

## A Preliminary Survey of Muslim Experts' Views on Artificial Intelligence Tinjauan Awal Pandangan Pakar Muslim tentang Kecerdasan Buatan

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### ABSTRACT

*There should be a great deal of concern over the extensive and still expanding application of artificial intelligence (AI) technology in Muslim life today. From the use of smartphones, drones, robots, autonomous vehicles and weapons technologies, the transformation caused by AI is significantly positive but much is still up for debate and contemplation. In fact, some Muslims may merely consider this rapid growth of AI as part of science fiction which is being popularised in movies. This incognizant view is dangerous because Muslims may not be alert to unforeseen AI impact especially when it crosses over Islamic ethical or legal limits. These interpretations should provide an appropriate context for Muslim experts today to rethink their views with regards to the transformative impact of AI on Muslim society. This preliminary study therefore, is conducted to gather Muslim experts' professional views on AI related issues. Using a quantitative methodology approach with a cross-sectional study design, 37 experts responded to the personal, online questionnaire emailed to them. The findings generally indicate the respondents' insensitivity towards the greater extent of AI impact on Muslim consumers at large. However, most of the respondents were agreeable on the urgent need for regulations so that AI is geared and harvested for its benefits in enhancing Muslim life. This signifies the importance of thorough and strict regulations for AI research and technology to adhere to Islamic principles. A specific framework development underpinned by Maqasid al-Shari'ah is recommended to address the various contemporary issues of AI impact.*

*Keywords: Artificial Intelligence; Muslim; expert; Maqasid al-Shari'ah*

### ABSTRAK

*Perhatian yang serius harus diberikan terhadap penggunaan meluas teknologi kecerdasan buatan atau artificial intelligence (AI) dalam kehidupan Muslim hari ini. Daripada penggunaan telefon pintar, dron, kenderaan tanpa pemandu, robot hinggalah pembuatan senjata automasi, teknologi AI telah menghasilkan perubahan positif yang ketara namun masih banyak perkara yang perlu diperdebat dan diperhalusi. Malah, terdapat Muslim yang mungkin menganggap perkembangan pesat AI ini sekadar sebahagian daripada fiksiyen sains yang dipopularkan dalam wayang. Pandangan acuh tak acuh ini mampu mengundang bahaya kerana umat Islam mungkin tidak akan menyedari kesan AI apabila ia melangkai had etika atau undang-undang Islam. Tafsiran sebegini seharusnya membuka ruang yang sesuai untuk pakar-pakar Islam Muslim hari ini untuk memperhalusi semula pandangan mereka tentang kesan transformasi AI terhadap masyarakat Islam. Justeru, kajian awal ini bertujuan untuk mendapatkan pandangan profesional daripada pakar-pakar bidang pengajian Islam tentang isu yang berkaitan dengan teknologi AI. Menggunakan pendekatan metodologi kuantitatif dengan reka bentuk kajian keratan rentas, dapatan kajian dikumpul daripada 37 pakar yang telah memberikan pandangan mereka melalui soal selidik yang diemel secara peribadi. Secara am, dapatan kajian menunjukkan ketidakpekaan responden terhadap kemampuan AI yang mampu mendatangkan kesan terhadap pengguna Muslim secara umum. Walau bagaimanapun, sebahagian besar daripada responden setuju dengan keperluan satu panduan agar AI dimanfaatkan untuk meningkatkan tahap kehidupan umat Islam. Keperluan ini menekankan kepada satu panduan menyeluruh yang menepati undang-undang Islam dalam mengendalikan penyelidikan dan penggunaan teknologi AI. Oleh itu, kajian ini menyarankan pembangunan satu kerangka khusus yang berlandaskan Maqasid Syariah dalam menangani pelbagai isu kontemporari berkaitan kesan teknologi AI.*

*Kata kunci: Kecerdasan Buatan; Muslim; Pakar; Maqasid Syariah*

## INTRODUCTION

There is no doubt that artificial intelligence (AI) development has significantly changed the world, and Muslims' are no exception. Formulated in the research labs of the Silicon Valley, AI is deeply rooted in secular ideals of progress. Still, as AI goes global, advocates of different ethical traditions are weighing in, often calling for greater regulation of the technology. Muslim AI experts in particular, have reignited a long-standing debate about the relationship between modern liberalism and Islam. Must algorithms be allowed to play God? The response to this issue is crucial because there are numerous advantages and benefits of AI. One remarkable benefit of AI is in preventing cancer (Hassoon et al. 2018). AI also plays a crucial role in investing and trading stocks in processes (Navale et al. 2016). In the aviation industry, AI technology assists pilots in providing information for aircraft position, air pressure and weather conditions (Kashyap 2019). To add, AI technology has enabled autonomous vehicles (Hengstler et al. 2016), and robot tutors for schools (Bailey 2019; Gordon et al. 2016). The existence of AI obviously has made machines smarter in performing assigned tasks.

