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Mengeksplorasi dampak teknologi deepfake terhadap kepercayaan publik dan manipulasi media: Tinjauan lingkup

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Abstract: Deepfake technology, an AI-driven method for synthesizing hyper-realistic yet fabricated content, has raised concerns regarding public trust and media manipulation. This scoping review examines its impact by analyzing interdisciplinary literature from computer science, communication, psychology, and sociology. Using a systematic review approach, the study identifies key trends, challenges, and research gaps. Findings reveal that deepfake technology significantly blurs the boundary between truth and fiction, eroding media credibility. Additionally, malicious actors exploit deepfakes to spread misinformation, manipulate public perception, and threaten information integrity. The study underscores the urgent need for increased awareness, policy interventions, and media literacy programs to mitigate deepfake-related risks. By mapping the current discourse, this review highlights critical areas for future research and practical strategies to safeguard digital information ecosystems.

Abstrak: Teknologi *deepfake*, metode berbasis kecerdasan buatan untuk menyintesis konten hiper-realistis namun rekayasa, telah menimbulkan kekhawatiran terhadap kepercayaan publik dan manipulasi media. Kajian ini mengkaji dampaknya melalui tinjauan pustaka interdisipliner yang mencakup bidang ilmu komputer, komunikasi, psikologi, dan sosiologi. Dengan pendekatan tinjauan sistematis, penelitian ini mengidentifikasi tren utama, tantangan, serta kesenjangan dalam literatur yang ada. Temuan menunjukkan bahwa teknologi deepfake secara signifikan mengaburkan batas antara fakta dan rekayasa, sehingga mengikis kredibilitas media. Selain itu, aktor jahat memanfaatkan *deepfake* untuk menyebarkan misinformasi, memanipulasi persepsi publik, dan mengancam integritas informasi. Studi ini menekankan urgensi peningkatan kesadaran, intervensi kebijakan, serta program literasi media guna memitigasi risiko yang ditimbulkan oleh deepfake. Dengan memetakan wacana yang berkembang, kajian ini menyoroti area kritis bagi penelitian lanjutan serta strategi praktis untuk melindungi ekosistem informasi digital.

INTRODUCTION

Advancements in artificial intelligence (AI) have paved the way for innovative technologies that shape various aspects of modern life (Gil et al., 2023). Among these, deepfake technology, an AI-driven method for synthesizing hyper-realistic yet fabricated content, has gained widespread attention in recent times (Gambín et al., 2024). The remarkable ability of deepfakes to manipulate audiovisual content convincingly raises significant concerns about its potential implications on public trust and media manipulation (Hameleers, 2024; Langguth et al., 2021).

The advent of deepfake technology has revolutionized the way digital media is created and consumed. Deepfakes employ sophisticated algorithms and machine learning techniques to alter or replace faces and voices in videos, resulting in convincing content that is difficult to distinguish from genuine footage, between real and fake content (Editorial Desk USAII, 2024). While deepfake technology offers exciting possibilities for entertainment and creative expression such as filmmaking and education as well as social awareness about potential for media manipulation. It also poses serious challenges to societal well-being and negative consequences such as erosion of trust in information as people struggle to discern authenticity and malicious use such as actors create fake news, manipulate public opinion and engage in cyberbullying (Tang et al., 2023). The ability to create deepfakes poses risks across politics, journalism, entertainment, and criminal justice. By misleading the public, altering history, and fabricating events, deepfakes raise critical ethical and legal concerns. Therefore, awareness of their impact on public trust and media manipulation is essential in addressing the challenges of this evolving technology.

Data from different sources also confirm that the problem exists and is acute at the initial stage of research. Many cases of deepfake videos in current social networks are observed, which leads to the confusion of the audience and dropping the trust in media source (Ahmed, 2021). Deepfakes are widely seen on social media platforms which has created severe concerns on who can moderate content on social media and whether fake news can go viral. Conjuring such instances of media manipulation through deepfakes have raised concern to researchers, policy makers and technologists for deeper investigation of this deep fake technology with relation to the erosion of trust and media manipulation.

A survey by the Centre for Data Ethics and Innovation (CDEI, 2019) found that over 60% of people are skeptical of social media information due to deepfakes. This indicates growing concern over their impact on trust and media credibility. Moreover, deepfakes have been used to defame public figures, manipulate event narratives, and fabricate staged scenes, sparking intense ethical and legal debates.

Analysis across disciplines—including computer science, communication, psychology, and sociology—reveals the evolving nature of deepfake technology. Studies show that digital media consumers are highly susceptible to pre-recorded deepfakes, increasing skepticism toward online content. Strömbäck et al. (2020) highlight the role of cognitive heuristics in making individuals vulnerable to deepfake-driven misinformation. The "media trust" model (Ahmed, 2021) suggests that trust in media relies on source credibility, message accuracy, and prior media interactions.

