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# Harmonizing Artificial Intelligence with Islamic Values: A Thoughtful Analysis of Religious, Social, and Economic Impacts of Technological Advancements

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## ABSTRACT

The research explored the integration of AI technologies with Islamic principles and their implications for religious, social, and economic structures in Muslim-majority countries. It used qualitative design, semi-structured interviews, and case studies to analyze digitization of the Holy Qur'an and Hadith, and AI in banking compliance with Shariah laws, focusing on lexical-semantic, syntactical, grammatical, and pragmatic issues. A few of the such AI-based Qur'an tools include KSU Qur'an (مجمع الملك فهد لطباعة المصحف الشريف), Islam web, Qur'anic Arabic Corpus, Almonagib alQur'any (المنقب القرآني), Tanzil (Tanzil Documents), The Qur'an (Al-Qur'an (القرآن) - Online Qur'an Project - Translation and Tafsir) and the Noble Qur'an (The Noble Qur'an – القرآن الكريم). Islamic Fintech, which adheres to Shariah principles, is embracing innovation to streamline transactions and comply with the Holy Qur'an. AI virtual assistants like 'Aisyah' are being adopted by Islamic banks to streamline transactions and eliminate risks like leverage and uneven maturity. The regulatory management of Islamic FinTech includes issues like Islamic cryptocurrency rules, money creation, and eliminating 'riba'. In Malaysia and Indonesia, digital zakat distribution and classification systems are being developed using AI to accurately classify those in need and compute financial percentages for each group. Thematic analysis revealed that human-inspired, analytical, and humanized AI has led to its significant impact on various aspects of life, society, and employment. Nonetheless, AI cannot substitute for the profound comprehension and knowledge of Islamic jurists, alongside human reasoning and intellectual competence. Job displacement and ethical concerns of accuracy, transparency, fairness, and accountability remain significant challenges for society.

## INTRODUCTION

The unwavering principles of the universe as created by God in Islamic Worldview are directed from the words of God and Sunnah, where the ultimate source of guidance is Divine Revelation. Humans are gifted with 'reason' as an essential tool by God, not to encourage blind acceptance of ideas. However, peace and harmony should be maintained (Nadvi & Junaid, 2021). According to the Qur'anic value system, the centrality of justice is the standard in harmony with Islamic law. Allah says, "And We have certainly honored the children of Adam and carried them on the land and sea and provided for them of the good things and preferred them over much of what We have created, with [definite] preference." (Surah Al-Isra', Verse 70). Hence, Islamic ethics and principles allow human beings to adopt what is good for them and create in the world for their daily living (Ebrahimi, 2017).

The advances in Artificial Intelligence (AI) are one of the valuable things in the world established in the 1950s as an academic discipline and is defined as: "A system's ability to interpret external data correctly, to learn from such data, and to use those learnings to achieve specific goals and tasks through flexible adaptation."(Haenlein & Kaplan, 2019). It exhibits cognitive, social and emotional intelligence. AI is significantly impacting firms, life, society and employment, producing multiple opportunities for exploiting the additional benefits (Makridakis, 2017).

The newest definition of AI applications' importance is stated by Harari: "Science is converging to an all-encompassing dogma, which says that organisms are algorithms, and life is data processing. Intelligence is decoupling from consciousness. Non-conscious but highly intelligent algorithms may soon know us better than we know ourselves (P.397)." (Harari, 2016; Makridakis, 2017). On the other hand, according to Stephen Hawking: "The rise of powerful AI will be either the best or the worst thing ever to happen to humanity. We do not yet know which." (Makridakis, 2017).

There is a significant potential for AI to enhance human life with its broader applications in the daily lives of humans, including healthcare, finance, education, agriculture, human resources and recruiting, military training and air combat, customer service, music composition, social media newsfeed, reliable engineering and maintenance, work scheduling and optimization and autonomous vehicles or traffic management and many others (Lo Piano, 2020). AI and ML significantly impact daily decision-making due to efficiency and speed, but ethical concerns of accuracy, transparency, fairness, and accountability must be addressed. (Lo Piano, 2020). The AI revolution has significantly impacted both worldly and religious life, with arguments suggesting science is not anti-Islamic and should be used for practical purposes (Bashir, 2021).

Therefore, the current research was conducted with an aim to discuss AI in broader Islamic, social and economic



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perspectives for active participation and meeting the goals of the conference. AI is a powerful tool that has both promises and concerns. Its integration with religious, social, and economic structures has sparked debates and dilemmas. In Islam, AI presents both challenges and opportunities. It can serve Islamic Law objectives, preserve and digitize sacred texts, and intersect with the socio-economic dynamics of Muslim-majority societies. This article explores the multi-dimensional impact of AI in the modern age and its relationship with Islamic principles and societal norms. It aims to foster a nuanced understanding of AI and emphasize its responsible and ethical deployment in line with religious and cultural values. The research question addressed in the current research is stated below:

How does the integration of Artificial Intelligence technologies align with Islamic principles, and what are its implications for religious, social, and economic structures in Muslim-majority societies?

## The Evolution of Technology and AI's Limits

### Historical Evolution of AI

According to Haenlein and Kaplan (2021), the historic evolution of AI can be elucidated from the four seasons. The birth of AI begins with AI Spring traced back to 1942 when Isaac Asimov published 'Runaround', a short story. The three levels of robots were explained in the book: a robot must not injure human beings, must obey their orders and must protect their existence. Alan Turing first developed 'The Bombe', a machine based on computing machinery and intelligence. Later, IBM 701 was designed by Nathaniel Rochester to stimulate AI (Haenlein & Kaplan, 2019).

AI summer and winter began with the development of the ELIZA computer program by 1966, capable of simulating human conversations. In AI fall, expert systems came into being with a set of rules formalized with human intelligence using if-then statements like IBM's Deep Blue chess playing program and PROSPECTOR expert system, which was used to study mineral deposits (Haenlein & Kaplan, 2019; Zhang & Lu, 2021). It led to the creation of Artificial Neural Networks (ANNs) and deep learning when Google developed AlphaGo in 2015 (Haenlein & Kaplan, 2019; Zhang & Lu, 2021).

