The American Journal of Applied Sciences
ISSN 2689-0992 Volume 08 - 2026

Fact-Checking Technologies Against Fake News and Disinformation: International Practices and Their Application in Uzbekistan's Online Media

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Received: 22 Mar 2026 | Received Revised Version:18 Apr 2026 | Accepted: 06 May 2026 | Published: 31 May 2026

Volume 08 Issue 05 2026 | Crossref DOI: 10.37547/tajas/Volume08Issue05-31

Abstract

The article proposes a five-layer model of fact-checking and digital verification for Uzbekistan's online media. The model positions fact-checking as a continuous newsroom function that combines monitoring, open-source investigation, deepfake verification, transparent publication and preventive media literacy.

Keywords: Fact-checking, disinformation, fake news, verification, open-source intelligence, deepfake, artificial intelligence, online media, Uzbekistan.

Cite This Article: Bakhodir Khasanov Firdavsiy ugli. (2026). Fact-Checking Technologies Against Fake News and Disinformation: International Practices and Their Application in Uzbekistan's Online Media. The American Journal of Applied Sciences, 8(5), 215–225. https://doi.org/10.37547/tajas/Volume08Issue05-31

1. Introduction

Digital platforms have changed both the speed and structure of information disorder. Fake news and disinformation do not circulate only as isolated false reports; they operate through combinations of claims, sources, visual evidence, distribution networks and audience reactions. A misleading message may contain a fabricated statement, an authentic image taken from another event, a selectively edited quotation, or a genuine fact placed in a harmful context. For this reason, contemporary fact-checking must evaluate not only whether a statement is true, but also where it originated, how it was framed, which evidence supports it, how it spread and what consequences its circulation may produce.

Wardle and Derakhshan distinguish between disinformation, misinformation and malinformation. Disinformation refers to deliberately created false information, misinformation to inaccurate information shared without intent to deceive, and malinformation to genuine information used in a harmful or misleading context [1]. This classification is especially relevant to Uzbekistan's online media environment, where Telegram channels, social networks, official sources, international news organisations and AI-generated synthetic content influence the same information space simultaneously.

Fact-checking is often reduced to the binary labelling of a claim as true or false. Such a narrow understanding does not adequately describe contemporary verification practice. In this article, fact-checking is treated as a system of journalistic and verification technologies that jointly assess the claim, the source, the context, the digital trace, visual or audio material, the dissemination

chain and the potential social impact. Verification is therefore not an optional correction after publication; it is an editorial process that should operate before, during and after content distribution.

International organisations and newsrooms have developed different institutional and technological models. The International Fact-Checking Network emphasises non-partisanship, source transparency, methodological transparency, organisational transparency and visible correction policies [5]. Reuters demonstrates a newsroom-integrated model, while the European Digital Media Observatory represents a network model connecting fact-checkers, researchers and media literacy specialists [6, 7]. Bellingcat and the Verification Handbook provide open-source methods for verifying user-generated content, especially in emergencies [8, 9]. Google ClaimReview and C2PA show how fact-checking results and content provenance can be supported by structured and technical standards [10, 12].

Uzbekistan already has initial fact-checking and media literacy initiatives, including Factchecker.uz, Factcheck.uz, UNESCO-supported activities and the Digital Detectives project [16-19]. However, these elements have not yet developed into a fully integrated national system linking major newsrooms, universities, official information services, technical experts and audiences through common standards. The central research problem is therefore how international fact-checking technologies can be adapted to the editorial, technological and institutional conditions of Uzbekistan's online media.

The aim of the study is to identify the most transferable international fact-checking practices and to develop an integrated model for their application in Uzbekistan. The research addresses three questions: (1) Which normative, editorial and technological elements define reliable international fact-checking? (2) Which verification workflows are most relevant to the Uzbek online media environment? (3) What institutional model could transform fact-checking from episodic rebuttal into a continuous newsroom and public-interest function?

