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Media's Approach to Artificial Intelligence: Content Analysis of US Newspapers

Medyanın Yapay Zekaya Yaklaşımı: ABD Gazetelerinin İçerik Analizi

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ABSTRACT

Artificial intelligence (AI) is rapidly advancing and becoming integrated into nearly every aspect of daily life, from science, technology, transportation, healthcare to finance, education, and entertainment. As AI technologies evolve, the way the public learns about AI will be crucial for its acceptance and integration into society. Media can play a pivotal role not only in informing the public but also in shaping perceptions of AI, influencing whether it is viewed from a positive or negative perspective. How AI is portrayed in the media can affect the public's understanding and willingness to embrace these technologies. Is AI presented in the media through the opportunities it offers to society, or is the focus placed on its potential challenges? Given the influential role of media in shaping public opinion, it is crucial to examine whether the portrayal of AI in news articles fosters understanding of it through a positive or negative lens. Therefore, this study focuses on how narratives in US newspapers cover the topic Artificial Intelligence (AI). The study analyzes 166 AI-related articles from three different newspapers between January 1, 2014, and December 31, 2023, using content analysis method. The research reveals a balanced portrayal of AI across the three newspapers, highlighting artificial intelligence's potential benefits and ethical challenges. Positive narratives emphasize technological advancements and societal benefits, while negative narratives focus on ethical concerns such as privacy and surveillance issues.

Keywords: Artificial Intelligence, US Newspapers, Media Narratives, Agenda-Setting Theory, Media Coverage of AI.

ÖZ

Yapay zeka (YZ) hızla gelişmekte ve bilim, teknoloji, ulaşım, sağlık hizmetleri, finans, eğitim ve eğlence gibi günlük hayatın her alanına entegre olmaktadır. YZ teknolojileri geliştikçe, halkın bu konuda nasıl bilgi edindiği, YZ'nin toplum tarafından kabul edilmesi ve benimsenmesi anlamında kritik bir öneme sahip olacaktır. Medya, yalnızca halkı bilgilendirmekle kalmayıp, aynı zamanda YZ'ye dair algıların şekillenmesinde de önemli bir rol oynayabilir ve halkın bakış açısını olumlu ya da olumsuz şekilde etkileyebilir. YZ'nin medyada nasıl tasvir edildiği, halkın bu teknolojilere yönelik algısını ve benimseme eğilimini etkileyebilir. Medyanın YZ'yi sunumunda, yapay zekanın halka sağladığı fırsatlara mı yoksa potansiyel tehlikelere mi odaklanılıyor? Medyanın kamuoyu üzerindeki etkisi dikkate alındığında, haber makalelerinin YZ'yi olumlu mu yoksa olumsuz bir bakış açısıyla mı sunduğunu incelemek önem taşımaktadır. Bu nedenle, bu çalışma ABD gazetelerinde yapay zekanın nasıl ele alındığını mercek altına almaktadır. Çalışma, 1 Ocak 2014 ile 31 Aralık 2023 tarihleri arasında üç farklı gazeteden 166 YZ ile ilgili makaleyi içerik analizi yöntemi kullanarak incelemektedir. Araştırma, üç gazete genelinde YZ'nin dengeli bir şekilde ele alındığını ortaya koymaktadır ve yapay zekanın toplum açısından potansiyel faydaları ile oluşturduğu etik sorunları vurgulamaktadır. Olumlu anlatılar teknolojik gelişmeleri ve toplumsal faydaları öne çıkarırken, olumsuz anlatılar gizlilik ve gözetim gibi etik endişelere odaklanmaktadır.

Anahtar Kelimeler: Yapay Zeka, ABD Gazeteleri, Medya Anlatıları, Gündem Belirleme Teorisi, Kamu Algısı.

Introduction

Artificial intelligence (AI) is rapidly evolving across virtually all sectors of the economy, including science, transportation, healthcare, finance, education, and entertainment. While some scholars contend that AI powered innovation will have a substantive and positive impact on people's lives (Madan & Ashok, 2023:1), others contend that AI also presents a number of moral, ethical and legal challenges regarding the escalating capabilities of AI (Taeihagh, 2021:138; Renda, 2019: 5). As AI technologies continue to evolve, how the public learns about AI will play a pivotal role in their acceptance and integration into daily life. According to a recent PEW survey conducted on 2022, the public remains cautious about the impact artificial intelligence is having on American life: Just 15% say they are more excited than concerned about the increasing use of AI in daily life, compared with 38% who are more concerned than excited; 46% express an equal mix of concern and excitement (Kennedy et al., 2023).

The fact that the American public is so divided relative to the impact AI will have on their daily lives, it begs the question: How does the public learn about AI? As noted by Cui and Wu (2020), the media plays an important role in conveying scientific progress to the public, particularly with emerging technologies like AI. Similarly, Ophir et al. (2021) highlight that media exposure significantly shapes public beliefs about these technologies, while Ophir and Jamieson (2021) emphasize that much of people's knowledge about science comes more from media narratives than from direct scientific facts. These findings emphasize the importance of studying how AI is presented in the media to understand the narrative's potential impact on public's awareness, understanding and acceptance of AI technologies. However, Chuan et al. (2019) emphasize the lack of empirical data in terms of analyzing how media covers AI. They argue that, aside from the comprehensive study by Fast and Horvitz (2017), which examined 30 years of AI coverage in *The New York Times* and revealed important trends in public discourse, there is a lack of empirical research in this area. Although research on public perceptions of datafication and automation is increasing, only a limited number of studies examine the framing practices used in the news regarding AI (Nguyen & Hekman, 2021). This study will attempt to address this empirical gap by analyzing the content and tone of AI-related news articles from major US newspapers over nearly a decade, which will reveal prevailing themes and sentiments in media coverage.

