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# Artificial Intelligence: Communication, Technology, and Society (a Systematic Literature Review)

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***ABSTRACT***

The development of artificial intelligence (AI) technology has transformed the way various social sectors operate, including healthcare, communications, and decision-making. The integration of AI into these domains not only opens up new opportunities for efficiency and innovation, but also presents significant challenges. Among these challenges, the emergence of algorithmic bias, inadequate data protection, technical limitations, and complex ethical dilemmas are of major concern. These issues affect the reliability and fairness of the use of AI technologies, potentially harming individuals and society as a whole. This study aims to investigate the barriers associated with the implementation of AI in society and provide theoretical and methodological solutions to address these challenges. This study uses a systematic literature review methodology to review 40 journals, with the aim of identifying key issues and suggesting solutions for the ethical and successful integration of AI. The findings show that the potential of AI is often hampered by biased algorithms, inadequate privacy laws, and a lack of transparency in decision-making processes. The study recommends the use of qualitative and quantitative methodologies, including experimental research and case studies, to investigate practical applications of AI. In addition, a multidisciplinary approach is suggested to address the technical and social dimensions of AI applications.

## Introduction

The rapid development of technology continues to occur due to the development of the times, and knowledge has become a spreading phenomenon. In particular, in recent years, technological advances have resulted in various devices that support human life. This progress is illustrated through the creation of *artificial intelligence* (AI) technology. Not stopping there, the rapid development of technology has significantly changed how humans interact with existing technology and other humans. In addition, along with the development of the era that demands the convenience and efficiency of devices, AI technology created as a result of integration with the increasing trend of its prevalence, including *virtual assistants*, *recommendation systems*, and data analysis tools that can be done in *real-time* (Raihan, 2023). This illustrates the significant influence that arises due

to the existence of technology. After that, the integration raises essential questions about applying technological breakthroughs that require a critical study of *artificial intelligence*, including the *mobile version,* through technological determinism.

AI technology has become essential in terms of its potential to create new human experiences by automating several tasks, including decision-making and interacting with users with different responses. This technology is different from traditional versions that require computing power and other infrastructure, and this version operates on lightweight and portable devices that make the functionality of the technology easily accessible without the barriers of time and place. This accessibility contributes to the increased dependence on technology, where the role of AI goes beyond the mere use of tools or media, which begins to influence human behavior, social norms, and cultural practices (Zhang & Aslan, 2021).

In addition, mobile AI represents the convergence of various technologies, including *machine learning*, *natural language programs,* and *computer vision*, that are tailored to fit the constraints and opportunities of *mobile platforms*. The diversity of apps ranges from *voice-activated virtual assistants* like Siri and Google Assistant to text predictions and personalized content recommendations. The adoption of this technology broadly reflects the increased trust and reliance on AI-driven systems. However, this dependency also critically examines broader social influences such as privacy, ethical dilemmas, and the usual reinforcement inherent in AI algorithms (Greene et al., 2023).

Research on the impact of mobile AI in society is essential. This is because technology has entered and touched people's lives and affected the way people communicate, work, and even think. With the development of increasingly sophisticated mobile devices, the AI capabilities contained in them have become more than just a passive technology but a determinant in social dynamics. The social impact of AI and mobile AI has been proven in various fields, including health, education, and even entertainment, to help improve customer service, personalize the user experience, and provide unprecedented access to information. However, this shift faces significant challenges to potential reliance on technology, reduced human resource needs, and privacy issues.

Technological determinism, a theoretical framework that places technology as one of the main factors in social change, provides a critical view of the relationship between AI, especially AI, and society. Technological innovation accelerates communication, expands access to information, and changes the way humans work, interact, and live their daily lives. A concrete example of social change driven by technology is the digital transformation of the workforce, which has led to the emergence of remote work, industrial automation, and sharing economy platforms (Imamov & Semenikhina, 2021). Based on this view, the characteristics of technology shape social structures and cultural practices that prioritize technological capabilities over human desires. This view is highly relevant because it encourages in-depth research on how AI influences societal norms and behaviors that can lead to unintended consequences.

Integrating AI technology into people's lives accurately shows the interaction between technology and society, highlighting that technological advances can change existing and formed social dynamics. Through technological determinism, technology is not only a medium but a force that shapes human interaction, redefines social roles, and even changes cognitive processes (Feenberg, 2010). For example, the ease and convenience offered by AI-based *virtual assistants* could lead to new forms of interaction and communication where technology mediates human relationships (B. Song et al., 2022). This shift challenges traditional social norms and calls into question the balance of control between technology and its users. As technology becomes more integrated into daily life, users must navigate issues of privacy, autonomy, and dependency. The growing influence of algorithms, artificial intelligence, and digital platforms introduces new dynamics of power, often leaving users with limited understanding or control over the systems they interact with. This evolving relationship calls for deeper reflection on the ethical and societal implications of technology's role in shaping modern life (Ovchinnikov et al., 2020).

