AIGC Technology-Driven Venue Display: A Study on the Transformation from Traditional to Digitalization

Yaoyu Chu

Liaoning Communication College, Shenyang, Liaoning, 110000, China

Abstract. With the rapid development of science and technology, artificial intelligence generated content (AIGC) technology has been widely used in various fields, especially in venue display and event planning. The introduction of AIGC technology has brought profound changes to traditional display methods. This paper discusses how AIGC promotes the digital transformation of venue display, and analyzes its influence on audience experience, content creation and display effect. Traditional display relies on static materials and live explanations, but modern audiences need more interaction and immersion. AIGC technology makes content generation more flexible and efficient, and can generate personalized content in real time according to audience feedback, thus improving the sense of participation and information transmission efficiency. This paper analyzes the application of AIGC in practical exhibition, such as VR, AR and interactive projection technology, and discusses how to enhance the visual effect and interactive experience. The research also pays attention to the advantages of AIGC in content creation, such as reducing cost, shortening cycle and improving efficiency. Summarize the challenges and opportunities of AIGC-driven exhibition transformation, and put forward the future research direction. Through the in-depth analysis of the combination of AIGC technology and venue display, this paper hopes to provide valuable reference for researchers and practitioners in related fields and promote the innovation and development of venue display.

Keywords: AIGC Technology; Venue Display; Digital Transformation; Virtual Reality (VR); Augmented Reality (AR).

1. Introduction

In the wave of the digital age, the artificial intelligence generated content (AIGC) technology is rapidly changing the operation mode of various industries, especially in the field of venue display. The traditional venue display usually relies on static exhibition materials and on-site explanations, which is not only inefficient in information transmission, but also difficult to meet the needs of modern audiences for interactive and personalized experience. With the development of technology, the introduction of AIGC technology has brought new possibilities for the exhibition in the venue, which has fundamentally changed the generation and presentation of the exhibition content. By using advanced technologies such as machine learning, natural language processing and computer vision, high-quality content can be generated in real time. The application of this technology not only improves the efficiency of content creation, but also enables the display content to be dynamically adjusted according to the audience's feedback and interest, thus enhancing the audience's sense of participation and immersion. Although AIGC technology shows great potential in the exhibition, its application still faces many challenges, including technology maturity, content quality control and audience acceptance. Therefore, this paper will deeply discuss how AIGC technology drives the digital transformation of venue display, analyze its influence on audience experience, content creation and display effect, and summarize the future development direction. Through the exploration of this field, it aims to provide useful reference for relevant researchers and promote the innovation and progress of venue display.

2. The Evolution of AIGC Technology: From Concept to Application

2.1 The Definition of Aigc Technology and its Core Components

AIGC technology refers to the technology of automatically generating content by using artificial intelligence algorithms and models. The core of this technology lies in the combination of machine learning, natural language processing, computer vision and other artificial intelligence technologies, which can create high-quality text, images, audio and video and other forms of content without direct human intervention. The appearance of AIGC technology marks a fundamental change in the way of content creation, especially in the field of venue display, and the application of AIGC technology has injected new vitality into the traditional display mode.

The core components of AIGC technology mainly include natural language processing (NLP), computer vision, GAN, data analysis and personalized recommendation. Through the synergy of these core components, AIGC technology not only improves the efficiency and effectiveness of the venue display, but also provides a richer and more personalized experience for the audience, and promotes the process of transforming from the traditional display mode to digital and intelligent.

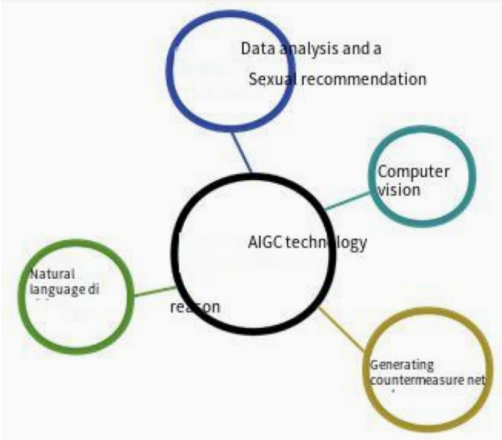


Fig 1. The core components of AIGC technology

2.2 The Development of AIGC Technology and its Application Examples in the Exhibition Hall

The origin of AIGC (Artificial Intelligence Generated Content) technology can be traced back to the early artificial intelligence research in 1950s. With the improvement of computing power and machine learning algorithm, AIGC technology has gradually evolved into a powerful tool that can automatically generate text, images, audio and video content. After entering the 21st century, especially in recent years, the breakthrough of deep learning and natural language processing technology has made AIGC technology widely used.