Nevertheless, as with most changes, AI comes with advantages as well as disadvantages. From the use of smartphones, drones, driverless cars, robots to the manufacture of automation weapons, the transformation caused by AI brings along some pertinent issues. Unfortunately, Muslims like many other theist people in the world may consider this rapid growth of AI merely as parts of science fiction which are being made popularised in movies. This incognizant view is dangerous because in achieving desired goals, Muslims may unforeseen AI technology impact especially when it crosses over Islamic ethical or legal boundaries. Consequently, there should be a great deal of concern over this type of thinking due to expansive use of AI technology in Muslims' life today.

However, there is a dearth of empirical evidence and worldwide discussion about AI among the two billion people who profess this sacred belief. Yet, the necessity has been made clear in the Islamic legal doctrine, Maqasid al-Shari'ah. The Shari'ah comprehensively tackles every aspect of human activity in enhancing the public good (maslaha)

and avoiding actions that are harmful to individuals and society to ensure well-being and harmony (Al-Rahman, 1982; Rasool, Mohd Yusof & Ali 2020). These arguments have apparently set a purposeful context for Muslim experts today to rethink their views with regards to the transformative impacts of AI on Muslim society. Therefore, this study aims to find out Muslim experts' views on AI technology and its adaptation in Muslim society today. Specifically, it attempts to investigate the experts' viewpoints on five aspects which are its awareness, potentiality, usability, dissemination and the need for Islamic regulations on the use of AI technology for the ummah.

## LITERATURE REVIEW

### BENEFITS OF ARTIFICIAL INTELLIGENCE ON SOCIETY

Zora and da Vinci robots are two instances of AI robotic assisted systems that highlight the potential benefits of AI. Zora is the first commercialized humanoid care robot which is equipped with seven senses to interact naturally with humans. A study by Van den Heuvel, Lexis and de Witte (2017) found that Zora robots can help children with disabilities during therapy to boost their motivation level. The robots can also provide positive stimuli to elderly patients who are in need for continuous health care monitoring and interaction (Melkas 2019). da Vinci robots are also widely deployed in the medical field. The robots have been successful in supervising many surgical cases that have saved lives (Ozben et al. 2019; Morelli et al. 2018; Ying et al. 2019; Pötscher, Bittermann & Längle 2018). Apart from easing doctors' tasks, da Vinci robots are more capable than humans in detecting complications in human internal organs and minimizing blood flow. da Vinci maintenance charges however, are immense (Sandhu 2019), and has mobile restrictions (Morelli et al. 2018). Regardless, these AI equipped robots have already been accepted by some communities to assist in their daily tasks.

Furthermore, AI plays a big role in business. According to Winfield and Jirotko (2018), AI can reduce various costs of spending, save time and minimize manpower. For example, the most popular

AI's used in businesses are chatbots, smart logistics and backup engines. First, the use of chat boxes aims to deal with inquiries from customers, answer voice commands for simple tasks and provide product recommendations through interactions using natural language (Vegeśna, Jain & Porwal 2018). Second, smart logistics is used for logistics compilation and helps automate warehouse operations (Zhang 2019). Third, recommendation engines are used to set sales prices, analyze customer's behavior and predict customer inclinations in making purchases (Kim et al. 2019). Amazon and Alibaba are among the earliest companies to use AI services in their business.

#### CHALLENGES OF ARTIFICIAL INTELLIGENCE ON SOCIETY

On the other hand, AI brings about substantial challenges to society. Among the negative impacts of AI is related to the workforce. Increased use of technology has resulted in many jobs being replaced with machines and robots (Au-Yong-Oliveira et al. 2019). A survey conducted by Granulo, Fuchs and Puntoni (2019) also found that most companies are more likely to choose to use machines than manpower. This has raised the issue of economic instability at the global level as workers lose their source of income hence, are feared unable to cope with daily life.

Moreover, the use of social media such as Facebook, Twitter, Whatsapp and Instagram contributes to intrusion of personal data cases. These are the extent of AI technology that can jeopardise the security of users' personal data. For example, there were misused consumer data cases during President Trump's election in the United States (Gonzalez 2017) and several other countries including Argentina, Nigeria, Kenya, India, and the Czech Republic (Posetti & Matthews 2018). In Malaysia, the results of the 13th General Election (GE13) were also alleged to have been interfered by third parties using voters' personal data (Welsh 2018). These instances of personal data manipulations using AI technology, can falsely form negative sentiments and inclinations among voters towards certain political groups.

