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The Application of AI-Generated Content (AIGC) in E-Commerce Advertising

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Abstract

In recent years, e-commerce platforms have increasingly relied on content marketing, where advertising is expected to deliver more diverse and information-rich messages. The rapid development of artificial intelligence-generated content (AIGC) offers new tools that allow companies to adapt to this environment more efficiently. With the maturation of technologies such as AI-driven copywriting, image design, and video generation, AIGC has begun to play a central role in advertising content production and distribution. This paper explores how AIGC reduces production costs, enables scalable and personalized advertising, and reshapes consumer engagement. Moreover, it analyses emerging challenges, including the homogenization of content, data security risks, and copyright disputes. The paper concludes with an outlook on the future of AIGC in advertising and proposes directions for responsible and innovative development.

Keywords

AIGC, artificial intelligence, E-commerce, digital advertising

1. Introduction

Artificial intelligence-generated content (AIGC) has emerged as one of the most transformative applications of artificial intelligence in the digital economy (Wang et al., 2024; Zhao et al., 2023). By leveraging generative models such as large language models (LLMs), diffusion models, and multimodal systems, AIGC is able to automatically generate text, images, videos, and even interactive experiences. These capabilities are particularly relevant to the advertising industry, where timely, personalized, and creative content is essential to capture consumer attention.

E-commerce platforms—such as Amazon, TikTok, Alibaba, and Google—are increasingly integrating AIGC into their advertising ecosystems (Li et al., 2023). AIGC enables these platforms to combine user data with automated creativity, thereby producing advertisements that are not only cost-efficient but also more engaging. This shift reflects broader transformations in consumer behavior, as customers move from passive reception of information to active engagement with interactive and personalized advertising content.

This paper explores the current state of AIGC in e-commerce advertising, evaluates its benefits and challenges, and considers future directions for both technological development and policy regulation.

2. Current Applications of AIGC in E-commerce Advertising

2.1 Data-Driven Creative Generation

Unlike traditional advertising, which relies heavily on human creativity and intuition, AIGC integrates data analytics into every stage of production. By analysing browsing logs, purchasing behavior, price sensitivity, and inventory levels, AIGC tools generate advertising assets that align closely with consumer intent. Platforms such as Google's DV360 provide cross-channel data and creative asset management, enabling real-time programmatic delivery.

2.2 Personalized and Automated Advertising

AIGC excels at producing personalized advertising at scale. For example, TikTok's *Smart Creative* system automatically generates short video scripts, voiceovers, and visuals tailored to target audiences. Google Ads dynamically inserts product prices, store locations, and promotions into search results. Similarly, Amazon's automated creative tools adapt ad copy to match user queries. This high level of personalization not only improves click-through rates but also strengthens consumer trust by making ads feel relevant.

2.3 Multi-Scenario Content Production

The AIGC adapts to diverse advertising contexts:

- **Search advertising:** Dynamically integrates price, inventory, and location information.
- **Social and video platforms:** These platforms generate 30–60 second scripts, subtitles, and audio tracks.
- **E-commerce storefronts:** Creates adaptive product descriptions and landing page highlights.

Google's "automatically created assets (ACA)" system exemplifies this shift, automatically producing headlines, ad descriptions, and call-to-action elements.

3. Advantages of AIGC in E-commerce Advertising

3.1 Cost reduction and Efficiency

AIGC dramatically reduces the time and resources required to produce creative content. Automated generation minimizes the need for multiple review rounds and allows companies to launch campaigns more quickly. By combining consumer data with creative templates, AIGC avoids inefficient expenditures and focuses resources on high-performing strategies.

3.2 Scalability and Personalization

Traditional advertising struggles to balance scale with personalization. The AIGC solves this problem by using modular templates with variable components. A single campaign can be automatically transformed into hundreds of customized versions. For example, Meta's *advantage+ creative* system generates multiple ad variations by remixing assets. Additionally, AIGC facilitates multilingual adaptation, enabling global businesses to reach diverse audiences efficiently.

3.3 Creative Diversity and Flexibility

AIGC introduces flexibility by generating outputs with different visual and stylistic variations. This helps reduce consumer fatigue caused by repetitive advertising styles. Furthermore, rapid iteration cycles enable advertisers to experiment with creative concepts and incorporate consumer feedback quickly.

4. Challenges and Risks

4.1 Content Homogenization

A key risk of AIGC is the homogenization of content. When algorithms are optimized for engagement, they often converge in similar styles, resulting in repetitive ads across platforms. This threatens consumer attention over time. Solutions include developing multiobjective optimization frameworks, encouraging diverse training datasets, and implementing style-labelling standards.

4.2 Data security and Copyright Concerns

Because AIGC relies on large-scale datasets, it raises issues of privacy, data protection, and intellectual property. Content generated using copyrighted material may inadvertently infringe on existing works, blurring the boundaries of ownership. Addressing these risks requires legal frameworks, such as the EU's *Artificial Intelligence Act*, as well as corporate adoption of content provenance standards (e.g., C2PAs).

4.3 Ethical and Regulatory Issues

In addition to technical risks, AIGC introduces ethical concerns. Consumers may be misled by synthetic content that mimics human creativity, raising questions about authenticity and transparency. Regulatory bodies, such as the Chinese Cyberspace Administration and the European Commission, have begun introducing frameworks to ensure compliance.

5. Future Development Trends

5.1 Privacy and Data Governance

Future AIGC development must prioritize consumer privacy. This includes implementing stricter anonymization techniques, differential privacy, and clearer guidelines on data usage.

5.2 Regulatory Standardization

International cooperation is needed to establish global standards for AIGC in advertising. Emerging frameworks, such as the EU AI Act and China's algorithm governance rules, are likely to serve as models.

5.3 Cross-Industry Collaboration

As AIGC becomes more prevalent, collaboration between technology firms, advertisers, and academia becomes critical. Industry associations, such as the Interactive Advertising Bureau (IAB), are already working on best-practice guidelines.

5.4 Consumer-Centric Innovation

Finally, the future of AIGC lies in creating value for consumers. By focusing on enhancing consumer experiences—rather than solely maximizing engagement—advertisers can ensure sustainable growth in the digital economy.

6. Conclusion

AIGC is transforming e-commerce advertising by enabling scalable, personalized, and efficient content production. The transition from automated copywriting to AI-generated video empowers businesses to reach consumers in new ways. However, challenges related to homogenization, copyright, and data security must be carefully addressed. The future of AIGC in advertising will depend on striking a balance between innovation, regulation, and ethical responsibility. With proper governance, the AIGC has the potential to redefine the relationship between brands and consumers, shaping the next generation of digital commerce.

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Conflicts of Interest

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