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Netizen Views on Artificial Intelligence: A Social Media Content Analysis

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Abstract

The study aims to explore the understanding of digital citizens on artificial intelligence and their views on applications of artificial intelligence. This study uses digital content analysis to get the information discussed by netizens on social media about Artificial Intelligence. The paper uses the data monitoring tool Brand24 that crawls and analyzes the social media including Twitter, blogs, news, forums, videos, podcasts, and the web. The analysis unit used two keywords, "Artificial Intelligence" and "Artificial Intelligent". Based on the results of digital discourse analysis on Artificial Intelligence (AI), there are several categories where AI is implemented such as in Agriculture, Business, Tourism, Sport, Automotive and Transportation, Cybercrime, Communication, Education, Government, Immigration and Borders, Military and Defense, and Multimedia. There are also two views or sentiments among the netizens about AI, the positive sentiment related to AI will help people, AI can solve complex problems, increase accuracy, and help decision-makers. However, the negative sentiments toward AI such as AI replacing human intelligence, AI creating dangerous weapons, AI supporting data manipulation, and making people dependent on machines.

Keywords: *digital content analysis; artificial intelligence; digital citizen; education; social media*

Introduction

We often encounter artificial intelligence (AI) discussions in mainstream media, social media, scientific seminars and conferences, lectures, and daily conversations. AI has become very popular along with the development of information technology. AI concept has emerged for a long time, marked by the emergence of human robots or smart cars that appear in fictional films. Even long before that, in the 1950s, two figures had futuristic thoughts about machines capable of doing human work, Marvin Minsky and John McCarthy, the fathers of artificial intelligence. In the same year, British scientist Alan Turing who explored mathematics as the forerunner of AI, in an article entitled 'Computer Machinery and Intelligence', discussed in their paper that machines can also think and make decisions like humans (Anyoha, 2017).

AI development in the world

AI is growing and reaching various fields in human life, starting from the health sector, which was initiated in the 1950s and developed at large in the early 2000s (Kaul, Enslin, Gross, 2020).

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AI helps during diagnosis, treatment, and improving the capacity of physicians (Mintz & Brodie, 2019). AI is also widely used in industries, marketing, education, robots, and machine learning in the military (Svenmarck, et al, 2018, Morgan, et al, 2020, Wasilow & Thorpe, 2019, Kania, 2019). Humans can use AI to support activities that can facilitate work, speed up, and provide a high level of accuracy. With this AI, humans expect convenience, speed, and accuracy in daily activities. AI deals with big data, maths, and computers.

Earlier, AI was only a subject of discussion for scientists in mathematics, computer science, and programming, but now the discussion of AI is not limited to people who have competence in information technology, computer science, and mathematics. Seeing the direction and development of AI that has reached all aspects of people's lives, this paper overviews the digital community's view of AI. The benefits of this research can be used as input for the field of science to develop AI according to the community's needs, and fields of science that have not utilized AI can initiate AI gradually.

Literature Review

Digital Content Analysis

Research on a social problem using the Digital Content Analysis approach is popular among researchers. This analysis is used to understand content analysis of media content. The content analysis is a valid conclusion from the content of media texts (Gessese, Gebru, & Nigatu, 2022). The Digital Content Analysis includes social media such as Twitter, blogs, news, forums, videos, podcasts, and the web. Social media does play an important role in this because it can contribute to negative or positive perceptions of society. Another study that discussed Internet users in Korea during the e COVID-19 pandemic, showed the results that media content could contribute to social anxiety, fear, and hatred (Kim, Lim, & Chung, 2022). This media content can form hatred, leading to negative perceptions. Although this media discourse does not always contribute to negative perceptions, there is also something that can be taken in positive values from media discourse. This media often influences public understanding (Köstler & Ossewaarde, 2022). and can be used as data collection to analyze Artificial Intelligence in the public's view. Previously, Kostler & Ossewaarde (2022) emphasized that the role of media is to critically assess the future vision of AI that creates ideas, opinions, and views. In addition, using Digital Discourse Analysis requires precision, accuracy, and knowledge to understand and analyze the intent of media content.

