

ARTIFICIAL INTELLIGENT EFFORTS IN ADDRESSING THE HUMANITARIAN CRISIS: A STUDY ON ROHINGYA REFUGEES

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Abstract: Efforts to address the humanitarian crises among Rohingya refugees, including violence against women, human trafficking, and other inequalities, have been insufficient. This paper explores how artificial intelligence (AI) can help mitigate these issues through a qualitative approach. Data was gathered via questionnaires and supported by various relevant sources, followed by thorough analysis. The findings indicate that AI can play a significant role in addressing humanitarian crises by improving mental health services, detecting potential security threats, aiding in language translation, and enhancing cybersecurity. However, the use of AI also presents challenges, such as biased or inaccurate data, threats to data security, reduced human skills, privacy concerns, and job displacement. The Qur'an encourages the use of the universe's resources wisely, suggesting that technology, when used judiciously, aligns with Islamic teachings. Thus, AI technology can be beneficial if applied responsibly and within ethical guidelines.

Keywords: Artificial Intelligence; Humanitarian Crisis; Rohingya.

Introduction

Humanitarian crises often occur in Indonesia both caused by natural disasters and social conflicts. It has a serious impact on human life and infrastructure. Examples of humanitarian crises that occurred in Indonesia such as, first, the earthquake and tsunami disaster in Aceh. In 2004 Aceh was hit by a magnitude 9.1 earthquake off the coast of Sumatra. The quake triggered tsunami waves that hit the coast of Aceh and surrounding countries and caused huge losses by claiming 230.000 lives and paralyzing infrastructure in the region. The Indonesian government and people are working with the international community to provide emergency assistance and long-term recovery for disaster victims.¹

The second eruption of Mount Merapi Yogyakarta occurred in 2010. The eruption of Mount Merapi caused loss of life, damaged villages and posed a threat of long-term danger due to the spreading volcanic ash. The Government of Indonesia together with volunteers and organizations launched emergency response operations to rescue affected populations, provide medical assistance, and restore affected areas.² Third, the humanitarian crisis that occurred in Papua resulted in hundreds of thousands of people being displaced. Children died from edema, hunger and malnutrition. In the Maybrat area of Southwest Papua, food supply has stopped, causing dozens of children to die from diarrhea and hungry edema. Maybrat is one of six Papua conflict areas that experienced attacks by Papuan armed groups on military rayon command posts in Kisor in 2021. Five other conflict areas are Puncak, Yahukimo, Intan Jaya, Nduga and Pegunungan Bintang regencies. The number of refugees in the six regions is estimated at 60.000 to 100.000 people.³

Apart from the phenomena previously described, several countries are currently trying to overcome the arrival of Rohingya refugees, including Indonesia. According to CNN Indonesia, Rohingya is a majority ethnic group of Muslims and is located in

¹ Arif Prasetyo Wibowo and Rose Fitria Lutfiana, *Pendidikan Kewarganegaraan Untuk Perguruan Tinggi di Era Disrupsi* (Malang: Universitas Muhammadiyah Malang, 2023), 228.

² Ibid., 228.

³ See “Kemanusiaan Dulu Jeda Kemudian,” *Majalah.tempo.co* (1 January 2023), <https://majalah.tempo.co/read/opini/167853/bisakah-jeda-kemanusiaan-papua-menghentikan-konflik>; accessed on 27 April 2024.

Buddhist-majority Myanmar. There were armed attacks, large-scale violence, and human rights violations in August 2017. Thus, forcing thousands of Rohingya out of Myanmar's Rakhine State.⁴ As reported in *detikSumut*, in the period of November 14-21, 2023, as many as 1,084 Rohingya refugees arrived in Sabang, Aceh. The United Nations Refugee Agency (UNHCR) has informed us that more than one million Rohingya refugees are heading to various countries for protection.⁵

In *jpnn.com*, it was explained that there were concerns from the “Kaukus Perempuan Parlemen Republik Indonesia, Kaukus Perempuan Politik Indonesia, and the Maju Perempuan Indonesia” towards Rohingya Refugees, especially women and children because they experienced various forms of physical or sexual violence and death threat⁶ In addition, in *komnasperempuan.go.id*., it was revealed that conditions of conflict, discrimination, and violence, as promised by human trafficking syndicates, that would bring Rohingya refugees to Malaysia to meet their families were the causes of Rohingya refugees fleeing Myanmar. However, some had no purpose other than to leave Myanmar to save themselves.⁷

With the Rohingya refugee case, Indonesia has taken several steps by assisting in the form of clothing, food, and other active and responsive handling.⁸ However, local communities in Aceh, North Sumatra, and Riau began to feel burdened because the

⁴ “Asal Usul Pengungsi Rohingya yang Mengundang Polemik di RI,” *CNN Indonesia* (2023), <https://www.cnnindonesia.com/internasional/20231211180153-120-1035843/asal-usul-pengungsi-rohingya-yang-mengundang-polemik-di-ri>; accessed on 7 January 2024.

⁵ “Asal-Usul Rohingya dan Alasan Mereka Mengungsi,” *Detik.com* (2023), <https://www.detik.com/sumut/berita/d-7071521/asal-usul-rohingya-dan-alasan-mereka-mengungsi>; accessed on 7 January 2024.

⁶ “Kaukus Perempuan Dorong Penyelesaian Krisis Rohingya,” *JPNN* (2017), <https://www.jpnn.com/news/kaukus-perempuan-dorong-penyelesaian-krisis-rohingya>; accessed on 7 January 2024.

⁷ Komnas Perempuan, “Laporan Ringkas Pemantauan Pengungsi Rohingya di Kabupaten Aceh Utara, Aceh Timur dan Kota Langsa Provinsi Aceh” (2020), <https://komnasperempuan.go.id/laporan-pemantauan-ham-detail/laporan-ringkas-pemantauan-pengungsi-rohingya-di-kabupaten-aceh-utara-aceh-timur-dan-kota-langsa-provinsi-aceh>; accessed on 7 January 2024.