By examining the content and tone of AI-related coverage, the research aims to identify prevailing themes and narratives, including the opportunities and challenges presented by AI technologies. This study seeks to emphasize the role of media in framing the discourse around AI, providing insights into how news articles approach the subject, whether through optimistic portrayals of technological advancements or cautionary perspectives regarding ethical concerns. Ultimately, this research will contribute to an understanding of media narratives surrounding AI. The importance of this research lies in its potential to reveal the role of media in framing AI, emphasizing both its potential benefits and challenges.

Literature Review

The History of Artificial Intelligence

The concept of artificial intelligence was introduced into our lives in the 1950s with Alan Mathison Turing's idea of "Can machines think?" (Nacaroğlu & Savcı, 2023: 132). Alan Turing is recognized for his pioneering work in fields like Computer Science and Automated Decryption, Systems Biology and the Turing Test. He envisioned a machine that could simulate human mathematical reasoning through a series of instructions and later generalized this concept into a universal machine capable of mimicking any computational process. This led to the realization that certain problems are undecidable, meaning they cannot be solved by any algorithm. Turing's model of human calculation sparked further exploration into whether computers could eventually perform complex human-like reasoning (Fox & De Raedt, 2014: 1-4).

The Turing Test, originally called as the Imitation Game, proposes that if a machine can engage in conversation and convince a human that it is also human, it can be considered intelligent. In this test, the human interacts with both a person and a machine via text (to avoid using physical cues). If the human can not tell the difference between the two, the machine has passed the test. Turing designed this test to focus on communication and cognitive abilities rather than physical traits (French, 2000: 116).

Afterwards, John McCarthy, coined the term "Artificial Intelligence" in 1956 and defined it as making machines behave intelligently like humans (Kaplan, 2016: 1). Zhang and Lu (2021: 2) categorize AI development into several stages, beginning with the founding period in 1943 and McCarthy's introduction of AI at the 1956 Dartmouth conference. In 1956, the Dartmouth Conference, the world's first artificial intelligence conference, was held. With the use of artificial neural networks, instead of programming computers with specific rules, the system of training computers with a set of instructive data was tested, allowing the machines to learn patterns and rules on their own, similar to how humans learn (Berberoğlugil, 2023: 82). Early research at institutions like MIT and Stanford led to advancements in speech recognition and translation during the second golden age, while the third golden age, starting in the early 2000s, saw rapid technological progress, especially in algorithms for speech and visual recognition by 2012 (Zhang & Lu, 2021: 2).

With advancements in artificial intelligence over the decades, its practical applications have started to deliver substantial economic and social advantages. AI has provided economic and social benefits, enhancing labor efficiency, reducing costs, optimizing human resources, and creating new job demands (Zhang & Lu, 2021: 2; Lu & Da Xu, 2018: 2103). It aids scientific research by interpreting large datasets, accelerating discoveries (Wang et al., 2023: 47). Consequently, the AI market is rapidly growing. The International Data Corporation (2023) predicts global AI spending to reach $154 billion in 2023, a 26.9% increase from 2022, with a compound annual growth of 27.0% from 2022-2026, surpassing $300 billion in 2026. The market size is expected to grow from $241.8 billion in 2023 to nearly $740 billion by 2030, with its value rising from $208 billion in 2023 to around $1.85 trillion by 2030 (Thormundsson, 2024).

Media Coverage of Artificial Intelligence

Mass media are crucial for raising awareness and disseminating information to the public and their extensive reach and broad audience make them central agents in spreading knowledge through public communication (Schmidt et al, 2013: 1233). Chuan et al. (2019: 339) assert that public perceptions regarding scientific developments including AI are mostly informed and affected by how media presents them, and the public's acceptance and adoption of AI technologies depends on how they understand AI's power, its drawbacks and risks posed with it. Therefore, Chuan et al. indicate that research focusing on how media covers AI is crucial in understanding how public opinion of AI is shaped. Additionally, Chuan et al. note that, aside from a comprehensive study by Fast and Horvitz (2017), which examines 30 years of AI coverage in The New York Times, there is a significant gap in this area. Fast and Horvitz's study reveals that the narrative of the articles involves an optimistic view of AI, while there is an increasing concern on the negative impacts of AI lately (Chuan et al., 2019: 339).

Nader et al. emphasize the growing integration of AI into daily life and predict that this trend will continue for many years. Their study focuses on understanding how entertainment media shape public beliefs and attitudes. The findings indicate that while AI is often portrayed in extreme ways, both positively and negatively, the public's views are more moderate (Nader et al., 2024: 714-715).