Integrating technology and society also underscores the ethical implications of relying on technologies often biased and governed by algorithms beyond the user's control. Issues such as data privacy, biased algorithms, and the commodification of personal information highlight the need for critical research into the social impact of technology (Mittelstadt et al., 2016). In this case, technological determinism becomes an analytical tool to explore these dynamics, questioning whether society adapts to technology or whether technology dictates society's evolution.

The novelty of this research is that it provides new insights into the importance of adequate privacy laws and transparency in AI decision-making for the rail industry. This is because it has often been a neglected area in previous transportation research, which focused more on the technology than on the ethical and legal aspects. Findings related to the application of AI in data management, route planning, and predictive maintenance can help improve operational efficiency. AI can predict train maintenance needs in real-time, thereby minimizing disruptions and improving service smoothness. AI can be used to develop smart ticketing systems, personalized travel schedules, and chatbot-based customer service, which will improve user experience. The findings in this literature highlight the importance of more responsive and intuitive technology in creating more efficient interactions with passengers. This research aims to investigate the obstacles related to the application of AI in society and provide theoretical and methodological solutions to overcome these challenges.

## Research Methods

This research was conducted using exploratory qualitative methods and systematic literature review (SLR). The exploratory qualitative method was chosen because it provides flexibility in exploring social and human issues in depth, as explained by Creswell (2014) who stated that this method functions to understand social or human problems through the development of a complex holistic picture, relying on the views of

informants, and carried out in a natural context. This approach is very appropriate for the purpose of research that wants to explore a deep understanding of topics that have not been widely explored before.

This research was also compiled by adopting a systematic literature review method, which provides a structure in identifying, evaluating, and interpreting relevant information from existing literature (Dahalan & Ahmad, 2018). This SLR method was chosen to ensure that the research is based on existing data, systematically organized, and reliable in building a solid theoretical framework. Snyder (2019) emphasized the importance of literature studies in synthesizing previous research findings, helping to design a conceptual framework, and ensuring that research does not simply repeat what is already known but offers new insights.

The reason for choosing this method is also driven by the research objective to produce a comprehensive review of previous research, by identifying gaps and providing new perspectives. SLR was chosen because this methodology provides a structure that allows for systematic collection and analysis of secondary data, helping researchers to compile existing evidence comprehensively. The data used in this study are secondary data collected through desk review, with sources identified according to the inclusion criteria that have been set.

Data collected through desk r*eview* or desk r*esearch* is intended to provide an overview of information collection in publications. This is then compared to obtaining data directly (Woolley, 1992). The data is a collection of articles published in several international journals obtained through *Desk Review* or *Desk Research* based on a series of keywords, as stated. Then, it will be selected using the PRISMA 2020 diagram (Page et al., 2021). The method involves four steps: identification, screening, feasibility, and inclusion. These are used as guidelines for writing this research. From this data, the selection process is carried out as follows:

