January - June 2025 ASEAN JOURNAL OF MANAGEMENT & INNOVATION

ASEAN Journal of Management & Innovation
Vol. 12 No. 1, 115 - 122
©2015 by Stamford International University
DOI: 10.14456/ajmi.2025.9
ajmi.stamford.edu
Received: April 29, 2025
Revised: May 21, 2025
Accepted: May 21, 2025

Multi-Dimensional Application of Music Artificial Intelligence in Arts Management

Chananart Meenanan
Princess Galyani Vadhana Institute of Music, Thailand
Chananart7@gmail.com
Shengjun Yang
Hunan Normal University, Chaina
179287572@qq.com
Zhidan Xiao
Hunan Normal University, Chaina
Xiaozhidan1008@163.com

Abstract
Nowadays, as the rapid development of AI technology takes place, music artificial intelligence is gradually becoming an important topic in the field of arts management. This paper aims to study the role that music artificial intelligence can play in arts management, and elaborates on three aspects: technological progress, interdisciplinary cooperation and legal norms, trying to tap the huge potential of music artificial intelligence in optimizing user experience for intelligence, improving market decision-making ability, promoting innovation and creation, strengthening copyright protection and cross-cultural communication and integration.

Keywords: Music Artificial Intelligence, Arts Management, Management Efficiency, Decision Optimization, Audience Experience

1. Introduction

With the rapid development of artificial intelligence technology, music AI mainly empowers various fields such as music creation, performance, promotion and management through machine learning and deep learning, natural language processing, and big data analysis technologies, thus ushering in unprecedented opportunities for change and innovation in related fields. The research of music artificial intelligence in the field of arts management is one of the important trends of the integration of arts and technology. The research on how to optimize the arts management process by using artificial intelligence technology to enhance the efficiency of the music industry and stimulate creativity will provide theoretical support and practical guidance for the sustainable development of the music industry in the future.

2. The Theoretical Basis of Study

In Arts Management published in 2016, Xie Dajing introduced in the first chapter "Introduction" that when arts exist in the form of group activities, there is a need for management. "Management" here refers to the planning, organization, direction, coordination and control of collective artistic creation and production activities, that is, to create a good business environment for artists' creation and the pursuit of artistic pleasure by the general audience (Chen & Liu, 2023; Xie, 2016). With the rapid development of artificial intelligence technology, interdisciplinary integration is imperative, and the field of arts management will also usher in a new artistic sense and business environment. The application of music artificial intelligence in the field of arts management relies on a multidisciplinary theoretical foundation, including computer science, musicology, natural language processing, big data analysis and other fields.

2.1 Arts Management in The Context of Large Models

Large model, also known as large artificial neural network model in deep learning, has a large parameter scale and complex structure, which can effectively process and understand a large number of complex data. It has been applied to many aspects of arts management, covering the creation, display, promotion, marketing, copyright management, etc., and its introduction and application will bring more efficient and intelligent solutions (Huang & Zhang, 2022). The application of large models will bring great changes to the field of arts management and will also profoundly affect the future development of arts management and related fields.

(1). Innovation of artistic works

Large models analyze a large number of artistic works and generate new works or creative suggestions, which will play a great role in helping artists' creative process, provide different perspectives and inspiration for artists in the creative process, and thus promote artists to break through the original thinking set, expand the scope of creation, and improve the creative efficiency. For example, variations of works of arts produced through generative adversarial networks (Gans), or works of arts based on a particular theme, will allow artists to break away from existing modes of thinking and work from a new perspective.

(2). Arts works promotion and marketing

The large model provides accurate marketing strategies and suggestions for arts managers in the promotion and marketing of arts works. Based on the analysis of market trends and user preferences, as well as in-depth mining of user behavior data and content on social media platforms, the large model can accurately predict the popularity of artworks and formulate personalized promotion plans and strategies for them, thus improving the exposure rate and sales efficiency of works. Through such accurate marketing strategies and suggestions, arts managers can better carry out marketing and marketing.

(3). Arts certification and copyright management

Through the application of image recognition and data analysis technology, large model can accurately identify and verify the authenticity and integrity of arts works and play an important role in the copyright management of arts works (Li & Wang, 2021; Zhou & Li, 2023). In recent years, with the continuous improvement of blockchain technology, the large model can fully protect the rights and interests of artists and collectors by establishing a safe and transparent arts trading platform and effectively prevent the occurrence of arts piracy and infringement. Therefore, the large model is of great significance for the healthy development of the market in the arts field.