In 2012, the advent of deep learning and neural networks prospered with improvements in the field of pattern recognition, offering satisfactory results among search engines, speech and visual recognition, recommendation systems and semantic analysis (Haenlein & Kaplan, 2019). With deep learning being evolved, accuracy and speed have been fine-tuned with commonly used latest models of Faster R-CNN (Region-Based Convolutional Neural Network), Mask-RCNN, and YOLO (You Only Look Once) (Zhang & Lu, 2021).

Notably, from ELIZA to neural networks AI has been recognized to the advent of self-driving cars, smart speakers and Facebook's image recognition algorithm. The overall understanding of development of AI shows the rise in continuous improvements in computing power and Big Data has enhanced the significance of AI classified into human-inspired, analytical and humanized AI.

### Challenges in AI's Development

A challenge in AI and ML integration is to improve performance at scale and resource autonomy in autonomic systems. However, in the views of the researcher of this research, one of the greatest challenges in AI's development is the correct AI predictions. Similalry, past research highlighted which could substitute the role of humans being superior in performing mental tasks by 2037 (Makridakis, 2017). Besides, challenges arise in the field of quantum computing with emerging computational paradigms like fog, edge, cloud, and serverless environments (Gill *et al.*, 2022). The limitations of quantum computing include the pursuit of robust and scalable quantum hardware and quantum decoherence. It is pertinent to the nature of quantum information, delicately susceptible to disruption (Córcoles *et al.*, 2019; Rayhan & Rayhan, 2023). As an AI researcher, I have noted that these challenges in quantum computing which can cause errors in reliable quantum computations.

Moreover, the societal and ethical implications of AI's evolution emphasize the importance of global collaboration and responsible innovation, mitigating potential risks and ensuring data privacy. Similalry, existing literature showed that with AI quantum technologies being democratized, protecting sensitive information and ensuring transparency is essential (Rayhan & Rayhan, 2023). The ethical reasoning capabilities are associated with the autonomous system's behavior and replacing traditional social structures accounting for moral values. The certification processes, standards and codes of conduct should be ensured by the users and developers of AI systems (Dignum, 2018).

### AI's Potential and its Limits

As an AI researcher, I believe AI has been around in multiple forms of niche applications and pilots for decades. However, according to Mehr *et al.* (2017), only recently has it been embedded within virtual and physical environments. By 2035, the potential of AI is to double the rates of economic growth, as estimated by Accenture (Mehr *et al.*, 2017). The applications where AI excels include automotive, financial, retail and healthcare sectors with mature scenarios. Autonomous driving includes the integration of driverless driving and fixed-speed cruise automatic parking (Zhang & Lu, 2021). In financial markets, AI is successfully embedded in intelligent consulting, intelligent risk control, credit rating and market forecasting, providing real-time risk warnings to financial institutions (Bisht *et al.*, 2022). On the other hand, the health sector is dealing with huge datasets for improved medical assistance, developing new drugs and detecting cancer (Noorbakhsh-Sabet *et al.*, 2019). Notwothstanding, in retail, the application of AI combined with ML, sensors, and computer vision

monitors goods replacement, inventory management, market forecasts and monitoring in the virtual shopping cart like AmazonGo (Chi *et al.*, 2020). In the media sector, one-click content generation by communication robots in the media industry is boosting brand promotion with AI. In smart payment systems, AI allows voiceprint recognition and face scanning, like the Alipay Pay payment system (Zhang & Lu, 2021).

It has noted by the researcher that with a great many potential applications, AI can be challenging in any sector struggling due to overreliance of ML models. As examined from the existing literature, increased cybersecurity risks, adverse impact of AI applications and limited technical expertise (Nishant *et al.*, 2020).

**Religious, Social, Economic and Ethical Impacts of AI-based Technological Advancements**

**Islamic Perspective on AI**

In light of Islamic jurisprudence, the social and cultural impact of AI can be tacked with Islamic law traits to serve the goals of Shariah as stated in the Holy Qur'an: "And pursue not that of which thou hast no knowledge; for surely the hearing, the sight, the heart all of those shall be questioned of." (Surah Al-Isra', Verse 36) (Shahrouri, 2023). Nothing prevents AI from declaring anything to be forbidden as long as there is any proof that it violates Islamic law (haram). Things are designed to make life easier for people. As Allah stated: "Do you not see that Allah has made what is in the heavens and what is in the earth subservient to you, and made complete to you His favors outwardly and inwardly?" (Surah Al-Luqman, Verse 20) (Ahmed, 2021). Another Qur'anic verse on Islamic Law and jurisprudential principles on AI is translated as: "Amongst the important basic rules and principals of the Islamic religion is that all things are permissible except what involves Islamic prohibition. Allah the Almighty says (what means): Qur'an it is He who created for you all of that which is on the earth." (Surah Al-Baqarah, Verse 29) (Ahmed, 2021).

