

RESEARCH ARTICLE

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Media Security in Algeria in the Era of Digital Transformation and the Spread of Artificial Intelligence -A Descriptive Analytical Study on the Challenges of the Digital Age

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Received: 22/02/2025 Accepted: 01/06/2025 Published: 07/09/2025

Abstract:

This study addresses the profound changes occurring in Algeria's media landscape due to rapid digital technology developments and the growing use of artificial intelligence in media work. These changes raise questions about whether the necessary conditions exist to ensure media security, particularly regarding information protection, freedom of expression, and individual privacy.

The study aims to examine the current state of media security amid digital transformation by combining theoretical frameworks with field analysis. It highlights the new challenges facing journalists and media institutions and proposes a set of recommendations to strengthen digital security and promote responsible media content.

Keywords: Media security, Algeria, digital transformation, artificial intelligence, digital media

Introduction:

Algeria's media environment is undergoing rapid changes driven by digital transformation and the spread of artificial intelligence technologies. These developments have reshaped the production and dissemination of information and directly impacted the concept and practices of media security.

In recent years, Algeria has sought to accelerate its digital transformation by developing national strategies to enhance digital infrastructure and

build national capabilities in artificial intelligence. At the same time, the media sector is experiencing significant shifts due to digitization and the proliferation of digital communication tools.

Media institutions in Algeria are transitioning toward a digital environment, relying more on digital platforms and AI applications in news editing and data analysis. This shift has created major challenges related to information credibility, privacy protection, and the security of media infrastructure.

1. Research Problem:

With the rapid digital transformation and increasing use of artificial intelligence in media production and dissemination, Algeria, like many other countries, faces new challenges in media security. These include the spread of fake news, data leaks, and information manipulation. The central research question is: To what extent have digital transformation and artificial intelligence affected media security in Algeria, and what mechanisms exist to protect and develop it?

This central question is supported by the following sub-questions:

1. What is the concept of media security and its dimensions in the Algerian context?
2. How has digital transformation reshaped the media work environment in Algeria?
3. What role does artificial intelligence play in influencing media security?

4. What are the main threats and risks facing Algerian media in the digital environment?
5. How can media security in Algeria be strengthened amid the current technological revolution?

2. Objectives of the Study: This study aims to:

1. Assess the awareness of media professionals and users regarding media security.
2. Identify the main digital threats facing Algerian media.
3. Examine the impact of artificial intelligence tools on the credibility and security of information.
4. Propose practical solutions to enhance media security in Algeria's digital environment.

3. Research Methodology:

This study adopted the survey method, a descriptive approach aimed at collecting and analyzing data from the target population to produce quantitative and qualitative indicators reflecting the reality of the studied phenomenon.

This method was chosen for its suitability to the topic of media security in Algeria amid digital transformation and the spread of artificial intelligence. It allows for gathering the opinions of a diverse sample of media professionals and users regarding awareness of digital risks and preventive measures.

To achieve this, the study employed an electronic questionnaire as an efficient and rapid tool for data collection in the digital environment. A total of 100 electronic forms were distributed, covering three main areas:

1. Awareness of media security
2. Digital transformation and artificial intelligence
3. Key measures to enhance media security in Algeria

The questionnaire included both closed and open-ended questions and was shared online and via social media platforms to reach the largest possible number of participants. Most respondents were young adults and university graduates, reflecting the digital generation's interest in media security.

4. Definitions of Concepts and Terms:

1. Digital Transformation: A comprehensive process that uses digital technologies to develop

an organization's internal and external operations and services (Laudon & Traver, 2020).

2. Media Security: Defined as "the ability to protect media content and information from manipulation, disinformation, and digital attacks aimed at influencing public awareness" (West, 2020).

3. Artificial Intelligence: Encompasses all technologies that enable digital systems to make human-like decisions (Russell & Norvig, 2021).