However, deepfakes disrupt these factors by blurring the line between reality and fabrication, posing a significant threat to media integrity.

Research on the psychological effects of deepfake exposure shows that highly convincing fake videos can induce cognitive dissonance, causing individuals to struggle with reconciling new information with their existing beliefs (Kobis et al., 2021; Lee et al., 2023). This dissonance influences public opinion formation and decision-making, highlighting the critical role of deepfake technology in media manipulation.

Boutadjine et al. (2023) examined deepfake technology, though most existing studies remain focused on technical aspects like detection and prevention. This review shifts the focus to the societal impact, specifically how deepfakes erode trust and facilitate media manipulation. These insights are essential for developing strategies and policies to mitigate deepfake-related risks.

Given the rapid advancements in deepfake technology, it is essential to analyze its impact on public perception, news credibility, and information authenticity. This study is based on the concern that as deepfakes become more sophisticated, societal trust in online content may erode, creating opportunities for malicious actors to manipulate public opinion.

This scoping review provides a comprehensive analysis of deepfake technology's impact, assess the prevalence and influence, identifying key outcomes, emerging trends, and future research directions on media trust and manipulation, Additionally, it highlights the need to raise public awareness about deepfake-related risks and the importance

of developing protective measures to mitigate its negative effects.

A needs assessment conducted through literature review identifies critical gaps, forming the theoretical framework for this study. By examining various dimensions of deepfakes, this research aims to contribute significantly to the field, offering a foundation for policymaking and collaborative efforts to mitigate AI-driven threats in the media landscape. While prior studies have explored specific aspects focus on technical technology and some specific sensitive issues in local circumstances, this research therefore offer a comprehensive synthesis of the literature a more holistic perspective. By addressing these gaps, this study seeks to inform policymakers, media stakeholders, and the public about the risks and vulnerabilities posed by deepfakes. However, given the current and future developments in deepfake technology, it is crucial to examine the effects of deepfake misuse on the perception of the public, the news sources' credibility, and the factor of information truthfulness. The premise for this study is therefore the fear that with increased advancement in deepfake technology the society will lose trust in anything they come across on the internet and this will compound opportunities for the undesirable element to activities twist people's perception on any given issue.
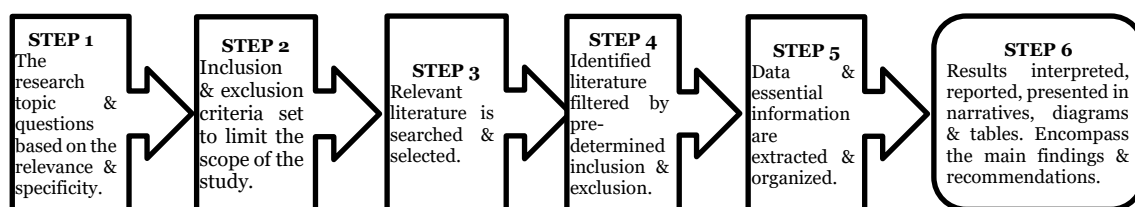
METHOD

This study employs a scoping review methodology, systematically analyzing existing literature on deepfake technology (Arksey & O'Malley, 2007). It explores its impact on interpersonal communication, political discourse, and social movements. The primary objective is to refine the research scope, provide a structured overview, and identify gaps in the current body of knowledge.

This scoping review follows the framework of Levac et al. (2010) with modifications to align with the research objectives. The process includes: First of all, defining the research topic and questions based on literature relevance; second, establishing inclusion and exclusion criteria to refine the study scope; third, searching and selecting relevant literature from databases such as ScimagoJR; fourth, PubMed, Scopus, and Web of Science, filtering literature based on predefined criteria; fifth, extracting and organizing key data, including study type, research design, methods, results, and conclusions, and sixth, systematically analyzing and reporting findings through narratives, diagrams, or tables. This structured approach ensures a comprehensive synthesis of deepfake-related research, highlighting key insights and future research directions, as follows:

Figure 1

Steps of the scoping review

STEP 1	STEP 2	STEP 3	STEP 4	STEP 5	STEP 6
The research topic & questions based on the relevance & specificity.	Inclusion & exclusion criteria set to limit the scope of the study.	Relevant literature is searched & selected.	Identified literature filtered by pre-determined inclusion & exclusion.	Data & essential information are extracted & organized.	Results interpreted, reported, presented in narratives, diagrams & tables. Encompass the main findings & recommendations.