2. Methods

The study uses a qualitative research design combining document analysis, comparative institutional analysis and case-based analysis. The purpose is not to calculate the statistical effectiveness of individual tools, but to identify recurring standards, operational procedures and transfer conditions that can support the development of fact-checking in Uzbekistan's online media.

The documentary corpus consists of four groups of sources. The first group includes theoretical and methodological works on information disorder, political fact-checking, verification and deepfakes [1-4, 13-15]. The second group contains professional standards and operational guidance developed by the International Fact-Checking Network, Reuters, the European Digital Media Observatory, Bellingcat and the European Journalism Centre [5-9]. The third group includes technical standards and platform-oriented tools, particularly Google ClaimReview and C2PA [10, 12]. The fourth group includes Uzbek fact-checking platforms and media literacy initiatives, namely Factchecker.uz, Factcheck.uz, UNESCO activities and the Digital Detectives project [16-19].

The comparative framework evaluates each model according to six criteria: impartiality, source transparency, methodological transparency, correction policy, technological capacity and institutional cooperation. The transfer analysis then considers whether and how each element can be incorporated into Uzbek newsrooms, taking into account the dominance of Telegram and social networks, the frequent circulation of anonymous content, the use of official visual styles in fraudulent materials, and the growing presence of AI-generated audio and video.

The case-based component examines recurring categories described in the source material: crisis-related photographs and videos, numerical claims and public statements, deepfakes promising compensation or state assistance, synthetic military or political appeals, and content imitating television channels or law-enforcement agencies. These cases are used to derive verification questions and editorial procedures rather than to estimate prevalence.

The analysis proceeded in three stages. First, key concepts and standards were coded from the documentary corpus. Second, technologies were classified by the object of verification: claim, source, context, image or video, AI or deepfake content, and dissemination chain. Third, international and local practices were synthesised into a five-layer integrated model comprising normative-ethical, editorial, technological, institutional and audience dimensions.

Because the study is qualitative and based on publicly available documents and described cases, it does not claim national representativeness or measure the accuracy of specific automated detectors.

Table 1. Analytical categories used in the study

Category	Operational meaning	Relevance to Uzbekistan's online media
Fact-checking	Assessment of the factual basis of a claim, number, quotation or report.	Identifies false, inaccurate or decontextualised content and explains the evidence.
Verification	Establishing the source, time, location, authorship and authenticity of material.	Supports pre-publication assessment of photographs, video, audio, documents and witness accounts.
Open-source analysis	Collection, comparison and archiving of evidence from publicly accessible sources.	Enables work with Telegram, social networks, maps, web archives and official databases.
Debunking	Evidence-based correction of false or misleading content after circulation.	Reduces harm but may be insufficient when emotional framing has already spread.
Prebunking	Preventive warning about recurrent false narratives or fraud schemes.	Builds audience resilience against repeated scams and synthetic-content campaigns.
Real-time fact-checking	Verification conducted while a crisis or public event is unfolding.	Prevents information vacuums from being filled by harmful or unverified sources.

3. Results

3.1. International fact-checking is defined by transparency and institutional responsibility

The comparative analysis shows that reliable fact-checking is not defined primarily by the use of a particular software tool. Its core is a transparent professional procedure. Across the IFCN, Reuters and EDMO models, five elements recur: impartial selection of claims, disclosure of sources, explanation of methods,

visible correction of errors and organisational accountability. These elements establish whether audiences can reproduce or critically assess the verification process.

The IFCN Code of Principles offers the clearest normative foundation. Its requirements imply that official, unofficial, political and social claims should be evaluated according to consistent criteria. Source transparency requires the publication of documents, archives, screenshots, video origins and expert evidence whenever possible. Methodological transparency requires a newsroom to explain why a claim was selected and how the conclusion was reached. A visible correction policy distinguishes professional fact-checking from one-sided rebuttal.

