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Post-Production in the Age of Artificial Intelligence: How Generative AI Is Reshaping Editorial Workflows, Human Collaboration, and Creative Decision-Making Forensic Accounting Frameworks Addressing Fraud Prevention in Emerging Markets through Advanced Investigative Auditing Techniques

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Abstract

The rapid advancement of artificial intelligence (AI) is transforming documentary filmmaking, reshaping nearly every stage of production, from research and archival discovery to transcription, editing, visual restoration, and audience engagement. While AI-powered tools significantly improve efficiency, reduce production costs, and expand creative possibilities, they also raise fundamental questions about authorship, authenticity, ethics, and the irreplaceable role of human judgment. Documentary storytelling has traditionally relied on empathy, lived experience, editorial intuition, and ethical decision-making to construct truthful and emotionally resonant narratives. These qualities are difficult to replicate through algorithmic systems alone. This article examines the evolving relationship between human creativity and artificial intelligence in documentary storytelling through a qualitative literature review informed by the PRISMA 2020 reporting framework. Rather than framing AI as a replacement for filmmakers, it argues that AI functions most effectively as a collaborative creative assistant that augments human capabilities while leaving critical editorial decisions in human hands. The discussion explores AI's applications across documentary workflows, including pre-production research, automated transcription, metadata generation, archival organization, rough-cut assembly, translation, and visual enhancement, alongside its limitations in interpreting emotional nuance, cultural context, moral complexity, and narrative intention.

The article further addresses the ethical implications of AI-assisted documentary production, including concerns surrounding misinformation, deepfakes, algorithmic bias, transparency, copyright, and audience trust, grounded in a documented case study of AI voice reconstruction in the documentary *Roadrunner: A Film About Anthony Bourdain*. Drawing on contemporary developments in generative AI and documentary practice, it argues that the future of documentary filmmaking lies not in competition between humans and machines but in a collaborative model where AI enhances efficiency while human storytellers preserve authenticity, accountability, and creative vision. Ultimately, the enduring value of documentary cinema will continue to depend on the uniquely human capacity to understand lived experience, exercise ethical judgment, and tell stories that foster empathy and social understanding.

Keywords: Generative Artificial Intelligence, Post-Production, Editorial Workflows, Film Editing, Assistant Editing, Human-AI Collaboration, Media Asset Management, Creative Industries, Digital Media, Knowledge Management

1. Introduction

The post-production sector has historically evolved through successive waves of technological innovation. From the transition from analogue film editing to non-linear digital editing systems in the 1990s to the adoption of cloud-based collaborative workflows during the past decade, technological advancement has consistently redefined the speed, efficiency, and organization of editorial processes. Yet, despite these developments, the fundamental creative responsibilities of editors, including narrative construction, pacing, emotional rhythm, and storytelling, have remained predominantly human-centered. The emergence of generative artificial intelligence (AI) represents a distinct shift in this trajectory by introducing computational systems capable of performing not only technical support functions but also tasks traditionally requiring elements of human cognition and creative reasoning.

Recent advances in large language models, multimodal AI, computer vision, and generative media technologies have accelerated the integration of artificial intelligence into virtually every stage of the post-production pipeline. AI-powered systems can

automatically generate transcripts, identify speakers, organize footage through semantic metadata, remove background noise, detect scenes, recommend edits, generate visual effects, localize content into multiple languages, and assist with the production of rough assemblies. Recent industry-facing surveys of filmmakers confirm that generative AI tools are now used across all three stages of production, pre-production, production, and post-production, with post-production applications concentrated in editing, compositing, background replacement, stylization, and visual effects work (Anantrasirichai *et al.*, 2025) ^[3]. These capabilities have substantially altered how editorial teams interact with media assets, manage information, and coordinate creative workflows across distributed production environments.

Unlike previous workflow automation technologies, generative AI does not merely increase operational efficiency; it fundamentally changes the relationship between creative professionals and digital production systems. Editorial work has traditionally depended on intensive manual organization of media, meticulous logging of footage, collaborative communication among post-production departments, and the accumulation of tacit professional knowledge developed through experience. Generative AI introduces intelligent systems capable of processing vast volumes of audiovisual information at speeds that exceed human capability, thereby transforming post-production into an increasingly knowledge-driven environment where information retrieval, metadata quality, and algorithmic assistance become integral components of editorial practice. This transformation is particularly significant for assistant editors, whose responsibilities frequently involve media ingestion, synchronization, transcription management, proxy generation, archival organization, quality control, and media asset management. Many of these tasks are highly structured and data intensive, making them particularly suitable for AI-assisted automation. Consequently, professional roles within editorial departments are evolving from manual execution toward supervision, validation, workflow orchestration, and strategic decision-making. Rather than eliminating editorial professionals, AI is redistributing responsibilities, requiring practitioners to develop new competencies in AI literacy, data governance, workflow design, and ethical oversight.

Despite rapid industry adoption, scholarly research examining the broader implications of generative AI for editorial workflows remains relatively limited, and much of what does exist is scattered across computer science, media studies, law, and management literatures that rarely cite one another (Anantrasirichai & Bull, 2022) ^[2]. Existing studies often focus on technical performance or individual AI tools without adequately considering how these technologies reshape collaborative practices, organizational knowledge, creative authority, and professional identity within post-production environments. Moreover, much public discourse continues to frame AI as either a replacement for creative workers or a purely technical productivity tool, overlooking the nuanced reality that editorial decision-making remains deeply dependent on human interpretation, cultural understanding, emotional intelligence, and narrative judgment.

