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AI APPLICATIONS FOR *FIQH* RULINGS IN ISLAMIC BANKS: SHARĪʿAH COMMITTEE ACCEPTANCE

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ABSTRACT

Purpose — The objective of this paper is to study acceptance of the use of artificial intelligence (AI) in the *fiqh* ruling process by Shariah committee (SC) members of Islamic banks in Malaysia.

Design/Methodology/Approach — This is a qualitative study using focus group interviews with ten SC members from different Islamic banks in Malaysia. Following the interviews, a thematic analysis of the transcribed data was conducted using computer-assisted qualitative data analysis software (CAQDAS).

Findings — The participants were generally receptive towards the utilisation of AI tools in the *fiqh* ruling process at Islamic banks. The participants recognise the potential of AI smart assistants for improving the efficiency and effectiveness of the *fiqh* ruling process. However, they raised some concerns and expectations that need to be addressed.

Originality/Value — The novelty of this research comes from sourcing first-hand perspectives of SC members of Islamic banks in Malaysia. Being the end users of AI systems for the *fiqh* rulings in Islamic banking, it is important to understand their perceptions, concerns and expectations.

Research Limitations/Implications — The size of the focus group was limited to ten participants to optimise group size and composition in order to allow adequate participation by each group member. Further sampling from more SC members may elicit additional findings.

Practical Implications — The first-hand views from the target users provide valuable input for initiatives related to the development of AI systems for the *fiqh* ruling process in Islamic banking.

Keywords — AI smart assistants, AI *fiqh* ruling, Artificial intelligence, Sharīʿah robo advisor

Article Classification — Research paper

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INTRODUCTION

Since its launch in November 2022, ChatGPT has become a global phenomenon with millions of users and has since gained considerable traction—including from those in the Sharīʿah field. ChatGPT was developed using generative artificial intelligence (AI) technology. Various use case demonstrations with ChatGPT dealing with complicated subject matters have helped more people to realise the capacity of AI technology for solving complex problems.

Although ChatGPT has no doubt intensified such interest, the vision of leveraging AI for the advancement of Islamic finance has been present for several years. Stakeholders in Islamic finance have openly expressed their optimism about the potential of AI for improving productivity and efficiency within the industry. The General Council for Islamic Banks and Financial Institutions, in the ninth meeting of its Financial Cooperation Working Group on 26 October 2017 in Ankara, Türkiye, identified AI as being 'on top of the list to be watched for in the next coming three years' (Al-Homsi, 2017, p. 10). A study examining AI and smart contract applications in Islamic finance recognised their role and impact on the future development of the Islamic finance industry (Mat Rahim *et al.*, 2018).

Optimism about AI applications in Islamic financial services extends to the Sharīʿah compliance aspects of Islamic financial products and services. This goes as far as attempting to develop AI-based digital tools (often referred to as Sharīʿah robo-advisor) for Sharīʿah advisory services in the field of Islamic finance. Sa'ad *et al.* (2020, p. 3) state that 'the Islamic financial services atmosphere wasn't left behind in accepting Robo-advisor in simplifying the Islamic financial services and to ease the Sharīʿah supervision activities in Islamic banking and finance'. However, Salim *et al.* (2020, p. 85) raise the question of how to 'assess the acceptance of Sharīʿah scholars and bankers to the idea of Sharīʿah robo-advisory?'. The objective of this paper is to consider this question and study the acceptance by Shariah committee (SC) members of Islamic banks in Malaysia regarding the introduction of AI applications in the *fiqh* ruling process of Islamic banking products and services.

Following the introduction, this paper includes a literature review on AI in Islamic finance, followed by a discussion of the research methodology, which adopted the focus group interview approach. Thereafter, the findings are presented and a discussion of the results ensues. The paper concludes by considering the implications for the industry and future research.

LITERATURE REVIEW

The Artificial Intelligence Index Report 2021 produced by Stanford University indicates that AI continued to attract intense academic and commercial attention in the preceding year. Based on an AI Index survey conducted in 2020, the previous four years saw the world's top universities significantly increase their investment in AI education. 'The number of courses that teach students the skills necessary to build or deploy a practical AI model on the undergraduate and graduate levels has increased by 102.9% and 41.7%, respectively' (Zhang *et al.*, 2021, p. 12). Moreover, the number of journal publications that discuss AI-related topics grew by 34.5 per cent from 2019 to 2020, compared to a 19.6 per cent increase from 2018 to 2019.

One of the key reasons for the increased focus on AI in recent years is the fact that AI plays a significant role in overarching digitisation and automation trends across numerous

industries (Chan *et al.*, 2019). For example, in Malaysia, Bank Negara Malaysia's (BNM) Policy Outlook reported that their budget for automation and digitisation (available to Malaysian SMEs from March 2020 until December 2021) was raised from MYR700 million to MYR1 billion (Illias, 2021). Digitisation and automation technologies also contribute to the production of vast data sources (also known as big data). The growth in AI has been escalated by harnessing this big data in order to augment human decision making.