Considering the quadruple bottom line theory (Prophet, Prosperity, Planet and People) in Islamic banking, the role of spirituality is pivotal. The Prophet dimension must be prioritized over prosperity (profit). Also, incentives to People should be decided for undertaking social functions and conserving the Planet (Hamidi *et al.*, 2023). Furthermore, in my point of view, the association between finance and ethical issues in AI implementation is significant. Consequemtly, pass researchers Rabbani *et al.* (2022) recommended the use of Islamic finance tools in the Regulation Technology (RegTech) sector to limit integrity and transparency challenges (Rabbani *et al.*, 2022). For example, in Islamic jurisprudence, the financial arrangement for Islamic loans is supported by Qardh-Al-Hasan if applied properly in Fintech with AI. Qardh-Al-Hasan was mentioned by Allah six times in the Holy Qur'an. Allah says: "Who is it that would loan Allah a goodly loan so He may multiply it for him many times over? And it is Allah who withholds and grants abundance, and to Him you will be returned" (Surah Al-Baqarah, Verse 245). This verse depicts that Qardh-Al-Hasan is a beautiful tool of finance to eradicate poverty with the inclusion of AI in finance (Sarac & Hassan, 2020). The researcher in this study discusses the scope and limitations of digitizing the Holy Qur'an and Hadith, two legitimate sources of guidance for Muslims. Hakak *et al.* (2022) explained that since the content of Hadith is fabricated from online content, the task is challenging to digitizes the original Hadith without any alterations. However, the recent advancements in the statistical-based and rule-based approaches in the Arabic language enhance the credibility of the digitized system (Hakak *et al.*, 2022). Also, to preserve the integrity of the Qur'an, there are several trustworthy organizations and religious bodies which approve digitized Holy Qur'an, like King Saud University and Saudi Ministry's King Fahd Complex for The Printing of the Holy Qur'an (Hakak *et al.*, 2017). This research case study analyzes data-driven Qur'anic translation tools and AI in banking, focusing on compliance with Shariah laws.

**Social Implications of AI**

According to Zhao *et al.* (2022), the misuse of AI can lead towards cyber bullying, terrorism and criminal activities. However, as the researcher noted the education of the new generation should be trained as 'digital citizens', knowing how to deal with the social issues of the present and future technologies. Consequenytly, previous research showed that the role of education and training for safe AI utilization is linked with meeting the standards of human rights, labor practices, organizational governance, fair operating practices and community involvement (Zhao *et al.*, 2022). This study's researcher explores the potential of AI to bridge societal gaps, examining its social and ethical impact from both an AI and human perspective. As reviewed from the pas study by Mhlanga (2023), AI significantly influences the widening inequality in society, the undermining of community culture, the sense of community and identity in society and the sense of identity. Therefore, 'fairness' in AI algorithms is effective for making ethical decisions and narrowing societal gaps. AI must meet the standards of balancing society's welfare, economic growth and the environment to achieve social responsibility. The Unified framework of AI to meet social implications includes beneficence, autonomy, non-maleficence, explicability and justice (Mhlanga, 2023; Saveliev & Zhurenkov, 2021). Besides, the social and ethical hazards of AI are also posed by social toxicity and prejudice. However, instructional technologies offer safe AI utilization in online learning with multiple learning management systems, interactive whiteboards, mobile technologies, virtual and augmented reality and gamification (Uunona & Goosen, 2023).

**Economic Ramifications of AI Advancements**

This research focused on the pace at which tasks are automated with evolved AI capabilities and AI has taken

over a few job roles. As examined in the existing literature, the risk of job displacement for 'shop-floor' workers in manufacturing is limited due to the human capabilities of managing cognitive tasks (Tyson & Zysman, 2022). Job displacement is a key concern associated with AI integrated into workforces, causing potential unemployment. It is worth noting that AI technologies are most likely to take over task-based displacement in jobs, whereas higher-value tasks are still required to be done by humans (George *et al*., 2023).

Notably, the job growth for low- and middle-wage occupations is most likely to decline with AI advancements in occupations like production, support and warehousing in technology, healthcare and education sectors. In contrast, high-wage jobs are expected to increase the demand for upskilling employment (Tyson & Zysman, 2022). Notowithstanding, it is possible for displaced employees to discover that time and money are required to retrain, re-skill, and re-educate themselves in order to enter different industries. In general, technological innovation widens the gap between the rich and the poor since it frequently replaces low-skilled employees and reduces the need for their services (Nissim & Simon, 2021). Economic development is positively linked with the improvements in work performance, work conditions and work relationships (Caruso, 2018). The new opportunities posed by AI have transformed manufacturing businesses, offering the provision of manufacturing maintenance and repair, innovation information, analytical services and operations of the supply chain ecosystem (Ehret & Wirtz, 2017). As reported by the World Economic Forum (WEF), AI is the game changer in multiple applications, including distributed energy grids, smart disaster response, smart agriculture and food systems, autonomous electric vehicles, AI-designed connected, intelligent and livable cities, next-generation climate and weather prediction and reinforcement learning for earth sciences (Yigitcanlar *et al*., 2020). In my observation from the literature review, economic opportunities tied to AI-driven Industry 4.0 regard the cycle of innovation in private and public institutions. As noted in existing literature, AI is posing new economic developments in multiple industries, including healthcare, finance, retail, supply chain, manufacturing and logistics (Dwivedi *et al*., 2021).

According to the WEF probabilistic research on the economic effects of AI and automation, 20% of current UK occupations may be affected by AI technology (Dwivedi *et al*., 2021). Due to the larger potential for technological development throughout the manufacturing industry, this number is higher in growing economies like China and India, where it increases to 26%. According to forecasts, AI technology will promote innovation and economic growth, generating 133 million new jobs worldwide by 2022 and 20% of China's GDP by 2030 (Dwivedi *et al*., 2021). Governments worldwide are recognizing AI as a nation-defining capacity, with 50 countries implementing special national AI policies since February 2020, accounting for 90% of the world's GDP (Yigitcanlar *et al*., 2020).

It has studied that the key challenges tied to AI include the obstacles of data monopolies and obtaining the data which harm small and medium enterprises. For the workforce, a technological revolution is a key driver for increasing cost effectiveness, bringing time and overall productivity for multiple stakeholders and labor markets (Susar & Aquaro, 2019). The main risk here is that AI is expected to become a vehicle only for the 1% of high-income earners, i.e., the wealthiest and monopolistic multinational corporations (Yigitcanlar *et al*., 2020).