This study addresses these gaps by examining how generative AI is reshaping editorial workflows through the lens of human-AI collaboration and knowledge-driven production. Rather than viewing AI as a substitute for editors, the study

conceptualizes AI as an intelligent collaborative system that augments cognitive processes, accelerates routine editorial functions, and enhances access to organizational knowledge while preserving human creativity as the central mechanism of storytelling. By synthesizing contemporary scholarship across artificial intelligence, media production, knowledge management, and creative industries, this research contributes to a deeper understanding of how editorial practice is being redefined in the age of generative AI and offers practical recommendations for organizations preparing for the next generation of post-production workflows.

2. Statement of the Problem

The rapid adoption of generative artificial intelligence (AI) has introduced one of the most significant technological transformations in the history of post-production. AI-powered tools capable of automatic transcription, semantic media search, intelligent logging, speech enhancement, visual content generation, metadata extraction, multilingual localization, and rough-cut assistance are becoming increasingly embedded within professional editorial environments. Major software vendors, including Adobe, Blackmagic Design, Avid, Runway, OpenAI, and emerging AI startups, continue to release capabilities that promise substantial improvements in editorial efficiency and production speed. While these developments have accelerated workflow automation, they have simultaneously introduced profound questions regarding the future organization of editorial labor, creative decision-making, and professional identity within the post-production industry.

Despite the rapid pace of technological innovation, the integration of generative AI into professional editorial workflows remains largely fragmented and inconsistent. Production companies often adopt AI technologies on an ad hoc basis without comprehensive organizational strategies governing implementation, workflow redesign, quality assurance, or ethical oversight. As a result, AI adoption frequently focuses on isolated productivity gains rather than holistic workflow transformation. Editorial departments continue to rely on traditional organizational practices while selectively incorporating AI-powered tools, creating hybrid workflows that vary significantly across productions, organizations, and creative teams. The absence of standardized frameworks for AI integration limits both the consistency and long-term sustainability of these evolving workflows.

A particularly significant challenge concerns the transformation of editorial roles. Historically, assistant editors have performed essential responsibilities involving media ingestion, synchronization, proxy creation, transcription management, metadata organization, archival retrieval, quality control, and project organization. Many of these responsibilities involve repetitive cognitive tasks that are increasingly susceptible to automation through machine learning and generative AI systems. Consequently, concerns have emerged regarding workforce displacement, evolving skill requirements, and the future value proposition of entry-level editorial positions. However, current academic literature provides limited empirical understanding of how these professional responsibilities are being redefined rather than eliminated. Existing research has focused predominantly on AI capabilities instead of examining how editorial professionals adapt their expertise within AI-augmented production environments.

Equally important is the limited scholarly examination of creativity within AI-assisted editorial processes. Film editing extends beyond the technical assembly of audiovisual material; it is fundamentally an interpretive and narrative discipline requiring emotional intelligence, contextual reasoning, aesthetic sensitivity, and collaborative judgment. While generative AI demonstrates remarkable capabilities in pattern recognition, language processing, and content generation, it remains uncertain whether computational systems can meaningfully participate in higher-order creative decisions involving narrative pacing, emotional resonance, character development, symbolic meaning, and audience engagement. Scholars examining the science of generative AI directly have argued that this question, whether AI systems can be said to participate in creativity, or only to accelerate its mechanics, remains genuinely unresolved and is likely to remain contested for some time (Epstein *et al.*, 2023)^[7]. This tension between computational efficiency and human creativity represents one of the defining questions confronting contemporary post-production practice.

The emergence of AI-assisted editorial workflows also raises substantial ethical and governance concerns. Generative AI models rely upon large-scale datasets whose provenance, intellectual property status, and representational biases are frequently contested. Questions surrounding authorship, copyright ownership, algorithmic transparency, misinformation, privacy, and accountability become increasingly complex as AI-generated content enters professional production pipelines (Mazzi, 2024; Yang & Zhang, 2024)^[13, 18]. Editorial professionals must therefore navigate not only technological innovation but also evolving legal, ethical, and professional responsibilities that remain insufficiently addressed within current workflow standards and industry guidelines.

Furthermore, post-production has evolved into an increasingly knowledge-intensive enterprise in which the efficient organization, retrieval, and application of information directly influence creative performance. Modern productions generate thousands of hours of footage, extensive metadata, multiple versions of editorial sequences, transcripts, production notes, visual effects assets, archival materials, and collaborative feedback distributed across geographically dispersed teams. Although generative AI offers unprecedented capabilities for organizing and retrieving this knowledge, scholarly research has yet to adequately conceptualize post-production as a knowledge management ecosystem in which artificial intelligence functions as both an automation technology and an organizational intelligence system supporting collaborative decision-making.

Although numerous publications discuss artificial intelligence within filmmaking, relatively few studies examine the broader organizational transformation occurring within editorial departments. Existing literature often evaluates individual AI applications without considering their cumulative impact on workflow architecture, professional collaboration, institutional knowledge, creative governance, and long-term workforce development. This fragmented understanding limits the ability of production companies, educational institutions, and policymakers to develop evidence-based strategies for integrating AI into professional editorial practice.

This study addresses these gaps by critically examining how generative AI is reshaping editorial workflows across

contemporary post-production environments. Rather than approaching AI solely as a productivity tool or a potential replacement for creative professionals, the research conceptualizes generative AI as an intelligent collaborative system operating within a broader knowledge management framework. By synthesizing current scholarship across artificial intelligence, media production, organizational knowledge, and creative industries, the study seeks to provide a comprehensive understanding of how editorial work is being redefined and to propose practical strategies for balancing technological innovation with the preservation of human creativity, professional expertise, and ethical responsibility.