(4). Planning and management of cultural and artistic activities

In today's society, the future development of the arts market and the accurate prediction of the future trend of cultural and artistic activities are very important for arts managers and cultural planners. They can analyze historical data and social trends through large models, and after obtaining relevant data, formulate forward-looking and strategic cultural and arts activity plans, so as to make more reasonable use of resource allocation, and greatly improve the sustainable development ability of the arts market and culture and arts while increasing the participation and social influence of activities.

The intervention of the large model can better optimize and improve all aspects of arts management, improve work efficiency and accuracy, and bring new development opportunities and solutions, so as to create and promote arts in many fields, including arts creation and promotion, as well as planning and copyright management of cultural and artistic activities. It brings more effective and innovative ways of development and application.

2.2 Arts Management in The Context of Big Data Analysis

The core of big data analysis is the application of advanced algorithms and technologies to process and analyze a large number of complex and diverse data, from which valuable information can be extracted for comparison. Through the establishment of big data analysis systems, enterprises and organizations can identify patterns and conduct correlation analysis to grasp trends, thereby supporting decision making and operation optimization, and promoting innovation and development (Sun & Zhao, 2022). In the field of arts management, a large number of user behavior data and music playback data are centrally analyzed to discover trends and user preferences in the music market, providing a solid theoretical basis for personalized music recommendation, market analysis and audience management, and also providing strong support for the music industry.

(1). Analysis and prediction of arts market

By collecting and analyzing a large amount of arts market data in the world today, including auction transaction records, arts market price trends, and sales of artists' works, arts managers can dig these data deeply to understand dynamic market changes and potential trends, and predict the future development direction of the market. And to develop more forward-looking strategies for the promotion and marketing of artworks. Big data analysis technology enables arts managers to have a better understanding of users' preferences and behavior patterns. Personalized arts recommendation and customization services are realized through the analysis of users' browsing history, collection preferences, purchasing habits and other data.

(2). Transparency of arts market and optimization of resources

The establishment of an arts trading platform and database can record the context and transaction history of artworks, so as to effectively curb the counterfeiting and piracy of artworks and protect the legitimate rights and interests of the arts market and the safety of transactions. At the same time, the use of big data technology can promote the transparency of the arts market and the improvement of circulation efficiency, which is an important measure to protect the healthy development of the arts market. In the planning of cultural and artistic activities, big data helps arts managers optimize and adjust resource allocation and activity plans according to current social hot spots and cultural consumption trends, so as to formulate more targeted and attractive cultural activity plans, improve the participations rate and social influence of activities, and improve resource utilization efficiency.

(3) Arts education and popularization of arts and culture

The role of big data in the field of arts education is also significant. Based on the massive analysis of students' learning data and artsistic interests, it develops personalized teaching resources and course content, so that students can get better learning experience and teaching results. In addition, in the promotion of arts and culture, big data can expand the dissemination scope and influence of arts works, promote the popularization of arts and cultural heritage, and bring more new ways and approaches to the field of arts education (Ministry of Culture and Tourism, 2023).. Big data technology has brought a lot of help to the arts management work, whether it is the analysis of the market or the service to users, from the planning of cultural activities to the promotion of arts education, it has promoted the arts management work to a more efficient and intelligent direction. In the future, with the continuous development of science and technology and the continuous expansion of data application scope, big data analysis technology will play an increasingly significant role in the field of arts management.

2.3 Arts Management Under Signal Processing and Computer Vision

Signal processing is a discipline that involves the analysis, modification, and synthesis of signals in order to improve signal quality or extract useful information. Signals can be various forms of data, such as audio, video, sensor data, etc. Computer vision is the technology that