Source: Levac et.al. (2010)

A scoping review is a valuable methodological approach for gaining a comprehensive understanding of existing literature on a specific topic. It helps researchers explore broad and complex subjects while establishing a conceptual framework for future studies. The rationale for categorizing this article as "A Scoping Review" is twofold: First, it expands the scope of analysis within the field, making it suitable for emerging and evolving topics like deepfake technology and media manipulation, and second it facilitates the identification of key research gaps, offering insights into future directions. Given that deepfake technology remains a relatively new and dynamic field, a scoping review serves as an essential tool for assessing its societal implications and guiding further research.

Secondly, deepfake technology cuts across technology, communication together with media studies, psychology, and policy. Conducting a scoping review will thus assist in outlining the research domains and mapping areas of uncertainty across these fields about the impact of deepfake on media trust and manipulation.

Third, deepfake studies are diverse, heterogeneous and interdisciplinary, which leads to the generation of a broad and mixed body of research consisting of articles of different methodological approaches, theoretical and empirical, along with policy documents. A scoping review does the best job of providing this summary of such a diverse type of literature.

Fourth, Flexibility in Research Questions. The characteristics of scoping reviews make it most suitable for general and exploratory research questions. For such subjects as the effect of deepfake on the audience's trust and media deception, the questions might be adjusted depending on the findings. The method is effective for the purpose of questioning, where the questions are progressively

refined and, therefore, appropriate for exploratory research.

Fifth, stating key ideas and concepts. The analyzed terms: deepfake technology, media manipulation, and public trust may be described and used differently in the context of different studies. Therefore, the scoping review assists in defining and categorizing them making the diverse terminologies used in the literature more precise.

Sixth, stakeholder engagement. Like other types of reviews, scoping reviews require involving stakeholders such as policymakers, media practitioners, and technologists to ensure the research addresses questions that would yield useful answers. Such engagement is particularly important when it comes to a topic of such pertinence to society like deepfakes.

RESULTS AND DISCUSSION
Definition, Development and Occurrence of Deepfakes

Deepfakes, a fusion of deep learning and fabricated content, represent an advanced AI-driven technique for synthesizing multimedia. This technology enables the realistic manipulation of videos and images by altering facial appearances and voices, making it difficult to distinguish between genuine and fabricated content. Defined as an AI-based image synthesis method, deepfakes allow for the modification of individuals, objects, or environments, raising significant concerns regarding authenticity and misinformation (CDEI, 2019).

Deepfakes leverage advanced deep learning techniques, particularly Generative Adversarial Networks (GANs), to produce highly realistic synthetic content (Zhang et al., 2017). These sophisticated systems are trained on vast datasets, enabling them to generate synthetic media that closely resembles authentic materials. The primary concern surrounding deepfakes lies in their ability to convincingly manipulate visual and auditory signals, posing significant challenges to media credibility and public trust.

Advancements in machine learning and computer vision have significantly improved deepfake generation, making synthetic content more realistic and accessible. Initially used for humor and artistic expression, deepfakes have increasingly been exploited for harmful purposes, including political manipulation, misinformation campaigns, information warfare, and cyberbullying (Almars, 2021). As a result, governments, technology firms, and research institutions are actively monitoring and addressing the rapid evolution of this technology.

The widespread circulation of deepfake videos has raised concerns about their potential impact, particularly as highly realistic impersonations of public figures, politicians, and celebrities flood social media. In 2019, Deeptrace (now Sensity) identified approximately 15,000 deepfakes readily available online across platforms like YouTube, Vimeo, LiveLeak, and adult websites. A notable example, "DeepTomCruise," emerged in early 2021, showcasing a highly convincing deepfake of Tom Cruise on TikTok. This viral case highlighted both the entertainment value and the potential risks of deepfake technology, prompting discussions on its ethical implications and possible misuse.

The evolving landscape of deepfake technology presents significant ethical, social, and legal challenges. Deepfakes have been exploited for malicious purposes, such as spreading fake news and distorting public perception, ultimately

undermining social cohesion and digital media credibility. As deepfake creation becomes increasingly accessible and realistic, it is essential to assess its broader implications. One possible approach to addressing these risks is through the "peace communication model," which fosters dialogue across generations and civilizations as an alternative to mitigating the societal impact of deepfake technology (Boediman, 2019).

Pros & Cons and Digital Age Challenges

Evaluating the opportunities and threats of deepfake technology requires assessing its strengths and weaknesses. While deepfakes offer advantages such as cost-effective video campaigns, improved omnichannel marketing strategies, and enhanced consumer experiences, they also pose significant risks. These include credibility issues, ethical concerns, and the rise of fraudulent activities. As deepfake technology continues to evolve, its socio-economic and cultural implications remain complex and demand careful scrutiny (Westerlund, 2019).