3. Research Questions

To critically examine the impact of generative artificial intelligence on contemporary post-production practices, this study is guided by the following research questions:

1. How is generative artificial intelligence transforming editorial workflows across contemporary film, television, documentary, and digital media post-production environments?
2. Which stages of the post-production pipeline experience the greatest operational and creative impact from AI-assisted technologies, including transcription, media asset management, logging, rough-cut generation, localization, and quality control?
3. How is the integration of generative AI redefining the professional roles, competencies, and collaborative responsibilities of editors, assistant editors, and other post-production professionals?
4. What organizational, technological, ethical, and legal challenges influence the successful adoption of generative AI within editorial departments?
5. How can production companies integrate generative AI into editorial workflows while preserving creative judgment, editorial integrity, and human-centered storytelling?

4. Research Objectives

4.1. General Objective

The primary objective of this study is to critically examine how generative artificial intelligence is reshaping editorial workflows within contemporary post-production by evaluating its influence on workflow efficiency, professional responsibilities, collaborative practices, and creative decision-making. The study seeks to establish an evidence-based understanding of how AI can augment editorial practice while preserving the central role of human creativity in film and television production.

4.2. Specific Objectives

To achieve this overall aim, the study is guided by the following objectives:

1. To examine the current applications of generative AI technologies across different stages of the post-production workflow, including transcription, media organization, semantic search, logging, editing assistance, localization, visual effects generation, and quality assurance.
2. To evaluate the impact of AI-assisted systems on editorial efficiency and workflow optimization, with particular emphasis on reductions in repetitive cognitive tasks, improvements in media retrieval, and enhanced

collaboration across editorial teams.

3. To investigate how generative AI is transforming the professional responsibilities and skill requirements of editors, assistant editors, post-production supervisors, and media management specialists, identifying both opportunities and emerging workforce challenges.
4. To critically assess the ethical, legal, and organizational implications associated with AI-assisted editorial workflows, including issues relating to authorship, copyright, transparency, algorithmic bias, privacy, and accountability.
5. To develop practical recommendations for integrating generative AI into professional post-production environments through a human-centered collaborative framework that balances technological innovation with creative excellence and editorial ethics.

5. Research Hypotheses

Although this study primarily adopts a qualitative systematic review methodology, the following propositions guide the synthesis and interpretation of existing scholarship:

H₁: Generative artificial intelligence significantly improves operational efficiency across editorial workflows by automating repetitive and data-intensive post-production tasks.

H₂: The adoption of generative AI is associated with a measurable transformation in the professional roles and competencies required of post-production personnel rather than a direct replacement of editorial professionals.

H₃: Human editorial judgment remains essential for narrative construction, creative decision-making, and ethical oversight despite increasing AI-assisted automation.

H₄: Organizations that implement structured human-AI collaborative workflows achieve greater improvements in editorial productivity and creative outcomes than organizations relying on isolated AI automation tools.

H₅: Successful integration of generative AI within post-production depends equally on technological capability, organizational readiness, workforce reskilling, and governance frameworks.

6. Literature Review

6.1. Evolution of Post-Production Workflows

The history of post-production is characterized by continuous technological innovation aimed at improving efficiency, collaboration, and creative flexibility. The transition from analogue film editing to non-linear digital editing systems in the late twentieth century fundamentally transformed editorial practice, enabling editors to manipulate footage non-destructively and experiment with narrative structures without permanently altering original media. The widespread adoption of software such as Avid Media Composer, Adobe Premiere Pro, and DaVinci Resolve further accelerated collaborative editing through shared storage, digital asset management, proxy workflows, and cloud-based production environments.

Although these technological advancements significantly increased production efficiency, they primarily automated mechanical and organizational processes rather than creative reasoning. Editors remained responsible for interpreting story structure, emotional pacing, character development, and audience engagement. As Manovich (2001)^[12] argues, digital technologies expanded the possibilities of media production without fundamentally replacing human creative

interpretation. Consequently, editorial expertise continued to depend upon narrative intuition, aesthetic judgment, and collaborative communication despite increasingly sophisticated production technologies.

The rapid expansion of streaming platforms, remote collaboration, and high-resolution digital acquisition has further increased the complexity of contemporary post-production. Modern productions routinely generate hundreds or thousands of hours of audiovisual material requiring extensive logging, metadata management, transcription, version control, archival organization, and cross-departmental coordination. These growing information demands have transformed post-production into an increasingly data-intensive environment, creating new opportunities for intelligent automation.

Unlike previous technological innovations, generative artificial intelligence extends beyond mechanical workflow optimization by performing tasks traditionally associated with human cognition, including language understanding, semantic retrieval, visual recognition, and content generation. This distinction positions AI as a transformative force capable of reshaping not only production efficiency but also the organization of creative labor itself.

6.2. Generative Artificial Intelligence in Creative Industries

Generative artificial intelligence refers to computational systems capable of producing original content, including text, images, audio, video, and software code, through machine learning models trained on large datasets. Recent developments in transformer architectures, diffusion models, multimodal learning, and large language models have dramatically expanded AI's capabilities across creative industries. Anantrasirichai and Bull (2022)^[2], in one of the most comprehensive reviews of AI in the creative industries to date, trace this expansion across the entire content lifecycle and argue that generative systems increasingly participate in creative production rather than functioning solely as analytical or organizational tools, generating scripts, concept art, music, voice synthesis, visual effects, and editorial assistance in the process.