In the field of venue display, the application examples of AIGC technology emerge one after another, which greatly promotes the transformation of traditional display methods. For example, an international science and technology exhibition uses AIGC technology to generate personalized exhibition content, and exhibitors can generate relevant exhibition materials in real time according to the interests and needs of the audience. This way not only improves the interactivity of the exhibition, but also enhances the audience's sense of participation and experience. Another typical application example is the creation of a virtual exhibition hall. Through AIGC technology, exhibition organizers can quickly generate a high-quality 3D exhibition environment, and the audience can have an immersive experience through virtual reality (VR) equipment. This digital display method breaks the limitation of time and space, and enables the global audience to participate in the exhibition, greatly expanding the audience range.

2.3 Current Trends and Future Prospects of AIGC Technology

With the continuous progress of artificial intelligence technology, AIGC (Artificial Intelligence Generated Content) technology has been widely used in various fields, especially in the exhibition industry, showing great potential and development trend. At present, the main trends of AIGC technology include personalized content generation, real-time interactive enhancement, and multimodal content fusion.

Personalized content generation is becoming an important direction of AIGC technology. By analyzing the user's behavior data and preferences, AIGC system can provide tailor-made display content for each audience . This personalized experience not only enhances the audience's sense of participation, but also makes the exhibition content closer to the audience's needs and enhances the attraction of the exhibition. Real-time interactive enhancement is another major trend of AIGC technology in the exhibition hall. With the help of natural language processing and computer vision technology, AIGC system can realize real-time interaction with the audience. For example, in an exhibition, the audience can interact with the exhibits through voice or gestures, and the system can respond immediately and provide relevant information. This interactive way not only improves the participation of the audience, but also adds interest and dynamics to the exhibition.

3. Challenges and Shortcomings of Traditional Venue Display

3.1 Features and Advantages of Traditional Venue Display

As a form of exhibition with a long history, traditional venue display has unique characteristics and advantages, which still occupies an important position in many industries. First of all, the traditional venue display usually emphasizes face-to-face communication and interaction, which can strengthen the connection between exhibitors and audiences and promote the effective transmission of information. Through the on-site demonstration and explanation, the audience can ask questions immediately, and exhibitors can adjust the display content according to the audience's response, so as to realize more vivid and in-depth communication.

Traditional venue display can often provide a rich sensory experience. The audience can not only see the products at the scene, but also touch, try out and even participate in the product demonstration. This multi-sensory experience can deepen the audience's understanding and memory of products and enhance the brand's awareness and goodwill.

3.2 Limitations of the Traditional Model: Cost, Efficiency and Participation.

Although the traditional venue display has advantages in many aspects, its mode also has obvious limitations, mainly in terms of cost, efficiency and participation. First of all, the cost problem is a big challenge for traditional venue display. Organizing a large-scale exhibition usually requires a lot of money, including booth rental, exhibition transportation, exhibition design, personnel training and so on. These expenses often make it difficult for small and medium-sized enterprises to bear, limiting their opportunities to participate in exhibitions, thus affecting the fairness of market competition.

The problem of efficiency can not be ignored. Traditional venue display often requires long preparation time and complex organizational processes. The preparations for the exhibition include booth design, material production and personnel arrangement, and the whole process is time-consuming and labor-intensive. Participation is also a big shortcoming of the traditional model. Although live communication can enhance interaction, due to time and space constraints, many potential audiences may not be able to attend in person.

3.3 The Lack of Audience Experience and the Improvement of Technical Requirements

There are obvious shortcomings in the audience experience of the exhibition hall, which not only affect the audience's sense of participation, but also limit the overall effect of the exhibition. First of all, traditional display methods often rely on static exhibits and one-way information transmission,

and the audience's interaction at the exhibition site is low. Although exhibitors can give on-site explanations, the audience's participation is often limited to passively receiving information, lacking opportunities for active exploration and interaction. This one-way communication mode makes it difficult for the audience to deeply understand the characteristics and values of the exhibits and reduces their enthusiasm for participation.

Therefore, the need to improve the audience experience urges the exhibition industry to actively explore new technical solutions to meet the expectations of modern audiences for interactivity, information acquisition efficiency and immersion. By introducing AIGC technology and other advanced technologies, exhibition organizers can create a richer and more personalized exhibition experience, thus enhancing the audience's participation and satisfaction .