⁸ Zulkarnain and Indra Kusumawardhana, “Bersama untuk Kemanusiaan: Penanganan Lintas Sektor terhadap Masalah Pengungsi Rohingya di Aceh 2015,” *Jurnal HAM*, Vol. 11, No. 1 (2020), 67-83.

number of refugees increased.⁹ From there, there are differences of view to responding to the Rohingya refugee problem, which causes discord among the community today.¹⁰ Thus, there needs to be more effort to deal with the problems that occur, one of which is the role of technology, considering the increasingly modern era. Siswanto revealed that technology can be seen as a pragmatic approach to overcoming crises and making them easier to deal with.¹¹ Asih explained, that technology is an aspect of assistance provided by international organizations as *Aid Provider* to analyze one of IOM's roles in dealing with refugee problems.¹² Currently, there has been the development of artificial intelligence often referred to as AI, Qonita explained that AI can help humans solve problems rationally, quickly, easily, and cheaply.¹³

It is not uncommon to find previous articles discussing AI such as articles entitled "Pemanfaatan Teknologi Artificial Intelligence untuk Penguatan Kesehatan dan Pemulihan Ekonomi Nasional,"¹⁴ "Penerapan Artificial Intelligence (AI) dalam Pengelolaan Krisis Bencana,"¹⁵ "Filsafat Artificial Intelligence (AI) dan

⁹ Pramesti Regita Cindy, "Rohingya Kian Beban Indonesia, Pemerintah Belum Temukan Solusi" (2023), <https://www.bloombergtechnoz.com/detail-news/22906/rohingya-kian-bebani-indonesia-pemerintah-belum-temukan-solusi>; accessed on 7 January 2024.

¹⁰ Sadhali, "Masyarakat Aceh Jangan Terpecah Belah Karena Rohingya" (2024), <https://www.rri.co.id/daerah/499499/masyarakat-aceh-jangan-terpecah-belah-karena-rohingya>; accessed on 7 January 2024.

¹¹ Romi Siswanto, "Transformasi Digital Dalam Pemulihan Pendidikan Pasca Pandemi" (2022), <https://gurudikdas.kemdikbud.go.id/news/transformasi-digital-dalam-pemulihan-pendidikan-pasca-pandemi>; accessed on 8 January 2024.

¹² Hastin A. Asih, "Peran *International Organization For Migration* Dalam Mengatasi Pengungsi Asal Myanmar di Indonesia Tahun 2010-2013," *Global & Policy*, Vol. 3, No. 1 (2015), 1-12.

¹³ Aqila Zahra Qonita, "Mengulas Kontroversi AI Dan Seni Menurut Guru Besar Artificial Intelligence Telkom University" (2023), <https://telkomuniversity.ac.id/mengulas-kontroversi-ai-dan-seni-menurut-guru-besar-artificial-intelligence-telkom-university/>; accessed on 8 January 2024.

¹⁴ Fitri Andri Astuti, "Pemanfaatan Teknologi Artificial Intelligence untuk Penguatan Kesehatan dan Pemulihan Ekonomi Nasional," *Jurnal Sistem Cerdas*, Vol. 4, No. 1 (2021), 25-34.

¹⁵ Tri Wahyudi, "Penerapan Artificial Intelligence (AI) dalam Pengelolaan Krisis Bencana," *Jurnal ICT: Information Communication & Technology*, Vol. 23, No. 2 (2023), 433-439.

Kemanfaatan untuk Mewujudkan Indonesia yang Berperadaban,”¹⁶ and “Peran Public Relations di Era Artificial Intelligence.”¹⁷ The difference with this paper is the focus of discussion on AI in overcoming humanitarian crises, especially in Rohingya refugees. This paper aims to analyze the efforts that can be made by AI in dealing with the humanitarian crisis of studies on Rohingya refugees.

The method used is a qualitative approach literature study with data collection based on various sources relevant to the topic of discussion. To strengthen the source, the author collected data using questionnaires in the form of Google Forms, distributed to several respondents from various regions. Respondents in this paper are the general public with a minimum criterion of 23 years old, with snowball sampling techniques while data analysis techniques refer to the analysis components according to Miles et.al (data collection, data reduction, data presentation, conclusions).¹⁸

Development of Artificial Intelligence

Artificial intelligence, abbreviated AI in its development history, is full of important roles, especially in the technology field. Starting in the 1950s, AI played an important role in shaping the understanding and development of human intelligence. Researchers initially focused more on developing computer programs that were then executed with simple mathematical tasks. However, in its later development, it focused more on creating machines that can think and learn like humans. Next, in 1956, precisely at the Dartmouth College conference, was the beginning of the inauguration of AI. Then, in the 1960s, the existence of natural language processes and rule-based systems hampered AI progress for decades due to a lack of resources and technical challenges.¹⁹

¹⁶ Rosa Anggelina Babys et al., “Filsafat Artificial Intelligence (AI) dan Kemanfaatan untuk Mewujudkan Indonesia yang Berperadaban,” *Jurnal Oratio Directa*, Vol. 5, No. 2 (2024), 1021-1042.

¹⁷ Mia Nurislamiyah et al., “Peran Public Relations di Era Artificial Intelligence,” *Jurnal Komunikasi dan Penyiaran Islam*, Vol. 4, No. 2 (2023), 1-10.

¹⁸ Matthew B. Miles et al., *Qualitative Data Analysis a Methods Sourcebook* (California: Sage, 2014), 32.

¹⁹ Moh Nur Sholeh, *Transformasi Proyek Konstruksi dengan Artificial Intelligence* (Semarang: Universitas Diponegoro, 2023), 16-17.