The misconduct of AI technology has also threatened world security. For instance, AI technology through facial recognition systems were recently used for racial discrimination purposes

in detecting, tracking and controlling the Uighur ethnic group, which is a large Muslims community in China (Mozur 2019; Byler 2019). The New York Times classifies the issue as an "existential threat to democracy" (Mozur 2019). A study by Mehta, Siddiqui and Javaid (2019) also confirms that AI technology is now not only used to detect a person's face, it is targeted to 'read' a person's emotions and behaviour. Hence, it is not surprising if this type of technology is exploited to oppress certain groups of people based on their skin colour, race, ethnicity, gender or religion for that matter.

Furthermore, the fact that AI technology relies solely on algorithms, instruction lists and shortcuts to instruct computers on what to do, it is most unlikely for the technology to produce unfair or biased output (Silva & Kenney 2018). Data scientists have also confirmed that computer programs, networks, machine learning algorithms and AI learn how to act based on the input. Yet, it is still not perfect as there were cases where it fails to function properly. For example, fatal accidents involving Tesla self-software were partly due to algorithms that could not distinguish between the white tractor side and the bright sky behind it (Mackie, 2018). Similarly, the algorithms used in Flickr Apps and Google Photos Apps, which have been falsely labelled as racist images (Grush 2015; Hern 2015), as well as the automatic translation tools which have features of gender bias (Prates, Avelar & Lamb 2019). These prove the weakness of relying on algorithms for AI to make decisions and are feared to affect life, especially when it involves matters relating to ethics and laws.

Even more worrisome is the capabilities of AI technology at the AGI and ASI levels, which can surpass human capabilities. At this stage, the AI system no longer depends on humans for algorithmic codes, it can even generate its own algorithm. This phenomenon is causing concern among AI developers around the world including Elon Musk, Bill Gates and Steve Wozniak (Bundy 2017; Helbing 2019; Walsh 2016). The concern is on the drastic development of AGI and ASI technology which is capable to supersede human intelligence (Müller & Bostrom 2016). In fact, Stephen Hawking also issues similar concerns where he predicted the risk of humanity when superhuman AI or ASI technology was created and out of human control (Vyas et al. 2018).

## ARTIFICIAL INTELLIGENCE POLICIES AND ISLAMIC REGULATIONS

Due to the wide-ranging impacts, both benefits and risks of AI, several countries have initiated cooperation between policy makers, industry and business leaders to be equally involved in developing various policies to regulate the use of AI technology and systems. Developed countries such as Canada, China, Japan, the United Kingdom, the United States, and the European Union have begun to launch strategies to stimulate the development and commercialization of AI to maintain economic competitiveness and for a more comprehensive form of governance (Erdélyi & Goldsmith 2018; New 2017; Viola 2017).

Another strategy is through cooperation and interdisciplinary integration in addressing the rapid evolution impact of AI technology. For that, AI developers and policy makers should consider the various perspectives and disciplines, including from the Islamic perspective. History has proven that Islamic civilization once made an invaluable contribution to world civilization (Al-Hassani 2017). The birth of many great scholars in various fields such as philosophy, science, engineering, politics, literature, society, religion, and medicine shows that Islam has a way of solving various problems in the past. Even the development of knowledge in the Islamic world has been recognized as a catalyst to the Renaissance in Europe which eventually gave birth to a glorious civilization there (Ahmad, Rabee & Zulkifle 2017). The integration is also expected to re-establish the collaboration between scientists and Muslim experts who have long been separated in two different worlds.

Indeed, the aim to preserve and safeguard users' rights and safety coincides with the concept of care in the five principles of Maqasid Syariah, namely religious care (*hifz al-adin*), life care (*hifz al-nafs*), mental care (*hifz al-'aql*), hereditary care (*hifz-nasl*), and property protection (*hifz al-mal*) (As-Syatibi, n.d.). The five principles are set to preserve and protect human interests and rights (Auda 2014; Ibrahim, Abdul Rahman & Mohd Saifuddeen 2018). For instance, for Muslim consumers, the use of Shari'ah-compliant signs like the halal logo guarantees the halal status of a product. The use of the logo has helped to boost confidence among Muslim consumers in relying on products that has been approved by local Islamic authorities (Yahya & Mohamad Rasit 2019).

In another instance, as the use of AI involves a variety of data including personal data, various parties globally including the European Union, United Nation and UNESCO began to pay attention to the use of personal data. For example, the European Union has begun to introduce the General Data Protection Regulation (GDPR) to protect users' personal data (Casali & Vyas 2021). The importance of personal data protection is in line with Islamic teachings. Islam attaches great importance to the protection of personal data because it is included in the right to privacy (Hayat 2007; Nawi et al. 2021). This is evidenced in surah al-Hujurat verse 12 and surah an-Nur verse 27. Hence, the necessity to protect any forms of personal data such as structured, unstructured, geographic, time-series, event, network, and linked data (Nawi et al. 2020) is not only crucial, it is even in line with the teaching of Islam.