Building on the role of media in shaping public perceptions, Cui and Wu emphasize the crucial role media plays in conveying scientific progress to the public, particularly modern technologies like AI. They argue that media portrayal significantly

influences how the public understands and assesses AI, though research on the relationship between media and public perception of AI remains limited. The study also highlights how varying media exposure leads to differing emotions and perceptions of AI, complicating public reactions to emerging technologies (2021: 45-46). Extending this argument, Sun et al. argue that media coverage of AI significantly influences public perceptions and their responses to the technology. They emphasize that previous research has shown how media portrayals shape the public's opinions and judgments about emerging technologies, highlighting the media's role in constructing public views of AI (2020: 1).

Advancing this line of inquiry, Ophir et al. examine how media exposure shapes public beliefs about scientific topics, including AI. They state that most Americans are exposed to scientific topics and issues through media. Their study focuses on the agenda-setting effect of media, examining how media exposure influences people's perceptions of specific scientific issues. The results suggest that media exposure plays a crucial role in shaping beliefs about a scientific topic (2024: 19, 25). Building on the discussion of media's influence, Ouchchy et al.'s study reveals that although the narratives of AI in media mostly involves a fictional theme, ranging from highly optimistic to very pessimistic, there has been a recent shift towards focusing on real developments in the field of AI. They state that public perception of AI will be influenced by the way media frames AI and how public perceive AI will influence the development of AI and public policies and regulations associated with it (Ouchchy et al., 2020: 928).

Examining the narratives surrounding AI, researchers have explored how media coverage highlights its ethical and societal implications. Chuan et al.'s study on the portrayal of AI in American news sources reveal that majority of the article's narrative involved potential ethical concerns regarding the use of AI without any focus on in-depth ethical discussion. The topics covered are mainly about business, economy, science and technology, even though there has been an increase recently in discussing ethical issues posed with AI (2019: 343).

Both Scheufele and Lewenstein (2005) and Ophir and Jamieson (2021) highlight the significant role media narratives play in shaping public perceptions of technology and science. Ophir and Jamieson state that people's knowledge about science is mostly conveyed through media narratives than scientific facts (2021: 1008). Scheufele and Lewenstein state that heuristics conveyed by mass media significantly influence how individuals perceive the risks and benefits associated with technology, ultimately impacting public support for research in those fields (2005: 659). Additionally, Ophir and Jamieson state that media narratives influence how people perceive science, impact its reliability, and enhance or undermine public trust and support for it (2021: 1009). Together, these studies emphasize the power of media in shaping discussions about technology and science, highlighting its impact on public opinion and decision-making.

Overall, the literature reviewed presents the power of media narratives on shaping public perceptions of AI, technology and science. The studies reveal that the media narratives influence public acceptance and adaptation of science, technology, and AI technologies.

Agenda-Setting Theory

The agenda setting theory explores how media can influence public perception by determining which topics receive more attention than others and how those topics are framed. The concept that the media sets agendas was initially put forth in Walter Lippmann's Public Opinion (1922). As stated by Lippmann, the media plays a pivotal role in the formation of our mental images of the wider world of ongoing global affairs that we are not able to personally observe. Although Lippmann never explicitly referred to the media's effect as agenda setting (McCombs & Shaw, 2005: 157), Lippmann assumed that people's actions are based not on direct and certain knowledge, but on the images

they create or receive from others (Lippmann, 1965: 19).

Petersen emphasizes the unrealistic and impractical expectation that everyone should have a well-informed opinion on all public matters, and that the media should help fulfill this expectation. (2003: 250). He highlights the unrealistic nature of this expectation, while Lippmann argues that although the press is widely regarded as our primary connection to the unseen environment, there is an impractical belief that it should deliver a complete and true picture of all relevant external issues (Lippmann, 1922: 203, as cited in Petersen, 2003: 250). Lippmann's critique of this impractical belief relates to his observation that the increasing complexity of journalism, driven by the surge in the number of facts and dissolution of established standards of judgment, has posed significant challenges for the press in handling and presenting complicated and confusing information (Lippmann, 1931: 161).

Beyond merely providing information, the role of media in shaping public agendas has also been frequently analyzed. Cohen (1963: 13) outlines the role of mass media in setting agendas, suggesting that while the media may not directly control people's thoughts, it is highly effective in directing their attention to specific issues. Similarly, Shaw and Martin (1992: 903) note that while the press presents ideas for public discourse and potential community action, it does not dictate how we perceive these ideas. However, they argue that public concerns are constantly competing for limited public attention, and although mass media is presumed to have significant influence, it is just one of the many forces shaping the agenda within the broader social order (1992: 903-908).

Nevertheless, there are differing perspectives on how the way media presents events influences public perceptions. Graber (2006) argues that, contrary to the belief that the media simply reports events without shaping opinions, the way news is presented does influence viewers' perspectives, especially on topics outside their personal experiences. He notes that when public perceptions align more with the media's portrayal than with actual events, the media's powerful influence becomes clear (2006: 231).