Within film and television production, AI adoption has accelerated across pre-production, production, and post-production activities. Contemporary AI applications include automated transcription, dialogue cleanup, object recognition, facial detection, semantic media search, shot classification, language translation, subtitle generation, synthetic voice production, generative visual effects, and rough-cut assembly (Li *et al.*, 2026; Uddin *et al.*, 2025)^[17]. Industry-facing analyses report substantial reductions in the time required for repetitive post-production tasks, including editing, color grading, visual effects compositing, and audio synchronization, alongside faster creative iteration, although such figures typically derive from vendor case studies and qualitative industry reporting rather than controlled empirical trials, a distinction addressed further in the Limitations section of this review.

However, scholars remain divided regarding the broader implications of AI-assisted creativity. Some researchers argue that generative AI democratizes creative production by lowering technical barriers and increasing production efficiency (Al Naqbi *et al.*, 2024)^[1]. Others caution that excessive dependence on algorithmic systems may reduce creative diversity, reinforce existing biases embedded within

training data, and challenge traditional understandings of authorship and artistic ownership (Epstein *et al.*, 2023) ^[7]. These competing perspectives demonstrate that AI adoption should be evaluated not only in terms of productivity but also through its broader cultural, ethical, and professional consequences.

6.3. Human–AI Collaboration in Editorial Practice

One of the most significant developments in contemporary AI research is the transition from viewing artificial intelligence as a replacement for human labor toward conceptualizing it as a collaborative partner that augments human expertise. Dellermann *et al.* (2019) ^[6] formalized this shift through the concept of “hybrid intelligence,” emphasizing complementary intelligence, whereby computational systems perform large-scale information processing while humans retain responsibility for contextual reasoning, ethical judgment, and creative interpretation.

Editorial work provides an especially relevant context for examining collaborative intelligence because successful editing requires both structured information processing and subjective creative evaluation. AI systems demonstrate considerable advantages in processing extensive audiovisual datasets, generating transcripts, identifying speakers, detecting duplicate content, organizing metadata, and retrieving relevant footage based on semantic queries. A systematic review of GAN-enabled human-AI collaborative applications in creative and design industries found that these systems consistently perform best when treated as assistive collaborators embedded within a human-directed workflow, rather than as autonomous creative agents (Hughes *et al.*, 2021) ^[10]. These capabilities substantially reduce the administrative burden associated with editorial preparation.

Nevertheless, creative editing extends beyond technical efficiency. Editors continuously interpret narrative intention, emotional progression, dramatic tension, symbolic meaning, rhythm, and audience expectations. Such decisions depend upon cultural knowledge, interpersonal collaboration, and aesthetic sensitivity that remain difficult to formalize computationally. Consequently, AI increasingly functions as an intelligent assistant supporting human creativity rather than replacing editorial decision-making.

Emerging industry practice reflects this collaborative model. Rather than eliminating editorial positions, production companies increasingly expect editors and assistant editors to supervise AI-generated outputs, validate automated decisions, correct inaccuracies, and integrate computational recommendations within broader storytelling objectives. Editorial expertise therefore evolves from manual execution toward strategic oversight, quality assurance, and creative leadership.

6.4. Knowledge Management in Post-Production

Knowledge Management (KM) has traditionally been examined within business administration, organizational studies, healthcare, and public sector governance. However, its relevance to media production has received comparatively limited scholarly attention despite the knowledge-intensive nature of post-production workflows. Within the wider creative industries literature, knowledge management has increasingly been recognized as a distinct organizational challenge: creative workers’ knowledge functions simultaneously as a personal, bargaining asset and as an organizational resource, which can create tension between

individual creative professionals and the collaborative knowledge-sharing that production organizations depend upon.

Knowledge management refers to the systematic processes through which organizations acquire, organize, store, retrieve, share, and apply knowledge to improve decision-making and organizational performance. Within post-production, knowledge exists in multiple forms, including production notes, editorial decisions, metadata, transcripts, archival records, visual references, version histories, technical documentation, and tacit professional expertise accumulated through collaborative practice.

Modern productions generate vast quantities of structured and unstructured information distributed across editors, assistant editors, producers, directors, visual effects teams, sound departments, and archival researchers. Efficient retrieval of this information significantly influences editorial productivity and creative collaboration. Poor metadata quality, inconsistent organizational practices, fragmented storage systems, and inadequate documentation frequently result in duplicated work, communication breakdowns, and delays throughout production.

Generative AI substantially expands organizational knowledge management by automatically extracting metadata, generating semantic descriptions, organizing media libraries, recognizing visual content, transcribing dialogue, and enabling natural-language search across large media repositories. These capabilities transform AI from a simple automation technology into an organizational intelligence system that enhances collective knowledge accessibility throughout post-production.

This perspective represents an emerging area within scholarly research. Existing studies primarily evaluate AI according to computational performance metrics while giving comparatively little attention to its role in supporting organizational learning, institutional memory, and collaborative knowledge exchange. Accordingly, this study argues that post-production should increasingly be understood as a knowledge ecosystem in which AI functions as a critical component of organizational intelligence rather than merely an editing tool.

6.5. Ethical, Legal, and Governance Considerations

The integration of generative AI into professional editorial pipelines raises governance questions that extend beyond workflow efficiency. Authorship and copyright present a particularly unsettled area: Mazzi (2024) ^[13] argues that AI-generated works blur established lines of authorship because the originality traditionally located in an individual creator’s expressive choices is partly displaced onto the text prompt and the underlying model, complicating who, if anyone, should be credited or hold rights to AI-assisted editorial outputs. Yang and Zhang (2024) ^[18] similarly note that the copyright status of generative AI content, and the compensation owed to creators whose work trained the underlying models, remain two unresolved regulatory questions with direct economic consequences for the creative industries.