In the 1990s, developments were rapid and were a breakthrough in machine learning and advances in data processing, making AI achieve high levels of work. The success of chess, facial recognition, and natural language is a testament to advances in AI. From this, AI is now an integral part of every aspect of daily life.²⁰ Rachmad and Widyastuti said that the development of AI in everyday life plays a role in various aspects such as manufacturing, financial services, print media, transportation, electronics, industry, health, and entertainment. The nature possessed by AI is permanent, able to provide convenience, consistency, accuracy, and well-documented. The concept of artificial intelligence or AI was originally from the existence of a turing machine which is a machine for testing intelligence on a person on two objects.²¹

The mention of artificial intelligence is reminiscent of supercomputers, where the ability to carry out processes that can be said to be very large includes adaptive behavior such as the inclusion of sensors and various other abilities that allow for cognition and functional abilities like humans. From this, various films can be created to display AI capabilities, for example, in smart buildings, the ability to regulate air quality in buildings, temperature, and play music that depends on the heart condition of the occupants of the space that is felt.²² In Warwick, it is explained that there are various schools of thought about the true nature of AI. This is because machines can act as intelligently as humans can as if they were just as intelligent as humans. So AI can be classified into weak AI and strong AI.²³

The concept of classification is based on Marvin Minsky definition in Warwick: weak AI does what looks like human intelligence, but weak AI is unacceptable to some people. Powerful AI allows machines to think in the same way as humans, not just imitate human thinking. Strong AI can be formed by creating a

²⁰ Ibid., 16-17.

²¹ Dwi Swasono Rachmad and Widyastuti, "Filsafat Ontologi Kecerdasan Buatan Pada Perkembangan Teknologi Informasi," *Prosiding Seminar Nasional Sistem Informasi dan Teknologi*, Vol. 4, No. 1 (2020), 225-229.

²² Edhy Rustan, *Desain Instruksional dan Pengembangan Pembelajaran Bahasa* (Yogyakarta: Selat Media Patners, 2023), 223.

²³ Kevin Warwick, *Artificial Intelligence: The Basics* (USA and Canada: Routledge, 2012), 64-65.

computer that fully replicates the function of the human brain in every aspect.²⁴

There are types of AI that can be used to deal with humanitarian problems. Such as AI robots that can help perform surgery in the health sector and provide care for the elderly or people with disabilities.²⁵ This is of particular concern to Rohingya refugees considering that there are various ages from childhood to elderly. So that the existence of AI robots becomes a tool for Rohingya refugees in providing handling. There are several ways AI robots work. First, high-quality patient care. Medical robots support minimally invasive procedures, customized and frequent monitoring for patients with chronic diseases, intelligent therapy and social engagement for elderly patients. In addition, as robots ease the workload, nurses and other nurses can offer more empathy and human interaction to patients which can improve long-term well-being. Second, operational efficiency. Service robots streamline routine tasks, reduce physical demands on human workers, and ensure more consistent processes. Robots can track inventory and place orders on time, helping to ensure supplies, equipment and medicines are where they are needed.

The last but not least, modular robot. Modular robots complement other systems and are capable of being programmed to perform a variety of tasks. Therapeutic exoskeleton robots and prosthetic robot arms and legs are examples in healthcare. Rehabilitation after stroke, paralysis, traumatic brain injury, or multiple sclerosis can be assisted with therapeutic robots. AI robots are able to monitor the patient's body shape while performing prescribed exercises, detect degrees of movement in various positions and record improvements more accurately than the human eye. AI robots can communicate with patients to offer coaching and motivation.²⁶

The author searches from various reliable sources, both journal articles that the author gets through Google Scholars and official

²⁴ Ibid., 64-65.

²⁵ "AI dan Kemanusiaan: Menjelajahi Potensi Risiko dan Manfaat dari Teknologi Baru ini," <https://www.akurasi.id/headline/teknologi-ai-dan-manusia/>; accessed on 26 April 2024.

²⁶ Parul Saini, "Cara Robot Medis Dapat Meningkatkan Layanan Kesehatan" (2023), <https://webmedy.com/blog/id/ways-medical-robots-can-enhance-healthcare/>; accessed on 27 April 2024.

websites that discuss the topic of the problem. The existence of activities carried out using AI can minimize the occurrence of humanitarian crisis. The following are the author's search results related to activities that can be carried out by AI:

Table 1. Interpretation of AI activities

Writer	Interpretation
Wibowo & Muhamad, 2023	Effectiveness of mental health services. ²⁷
Larasati, 2023	Detect potential security threats such as cyberattacks or suspicious activity. ²⁸
Oktavianus et.al., 2023	Language translation. ²⁹
Nur'adila, 2023	Enhanced cybersecurity. ³⁰

Related to Table 1, to find out whether the public now knows that AI can perform activities such as addressing mental health problems, detecting potential security threats such as cyberattacks or suspicious activity, translating a language, and enhancing cybersecurity, the authors compiled a questionnaire and distributed it to several respondents. The following are the results of the percentage of answers from several respondents that the author has reduced based on needs in the preparation of this paper:

²⁷ Christabel Azarine Wibowo and Muhamad Basyrul Muvid, “Analisis dan Desain Sistem Digital Konsultasi Psikologi,” *SATIN: Sains dan Teknologi Informatika*, Vol. 9, No. 2 (2023), 134–144.

²⁸ Diah Ayu Larasati, “Penerapan Kecerdasan Buatan dalam Analisis Data untuk Pengambilan Keputusan yang Lebih Baik,” *Paradoksia*, Vol. 1, No. 1 (2023), 1-9.

²⁹ Arnolus Juantri E Oktavianus et al., “Pemanfaatan Artificial Intelligence pada Pembelajaran dan Asesmen di Era Digitalisasi,” *Jurnal Kridatama Sains dan Teknologi*, Vol. 5, No. 2 (2023), 473-486.

³⁰ Rika Nur'adila, “Tren Keamanan Menggunakan Artificial Intelligence” (2023), retrieved from https://www.researchgate.net/publication/370072875_Tren_Keamanaan_Menggunakan_Artificial_Intelligence?enrichId=rgreq-d9660428c569200fa1fd5f3ae7ab907b-XXX&enrichSource=Y292ZXJQYWdlOzM3MDA3Mjg3NTtBUzoxMTQzMTE0OTMyMTg2MkAxNjgxNzk3MzUxNjU0&el=1_x_2&_esc=publicationCoverPdf; accessed on 10 January 2023.