Scheufele argues that mass media has an impact on how certain issues gain importance relative to others (2000: 300). He mentions that the positive relationship between the media and audience agenda was first examined by McCombs and Shaw in 1972. McCombs and Shaw's study was based on Cohen's (1963) idea that mass media influences audience not by especially telling them what to think but by telling them what to think about. Numerous studies have identified a direct relationship between the amount of media coverage and the salience of it in public agenda. The greater the amount of media content released on a specific issue, the higher the chance this issue finds a place in the public agenda (Scheufele, 2000: 304).

Extensive scholarly attention has been given to understanding the media's influence on public priorities and decision-making processes. McCombs and Shaw (2005: 156) note that by shaping citizens' priorities and distributing most of the information and perspectives that influence public opinion on current issues, the press plays a crucial role in public life. The public and policy makers in the government obtain indefinite but effective underlined messages about public issues by the press. As a result, both the public and government officials focus on issues that receive extensive media coverage. Additionally, McComb and Shaw highlight the numerous research investigations conducted globally which examine the ranked position of situations on the press agenda and the order of priority on the public agenda, in studying the effect of media has on agenda setting. A significant percentage of this research has revealed a strong correlation between public opinion and policymakers' agendas, and the topics prioritized on the news media's agenda. The general population's and decision makers' eventual assessment of the significance of these findings is heavily affected by how they are reported in the news (McComb & Shaw, 2005: 157).

While McCombs and Shaw emphasize the direct influence of the media on public and policymaker priorities, other scholars explore the limitations of this influence. Bovitz et al.'s study focuses on the power of news organizations in shaping public opinion. However, Bovitz et al. indicate that the news organizations can influence the public opinion but due to barriers such as lack of success in attracting audience and conflicts within organizations over which content to prevail, it can be a limited discourse (2002: 146).

Expanding on the media's role in influencing public opinion, Mensah highlights the power of media in shaping stories, framing problems, and shaping public opinion on diverse topics. He argues that the media environment today has a massive level of impact on how people perceive the world and how people shape their opinions. Furthermore, how the media frames issues and how it interprets them is influential on audience's perceptions. The cognitive biases and heuristics of people make them prone to being affected by media narratives (2024: 2).

On the other hand, there are limitations to the media's agenda setting theory. Zain (2014) argues that personal factors may reduce the impact of media's agenda-setting effect on individuals, where personal variables influence how much an individual is affected by the media's agenda. Additionally, he emphasizes the concept of inter-media agenda-setting, where one media type influences another. He argues that new media, being faster and more accessible than traditional media, especially appealing to younger generations, making it more effective at shaping public opinion and influencing traditional media agendas.

Beyond the direct influence of media, research has increasingly explored how evolving communication patterns and new technologies interact with agenda-setting processes. Coşkun Tuna and Türkölmez argue that given the impact social media has on shaping individual identities and its ability to reach large audiences, it can be argued that it is a more widespread and effective platform compared to traditional communication methods. Traditional media, such as television, magazines, newspapers, and radio, offer limited interaction and function through one-way communication. In contrast, new media stands out by enabling mutual exchanges and online engagement, providing a participatory and interactive platform that differentiates it from traditional media (2023).

Researchers have explored how social media reshapes news dissemination and agenda-setting compared to traditional media. Güdekli (2016) emphasizes the growing influence of social media in presenting a narrative. She argues that social media, especially platforms like Twitter, has rapidly increased its impact on the dissemination of news and the setting of agendas. Additionally, she asserts that the dynamic nature of social media has caused the agenda to change much more rapidly, making traditional media less decisive than it used to be, particularly focusing on the concept of social media users, becoming almost "reporters," and their social media posts shaping the media agenda (155). Therefore, the study presents an argument that, while traditional media continues to exist, its power is being challenged due to the growing influence of social media .

Roberts and Wanta's (2002) study indicates that there are factors which influence or weaken the media's agenda setting effect. They argue that while media coverage can influence public perception of issues, intensity of coverage, interpersonal communication, and the introduction of new online communication forms influence the medias' agenda-setting effect. Similarly, Melek's (2017) study focuses on understanding the relationship between the mainstream media and social networks, how the agenda of mainstream media interacts with and influences the content shared on social networks. The study suggests that traditional media can shape or affect the topics discussed on social media, and there is also a reverse relationship, where social media discussions may influence mainstream media's

coverage. This finding indicates that traditional media has less influence on agenda-setting than before, as social networks now share the power that mainstream media once held exclusively.

Similarly, Kılıç argues that with the development of the internet, and especially social media, a significant transformation has begun in communication methods. The one-way communication model of traditional media has given way to a two-way communication model dominated by mutual interaction. Additionally, various topics are being discussed and presented in the form of agendas on Twitter, one of the social sharing platforms. In this context, social media, and Twitter in particular, has become an important platform for agenda-setting (2020).

In conclusion, the agenda-setting theory remains relevant today; however, as Naser (2020) states that the relationship between the media and the public is no longer one-sided. Rather than passively accepting the media's agenda, the public now plays an active role in guiding media content. His argument regarding the inter-media agenda-setting concept further strengthens the theory's adaptability, where both traditional and new media interact to shape public discourse. Although the power of traditional media has been weakened due to the growing influence of social media on agenda-setting, the development of internet and new media tools, as Güdekli (2016: 151) indicates; traditional media, particularly print media, has historically been an important tool for social communication. Additionally, the literature review reinforces the impact of media coverage on public attention, influencing how people percieve and prioritize issues. However, this effect has diminished due to the rise of social media tools as discussed above.