The financial services industry (FSI) is identified as one industry that has benefited greatly from AI innovations. According to Chan *et al.* (2019, p. 3), 'Artificial Intelligence is a powerful tool that is already widely deployed in financial services.' Traditional FSI players have no choice but to remodel their processes and offerings to adapt to continuous changes in consumer behaviour and needs (Deloitte, 2019). AI has helped to accelerate the speed at which this responsiveness is possible and has consequently built a new degree of trust in the finance industry. AI plays an important role in the FSI as 'it is revolutionising a centuries-old industry innovation flow from the ground' (Corea, 2019, p. 14). Omar (2021), in his presentation at the 6th Doha Islamic Finance Conference on *Artificial Intelligence in Islamic Banks: A Looking Forward Vision*, stated that 'Islamic banks must innovate by adopting AI' and that 'the future will look brighter with AI'.

Khan (2019) summarises the applications of AI in Islamic finance into functional groupings, which cut across front, middle, and back-office operations, as well as compliance. Unique to Islamic financial services are AI applications for Sharīʿah compliance. Sa'ad *et al.* (2020) opine that AI digital assistants (Robo Sharīʿah advisors) could help to reduce the effort involved in the iterative Sharīʿah review process and, therefore, facilitate more timely and robust Sharīʿah rulings for Islamic banking products and services.

Fazmi (2019, p. 1) advocates for the concept of Sharīʿah robo-advisory and suggests that to ease the operations of Islamic banks and financial institutions, Sharīʿah robo advisors can act as *Smart Muftis* to evaluate the sources of Sharīʿah and provide recommendations based on past fatwas. Sultan (2017) shares some specific examples of how Sharīʿah robo advisors can help validate basic Sharīʿah requirements in Islamic financial products and services, namely:

1. To ensure a proper offer (*ījāb*) and acceptance (*qabūl*) in sale contracts so that the subject matter and price are well defined and not uncertain.
2. To ensure that no partner in partnership contracts (*muḍārabah* and *mushārakah*) gets eliminated from receiving profits, if there are any, based on the applicable profit-sharing ratio.
3. To ensure that losses in partnership contracts, if there are any, are properly apportioned as capital contributions are also well defined.
4. To validate if the product meets specific objectives of Sharīʿah (*maqāṣid al-Sharīʿah*).

Obaidullah (2021, p. 1) outlines various reasons why there is a 'need to create an artificially intelligent Sharīʿah expert'. These reasons include:

1. 24/7 continuous availability, with higher reliability compared to humans, which will only be available at certain stipulated time periods.
2. Not vulnerable to any forms of bias or attitude.
3. Ability to make more consistent judgements.

4. Ability to 'produce more timely results, [make] faster decisions and better prevent fraud and/or errors. Most importantly, it will use cutting-edge knowledge and the combined wisdom of multiple human Sharīʿah experts'.

The ChatGPT phenomenon has also raised curiosity about its ability to process Sharīʿah-related queries. According to Abdul Rahman (2023), ChatGPT's responses regarding intricate Islamic jurisprudence topics and complex micro level Islamic financial issues are still unreliable. Datuk Dr Zulkifli Mohamad al-Bakri (a Malaysian Sharīʿah scholar and a former Minister in the Prime Minister's Department in charge of Religious Affairs) advises that ChatGPT's responses in matters of *ʿaqīdah* (creed), *fiqh* (jurisprudence), hadith (Prophetic teachings), *sīrah* (life of the Prophet (SAW)), and *muʿāmalāt* (transactions) are still not well founded (Ahmad, 2023).

METHODOLOGY

This study adopts a focus group interview approach. Focus group interviews are 'a particular type of group interview, where the topic is clearly defined and there is a focus on facilitating discussion between participants' (Sekaran & Bougie, 2016, p. 121). The focus group interview method was deemed suitable for this study because it is recommended when 'looking for the range of opinions, perceptions, ideas, or feelings that people have about something like an issue, behaviour, practice, policy, program, or idea' (Krueger, 2015, p. 61). 'Focus groups work particularly well to explore perceptions, feelings, and thinking about issues, ideas, products, services, or opportunities' (Krueger, 2015, p. 37).

To keep the focus group discussion within the relevant context of this study, the focus group interview was guided by the Unified Theory of Acceptance and Use of Technology (UTAUT), which is well established for studying human intentions to accept and use software applications. According to Venkatesh *et al.* (2003), intentions to use can be gauged based on three constructs:

1. Performance expectancy: the degree to which an individual believes that using the system will help him or her to attain gains in job performance.
2. Effort expectancy: the degree of ease associated with the use of the system.
3. Social influence: the degree to which an individual perceives that it is important that others believe he or she should use the new system.