allows computers to understand and interpret visual information through images and videos. The goal is to simulate the human visual system in order to automate visual perception tasks. Computer vision involves image processing, pattern recognition, machine learning and other technologies, and has a wide range of applications, including face recognition, autonomous driving, medical image analysis, industrial inspection and augmented reality. Based on signal processing and computer vision technology, the rapid development of virtual reality (VR) and augmented reality (AR) technology in recent years has brought revolutionary changes to the arts experience. Combined with AI technology, VR/AR can provide an immersive music experience. For example, at present, there are more AI-generated virtual bands and virtual concerts, and the audience experiences realistic interactive scenes in virtual reality. This kind of technology has a wide range of application prospects in music education, music performances and cultural communication in the future. In the virtual arts course, students participate in various music courses through VR technology, and experience interactive arts teaching mode to improve creative skills and artsistic perception ability; In virtual reality concerts, musicians and bands can hold concerts in virtual scenes no matter where they are, and audiences around the world can enjoy immersive music performance experiences as if they were in the scene through VR devices. In drama and dance performances, the use of VR technology can also create corresponding virtual stage and theater space, the use of digital modeling of virtual people and artsists on the same stage for drama and dance performances, greatly enhancing the audience's sense of participation and interaction.

3. The Research Status of Music Artificial Intelligence in Arts Management

In recent years, the application and research of music artificial intelligence in arts management have made remarkable progress. The rapid development of AI technology has made it more and more widely used in music creation, market analysis, user experience optimization, copyright protection and education and training.

(1) Market analysis and audience management

Through big data analysis tools, the music artificial intelligence system can analyze users' listening habits, dig deeply into audience behavior data and preference information, and finally provide personalized music recommendation services. This personalized recommendation system not only improves the user experience, but also helps arts managers develop more effective marketing strategies, optimize resource allocation, and provide accurate market analysis data. For example, Spotify, Apple Music, etc., based on collaborative filtering, content analysis and mixing model of streaming media platform recommendation system, can provide users with accurate music recommendation. In China, the research in this field is also continuing to advance. Chinese Academy of Sciences, Central Conservatory of Music and other relevant research institutions and Baidu Music, QQ Music and other platforms have also carried out in-depth research on big data analysis and recommendation systems, and developed a series of music recommendation systems that can effectively improve the recommendation accuracy and user satisfaction.

(2) Innovative performance forms

In the Introduction to Arts Management published in 2018, the author Zheng Xinwen pointed out in the second chapter, Mastering the Soul of Arts Groups: Programs, that a successful program must have its "characteristics", that is, it is different from other programs, and it is these "characteristics" that make it have a strong "attraction" to the target market. The "creativity" and "artistic level" of the artistic product itself are often the core elements of this attraction. The introduction of digital technology has created more innovative performance forms for students. Making full use of virtual stage design and VR technology can provide students with a new performance experience and artistic expression form based on the

traditional performance framework, thus stimulating students' artistic innovation thinking. The organic combination of arts management and digital technology can enhance students' comprehensive literacy, so that they can adapt to the development wave of the digital age in their future careers, so as to better adapt to the changing cross-field work environment. For example, after Wuhan University Cultural Heritage Intelligent Computing Laboratory was successfully selected into the list of Philosophy and Social Science Laboratories of the Ministry of Education in 2021, its core work focuses on the use of intelligent digital technology to enable the protection and activation of cultural industries and is committed to the development of basic liberal arts experimental platforms and scientific devices. In the cultural heritage digital interpretation theater project, the lab mainly focuses on the immersive interactive play creation of cultural heritage interpretation and constructs a panorama of cultural digital heritage through setting specific scenes, vividly presenting Chinese stories.

In September 2023, at the National Performing Arts Expo jointly sponsored by the Ministry of Culture and Tourism and the People's Government of Sichuan Province, the drama Department of Sichuan Vocational College of Arts and China Unicom jointly built the 5G+VR virtual stage scene teaching demonstration experience space, aiming to use 5G network and virtual reality technology. To provide students with a more immersive and interactive drama teaching environment. This cooperation will enable students to perform and practice in simulated stage scenes through virtual reality technology, while utilizing the high-speed and low-latency characteristics of 5G networks to achieve remote real-time interaction and multi-party interaction, bringing new possibilities and experiences to drama teaching.

Music AI can help break down the barriers between traditional artistic creation and technological innovation. By building a virtual reality platform and integrating digital technology into artistic creation, it is helpful to keep pace with The Times in performance production, bring forth the new, and integrate more scientific and technological elements, so as to better meet the aesthetic needs of contemporary audiences and cultural markets.