Despite its negative applications, deepfake technology presents numerous possibilities, particularly in entertainment. It enables filmmakers to integrate actors into scenes without compromising historical authenticity and enhances language dubbing, breaking barriers in global content distribution. This technology also fosters social connectivity, accelerating information dissemination for education, research, and knowledge sharing (Caporusso, 2021). Additionally, deepfakes contribute to e-commerce growth and digital business transformation while empowering citizens in political discourse and comm

On the other side of the coin that sparked innovative uses and implementation of the deepfake technology

is the emergence of ethical conundrums. As with fake news, the possibility of fake videos as a source of news dissemination is a threat to media credibility. Skepticism towards persuasively altering graphic or sound material, as well as the capacity to deceive the audience, make it possible to motivate the instability of trust invested in digital media. Additionally, the technology's capability to create counterfeit videos of public figures engenders privacy and identity concerns. Safeguarding individuals' reputations and preventing non-consensual use become pivotal considerations in this evolving landscape.

A balanced perspective is essential in the rapidly evolving realm of deepfake manipulation. While deepfakes offer benefits such as enhanced creativity and global accessibility, they also pose risks like misinformation and privacy violations. The study of deepfakes necessitates an interdisciplinary approach, integrating ethical, legal, and technological considerations. A critical lens helps society adapt to the digital transformation deepfakes bring. Concepts like ethical frameworks, such as "halal product and/or services," highlight the need for moral considerations in digital advancements, ensuring fairness, inclusivity, and accountability (Boediman, 2017).

Media Credibility

Media credibility plays a crucial role in shaping public opinion and societal outcomes. This article explores the concept of media credibility, its definitions, and its impact on society. Deursen & Dijk (2014) highlight the increasing use of the Internet, a trend also evident in Indonesia, where people primarily utilize it for information search, self-realization, online shopping, entertainment, communication, and gaming.

Kemp (2022) highlights that Indonesian internet users frequently engage with instant messaging applications such as WhatsApp, Line, Facebook, and Twitter, as well as news portals like Detik.com, Kompas.com, and Tribunnews. These platforms are among the most widely used online. However, the credibility of the information they provide is crucial, as biased, inaccurate, or unethical reporting could pose significant risks to public perception and discourse.

Media credibility encompasses factors that define the competence of media sources within society. Mass media is expected to maintain accuracy, objectivity, and transparency, as these qualities foster rational thinking among the public. Awareness of these attributes enables individuals to critically analyze information from various sources.

Several key factors serve as primary reference points for media credibility (trustworthiness). These dimensions ensure that the information conveyed to the public remains reliable, accurate, and credible. The following table presents essential dimensions for maintaining media credibility.

Table 1
Primary Dimensions for Upholding Media Credibility (Applied in Cycles)

Stages	Dimensions	Arguments
1	Editorial Independence	The cycle commences with the principle of editorial independence, providing media with the freedom to report news objectively without external intervention. This establishes a robust foundation for journalistic integrity.
2	Accuracy and Facts	News is presented using verified data, ensuring that conveyed information is truthful and dependable.
3	Precision in Reporting	Media pays heightened attention to details and context, thereby delivering news with clarity and accuracy.
4	Journalistic Ethics	This stage serves as a pivotal foundation within the cycle. Principles of honesty, responsibility, and avoidance of conflicts of interest guide each step-in news reporting.
5	Diversified Sources	The cycle then transitions towards the stage of seeking diverse information sources. This aids in circumventing biases and providing a balanced perspective in news coverage.
6	Transparency	This stage allows the public to witness the news production process. Media opens windows into editorial practices and processes.
7	Response to Critique	Response to critique, showing constructive feedback to criticism follows as the subsequent step in the cycle. Media assumes responsibility for errors and rectifies inaccurate information.
8	Context and Analysis	This segment of analysis and context presentation highly demands in-depth analysis and context provision constitute the following stage in the cycle. Media offers deeper insights to enhance the public's understanding of issues.
9	Differing Opinions	Proceeding to the segment indicating the allowance for various viewpoints. Thereafter, media created space for divergent viewpoints in news coverage. This fosters healthy and inclusive discussions within society.
10	Data Transmission	Finally, the segment of ensuring data protection and user privacy. Media assumes the responsibility of upholding information security and respecting individual privacy.