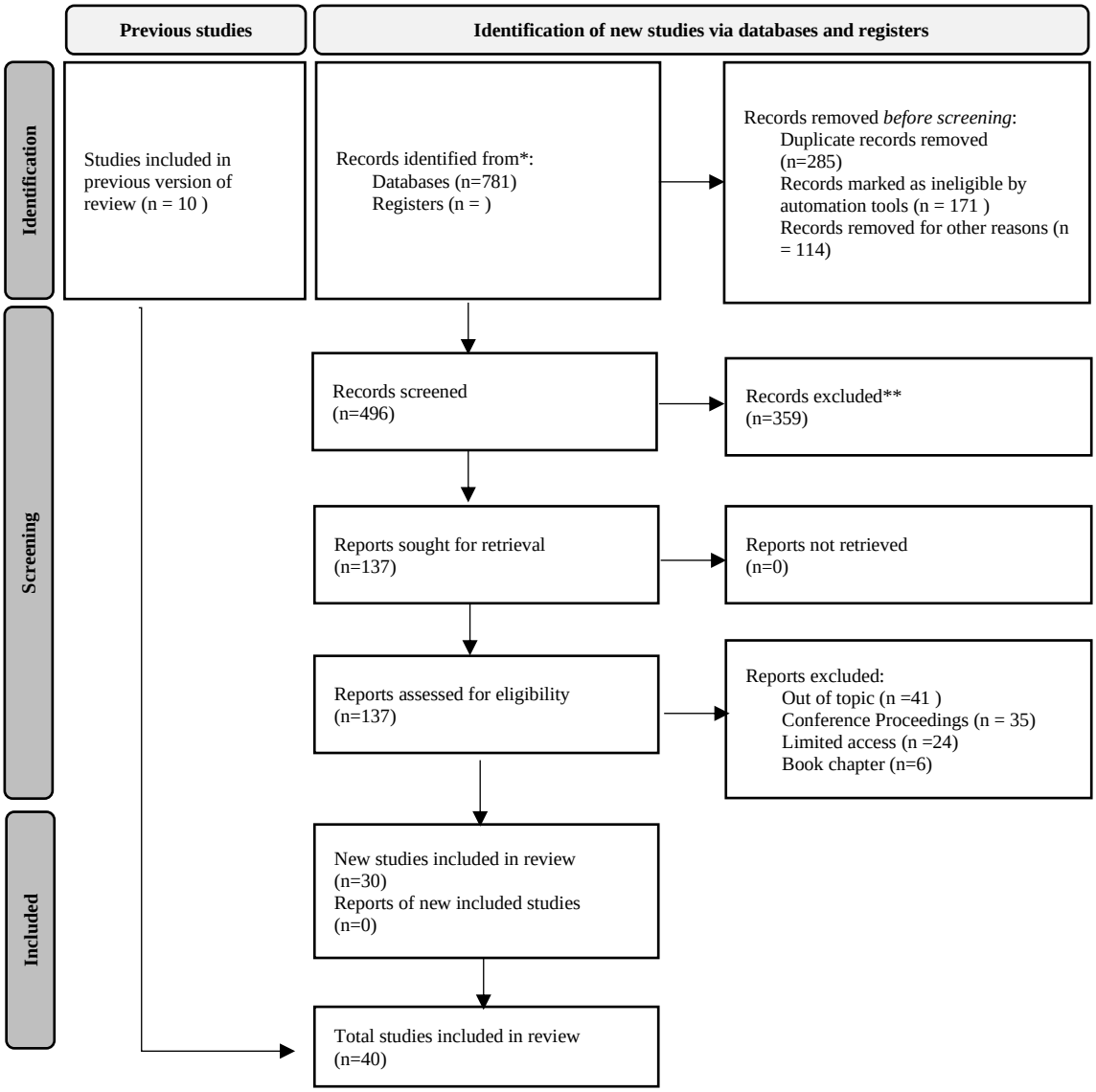


Figure 1. Screening Protocol with PRISMA 2020
Source: (Page et al., 2021; Author, 2024)

After obtaining a data set, the results are presented and enriched by bibliographic mapping using VOSViewer software.

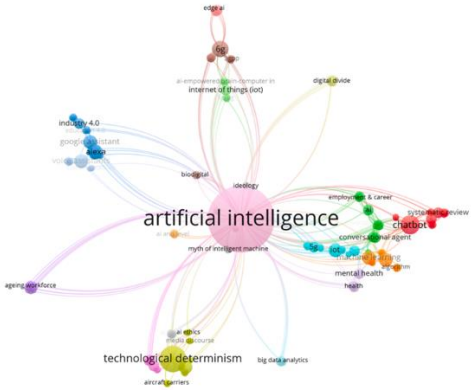


Figure 2. Bibliographic mapping related to artificial intelligence technology and society

Source: Author with vos viewer (2024)

Based on the grouping generated through the VOSViewer application, as illustrated in Figure 2, the main keywords in this study are Artificial Intelligence on pink or pink clusters. Furthermore, the keyword is followed by technological determinism on the green cluster, confirming the researcher's focus on how the technology Artificial Intelligence influences factors around technology. In addition, other keywords discussed together in this study are related to various kinds of Voice Command Artificial Intelligence, which are found in mobile phone technologies such as Google Assistant, Alexa, and Siri, which are found in the blue cluster and as well as chat-bots that are included in the Artificial Intelligence which is found in the red cluster. Referring to the bibliographic mapping above, myths, the Digital Divide, and ideologies are also discussed in several clusters related to artificial intelligence.

