The Application of The Fuzzy Delphi Method (FDM) in Developing Contract Parameters for Shari‘ah Compliant E-Commerce

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Abstract

E-commerce has become a norm among today’s world community including in Malaysia. The Muslim community, with no exception, is also involved in this modern transaction as it is now expanding rapidly. Nevertheless, such transactions need to be ensured in accordance with the principle of sale and purchase according to the Islamic fiqh. Using a quantitative approach based on the Fuzzy Delphi Method, this study aims to analyse the consensus of 12 panels of muamalat experts to develop items that need to be present in the Shari‘ah compliant e-commerce contract parameters. This research adopts the research design based on the design and development (DDR) technic involving three phases – analysis, design and development, and evaluation phases. This article aims to analyse the second phase of the process and findings, that is, the design and development phase. This phase intends to analyse the group consensus on the 29 parameters suggested by the researcher. The process involves some procedures for obtaining threshold value (d), percentage of expert consensus, and defuzzification value using Likert 7-Point scale questionnaire instrument. The result of the study comes to a conclusion that the expert group has reached a consensus for 28 item parameters with defuzzification value exceeding the value of \( \alpha \)-cut = 0.5 (based on the threshold value \( \leq 0.2 \) and expert consensus exceeding 75%). The findings also show the dimension of products and prices reaches the highest value compared to the dimensions of contracting parties and form of contract. In short, the application of Fuzzy Delphi Method has resulted in a Shari‘ah compliant e-commerce contract parameters which can contribute to larger studies, such as the development of Shari‘ah compliant e-commerce transaction model or prototype.

Keywords: E-commerce, Fuzzy Delphi Method, Threshold value, Shari‘ah-Compliant.

Introduction

E-commerce involves the sale, purchase or exchange of goods, services and information online, through the internet network. Wigand (1997) and Chatterjee (2002) define e-commerce as the use of electronic medium to carry out economic activities. Meanwhile, Turban et al. (2000) and Ayyappan P. (2013), who share almost the same principle, state that e-commerce is a transaction involving the purchase, sale or exchange of goods, services and information through electronic networks, including the internet. E-commerce is a business transaction operated through a network of computer-based electronic processing and data transfer, voice and image that is global in goods and services transactions, online delivery of digital content, electronic funds transfer, electronic share transactions, bill display in electronic form, commercial auctions, consumer marketing and after-sales service (Guo, 2012). Thus, e-commerce is a consumer buying and selling concept to meet their daily needs and requirements through electronic means. Based on this principle, e-commerce is a concept of buying and selling using electronic medium in
line with current scientific and technological developments.

E-Commerce and Shari‘ah

Muslims are no exception when it comes to the effects of the rapid expansion of the e-commerce market which have led them to engage in such activities. E-commerce provides space for Muslim societies to showcase how whole and comprehensive Islam is through this economic activity. To Yusuf al-Qaradawi (1997), a renowned modern Muslim thinker and jurist, Islam does not prohibit any form of business unless the business involves the element of injustice, fraud, multiplying profits or the offering of something legally prohibited. Every activity, including economic activities carried out by the Muslim community should be based on the Qur‘an and the Hadith so as not to be excluded from the rules outlined by Allah SWT for the purpose of gaining a reasonable profit and attaining success (al-falah) in the hereafter. This is in line with what is said by God in the Qur‘an:

“There is no blame upon you for seeking bounty from your Lord ….” (Q.S.2: 198)

Islamic law is governed with the aim of achieving the maslahah (serving of public interest), which is built upon the principle of goodness and resisting the harm. Based on the maslahah principle, Islam does not prevent its followers from practicing e-commerce in their daily trading arrangements provided that the contract is in compliance with the rules set by the Shari‘ah. This is because e-commerce is a modern form of transaction based on the use of science and technology and it requires clear fiqh guidelines from contemporary scholars. A classical Muslim scholar and expeditor of the law, al-Suyuti, once stipulated, “The origin of a matter is permissible unless there is a proposition on the ban”. (Al-Suyuti, 2010).