Researcher-formulated analysis

Editorial journalism operates independently, free from external influences such as government or corporate entities, ensuring unbiased news coverage. An independent editorial board helps prevent political or commercial bias (Nugroho et al., 2020). Reliable media must provide factual and verified news, as misinformation undermines credibility. To maintain trust, media should avoid sensationalism, present balanced perspectives, and adhere to ethical standards, including truthfulness, professionalism, audience empathy, impartiality, and respect for privacy.

Credible and independent media should source information from multiple independent sources to minimize bias. Transparency in editorial processes and news gathering enhances public trust. Additionally, media must be open to criticism, acknowledge mistakes, and provide accurate corrections, as these practices are essential for maintaining credibility.

Providing background knowledge and detailed information in news helps readers and viewers gain accurate understanding, preventing misinterpretation. Credible media should accommodate diverse opinions, reflecting societal pluralism and fostering healthy debates. In the digital era, data security and user privacy are also crucial for maintaining media credibility. While upholding credibility is a challenging task, it is essential for ensuring reliable information and sustaining public trust.

Influential Factors

Mass and social media operate based on specific agendas designed to shape public opinion (Syamsiyah & Pawito, 2016). According to the agenda-setting theory, media frames construct reality in news stories, influencing public perceptions rather than direct responses to facts (McCombs, 2002). Media play a crucial role in shaping societal perceptions and selecting which issues to highlight. This process occurs through two key mechanisms: defining important themes or values and framing these themes to influence public discourse. By controlling agenda-setting through framing, media can regulate opinions and behaviors within a population.

Several key components contribute to media credibility. Source credibility, which reflects the reliability and authority of the media entity, plays a crucial role in shaping audience trust. Additionally, the relevance and reliability of content, along with a commitment to ethical journalism, are essential factors in maintaining credibility.

This shows that credibility depends on the audience characteristics which include the media literacy and past experiences with the messages, and therefore it is a relative concept. Various factors can influence the level of public trust in mass media and social media platforms, including:

Media Credibility: Thus, the experience as a credible source of news over the years will influence the public perception of journalism. The trusted media is more likely to be utilized, particularly those which have a credible image in the society. Source of Information: It wants the news to be received directly from credible and reliable sources hence the trust placed in such news. Given the relativization of news because of the new deep fake technologies, reliable sources play a crucial role (Pew Research Center, 2022).

Education and Media Literacy: Education and media literacy of the people also helps the users to distinguish between fake or misleading information especially the deep fake videos (Vaccari and Chadwick, 2020). Personal Experience: It is believed that citizens' direct or indirect interactions with synthetic or modified information, such as deepfakes, define their general attitudes toward media coverage (Schwerter & Zimmermann, 2019). Technological Understanding: Thanks to the knowledge of deepfakes and distinctive features of shovel or manually flagged inauthentic content, a person's ability to distinguish between real and fake news is affected. Social and Cultural Context: Sociocultural factors can also be a cause of the low public trust. Gesikowski's (2023) paper revealed that culture norms and perception towards media impacts how people evaluate and accept news as genuine.

Emotional Impact: By this, it would mean that emotionally charged news does have a stronger ability to sway the trust of the public. It is possible to employ Deepfake technology in order to design materials that cause certain responses in people and as a result alter the attitude of people (Myers & Tingley, 2016). Expert Endorsement: Experts' and specialists' opinions or endorsements in technology or cyber security play an essential role in influencing the public opinion about deepfakes and their effects on news. (Kertz & Ohanian, 1992; Mena et al., 2020; Singh & Banerjee, 2018; Tarigan et al., 2023).

Media Openness and Transparency: Transparency of media on the use of deepfake technology and attempts at identification of this technology as well as countering the same also affects trust (Curry & Stroud, 2021; Prochazka & Obermaier, 2022). Regulation and Oversight: The impact of the regulations and oversight of topis within the media can in a positive way or negative way affect the level of trust in reporting especially the deep fakes (Mitchell & Walker, 2021; Schennach, 2017; Tambini, 2020).

Media Literacy and Public Responsibility

While the issue of media credibility is rather multifaceted, education for media literacy remains one of the key solutions. Educating people in how to analyze information allows them to distinguish the existence of accurate information and untrue and unreliable sources. This in turn makes for a better-informed public thus making society a more democratic one. This is why media Literacy and media responsibility is pivotal in today's complex society, where information can be easily produced and passing on. During our interaction with new information and, consequently, diverse content, it becomes significant to analyze, evaluate and, finally, interact with the media. This engagement requires commitment to guarantee that the information we are receiving and the one that we are sharing is good for the common public. The following is the model of media literacy and public responsibility action plan, these critical factors must be understood for implementation:

Figure 2
Media literacy and public responsibility action plan

| Understanding Media Literacy | → | Navigating Misinformation | → | The Ethical Responsibility | → | Promoting Positive Dialogue | → | Educational Initiatives and Collaborative Efforts |

Source*:* The researcher-formulated model

To understand the above model, firstly, media literacy is not limited to the traditional domains of reading and understanding that involves a set of skills. It entails the ability to analyze different types of media, including knowledge of details like prejudice, propaganda, and how the materials can affect society. Through such skills, one is able to tell the difference between news that is genuine and one that is fake hence help in decision-making (Hobbs, 2017; Uhls & Robb, 2017; Welsh & Wright, 2010).