Besides these constructs, UTAUT also includes an element of moderating factors. For the purpose of this study, AI technology literacy is utilised as the moderating factor. The purpose of asking these questions prior to conducting the interview is to evaluate the participants' familiarity with AI technology in general. The responses also give insight into the participants' knowledge gaps and areas that may need additional improvement, as well as provide useful information about the present status of AI technology literacy among SC members at Islamic banks.

Focus Group Participants

The focus group comprised ten (10) Shariah committee members from different Islamic banks in Malaysia. A summary of the profiles of the participants is given in **Table 1**.

Table 1: Focus Group Participants' Profiles

Participants	Shariah Committee Roles
Respondent 1	A prominent member of two national level Shariah Advisory Councils in Malaysia, SC chairman of two government-owned Islamic financial institutions, SC member of an Islamic financial institution, and SC chairman of a *takāful* (Islamic insurance) institution
Respondent 2	SC member of an Islamic development financial institution, SC member of a foreign-owned bank, and SC member of two *takāful* institutions, being engaged in both general and family *takāful*
Respondent 3	SC member of a digital Islamic bank in Malaysia, and SC member of a government-owned Islamic financial institution
Respondent 4	A member of two national level Shariah Advisory Councils in Malaysia, SC chairman of an Islamic commercial bank, SC chairman of a development financial institution, and SC chairman of a *takāful* institution
Respondent 5	A member of two national-level Shariah Advisory Councils in Malaysia, SC member of an offshore financial services authority, and SC member of a national retirement fund management institution
Respondent 6	SC chairman of an Islamic commercial bank
Respondent 7	SC member of an Islamic commercial bank, and SC member of a development financial institution
Respondent 8	SC deputy chairman of a development financial institution
Respondent 9	SC chairman of an Islamic commercial bank, SC member of a re*takāful* institution, and SC member of a cooperative Islamic financial institution
Respondent 10	SC member of an Islamic commercial bank, and SC member of a *takāful* institution

Source: Authors' own

Interview Questions

The open-ended questions for this focus group were developed based on the three constructs from the UTAUT. The questions are as given in **Table 2**. Some additional questions were asked as follow-up questions based on the answers given to the ten pre-prepared questions.

Table 2: List of Questions for Focus Group Interview

Construct	Questions
Performance Expectancy	1. Do you believe that AI technologies can assist in the *fiqh* rulings of Islamic banking products and services, in order to make the process more efficient (easier and faster)? 2. In what ways do you think that AI smart assistants can help in improving the quality of the *fiqh* ruling process of Islamic banking products and services? 3. What are your concerns about utilising AI smart assistants to improve your performance in the *fiqh* ruling process of Islamic banking products and services? 4. What are your expectations for utilising AI smart assistants to improve your performance in the *fiqh* ruling process of Islamic banking products and services?
Effort Expectancy	5. Are you willing to put in some effort to learn and familiarise yourself with using AI smart assistants for your *fiqh* ruling work? Why or why not? 6. What are your concerns in terms of having to learn to use AI smart assistants for the *fiqh* ruling process of products and services? 7. What are your expectations in terms of the efforts that you need to put in to use AI smart assistants for your *fiqh* ruling work?

Table 2: List of Questions for Focus Group Interview (Cont.)

Construct	Questions
Social Influence	8. Are you willing to use AI smart assistants to help you with the *fiqh* ruling process of Islamic banking products and services, regardless of whether other SC members use it or not? 9. Is it important to you that other SC members also use AI smart assistants? 10. In your opinion, what is required to convince SC members of Islamic banks to use AI smart assistants to help with their *fiqh* ruling work?

Source: Authors' own

Prior to the focus group interview, the participants were asked to answer (Yes/No/Not Sure) to a list of simple questions, in order to gauge their level of literacy in AI technology (see **Table 3**). It was expected that the more exposure that the SC members of Islamic banks had to AI, the more positive their attitudes would be towards the use of AI smart assistants in the *fiqh* ruling process.

Table 3: Questions to Gauge AI Literacy Level of Focus Group Interview Participants

No.	Questions
1.	Have you heard of the term artificial intelligence (AI)?
2.	Have you heard of the following technologies? a. Machine Learning b. Natural Language Processing c. Computer Vision d. Robotic e. Expert System
3.	Do you think that you have used AI-based systems or tools?
4.	Have you engaged in a conversation with a chatbot?
5.	Have you used any app where you use facial recognition as identity verification?
6.	Please identify whether the following are included in the scope of AI technologies: a. Algorithms that use statistical tools and mathematical models that enable machines to improve performance b. Algorithms that understand text and speech in various languages' context c. Image recognition and motion analysis d. Robots that can interact with the physical world e. Algorithms that can help to infer decisions based on a set of predefined rules
7.	Do you agree that AI will play a major role in our lives?
8.	Do you agree that we have to embrace AI technological innovations to make us more efficient and productive in our work?
9.	Do you believe that AI technologies can help in the Sharīʿah field?
10.	Have you had any exposure to any AI technology innovations in the Sharīʿah field?