### The Need for Responsible and Ethical AI

The ethical concerns which should be explicitly noted for responsible AI integration include fairness, justice and dignity. Technological innovation is seen as a significant factor in solving problems of the society and promoting happiness, economy and well-being (Leenes *et al*., 2017). In my opinion, responsible innovation with AI is balanced as an interactive and transparent process tackling the challenges of economic progress and social welfare. Ethical responsibility should focus on technology push, foresight, and policy pull, as AI algorithms' failures in decision-making and predictive analysis can lead to potential biases like lack of transparency, trustworthiness, respect and privacy protection (Yigitcanlar *et al*., 2021).

There are many academic, public and private sector international bodies which support governments in AI regulation and promoting its research and development like the Partnership on AI, the International Association for Artificial Intelligence and Law, the Artificial Intelligence Forum of New Zealand, and SPARC in the EU, and few of the tech firms' (Apple, Facebook, Baidu, Amazon, IBM, Google, and Microsoft) (Erdélyi & Goldsmith, 2018). International organizations such as the OECD Principles of AI and the Council of Europe's Expert Committee on Human Rights and AI provide ethical guidelines for reducing AI-related risks in a human-centered society. The purpose is to meet the standards of transparency, fairness and accountability (Radu, 2021). The European Commission's High-level Expert Group on AI (HLEG) is responsible for dealing with the moral activities of AI and establishing trustworthy AI-based applications (Ryan, 2020). The meaningful human control of AI algorithms is important to deal with the ethical, legal, organizational, technical and societal issues to enhance the moral values of AI systems (Santoni de Sio & Mecacci, 2021). Thus, the recent study's purpose was to identify the potential biases which are dealt with by creating reliable AI guidelines shifting away from non-autonomous AI.

## METHODOLOGY

### Research Design

A qualitative research design was adopted in the current research to present an in-depth analysis of the religious, social, economic and ethical implications of AI in light of multiple perspectives and opinions. The interpretivist

philosophy was used to highlight human opinions on AI and its technological advancements in the social world. The qualitative research was deemed to be a suitable way of gathering multi-faceted views of the economic, social and religious repercussions of AI technologies in the recent era.

**Data Collection**

Semi-structured interviews were conducted for data collection in the current research through open-ended questions. The questions were designed based on the theorization of the Islamic, social, economic and ethical constructs discussed with reference to the existing literature to enhance their validity. Also, a few ABC University professors were approached to test the validity of interview questions and enhance study outcomes, specifically targeting Muslim-majority countries and diverse demographic groups, ensuring broader findings across age, gender, profession, country and level of religious observance. The second approach of data collection was the case study analysis on the applications of AI in Muslim-majority countries reflecting upon the Islamic jurisprudence and Shariah laws. The two case studies include AI-Driven Qur'anic Translation tools and AI in Banking Compliant with Shariah Laws.

Table 1 below presents the demographics including age, gender, country of residence, profession, and level of religious observance of the 13 interview respondents who participated in this research. The research participants were sampled using a purposive sampling technique since the purpose of the research was to reach out to the experts in the field of AI and get some useful and constructive opinions on AI implications. Therefore, professors, AI experts, religious scholars and AI technologists were approached to gather diverse viewpoints on the research question.

**Table 1:** Demographics of Interview Participants

| **Demographics** | | **Frequency** | **Percent** |
|---|---|---|---|
| Age | 21-30 Years | 3 | 23.08% |
| | 31-40 Years | 4 | 30.77% |
| | 41-50 Years | 3 | 23.08% |
| | Above 50 Years | 3 | 23.08% |
| Gender | Male | 7 | 53.84% |
| | Female | 6 | 46.15% |
| Country of Residence | Saudi Arabia | 3 | 23.08% |
| | Pakistan | 2 | 15.38% |
| | Indonesia | 2 | 15.38% |
| | Bangladesh | 1 | 7.69% |
| | Malaysia | 2 | 15.38% |
| | Egypt | 1 | 7.69% |
| | United Arab Emirates | 2 | 15.38% |
| Profession | Professor | 4 | 30.77% |
| | AI Expert | 3 | 23.08% |
| | Religious Scholar | 3 | 23.08% |
| | AI Technologist | 3 | 23.08% |
| Level of Religious Observance | Very Observant | 4 | 30.77% |
| | Moderately Observant | 4 | 30.77% |
| | Slightly Observant | 4 | 30.77% |
| | Not Observant | 2 | 15.38% |
| **Total** | | **13** | **100.0** |

**Data Analysis**

A thematic analysis approach underlies the current research's conclusions. The transcripts were encrypted from audio to textual format following transcription and de-identification. Further, noting iteratively created codes for each interview section, themes were designed to analyze the interview responses, identifying repetitive keywords in the majority of responses.

**Ethical Considerations**

All respondents were asked to sign an informed consent through email explaining the research purpose and confirming that their data private data would be kept confidential throughout the research.

## RESULTS AND DISCUSSION

**Thematic Analysis**

A few of the in-depth responses of the current research participants are stated below for each of the interview questions explaining their diverse viewpoints on all the derived themes from the interview transcripts.

**AI and Religious Perspectives**

**How Would You Define Artificial Intelligence (AI)?**

Participant 1, an AI Expert, stated: "In simple terms, I would say AI refers to the advancement of computer systems capable of performing tasks with human intelligence by learning, reasoning and making decisions."

Participant 3, a professor, mentioned: "In my opinion, AI is a way of developing machines which can make predictions copying human cognitive functions when performing autonomous tasks."

**To What Extent Do You Believe that AI Aligns with the Unwavering Principles of the Universe as Created by God?**

Participant 2, a religious scholar, stated: "As Muslims, we must emphasize the value of upholding human dignity, compassion, and the quest for spiritual development while acknowledging the promise of AI. They provide caution against placing an undue dependence on AI, which might cause morality, empathy, and human contact to be neglected."

Participant 3, a university professor, mentioned: "I have a certain belief that AI can align with the principles of God. For instance, in the field of healthcare, AI is definitely aiding humanity, but it may violate the ethical considerations of protecting human dignity."