Reuters demonstrates that fact-checking is most sustainable when embedded in routine editorial production. In this model, speed remains the responsibility of the news operation, while accuracy, evidence and context are protected through dedicated verification procedures. EDMO extends the principle beyond a single newsroom by connecting fact-checkers, researchers, media literacy specialists and regional centres. The transfer implication for Uzbekistan is that both newsroom-based and network-based models are necessary: internal verification capacity should be combined with external cooperation and shared databases of recurring false narratives.

Table 2. Transfer of international fact-checking standards to Uzbekistan

Principle or model	International function	Application in Uzbekistan
Impartiality and fairness	Claims are selected and assessed according to consistent criteria.	Apply the same verification threshold to official, unofficial, political and social claims.
Source transparency	Audiences can inspect the evidence used in the assessment.	Publish documents, archive links, screenshots, original videos and expert evidence.
Methodological transparency	The selection and verification process is explained.	Add a standard 'How we verified it' section to fact-checking materials.
Correction policy	Errors are corrected visibly and with a clear update history.	Differentiate corrections, clarifications, updates and withdrawals.
Newsroom model	Verification is integrated into daily editorial work.	Create a fact-checking editor position or a small verification team in major outlets.

Network model	Newsrooms, researchers and media literacy actors cooperate.	Develop a national network linking media, universities, platforms and official information services.

3.2. Verification procedures must be differentiated by the object being checked

The study finds that a single universal checklist is insufficient. Verification should begin by identifying the object under examination. A claim requires comparison with primary documents, official records and expert evidence. A source requires examination of channel history, domain registration, authorship and archived versions. Context verification requires reconstruction of the timeline and comparison with earlier reporting. Visual material requires reverse-image search, metadata analysis, geolocation, chronolocation and independent corroboration.

AI-generated and deepfake content requires a layered process. The newsroom must search for the original video, check whether the statement appears in an official archive, compare audio with lip movements, inspect signs of synthetic generation, review content provenance indicators such as C2PA where available, and seek expert assessment when the potential harm is high. No detector, QR code or metadata field should be treated as conclusive proof on its own; each is a supporting signal within a broader editorial investigation.

The dissemination chain is also an object of verification. Reposting dynamics, clusters of channels, identical wording and bot-like activity can indicate coordinated amplification or artificial resonance. This is important in Uzbekistan because a misleading claim may acquire credibility not through evidence, but through rapid repetition across Telegram channels and social networks.

Table 3. Verification workflow by object

Object	Main question	Primary methods	Practical use in Uzbekistan
Claim	What exactly is being asserted?	Primary source, official document, expert interpretation.	Check statements about compensation, committees, restrictions or new legal measures against documentary evidence.
Source	Who first published or distributed the material?	Channel history, author, domain, archive and ownership indicators.	Determine whether an anonymous page or newly created website

			is being presented as an official source.
Context	Has a fact been removed from its original circumstances?	Timeline reconstruction, earlier reports and complete official statements.	Separate old material from new events and distinguish preliminary proceedings from final legal outcomes.
Image/video	Does the material belong to the claimed place and time?	Reverse-image search, metadata, geolocation, chronolocation and corroboration.	Verify crisis-related photographs and videos before publication.
AI/deepfake	Is the material synthetic, altered or falsely attributed?	Original archive, official channels, audio-lip comparison, provenance data and expert analysis.	Check videos imitating public officials, television channels or law-enforcement agencies.
Distribution chain	How did the content become widely visible?	Reposting analysis, channel clusters and bot-like activity.	Identify coordinated distribution and artificially produced public resonance.

3.3. Crisis verification must operate in real time rather than as delayed rebuttal

The analysis of crisis-related cases indicates that delayed rebuttal is structurally weaker than real-time verification. During social tension or emergencies, photographs, videos, witness statements and emotional comments spread rapidly, while their source, place and time often remain unclear. If the first emotional interpretation is allowed to stabilise as fact, a later correction may not fully reverse its effect.