Source: Authors' own

Data Analysis Method

Following the focus group interviews, a thematic analysis of the transcribed data was conducted. Thematic analysis is one of the most common approaches to qualitative data analysis (Bryman, 2011). The process involves systematically coding data in order to identify patterns (themes) from the dataset, often with the help of computer-assisted qualitative data analysis software (CAQDAS) such as QSR NVivo. Themes are determined, based on the identification of

congruous patterns which relate to the research focus—which in this study is SC members' acceptance of the use of AI assistants in the *fiqh* ruling process at Islamic banks.

FINDINGS

AI Literacy Level

The responses reveal a broad understanding and acceptance of AI technologies among the SC members (participants). The unanimous recognition of the term 'Artificial Intelligence' (100% responded 'yes') affirms a basic level of AI literacy among the participants. Moreover, the majority of participants' familiarity with various AI terminologies, such as Machine Learning, Natural Language Processing, Robotics, and Expert Systems, indicates their greater level of comprehension of the AI landscape. However, the observed relative lack of awareness about Computer Vision points to certain gaps in the participants' understanding about specific AI technologies.

The acknowledgement by all the participants concerning their experience in using AI-based systems or tools and engaging with chatbots underscores the pervasive influence and penetration of AI technologies into daily life. This also reflects the active participation of the individuals in an increasingly digitised environment. Participants' understanding of the scope of AI technologies also appears to be significant. Most importantly, the participants' unanimous belief that AI technologies can assist in the Sharīʿah field implies their openness to the integration of AI in their *fiqh* ruling work.

Overall, the analysis reveals a high level of AI technology literacy among participants, characterised by a broad understanding, acceptance, and enthusiasm for AI technologies, along with acknowledgement of their significant role in various fields, including Sharīʿah. This understanding, however, is marked by gaps in specific areas, indicating the need for continued education and exposure—especially in terms of practical applications in specialised fields.

Performance Expectancy

A dominant theme running throughout the discussion was the expectation of increased efficiency and the potential for improved quality in the *fiqh* ruling process. The SC members were optimistic about the prospect of AI tools for significantly reducing the time and effort required to retrieve and analyse relevant references—thus allowing them to focus more on critical thinking and decision-making aspects. They acknowledged AI smart assistants as valuable tools that could support decision-making and expedite the overall process. This is particularly evident in Respondent 2's statement that *fiqh* is a rule-based discipline making it suitable for integration with AI technologies.

The participants identified several ways in which AI could improve the *fiqh* ruling process, such as: providing reliable and consistent responses; offering relevant and accurate information; and assisting in impact analysis and data simulation. They suggested that through a comprehensive body of knowledge, AI tools could assist in providing justifications for specific rulings, thus enhancing transparency and clear explanations for *fiqh* ruling decisions. Respondent 3 highlighted the capability of AI smart assistants to retrieve, sort and organise information from BNM, the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI), and other relevant knowledge bases, and thus provide a convenient alternative to manual

searches through books and other sources. This general positivity regarding the potential for performance improvement is consistent with findings by Fazmi (2019) and Sa'ad *et al.* (2020), who suggest that the use of AI smart assistants (Robo-advisory or Smart Mufti) will help speed up the *fiqh* ruling process, and therefore enable decision makers to propose solutions more rapidly than with current manual methods.

Despite the above-mentioned advantages of using AI, the participants also raised a few concerns which can be summarised as follows:

1. The ability of AI to effectively understand and navigate Arabic literature.
2. The reliability and consistency of responses.
3. The presence of system bugs that could hinder the process.
4. The possibility of receiving irrelevant information.
5. The need to verify the accuracy of answers without proper sources or references.
6. The richness of the body of knowledge.
7. The quality of data that is inputted into AI systems.

All the participants emphasised the importance of ensuring that AI system output is trustworthy and in alignment with the standards of the *fiqh* ruling process.

In terms of their expectations for future high-powered AI capabilities for the *fiqh* ruling process, participants shared their desire for AI smart assistants to provide impact analysis—allowing them to assess the consequences of decisions and evaluate their alignment with the *maqāṣid al-Sharīʿah*. They expected the systems to perform data simulations, enabling them to explore different scenarios and to help them understand the potential impact on specific groups. Some participants also highlighted the integration of macro analysis. On this note, Respondent 2 shared a criticism of current *fiqh* rulings, in that they tend to focus on micro decisions without considering the broader macro perspective of the *maqāṣid al-Sharīʿah*. He expressed that if the parameters of *maqāṣid al-Sharīʿah* could be quantified and integrated into AI systems, it would allow for the verification of rulings' alignment with the objectives of Sharīʿah.

Effort Expectancy

The findings with regard to effort expectancy revealed three overarching themes in relation to the utilisation of AI digital assistants in the *fiqh* ruling process for Islamic banking products and services:

1. Participants' positive will.
2. Concerns about ease of use and complexity.
3. Expectations on ease of use, tool capability, and fast responses.