Methodology

Given the media's significant role in shaping public perceptions and setting the agenda for societal issues including technological developments such as AI, it is important to examine how the three major newspapers in US frame AI. The research design employs a content analysis method to explore how artificial intelligence (AI) is represented in the three major US newspapers, focusing on examining the themes and tones of these articles.

In order to understand how AI is addressed in the media, the data was collected from the articles of the New York Times, the Wall Street Journal and the Washington Post, using ProQuest database. The usage of these sources provided different viewpoints about AI's potential benefits, risks, ethical considerations, and implications. Articles were searched in regards to containing at least one of the following terms: "artificial intelligence," "AI," "machine learning," "robotics", "AI ethics", and "intelligent systems". A total of 951 news articles were retrieved through keyword search. The news articles obtained span from January 1, 2014 to December 31, 2023. After screening 951 news articles, it was revealed that many of those articles only mentioned AI without providing substantive discussion of the topic. Then a total of 166 news articles that focused substantially on AI related topics were retrained. The analysis focused on identifying themes and the tone of the articles, and how these articles framed AI related topics. This examination aims to uncover the dominant narratives in these articles.

Research Findings

Using NVIVO 14 software, a dataset that consisted of articles covering various themes were analyzed. The prominent themes in the chosen articles

Table 1

Number and time range of AI related articles for each medium

News Media	# of Articles Acquired	# of Articles Retained	Time Range
Washington Post	307	46	01/01/2014-12/31/2023
New York Times	445	83	01/01/2014-12/31/2023
Wall Street Journal	199	37	01/01/2014-12/31/2023

were artificial intelligence, data, software, system, computer, and social media. Other notable themes were technology, tech, tools, algorithms, cheating, facial recognition, future, machine, and privacy. Other themes involved companies, newspapers, publishers, online, generative, and images.

Figure 1

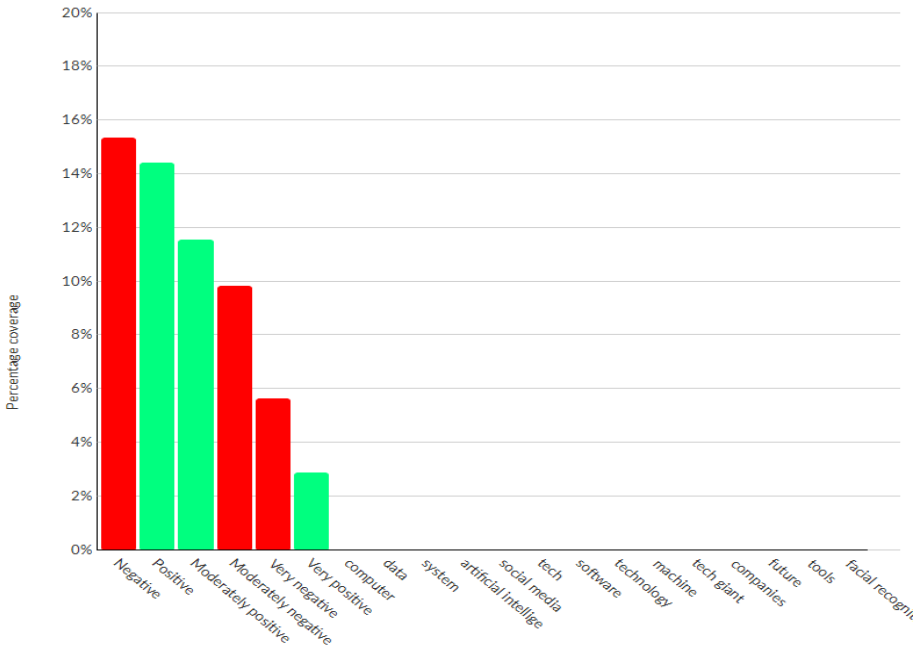
Key themes identified in AI related media coverage visualized through word cloud

The word cloud offers a visual presentation of the key themes dominating AI-related media coverage. The central theme "Artificial Intelligence" illustrates the significant interest and importance attributed to AI in the media narrative. The theme "Computer" is prominent, indicating the fundamental role that computational power and technology play in the development and application of AI. "Software" and "system" are key components in the narrative, suggesting that media coverage often focuses on the technical infrastructure supporting AI. "Data" is another crucial theme in the media narrative, emphasizing the critical role of data collection and management. "Social Media" emerges as a significant theme, illustrating the intersection of AI with social media platforms that shape public opinion and social interaction. Additionally, "Facial Recognition" stands out as a notable theme. The media's focus on facial recognition suggests a narrative concerned with the balance between innovation and safety measures and ethical considerations, particularly regarding surveillance issues. The terms "Privacy" and "Cheating" reflect societal and ethical concerns associated with AI. Media coverage often addresses the implications of AI on privacy issues and the potential for misuse. "Tech" and "Technology" are themes that involve the advancements and diverse applications of AI, whereas "Algorithms" and "Machine" indicate a focus on the technical aspects of AI, particularly machine learning. Additional themes like "Tools", "Companies", "Generative", and "Publishers" emphasize the development of new applications, the role of businesses in driving innovation, and the creation of generative AI models capable of producing new content. While, "Future" reflects predictions, potential advancements, and the long-term impact of AI on society, "Online", "Images", and "Newspapers" suggest a focus on digital mediums and the changing media environment in AI era. In summary, the word cloud represents media narratives of AI, characterized by a mix of themes involving ethical considerations, societal impact and technical aspects. The variety of themes suggests an existence of diverse content.