4. AIGC Technology How to Reshape the Exhibition Experience of the Venue

4.1 Application of AIGC Technology in Content Generation and Display

The introduction of AIGC (Artificial Intelligence Generation Content) technology is profoundly changing the way of content generation and display in the venue, making it more efficient, flexible and personalized. First of all, AIGC technology can automatically generate high-quality text, images and video content, which greatly reduces the time and cost required for manual creation in traditional exhibitions. For example, in the preparation stage of the exhibition, exhibitors can use AIGC tools to quickly generate exhibits introduction, promotional materials and presentations. This automatic content generation not only improves work efficiency, but also ensures the consistency and accuracy of information.

The application of AIGC technology enables the display content to be adjusted in real time according to the audience's needs and feedback. At the exhibition site, AIGC system can automatically generate personalized display content by analyzing the audience's behavior data and interaction. For example, when the audience shows strong interest in a product, the system can provide more detailed product information, use cases or related videos in real time to enhance the audience's sense of participation and experience. This ability of dynamic adjustment makes the exhibition content closer to the needs of the audience and improves the display effect.

4.2 The Promotion of Interactive and Personalized Experience

The application of AIGC (Artificial Intelligence Generated Content) technology has significantly improved the interactive and personalized experience of the exhibition, enabling the audience to interact with the exhibition content in a more active and participatory way. First of all, AIGC technology enables the exhibition to dynamically adjust the display content according to the audience's interests and behaviors through real-time data analysis and feedback mechanism. For example, when visitors interact with exhibits through mobile devices or touch screens, AIGC system can instantly identify their preferences and automatically generate relevant supplementary information or recommended content. This real-time response not only enhances the audience's sense of participation, but also makes the display content more suitable for the audience's needs.

The personalized recommendation function of AIGC technology further enhances the audience's experience. By analyzing the historical behavior and preferences of the audience, AIGC system can provide tailor-made exhibition routes and content recommendations for each audience [3]. For example, in a large-scale science and technology exhibition, the audience can input their personal interests, and the system will generate personalized exhibition guides to recommend exhibits and explanations related to their interests. This personalized experience enables the audience to obtain information more efficiently and improve their satisfaction and participation.

5. Digital Transformation: The Future Road of Exhibition in the Venue

5.1 The Necessity and Urgency of Digital Transformation

With the rapid development of science and technology and the constant change of market environment, digital transformation has become an urgent task for the exhibition industry. First of all, digital transformation is the key to enhance competitiveness. Under the background of globalization and informatization, consumers' needs are increasingly diversified and personalized, and the traditional display methods can no longer meet the expectations of modern audiences. Through digital transformation, exhibition organizers can use advanced technical means, such as AIGC, virtual reality (VR) and augmented reality (AR), to provide a richer and more interactive display experience, thus attracting more audiences and enhancing the brand's influence [3].

Digital transformation is not only an inevitable trend of the development of the exhibition industry, but also an urgent need to enhance competitiveness, improve efficiency, enhance audience experience and meet market challenges. Only by actively promoting digital transformation can the industry be invincible in the future competition.

5.2 Strategies and Steps to Implement Digital Transformation

Digital transformation is a systematic project, which requires clear strategies and steps to ensure the smooth progress of transformation and the realization of expected results. First of all, making clear strategic objectives is the first step to implement digital transformation. Exhibition organizers need to clarify the purpose of transformation, such as improving the audience experience, improving operational efficiency or expanding market coverage. These goals will provide guidance for subsequent policy formulation and resource allocation.

Comprehensive market research and demand analysis are very important. Through in-depth analysis of the behavior habits, preferences and needs of the target audience, organizers can identify the areas that need to be focused on in the digital transformation. This process can be carried out through questionnaires, interviews and data analysis to ensure the scientific and effective transformation strategy. Choosing the right technical tools and platforms is the key link to implement digital transformation. AIGC technology, virtual reality (VR), augmented reality (AR) and data analysis tools are all important technical means to improve the exhibition effect. Organizers need to choose suitable technical solutions according to their own needs and budgets, and establish cooperative relations with technology suppliers to ensure the smooth implementation of technology. At the same time, the organizer also needs to set key performance indicators (KPI) to evaluate and adjust the effect in the implementation process. Finally, training and supporting team members is the guarantee for the success of digital transformation.