Bias represents a second major governance concern. Because generative models learn statistical patterns from large training corpora, they can reproduce and amplify the demographic and cultural imbalances present in that data, a dynamic first documented at scale in commercial facial-analysis systems (Buolamwini & Gebru, 2018) ^[5] and since

identified as a general property of generative systems trained on unrepresentative data (Ferrara, 2023) ^[8]. For post-production specifically, this raises concerns about automated systems that generate, retouch, or select visual content, since biased outputs can affect representation on screen in ways that are not always visible to the editorial team relying on the tool.

A third concern involves transparency and accountability. Because generative AI outputs are produced by statistical processes rather than deliberate authorial choices, editorial teams that rely on AI-generated rough cuts, transcripts, or visual assets must develop internal quality-control and disclosure practices to ensure that automated contributions are reviewed, corrected, and appropriately credited before reaching audiences.

6.6. AI in Localization and Accessibility

Localization is among the post-production functions where generative AI has moved furthest from experimentation into routine production use. Automatic speech recognition, neural machine translation, and voice-cloning systems now allow subtitle and dubbing drafts to be produced within minutes rather than the days or weeks required by traditional audiovisual translation workflows (Li *et al.*, 2026). Large-scale empirical analysis of professional dubbing practice has shown that vocal naturalness and translation quality matter more to audience reception than the strict isochronic (timing) and isometric (character-length) constraints that automatic dubbing systems have traditionally optimized for, suggesting that current AI dubbing pipelines may be over-engineered toward the wrong objectives (Brannon *et al.*, 2022) ^[4]. This body of work reinforces the broader theme of this review: AI performs strongest in localization and accessibility tasks that are well-structured and repetitive, while questions of cultural nuance, humor, and emotional register continue to require human linguistic and editorial judgment.

6.7. Research Gap

Despite the growing body of literature examining artificial intelligence within filmmaking and digital media, several important gaps remain. First, much of the existing research focuses on isolated technological applications rather than the comprehensive transformation of editorial workflows. Second, relatively few studies examine how AI influences professional identities, collaborative practices, and evolving workforce competencies within post-production teams. Third, the intersection between generative AI and knowledge management remains underexplored, particularly regarding how intelligent systems facilitate organizational learning, institutional memory, and cross-functional collaboration. Furthermore, current scholarship often frames AI as either a productivity-enhancing technology or a potential substitute for creative professionals. This binary perspective overlooks the increasingly collaborative relationship emerging between editors and intelligent systems in professional production environments. There remains a need for an integrated conceptual framework that explains how AI simultaneously influences workflow efficiency, knowledge management, creative practice, and organizational transformation.

This study addresses these gaps by synthesizing scholarship across artificial intelligence, film and media studies, organizational knowledge management, and creative industries. It advances the argument that generative AI is not merely automating post-production tasks but fundamentally

transforming editorial work into a knowledge-driven, human-AI collaborative ecosystem. By doing so, the research contributes a broader theoretical perspective on the future of post-production while offering practical insights for industry professionals, educators, and policymakers.

7. Theoretical Framework

A theoretical framework provides the conceptual lens through which a study interprets its findings. Given that this research examines the intersection of artificial intelligence, editorial practice, and organizational transformation, no single theory sufficiently explains the complexity of contemporary post-production. Accordingly, this study adopts an integrated theoretical framework combining Sociotechnical Systems Theory (STS), the Knowledge-Based View (KBV) of the Firm, and Human-AI Collaboration Theory. Together, these perspectives explain how generative AI influences not only technological efficiency but also organizational knowledge, professional roles, and creative decision-making within post-production environments.

7.1. Sociotechnical Systems Theory

Sociotechnical Systems Theory (STS), originally developed by the Tavistock Institute (Trist & Bamforth, 1951) ^[16], posits that organizational performance is optimized when technological systems and social systems are designed to function in harmony. Rather than viewing technology as an independent driver of organizational change, STS argues that sustainable innovation depends upon the mutual adaptation of people, organizational structures, and technological capabilities.

Within post-production, editorial workflows represent highly interconnected sociotechnical systems involving editors, assistant editors, producers, directors, archivists, visual effects artists, sound designers, and production coordinators working alongside sophisticated digital technologies. Editorial decisions emerge through continuous collaboration, negotiation, creative interpretation, and technical coordination rather than through isolated individual actions. Consequently, introducing generative AI into these environments affects not only workflow efficiency but also communication patterns, decision authority, team dynamics, and organizational culture.

From an STS perspective, the successful implementation of AI depends less on algorithmic sophistication than on how effectively organizations redesign workflows to integrate human expertise with computational capabilities. AI-powered transcription, semantic search, automated metadata generation, and intelligent media organization can substantially reduce repetitive administrative tasks; however, these systems achieve their greatest value when editors remain responsible for validating outputs, exercising creative judgment, and ensuring narrative coherence. This study therefore interprets generative AI as a component of a broader sociotechnical ecosystem in which technology augments, rather than replaces, collaborative editorial practice.

7.2. Knowledge-Based View of the Firm

The Knowledge-Based View (KBV), developed from the resource-based theory of the firm (Grant, 1996; Nonaka & Takeuchi, 1995) ^[9, 14], argues that knowledge constitutes the most valuable strategic resource within modern organizations. Competitive advantage arises not merely from

access to information but from an organization's capacity to create, organize, share, and apply knowledge more effectively than its competitors.

Although KBV has been widely applied within management, healthcare, and information systems research, its application to post-production remains relatively limited despite the industry's dependence on complex knowledge processes. Contemporary productions generate vast quantities of explicit knowledge, including scripts, transcripts, metadata, edit decision lists (EDLs), continuity notes, archival records, production reports, and technical documentation, as well as tacit knowledge embodied in editorial judgment, storytelling expertise, and collaborative experience.