In general, the participants appeared to be highly motivated to engage with new technologies such as AI smart assistants. This was driven by the recognition of the benefits they could derive from these tools, specifically the potential to speed up the *fiqh* ruling process and to make their work more efficient. Respondent 4 mentioned that AI systems could yield more refined answers and reduce the time required for research, and therefore, 'like it or not, scholars need to put time to understand and know how to use it'. Respondent 9 added that 'time is of essence. We can no longer rely on manual methods to check from books'. The necessity for continuous learning was

a sentiment echoed by all respondents. They perceived the effort required to learn to use AI systems not as a barrier but rather as an essential aspect of their work. Furthermore, the participants also highlighted the pressing needs and challenges to deliver rulings promptly. Therefore, they were open to adopting innovative AI solutions that could assist in meeting these demands effectively.

However, their enthusiasm was tempered by concerns that may affect their willingness to learn and utilise AI smart assistants. These revolved around how user friendly the systems (e.g., the interface) would be, how easy they would be to use from a functional point of view (e.g., minimal user input), and how well the systems would perform. Respondent 2 highlighted the importance of user friendliness. He mentioned that it would be advantageous if the AI assistants could engage in conversational interactions, similar to ChatGPT. Participants generally expressed that intuitive and straightforward interfaces could drive adoption and consistent use. In particular, the participants expressed a desire for uncomplicated experiences, highlighting specific barriers such as the need to remember multiple passwords as potential hindrances to adoption. Respondents 5 and 8 further stressed the need for user friendly and easy-to-use systems, particularly for the older generation, who were deemed to be generally less tech-savvy.

Overall, the participants expressed willingness to utilise AI assistants in their *fiqh* ruling work because they recognise the benefits and predominantly view adoption as part of their ongoing education. User friendly interfaces are considered essential to successful adoption so that the tools can excel at improving efficiency. Concise and easily comprehensible outputs are also preferred. Potential challenges may occur for less IT-literate users, and therefore, training is also important.

Social Influence

The analysis of the social influence construct revealed more varied points of view. While some acknowledged the potential influence of their colleagues' usage on their own adoption decisions, others indicated a more independent stance, suggesting that they would use the technology if they found it beneficial, regardless of other SC members' usage.

Respondent 8 indicated that social influence could indeed be a contributing factor to the adoption of AI smart assistants. He mentioned that observing other members utilising AI tools to expedite their decision-making processes could sway his decision to adopt the same technology. In contrast, Respondent 3 was clear about his decision to make use of AI technology. He stated, 'as long as it can help me, I'm using it regardless. I don't care whether they use it or not'. However, he added, that he would also ask the other scholars that refused to use AI tools and advise them to use the tools as it could help them. Respondent 2 thought it was very important for him to use it as it would help him make better decisions.

Concerning their views over whether it is important for other SC members to use AI assistants, most participants agreed on the significance of recommending the use of AI assistants to other SC members. They emphasised the importance of having a consistent level of knowledge among the members, which could be achieved through the adoption of AI technology. Participants believed that recommending the use of AI smart assistants was crucial for improving decision-making processes within the group, which ultimately would lead to better discussions and deliberations, because the collective use of these tools could improve the

efficiency and quality of the decision-making process. This was seen by most as bringing a collective benefit to the meetings, that goes beyond that of the enhanced performance of each individual SC member.

To convince SC members of Islamic banks to use AI smart assistants for *fiqh* ruling work, several factors were identified. These include the need to:

1. demonstrate a track record and provide proof of the benefits.
2. demonstrate the quality of the outputs.
3. convince traditional scholars about the value of AI.
4. leverage the influence of respected scholars.
5. tap into the viral aspect of technology adoption.
6. effectively present the features and usability of AI smart assistants.
7. allow for gradual implementation over time.
8. provide necessary training (particularly for older SC members).
9. strike a balance between traditional methods and AI technology.
10. develop appropriate regulations.
11. ensure the qualifications of users, i.e., possessing a strong foundation of knowledge in *fiqh* principles.

Additional Question 1

Whether the delivery of AI smart assistants for the fiqh ruling process should be through commercial initiatives, or if there is a need for a national effort to standardise such tools?

The idea of having a national initiative for the knowledge base for AI smart assistants was well received. The participants recognised the benefits of a centralised approach to improve the Sharīʿah resolution process. However, they also acknowledged the potential challenges which include issues related to proprietary knowledge and the need for stakeholder engagement. Participants highlighted the importance of regulation, transparency, collaboration, diverse stakeholder participation, consent, and the involvement of multiple stakeholders for any initiative. A strategic and graduated approach that initially uses available and uncomplicated resources is advised for demonstrating feasibility and value.

Additional Question 2

To what extent AI smart assistants could help in fiqh rulings, specifically in the understanding of reality (wāqiʿ), sources (nuṣūṣ), objectives (maqāṣid) and consequences (maʾālāt)?