**In Your Opinion, How Has the Recognition of These Principles Been Reflected in the Work of both Muslim and Non-Muslim Scientists?**

Participant 4, a religious scholar, mentioned: "While some Muslim and non-Muslim scientists believe that AI can fulfil the needs of humans, some believe that AI can be of assistance for humans, but it cannot genuinely embody the divine and meet the human needs of spirituality."

Participant 5, an AI technologist, stated: "It is admirable that religious concepts are being acknowledged in scientific research. Scientists from all backgrounds, including Muslims and non-Muslims, have recognized the significance of ethical principles derived from many theological and philosophical traditions. Examples of notions that are becoming more prevalent in AI research include social justice, human dignity, compassion, sustainability and environmental stewardship. This understanding aids in bridging the gap between moral duty and scientific development, ensuring that technical advancements are guided by values that benefit the general good."

From the above mentioned responses, it has observed Muslims stress the significance of maintaining human dignity, compassion, and spiritual growth while recognizing the promise of AI. From my analytical insights, I have noted from interviews of respondents from multiple religious backgrounds and ethnicities that Muslims stress the significance of maintaining human dignity, compassion, and spiritual growth while recognizing the promise of AI. Muslims emphasize the importance of AI being in line with God's principles in particular. Their viewpoint is given a special dimension by the religious setting, which may not be present in the opinions of scientists from other backgrounds. While both groups place considerable emphasis on moral ideals, Muslims may do so more explicitly than scientists from different backgrounds do by prioritizing ideas like compassion and spiritual development.

**Evolution and Limits of AI**

**How Do You Perceive the Historical Evolution of AI, from its Early Days to the Current Deep Learning Models?**

Participant 6, an AI expert, stated summarized AI evolution: "ML was first used in relation to neural networks in the 1950s. In the 1960s, Shakey, the very first mobile AI robot, and Eliza, a cognitive-skill-based Chatbot, were developed. Later, it was followed by AI renaissance in the 1970s and 1980s. Synthesis of speech and video in the 1990s was observed within AI development. The decade of the 2000s witnessed the rise of IBM Watson, face recognition, virtual assistants, autonomous cars, deepfakes, and content and picture production."

Participant 5, an AI technologist, stated: "The development of AI has been remarkable, starting with rule-based systems. Over time, machine learning methods emerged, advancing technology. Deep learning models revolutionized AI research, enabling tasks like image identification, NLP, recommendation systems, medical diagnosis and treatment, computer vision, robotics, fraud detection, and more. This demonstrates our inventiveness and ability to replicate cognitive processes in robots."

**What are the Key Challenges You See in the Development of AI, Especially from a Religious and Ethical Standpoint?**

Participant 7, a religious scholar, stated: "I believe challenges from a religious and ethical perspective include assuring justice and openness in AI decision-making, as well as addressing worries about AI taking the place of humans in the workforce. The issue of responsibility arises when AI makes choices that have moral ramifications. It is a big task to strike a balance between moral and spiritual ideals and technical progress. Allah states in the Holy Qur'an, "And spend in the way of Allah and do not throw [yourselves] with your [own] hands into destruction." (Surah Al-Baqarah, Verse 195); thus, AI should only be used in ways which benefit people."

**Can You Highlight Any Specific Areas Where AI Excels and Where it Might Be Ineffective?**

Participant 7, a religious scholar, stated: "Data analytics, prediction modelling, automation and pattern recognition are activities where AI has emerged. It excels in fields like financial forecasting and medical diagnostics. Nevertheless, as I already pointed out, it might not work well for activities requiring moral judgements, empathy, and compassion, which are central to many religions,

not only Islam. Additionally, it could not perform well in activities that call for complicated moral thinking, emotional intelligence, and creativity."

The findings from thematic analysis showed that AI advancements, from rule-based systems to deep learning models, have revolutionized various applications but raise moral and religious questions. While AI excels in financial forecasting and medical diagnosis, it struggles with morality and empathy challenging ethical and spiritual aspirations. According to my analysis on the respondents' views, AI scientists and Islamic scholars are looking at how AI innovations like neural networks might be compatible with Islamic principles. Particularly intriguing is the ethical use of AI in the fields of banking, medicine, and other Shariah-compliant industries. Nonetheless, the main issue is ensuring AI development adheres to ethical standards and respects human dignity, addressing biases, safeguarding privacy, and avoiding applications that could harm humanity or violate religious principles. All things are considered halal for humans, as they are tahir (pure) and Muslims can handle or touch them obeying laws of Shariah.

**Religious Implications of AI**

**How Do You View AI's Role in Islamic Jurisprudential Endeavors?**

Participant 4, a religious scholar, stated: "Studying Islamic jurisprudence and Shariah all my life, I assure you that, although in order to get a greater grasp of Islamic law, AI can assist academics in analyzing the context and historical interpretations of Qur'anic quotes and Hadith, but as AI cannot substitute for the profound comprehension and knowledge of Islamic jurists, it should always be used to supplement human reasoning and intellectual competence. AI can be a tool for human assistance in understanding Islamic jurisprudence; however, the Holy Qur'an is the righteous way to understand it as Allah says in the Holy Qur'an: "Indeed, in the creation of the heavens and the earth, and the alternation of the night and the day, and the [great] ships which sail through the sea with that which benefits people..." (Surah Al-Baqarah, Verse 164)."

**What are Your Thoughts on the Digitization of the Holy Qur'an and Hadith through AI?**

Participant 2, a religious scholar, stated: "For Muslims everywhere, the digitalization of the Holy Qur'an and Hadith by AI is a useful resource. In particular, AI-powered applications can make it simpler to access Hadith collections and verses from the Qur'an, facilitating improved comprehension and study. Allah warns about misinterpretation of the Holy Qur'an as He says: "Indeed, those who conceal what We sent down of clear proofs and guidance after We made it clear for the people in the Scripture - those are cursed by Allah and cursed by those who curse." (Surah Al-Baqarah, Verse 174)."