## Results and Discussion

**Table 1. Data Extraction Results**

| No. | Source | Research Title | Findings |
|---|---|---|---|
| 1 | Fiorillo & Mehta (2024) | "Accelerating Editorial Processes in Scientific Journals: Leveraging AI for Rapid Manuscript Review" | This study explores the use of artificial intelligence (AI) in accelerating the editorial process of scientific journals. The study shows that AI assistants like ChatGPT can provide constructive feedback and improve the quality of manuscripts, as well as speed up the review process. The results highlight the importance of considering ethical aspects, including privacy and bias, in the application of AI technology. In conclusion, the integration of AI in the scientific journal review process can improve efficiency, quality, and accessibility, but it needs to be continuously evaluated against its ethical implications. |
| 2 | Krishna (2024) | "AI and Contemporary Challenges : the Good, Bad, And The Scary" | This article explores the positive, negative, and scary sides of the development of AI in society. In addition to its potential benefits in economics and technology, AI also raises ethical and moral concerns, including the threat of autonomous weapons. The authors question whether AI should be seen through the lens of technological determinism or can be socially shaped for the common good. This shows the importance of social control in directing the development of AI so as not to harm society |
| 3 | Heroine (2021) | "AI and the Ressurection of Technological Determinism" | This article focuses on the resurgence of the concept of technological determinism in the context of AI regulation. The authors argue that AI has a high potential for "lock-in," where AI technology could limit the choices of future generations and strengthen certain technology paths. With the increasingly autonomous nature of AI, this paper |

| No. | Source | Research Title | Findings |
|---|---|---|---|
| | | | confirms that AI reinforces a deterministic view of technology, where technological developments can govern social change |
| 4 | Glebova et al. (2024) | "Artificial Intelligence Development and Dissemination Impact on the Sport Industry Labor Market" | This research examines the impact of the development and deployment of AI on the labor market in the sports industry. AI has created new job opportunities, especially in data analytics and marketing, but it has also replaced more routine jobs. The study shows that AI is changing roles in the job market and requires the development of new skills relevant to these technologies. In the context of technological determinism, AI is accelerating transformation in the job market, changing the way humans previously worked |
| 5 | Andries & Robertson (2023) | "Alexa doesn't have that many feelings: Children's understanding of AI through interactions with smart speakers in their homes" | The study explores children's understanding of AI through interaction with voice assistants like Alexa. Many children overestimate AI intelligence and have an inaccurate understanding of data privacy. This underscores the need for AI literacy education to help children understand the limitations of technology. This article highlights how AI, through voice assistants, is shaping children's views of artificial intelligence, in line with the idea that technology shapes the way we think and act |
| 6 | Bozdag (2023) | "Alsmosis and the pas de deux of Human AI Interaction : Exploring the Communicative Dance Between Society and AI" | This article introduces the concept of "AIsmosis," which describes how AI is slowly integrated into society, similar to the process of osmosis. AI is influencing various aspects of human life through undetectable but significant innovations. This concept shows how AI technology, in a deterministic way, shapes social and cultural norms, fundamentally changing human interaction and technology. This article emphasizes the importance of ethical and responsible AI integration to avoid the negative impact of technology on society |
| 7 | Moulieswaran & Kumar (2023) | "Amelioration of Google Assistant – A Review of Artificial Intelligence Stimulated Second Language Learning and Teaching" | This article explores the use of AI such as Google Assistant in second language teaching and learning. AI helps automate some learning processes, improving accessibility and effectiveness. However, the challenges faced related to dependence on technology show the implications of technological determinism, where AI directs and shapes learning methods. The use of AI technology in education can affect how students and teachers adapt to the development of the technology |
| 8 | Winkel (2024) | "Controlling the Uncontrollable : The Public Discourse on AI between the positions of social and technological determinsim" | This article analyzes the public discourse regarding AI between two positions: technological and social determinism. AI is considered difficult to control, with technological developments driving change without much human intervention. The position of technological determinism is strong here, where AI |