In general, the participants expressed a belief that AI can augment and enhance the decision-making process; however, they advised that it is crucial to maintain the human touch in these critical decisions. AI is a tool that can provide data and predictive analysis and assist in the formulation of decisions; however, it should not replace human judgement, which is indispensable in the complex and nuanced *fiqh* ruling process.

On the overall capabilities of AI in understanding the above-mentioned four concepts, Respondent 9 shared his views as follows:

> Among the four, based on the ranking, I believe that the use of AI in the case of *fahm al-nuṣūṣ* (understanding of sources) is the most doable. This is because *nuṣūṣ* is about data, resolutions, fatwa, etc. Past scholars have already established the discipline of *uṣūl al-*

> *fiqh*. So, it is possible to train AI to follow the rules in the discipline. That's why I see this is really doable. It is objective and a very structured discipline. The use of AI in the case of *fahm al-maqāṣid* (understanding of objectives) is slightly less. It is possible but the more subjective the issue is, the less AI will be reliable. It can still help. Next, in the case of *wāqiʿ* and *maʾālāt*, the same situation prevails. It may be possible for AI to provide clues only. Actually, only humans can fully understand the current reality.

Additional Question 3

To what extent could AI systems perform ijtihād (independent reasoning to decide on fiqh rulings)?

The unanimous sentiment expressed by all participants was that AI is not expected to do *ijtihād*, primarily due to the inherent complexities involved in the process and the unique human capabilities required for it. The overall consensus was of cautious optimism about the potential for AI to assist in the *ijtihād* process—but with a strong emphasis on the irreplaceable role of human scholars. The ability of AI to make value judgements, comprehend context, and understand the nuances of the current reality (*wāqiʿ*) were identified as the significant challenges and limitations. Participants did, however, also acknowledge the capabilities of AI for quickly accessing and presenting relevant sources.

Additional Question 4

What could be the impacts of the utilisation of AI smart assistants on the Islamic banking industry?

The participants unanimously agreed that these digital tools have the potential to make a significant difference in the *fiqh* ruling process. They believed that the efficiency, accuracy and effectiveness of Sharīʿah rulings could be enhanced and that this would lead to a positive, industry-wide impact. They also highlighted the importance of collaborative and collective contributions to the body of knowledge for Sharīʿah rulings. Respondent 3 stated, 'I will emphasise on the collaborative and collective process to contribute to the body of knowledge. The more knowledge you have, the more precise the ruling.' Efforts to put together a comprehensive body of knowledge from which AI could derive responses to user queries would greatly benefit the industry. They acknowledged the significant impact of developing a knowledge system or knowledge ontology.

DISCUSSION

Based on the SC members' responses to the AI technology literacy-related questions, the participants generally appear to have a broad understanding, acceptance of and enthusiasm for AI technologies. They also acknowledge the significant role of AI in various fields including Sharīʿah. There are some gaps in specific AI areas which require continued education and exposure, particularly in terms of practical applications in specialised fields.

The SC members who participated in this study recognised the potential benefits of AI technologies in the *fiqh* ruling process of Islamic banking products and services, and they were optimistic about the capability of AI to contribute significantly to the efficiency and speed of the

ruling process. They expressed the belief that AI tools could provide comprehensive responses, complete with relevant sources, and thus contribute to a more thorough, holistic perspective during the decision-making process. They also hoped that AI tools could help with the simulation of outcomes that would result from their decisions. They did, however, express concerns regarding the reliability and accuracy of AI responses, considering the current perceived limitations of AI capabilities.

On the level of effort required, the participants were willing to learn and adopt AI smart assistants to assist with their work, provided that it does not take too much of their time. Therefore, it is important for the AI systems to be intuitive, user friendly, and easy-to-use. The participants expressed a preference for AI smart assistants to provide responses that are adjustable to their needs. They would also appreciate value-added features, such as contextual recommendations, concise and graphical outputs, as well as the ability to summarise complex information into simple language.

Almost all the participants indicated their willingness to adopt AI smart assistants, regardless of their peers' adoption or attitude toward adoption. They deemed the utility and potential benefits of the technology as important. At the same time, participants believed that collective adoption among the SC members could help to bring everyone to the same level in their discussions. They believed that other SC members would willingly use AI smart assistants if the evidence of the benefits of using AI smart assistants could be demonstrated to them. Despite this, they did acknowledge that some SC members, particularly some older ones, may have some difficulty in adopting new technologies and would thus require additional assistance and guidance.

Other pertinent points gathered from the responses to the additional questions during the interviews included:

1. The participants recognised the benefits of a centralised national approach but acknowledged the potential challenges related to proprietary knowledge. They proposed a strategic, gradual approach, with consent from the knowledge owners, starting with readily available and uncomplicated resources to demonstrate the feasibility and value.
2. The participants believed AI could help gather, sort, and analyse data to generate insights supporting more informed decision-making. They also recognised the potential for AI systems to understand patterns and behaviours on both local and global scales. The participants envisioned that AI smart assistants could facilitate more proactive, data-driven Sharīʿah decision making.
3. The participants highlighted the need to strike a balance between sharing Sharīʿah rulings with a broader audience and maintaining certain aspects as private or proprietary knowledge, considering the efforts and investments made by individual institutions.
4. The participants unanimously agreed that efforts to come up with digital tools have the potential to make a significant impact on the *fiqh* ruling process. They believed that the efficiency, accuracy and effectiveness of Sharīʿah rulings could be enhanced, leading to positive industry-wide benefits. However, they expressed the need for collaborative and collective contributions to the body of knowledge in Sharīʿah rulings.