A practical crisis protocol for Uzbek online media should include continuous monitoring of social networks and Telegram channels; identification of the original source, location and time of visual material; construction of an event chronology; comparison of official information with independent evidence and witness accounts; and publication of verified visual archives, question-and-answer materials and open-data explanations. Such a protocol would position local media not merely as transmitters of official statements but as institutions that investigate and explain.

The communication format is part of the verification result. A short fact-checking card, video explanation, timeline, FAQ, 'How we verified it' block and recurrent-fakes database can be more effective than a formal rebuttal alone. These formats expose the reasoning process and simultaneously teach the audience how verification is performed.

3.4. Uzbekistan has an initial but fragmented fact-checking infrastructure

Factchecker.uz and Factcheck.uz demonstrate that local demand and initial professional infrastructure already exist. Factchecker.uz classifies content into categories such as false information, suspicious reports, photo fakes, clickbait, fraud and fake accounts. Factcheck.uz links fact-checking with tools, media literacy and information security. These approaches are valuable because they adapt international terminology to recurrent types of harmful content in the Uzbek information environment.

UNESCO's activities and the Digital Detectives project provide an educational basis through awareness materials, training and the preparation of fact-checking trainers. Their strategic importance lies in connecting professional journalism with university education, youth engagement, regional capacity and public media literacy.

Nevertheless, the local system remains fragmented. The reviewed initiatives are not yet linked through a shared methodology, common correction standards, a national database of recurring false narratives or a rapid cooperation mechanism involving major online media, official information services, universities and technical experts. As a result, impact may remain episodic and project-dependent.

Table 4. Existing foundations of fact-checking in Uzbekistan and development needs

Platform or initiative	Current contribution	Development priority
Factchecker.uz	Local classification of false reports, photo fakes, clickbait, fraud and fake accounts.	Strengthen methodology disclosure, correction policy and routine exchange with newsrooms.
Factcheck.uz	Connects fact-checking with tools, media literacy and information security.	Expand newsroom guidance, educational resources and a database of recurring false narratives.
UNESCO activities in Uzbekistan	Provides awareness materials and a methodological foundation for media literacy.	Integrate resources systematically into journalism education and newsroom training.

Digital Detectives	Develops trainers, youth participation and regional fact-checking skills.	Connect training outcomes with newsroom protocols, university curricula and professional networks.

3.5. An integrated five-layer model is required

The synthesis of international and local evidence resulted in a five-layer model for fact-checking and digital verification in Uzbekistan's online media. The normative-ethical layer ensures impartiality, source transparency, separation of fact and opinion, and visible correction. The editorial layer institutionalises fact-checking through a responsible editor, a small verification team, internal protocols and a standard explanation of methods.

The technological layer combines open-source analysis, reverse-image search, metadata, geolocation, chronolocation, ClaimReview, content provenance indicators, deepfake checks and archive comparison. The institutional layer connects media organisations, universities, local fact-checking platforms, official information services and technical experts. The audience layer incorporates media literacy, fact-checking cards, FAQs, prebunking and databases of recurring false narratives.

The model is designed to address three priority problems: early identification of suspicious content in a Telegram-dominated environment; verification of deepfakes and synthetic content imitating public officials, state institutions or media brands; and prevention of information vacuums during crises through monitoring, multi-source verification and explanatory journalism.

Table 5. Integrated model of fact-checking and digital verification for Uzbekistan's online media

Layer	Core content	Expected function
Normative-ethical	Impartiality, source transparency, fact-opinion separation and correction policy.	Prevents fact-checking from becoming a political instrument or one-sided rebuttal mechanism.
Editorial	Verification editor or team, internal protocol and a standard 'How we verified it' block.	Makes verification a routine part of news production rather than an occasional project.
Technological	Open-source investigation, reverse search, metadata,	Establishes the provenance, authenticity and context of digital evidence.

	geolocation, ClaimReview, C2PA and deepfake checks.	
Institutional	Cooperation among media, universities, fact-checking platforms, official services and experts.	Creates a national network and a rapid-response mechanism.
Audience	Media literacy, verification cards, FAQs, prebunking and recurring-fakes database.	Transforms audiences from passive consumers into more responsible evaluators of information.