Secondly, this understanding is of significance, given the present difficulty of managing the overflow of information mixed with the circulation of fake news. Responsible media consumption requires thus a defensive approach of society. This demands evaluation of the reliability of the source of information before passing on the information to others. This makes individuals take measures in cross-checking the information they stake on and help in avoid the spread of wrong information (Dalkir, 2020; De Paor & Heravi, 2020; Kyriakidou et al., 2022).

Thirdly, there is a very deep Ethical responsibility when and for which information and data dissemination can become a matter of a few clicks. Information sharing is not a one-way process; people discuss things on the social media platforms, and it dictates everyone's perception, and in some cases policies. Being a responsible media means thinking about the effects of our actions, assessing the possible impacts on society, and avoiding posttruth mentality (Babbie, n. d. ; Craig, 2015; Tilak et al. , 2020; Torelli, 2021).

Fourth, Positive say is the basis of constructive dialogue. Dialoging with other trust sources or considering multiple points of view is much more meaningful when the participants grasp the creation of media and possible bias. Responsible media engagement facilitates open discussions, encourages critical thinking, and fosters a culture of respectful disagreement, ultimately enriching our collective understanding (Al-Dmour et al., 2022; Kent & Taylor, 2021; Pérez Tornero et al., 2014; Stehle & Huck-Sandhu, 2016).

Finally, the following two categories can be highlighted as the major driving forces for media literacy and media responsibility concerning educators, media, technologies, and persons: educational measures and cooperation activities. Schools, colleges, and universities remain critical in enhancing the competencies of users in media literacy to guide society through the existing media platforms. Stakeholders in the media can help by insisting that the media houses adhere to ethical standards and present balanced and information (Alves et al., 2014; Khan et al., 2022; Palau-Sampio, 2020; Ureta et al., 2020).

It means that in our period of active development of digital media, media literacy and responsibility remain our key beacons that let us use the possibilities of

the new media as a tool to bring a positive change. Given the set knowledge and skills to analyze, reason, and approach information consumption and production responsibly, we could all be part of the change towards a better informed, tolerant and wise society. By adopting such principles, not only does it improve the individual self but also society constituting the global society.

Raising Awareness

It can be concluded therefore that raising awareness in media and journalism is in fact a force of social change. Media and journalism have potent influences that enable change in society. One of the key functions of journalism is raising people's awareness on important social issues, which is not a mere reporting that triggers discussions and makes an audience thoughtful (Al-Dmour et al., 2022; Ibrahim, 2021). The implementation undoubtedly crucial for the place occupied by media and journalism regarding raising the awareness, revealing the working methods, the difficulties and the consequences of the endeavour (Spinde et al., 2022).

Awareness creation is a laudable task which entails enlightening the public on issues that hardly get any exposure, creating public opinion and awareness to shed light. For this purpose, there is media and journalism to communicate such work and bring attention – from the climate crisis to human rights abuses, from pandemics to socio-political disparities (Iqbal et al., 2023). This way media practitioners function as watchdogs and tell stories as well as educate in a way that allows the Communities to be informed so that action can be taken (Shaikh et al., 2017).

Various Different strategies are used depending on the nature and genre of the sphere in question, be it media or journalism with the primary aim of raising awareness. There is, for example, investigative journalism that delves into social issues, reveals what is usually concealed from the public and corrupt practices thus forcing the audience to face the ugliness of society (Trayner et al., 2023; Turpyn & Adwitiya, 2022). Opinionated and analytical documentaries, podcasts, and articles are also the main sources that provide multiple viewpoints and initiate discussions that go beyond sensationalistic topics. Thought-provoking documentaries, podcasts, and opinion pieces also play a central role in offering diverse perspectives and stirring conversations that resonate far beyond headlines.

Depending on the nature and the genre of the sphere, different strategies are used; in particular, media or journalism with the primary purpose of creating awareness. For instance, there is investigative journalism that may engage in miscellaneous social issues, disclose what is usually hidden from the public and different types of corruption, which compel the audience to look at the worst side of society.