Chapter One: Theoretical and Conceptual Framework of Media Security

Section One: Media Security in the Context of Digital Transformation

1. Definition of Media Security:

Media security is a modern concept in media and communication studies. It intersects with issues such as national autonomy, freedom of expression, and the protection of information spaces.

It refers to the ability of the state and media institutions to safeguard the media environment from threats targeting content credibility, digital infrastructure integrity, and national public opinion stability. It also includes ensuring freedom of journalistic work within a legal and ethical framework that considers the public interest and reduces risks of information manipulation or covert guidance.

Media security can also be defined as a set of policies and measures aimed at protecting information, media channels, and the media environment from technical, social, and political threats. It includes the following dimensions:

1. Informational dimension: Concerns the accuracy, credibility, and integrity of information, preventing distortion or tampering.
2. Technical dimension: Focuses on protecting digital media infrastructure from breaches, cyberattacks, and data leaks.
3. Social dimension: Emphasizes public awareness and the influence of media on public opinion.
4. Organizational and political dimension: Ensures a balance between freedom of expression and national security needs, as well as social stability.

Studies such as Castells (2010) indicate that media security has become an integral part of national security and a central challenge in the era of digitization and digital transformation.

2. Security Challenges for Media in the Digital Age

A. Spread of Rumors and Fake News

Misleading news now spreads faster than traditional media due to the lack of immediate oversight and the ease of creating anonymous accounts. Algorithms also tend to prioritize attention-grabbing content, even if it is false.

B. Cyberattacks

Media institutions face cyber threats such as hacking, data destruction, theft of sensitive information, and unauthorized control over publishing platforms.

C. Information Warfare and Digital Propaganda

States and malicious groups use social media platforms as tools for psychological and political influence. This is achieved through coordinated campaigns, media bots, and fake accounts.

D. Loss of Trust in Media

Information chaos leads to a decline in public trust in media platforms. This poses a serious threat to social stability.

Section Two: Digital Transformation and Its Impact on Media

1. Concept of Digital Transformation

Digital transformation refers to the transition from traditional systems to technology-based systems. It involves changes in infrastructure, work methods, management systems, and knowledge production. It is not limited to introducing digital tools but represents a comprehensive structural change that reshapes processes, production, and services.

Digital transformation integrates digital technology into all aspects of media production, including editing, publishing, and distribution. The Algerian experience shows that digital transformation has expanded access to information, but it has also created new challenges related to information security and combating fake news.

2. Dimensions of Digital Transformation in the Media Field

Digital transformation has

brought profound changes to the media landscape, including:

- Content Digitization: Transition from print media to electronic media and digital platforms.
- Audience Interaction: The audience now participates in content production, not just consumption.
- Multiple Sources: Thousands of independent platforms have emerged, leading to great diversity in information.
- Decentralized Publishing: Traditional institutions no longer monopolize news production.
- High Speed: Information spreads within seconds, increasing both opportunities and risks.

Section Three: Artificial Intelligence and Its Impact on the Media Environment

1. Uses of Artificial Intelligence in the Media Industry

Artificial intelligence has become central to contemporary media development. It is used in data analysis algorithms to read audience trends, image and video recognition to detect inappropriate content, chatbots for user support, deep learning for text processing and improving machine translation accuracy, and automated content generation, known as “robot journalism.”

2. Artificial Intelligence as a Tool to Enhance Media Security

Artificial intelligence contributes to protecting the media environment through several mechanisms:

A. Detecting Fake News

Algorithms can analyze texts, detect inconsistencies, compare information against a wide range of sources, and monitor suspicious account behavior.

B. Deepfake Detection

AI tools can analyze facial features and lip movements, detect voice manipulation, and identify subtle lighting differences that are imperceptible to humans.

C. Strengthening Cybersecurity

AI systems can predict cyberattacks, detect abnormal patterns, and respond faster than human operators.

3. The Role of Artificial Intelligence in Influencing Media Security

Artificial intelligence (AI) is a double-edged sword in media security. On one hand, it is an

effective tool to enhance the credibility and safety of information. On the other hand, it can be used to undermine trust in media sources and spread misinformation.