"In the digitization of the Holy Qur'an, Qur'an, fiqh (Islamic law) and uṣūl al-fiqh (legal theory) must be followed considering the significance of syntax, morphology, word sentence disambiguation, and other aspects. I am still in doubt whether AI can abide by all the rules of Qur'an recitation translated into other languages as compared to the Arabic language. However, I believe digitization of the Holy Qur'an and Hadith is important for spreading the message of Allah and maintaining the original text's integrity as Allah says: "Indeed, it is We who sent down the Qur'an, and indeed, We will be its guardian." (Surah Al-Hijr, Verse 9)."

**How Can We Ensure that AI Aligns with the Objectives of Islamic Law and Jurisprudential Principles?**

Participant 2, a religious scholar, summarized how AI can be aligned with Islamic law and what is wrong with it: "AI presents Muslims with a wealth of exciting options, but it also poses unprecedented risks to the faith by perhaps eroding the Qur'an's holiness. It is not impossible to see a modern-day Islamophobe using cutting-edge generative AI technology in a fresh effort to challenge Muslims' beliefs. In the Qur'an, Allah makes a reference that suggests that even AI-powered initiatives will fall short as He states: "Say, ˹O Prophet, if ˹all˺ humans and jinn were to come together to produce the equivalent of this Qur'an, they could not produce its equal, no matter how they supported each other." (Surah Al-Israa, Verse 88)."

Participant 8, an AI Expert, stated: "In recent years, the use of AI is mostly seen in finance. Therefore, AI algorithms applied in banking or commerce should abide by Islamic fairness and riba (unsury) prohibitions as Allah says in the Holy Qur'an: "Those who devour usury will not stand except as stand one whom the devil has driven to madness by [the touch of] insanity." (Surah Al-Baqarah, Verse 275)"

Thematic analysis revealed that scholars stressed the importance of human reasoning in interpreting Islamic law, preserving the accuracy of digital Qur'anic and Hadith materials, and adhering to linguistic and syntactical rules. They also caution against AI eroding the sanctity of the Qur'an, emphasizing the responsibility of Muslims. In my opinion, Muslims need to take proactive steps to guarantee that they benefit from AI while safeguarding themselves from its risks. Notably, religious scholars were agreed on the fact that it is crucial to guarantee the validity and correctness of digital material.

**Social Implications of AI**

**What Do You Think is the Role of Education and Training in Ensuring Safe AI Utilization?**

Participant 8, an AI Expert, stated: "The responsible use of AI necessitates extensive education and training, enabling individuals to understand its consequences and risks, enabling ethical judgements… This also ensures AI professionals adhere to ethical standards and industry best practices, reducing potential harm from improperly developed AI systems."

Participant 9, a professor, mentioned: "The role of education and training in ensuring safe AI usage is crucial,

as teachers and students must be knowledgeable about AI usage to identify potential misuse and its benefits."

**How Can We Ensure the Protection of Personal Data and Maintain Individual Privacy When Using AI Systems?**

Participant 12, an AI technologist, mentioned: "In the AI era, protecting personal information and privacy requires a comprehensive strategy including strong data encryption, access restrictions, open data management procedures, and strict adherence to privacy laws. Implementing data access controls can help prevent inadvertent data disclosure and prevent unauthorized individuals from sharing private information with AI training models."

Participant 4, a religious scholar, mentioned: "AI clearly has the potential to increase productivity, improve customer service, speed up response times and delivery, promote the development of new markets, and even save expenses for businesses… Yet there are still moral concerns in the areas of privacy and security, risk factors of misinformation, as well as the human cost."

**In Your Opinion, Will AI Play a Role in Widening or Narrowing Societal Gaps? Please Explain**

Participant 13, a professor, mentioned: "Robots with AI capabilities may eventually replace humans in a variety of sectors, including manufacturing and transportation, as they grow more advanced and capable… Job displacement and economic turmoil may result from this. However, AI can bridge societal disparities by expanding access to jobs, healthcare, and educational opportunities if it is applied wisely."

From the thematic analysis, it was noted that AI will probably decrease the proportion of revenue going to low-skilled workers while increasing wages for highly skilled workers, leading to greater inequalities in society. From my insightful evaluation of the respondents' views, I believe that users should be informed about the data-gathering process and have the option to opt in or out. Data security and privacy should be prioritized in the development process. Considerably, educational institutions are collaborating with technology partners to create comprehensive training programs for AI usage both in and outside the classroom.

**Economic Ramifications of AI**

**How Do You Perceive AI's Impact on Job Creation and Job Displacement, Especially in Muslim-Majority Economies?**

Participant 1, an AI Expert, stated: "Employees with less education or older workers may find it challenging to master new skills when their employment requires repeated or routine operations."

Participant 9, a professor, mentioned: "AI's impact on employment displacement and creation varies by industry and location. While AI may initially displace everyday jobs in Majority Muslim countries, it can also create new opportunities in AI research, development, and maintenance… AI's significance has grown in healthcare, banking, education, and other industries, boosting accuracy, reducing costs, and improving efficiency."

**What Economic Opportunities Do You Foresee with the Rise of AI-Driven Industries?**

Participant 6, an AI Expert, stated: "AI-driven enterprises have economic potential in healthcare, banking, and logistics, attracting investment in developing Muslim-majority countries… Fostering an AI-friendly environment boosts productivity, diversifies industries, encourages entrepreneurship, and attracts foreign capital."

**How Do You View Challenges Arising from AI Monopolies and Global Economic Disparities?**

Participant 9, a professor, stated: "AI could lead to a shift in investments from emerging economies to advanced ones, potentially causing a temporary decrease in GDP in developing countries. Developing Muslim-majority economies could promote local AI development, international cooperation, and equal access to AI technology laws, thereby reducing the problems caused by monopolies."