Awareness-raising initiatives have promising outcomes but also face significant challenges. The spread of fake news and misinformation is a major threat, undermining the effectiveness of authentic awareness efforts. Balancing engaging content with truthfulness remains a challenge. Additionally, media polarization and echo chambers can hinder the dissemination of accurate information and limit the reach of awareness campaigns.

When effectively practiced, media and journalism can raise awareness and drive significant positive change in politics, business, and society. Investigative journalism has historically influenced major transformations. Moreover, media coverage helps movements define their mission, encouraging public participation. Positive change is achievable through strategies that foster empathy for communities, emphasizing the importance of a well-informed audience capable of addressing socio-cultural challenges.

Media and journalism are not just professions but privileges that enable change. They provide access to information, amplify voices, and challenge ignorance. By shaping perceptions and inspiring action, media hold significant influence, underscoring the need for responsible journalism, ethical standards, and reporting on crucial issues.

Proactive Measures to Mitigate the Adverse Effects

In an increasingly complex and interconnected world, adverse effects have become a major concern across various fields, including technology, environment, public health, and socio-economic systems. Proactive strategies are essential to mitigate these risks. Technological advancements, such as deepfake technology, offer new opportunities for journalism but also pose significant challenges, including the spread of fake news, loss of trust, and privacy invasion. These issues highlight the urgent need for preventive measures to safeguard media integrity and public trust.

The danger of deepfake technology is the production of realistic videos and audios for misrepresentation of the truth refers to deepfake technology. In journalism, this can result in the flow of incorrect data that weakens people's trust

and distorts the quality of the content of news products. Since deepfakes can be used to generate realistic videos of people's behaviors, the latter can be maliciously applied to generate fake statements by specific personalities or twisting sensitive occurrences to fit particular narratives. The effects are priceless when it comes to democracy credibility, and individual privacy.

Deepfake technology poses a significant threat by creating realistic but misleading videos and audio recordings. In journalism, this can lead to the spread of misinformation, eroding public trust and distorting news quality. Deepfakes can manipulate statements or events to fit specific narratives, with severe consequences for democracy, credibility, and individual privacy.

Consequences are usually of a negative nature and are also described as side effects, misfortunes or other undesirable collateral effects of something. They can come out in different dimensions namely, environmental violations, health issues, economic downturns, or disruptions to societal harmony. Side effects can be mild and irritating or major and urgent that will halt all other activities to attend to them in the intermediate term.

The justification of preventive steps is that most problem-friendly methodologies include waiting for the negative consequences to occur before addressing relevant issues. However, this means a reactive disposition which is potentially misleading, does extra harm, costs, and steps.

Proactive measures, on the other hand, emphasize prevention and preparedness. By anticipating potential adverse effects and instituting preventative strategies, organizations, governments, and individuals can not only avert crises but also enhance their capacity to respond efficiently when unexpected challenges

arise. Figure 3 show a strategic approach to mitigation towards adverse effect of deepfake technology and media manipulation.

Figure 3
Strategic approach to mitigation towards adverse effect of deepfake technology and media manipulation
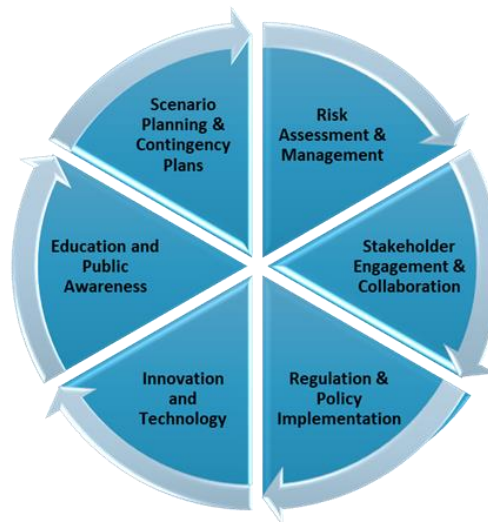
Source: the researcher-developed analysis

Conducting thorough "Risk Assessments and Management" to identify potential adverse effects is the first step. These assessments help in understanding the scope, magnitude, and probability of adverse outcomes. Subsequently, strategic risk management plans can be formulated to prevent, mitigate, or transfer risks.

Engaging stakeholders through collaboration fosters a comprehensive approach to mitigating misinformation. Diverse perspectives enhance strategy development, ensuring solutions are contextually relevant and socially acceptable. Collaborative fact-checking, for example, strengthens partnerships with fact-checking organizations, helping to validate information and prevent the spread of false narratives.