Furthermore, using NVIVO 14 software, the tone of the articles were analyzed. The dataset shows that there is a balanced distribution between negative and positive sentiments, with a slight leaning towards negative tone. A slightly more prevalence of negative sentiment indicates that the articles' narratives involved concern, criticism or negative aspects of the topics discussed in the articles. However, both moderately negative and moderately positive sentiments had a higher share compared to very negative or very positive sentiments. This shows that the tone of the articles involved moderate opinions than extreme ones, both negatively and positively. Although the articles involved a slightly more negative tone compared to the positive tone, the positive tone was also substantial. This indicates that the articles also had a narrative where the potential benefits of AI were discussed. The topics with more negative sentiment included challenges as privacy, security, and transparency whereas the topics with a more positive sentiment included innovation and potential benefits of AI. The mixed sentiment indicates the existence of diverse opinions, reflecting both appreciation and criticism across themes.

Figure 2

Sentiment tone classification in AI related media coverage



Furthermore, matrix coding was applied using NVIVO 14 software, including the positive and negative references and the themes artificial intelligence, cheating, facial recognition, machine, social media, system, and technology. The results indicate that Artificial Intelligence shows a balanced sentiment with mixed opinions, whereas technology and system themes both have a balanced sentiment, leaning more towards positive sentiment. Cheating and facial recognition themes show a prominence of negative sentiment, while social media theme displays more negative sentiment, with a significant portion of mixed opinions. Machine theme shows a balanced sentiment with mixed opinions.

Figure 3

Sentiment analysis of themes in AI related media coverage

In examining newspaper coverage of artificial intelligence (AI), it is crucial to address the negative sentiments associated with specific themes. Understanding these sentiments can have significant implications for the development, awareness, and adoption of AI technologies.

The analysis reveals notable negative sentiments in the themes cheating and facial recognition and a relatively less negative sentiment to social media theme. Negative sentiments surrounding facial recognition and technology theme are mostly linked to privacy and surveillance issues. This reveals the concern about potential misuse of facial recognition systems and privacy issues associated with that. Negative sentiments surrounding cheating theme include concerns about misuse and unethical use of the technology which violate fairness and ethical considerations. Negative sentiments surrounding social media theme include concerns about privacy issues and data collection.

Understanding these negative sentiments is essential for addressing concerns related to cheating, facial recognition, and social media, thereby building and maintaining public trust in AI technologies. Negative sentiments can hinder the awareness, acceptance and adaptation of AI technologies if individuals perceive that their privacy or ethical principles are being compromised. Furthermore, negative sentiments can influence policymaking and regulations by urging policymakers to enact laws and guidelines aimed at addressing these public concerns. Understanding these concerns is crucial for establishing policies that balance technological advancements with the protection of individual rights and societal values. Additionally, understanding negative sentiments can facilitate transparent communication, ensuring that the public is well-informed about AI technologies and can embrace a balanced perspective.

To sum up: the dataset indicates that the newspaper article coverage of AI encompasses a wide range of topics including ethical considerations, societal impacts, benefits, future of technology, algorithms, and social media. The tone of the narratives reflects both positive and negative sentiments. Positive sentiments focus on advancements in technology and its potential benefits to society, while negative sentiments focus on ethical considerations such as privacy and surveillance issues. The newspapers frame artificial intelligence as a technology with both promising opportunities and challenges at the same time.

The analysis of the media coverage of AI in major US newspapers aligns with the principles of the agenda-setting theory. As suggested by McCombs and Shaw (2005: 156), the media not only informs the public but also shapes the salience of issues. In this context, the prominence of certain themes such as privacy, facial recognition, and cheating within the AI narrative emphasizes the agenda-setting role of these newspapers. By emphasizing the potential risks of AI, negative sentiments related to privacy and ethical issues, the media directs public attention towards these concerns, positioning them as important considerations in the public discourse on AI.

The data shows that although both positive and negative sentiments are present, the media's focus on privacy concerns and surveillance issues, suggests that these newspapers are setting an agenda that underscores the ethical and regulatory challenges of AI. This is in line with Cohen's (1963) idea that the media does not tell people what to think but what to think about. Through this framing, the newspapers prioritize discussions on the ethical implications of AI, which, in turn, can influence public perception and possibly can shape policymaking around AI development and regulation.

Additionally, the tone of coverage, while balanced, leans slightly towards negative sentiment, particularly in themes related to privacy, social media, and surveillance. This framing reinforces the agenda-setting effect, as these themes are repeatedly emphasized, potentially shaping a cautious perspective about AI. The media's decision to present AI as both a tool of innovation

and a source of ethical dilemmas suggests a deliberate agenda that balances optimism with caution.