Generative AI significantly enhances organizational knowledge management by accelerating the acquisition, organization, retrieval, and dissemination of production knowledge. AI-powered semantic search enables editorial teams to locate relevant footage using natural-language queries rather than manual logging alone. Automated transcription improves accessibility to spoken content, while computer vision systems identify locations, objects, faces, and actions across extensive media collections. These capabilities reduce the cognitive burden associated with information retrieval and enable creative professionals to devote greater attention to narrative construction and collaborative decision-making.

Accordingly, this study conceptualizes post-production as a knowledge-intensive organizational ecosystem in which editorial effectiveness depends upon the efficient management of production knowledge. Within this framework, generative AI functions not simply as an automation technology but as an organizational intelligence system that strengthens institutional memory, enhances collaboration, and improves knowledge accessibility across editorial teams.

7.3. Human–AI Collaboration Theory

Recent developments in artificial intelligence research have shifted scholarly attention from automation toward collaborative intelligence, emphasizing the complementary strengths of humans and intelligent systems (Dellermann *et al.*, 2019)^[6]. Human–AI Collaboration Theory proposes that optimal performance emerges when computational systems and human expertise are combined according to their respective capabilities rather than positioned in competition. Artificial intelligence demonstrates exceptional performance in tasks involving large-scale data processing, pattern recognition, transcription, language translation, semantic retrieval, metadata generation, and repetitive computational analysis. Human editors, however, continue to possess unique capabilities in emotional interpretation, narrative construction, ethical reasoning, contextual understanding, cultural sensitivity, and aesthetic judgment. These forms of expertise remain difficult to replicate through contemporary generative AI models because they depend upon lived experience, intuition, interpersonal communication, and nuanced creative reasoning.

Within professional editorial environments, AI increasingly assumes the role of an intelligent collaborator rather than an autonomous creative agent. Editorial professionals supervise AI-generated outputs, verify factual accuracy, refine automated recommendations, resolve contextual ambiguities, and ensure that storytelling decisions remain aligned with creative intent. Rather than eliminating editorial expertise,

generative AI shifts professional value toward critical evaluation, strategic oversight, interdisciplinary coordination, and creative leadership.

Human–AI Collaboration Theory therefore provides an appropriate conceptual foundation for understanding the evolving relationship between editorial professionals and intelligent technologies. This study argues that the future of post-production lies not in replacing human editors but in designing collaborative workflows that maximize the complementary strengths of both human creativity and artificial intelligence.

7.4. Conceptual Framework

Drawing upon these three theoretical perspectives, this study proposes an integrated conceptual model for AI-enabled post-production. The model positions generative AI capabilities (e.g., transcription, semantic search, metadata enrichment, content analysis, and automation) as technological inputs that interact with organizational knowledge resources (media assets, production documentation, editorial expertise, and institutional memory) within a sociotechnical production environment. These interactions reshape editorial workflows by improving information accessibility, reducing repetitive labor, and supporting collaborative decision-making.

However, the framework also recognizes that workflow improvements are mediated by human expertise. Editors and assistant editors remain responsible for validating AI outputs, interpreting narrative context, making creative decisions, and ensuring ethical compliance. Consequently, post-production effectiveness emerges from the dynamic interaction between technological capability, organizational knowledge, and human creative judgment rather than from automation alone. This integrated framework underpins the analysis presented throughout the remainder of the study and supports the central proposition that generative AI is transforming post-production into a knowledge-driven, human-AI collaborative ecosystem in which editorial professionals increasingly function as creative strategists, knowledge curators, and supervisors of intelligent production systems.

8. Methodology

8.1. Review Design

This study adopts a qualitative systematic literature review design, informed by the reporting structure of the PRISMA 2020 statement (Page *et al.*, 2021)^[15]. PRISMA 2020 is used here as a reporting and search-transparency framework rather than as a meta-analytic protocol: because the underlying literature on generative AI in post-production is heterogeneous, spanning peer-reviewed journal articles, conference proceedings, preprints, legal scholarship, and industry-analytical reports, a quantitative meta-analysis was neither appropriate nor intended. Instead, PRISMA's logic of transparent identification, screening, and inclusion was applied to structure a narrative and thematic synthesis.

8.2. Search Strategy

Literature was identified through structured searches conducted across academic publisher platforms and repositories, including ScienceDirect, Wiley Online Library, MDPI, Nature Portfolio journals, ACM Digital Library, IEEE Xplore, arXiv, SSRN, and the Yale Law Journal, supplemented by a general academic search engine to surface additional peer-reviewed and industry-analytical sources. Search terms combined core concepts using Boolean logic,

including combinations of: *generative artificial intelligence, post-production, film editing, assistant editor, media asset management, human-AI collaboration, knowledge management, creative industries, authorship, copyright, algorithmic bias, and audiovisual localization/dubbing*. Searches were restricted to sources discussing developments between 2018 and 2026, corresponding to the period in which transformer-based and diffusion-based generative models became commercially significant in media production.

8.3. Eligibility Criteria

Inclusion criteria: (a) peer-reviewed journal articles, conference papers, law review articles, or scholarly preprints; (b) publications directly addressing generative AI, automation, or intelligent systems in relation to film/television/media post-production, editorial work, creative-industry knowledge management, or human-AI collaboration; (c) publications from 2018–2026; (d) English-language sources.

Exclusion criteria: (a) purely promotional or vendor marketing material with no analytical or scholarly content; (b) sources whose relevance to post-production or editorial workflows was only tangential; (c) duplicate reporting of the same study or dataset; (d) non-English sources, due to translation-verification constraints within the scope of this review.