Furthermore, "Regulation and Policy Implementation" bodies like governments play a crucial role in mitigating adverse effects. Enforcing regulations and policies that prioritize safety, sustainability, and ethical conduct can preemptively curtail potential harm. Regulation and legal frameworks can play a role in enforcing laws against malicious use of deepfake technology. Regulations can deter individuals and entities from producing and disseminating harmful content.

Harnessing innovation and technology offer proactive solutions to anticipate and mitigate adverse effects. Predictive analytics and early warning systems enhance preparedness, while AI-driven tools can detect and flag deepfake content. Collaboration between tech experts and journalists strengthens detection mechanisms. Additionally, source authentication methods, such as blockchain, can ensure content integrity by

creating immutable records of its creation and modifications.

Next step, "Education and raising Public Awareness" about potential adverse effects can empower individuals to take proactive measures in their personal lives. Educational campaigns, workshops, and training sessions can equip people with the knowledge and skills needed to prevent or address adverse outcomes. Ethical guidelines and standards should be formulated, journalism ethics must evolve to address the challenges posed by deepfakes. Establishing guidelines for responsible content creation and verification can ensure that journalistic integrity is maintained.

Educating and raising public awareness about potential adverse effects empowers individuals to take proactive measures. Educational campaigns, workshops, and training sessions equip people with the skills to recognize and mitigate risks. Additionally, evolving journalism ethics is crucial in addressing deepfake challenges. Establishing ethical guidelines and standards for responsible content creation and verification helps maintain journalistic integrity and credibility.

Finally, developing "Scenario-based Strategies and Contingency Plans" equips organizations to respond swiftly to adverse effects. These plans outline a series of steps to be taken in the event of specific adverse scenarios. For example, transparency in production, journalists should provide transparency about their content creation processes. Detailing the steps taken to verify and validate content can rebuild trust with the audience. These six strategic approaches to mitigation should be worked in a circular flow continuously.

The proactive mitigation of adverse effects has emerged as a critical imperative in a rapidly evolving world. By embracing strategic approaches, by adopting strategic

actions, societies and entities are to avoid negative scenarios, reduce the occurrence of their negative effects, and create conditions for their containment in the context of volatilities. From risk assessment and stakeholder engagement to technological innovation and public awareness, the arsenal of proactive measures is diverse and dynamic. Embracing these strategies not only averts crises but also paves the way for a more sustainable, secure, and adaptable future.

CONCLUSION

The main contribution of this research is to highlight the dangers of deepfake technology, which pose highly complex threats to the security, safety, integrity, and credibility of humanity. Due to these multifaceted impacts and threats, theoretical and methodological implications must be interdisciplinary, multidimensional, and require proactive collective action. By combining media literacy, technological innovation, the creation of ethical guidelines, and a clear and measurable regulatory framework, the world of journalism can navigate the complexities of deepfake technology while adhering to an ethical commitment to provide accurate, trustworthy, and responsible information to the public.

Amid the ongoing debate surrounding deepfake technology, this research recommends practical strategies for detecting and addressing deepfakes. Regarding media credibility, the study identifies key dimensions that should be applied, including editorial independence, accuracy and facts, precision in reporting, journalistic ethics, diversified sources, transparency, response to critique, context and analysis, differing opinions, and data transmission.

For policymakers, it is crucial to raise public awareness about the use and harmful impacts of deepfake technology.

Hence, media literacy and public responsibility must be continuously advocated, campaigned for, and committed to, with the implementation of reward and punishment for adherence to policies and regulations. The model stages of media literacy and public responsibility created are as follows: "Understanding Media Literacy – Navigating Misinformation – The Ethical Responsibility – Promoting Positive Dialogue – Educational Initiatives and Collaborative Efforts."

Both journalism and policymaking dimensions should align in their perceptions to formulate risk mitigation strategies against the effects of deepfake technology. This research categorizes key aspects of this mitigation, including risk assessment and management, stakeholder engagement and collaboration, regulation and policy implementation, innovation and technology, education and public awareness, and scenario planning and contingency plans.

In conclusion, the multifaceted implications of Deepfake technology concerning public trust and media manipulation, through a comprehensive analysis of existing literature, it is evident that deepfakes possess the potential to significantly erode public trust in the media due to their capacity to craft highly convincing yet fabricated content. Moreover, the review highlighted how these synthetic media tools can be harnessed for nefarious purposes, exacerbating the already intricate landscape of media manipulation. While the technology's creative possibilities are noteworthy, its ethical and social ramifications demand thoughtful consideration. In essence, the discourse surrounding deepfake technology requires ongoing interdisciplinary research and vigilant discourse to formulate effective strategies that mitigate its negative repercussions and foster a more trustworthy media environment.

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