Conclusion

As Nguyen and Hekman suggest, the prominence of an issue in the news enhances its significance in public discourse and resonates with the audience. This principle of the agenda-setting theory emphasizes that editorial choices influence the visibility and prioritization of topics. Additionally, how technology is framed in the media can significantly impact audience perceptions and evaluations. Thus, it is essential to explore the contexts in which news media cover technology, whether it is portrayed as an opportunity or a threat (2021: 438). In this regard, the way AI is discussed in the media can shape public awareness and understanding of this technology. In this research, the prominent themes and mixed sentiments in the articles reflect the media's role in presenting a balanced view of AI, emphasizing both its potential benefits to the society and the ethical issues it raises. The balanced narrative surrounding AI-related topics helps the public become well-informed about the opportunities and challenges associated with AI. This comprehensive portrayal is vital for informing the public. Ultimately, understanding these media representations is crucial for fostering a well-informed society capable of engaging thoughtfully about AI technologies.

Discussion

The analysis of 166 articles from the New York Times, the Wall Street Journal, and Washington Post, covering the period from January 1, 2014, to December 31, 2023, reveals a balanced portrayal of artificial intelligence (AI) in the media. This mixed sentiment, encompassing both optimism about AI's potential benefits and concerns about its ethical challenges, is likely to contribute to a balanced public understanding. Positive narratives can foster enthusiasm for technological advancements, while negative narratives may increase concerns about ethical implications. Key themes, such as cheating, facial recognition, and social media, play a significant role in shaping public awareness and concerns.

Examining how the media discusses AI clarifies its meaning, potential future developments, and its significance to the public (Brennen, 2018: 2). The way these issues are portrayed in the media can influence how the public perceives AI and may affect its acceptance and the trust in these technologies. The presence of both positive and negative narratives suggests that media coverage provides a comprehensive view of AI's potential impacts. Given the pivotal role of creating public awareness and undestanding of the development and adaptation of new technologies, it is critical to examine how ethical issues related to AI are addressed in media discourse. As noted by Ouchchy et al. (2020), the portrayal of ethical concerns in the media can influence public opinion. Consequently, understanding how these ethical considerations are framed can offer valuable insights into the growing demand for more regulated AI practices.

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Genişletilmiş Özet

Yapay zeka; bilim, ulaşım, sağlık, finans, eğitim, ve eğlence dahil olmak üzere ekonominin hemen her alanında hızla gelişmektedir. Yapay zeka ekonomik ve sosyal faydalar sağlayarak iş verimliliğini artırmış, maliyetleri düşürmüş ve yeni iş talepleri yaratmıştır. Yapay zeka pazarı hızla büyümektedir ve 2026'da küresel pazar büyüklüğünün 300 milyar doları aşması öngörülmektedir. Ancak yapay zekanın hızla gelişmesi, beraberinde etik ve sosyal kaygılara da yol açmaktadır. Yapay zeka teknolojileri gelişmeye devam ettikçe, halkın yapay zeka hakkında nasıl bilgi edindiği, bu teknolojilerin halk tarafından kabulü ve günlük yaşama entegrasyonu anlamında önemli bir rol oynayacaktır. Medya, yalnızca halkı bilgilendirmekle kalmaz, aynı zamanda yapay zekaya dair algıların şekillenmesinde de önemli bir rol oynayabilir ve halkın bu konuya olan bakış açısını olumlu ya da olumsuz şekilde etkileyebilir.

Cui ve Wu'nun (2020) belirttiği gibi, medya özellikle yapay zeka gibi yeni teknolojilerdeki bilimsel gelişmeleri kamuoyuna aktarmada önemli bir rol oynamaktadır. Benzer şekilde, Ophir vd. (2021) medyanın teknolojilere dair kamuoyu fikirlerini önemli ölçüde şekillendirdiğini vurgularken, Ophir ve Jamieson (2021) insanların bilim hakkında sahip oldukları bilgilerin çoğunun bilimsel gerçeklerden ziyade medya anlatılarından geldiğini belirtmektedir. Bu bulgular, yapay zekanın medyada nasıl sunulduğunu incelemenin, anlatının kamunun yapay zeka teknolojileri hakkındaki farkındalığını, anlayışını ve yapay zekayı kabulü üzerindeki potansiyel etkisini anlamak açısından önemini vurgulamaktadır. Ancak Chuan vd. (2019), yapay zekanın medyada nasıl ele alındığına dair ampirik verilerin eksikliğine dikkat çekmektedir. Onlar, Fast ve Horvitz'in (2017) New York Times'ta 30 yıl boyunca yapılan yapay zeka haberlerini inceleyen kapsamlı çalışması dışında, bu alanda ampirik araştırmaların yetersiz olduğunu savunmaktadır. Verileştirme ve otomasyon konularındaki kamuoyu algısına yönelik araştırmalar artarken, haberlerde yapay zeka ile ilgili kullanılan çerçeveleme uygulamalarını inceleyen çalışma sayısı sınırlıdır (Nguyen & Hekman, 2021). Bu araştırma, üç önemli Amerikan gazetesinde yaklaşık on yıllık bir süre boyunca yayımlanan yapay zeka haberlerinin içeriğini ve tonunu analiz ederek, bu ampirik boşluğu doldurmayı amaçlamaktadır. Bu analiz, medya haberlerindeki anlatılarda hakim temalar ve duyguların ortaya çıkarılmasını sağlayacaktır.