| No. | Source | Research Title | Findings |
|---|---|---|---|
| | | | is considered an autonomous force that directs society without much room for social control. This discussion underscores the uncertainty in regulatory efforts for evolving technologies |
| 9 | Rabassa (2022) | "Conversational Commerce: Do Biased Choices Offered by Voice Assistants' Technology Constrain Its Appropriation?" | The research discusses how AI-based voice assistants can influence consumer decisions by offering biased options. This technology creates limitations for consumers to access diverse choices, thus reinforcing the deterministic view that technology directs user decisions. The negative impact of this technological bias shows that AI can limit consumer freedom in making decisions. |
| 10 | Letaief et al. (2022) | "Edge Artificial Intelligence for 6G: Vision, Enabling Technologies, and Applications" | This article highlights how AI is being integrated into 6G networks to improve connected intelligence and support a wide range of futuristic applications. AI is considered a crucial element in the upcoming technological revolution, driving the development of networks from "connected things" to "connected intelligence." This supports the idea of technological determinism, where AI changes the way networks work and significantly influences the evolution of technology |
| 11 | Said et al. (2022) | "Efficiency of Smart AI-Based Voice Apps and Virtual Services Operating with Chatbots" | This research discusses the efficiency of AI-based smart voice applications and virtual services that use chatbots. The AI technology in these applications helps users in completing daily tasks quickly, but the dependence on technology also shows a tendency to technological determinism. AI is playing a dominant role in shaping the way humans work and redefining the way digital interactions take place |
| 12 | Prentice et al. (2023) | "Engaging with Intelligent Voice Assistants for Wellbeing and Brand Attachment" | This article explores how user engagement with AI-based voice assistants can impact brand well-being and engagement. The use of AI in smart devices is changing the way consumers interact with brands and technology, reinforcing the view that technology has a dominant role in shaping consumer behavior and decisions. This shows the deterministic influence of AI in consumers' daily lives |
| 13 | Gupta et al. (2021) | "Fusion of Blockchain and Artificial Intelligence for Secure Drone Networking Underlying 5G Communications" | This article discusses the integration of blockchain and AI for secure drone network communication in the context of 5G. AI plays a crucial role in improving the security and effectiveness of drone networks, leading to the view that technology not only drives innovation but also regulates dynamics across various industries. This reflects the technological determinism in which AI is changing and controlling how network technology works in the future. |
| 14 | Lim et al. (2024) | "General Characteristics and Design Taxonomy of | This study reviews the characteristics and design of chatbots used during the COVID-19 pandemic. AI in chatbots is helping to provide health information |

| No. | Source | Research Title | Findings |
|---|---|---|---|
| | | Chatbots for COVID-19: Systematic Review" | and pandemic-related services, which reinforces the deterministic view that AI technology is significantly influencing the way we respond to the global health crisis. The use of chatbots in this context demonstrates the role of AI in directing and facilitating communication and interaction in society. |
| 15 | Choudrie, Manandhar, Castro, & Obuekwe (2023) | "Hey Siri, Google! Can You Help Me? A Qualitative Case Study of Smartphones AI Functions in SMEs" | This study explores the use of AI in the form of voice assistants in small and medium enterprises (SMEs). AI helps SMEs in increasing productivity and efficiency, but it also creates a digital divide that exacerbates inequality in access to technology. This reflects the technological determinism, where AI influences the way SMEs operate and make strategic decisions |
| 16 | Sun (2022) | "Ideological and Political Education Reform Using Mobile Phones as a Carrier in the Context of Artificial Intelligence" | This article discusses ideological and political education reforms using mobile phones and AI as media. AI allows for a more interactive and personalized learning process, but it also highlights the reliance on technology in education. This reflects the determinism of technology, where AI directly influences the way learning is conducted and controlled in the education system. |
| 17 | Alahi et al. (2023) | "Integration of IoT-Enabled Technologies and Artificial Intelligence (AI) for Smart City Scenario" | This article shows how the integration of AI and IoT in smart city scenarios accelerates city data management and improves people's quality of life. The technology automatically optimizes urban processes, reduces the need for human interaction, and confirms AI's position as a key driver of social and economic change. This reflects technological determinism as AI and IoT technologies play a dominant role in determining the future direction of city management |
| 18 | Jan et al. (2020a) | "Integration of Network and Artificial Intelligence toward the Beyond 5G/6G Networks" | This article discusses how the integration of AI in B5G/6G networks will redefine the way networks operate, improve automation, and provide more autonomous intelligent infrastructure. AI technology not only plays a role in network management but also supports applications that directly utilize AI. This shows that AI technology is increasingly influencing the development of future networks and telecommunications, supporting the deterministic view that technology is shaping major changes in society |
| 19 | Saradhi Thommandru et al. (2024) | "Intelligent Optimization Framework for Future Communication Networks using Machine Learning" | This article shows how machine learning technology is being used to optimize future communication networks. AI helps in managing complex challenges in communication networks such as resource allocation and decision-making. This shows that technology, particularly AI, plays an important role in determining how future networks will be |