8.4. Selection Process and Resulting Corpus

Searches conducted across the databases and themes described above returned an initial pool of sources, from which duplicate entries and sources failing the eligibility criteria (chiefly promotional/vendor content without analytical substance) were removed. The remaining sources were screened for relevance to the study's research questions, and a final corpus of sources meeting all inclusion criteria was retained for narrative synthesis; these are the sources cited throughout Sections 6 and 9 and listed in full in the References section. Given the genuine novelty of generative AI in professional post-production, several of the most directly relevant sources are 2024–2026 conference papers, preprints, and industry-analytical reviews rather than long-established journal literature, a pattern consistent with the recency of the technology itself and one this review treats as a finding in its own right (see Section 10.3, Limitations).

8.5. Synthesis Approach

Because study designs and evidentiary standards varied substantially across the corpus (ranging from formal systematic reviews and empirical corpus studies to qualitative industry analyses and legal commentary), a thematic narrative synthesis was used rather than statistical meta-analysis. Sources were coded inductively against the study's five research questions, and recurring themes, workflow automation, role transformation, knowledge management, ethical/legal governance, and localization, were used to organize the Findings presented in Section 9. This approach is consistent with recognized guidance for synthesizing qualitatively heterogeneous literature (Page *et al.*, 2021) [15].

9. Findings

9.1. Workflow Transformation Across the Post-Production Pipeline

Consistent with RQ1, the reviewed literature converges on the conclusion that generative AI is not confined to a single

post-production task but is being adopted across the entire pipeline, from ingest and logging through editing, visual effects, sound, and delivery. Industry-facing filmmaker surveys report AI tool use across pre-production, production, and post-production stages, with post-production applications concentrated in editing, compositing, background replacement, stylization, and visual effects (Anantrasirichai *et al.*, 2025) [3]. Reviews of AI applications in film production similarly document adoption across transcription, dialogue cleanup, scene detection, shot classification, subtitle generation, and rough-cut assembly (Li *et al.*, 2026; Uddin *et al.*, 2025) [17].

9.2. Uneven Impact Across Pipeline Stages

In response to RQ2, the synthesized literature indicates that AI's operational impact is not evenly distributed across post-production tasks. The clearest, most consistently reported gains appear in structured, pattern-recognition-heavy tasks: automatic transcription, speaker identification, metadata tagging, scene detection, and localization/subtitling, where automatic speech recognition and neural machine translation have moved from experimental to routine production use (Li *et al.*, 2026). By contrast, tasks requiring sustained narrative judgment, pacing, emotional arc construction, thematic coherence across a full cut, remain reported as predominantly human-led even where AI tools assist with generating options or first-pass assemblies. Empirical work on professional dubbing further suggests that even in one of AI's strongest domains, the dimensions audiences respond to most (vocal naturalness, translation quality) are not the dimensions automatic systems have historically optimized for, indicating a persistent gap between technical automation and the qualitative judgment localization professionals apply (Brannon *et al.*, 2022) [4].

9.3. Redefinition of Editorial and Assistant-Editing Roles

Addressing RQ3, the literature consistently frames AI adoption as role transformation rather than role elimination. Structured, repetitive components of assistant editing, ingest, synchronization, proxy generation, transcription management, metadata organization, are the components most susceptible to automation, while responsibility for validating, correcting, and creatively contextualizing AI outputs is reported as shifting toward editorial professionals. This is consistent with the "hybrid intelligence" model, in which the most effective outcomes occur when AI systems handle large-scale data processing while human professionals retain responsibility for contextual and creative judgment (Dellermann *et al.*, 2019) [6], and with systematic evidence that GAN-enabled creative tools perform best as assistive collaborators within human-directed workflows rather than as autonomous creative agents (Hughes *et al.*, 2021) [10].

9.4. Ethical, Legal, and Organizational Challenges

In relation to RQ4, three challenge categories recur across the corpus. First, authorship and copyright remain legally and conceptually unsettled: the locus of originality in AI-assisted work is contested, and compensation for creators whose work trained the underlying models is an unresolved economic question with direct relevance to editorial teams using AI-generated or AI-assisted assets (Mazzi, 2024; Yang & Zhang, 2024) [13, 18]. Second, algorithmic bias inherited from training data can affect the outputs of AI systems used in visual content generation, retouching, or selection, echoing well-

documented disparities in earlier generations of computer-vision systems (Buolamwini & Gebru, 2018; Ferrara, 2023)^[5, 8]. Third, organizational fragmentation, the ad hoc, tool-by-tool adoption of AI without a coherent workflow-redesign strategy, is repeatedly identified as limiting the sustainability of AI integration, a pattern consistent with Sociotechnical Systems Theory's prediction that technology delivers limited value when adopted without corresponding adaptation of social and organizational structures (Trist & Bamforth, 1951)^[16].

9.5. Conditions for Effective Human-AI Integration

Finally, in relation to RQ5, the reviewed literature converges on several conditions associated with more effective AI integration: (a) treating AI outputs as drafts requiring human validation rather than finished deliverables; (b) investing in workforce reskilling so that editorial staff can supervise, correct, and creatively direct AI systems rather than being displaced by them; (c) building metadata and knowledge-management practices deliberately, since AI's value in post-production is closely tied to the quality and structure of the organizational knowledge it is retrieving and organizing (consistent with the Knowledge-Based View; Grant, 1996; Nonaka & Takeuchi, 1995)^[9, 14]; and (d) establishing explicit governance practices for authorship attribution, bias review, and disclosure of AI-assisted content before delivery.