Islamic law does not ignore the aspects of muamalah (civil/public transaction) related to business activity. Even the Shari‘ah has arranged and set clear guidelines to enable the Muslim community to participate in the activity. All forms of business carried out must ensure noble values such as fairness, honesty, tolerance and straightforwardness by the parties involved. These values are practiced to ensure the benefits (maslahah) and well-being of the transactions involved in e-commerce. Compliance to Islamic values refers to the avoidance of prohibited elements in businesses, namely, usury (riba), gambling (maysir), uncertainty (gharar), and coercion (ikra), and products, which are banned like wine and pork (Muhd Rosydi and Marjan Muhammad, 2013; Saiful Azhar Rosly, 2010). The basis of these prohibitions is to protect the benefits (maslahah) and to prevent any damage to the parties involved in the relevant transactions while at the same time exhibiting the value of justice, which is one of the maqasid al-shari‘ah, the objectives of the Shari‘ah (Muhd Rosydi & Marjan Muhammad, 2013).

In addition, an e-commerce contract is a form of sale and purchase contract between the seller and the buyer. Hence, its implementation needs to fulfill the basic requirements in Islamic law related to it. There are the elements of (i) form of contracts, (ii) the contracting parties, and (iii) objects and prices to enable them to be considered as legitimate in Islamic law. Therefore, e-commerce is a contemporary trading method that may as well be required by Muslims on the condition that it does not violate any legal provisions for business in Islam. With the emergence of e-commerce, it provides a wide space for the Muslim community to determine the rules or guidelines of e-commerce sales that comply with the fundamentals of Islamic law.

The Fuzzy Delphi Method for Group Consensus Analysis

The Fuzzy Delphi Method is a technique to achieve the group consensus on the parameter’s item developed by the researcher. This is one of the methods that can be used to obtain an expert consensus on the field in determining the aspects that should be the content of a field of study. This is because the technique is a method of assessment and measurement of a group consensus to a problem that is being investigated (Muhammad Ridhuan Tony, 2014). This method, which is a combination of fuzzy set theory and Delphi technique introduced by Murray, Pipino, and Gigch, is expanding in the context of education studies in Malaysia (Mohd Ridhuan et al., 2014). Unlike Delphi’s technique which involves decision-making by experts in a field of study conducted in several rounds, the Fuzzy Delphi Method is a decision making analysis technique that combines fuzzy set theory in classic Delphi technique. The fuzzy set theory was developed by a mathematician in 1965, Lotfi
Zadeh, which functions as an extension of the classical theory set whereby each element in a set is based on the binary set (Mohd Ridhuan, 2016).

Therefore, Fuzzy Delphi Method is not totally a new method but it is an instrument derived from the findings and modifications of the Delphi technique (Saedah Siraj, Norlidah Alias, DeWitt, & Zaharah Hussin, 2013). The main purpose of Fuzzy Delphi Method is to obtain feedback with a high validity on the problem and questionnaire given to a group of experts. The basic principles of Fuzzy Delphi Method are the same with Delphi’s in which it has the capability to make a decision where the respondents involved are those who deeply understand the issue or study. The FDM is precisely appropriate to get an expert consensus and analysed using a quantitative approach based on Fuzzy Delphi Method analysis. In fact, the highlight of the previous studies found that many studies have adopted the Fuzzy Delphi Method in achieving the objectives outlined in a research. The studies have also been found to cover various fields and areas of study which include engineering, education, science, Islamic studies, economics and many other areas that illustrate its suitability to be a method of conducting research.

The Fuzzy Delphi Method Analysis for Parameter’s Development

The parameters developed for this research were adapted in a set of questionnaire with Likert 7-Points scale as a study instrument. Then, the questionnaire was distributed to 12 panels who were selected based on certain criteria. Through this method, researchers can evaluate the developed items whether or not they are accepted or rejected by experts as well as item position preference for each of those items within the predefined dimensions. This Fuzzy Delphi Method analysis process involves the following procedure; (i) determining threshold value (d), (ii) percentage of group consensus and (iii) defuzzification process based on a-cut value.