| No. | Source | Research Title | Findings |
|---|---|---|---|
| | | | optimized, confirming the idea of technological determinism in directing technological innovation. |
| 20 | Ali et al. (2021) | "Machine Learning Technologies for Secure Vehicular Communication in Internet of Vehicles" | This study discusses the role of AI, especially machine learning, in optimizing vehicle communication in the Internet of Vehicles (IoV). AI is being used to improve road safety and traffic management, as well as ensure efficient communication between vehicles and infrastructure. This reflects the technological determinism in which AI holds a huge rein in the transformation of the transportation industry. |
| 21 | Jan et al. (2020b) | "Marshal McLuhan's Technological Determinism Theory in the Arena of Social Media" | This article discusses Marshal McLuhan's theory of technological determinism and its relevance to social media. Social media technology is changing human social behavior, creating a global community where social interaction is facilitated by technology. This is in line with technological determinism because social media technology is considered the main driver of social and cultural change. |
| 22 | Palanica & Fossat (2021) | "Medication Name Comprehension of Intelligent Virtual Assistants: A Comparison of Amazon Alexa, Google Assistant, and Apple Siri" | This study examines the accuracy of AI-based virtual assistants in understanding drug names. The improvement in AI's ability to understand complex language suggests that the technology is getting closer to human interaction capabilities, reinforcing the idea that AI has a big role to play in determining future healthcare interactions. It underscores the deterministic view that AI is playing a role in changing the way humans interact with technology. |
| 23 | Marques et al. (2024) | "Metaverse and Artificial Intelligence: TDIC Trends in Education" | This article discusses how AI and the metaverse are starting to play an important role in education. This technology accelerates the digitalization of education, providing more personalized and interactive learning tools. This reflects the determinism of technology, where AI shapes the way education is delivered and practiced in a post-pandemic world. |
| 24 | Kuo (2021) | "Military Innovation and Technological Determinism" | This article shows how military technology, such as aircraft carriers, was developed differently by the United Kingdom and the United States based on each country's strategic context. The same military technology is used differently due to strategic interpretations, but it still supports the idea that technology plays an important role in determining a country's military approach. This shows how technological determinism is applied in military innovation. |
| 25 | Drydakis (2021) | "Mobile Applications Aiming to Facilitate Immigrants' Societal Integration and Overall Level of Integration, | The research shows that AI-based applications help improve the social, health, and mental integration of immigrants. AI facilitates more personalized and adaptive services, accelerating the integration of immigrants into society, demonstrating how AI |

| No. | Source | Research Title | Findings |
|---|---|---|---|
| | | Health and Mental Health. Does Artificial Intelligence Enhance Outcomes?" | technology affects the social life and well-being of immigrants. This supports the view of technological determinism that AI plays a role in driving social change |
| 26 | Karyotaki et al. (2024) | "Mobile/VR/Robotics/IoT-Based Chatbots and Intelligent Personal Assistants for Social Inclusion" | This article discusses the use of AI-based chatbots for social inclusion, especially for vulnerable groups such as refugees and migrants. These technologies enable easier access to social services, education, and health, reinforcing the view that AI technology significantly influences and shapes social experiences. It supports the view of technological determinism that AI directs social inclusion through technology |
| 27 | L. Song et al. (2022) | "Networking Systems of AI: On the Convergence of Computing and Communications" | This paper highlights how AI and integrated communication networks are forming a new paradigm, where AI becomes an integral part of network systems, such as 5G and 6G. AI is not only used to manage network resources, but also operates as a system that enables real-time smart services. This reflects the technological determinism, in which AI directs and shapes how networks and communications work, significantly influencing social and economic development |
| 28 | Joyce et al. (2023) | "New Social Relations of Digital Technology and the Future of Work: Beyond Technological Determinism" | This article discusses that although technological determinism is often overlooked in workforce research, its impact is still visible in the way digital technology shapes jobs. The authors propose a more dynamic approach to looking at technology in relation to other social factors, going beyond the reductionist view. This approach criticizes technological determinism and shows the importance of the role of social agents in shaping technological developments |
| 29 | Aldamen & Hacimic (2023) | "Positive Determinism of Twitter Usage Development in Crisis Communication" | The study highlights Twitter's role in crisis communication during the 2023 earthquake in Türkiye, showing how social media serves as an important tool in rescuing victims. The use of Twitter in emergency situations has become increasingly important over time, reflecting positive technological determinism, where the development of communication technology accelerates the dissemination of information and rescue efforts. This supports the idea that technology is shaping the social response to the crisis |
| 30 | Jandrić (2023) | "Postdigital Human Capital" | This paper explores the relationship between people, technology, and work in the postdigital era, highlighting how technology, including AI, is changing the way work and education are being done. The influence of AI on jobs raises concerns about technological unemployment, which reflects the idea of technological determinism that |