A. Enhancing Media Security AI improves media security by detecting fake news through algorithms that analyze text, images, and videos, which helps limit the spread of misleading information (Wardle & Derakhshan, 2017). It is also used to analyze public opinion and media trends, monitoring targeted campaigns on social networks (Ahmed, 2023). Additionally, AI automates source verification through systems capable of assessing the credibility of accounts and documents quickly and accurately (Tandoc, 2022).

B. Threats to Media Security Despite these advantages, AI poses risks when used to produce fake news and deepfake content, making it difficult for the public to distinguish truth from fabrication (Chesney & Citron, 2019). It can manipulate public opinion by amplifying specific messages and supporting digital propaganda (Marwick & Lewis, 2017). AI is also used to analyze personal user data to deliver targeted media messages that influence awareness and behavior (Zuboff, 2019).

Therefore, AI can play a significant role in strengthening media security if used ethically and in an organized manner. However, it becomes a threat when deployed for misinformation and psychological influence on audiences. Legal and ethical frameworks are essential to regulate its use in media, ensuring a balance between technological advancement and the protection of information security.

Chapter Two: The Reality of Media Security in Algeria

Section One: Digital Transformation in Algerian Media

In the past decade, Algeria has experienced significant changes in its media landscape due to digitization. Governmental and private media institutions have adopted digital platforms to communicate with the public. Key transformations include:

1. **Digitization of Traditional Media:** Newspapers, radio, and television channels have moved to publishing through websites and smart applications, such as ENTV and Algerian Digital Radio.

2. **Social Media Platforms:** Platforms like Facebook, Twitter, and Instagram have become essential tools for news dissemination. A local study (2022) showed that over 70% of Algerians access news via social media.

3. **Digital Content Management Systems (CMS):** Algerian newspapers and news websites have adopted CMS platforms such as WordPress and Drupal to streamline content production and publication.

Challenges Associated with Digital Transformation:

- Weak digital infrastructure in certain regions.
- Limited technical training for journalists in digital media tools.
- Insufficient legislation to protect digital data and media content.

Section Two: Threats and Risks Facing Algerian Media in the Digital Environment

With rapid digital transformation and the increasing use of the internet and social media in Algeria, national media face various risks and threats that affect their credibility, independence, and ability to deliver accurate information.

1. Spread of Fake News and Misinformation Fake news and rumors are among the most prominent threats. They can spread quickly on digital platforms and influence public opinion, reducing the credibility of traditional media (Wardle & Derakhshan, 2017). Media misinformation on social media makes it difficult for audiences to distinguish between real and false news (Marwick & Lewis, 2017).

2. Cyberattacks and Media Platform Breaks News websites and online newspapers are exposed to cyberattacks, including server breaches, publishing of fake content, or platform disruption. These attacks threaten the continuity of digital media operations (Chesney & Citron, 2019).

3. Regulatory and Political Pressures Algerian media face challenges related to political pressure and censorship in the digital environment. These pressures can limit freedom of expression and affect media independence (Boukhari, 2020). Some platforms experience account closures or content blocking for political or legal reasons, which reduces information diversity.

4. Impact of Digital Propaganda and Public Opinion Manipulation Various actors exploit AI algorithms and social media to target audiences with tailored media messages. This can lead to mass misinformation and influence political and social decisions (Zuboff, 2019).

5. Weak Digital Literacy among Journalists and the Public A lack of training and awareness among some journalists and audiences increases vulnerability to fake news and misinformation, weakening the media's ability to maintain credibility (Tandoc, 2022).

Section Three: The Integrated Relationship Between Digital Transformation, Media Security, and Artificial Intelligence

Chapter Three: Field Study

Axis One: Awareness of Media Security

1. Have you heard of the concept of "media security"?

Answer	ratio
Yes	68%
no	32%

2. Assessing the level of public awareness of media security in Algeria

high	12%
middle	46%
weak	42%

3. Main sources of danger

fake news	50%
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The relationship between these three elements is interactive and complex:

1. Digital Transformation as an Enabling Environment Digital transformation provides the infrastructure for AI development and media expansion. Broad digitization makes protecting media more urgent.