6. Looking to the Future: The Potential and Challenges of AIGC Technology in the Exhibition Hall

6.1 Future Development Direction of AIGC Technology

With the development of artificial intelligence technology, AIGC technology shows a broad application prospect in the exhibition hall, and its future development direction mainly focuses on personalization and intelligence. The future AIGC system will analyze the audience's data and preferences more accurately, generate highly personalized exhibition content, covering exhibits recommendation, exhibition layout and interactive experience, and provide customized exhibition experience for each audience. At the same time, AIGC technology will be integrated with emerging technologies such as VR and AR to create an immersive display environment and enhance the audience experience. In addition, AIGC's ability in data analysis and decision support will also be enhanced, helping exhibition organizers to optimize their strategies and improve the exhibition effect. With the maturity of technology, the ethical and security issues of AIGC technology also need to be

paid attention to, so as to ensure that the technology application conforms to ethical standards and protect users' privacy.

6.2 Future Trends and Innovations in Venue Display

Personalized experience will become an important feature of future venue display. With AIGC technology, exhibition organizers can generate personalized display content and recommendations in real time according to the audience's interest and behavior data. This personalized service will enhance the audience's sense of participation and satisfaction, so that every audience can get a tailor-made experience, thus enhancing the brand's appeal. Interaction will be further enhanced. In the future, the venue display will provide a variety of interactive ways through smart devices and applications, such as real-time question and answer, voting and feedback mechanisms. The audience can not only interact with the exhibits, but also participate in the content generation of the exhibition, forming two-way communication. This interaction not only enhances the participation of the audience, but also provides valuable feedback information for the exhibition organizers to help them optimize their exhibition strategies.

Data-driven decision-making will become an important support for future venue display. Through the real-time analysis of audience behavior and exhibition effect, organizers can adjust the content and form of the exhibition in time to ensure the success of the exhibition. Data analysis can not only help identify the needs of the audience, but also provide scientific basis for future exhibition planning.

7. Conclusion

With the acceleration of digital transformation, AIGC technology provides efficient content generation and display solutions for exhibition organizers, remoulds the way of audience participation, and enhances interactivity and personalization. Although the traditional venue display has advantages in communication and brand image building, its limitations appear, and the industry needs to adapt to new needs. Looking forward to the future, AIGC technology will continue to promote exhibition innovation in the venue, bringing rich exhibition forms and efficient operation mode. However, with ethical and security challenges, the industry needs to balance innovation and standardization to ensure sustainable development. The exhibition transformation driven by AIGC technology reflects technological progress and is an important way for the industry to adapt to market changes and enhance its competitiveness. In the future, the venue display will be more intelligent, personalized and interactive, bringing new experiences to the audience and pushing the industry towards new glory.

References

[1] Shen Xiaoyan. Application of AIGC in the design and production of new media digital platform [J]. Screen printing, 2024, (21): 101-104. doi: 10.20084/j.cnki.1002-4867.2024.21.030.

[2] Lu Weiping, Liu Hailong. Research on innovative design of digital media technology-enabled intelligent experience hall [J]. Science and Technology Communication, 2024,16 (19): 11-13+17.doi: 10.16607/j. cnki.1674-6708.2024.19.

[3] Li Bai' ao. Research on the Immersive Archives Exhibition Service Based on User Experience [D]. zhengzhou institute of aeronautical industry management, 2024. DOI: 10.27898/d. cnki. gzhgl. 20024. 000000000003[1] Ling F, Kaixi F. Research on the application scenarios of AIGC in the rural cultural and tourism industry[C]// Shanghai Municipal People's Government, UNESCO. Urban-rural Integration and Beautiful Rural Design-Proceedings of the 10th Oriental Design Forum. Tongji University;China Academy of Art;, 2024: 31-45. DOI:10.26914/c.cnkihy.2024.047859.

[4] Liu C ,Ouyang X ,Bai R , et al. Risk Analysis of AIGC in Market Regulation[C]// East China Jiaotong University School of Electrical and Automation Engineering. Proceedings of 2nd International Conference on Financial Innovation, FinTech and Information Technology(FFIT 2023). China Academy of Electronics and Information Technology;, 2023: 164-179. DOI:10.26914/c.cnkihy.2023.084699.

[5] Gao R . AIGC Technology:Reshaping the Future of the Animation Industry[C]// Wuhan Zhicheng Times Cultural Development Co., Ltd.. Proceedings of 2nd International Conference on Artificial Intelligence and Communication Technology (AICT 2023). North University of China;, 2023: 149-153. DOI: 10. 26914/ c. cnkihy.2023.058429.

[6] Diligence, Li Xiaodong. Displaying the original meaning of space and conveying its visual context [C]// Industrial Design Branch of China Mechanical Engineering Society. Proceedings of the 2007 International Conference on Industrial Design (Volume 1/2). tianjin polytechnic university; Nanchang University; , 2007: 365-367.