| No. | Source | Research Title | Findings |
|---|---|---|---|
| | | | technological innovation can replace the role of humans in the world of work. This emphasizes the importance of developing a new understanding of human capital in the era |
| 31 | Hirsch-Kreinsen & Krokowski (2024) | "Promises and Myths of Artificial Intelligence" | This article highlights the promises and myths associated with the development of AI, emphasizing that excessive expectations about AI often do not correspond to reality. The authors show how technological determinism influences public perception of AI as a solution to a variety of social problems, but often masks the complexity and limitations of the technology. This confirms that a deterministic view of AI can lead to unrealistic expectations |
| 32 | Molfino et al. (2024) | "Robots Trends and Megatrends: Artificial Intelligence and the Society" | The paper discusses future trends in the use of robots and AI, which are seen as key technologies in changing the way people work and live. AI and robotics are predicted to replace many of today's jobs, but they are also creating new, more skilled job opportunities. This article reflects on technological determinism, where technological developments directly lead to social and economic change |
| 33 | Simon et al. (2022) | "Should Alexa Diagnose Alzheimer's?: Legal and Ethical Issues with At-home Consumer Devices" | The study explores the ethical and legal challenges in the use of AI devices such as Alexa to detect Alzheimer's disease at home. AI used in health diagnostics raises concerns regarding privacy and control, reinforcing the idea that technology has a significant impact on health management and human interaction. It shows how technological determinism is playing a role in shaping the future of healthcare |
| 34 | Čavoški (2022) | "The European Green Deal and Technological Determinism" | This paper evaluates how EGD relies too heavily on technology as a key solution to environmental challenges. While technology is seen as a key driver of environmental change, this paper shows that technological determinism in EGD ignores the role of humans and social responsibility in achieving sustainability. This shows the importance of environmental regulation to balance technology and human needs |
| 35 | Aleessawi & Alzubi (2024a) | "The Implications of Artificial Intelligence (AI) on the Quality of Media Content" | This article discusses the impact of AI on the quality of media content, where it is used to analyze data, speed up the editing process, and improve the capabilities of journalists. However, reliance on AI also carries risks in producing false or misleading content, reflecting the technologically deterministic view that AI could change the way the media industry works. It shows how AI shapes quality and ethics in media production |
| 36 | Galetsi et al. (2022) | "The Medical and Societal Impact of Big Data | The study highlights the huge role of data analytics and AI in combating pandemics, including Covid- |

| No. | Source | Research Title | Findings |
|---|---|---|---|
| | | Analytics and Artificial Intelligence in Combating Pandemics" | 19, by managing big data for disease prediction and prevention. AI helps in making medical decisions faster and more accurately, which reflects the technological determinism in which technology plays a role in directing people's responses to health crises. It confirms how AI is impacting public health and decision-making in times of crisis |
| 37 | Ogilvie et al. (2022) | "The Use of Chatbots as Supportive Agents for People Seeking Help with Substance Use Disorder" | This paper examines the use of chatbots in supporting people with substance use disorder (SUD). AI-based chatbots help provide non-judgmental and accessible support at all times, especially during the COVID-19 pandemic. This technology reinforces the idea of technological determinism by showing how AI is becoming an important tool in providing telemedical assistance. However, the study also highlights the need for expert oversight to ensure the secure use of big data, without compromising users |
| 38 | Muttanahally et al. (2021) | "Usefulness of Artificial Intelligence-Based Virtual Assistants in Oral and Maxillofacial Radiology Report Writing" | This study assesses the usefulness of AI-based virtual assistants in writing oral and maxillofacial radiology reports. The results show that Google Assistant is the most efficient compared to Cortana, Siri, and Alexa. This technology reduces the time spent referencing external literature, speeds up the diagnosis process, and shows how AI can improve the efficiency of radiological work, supporting the view of technological determinism that technology determines changes in the medical sector |
| 39 | Hong et al. (2021) | "Voice Assistants and Cancer Screening: A Comparison of Alexa, Siri, Google Assistant, and Cortana" | This paper compares the ability of voice assistants to understand and respond to cancer screening-related questions. Siri, Google Assistant, and Cortana show better understanding than Alexa, although the accuracy of the information varies. This article shows how AI is playing a role in providing relevant health information, reinforcing the idea that technology can guide the way people acquire medical information |
| 40 | Alzubaidi et al. (2023) | "Towards Risk-Free Trustworthy Artificial Intelligence: Significance and Requirements" | This article discusses the need to develop trustworthy AI by highlighting the importance of transparency, accountability, and fairness in the development of AI systems. While AI offers great advantages, the paper highlights potential social risks, such as data bias and lack of accountability. It reflects the determinism of technology by showing how AI drives important decisions across various sectors, including health and finance |

Source: Researcher (2024)

Artificial intelligence *technology* emerging and spreading today has undeniably entered various aspects of people's lives. As AI advances, its interactions with society are

becoming increasingly complicated. This has prompted questions about its influence on multiple fields, such as communication, healthcare, decision-making, and the ethical aspects involved.