Evidently, the question of law related to AI should involve various sources of Islamic laws, and it mandates collective *ijtihad* (al-Qaradawi 1985). The two approaches are applicable in addressing the various AI related issues in line with the development of science and technology today. Nevertheless, before these two approaches can be adapted, the question remains – what are the Muslim experts' view on AI technology in terms of awareness, potentiality, usability, dissemination and regulations for Muslim users? Hence, this study is an attempt to unravel this central question of the study.

## METHODOLOGY

This study uses a quantitative methodology approach with a cross-sectional study design. A questionnaire adapted from Müller and Bostrom (2014) was developed and emailed to 100 Islamic studies experts of various fields (i.e. *sharia*, *fiqh*, *usuluddin*, history, civilization, faith, thought, philosophy, education, economics, management and law). The questionnaire consists of 25 items which are categorised into five sections namely a) awareness on AI issues; b) potentiality of AI; c) AI usability for Islamic purposes; d) dissemination about AI technology; and e) the need for regulations on the use of AI. Prior to responding to the questionnaire, the experts were requested to visit <https://sites.google.com/view/ai-manusia> to be familiarised with the various pros and cons of AI technology in human life. 37 completed responses were recorded by the researchers. The collected data frequencies

and percentages were then analysed using Statistical Package for the Social Sciences (SPSS) software. The aim was to find out the experts' specific view with regards to the five sections in the questionnaire and on AI technology and its adaptation in Muslim society in general.

FINDINGS

The data have been analysed and presented in accordance to the five sections of the questionnaire. Each section comprises a number of items which are numerically labelled based on the section namely awareness on AI issues (item A1 to A5); potentiality of AI (B1 to B5); usability of AI (C1 to

C4); dissemination of AI information (D1 to D5); and need for regulations on the use of AI (E1 to E6). The findings are illustrated in charts and tables to present the frequencies and percentages of the agreement, disagreement as well as uncertainties collected from the 37 Muslim experts who responded to the questionnaire.

AWARENESS ON ARTIFICIAL INTELLIGENCE ISSUES

Figure 1 illustrates the respondents' knowledge about AI (Item A1). Most of the respondents (76%) were unsure, 21% knew about it, and the least (3%) said 'no.'

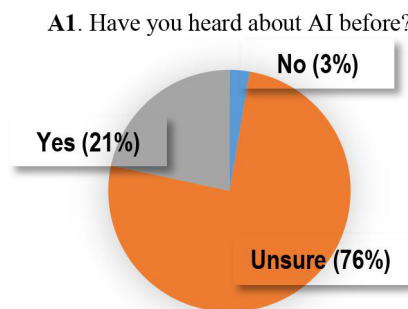


FIGURE 1. Respondents' Awareness About AI

Item A2 and A3 are on the respondents' views towards AI issues, and item A4 and A5 are on the actions required to address AI issues (Table 1). For the first two items (A2 and A3), 57% (21 respondents) and 49% (19 respondents) agreement, in contrast to 43% (16 respondents) and 51% (18 respondents) disagreement respectively. Items A4

and A5 on the other hand, had more agreements (35 and 29 respondents) on the compulsion to address the issues. Still, there were two respondents who disagreed on the need for AI regulations, and 22% (eight respondents) disagreed on the need for immediate attention.

TABLE 1. Respondent's Awareness on AI Issues

No.	Item	Agree		Disagree		Unsure	
		f	%	f	%	f	%
A2	The issue of AI is worrying.	21	57	6	143	0	0
A3	The use of AI is dangerous.	19	49	18	51	0	0
A4	AI issues need to be monitored.	35	95	2	5	0	0
A5	AI issues need to be addressed immediately.	29	78	8	22	0	0

POTENTIALITY OF ARTIFICIAL INTELLIGENCE FOR THE MUSLIMS

In Table 2, 35 out of 37 respondents acknowledged the potential of AI in improving quality of life for Muslims (item B1). In contrast to B2, there were a lesser number of agreements i.e. 51% (19 respondents); 49% (18 respondents) disagreed and

were unsure whether they would feel comfortable if AI was widely used in human life. Similarly, B3 which is confident in dealing with AI issues, had 26 respondents' agreement (70%), six disagreements (16%) and five uncertainties (14%) whether they could handle AI related issues. The agreement towards the positive use of AI development (B5) was also slightly reduced with nine respondents'

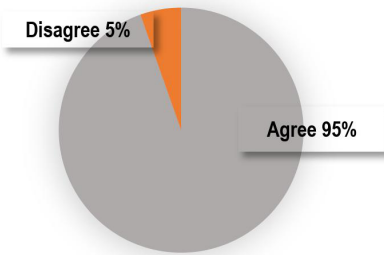
disagreement (24%). Interestingly for B4, there was a consensus on the need for Muslims to know

the pros and cons of using AI technology. Figure 2 depicts the responses for the section.