Previous research on AI

Research on people's views or perceptions of AI has been carried out for the last 5 years. Fast & Horvitz, 2017 researched the public opinion of AI by analyzing text from the New York Times over 30 years. The research focuses on optimism and pessimism about AI, including the development of AI in the world of education and health is overgrowing. Still, people are also worried that AI will take over humans and concentrate on ethical issues of AI. Furthermore, Gao et al., 2020 researched public perceptions of AI in the health sector. This study utilizes the social media platform Sina Weibo and collects public posts for the period of one year. The study results stated that the public thought positively that AI would replace human doctors in the future. Similarly, Kashive et al., 2020, conducted quantitative research by distributing questionnaires to explore the public understanding of AI in improving personal learning. The perception and need for AI in the health sector by using a systematic scoping review method (Chew & Achananuparp, 2022). Research related to perception and public views on AI is still

not much undertaken, especially using content analysis/text analysis methods with data from social media. However, few studies are available where research on public opinion/views was also done using questionnaires and systematic reviews. The literature does not have many studies relating the digital society's view on artificial intelligence using data from various platforms such as social media, online news, blogs, and websites.

Research Methods

This study uses digital discourse analysis to get the discourse discussed by netizens on social media about Artificial Intelligence. The study monitors data through social media with the help of Brand24. Social media including Twitter, blogs, news, forums, videos, podcasts, and the web is analyzed. The study uses two keywords, namely "Artificial Intelligence" and "Artificial Intelligent". The data obtained from the keyword "Artificial Intelligence" was 1689 times, 137 times in Twitter, 627 times in news, 17 in forums, 172 in blogs, 90 in videos, 4 in podcasts, and 642 times in Web. Sentiment analysis obtained from these keywords was 125 positive mentions and 33 negative mentions. The data from the keyword "Artificial Intelligent" is repeated 455 times, with 131 times in Twitter, 82 in news, 16 in forums, 50 in blogs, 20 in videos, and 156 times in the Web. Sentiment analysis obtained from these keywords was 67 positive mentions and 26 negative mentions. After the data is obtained from Brand24, a content analysis is carried out using an ATLAS.ti software, with the following steps: providing code, grouping code, and creating themes according to the core group that has been generated. The use of ATLAS.ti is carried out to support transparency and is systematic in the process of analyzing content or text by making quotations and providing code by reading line by line in the text (Paulus & Lester, 2015).

Research Findings

The results of data analysis using ATLAS.ti is discussed in this section. Coding is generated using ATLAS.ti, by reading all social media posts and extracting the subject of each content. Then those codes are classified based on the fields of working environment (Table 1).

Figure 1. AI is implemented and discussed in many fields

AI Field	AI Application
Agriculture	Support agriculture, help palm farming, farm automatic spray systems, real-time weather control
Business	Marketing, Food supply chain, Robot employee, e-mail analysis, chatbot as consultant, logistic industry
Tourism	Ticket order, tourism destination planner, and recommendation
Sport	Support athletes to build a 3D image
Automotive and Transportation	Automatic driving, smart car, road safety, smart dashcam, smart parking systems
Cybercrime	Trading robots, Dating Apps Trap, Create Scam, Deep face manipulation
Communication	Support daily conversation
Education	Support research, Support digital literacy
Government	Support good governance
Immigration and Border	Face recognition
Military and Defense	Create deadly chemical weapon
Multimedia	Face editing apps, Producing 3D Image, Video generating for blogs, Generating video captions, Reducing laptop noise, robot avatar

The keyword "Artificial Intelligent" in the monitoring carried out at Brand24 has several categories, as seen in Table 1. In the agriculture field AI can provide expert applications in automatic spraying systems, price forecasts, and real-time weather. In the business field, Artificial Intelligent can create marketplace artificial intelligence algorithms, the existence of a chatbot system to answer messages from customers by relying on machines, expert systems helping companies gain profits, and expanding user experience, marketing, and product distribution. Artificial intelligence in the field of Tourism makes it easy for customers to order tickets through AI-based Applications and chatbots regarding fun travel recommendations and presenting data about places, history, and other tourist identities.