(i) The Analysis of Findings Based on Triangular Fuzzy Number and Defuzzification Process

An analysis of the findings of the e-commerce contract parameter compliance with Shari’ah principles is conducted based on the first step through triangular fuzzy number that functions to determine the expert consensus on an item developed in the relevant questionnaire. The implementation of this procedure requires Fuzzy Delphi Method analysis to meet the following two conditions, they are; (i) threshold value (d) which is less or has equal value of ≤ 0.2 (Chen, 2000; Cheng & Lin, 2002), and (ii) percentage of group consensus on rate ≥ 75% (Chu & Hwang, 2008; Murry & Hammons, 1995). The data obtained from questionnaires distributed to 12 experts were analyzed using Microsoft Excel software based on a specific formula for obtaining a threshold value (d) which determined the distance of two fuzzy numbers (Mohd Ridhuan et al., 2014). The formula used is as follows:

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

The data obtained from the expert panel scale selection was analysed using the Microsoft Excel software using the above formula. The Fuzzy Delphi Method analysis of the guideline item for dimension of contracting parties displays threshold value (d) as in Table 1. In addition, threshold value (d) for dimension of products and prices is presented in Table 3 and threshold value (d) for dimensions of form of contract is displayed in Table 5.

The second step is to implement the defuzzification process as a method of determining the score and position of an item in the instrument that can indicate the level of importance of the item based on the expert group’s view. It also functions to evaluate whether an item is accepted or rejected based on expert agreement by comparing the value of the average of fuzzy number score with the value of a-cut. This process involves complex numbering using mathematical formulas as the method of determining the priority. There are three formulas that can be used to implement the defuzzification process and in this study, the formula adopted is based on the following (Mohd Ridhuan et al., 2014):
\[ A_{\text{max}} = \frac{1}{3} \left( m_1 + m_2 + m_3 \right) \]

Meanwhile, the determination of the \( \alpha \)-cut value is based on the median value between the fuzzy numbers (0-1) which is the value of \( \alpha\)-cut = 0.5. This value indicates the measured item is accepted based on the expert consensus and for a value less than 0.5, the item is rejected by the expert in a study (Mohd Ridhuan et al., 2014). The analysis of the mentioned steps is shown in Table 2 for the dimension of contracting parties, Table 4 for the dimension of products and prices and Table 6 for the dimension of form of contract.

(i) Analysis of the Second Round of the Fuzzy Delphi Method

After conducting the Fuzzy Delphi Method analysis, findings show that there are two items that are not approved by the experts. The researcher has conducted second rounds of Fuzzy Delphi Method for panels who did not get consensus on two related items. Mohd Ridhuan et al. (2014) clarifies that items which have no threshold value \( d \leq 0.2 \) and group consensus which exceeds \( \geq 75\% \) shall be omitted from content items or second round shall be conducted for experts who do not reach consensus. Thus, the researcher has chosen to run the second round because of the number of experts who did not agree is a total of five experts - three experts for item C05 and two experts for item C10. The researcher used the same questionnaire for the purpose of obtaining confirmation of expert approval level in the second round using structured interview method by phone or electronic communication. As a result from the second round, the disagreement over the two items in the second round has been reduced to one item which is item C05, while item C10 has reached the required consensus. The analysis of second round is presented in Table 7.

Based on Table 7, FDM analysis shows that panels reject item C05 and C10 items has been accepted by panels as parameters’ item. Therefore, item C05 should be removed from the content of the parameters to be developed in this study.

Conclusion

Muslims are not restrained from engaging themselves in e-commerce activities provided that compliance towards \( fiqh \) principles is given priority. The \( fiqh \) rules in the sale and purchase contracts are clearly based on the rules and the terms set forth. Based on the Fuzzy Delphi Method analysis, the present study has identified three dimensions that needed to be the main component of the parameters supported by 28 items for the parameter of e-commerce contract. The parameter items developed by the researcher have been assessed and agreed by 12 panels of experts.
References