4. Discussion

The findings support the argument that fact-checking should be understood as an institutional system rather than a collection of digital tools. Reverse-image search, metadata, deepfake detectors and provenance standards are useful, but they cannot substitute for editorial judgement. The credibility of a fact-check depends on whether the newsroom applies consistent criteria, exposes its evidence, explains uncertainty and corrects its own errors.

This conclusion is consistent with Graves's description of political fact-checking as a distinct journalistic institution and with the epistemological concerns raised by Uscinski and Butler [3, 4]. Selection of claims, interpretation of causality and assessment of contested political statements involve professional judgement. In Uzbekistan, this makes transparency particularly important. A fact-check that functions only as an official rebuttal may be perceived as partisan and can deepen rather than reduce distrust.

The international models are complementary. IFCN provides normative legitimacy; Reuters provides an internal newsroom structure; EDMO provides network coordination; Bellingcat and the Verification Handbook provide practical open-source methods; Google ClaimReview provides a structured publishing format; and C2PA provides provenance signals for digital content. No single model addresses the complete problem. Their combined value lies in linking ethics, workflows, technology, institutional cooperation and public education.

The Uzbek context creates several specific transfer conditions. First, Telegram channels and social networks are not peripheral sources but central distribution environments. Monitoring and source tracing should therefore be continuous. Second, synthetic content often produces an illusion of official authenticity by copying the language, visual identity and institutional symbols of government agencies, public officials or television channels. Verification must therefore include both technical examination and documentary comparison with official archives. Third, information vacuums during crises can allow unverified interpretations to dominate before professional media respond. Real-time fact-checking must be integrated with explanatory journalism.

The proposed model also shifts the relationship between fact-checking and media literacy. Fact-checking should not end with a verdict. By publishing evidence, timelines, verification steps and preventive warnings, media organisations can teach audiences how to evaluate future claims. This is particularly relevant where active verification habits are not yet consistently developed and where emotionally framed content is distributed more rapidly than detailed corrections.

There are important implementation challenges. Smaller

newsrooms may lack specialised staff, paid tools or technical expertise. Official information may not always be released quickly enough for real-time verification. Cooperation between media and state institutions may raise concerns about independence if governance rules are unclear. A national network should therefore be pluralistic, professionally self-regulated and methodologically transparent. Shared infrastructure should support verification without centralising editorial judgement.

The study has limitations. It is based on qualitative document and case analysis and does not measure the prevalence of disinformation, the performance of specific detection tools or audience responses to different correction formats. The analysed Uzbek initiatives are described through their public functions rather than through internal organisational data. Future research should test the proposed model in selected newsrooms, measure verification speed and accuracy, compare audience trust before and after transparent fact-checking formats, and examine coordination patterns across Telegram channels.

5. Conclusion

International media experience demonstrates that fact-checking is most effective when it operates as a continuous journalistic mechanism based on editorial responsibility, technological verification, institutional cooperation and audience engagement. It cannot be reduced to occasional rebuttals or automated labels.

For Uzbekistan's online media, the most transferable practices are transparent claim selection, publication of sources, a standard explanation of verification methods, visible correction policies, dedicated newsroom responsibility, open-source investigation, visual verification, archive comparison, structured fact-check publication and preventive media literacy.

The proposed five-layer model integrates normative-ethical, editorial, technological, institutional and audience components. Its implementation would allow newsrooms to detect suspicious content earlier, verify deepfakes and media impersonation more systematically, respond to crises without leaving an information vacuum and communicate evidence in formats that strengthen public verification skills.

The development of such a system requires cooperation among online media, universities, existing fact-checking platforms, official information services and technical experts. At the same time, professional independence, transparent methodology and open correction must remain central. Under these conditions, international fact-checking technologies can be adapted into a practical mechanism for strengthening the resilience and credibility of Uzbekistan's digital information environment.

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