AI provides a lot of convenience and sophistication to users in the field of technology, such as multimedia development, AI-based camera features like a black-white automatic filter feature, and AI Highlight Video, which can help capture more detailed images. Furthermore, the application of AI in the field of Sports can support sportsmen, with AI technology to produce three-dimensional or 3D images that describe the movement of a person's muscles and joints. AI in the field of Automotive Transportation, can control the car itself with an automatic control system/ driverless vehicle, predict the obstacles on the path, and set the map to reach the destination. While AI in the Multimedia field, can create informative and interesting videos, sophisticated audio, and voiceover settings. AI in the military field can create deadly chemical weapons for war purposes with precision.

Furthermore, the application of AI in the Government sector can simplify workloads by intensifying the digitization process with AI technology and introducing EBGs (Electronic-Based Government System). The application of AI in the fashion sector is used to brand innovative products and designs. The application of AI in education supports teaching and learning activities with the emergence of EdTech, which students and teachers popularly use. The application of AI in the field of Cyber Crime mainly uses Machine Learning as done by Google to block users who behave abusively. Similarly, the application of AI in the field of communication can be a voice-AI-based contact center service carried out by bots.

Artificial Intelligence creates several sentiments, including negative and positive sentiments, which can be seen in Table 2. Artificial Intelligence does have a positive impact on humans such as the 'Smart bot' which can help humans work such as automatically replying to customer questions and distributing zam-zam water in bottles without human contact and does not hinder the movement of worshipers in the Grand Mosque. It does not require direct physical contact. The 'AI system is very smart', and people can 'adapt' to AI-based technology.

With the positive sentiment of 'Accuracy', Artificial Intelligence deserves appreciation. The AI system can 'detect fakes' committed by outsiders to increase security. For example, according to BGR in its report, this AI helped in finding 7 million fake Business Profiles and restricted 8 million attempts to claim Business Profiles. In addition, Google also finds fake reviews from various accounts and clears up these fake reviews with Artificial Intelligent systems. In addition, Artificial Intelligence can encourage 'smart decision-making' efforts. Because the AI system displays a statistical model that is used to decide by generalizing the characteristics of an object. Furthermore, Artificial Intelligence can also 'imitate human expressions' and voiceovers which is very supportive in film production. That is the reason that the Artificial Intelligence system has become a 'problem solver' for every human job and can replace 'repetitive work' such as the Chatbot system, where Chatbots answer almost 80% of common questions.

Table.2 Sentiment on AI

Sentiment Negatives	Sentiment Positives
AI replace human	AI helps people
AI will reach human intelligence	Solving complex problem
Make people lose creativity	AI help society
Computer systems imitate the way of thinking	AI is interchangeable with Machine learning
Some jobs will be replace by AI	Feel proud when using AI
People will depend on the machine	AI is adaptable
Bad influences	Support decision making
Support crimes	Fast learner
AI lack of creativity	Golden Age of AI
AI as complex systems	Human mimicking
Support data manipulation	Replace repetitive works
AI drives blasphemy	AI is more accurate
AI creates a dangerous weapon	Prevent fake stuff
	AI extremely smart
	AI is the right solution
	AI increase accuracy
	AI will solve problems
	Emerging technology

The implementation of AI can also disrupt the balance of human resources, such as AI systems will replace many 'human roles' such as avatar robots equipped with multi-finger hands, zam-zam water distribution robots, robotic traffic monitoring assistants, and being able to detect electrical faults quickly. In addition, artificial intelligence systems can create computers and robots that can imitate human thinking even more intelligently, quickly, and accurately. The Eos Supercomputer will be built using the Hopper architecture and contains about 4,600 GPU H100, which offers 18.4 exaflops of AI performance. AI systems will achieve human intelligence programming or coding which is called artificial intelligence because it thinks and works like humans. The next sentiment is about the bad influence that can be obtained because this AI system will also interfere with and even hinder human creativity because of the rapidly increasing invention of Artificial Intelligence, such as humans starting to use websites that can analyze automatically, and can even create instant news.