Apakah Bapak/Ibu telah mengetahui bahwa Artificial Intelligence dapat digunakan untuk mengatasi masalah kesehatan mental?
40 responses

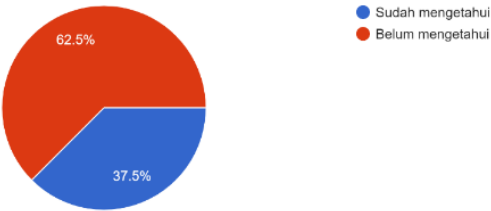


Figure 1. Questionnaire results in 2024

Based on Figure 1 with 40 respondents, the authors ask whether the public already knows that artificial intelligence can be used to address mental health problems. 62.5% stated that they did not know if AI could be used to overcome mental health problems. The remaining 37.5% already know that AI can be used to address men-tal health issues.

Apakah Bapak/Ibu telah mengetahui bahwa Artificial Intelligence dapat digunakan untuk mengatasi deteksi penipuan?
40 responses

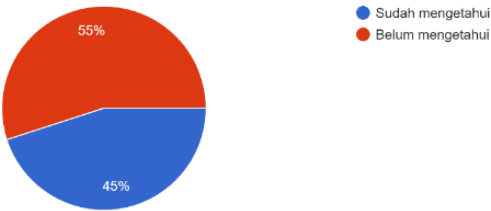


Figure 2. Questionnaire results in 2024

Based on Figure 2 with 40 respondents, the author asks whether the public already knows that artificial intelligence can be used to overcome fraud detection. 55% stated that they did not know if AI could be used to detect fraudulent activities. The remaining 45% already know that AI can be used to detect fraudulent activity.

Apakah Bapak/Ibu telah mengetahui bahwa Artificial Intelligence dapat digunakan untuk penerjemahan bahasa?
40 responses

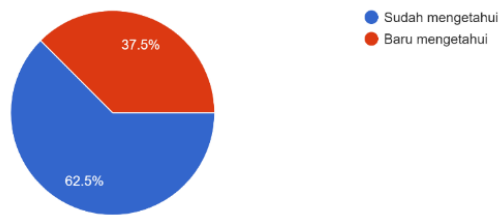


Figure 3. Questionnaire results in 2024

Based on Figure 3 with 40 respondents, the author asks whether the public already knows that artificial intelligence can be used for language translation. 37.5% stated that they only knew if AI could be used for language translation. The remaining 62.5% already know that AI can be used for language translation.

Apakah Bapak/Ibu telah mengetahui bahwa Artificial Intelligence dapat digunakan untuk meningkatkan perimeter keamanan?
40 responses

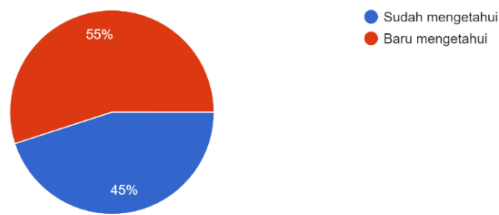


Figure 4. Questionnaire results in 2024

Based on Figure 5 with 40 respondents, the authors ask whether the public already knows that artificial intelligence can be used to improve the security perimeter. 55% stated that they just knew if AI could be used to improve perimeter security. The remaining 45% already know that AI can be used to improve security perimeters.

Definition of Artificial Intelligence

Permana et al., explained that AI is a field in computer science whose focus is on the process of developing computers and computer systems that can perform tasks with human intelligence. AI includes algorithms and techniques to make computers able to understand and learn from data in decision-making or intelligent action.³¹ As also explained by Rahman and Hendra et al., AI is a discipline in computer science that plays a role in overcoming every problem with the involvement of knowledge. The focus of AI is on the process of learning, predicting, understanding, or manipulating complex and complicated conditions.³² Ismawati & Syahri explained that AI is a research area that has a dynamic nature when discussing a computer science topic, so AI is one of the computer sciences that makes it able to do a good job like humans do. It is also explained in the Encyclopedia Britannica in Ismawati & Syahri that AI is a branch of knowledge that generally uses symbols rather than numbers and processes. Data refers to the heuristic method or refers to several rules.³³ In Pongtambing et al., it is explained that AI poses challenges, especially for young people. As well as about jobs where AI is considered capable of changing a job on an automated basis and replacing routine tasks due to machines. So changes in job demands arise due to the development of AI.³⁴

From what has been explained, it can be concluded that AI is a computer science study that strives to carry out all human activities effectively and efficiently. The existence of AI can solve every complex problem easily because AI is created with various algorithmic programs, so it is considered artificial intelligence for the output it produces.

³¹ Angga Aditya Permana et al., *Artificial Intelligence Marketing* (Indonesia: Get Press Indonesia, 2023), 1.

³² Ferry Fadzlul Rahman and Hendra Saputra, *Artificial Intelligence Dalam Pelayanan Kesehatan* (Sumatra Barat: Mitra Cendekia Media, 2023), 4.

³³ Nur Aziza Ismawati and Syahri Ramadhanti, "Penerapan Artificial Intelligence Dalam Mendukung Pembelajaran di Era Digital," *Prosiding Seminar Nasional 1 Amal Insani Foundation* Vol. 1 (2022), 158-166.

³⁴ Yulita Sirinti Pongtambing et al., "Peluang dan Tantangan Kecerdasan Buatan Bagi Generasi Muda," *Bakti Sekawan: Jurnal Pengabdian Masyarakat*, Vol. 3, No. 1 (2023), 23-28.

The Urgency of Artificial Intelligence

The development of AI certainly makes it easier for every human to complete a job, thus causing urgency through its use. Some of the urgency of AI is interpreted in the following table:

Table 2. Interpretation of the urgency of AI

Writer	Interpretation
Disemadi, 2021	Easy communication and access to information
Pakpahan, 2021	Solving cognitive problems
Zsazsa dan Elisabeth, 2023	Data analysis and decision-making quickly and accurately
Oktavianus et al., 2023	Analyse big data quickly and efficiently to make smarter and more timely decisions.