(3) Management and protection of music copyright

In recent years, the application of AI technology in music copyright protection and management has gradually attracted wide attention from society. Through blockchain technology and audio fingerprint recognition, AI can quickly and accurately achieve automatic identification and copyright tracking of music works. For example, foreign audio recognition services such as Shazam and ACR Cloud can efficiently identify musical works and provide copyright information by analyzing features such as the rhythm and tone of a work, comparing it with a reference database containing millions of songs, and quickly matching the "fingerprint" or key acoustic features of the target song. This technology can not only effectively prevent piracy but also ensure that music creators can get copyright protection and corresponding remuneration, thus promoting the healthy development of the music industry. In recent years, domestic research in this field has also been steadily advancing, among which the "ant blockchain" technology launched by Alibaba has been more prominent in copyright protection and tracking. In addition, domestic research institutions, such as Tsinghua University and the Central Conservatory of Music, have also carried out in-depth research in audio fingerprint recognition and copyright management, and have developed some technologies and systems with independent intellectual property rights.

(4) Music education and training

First, the integration of VR virtual reality technology and arts management discipline has realized the innovation of course teaching methods. The Arts Management Department of Xinghai Conservatory of Music is committed to training new arts management talents who meet the needs of modern cultural undertakings and cultural industry market. In recent years,

in the scientific research projects carried out, they have gradually integrated contemporary digital virtual technology and practical courses of performance production in depth and carried out stage design and rehearsal by digital means, including stage design, lighting effects, sound design, etc., and constantly innovated the teaching methods of courses.

Second, in the field of music training, the intelligent music teaching system built by AI technology provides students with personalized learning plans and real-time feedback. For example, AI music learning application platforms such as Yousician and Flowkey can help students learn the basic structure, sound principle, sound characteristics and various related professional music theoretical knowledge more efficiently. These applications not only improve the quality and efficiency of music education but also provide new tools and methods for the education and training sector in arts management. Many domestic companies are also increasing research investment in this field, which uses AI technology to build VIP sparling, music rabbit and other online music education platforms, can provide personalized music teaching services, and achieve real-time error detection and feedback, greatly improving the learning effect of students.

(2) The Influence of Music Artificial Intelligence on Arts Management

Music artificial intelligence is gradually becoming an important tool and research hotspot in the field of music industry and arts management, which not only shows great potential in music creation, performance, education, etc., but also has a profound impact on improving management efficiency, optimizing decision-making process, and promoting artistic innovation.

(1) Reform of management mode

Data entry, statistical analysis, market research and other traditional arts management work, often involve a lot of repetitive labor, but also more prone to artificial operation of the mistakes. Music artificial intelligence with big data analysis, machine learning and other technologies will greatly improve the efficiency of arts management by automating these tasks and adopting intelligent scientific and technological means. For example, through big data analysis, you can quickly gain insight into market trends, and AI can help arts managers develop more scientific marketing strategies. AI uses automated data collection and analysis to obtain more accurate characteristics of the audience's needs.

(2) Improvement of decision-making and efficiency

Big data analytics provides comprehensive data analysis and objective predictions in the background to help managers optimize the decision-making process with high quality. Music AI can even help managers identify potential risks in the market, with the collection and analysis of a large amount of relevant data, to minimize the probability of decision-making errors. Compared with the traditional decision-making mode, the process of data collection and analysis in the past takes a long time, resulting in lagging decision-making. Today, managers can make decisions in real time based on real-time processing and rapid analysis of music AI massive information databases, thus improving the timeliness and accuracy of decisions.

(3) Promote artistic innovation and improve audience experience

The application of AI technology in arts management can not only provide management tools for managers but also become an important force to promote artistic innovation, so as to drive the diversification and innovation of artistic creation. Such as the use of AI to generate music intelligent arrangements and other technologies to stimulate artists' creative inspiration and potential and simulate different styles of music to assist artists to explore and try new music styles and forms of expression. Through AI technology, music AI can also facilitate cross-border collaboration and convergent innovation, enabling artists from different fields to work

together to create new works that integrate multiple artistic elements.

(4) Integration of educational resources and construction of practice bases

Using the powerful data processing and learning ability of music artificial intelligence, it has collected and sorted out a large number of music learning resources such as teaching materials, video tutorials, and performance demonstrations around the world, providing personalized learning content and paths for educators and learners. At the same time, digital technology is used to create practice bases for students to create virtual reality and augmented reality music learning Spaces, so that they can perform and learn music in simulated scenes and realize real-time remote interaction and practical practice.

5. Future Challenges and Development

Although music AI shows broad application prospects in arts management, its development and application also face a series of challenges, which are mainly reflected in the aspects of technology, safety, ethics, law and social acceptance.