Furthermore, AI can influence or replace some human jobs, such as the Self-Driving system on Tesla cars. This Tesla car is capable of using an automatic control system. Due to this work shift, the sentiment is towards reliance on machines integrated with AI, such as ChatBots that can answer customer questions, Voice to text, and the manufacturing industry using devices. AI systems are also designed to support cyber crimes such as trading robots and money laundering. AI systems can also cause blasphemy against religion because these systems are programmed to as artificial intelligence is superior to God. The systems in AI can be so complex that they can even create deadly chemical weapons for war purposes.

Discussion

From the accumulated results, it was found that the categories of fields that were frequently or widely discussed were the fields of Business, Robots, Safety, Automotive and Transportation,

and E-commerce. The opinion of the digital community about AI shows diversity, some of the netizens positively welcome AI with the hope that AI can help them in their daily lives, whether at home, work, or in their social lives. AI also brings positive experiences to people who have interacted with AI with satisfying results. In addition to the positive view of AI, the digital community also views it negatively, this is mainly associated with the shift of the workforce from humans to machines. The possibility of shifting the workforce is what makes the digital community negatively view the implementation of AI. The results of this study are different from previous Nordic research, which states that city dwellers' views on the application of AI have 4 opinions, namely about AI and welfare, AI and data policies, transparent AI design, and knowledge of AI (Luusua, 2021). According to stakeholder views in the world of work, AI shows results, including the place and application of AI in various situations, issues related to expansibility and trust, and transformation as an effect of implementing AI in the design of human-centered systems (Gramkelitze, 2022). Perceptions of AI in the library field have also been widely studied before (Lund, 2020; Ali, 2020, Cox, 2018). In the field of education (Goksel, 2021), public group opinions on AI are quite diverse, this shows that AI is very complex and public knowledge about AI also varies.

The digital community sees AI as something positive. They see AI as the right solution because AI is a smart system, has a high level of accuracy, and can replace repetitive work. Furthermore, health workers responding to the development of AI in the medical field stated that AI does support efficiency, but communication and empathy are still inferior to humans (Blease, 2019). One form of efficiency is to automate cardiographic tasks (Seetharam, 2020). The results of previous research (Balasundaram, 2021) related to the views of medical officers on the implementation of AI in the health sector are positive, including time-saving, cost-effective, and handling vast data, and this is in line with the thoughts of the digital community collected through sharing social media platforms that are mentioned that AI in the health sector can provide convenience. The digital community is confident in AI, and this is evident in their comments about being able to solve complex problems, being extremely smart, being able to adapt to the environment quickly, and being a fast learner. Netizens strongly believe that AI will bring solutions for society with broad impact in various sectors. Community people are also very open-minded about AI. It is shown that digital people feel proud when using AI, people are willing to easily adapt to AI, and they believe that AI helps people to move forward.

Currently, all life activities are supported by technological sophistication, and a few are already using artificial intelligence systems (Artificial Intelligence). Artificial intelligence has been able to break through social life without complexity and produce other benefits (Thacker, Shah, & Shah, 2022). Various programming and coding performed by Artificial Intelligence (AI) systems make human work easier. The reason is, that artificial intelligence almost resembles human intelligence (Mulyanto, 2022), one of them is in the health sector, AI systems can even detect heart attacks. In an upload on the internet entitled 'ITS Students Initiate a Heart Attack Detector Vest', Enzy as the team leader, said that there was an opportunity to create a tool that can be used and is accurate in detecting a heart attack. However, there are still not many studies that mention patient opinions regarding the implementation of AI in the world of health, for example, in the field of radiology (Ongena, 2019), whether AI brings positive things to patients and provides a good experience, so this needs to be investigated further.

Artificial intelligence in the business sector is like a solution to the problems faced by business actors. The reason is that in a business, there is often an imbalance between the workforce and the number of requests, and the presence of artificial intelligence helps simplify the sales system

and the interaction between companies and buyers (Qin, Zhu, Zhao, & Zhao, 2022). This makes business actors ignore the number of orders that come in because of a lack of human resources. AI systems that work in the business sector support the sustainability of the business itself. The benefits of using AI systems in the business sector are time and energy savings and the provision of 24-hour information.