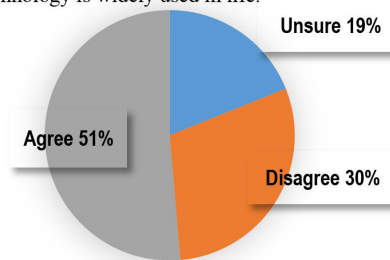
TABLE 2. The Potentiality of AI in for Muslims

No.	Item	Agree		Disagree		Unsure	
		f	%	f	%	f	%
B1	AI has the potential to improve the quality of Muslims' life.	35	95	2	5	0	0
B2	As a Muslim, I feel comfortable if AI technology is widely used in life.	19	51	11	30	7	19
B3	Though AI might be dangerous, I am confident Muslims can handle it.	26	70	6	16	5	14
B4	Muslims need to know the pros and cons of using AI technology.	37	100	0	0	0	0
B5	The development of AI technology will be more likely to be used for the benefits of the ummah.	28	76	9	24	0	0

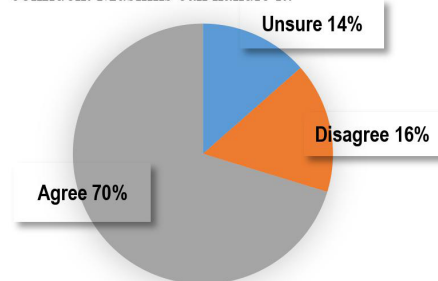
**B1.** AI has the potential to improve the quality of Muslims' life.



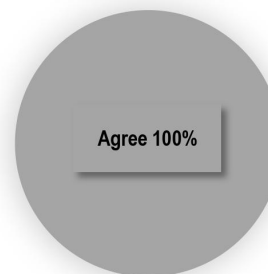
**B2.** As a Muslim, I feel comfortable if AI technology is widely used in life.



**B3.** Though AI might be dangerous, I am confident Muslims can handle it.



**B4.** Muslims need to know the pros and cons of using AI technology.



**B5.** The development of AI technology will be more likely to be used for the benefits of the ummah.

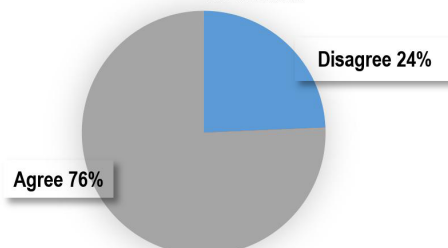


FIGURE 2. Pie Charts for Potential Use of AI Agreements

USABILITY OF ARTIFICIAL INTELLIGENCE TO SUPPORT ISLAMIC REGULATIONS

In general, each item in this section (C1 to C4) obtained majority of the agreements from the

respondents with regards to the usability of AI to support Islamic regulations (Table 3).

C1 scored the highest agreement, 97% (36 respondents) as compared to other items. This is followed by item C2 where 23 respondents (62%)

TABLE 3. Usability of AI to Support Islamic Regulations

No.	Item	Agree		Disagree		Unsure	
		f	%	f	%	f	%
C1	AI can be used to inform the mass about Islamic teachings.	36	97	1	3	0	0
C2	AI can be utilised to tackle doubts in the religion.	23	62	12	33	2	5
C3	AI can be put to use in providing views related to halal and haram matters.	20	54	14	38	3	8
C4	AI can be useful in assessing the five decisions of Shari'ah ruling (i.e. mandatory, recommended, permissible, reprehensible, forbidden).	19	51	13	35	5	14

agreed with the use of AI in responding to doubts in religion; while, 14 respondents (38%) did not agree and unsure of AI usability in tackling religious queries. In contrast, C3 and C4 received lesser agreements among the respondents. Out of 37, 20 respondents (54%) agreed whilst, the balance of 17 respondents (46%) disagreed and were unsure of

AI usability in providing views related to halal and haram. C4 had the least agreements for the section i.e. 51% (19 respondents) which gave almost an equal amount of disagreement, 35% (13) and unsure, 14% (five) respondents. Figure 3 illustrates the respondents' feedbacks on the usability of AI to support the regulations.