It can be described from Table 2 as the urgency of AI, including being able to facilitate communication and access to information.³⁵ solve a cognitive problem,³⁶ being able to perform data analysis that has a large capacity and decision-making accurately, intelligently, and efficiently.^{37,38} In some of these urgencies, it can be explained in more detail first about AI, which can provide young people with communication and access to information. This was explained by Disemadi, which can happen because AI is one form of technological advancement with the existence of various internet-based services that can be accessed by anyone. So that each user can communicate easily and the information obtained is obtained quickly.³⁹ Johansah & Arrum revealed that although AI can be used to disseminate information

³⁵ Hari Sutra Disemadi, “Urgensi Regulasi Khusus dan Pemanfaatan Artificial Intelligence dalam Mewujudkan Perlindungan Data Pribadi di Indonesia,” *Jurnal Wawasan Yuridika*, Vol. 5, No. 2 (2021), 177-199.

³⁶ Roida Pakpahan, “Analisa Pengaruh Implementasi Artificial Intelligence Dalam Kehidupan Manusia,” *Journal of Information System, Informatics and Computing*, Vol. 5, No. 2 (2021), 506-513.

³⁷ Cut Sah Kha Mei Zsazsa and Elisabeth Sitepu, “Implementasi Artificial Intelligence pada Pelayanan Publik,” *All Fields of Science Journal Liaison Academia and Society*, Vol. 3, No. 3 (2023), 24-42.

³⁸ Oktavianus et al., “Pemanfaatan Artificial Intelligence,” 473-486.

³⁹ Disemadi, “Urgensi Regulasi Khusus,” 177-199.

so that users quickly obtain information they want to know, the implementation of AI still requires human input.⁴⁰

The second is related to the use of AI as a cognitive problem solver, where in Pakpahan it is explained that AI solves every problem that generally has something to do with human intelligence.⁴¹ As explained in Putri et al., cognitive problem solving carried out by AI, in addition to its relation to human intelligence, is also related to learning, problem-solving, and pattern recognition. This is because AI makes it possible to analyze complex data so that it can find a pattern that can be said to be unable to be detected by humans.⁴² The third relates to AI, which can perform data analysis with large capacities and make decisions accurately, intelligently, and efficiently.⁴³ That is because in AI, there are several main schemes, as explained by Oktavianus et al. The first machine learning scheme contains algorithms and statistical models to perform pattern identification on data and make decisions.⁴⁴

The second scheme of deep learning aims to teach computers to understand and solve complex problems so that they have similarities with humans. The third scheme is a neural network, also known as a neural *network*. The existence of this network can carry out the learning process of complex patterns on data and perform tasks such as recognition of images, and sound, and translating language. The fourth scheme is cognitive computing to create intelligent systems so that they can understand, process, and respond to information like humans. So that cognitive computing can create a system that can not only process information but is also able to understand context, think, and respond to the surrounding environment. The fifth scheme is natural language processing, which aims to make computers able to understand,

⁴⁰ Feri Johansah and Arrum Dara Efda, "AI dan Pelayanan Publik: Penggunaan Komunikasi Digital Dalam Penerapan Data Ketersediaan Darah di RS USU Medan," *Technologia: Jurnal Ilmiah*, Vol. 14, No. 1 (2023), 14-18.

⁴¹ Pakpahan, "Analisa Pengaruh Implementasi," 506-513.

⁴² Velda Aurelia Putri et al., "Peran Artificial Intelligence dalam Proses Pembelajaran Mahasiswa di Universitas Negeri Surabaya," *Prosiding Seminar Nasional Universitas Negeri Surabaya* (2023), 615-630.

⁴³ Zsazsa and Sitepu, "Implementasi Artificial Intelligence," 24-42; Oktavianus et al., "Pemanfaatan Artificial Intelligence," 473-486.

⁴⁴ Ibid., 473-486.

process, and produce human language in a meaningful way. The sixth scheme of computer vision makes it possible to see and understand images or videos, both in terms of object recognition, face detection, and motion detection, as well as several applications that require visual interpretation.⁴⁵

Tracing the Qur’anic view of technology invites us to look at the many Qur’anic verses that explain the universe. Some opinions state around 750 verses of the Qur’an that talk about the universe and its phenomena, and command man to know and make use of it. Strictly and repeatedly, the Qur’an states that the universe was created and subjugated by Allah for the benefit of man, as described by al-Jāthiyah [45]: 13, “He also subjected for you whatever is in the heavens and whatever is on the earth—all by His grace. Surely in this are signs for people who reflect.”

The potential and availability of God-created land, and the inability of nature to disobey His commandments, all give man the potential to take advantage of what God subdues. The success of utilizing nature is the fruit of technology. The Qur’an praises a group of human beings whom it named *ulū al-albāb*. Their characteristics, among others, are described by Āli ‘Imrān [3]: 190-195. In this verse are described two main characteristics of human beings *ulul albab*, namely humans who always contemplating and dhikr. Through these two consistent processes, man can produce the product “*natijah*” which is very useful for man in carrying out his duties. *Natijah* is not just ideas that are arranged in the mind and concepts, but also go beyond them to the stage of implementation or practice and their application or use in everyday life (technology).

Implications of Artificial Intelligence in Addressing Humanitarian Crises

It is necessary to mention based on the research result about the efforts made to overcome the problem of Rohingya refugees, are presented in Figure 5 below:

⁴⁵ Ibid., 473-486.