2. Media Security as a Strategic Necessity As reliance on digital platforms increases, strong systems are needed to protect information and content. Media security becomes essential to ensure stability in the digital space.

3. Artificial Intelligence as a Key Tool AI acts as an "intelligent brain" capable of analyzing vast amounts of data, detecting attacks quickly, limiting the spread of fake news, and providing early warnings of threats.

4. The Circular Relationship

- Digital transformation promotes AI usage.
- AI supports media security.
- Media security ensures the continuity of digital transformation without information chaos.

Cyber piracy	30%
fake artificial intelligence	15%
Other (lack of training, weak laws...)	5%

From the above, it is clear that most respondents have heard the concept of media security. However, they believe that public awareness of it ranges from weak to moderate. Fake news is considered the most significant threat to media security by the participants, followed by hacking.

Axis Two: Digital Transformation and Artificial Intelligence

4. Has digital transformation contributed to improving information security?

Yes	38%
no	24%
to some extent	38%

5. Can artificial intelligence threaten the credibility of news?

Yes	82%
no	18%

6. The level of trust in the content produced by artificial intelligence tools.

High	10%
Medium	44%
weak	46%

It is observed from the table that the majority of participants consider artificial intelligence a threat to credibility. There is a noticeable decline in trust toward content generated by AI. Conversely, opinions are divided on whether digital transformation truly improves information security.

Axis Three: Proposed Solutions

7. Key measures to enhance media security

strict legal regulations	30%
Training journalists in cybersecurity	25%
AI-powered content monitoring	15%
Digital awareness campaigns for citizens	30%

8. Do you support the establishment of a national body specializing in media security?

Yes	88%
no	6%
I don't know	6%

Table Analysis: The table shows that respondents strongly favor the establishment of a national

authority for digital media security. They consider legal regulations and awareness

campaigns to be the most effective solutions for protecting the Algerian media space.

Study Results: Based on the previous tables, the following observations can be made:

1. There is a partial awareness of the concept of media security, which requires further deepening and widespread understanding.
2. Fake news and piracy represent the most significant current threats.
3. Artificial intelligence is seen as a double-edged tool; it can contribute to development but also poses risks to credibility.
4. Strongly support legal and institutional measures to regulate Participants' media space.

From the above, it can be concluded that the relationship between digital transformation, artificial intelligence, and media security is integrative and interactive. Digital transformation opens opportunities for media development, yet it also brings significant threats that necessitate strengthening media security through artificial intelligence.

CONCLUSION:

In light of the findings presented and analyzed in the chapters of this study, it can be stated that media security in Algeria, in the context of digital transformation and the spread of artificial intelligence, represents a major strategic challenge in the current phase. This is due to its direct impact on media freedom, content credibility, and information integrity.

Digital transformation and artificial intelligence in Algeria present both an opportunity and a challenge. The opportunity lies in developing media to make it more professional and interactive. The challenge lies in the emerging risks to information security, which require responses through a modern legal and institutional framework, alongside human capacity development aligned with the demands of the digital era.

With the rapid advancement of technology, integrating digital transformation, media security, and artificial intelligence becomes essential to ensure a safe, reliable, and effective media space. Achieving this also demands joint efforts among states, institutions, and societies to

build a sustainable digital environment that respects ethical values and addresses increasing cognitive challenges.

Recommendations:

1. Establish a national authority for digital media security to monitor threats and detect false content.
2. Enact laws regulating the use of artificial intelligence in the media field and limiting misinformation.
3. Include study units on digital security and news verification in media colleges.
4. Organize training workshops for media professionals in cybersecurity and data protection.
5. Strengthen digital awareness campaigns aimed at the public to promote information verification before sharing.

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