5. There was consensus that AI could only *assist* in the *ijtihād* process. AI could help a human *mujtahid* to be more efficient in the process, but *actual ijtihād* can only be performed by a human Sharīʿah scholar.

The SC members who participated in this study have provided valuable input for any initiative to develop AI smart assistants for the *fiqh* ruling process of Islamic banking. However, it is important to have a national level strategy in developing AI smart assistants for *fiqh* rulings that can benefit the overall Islamic finance industry. This approach addresses the preferences highlighted by the SC members for a combination of commercial and national initiatives, with intervention from regulatory authorities to facilitate the process as well as provide oversight of the quality of the AI smart assistant.

Several Islamic banks (ideally all Islamic banks in the country) could collaborate to develop a centralised knowledge base and implement AI smart assistants as a collective effort to harness AI technology for improving the *fiqh* ruling process throughout the industry. This could be facilitated by either BNM or the Association of Islamic Banking and Financial Institutions Malaysia. A special purpose vehicle (SPV) company could be formed, with the participating Islamic banks as the shareholders, in order to undertake the implementation and later to operate the AI smart assistant. The SPV company could appoint a technology vendor to help with the technical aspects of the AI smart assistant.

To make this model economically viable, the SPV company needs to be run as a proper commercial institution. The participating Islamic banks would be the shareholders who inject capital and who oversee the effective running of the SPV company. Once the AI smart assistant has been implemented and is operational, the SPV company would need to charge for the usage of the AI smart assistant on a subscription basis, even if the users are from the shareholder institutions. To increase revenue sources, the subscription could be opened up to other parties who are interested in leveraging the capabilities of the AI smart assistant.

This business model is quite similar to Payment Network Malaysia (PayNet), where the shareholders are financial institutions in Malaysia; however, the platform is widely used as a payment network infrastructure (PayNet, 2023). PayNet collects fees from transactions such as money transfers and payments that make use of its network. This collective implementation approach would elevate the *fiqh* ruling process to the next level. The country's entire Islamic banking industry would be able to benefit from the innovation.

CONCLUSION

This study indicates that the SC members who participated in the focus group interview are receptive towards the utilisation of AI in the *fiqh* ruling process for Islamic banking products and services. They believe that collective adoption among SC members will not only help make the process more efficient but may also result in better quality decisions. There are still numerous concerns and expectations which need to be addressed before the full potential can be harnessed. Nevertheless, there is a highly important message endorsed by the SC members, notably that AI technology is not a Muslim and it lacks human subjective qualities (judgement, intuition and emotional understanding) which are all essential in the *ijtihād* process. Therefore, no matter how

sophisticated AI algorithms are, AI assistants would remain a tool to assist human *mujtahids* in their *fiqh* ruling processes.

Collaborative efforts between the public and private sectors may help contribute to the successful promotion and utilisation of AI smart assistants in the *fiqh* ruling process. The creation of a national initiative, with intervention from regulatory authorities, is generally supported, in order to regulate and facilitate the development of a comprehensive body of knowledge, for the effective functioning of AI smart assistants.

For the Islamic banking industry in Malaysia to benefit from a more systematic and centralised knowledge base that could enhance AI smart assistants' output, a national level industry-owned knowledge base is recommended. Several Islamic banks could collaborate as a consortium to form an SPV company to develop and continuously update the knowledge base. With a centralised knowledge base in place, this SPV company could develop an industry-owned AI smart assistant for the *fiqh* ruling process of Islamic banking. Once the AI system development is completed, the SPV company can operate the system and provide software as a service (SAAS) to Islamic banks. The fees collected could be used to maintain and continuously improve the system.

To extend this research, it is suggested that a study be conducted that targets key influential stakeholders who have the potential to be involved in the creation of a shared knowledge base and industry-owned AI smart assistant for *fiqh* rulings in Islamic banking. A detailed study exploring the willingness of commercial partners, academics and other parties, as well as harnessing the insights of the end users (i.e., SC members), would provide vital insight that could transform the suggestions made in this research into something practicable.

REFERENCES

Abdul Rahman, Z. (2023), 'Dr. Zaharuddin A. Rahman's Post', *LinkedIn*, available at: https://mm.linkedin.com/posts/dr-zaharuddin-a-rahman-05a0195_i-have-used-chatgpt-for-about-a-month-for-activity-7028207195519410176-wAuX (accessed 5 May 2023).