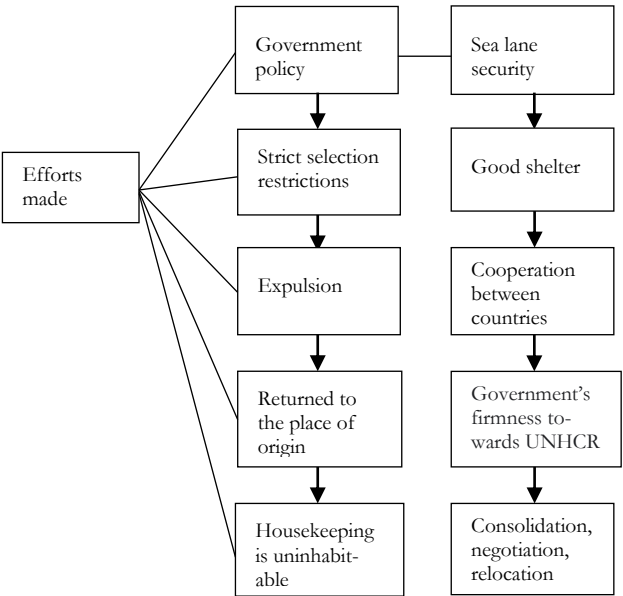


Figure 5. Questionnaire results in 2024

Based on Figure 5, it can be described again some of the efforts made to overcome the problem of Rohingya refugees, which the author has summarised from the results of the questionnaire, including policies from the government, strict selection restrictions, expulsion, return to their places of origin, improvement of uninhabitable houses, government firmness towards UNHCR (consolidation, negotiation, and relocation), the existence of good shelter, cooperation between countries in this regard, the establishment of long-term development such as the provision of humanitarian assistance, diplomacy, advocacy of human rights (Hak Asasi Manusia/HAM) and protection, as well as increasing the security of sea lanes. In addition to aiming to analyze the relationship with Rohingya refugees, in the results of this study, the author presents information about several activities that can be carried out by AI.

Based on the results of the research obtained, the efforts made to deal with Rohingya refugees were described. The first is government policy. In this regard, Susilowati et al. explain that the handling of migrant transit problems in Indonesia can be said to

be inadequate. Indonesian immigration upholds the law of the Law of the Republic of Indonesia Number 6 of 2011 concerning immigration. In these regulations, immigration activities are limited to matters related to the traffic of people entering or leaving Indonesian territory and supervision to maintain state sovereignty. These services only include law enforcement, state security, and public welfare facilities. The handling of refugees is different from the previous mandate because the service that must be provided to each refugee is humanitarian service.⁴⁶

Secondly, there are restrictions with strict selection in the kumparanNEWS, explained about this matter, a question as questioned by Hikmahanto about the status of the Rohingya ethnicity. According to him, there needs to be a selection to determine the status of the Rohingya ethnicity, whether it has been included in the category of Presidential Regulation 125 or not. In addition, the selection process aims to find out whether they are being persecuted or want to seek a better livelihood in Indonesia, and whether they have obtained asylum seeker status or refugee status from UNHCR or not. According to Hikmahanto in kumparanNEWS, if it has not gone through the selection process, the government does not have to treat Rohingya as foreign refugees, so Presidential Regulation 125 is enforced.⁴⁷

The third is related to expulsion. As quoted on mitaberita.com, the expulsion action occurred against Rohingya immigrants and was carried out by several Banda Aceh students. According to Fakhrrur-razi on mitaberita.com, the action taken by the students should not be taken because it does not reflect on scholars. According to him, there should also be a need to show brotherhood with Rohingya immigrants who do not have comfort in their country because of interfaith conflicts.⁴⁸ Fourth, related to

⁴⁶ Ida Susilowati et al., “Kebijakan Pemerintah Indonesia terhadap Pengungsi Ditinjau dari Hukum Islam,” *Mizan: Journal of Islamic Law*, Vol. 5, No. 3 (2021), 341-352.

⁴⁷ “Hikmahanto: Kedatangan Etnis Rohingya Bukan Urusan Indonesia” (2023), <https://kumparan.com/kumparannews/hikmahanto-kedatangan-etnis-rohingya-bukan-urusan-indonesia-21idx2XsTaq/full>; accessed on 8 January 2024.

⁴⁸ “LBH CaKRA Komentari Pengusiran Rohingya: Tidak Manusiawi dan Memalukan!” (2023), <https://www.mitaberita.com/2023/12/lbh-cakra-koment>

efforts to be returned to the place of origin, Usman in *kompas.com*, assessed that if the government's policy is to return Rohingya refugees to the country of origin, namely Myanmar, it can be said to violate human rights and international conventions that give obligations to states to protect anyone who is in danger or displacement from the pursuit of crime and persecution in a country of origin.⁴⁹

Fifth, there are efforts to fix uninhabitable houses; in this regard, Social Minister Khofifah Indar Parawansa emphasized that Rohingya refugees are accommodated in habitable locations. It was also said that thousands of Rohingya refugees were placed in unused warehouses, although they were called warehouses, but were suitable for habitation with good space and electricity, yard area, and sufficient health and logistics.⁵⁰ Sixth, sea lane security. In this regard, Mangihot revealed that the Indonesian National Army, Navy, Bakamla, and Indonesian National Police have made efforts to maximize sea security in anticipation of the wave of Rohingya refugees to Indonesia.⁵¹

Seventh, there is a good shelter. Related to this, as previously explained, Rohingya refugees are accommodated in habitable locations. In addition, Indonesia is taking diplomatic steps to open access to humanitarian aid and ensure transparency in handling Rohingya refugees. Indonesian aid agencies are building health, education, and temporary shelters for Rohingya refugees.⁵² In

ari-pengusiran-rohingya-tidak-manusiawi-dan-memalukan.html; accessed on 8 January 2024.

⁴⁹ Ardito Ramadhan and Krisiandi, "Amnesty: Pemerintah Langgar HAM Jika Kembalikan Pengungsi Rohingya Ke Myanmar" *Kompas.com* (2023), <https://nasional.kompas.com/read/2023/12/06/16580411/amnesty-pemerintah-langgar-ham-jika-kembalikan-pengungsi-rohingya-ke-myanmar>; accessed on 8 January 2024.

⁵⁰ Andreas Gerry Tuwo, "Mensos Tegaskan Pengungsi Rohingya Ditampung di Lokasi Layak Huni" (2015), <https://www.liputan6.com/news/read/2247201/mensos-tegaskan-pengungsi-rohingya-ditampung-di-lokasi-layak-huni>; accessed on 8 January 2024.

⁵¹ Johannes Mangihot, "Pengamanan Laut Jadi Opsi Pertama Antisipasi Gelombang Pengungsi Rohingya Ke Indonesia" (2023), <https://www.kompas.tv/nasional/467014/pengamanan-laut-jadi-opsi-pertama-antisipasi-gelombang-pengungsi-rohingya-ke-indonesia?page=all>; accessed on 9 January 2024.