The interviews with targeted population enhance my analytical perspective on AI and economic ramifications. I think AI may not entirely replace employment, but demand for highly trained positions like software engineers, digital marketers, and data scientists will rise in the coming years. Nonetheless, AI monopolies could worsen existing economic imbalances by preventing fair competition and innovation. Education and workforce development are crucial for a smooth transition.

**Ethical AI**

**How Can We Ensure a Balance between Rapid AI Innovation and Maintaining Strong Ethical Considerations?**

Participant 1, an AI Expert, stated: "I believe that determining who is accountable for the deliberations and choices made by AI systems requires the development of specific regulations and processes."

Participant 5, an AI technologist, stated: "Regular AI system evaluations and public participation in decision-making ensure that innovation aligns with social ideals. Maintaining a strong ethical foundation while promoting innovation can be achieved through ongoing monitoring, open reporting, and engagement with ethicists."

**Are You Concerned about Biases in AI Systems? How Do You Believe We Can Develop More Equitable Algorithms?**

Participant 10, an AI technologist, stated: "I am not concerned as we can take a few steps to mitigate such biases of AI. For example, to reduce bias in ML algorithms, various measures can be taken, including using a diverse training dataset, eliminating sensitive variables, employing bias mitigation strategies, conducting regular model evaluations, and ensuring human oversight. Creating

equitable algorithms requires a multifaceted approach, including transparency in AI design, thorough, robust testing, and auditing to ensure equality and fairness in AI algorithms."

**What Role Should Governments and International Bodies Play in AI Regulation?**

Participant 8, an AI Expert, stated: "Governments and international bodies play a crucial role in responsible and ethical AI development by creating legislation that addresses concerns like algorithm transparency, data protection, and discriminatory practices. AI and automated systems are utilized by governments at all levels for decision-making, law enforcement, public good support, and public feedback and complaints collection." Businesses should have systems of checks and balances in place, as well as procedures for identifying and resolving potential issues, to guarantee accountability and responsibility. However, AI experts and technologists during interviews were more concerned on balancing AI advancement and ethics is crucial. I have noted that interdisciplinary cooperation between religious scholars, technologists, and legislators can create ethical norms.

**General and Future Implications**

**What Areas Do You Believe Require Further Exploration within the Realm of AI, Especially from a Religious Perspective?**

Participant 4, a religious scholar, stated: "AI-driven systems that are based on the Qur'an's idea of justice (Surah Al-Hujurat) can be created to ensure the fair allocation of resources. AI may also be used to monitor environmental damage and reduce it, which is in line with Allah's commands in the Hold Qur'an on good stewards of the planet (Surah Al-An'am)."

**How Do You View the Potential for Collaboration between Technologists and Islamic Scholars in Shaping the Future of AI with Reference to the Holy Qur'an?**

Participant 7, a religious scholar, stated: "Collaboration between tech experts and academics from Islam has enormous potential for influencing AI development. The Qur'an advocates gaining knowledge, which includes advances in technology (Surah Al-Mujadila 58:11). Religious leaders can influence AI policies that uphold Islamic principles, promoting justice, responsibility, and compassion, ensuring its application for societal advancement. The Qur'an stresses the value of consultation while making decisions (Surah Ash-Shura). Together, technologists and religious scholars can direct the development of AI to advance mankind while respecting moral standards."

I am certain that from the point of view of religion, AI research should concentrate on assuring moral and equitable uses. Respondents mentioned that AI may also improve healthcare, which is in line with Islam's core ideal of protecting human life. AI has more potential in the areas of compassion, justice, and environmental stewardship. It is important to track the control of equitable AI algorithms possessing sufficient moral awareness and sufficient knowledge to give results with no bias.

**Case Study: Applications of AI in Compliance with Islamic Laws**

**AI-Driven Qur'anic Translation Tools**

AI usage nowadays is not uncommon as it can be observed everywhere, from applications of image processing to sophisticated applications of self-driving vehicles. Machine translation systems, sentiment analysis and Chatbots are developed with the use of Natural Language Processing (NLP) and AI (Khan & Rabbani, 2020). According to recent demographic data, there are 480 million Arabic speakers in Islamic, Asian, and African nations. When ranking languages by how widely they are spoken, Arabic came in fourth. Arabic is a language of significant significance since it is the language of the Holy Qur'an, popular poetry, and the cultural legacy of its people. The translation tools are influenced by the Neural Machine Translation system, which resolves lexical-semantic problems, syntactical problems, grammatical problems, and pragmatic problems (Khalatia & Al-Romanyb, 2020).

One such translation tool is the Almaany Dictionary Website, a bilingual dictionary based in Egypt, Turkey, India, and Jordan, which analyses 12 million Qur'anic words in Spanish, Turkish, French, and German, using certified translations of the Holy Qur'an. (Zemni *et al*., 2020). The study by Mohamed and Shokry (2022) introduces the Holy Qur'an's concept-based searching tool (QSST), which has four phases. The first phase involves manually annotating verses using the Mushaf Al-Tajweed ontology. Word embedding creates feature vectors using a Continuous Bag of Words architecture. The third phase calculates feature vectors for both input questions and Qur'anic subjects. The most pertinent verses are found by computing cosine similarity (Mohamed & Shokry, 2022). Furthermore, for Qur'anic academics and Arabic researchers, semantic or concept-based and keyword-based searches are the two main categories of Qur'anic search methods. It might be difficult to do a concept-based search in a large corpus like the Qur'an. Few of the AI-based Qur'an tools and applications include KSU Qur'an(مشروع المصحف الإلكتروني بجامعة الملك سعود), Islam web (Islam Web), Qur'anic Arabic Corpus, Almonagib alQur'any (المنقب القرآني), Tanzil (Tanzil Documents), The Qur'an(Al-Qur'an (القرآن) - Online Qur'an Project - Translation and Tafsir) and the Noble Qur'an (The Noble Qur'an – القرآن الكريم) which enable users to listen, read, and search in Qur'an with different languages (Mohamed & Shokry, 2022).