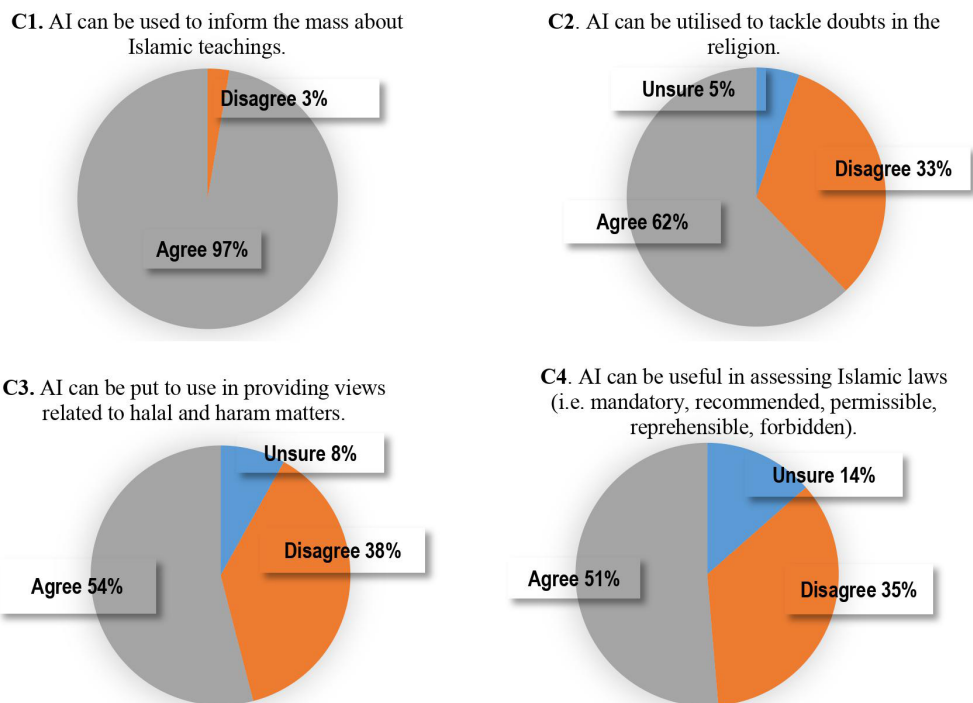


FIGURE 3. Pie Charts on AI Usability for Islamic Purposes Responses

DISSEMINATION OF AI INFORMATION FOR ISLAMIC PURPOSES

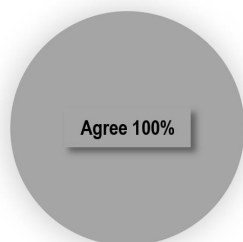
Notably, all items in this section received most of the agreements from the respondents. D1, D3 and D4 scored 100% agreements; as D2 and D5 obtained 94% and 89% respectively. A total of two and four disagreements and uncertainties identified for each

D2 and D5 items. Remarkably, item D5 recorded two respondents for each disagreement (5%) and unsure responses (5%) on the inclusion of views from the various *mazhab* (sects) to discuss AI related laws. Figure 4 further elucidates the respondents' agreements on the dissemination of AI information to the mass.

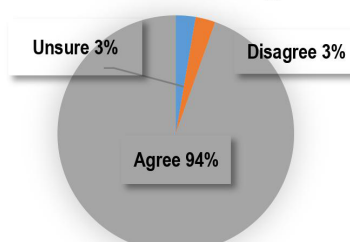
TABLE 4. Dissemination of AI Information for Islamic Purposes

No.	Item	Agree		Disagree		Unsure	
		<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
D1	Muslims need to be informed on the impacts and risks of using AI technology.	37	100	0	0	0	0
D2	Muslim users should be given guidelines on the use of AI technology.	35	94	1	3	1	3
D3	Islamic law-related discussions about AI need to be publicised in mass media.	37	100	0	0	0	0
D4	The discussion on AI-related Islamic laws should be included in the Islamic studies curriculum.	37	100	0	0	0	0
D5	The discussion of AI related laws should comprise views from all the <i>mazhab</i> (sects).	33	89	2	5	2	5

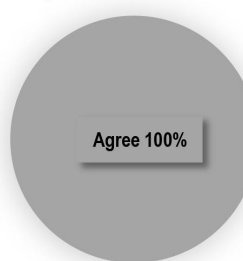
D1. Muslims need to be informed on the impacts and risks of using AI technology.



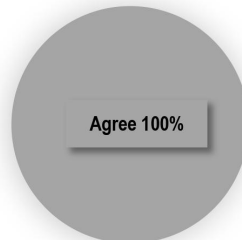
D2. Muslim users should be given guidelines on the use of AI technology.



D3. Islamic law-related discussions about AI need to be publicised in mass media.



D4. The discussion on AI-related Islamic laws should be included in the Islamic studies curriculum.



D5. The discussion of AI-related laws should comprise views from various *mazhab* (sects).