Ahmad, A. (2023), 'ChatGPT tidak sesuai dijadikan rujukan isu hukum agama', *Utusan Malaysia*, available at: https://www.utusan.com.my/terkini/2023/02/chatgpt-tidak-sesuai-dijadikan-rujukan-isu-hukum-agama/ (accessed 5 May 2023).

Al-Homsi, M. (2017), 'Technology, innovation and artificial intelligence for the growth of Islamic finance', available at: https://www.comcec.org/finance/9th-meeting-of-the-comcec-financial-cooperation-working-group-presentations/ (accessed 5 May 2023).

Bryman, A. (2011), *Social Research Methods*, Oxford University Press, New York, NY.

Chan, C., Chow, C., Wong, J., Dimakis, N., Nayler, D., Bermudes, J., Raman, J., Lam, R. & Baker, M. (2019), 'Artificial intelligence applications in financial services: asset management, banking and insurance', Technical Paper, Marsh & McLennan Companies. New York, USA.

Corea, F. (2019), *Applied Artificial Intelligence: Where AI Can Be Used in Business*, Springer International, New York, NY.

Deloitte (2019), *Global Artificial Intelligence Industry Whitepaper*, Deloitte Research, China.

Fazmi, F. (2019), 'Role of robo-advisors in Islamic financial institutions', available at: https://journal.wahedinvest.com/role-of-robo-advisors-in-islamic-financial-institutions (accessed 5 May 2023).

Illias, S. (2021), 'Economic outlook & lookout: silver linings amid pandemic clouds…?', (Slide), Maybank Kim Eng, Kuala Lumpur, Malaysia,

Khan, N. (2019), 'Artificial intelligence application in Islamic finance industry', *Global Islamic Finance Report 2019*, pp. 122–133.

Krueger, R.A. (2015), *Focus Groups: A Practical Guide for Applied Research*, Sage Publications, California, CA.

Mat Rahim, S.R., Mohamad, Z.Z., Abu Bakar, J., Mohsin, F.H. & Md, N. (2018), 'Artificial intelligence, smart contract and Islamic finance', *Asian Social Science*, Vol. 14 No. 2, pp. 145–154.

Obaidullah, M. (2021), 'Promise of IRSHAD: the intelligent Robo Sharīʿah Advisor', available at: https://conference.ibfnet.group/2021/03/03/promise-of-irshad-the-intelligent-robo-shariah-advisor/ (accessed 5 May 2023).

Omar, A. (2021), 'Artificial intelligence in Islamic banks: a looking forward vision', available at: https://www.youtube.com/watch?v=4Hj8lE6715s (accessed 5 May 2023).

PayNet (2023), 'Who We Are', available at: https://paynet.my/about-paynet.html (accessed 5 May 2023).

Sa'ad, A.A., Alhabshi, S.M., Mohd Noor, A. & Hasan, R. (2020), 'Robo-advisory for Islamic financial institutions: Sharīʿah and regulatory issues', *European Journal of Islamic Finance*, First Special Issue.

Salim, K., Abojeib, M. & Abdul Hamid, B. (2020), *Islamic Fintech in Malaysia: Reality & Outlook*, The International Centre for Education in Islamic Finance (INCEIF), Kuala Lumpur, Malaysia.

Sekaran, U. & Bougie, R. (2016), *Research Methods for Business: A Skill-Building Approach*, John Wiley & Sons, Chichester.

Sultan, Y. (2017), 'Will Sharīʿah robot-advisors replace the human Sharīʿah advisors?', *LinkedIn*, available at: https://www.linkedin.com/pulse/shariah-robo-advisors-replace-human-advisors-yousuf-sultan (accessed 5 May 2023).

Venkatesh, V., Morris, M.G., Davis, G.B. & Davis, F.D. (2003), 'User acceptance of information technology: toward a unified view', *MIS Quarterly*, Vol. 27 No. 3, pp. 425–478.

Zhang, D., Mishra, S., Brynjolfsson, E., Etchemendy, J., Ganguli, D., Grosz, B., Lyons, T., Manyika, J., Niebles, J.C., Sellitto, M., Shoham, Y., Clark, J. & Perrault, R. (2021), 'The AI Index 2021 Annual Report', AI Index Steering Committee, Human-Centered AI Institute, Stanford University, Stanford, CA.

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DECLARATION

Credit Authorship Contribution Statement

- Othman Abdullah: Conceptualisation, Methodology, Interviews, Analysis, Write-up, Review and editing
- Amir Shaharuddin: Supervision, Review and editing, Approval of final draft
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Declaration of Competing Interest

The authors declare that they have no known competing financial interest or personal relationships that could have influenced the research work.

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Ethical Statement

The authors declare that they understand the Ethical Guidelines and have adhered to all the statements regarding ethics in publishing. They also confirm that this paper is original and has not been published in any other journal nor is under consideration by another publication. The authors point out that this paper draws from an unpublished PhD thesis.

Data Availability

None

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Appendix

None