⁵² "Ketua DPR: Migrasi Pengungsi Merupakan Masalah yang Serius" (2018). <https://www.dpr.go.id/berita/detail/id/20125>; accessed on 9 January 2024.

addition, there is also assistance in clothing and food for Rohingya refugees.⁵³

The eighth cooperation between countries, related to this in Bangun, was explained in the case of Rohingya refugees, whose handling is complicated because of the lack of cooperation between member countries. The response of ASEAN member states to the Rohingya refugee problem is divided into three groups: first, countries that pay attention to the problem by providing proactive solutions (Indonesia, Malaysia, and Thailand); second, countries that pay attention to this problem but do not provide proactive solutions (Singapore, Brunei Darussalam, and the Philippines); and third, countries that tend to be silent, inactive, and seem reluctant to pay attention to this problem (Vietnam, Laos, and Cambodia).⁵⁴

Ninth is the need for government firmness towards UNHCR. In this regard, Hikmahanto, in merdeka.com, revealed five things that the government must do as a form of firmness. First, the government left everything to the UNHCR. Second, the government should request that UNHCR prepare and release a budget for the daily needs of the Rohingya ethnicity. Third, the interim government must find a remote island to accommodate the Rohingya ethnicity that already exists in Indonesia. Fourth, the government requested the Myanmar Embassy in Jakarta to repatriate the Rohingya, or UNHCR, as stipulated in Article 43 paragraphs (2) and (3) of Presidential Regulation 125. Fifth, Indonesia must ask the UNHCR office in Jakarta, which is in charge of screening asylum seekers and refugee status, to be closed immediately.⁵⁵

The tenth relates to the consolidation, negotiation, and relocation of Rohingya refugees, related to the consolidation of Zulkifli

⁵³ “Bara’ di Balik Penolakan Pengungsi Rohingya di Aceh, ‘Saya Sebelas Hari di Laut, Makan Sehari Sekali’” (2023), <https://www.bbc.com/indonesia/articles/cxe1j526e6vo>; accessed on 9 January 2024.

⁵⁴ Budi Hermawan Bangun, “Konstruksi Mekanisme ASEAN dalam Penanganan Pengungsi Rohingya,” *Arena Hukum*, Vol. 12, No. 2 (2019), 235-252.

⁵⁵ “Pemerintah Didesak Tegas Soal Etnis Rohingya: Jangan Sampai Jadi Masalah” (2023), <https://www.merdeka.com/peristiwa/pemerintah-didesak-tegas-soal-etnis-rohingnya-jangan-sampai-jadi-masalah-58956-mvk.html?screen=2>; accessed on 9 January 2024.

Hasan on jariungu.com, asking that all Indonesian people support the consolidation of ASEAN and even the world to move quickly to stop crimes against humanity in Myanmar.⁵⁶ About their negotiations, in diskominfo.acehprov.go.id, it was revealed that Indonesia can negotiate on Rohingya with Bangladesh or other countries for the issue of returning refugees.⁵⁷ However, regarding the return of refugees to their country of origin, there are special provisions. As also explained by UNHCR, the policy of deporting refugees to the country of their origin of arrival is contrary to humanitarian principles.⁵⁸ Use relocation or transfer of Rohingya refugees, is still being coordinated to determine which location will be determined by the authorities to be used as a shelter. This was revealed by the UNHCR Indonesia Spokesperson contained in detikSumut.⁵⁹

From some of the efforts in the research results above, it is appropriate for both the government and the community to choose and sort out good and appropriate efforts to make. This is to prevent conflict and not cause feelings of harm from an action. As explained earlier, along with the increasingly sophisticated times, the government and society can involve the role of technology to overcome the problems faced, including the problem of Rohingya refugees. Moreover, as has been explained before, until now, the search for the best efforts and solutions to overcome Rohingya refugees is still being carried out. From there, involving technology is one step that can be taken as a form of effort to deal with these problems.

As with AI technology, it has several implications for dealing with humanitarian crises. Some of these implications are: first, AI

⁵⁶ “Ketua MPR: Tidak Usah Ributkan Bantuan Rohingya” (2017), https://www.jariungu.com/berita_list.php?idBerita=93251&ketua-mpr-tidak-usah-ributkan-bantuan-rohingya; accessed on 9 January 2024.

⁵⁷ Adam Tri W., “Komisi 1 DPRA Minta UNHCR Dan IOM Mendesak Penyelesaian Konflik di Negara Etnis Rohingya” (2023), <https://diskominfo.acehprov.go.id/berita/kategori/pemerintah-aceh/komisi-1-dpra-minta-unhcr-da-n-iom-mendesak-penyelesaian-konflik-di-negara-etnis-rohingya>; accessed on 9 January 2024.

⁵⁸ Ibid.

⁵⁹ Agus Setyadi, “Ditolak di Sabang, UNHCR Masih Koordinasi Terkait Lokasi Penampungan Rohingya” (2023), <https://www.detik.com/sumut/berita/d-7075308/ditolak-di-sabang-unhcr-masih-koordinasi-terkait-lokasi-penampungan-rohingya>; accessed on 9 January 2024.

can be used as a mental health service. In the case of Rohingya refugees listed on voaindonesia.com, hundreds of Rohingya refugees suffered serious trauma when Myanmar's army launched clearance operations or forced Rohingya refugees to flee to Bangladesh.⁶⁰ In the Aceh People's Daily, it was revealed that some Rohingya refugees began to be exposed to mental stress, allegedly because of a lack of certainty about their lives.⁶¹ In Wibowo and Muhamad, it was revealed that AI-based technology can increase service effectiveness by helping to detect psychological problems early, provide psychological services that are right on target, and monitor client development on an ongoing basis.⁶² From this, AI-based technology can be a consideration and effort to be applied so that it can help overcome the problems that occur in Rohingya refugees related to mental health.