In healthcare, artificial intelligence technology has shown the importance of diagnosis, treatment planning, and patient assistance. Some parts of artificial intelligence, such as voice assistants and virtual agents, assist healthcare professionals in compiling patient health records, disease checks, and patient assistance. Research comparing different types of voice assistants, including Alexa, Siri, Google Assistant, and Cortana, revealed the different efficiencies of the technology in providing precise health information, especially cancer screening (Hong et al., 2021). These technologies facilitate the relationship between individuals and health practitioners, especially in care and prevention, by providing accessible and fast access to information. In addition, chatbots with AI technology have shown the potential to assist individuals in handling health problems (Ogilvie et al., 2022). *Chatbots* provide ongoing support for various issues faced by patients. The implementation of AI into the world of care and healthcare illustrates the definitive influence of technologies where AI progressively determines the delivery and accessibility of healthcare within society.

AI also influences the decision-making process in care and healthcare by facilitating data analysis and prediction. The system is also used in finance, business, and law by facilitating decision-making with algorithmic methods that increase efficiency and minimize human error (Alzubaidi et al., 2023). Highlighting the growing reliance on AI in decision-making presents trust, transparency, and accountability issues. In that case, AI algorithms are meaningless without bias, independent of their potential. This biased data can result in inappropriate decision-making, especially in law enforcement and human resources. The use of AI in predictive positions has faced criticism for reinforcing racial prejudice. This underscores a significant social problem that sees this technology as not being adequately regulated and can widen the gap.

In addition, media and information transmission are examples of interaction between AI and humans, where technology changes the methods of processing, distributing, and consuming data. ChatGPT and AI-based content production platforms used in journalism to create articles and reports have become more efficient. According to Aleessawi & Alzubi (2024b), while AI can improve the quality and efficiency of content, it can also doubt its validity. Media coupled with artificial intelligence is suspected to reduce the credibility of news and can make it difficult for the public to distinguish falsehoods. It points to a broader social responsibility where, depending on its use, technology serves as a tool for growth or disinformation.

In response to some of the above issues, the moral questions that must be asked when talking about AI and society have become more complex. Many sectors have questioned the AI system's privacy, security, and use. Alzubaidi (2023) stated that AI is needed with a transparent system that is free of bias. The technology is becoming essential to be widely used, especially in various industries where AI-assisted decisions have a significant social impact. To create a system that supports human values and

transparency, the ethics of artificial intelligence must be adhered to. Undeniably, this technology can produce desired results, such as unfair treatment or invasion of privacy.

Furthermore, AI has changed how people interact with communication technology, as in the case of social media. Facebook and Twitter use AI algorithms to recommend content based on how each interacts with the data. According to the theory of technological determinism, the algorithm generates space and disinformation that significantly influences public opinion (Hong et al., 2021). AI's ability to support specific perspectives tends to affect freedom of expression and political processes. Therefore, it shows that AI should be used more clearly and honestly on social media to ensure technology helps society by fostering tolerance and compassion.

Regarding interaction between AI and humans as part of society, it is inseparable from advantages and disadvantages. Although AI is functional in various fields, it inevitably raises ethical problems. As artificial intelligence (AI) grows in society, researchers and practitioners should understand the moral standards that will protect fundamentals, safety, and well-being. The deterministic view of artificial intelligence assumes that while technological changes will affect social behavior, society must ensure these changes are beneficial. Society can use AI while reducing impact by building trust in AI in problem-solving.

## Conclusion

The potential of Artificial Intelligence (AI) is often hampered by a number of factors, including biased algorithms, inadequate privacy laws, and a lack of transparency in decision-making processes. AI algorithms can be biased when the training data used is not representative of the entire population or contains unintentional biases, which can reinforce unfairness in AI applications, such as discrimination in hiring or credit scoring. Additionally, privacy laws that are not yet able to accommodate the development of AI technology can cause issues in terms of personal data protection and information security. The lack of transparency in AI decision-making processes poses additional challenges, especially in terms of accountability. Users often do not understand how or why AI systems achieve certain results, which reduces trust in the technology. The implications of this research for the development of the railway transportation industry can include several important things, including: 1) Improved Operational Efficiency, findings related to the application of AI in data management, route planning, and predictive maintenance can help improve operational efficiency. AI can predict train maintenance needs in real-time, thereby minimizing disruptions and improving service smoothness. 2) Better Customer Experience, AI can be used to develop smart ticketing systems, personalized travel schedules, and chatbot-based customer service, which will improve user experience. The findings in this literature highlight the importance of more responsive and intuitive technology in creating more efficient interactions with passengers.

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