Araştırma, yapay zeka ile ilgili haberlerin içeriğini ve tonunu inceleyerek, yapay zeka teknolojilerinin halka sunduğu fırsatlar ve sebep olabileceği etik sorunlar dahil olmak üzere hakim temaları ve anlatıları belirlemeyi hedeflemektedir. Bu çalışma, medyanın yapay zeka hakkındaki söylemi nasıl çerçevelediğine dikkat çekerek, haber makalelerinin konuya nasıl yaklaştığına dair içgörüler sunacaktır; bu yaklaşımlar, teknolojik gelişmelerin iyimser tasvirlerinden etik kaygılara yönelik ihtiyatlı perspektiflere kadar çeşitlilik gösterebilir. Bu araştırma, yapay zeka hakkındaki

medya anlatılarını incelemeye katkı sağlayacaktır. Bu araştırmanın önemi, medyanın yapay zekayı çerçevelemede oynadığı rolü ortaya çıkarma potansiyelinde yatmaktadır; hem potansiyel faydalarına hem de karşılaşılabilecek sorunlara vurgu yapılmaktadır.

Bu amaçla, New York Times, Wall Street Journal ve Washington Post'ta 01/01/2014 ve 31/12/2023 yılları arasında yayımlanan yapay zeka ile ilgili makaleler, ProQuest veri tabanı aracılığıyla taranmıştır ve daha sonrasında analiz edilmiştir. Tarama sürecinde, "Yapay Zeka", "YZ", "Makine Öğrenimi", "Robotik", "Yapay Zeka Etiği" ve "Akıllı Sistemler" terimleri anahtar kelime olarak kullanılmıştır. Elde edilen 166 adet makale, NVIVO yazılımı kullanılarak içerik analizi tekniği ile değerlendirilmiştir ve bu değerlendirme sonucunda makalelerdeki temalar, ana fikirler ve eğilimler tespit edilmiştir.

Araştırma bulguları, yapay zeka ile ilgili gazete haberleri anlatılarında yapay zeka, veri, yazılım, bilgisayar, sosyal medya, teknoloji, araçlar, algoritmalar, hile, yüz tanıma sistemleri, teknolojinin geleceği, görseller gibi geniş bir konu yelpazesini kapsadığını göstermektedir. Makale anlatılarının tonu, hem olumlu hem de olumsuz duyguları içermektedir. Olumlu duygular, teknolojideki ilerlemelere ve yapay zekanın toplum için sağladığı potansiyel faydalarına odaklanırken, olumsuz duygular ise gizlilik ve gözetim gibi etik kaygılar üzerinde yoğunlaşmaktadır. İncelenen makalaler, yapay zekayı aynı anda hem umut vadeden ve fırsatlar sunan hem de endişeye sebep olan bir teknoloji olarak ele almaktadır. Yapay zekanın potansiyel riskleri ve etik sorunları medya tarafından sıkça gündeme getirilmiştir. Bireysel mahremiyetin ihlali, hile, yüz tanıma sistemleri ve sosyal medya temaları medyada geniş yer bulmuştur.

Anlatıların hem yapay zekanın potansiyel faydaları konusundaki iyimserliği hem de etik sorunlara yönelik endişeleri kapsayan bu yaklaşımı, halkın dengeli bir bilgi edinmesine katkıda bulunabilir. Olumlu anlatılar, toplumun teknolojik ilerlemelere yönelik heyecanını artırabilirken; olumsuz anlatılar, toplumun yapay zeka teknolojisinin sebep olduğu etik sorunlar hakkındaki endişelerini artırabilir. Kopya çekme, yüz tanıma ve sosyal medya gibi öne çıkan temalar, kamuoyunun farkındalığını ve endişelerini şekillendirmede önemli bir rol oynamaktadır.

Yapay zekanın medyada nasıl sunulduğu, halkın yapay zekayı nasıl algıladığını etkileyebilir ve halkın bu teknolojilere olan kabulünü ve güvenlerini şekillendirebilir. Hem olumlu hem de olumsuz anlatıların varlığı, medyanın yapay zekanın olası etkilerine dair kapsamlı bir bakış açısı sunduğunu göstermektedir. Yeni teknolojilerin geliştirilmesi ve benimsenmesi konusundaki kamuoyu farkındalığı ve anlayışı yaratmada oynadığı önemli rol göz önüne alındığında, yapay zeka ile ilgili etik meselelerin medya söylemlerinde nasıl ele alındığını incelemek önemlidir. Ouchchy ve arkadaşlarının (2020) belirttiği gibi, medyada etik kaygıların nasıl ele alındığı, kamuoyunun bu konudaki fikrini etkileyebilir. Bu nedenle, yapay zeka ile ilgili etik sorunların medya tarafından nasıl çerçevelendiğini anlamak, toplumun bu teknolojilere olan güvenini ve kabulünü anlamada önemli bir rol oynayabilir.

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