Furthermore, along with the development of Artificial Intelligence, it is able to support online business. The field of e-commerce is the most reviewed field at Brand24. This is because online business is very popular with people when shopping (Maskuroh, Fahlevi, Irma, Rita, & Rabiah, 2022). The AI system that supports e-commerce can be found in the automated service system and the provision of information for 24 hours. This helps improve the user experience and even display a wider range of products. Finally, the most widely reviewed Artificial Intelligence keyword at Brand24 is in the security (Safety) field. A security system that combines Artificial Intelligence in it will certainly be able to optimize the security system to avoid predictable or unforeseen hazards (Wang & Chung, 2022). With an integrated AI system, the security range will be even tighter. This will be very useful for companies, other institutions, and even everyone using Artificial Intelligence-based security systems.

Artificial intelligence in the field of Robots produces robots that can move and walk like humans. Additionally, the field of robots that are integrated with AI can be programmed automatically and performed according to the commands given so that they can make decisions like humans and even take on the form of humans (Sætra, 2022). The benefits of the development of robotics are certainly very helpful in human work, and some jobs can be transferred using robots such as bomb defusing.

Technological developments are currently starting to incorporate artificial intelligence into it. The existence of Artificial Intelligence indicates that the use of technology is increasingly advanced and offers benefits to a large audience. The presence of AI systems is quite popular and glorified because it can do work (Cowley et al., 2022). Because of the advantages possessed by AI, makes Artificial Intelligence a system with positive perceptions in people's minds. A positive perception of AI systems as conveyed by Achmad Istamar, Country Head-Indonesia Google Customer Solutions, is "the significance of AI-based digital marketing (Artificial Intelligence) to be able to create added value for sellers and buyers through the delivery of information related to goods and services in accordance with the user profile. This technology can also be used by Small and Medium Enterprises (SMEs), which are the backbone of the Indonesian economy." (Mususilo, Yohanes Enggar, 2022). From the statement given by Achmad, there is a positive perception of AI as a support for business continuity. Not only profitable in the business field, but the AI system also supports online business can be known as E-commerce. This e-commerce utilizes a number of online platforms or social media to market a product or a service. By incorporating an AI system, the marketing of products or services can be reached more broadly and has other positive impacts. In a discourse entitled "The Future of Artificial Intelligence", Ali Mulyanto emphasized that "Artificial Intelligence will play an important role in the e-commerce sector soon. This will positively impact every aspect of the e-commerce sector, from user experience to product marketing and distribution. We can expect e-commerce with automated warehouse and inventory, shopper personalization, and use of chatbots in the future." (Mulyanto, 2022). Using ChatBots in e-commerce helps sellers provide information and resolve buyer confusion but can save time and effort. Because these Chatbots are like answering machines. An article on the internet entitled "Quality Chat with Artificial Intelligence Chatbots" (Admin Zamane, 2022) discusses

Chatbots for e-commerce. "Chatbots powered by artificial intelligence are very intelligent and friendly to answer our questions, even being able to detect whether we are moody or happy. Eventually, people will understand that they are talking to machines; they will understand that they are talking to software."

Artificial intelligence is so complex it offers advantages in various fields. So it is not surprising if today, companies, agencies, and the general public are moving forward with high use of artificial intelligence. A website upload on the internet discusses how Artificial Intelligence can improve security systems, which is the use of machine learning and artificial intelligence (AI) to combat payment fraud and money laundering (Hapidz, 2022). In addition, there is a discourse from an upload on the internet entitled "The US wants to mandate anti-drunk driver technology", which is a smartwatch that detects alcohol content in the blood that has also been developed with the vehicle should not be turned on if the user is detected drunk. Furthermore, camera systems and artificial intelligence may also be used together to give better results. The system monitors the driver by looking at the concentration level of the sleepy driver's eyes (Hasyim, 2022). The concept of artificial intelligence in this security system will help suppress the number of accidents caused by the influence of drunkenness.

In the hospitality sector, AI also has an important role in providing the right information regarding tourist attractions and virtual tours. Millennials also positively appreciate the existence of AI, and they even suggest that food and beverage services in hotels can be replaced using AI, but for other services such as check-in and wellness, human presence is still prioritized (Rauf, 2022).