Second are the implications of AI in detecting potential security threats such as cyberattacks or suspicious activity. In this regard, on voaindonesia.com, it was explained that the Banda Aceh Police determined one Rohingya man to be a suspect in a human smuggling case.⁶³ Other than that, based on the results of the research that has been described, there is concern that Rohingya refugees will become a threat to state security. Larasati explained that one of the benefits of implementing AI in data analysis is increased security. Thus, AI can be a tool for maintaining data and infrastructure security.⁶⁴ From this, there needs to be an effort towards the improvement and application of AI-based technology to anticipate something that happens.

In the three implications of AI related to language translation, Saskia and Pratomo explained that there is AI that can speak and

⁶⁰ "Masalah Kesehatan Mental Anak-Anak Pengungsi Rohingya" (2019), <https://www.voaindonesia.com/a/masalah-kesehatan-mental-anak-anak-pengungsi-rohingya/5062252.html>; accessed on 9 January 2024.

⁶¹ "Pengungsi Rohingya di BMA Mulai Kena Gangguan Mental" (2024), <https://harianrakyataceh.com/2024/01/09/pengungsi-rohingya-di-bma-mulai-kena-gangguan-mental/>; accessed on 9 January 2024.

⁶² Wibowo and Muvid, "Analisis dan Desain," 134-144.

⁶³ "Polisi Tetapkan Satu Pengungsi Rohingya Jadi Tersangka Penyelundupan Manusia" (2023), <https://www.voaindonesia.com/a/polisi-tetapkan-satu-pengungsi-rohingya-jadi-tersangka-penyelundupan-manusia/7403003.html>; accessed on 9 January 2024.

⁶⁴ Larasati, "Penerapan Kecerdasan Buatan."

translate 200 different languages; this is called NLLB-200, which can be translated simultaneously, including languages from all regions of Asia and Africa as well as rarely used languages such as Lao and Kamba, which are languages of the Bantu ethnicity in Kenya and Tanzania.⁶⁵ As the author explained earlier, in Octavianus et al., in the AI process, there is a schematic artificial neural network, or neural network, consisting of several artificial nodes or neurons connected through mathematical connections called “weights.” Each neuron receives input for the next neuron, so there is language translation ability in AI due to the process in artificial neural networks.⁶⁶

In addition, teknologi.id., revealed that Google has just announced its success in developing AI that allows it to be able to translate sign language. However, this is said to be not completely perfect; some gestures and facial expressions are sometimes missed in translation. In addition, the process of translating sign language can only be done on computer devices.⁶⁷ The existence of AI capabilities in terms of language translation can be used as a consideration to be tested on Rohingya refugees, considering that there are still obstacles related to communication. As stated by Safrizal, Rohingya have difficulty communicating with Acehnese people because of different languages and cultures, so even when communicating using sign language, there is often a misunderstanding of meaning due to cultural differences.⁶⁸

Fourth, AI can improve cybersecurity. As has been explained, based on the results of the research that has been described, there is concern that Rohingya refugees will become a threat to state security. As Nur’adila explained, in recent years, many researchers have begun to explore AI approaches to improve cybersecurity. The term cybersecurity refers to a process, system, and human

⁶⁵ Caroline Saskia and Pratomo Yudha, “AI Buatan Meta Bisa Terjemahkan 200 Bahasa” (2022), <https://tekno.kompas.com/read/2022/07/08/19300017/ai-buatan-meta-bisa-terjemahkan-200-bahasa>; accessed on 10 January 2024.

⁶⁶ Oktavianus et al., “Pemanfaatan Artificial Intelligence,” 473-486.

⁶⁷ “Berkat Teknologi AI, Google Translate Bakal Bisa Terjemahkan Bahasa Isyarat” (2020), <https://teknologi.id/tekno/berkat-teknologi-ai-google-translate-bakal-bisa-terjemahkan-bahasa-isyarat>; accessed on 10 January 2024.

⁶⁸ Safrizal, “Kpmunikasi Antarbudaya Pengungsi Etnis Rohingya dengan Masyarakat Aceh di CAMP Bayeun Aceh Timur,” *Al-Hikmah: Media Dakwah, Komunikasi, Sosial dan Kebudayaan*, Vol. 9, No. 1 (2018), 94-116.

behaviour that support the activity of maintaining electronic resources. AI can be said to be a versatile technique for determining false information and evaluating large amounts of data.⁶⁹ Related to this, the existence of AI-based technology can be used as an effort to anticipate something that happens.

In addition to the above implications, in reality, AI has several negative implications, so special attention needs to be paid when involving AI to overcome a problem. Hardiansyah revealed several implications or negative impacts of AI. First, there is bias and inaccuracy because AI depends on the data used. If the existing data is not representative, the results obtained from AI are biased and inaccurate. Second, AI misused by irresponsible parties will be a cybersecurity threat. Third, human skills are declining due to dependence on the use of AI. Fourth, it raises concerns about user privacy because AI is trained using large sets of data that potentially contain personal data. Fifth, AI has the potential to replace human jobs, making it a concern for job losses.⁷⁰

Conclusion

There is a need for the involvement of AI technology to deal with the problems that occur among Rohingya refugees. Some of the implications caused by the use of AI in dealing with humanitarian crises include addressing mental health problems, detecting potential security threats such as cyberattacks or suspicious activity, translating a language, and enhancing cybersecurity. On the other hand, the use of AI has several negative implications, such as biased or inaccurate data, which can be a threat to data security if used by irresponsible parties; dependence on the use of AI resulting in a decline in human skills; concerns about user privacy; and job losses.

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⁶⁹ Rika Nur'adila, "Tren Keamanan Menggunakan Artificial Intelligence" (2023), <https://www.researchgate.net/publication/370072875>; accessed on 10 January 2023.

⁷⁰ Zulfikar Hardiansyah, "5 Dampak Positif dan Negatif dari Artificial Intelligence Yang Perlu Diketahui" (2023), <https://tekno.kompas.com/read/2023/11/28/17150057/5-dampak-positif-dan-negatif-dari-artificial-intelligence-yang-perlu-diketahui?page=all>; accessed on 10 January 2024.

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