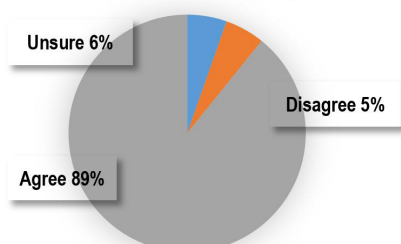


FIGURE 4. Pie Charts on Dissemination of AI Information to Muslims Responses



THE NEED FOR ISLAMIC REGULATIONS ON THE USE OF ARTIFICIAL INTELLIGENCE

Based on the results in Table 5, though only item E3 received a full agreement from the respondents, the other four items namely E1 (97%), E4 (94%), and E6 (97%) were no less agreeable. Each of the four items recorded one or two disagreements and uncertainties. The respondents provided their full support when it comes to the need for discussions

on legal matters, and impacts and risks of AI on Muslim societies. Also, the respondents were almost unanimous in matters concerning halal and haram laws (E5 and E6). Nevertheless, E2 scored the lowest with 23 respondents (62%). 12 (33%) and two (5%) respondents were sceptical about the issuance of Islamic guidelines to individuals and companies that are involved in the development of AI technology. The percentages are illustrated as in Figure 5.

TABLE 5. The Need for Regulations on the Use of AI Technology

No.	Item	Agree		Disagree		Unsure	
		f	%	f	%	f	%
E1	Islamic authorities need to conduct in-depth discussions on the impacts and risks of AI.	36	97	1	3	0	0
E2	Islamic authorities need to issue guidelines to individuals/ companies that are involved in developing AI technology.	23	62	12	33	2	5
E3	Religious bodies have to be involved to discuss legal issues on the use of AI for Muslim consumers.	37	100	0	0	0	0
E4	Muslim users should be given guidelines on how to use AI technologies.	35	94	3	1	3	1
E5	The laws related to halal and haram with regards to AI issues should be determined by consulting each <i>mazhab</i> .	33	89	2	5	2	6
E6	The judgement or determination of halal and haram laws in addressing AI issues must be collaboratively arbitrated by various bodies.	36	97	1	3	0	0

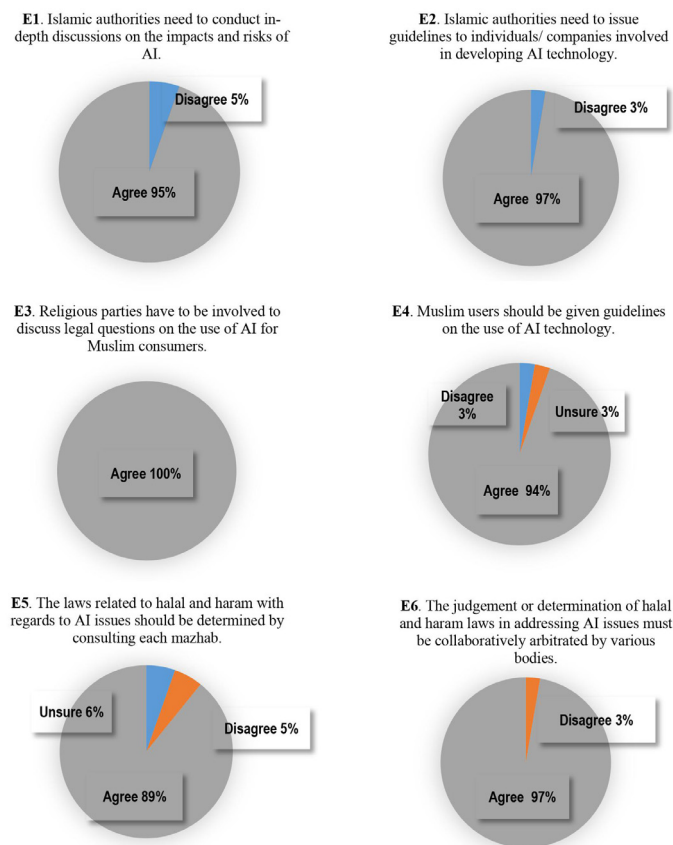


FIGURE 5. Pie Charts of Responses on the Need for Islamic Regulations in Using AI Technology

## DISCUSSION

The responses on the five aspects gathered from the 37 experts were varied. There was a general consensus from the experts in terms of the need to disseminate and communicate to the Muslim community about the impacts of AI. The respondents concede that the society must be informed and educated on the extent of AI impacts and risks via the various platforms of mass media. This action is intended to protect the community from any confusion or doubt of any product offering (Othaman 2010). Muslim consumers should be exposed to information about AI technology-based products so that they are aware of its benefits and risks. The experts also accord the inclusion of AI discussion in Islamic law courses and curricula as a channel or means to educate Muslims about Islamic laws and views on AI technology and systems. This is to foster awareness especially Muslim youths at education institution levels.

There is a consensus on the need for religious bodies to be involved to discuss legal issues on the use of AI for Muslim consumers. The consensus indicates the experts' concern in protecting Muslims' consumer rights and safety. Literature has proven that Muslim consumers prefer products that have approvals from local religious authorities. Apparently, the use of halal labels has become the determining factor in purchasing products especially food and drinks (Alam, Mohd & Hisham 2011; Hasim et al. 2021). In fact, a study by Teng and Jusoh (2017) found that the use of halal labels also influences non-Muslims in their purchasing decisions.