In addition to the positive perception obtained by Artificial Intelligence (AI), some people are worried about the presence of artificial intelligence technology in the midst of today's life. The reason is that some activities have begun to be replaced by machines or robots, causing concern that humans will be replaced by robots (Sætra, 2022). This will also result in higher unemployment rates and on the other hand humans must continue to strive to improve competence in order to enter industrial sector jobs properly. Because the convenience obtained from this AI system makes people lazy and they will rely on smart machines. In a quote entitled Advantages & Disadvantages of Artificial Intelligence (Mulyanto, 2022), "New discoveries of Artificial Intelligence make humans lazier at work, so humans are completely dependent on machines and robots. If this continues for years to come, then our next generation will be completely dependent on machines, resulting in unemployment and further health problems." Furthermore, the artificial intelligence system is considered manipulative support in a blog post on the internet entitled Fahrenheit Trading Robot Application, Stupid Investments Have Deceived Victims Up To Rp 5 Trillion. "Fahrenheit is a company that manages fake trading robots for illegal investments. It is known that the manager of the Fahrenheit Trading Robot application is PT FSP Akademi Pro. They claim to take advantage of artificial intelligence (AI) used in the crypto asset market." (Jhey, 2022).

The use of artificial intelligence systems does not always have advantages but also has a negative impact. As a user of an artificial intelligence system, you must be aware of the benefits and dangers of artificial intelligence technology so that you can fortify yourself. Talking about armaments, AI systems began to be used for the purposes of making weapons. As in an upload of discourse on the internet entitled Knowing the Latest Weapons of Artificial Intelligence, can be Operated without Humans and Deadly by (Yudha, 2022) it is said that "Artificial intelligence or artificial intelligent has been widely applied, including in weapon systems. The weapons using artificial intelligence are known as fully autonomous weapons or autonomous

weapon systems. The existence of these weapons has sparked various polemics because the weapon can work on its own without the need for human operation and this can be very deadly." The discourse above provides an overview of the progress of AI systems for weapons, but on the other hand, it gives concern because of the impact it has. Furthermore, artificial intelligence also creates evil that is exploited by humans themselves. The convenience of artificial intelligence can be used as a support for human crime. A post on the internet entitled Only 6 Hours, Artificial Intelligence Successfully Created 40,000 Deadly Chemical Weapons (Susanti, 2022) said that "The authors of the paper, published in Nature Machine Intelligence earlier this month, said that they had carried out a 'thought experiment' to find out if artificial intelligence (AI) could be abused by 'bad actors'. And their work has proven that the danger is real." From the upload of the discourse, the AI system can also invite someone's evil intentions, so the next thing that needs to be anticipated is self-protection and self-awareness.

Many professionals view AI as positive especially when AI can solve their problems in the workforce environment and offer easiness. Health professionals are welcome to the invention of AI-based radiology and very open to implementing it in the future (Chen et al, 2021). Among communication professionals, AI is also believed can increase productivity, critical thinking, and creativity (Lopez Jimenez and Quariachi, 2021). However, some information professionals consider the ethics issues of AI implementation (Cox, 2022), AI also will replace accountants in the future because AI can generate accounting information systems (Boritz, et al. 2023). Even though AI innovation is inevitable in the future and many professionals are prepared to use AI to support their tasks.

Conclusion

Based on the results of digital discourse analysis regarding Artificial Intelligence (AI) and several categories in it, it can be concluded that digital sentiment analysis monitored through the Brand24 platform produces several fields that have merged with artificial intelligence systems. The fields of AI that are most widely discussed are the fields of Business and e-commerce, security systems, and the use of robots.

The advantage of artificial intelligence, is that it attracts positive perceptions from the public because the system makes various human tasks easier. For example, the existence of Chatbots can save time and effort. The AI-based systems include smart robots, car control systems, health detectors, e-commerce-based marketing products and services, and others. However, some of these artificial intelligence systems have a number of negative perceptions because of the impact it has, such as cybercrime, money laundering, fraudulent investment manipulatives, and are killing human creativity. So the existence of an Artificial Intelligence system must be accompanied by self-knowledge to harness its maximum benefits.

Declaration of Competing Interest

None

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