(1) Technical complexity

Music AI technology involves a number of complex fields, among which deep learning, natural language processing and big data analysis enable music AI to have certain perceptual capabilities. But to truly read human emotions, technology is more difficult to achieve. For example, music is a multidimensional signal with multiple characteristics such as time, frequency, amplitude, etc. To accurately analyze and generate music, AI needs to continuously process and understand more such complex signals. Artists usually have strong cultural backgrounds and distinct personal preferences. In order to realize cross-cultural music creation and personalized recommendation, the AI corpus needs to be continuously expanded, learn as much music knowledge as possible, and cultivate keen cultural understanding ability. At the same time, artificial intelligence also needs to narrow the gap with human perception in creativity and emotional expression, in order to be closer to human emotions.

(2) Data privacy and security

In the process of training and optimization, music AI needs to incorporate a large amount of user data, including user listening history and behavioral data, for processing. If not handled properly, it may lead to the leakage of user data, which in turn constitutes a privacy violation. These problems are directly related to the privacy rights of users and may lead to a crisis of trust in the application of technology. Therefore, in the process of data collection and use, it must be done in strict accordance with relevant laws and regulations, so as to ensure the security of user data.

(3) Copyright and legal issues

Ai-generated music involves complex copyright issues. The current legal system has no clear provisions on whether the works created by AI have copyright, copyright ownership and other issues. How to ensure the legality and copyright protection of AI-generated works is an urgent problem to be solved.

(4) Ethics and social acceptance

The creation and recommendation of generative music AI may raise several ethical issues. Can AI replace humans in music creation? Will artistic creation become mechanized and homogenized in the future? How receptive are users to music created and recommended by AI? The development and application of music AI technology should fully consider and solve these problems to ensure that its future development is in line with social ethics and user acceptance. In the future, the rapid development of technologies such as deep learning, natural language processing and big data analysis will certainly promote the creative ability and quality of music artificial intelligence. The constant iteration of new technologies such as Generative

Adversarial Networks (GAN) and Transformer models will certainly make AI more creative and expressive in music creation. In addition, the improvement of emotional computing and audio signal processing technology will also further optimize the ability of music AI in emotional expression and music analysis. At the level of continuous integration and application development in various fields, with the upgrading and technological innovation of hardware technologies such as virtual reality (VR) and augmented reality (AR), they will certainly provide a more immersive and interactive music experience. In terms of intelligent copyright protection and management, with the progress of blockchain technology, more secure and transparent copyright tracking, protection and management will ensure the rights and interests of music creators, thus promoting the healthy development of the music industry.

6. Conclusion

The research of music artificial intelligence in the field of arts management is full of imagination and infinite hope. With the continuous progress of science and technology, music AI will certainly play a pivotal role in promoting music creation and improving management efficiency, optimizing user experience, and promoting innovation and sustainable development of the music industry. However, at the same time, it is also faced with many ethical and legal challenges, and relevant practitioners need to continue to explore and make unremitting efforts for artificial intelligence to better empower arts management, jointly promote the modernization and intelligence of arts management, so as to comprehensively enhance efficiency, innovation and sustainable development of the arts industry. The wheel of history rolls forward, its trend is unstoppable, and the future of science and technology is full of infinite possibilities.

Reference

Chen, X., & Liu, Y. (2023). AI in music and arts management: Technological foundations and ethical challenges. Springer.

Huang, L., & Zhang, W. (2022). Big data analytics in music market prediction: A case study of Chinese platforms. *Journal of Arts and Technology, 15*(4), 301-318.

Li, R., & Wang, T. (2021). Blockchain for music copyright management: A comparative analysis of global practices. *International Journal of Cultural Policy, 27*(3), 412-430.

Ministry of Culture and Tourism, China. (2023). Guidelines for AI integration in performing arts education. Beijing: Cultural Development Press.

Sun, M., & Zhao, K. (2022). Virtual reality in music education: Enhancing creativity through immersive experiences. *Music Education Research, 24*(2), 189-205.

Xie, D. (2016). Arts management: Principles and practices (2nd ed.). Peking University Press.

Zheng, X. (2018). Introduction to arts management. Shanghai Conservatory of Music Press.

Zhou, Y., & Li, H. (2023). AI-generated music and copyright law: A global perspective. *Journal of Intellectual Property Rights, 18*(1), 55-72.