List of shariah-compliant securities by Shariah Advisory Council, Securities Commission Malaysia]. Kuala Lumpur: Suruhanjaya Sekuriti Malaysia.
- Ulschak, F. (1983). *Human resource development: The theory and practice of need assessment.* Virginia: Reston Publishing Company.
- Umar, A. (2002). Penggunaan mata wang dinar dalam era globalisasi [The use of dinar currency in the era of globalization]. Retrieved from http://ddms.usim.edu.my/bitstream/123456789/903/1/Penggunaan%20Matawang%20Dinar%20Dalam%20Era%20Globalisasi.pdf