Moreover, there are almost unanimous votes on the usability of AI technology in providing information about Islamic teachings, the need for authorities to have in-depth discussions on impacts and risks of AI, and participations of various entities in determining halal and haram laws with regards to AI-related issues. This is concurred by al-Qaradawi (1985) on the approach of *ijtihād jama'i* (collective decision) which is applicable to Muslims' today when there have been yet sufficient knowledge, expertise and specialisation among Muslim scholars in the field like AI technology. As well, the expeditious developments in the world of science and technology today which are changing the landscapes of human life and society, have affected Muslims current practices hence, its related laws in terms of time, place, circumstances, intentions and culture (al-Qaradhawi 2004; al-Jawziyyah 1992; al-

Zarqa 1998). Changes to the laws are eventually, inevitable to ensure that the interests of Muslim communities are preserved, and not causing harmful effects to their well-being.

Furthermore, the majority of the experts were agreeable on the need for AI issues to be monitored via a specific guideline. The respondents concede that the society must be informed on the extent of AI impacts and risks via the various platforms of mass media. These findings are supported by al-Khadimi (2001) in which any act that risks of endangering safety or life is forbidden and illegal in Islam. However, the necessity to develop guidelines and ethics could not reach a consensual agreement because the impact and risk of AI technology compels further investigations. The experts' agreement concurs with the *sadd al-dhariah* approach which is often used in predicting any consequences that will occur if something is allowed (Alias et al. 2020; Ibrahim 2017). This can be seen from the responses given by most of the experts who disagreed and considered AI technology unsafe, hence, are doubtful on the extensive use of AI technology in life.

It was also found that though most of the experts agreed on the potentiality and usability of AI in improving quality of life, the experts do not feel comfortable if the use of the technology is left unchecked. Noticeably, the experts were less agreeable on the use of AI technology when it concerns halal and haram matters and Shari'ah rulings. This is plausibly due to limited studies connecting AI technology and Islamic fields hence, the inadequacy may cause confusion to Muslims to fully comprehend it (Nawi 2019). It is believed that assessing and making decisions are examples of high cognitive level thinking in the bloom taxonomy (Anderson 1999). Understandably, the expert agreed if the usability of AI focuses on low cognitive level tasks such as in disseminating information about Islamic teachings and beliefs to the public. However, it is important to note that a study by Parker and Jaeger (2016) revealed that AI technology today possesses a high cognitive level i.e. the ability to analyse input. Regardless, AI capabilities should not be treated like humans because of the differences and limitations in the way AI received and processed information.

## CONCLUSION AND RECOMMENDATION

Though much needs to be explored with regards to Islam and AI technology, this study found the

need for a specific guideline in regulating the use of AI-related products for Muslims, in particular. The experts' agreements on the five aspects (i.e. awareness, potentiality, usability, dissemination of information and regulations on the use of AI) indicate that a proper guideline can create awareness as well as educate Muslims so that AI technology is utilised in enhancing the public good and avoiding actions that are harmful to individuals and society to ensure well-being and harmony. In other words, the guideline that integrates Islamic principles is pertinent for Muslims to refer to when facing the various AI-related issues so that their rights and interests are safeguarded and kept in line with the teachings of Al-Quran and Sunnah. As well, with the exponential growth of Muslim population over the past few years (Pew Research Center 2017), Muslim consumers may soon have a strong influence on the demand landscape and become the largest target group, as users of AI technology merchandises. This adds up to the necessity of an Islamic guideline judging by AI current trends and its potential in impacting the future of virtually every industry and human being.

This study therefore, recommends a development of an Islamic ethical framework in regulating the use of AI product, especially for the Muslim community. The development of the framework is recommended to be grounded on Maqasid Shari'ah that serves to protect and preserve mankind's faith, life, intellect, progeny, and property. It is proposed that Maqasid al-shariah' be used as a checklist that can be utilized in tackling AI-related issues. It is also recommended that future studies are aimed at identifying the effects AI technology has on Muslims' belief or way of life, their daily practices or worships, morals or personality. Related investigations should delve deeper in finding out the impact and risks of AI in a specific field such as economics, education, aviation, etc. to find out the extent of AI technology utilisation or adaptation so that a more robust Islamic ethical framework can be developed.

Notably, this study is confined to various parameters such as time, expertise, ability and involvement of various parties. As such, many issues and challenges have not yet been explored under this small-scale, preliminary scope of the study. It is believed that there are more about AI that awaits to be discovered if a larger-scale, other dimensions or angles of studies are conducted. For that, Muslim experts and researchers from various fields are encouraged to take up the challenge, to broaden

or expand their Islamic knowledge, to connect or integrate with other disciplines or fields especially on AI technology for the benefits of global Muslim community.

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