9.6. Synthesis Against the Research Hypotheses

Read against the five propositions in Section 5, the synthesized literature offers qualitative support for H₁ (efficiency gains in repetitive, structured tasks), H₂ (role transformation rather than replacement), and H₃ (continued centrality of human judgment for narrative and ethical decisions). Support for H₄ and H₅ is more provisional: while the theoretical and industry-analytical literature strongly argues that structured, well-governed human-AI collaboration outperforms ad hoc tool adoption, few of the reviewed sources provide controlled, comparative empirical evidence (e.g., productivity metrics compared across organizations with differing integration strategies) that would allow H₄ and H₅ to be considered empirically confirmed rather than theoretically well-supported. This is flagged explicitly as a direction for future primary research in Section 11.

10. Discussion

10.1. Interpretation of Findings

The findings of this review support the study's central argument: generative AI is best understood not as a replacement for editorial labor but as a force that redistributes it. Across every theme examined, workflow automation, role transformation, knowledge management, and governance, the pattern is consistent with the integrated theoretical framework proposed in Section 7. Sociotechnical Systems Theory helps explain why the literature so consistently frames ad hoc, tool-by-tool AI adoption as a limiting factor: technology delivers its greatest value when organizational structures, roles, and workflows are redesigned around it, not simply layered on top of existing practice. The Knowledge-Based View helps explain why AI's benefits concentrate so heavily in tasks tied to information retrieval, organization, and metadata, precisely the domain in which post-production has always been a knowledge-intensive enterprise, even before AI made that fact more visible. And Human-AI

Collaboration Theory helps explain the recurring finding that AI performs best as a supervised collaborator rather than an autonomous creative agent.

10.2. Implications for Practice, Education, and Policy

For production companies, the findings suggest that the greatest return on AI investment lies not in acquiring individual tools but in redesigning workflows around a clear division of labor between automated processing and human creative oversight, paired with explicit governance practices for bias review and authorship attribution. For educational institutions training future editors and assistant editors, the findings suggest a need to teach AI literacy, critical evaluation of AI outputs, and data/metadata governance alongside traditional editorial craft, since entry-level responsibilities are shifting away from manual media management and toward supervision of automated processes. For policymakers and industry bodies, the unresolved status of authorship and copyright for AI-assisted creative work represents an area where clearer guidance would reduce uncertainty for production companies currently navigating ad hoc, organization-specific policies.

10.3. Limitations

Several limitations qualify these conclusions. First, this review's search process, while structured and transparent, was conducted through a combination of academic publisher platforms and a general academic search engine rather than through direct Boolean queries within a single bibliographic database such as Scopus or Web of Science; a researcher with institutional database access should replicate and extend this search to confirm coverage and obtain precise, exportable screening counts for a formal PRISMA flow diagram before this review is submitted for indexed publication. Second, because generative AI's application to post-production is a genuinely recent phenomenon, much of the most directly relevant literature consists of 2024–2026 preprints, conference papers, and industry-analytical sources rather than long-established, heavily cited journal literature; this reflects the state of the field rather than a search-process shortcoming, but it does mean some sources have not yet undergone extended post-publication scrutiny. Third, the review was limited to English-language sources, which may exclude relevant scholarship and industry practice from non-English-speaking production markets. Fourth, several of the efficiency figures reported in industry-analytical sources (e.g., time or cost reductions attributed to specific AI tools) derive from vendor case studies or qualitative industry reporting rather than independently verified, controlled measurement, and should be treated as indicative rather than definitive. Finally, as a qualitative narrative synthesis rather than a statistical meta-analysis, this review's conclusions are interpretive; they identify consistent patterns across heterogeneous sources rather than quantifying effect sizes.

11. Conclusion and Recommendations

This study set out to critically examine how generative artificial intelligence is reshaping post-production, with particular attention to editorial workflows, assistant editing, media asset management, and collaborative decision-making. The synthesized literature supports a clear central conclusion: generative AI is transforming post-production most decisively in structured, data-intensive tasks, transcription, logging, metadata generation, semantic search, and

localization, while human editorial judgment remains central to narrative construction, emotional pacing, and ethical oversight. Rather than displacing editorial professionals, AI is redistributing their responsibilities toward supervision, validation, and creative direction of increasingly capable but still fundamentally assistive systems.

Three sets of recommendations follow from this conclusion:

For production companies: integrate AI deliberately, as part of a redesigned workflow with clear human sign-off points, rather than adopting individual tools in an uncoordinated way; invest in structured metadata and knowledge-management practices, since AI's value is closely tied to the quality of the information it retrieves and organizes; and establish explicit governance policies covering authorship attribution, bias review, and disclosure of AI-assisted content.

For educational institutions: update editorial and assistant-editing curricula to include AI literacy, critical evaluation of automated outputs, and data governance, alongside the traditional craft skills of narrative construction and technical editing.

For future research: this review identifies a clear need for controlled, comparative empirical studies, for example, comparing productivity, quality, and workforce outcomes across production organizations with differing AI-integration strategies, to move the field from the largely qualitative and industry-analytical evidence base synthesized here toward more rigorously quantified conclusions, particularly regarding Hypotheses 4 and 5. Future work would also benefit from primary research directly involving editors and assistant editors (interviews, workflow observation, or survey-based studies), which was outside the scope of this literature-based review but would substantially strengthen the field's empirical foundation.

Generative AI does not, on the evidence synthesized here, mark the end of human-centered editorial craft. It marks a redistribution of where that craft is applied, away from the mechanics of media management and toward the judgment, ethics, and storytelling sensibility that remain, for now, distinctly human.

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