The key challenge in Qur'anic translation tools is that the keyword search does not take into account conceptual or semantic analysis for the query. Thus, expected results are frequently not obtained. Therefore, it is addressed by

a semantic and lexical-based tool, the Qur'anic English WordNet (QEWN) database (Bashir *et al.*, 2023). Every single one of the words from the Qur'an's English translation, together with their semantic content, are filled up in this database. Various ideas found in the Qur'an are stored in the Vocabulary of Qur'anic Search (VQC). In QEWN, the concepts of sense and synset are used. A word's sense refers to its specific usage, while a word's synset is a list of all of its possible synonyms (Bashir *et al.*, 2023).

**AI in Banking Compliant with Shariah Laws**

Islamic Fintech accepts all sorts of innovation as long as it does not violate Shariah principles. The two major risks in conventional banking are removed when AI complies with Islamic FinTech banking, including leverage and uneven maturity (Khan & Rabbani, 2020). Khan and Rabbani (2020) proposed 'Chatbot as Islamic Finance Expert' (CaIFE), an interactive chatbot powered by AI. By allowing customers to speak with a robot that has expertise amassed via ML, our interactive Chatbot CaIFE receives automated robot help pertaining to Islamic finance and banking. Any question pertaining to Islamic banking and finance is addressed on a real-time basis (Khan & Rabbani, 2020).

The application of AI in Islamic finance and investment includes Robo Islamic Advisor (RIA), Robo Advisor and Robo Financial Advisor (RFA), which dwells on the cognitive application of compliance and investment sectors. These are based on the principles of the Holy Qur'an and Shariah principles of gharar, riba and maysir, which are prohibited. These Chatbots follow Islamic teachings of urf' (customers' practices), fiqh (jurisprudence), and qanun (ordinance) (Gazali *et al.*, 2020). The suggested integrated AI and NLP-based Islamic FinTech Model by Haider Syed *et al.* (2020) combines Qardh-Al-Hasan (charitable loan) and Zakat (Islamic tax), which can assist the economy in reducing the negative effects of COVID-19 on people and SMEs. It also provides a recommender system powered by AI. If the lenders choose Zakat as the method of assistance, the list of recipients will include data regarding the needs of those who qualify to receive Zakat, and if they choose Qardh-Al-Hasan assistance, the list will include details about the borrowers (Haider Syed *et al.*, 2020).

The Python programming language is used to evaluate the Shariah document screening method that is suggested by Che Mohd Salleh *et al.* (2023) and is based on Levenshtein Distance similarity evaluation. The ability to detect fraud inside an organisation and perhaps increase data accuracy are two benefits of this strategy. The proficiency, consistency, and accuracy of fuzzy matching of strings have been calculated as automated measurements of participants' accuracy in speech intelligibility, which used this technique. Additionally, this technique works well for speech recognition, spelling checkers, spam detectors, and connections (Che Mohd Salleh *et al.*, 2023).

Islamic banks are adopting AI-virtual assistants like 'Aisyah' to streamline transactions, complying with Shariah laws and ideal economic conditions of musharakah and mudharabah. These assistants streamline processes, reducing energy, cost, and time. In a musharakah finance arrangement, the bank and clients pool resources to fund projects, with profits and losses distributed based on available cash (Yuspin *et al.*, 2022). A cooperative approach known as mudharabah finance entails the bank providing funds while the consumer contributes knowledge. Both parties will agree upon a profit-sharing percentage. These types of financing meet Islamic Shariah goals, including upholding brotherhood and justice, achieving economic prosperity, fair income distribution and individual freedom in social welfare (Yuspin *et al.*, 2022).

Notwithstanding, despite a great many successes of AI in Islamic finance, the ethical concerns and challenges are still there, which may not be appropriate with respective fiqh (understanding of Shariah) and Tafseer (Qur'anic interpretation). The automation of AI in FinTech reduces customer autonomy, transparency, reliability and accountability. However, RegTech, in accordance with Shariah principles, can resolve these ethical challenges of AI in FinTech considering the significance of Zakat and Rizq-Al-Halal (Rabbani *et al.*, 2022). The regulatory management problem discusses themes such as Islamic cryptocurrency rules, using Islamic FinTech to create money, adhering to Shariah law, doing away with riba using Islamic FinTech, and offering Sukuk (Dawood *et al.*, 2022). Accurately distributing the Zakat that has been collected is a further significant concern in FinTech. In Malaysia and Indonesia, in accordance with AI, digital zakat distribution and classification systems are created to accurately classify those in need and compute the necessary financial percentages for each group (Unal & Aysan, 2022).

## CONCLUSION

AI's potential to widen or narrow societal gaps is influenced by its social and ethical impact. AI algorithms must balance welfare, economic growth, and environmental responsibility to achieve social responsibility. A unified framework includes beneficence, autonomy, non-maleficence, explicability, and justice. Muslims caution against over-dependence on AI, as it may neglect morality and empathy. AI can aid in interpreting the meanings of Qur'anic quotes and Hadith but cannot replace the knowledge of Islamic jurists. AI algorithms in finance should adhere to Islamic fairness and riba prohibitions. AI's impact on employment displacement and creation varies by industry and location but can also create new opportunities in AI research and maintenance. Education and workforce development are crucial for a smooth transition.

## LIMITATIONS AND RECOMMENDATIONS

The current research was limited to a qualitative method, which may adhere to some bias in cultural and contextual bias. Due to limited time and financial resources, 13 participants were sampled for interviews

for data collection. However, in the future, this limitation can be addressed by conducting quantitative research as well as collecting data from a relatively larger sample size. Furthermore, AI experts, theologians and social scientists can review this research to benefit from the comprehensive understanding of the ethical issues of AI and Islamic values. Future researchers can conduct a comparative analysis among any two Muslim-majority countries to compare their AI-integrated banking systems in compliance with Shariah laws and valuable insights into the harmonization of AI evolving with time.

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