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Adaptation of Dance Performance Forms to Evolving Environments

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Abstract:

This study explores how dance performance forms adapt to changing environments, focusing on digital technology, multicultural integration in the process of globalization, and the impact of changes in the social environment on dance performance. By analyzing the application of technologies such as virtual reality (VR), augmented reality (AR), and mixed reality (MR) in dance, the study reveals how these technologies provide new creative spaces and expression techniques for dance performances. At the same time, this article also deeply explores the multicultural integration of dance performance forms in the context of globalization and analyzes how dancers and choreographers balance traditional culture and modern innovation in creation. In addition, research also explores the environmental adaptation of dance in specific cultural contexts, including responses to ecological awareness, social crises, and cultural inheritance. Through these studies, this paper proposes a development strategy for dance performance forms in the context of the new era, providing theoretical and practical guidance for future dance creation and practice.

Keywords:

Dance performance forms
Digital technology
Virtual reality
Multicultural integration
Environmental adaptation
Dance innovation.

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1. Introduction

As a comprehensive art form, dance performance has demonstrated a high degree of adaptability to the evolving social, cultural, and technological landscapes. The rapid advancements in science and technology since the 20th century have had a particularly profound impact on the forms of dance performance. Digital technologies, particularly virtual reality (VR) and augmented reality (AR), have introduced a new frontier for dance. VR technology enables dancers to perform in virtual spaces, interact with digital elements, and offer audiences an enhanced immersive experience [1]. For example, through VR technology, dancers can explore diverse stage designs and space layouts in virtual environments, creating unlimited stage possibilities [2]. AR technology can superimpose virtual content on the

real stage, enriching the audience's visual experience and providing real-time visual feedback to assist dancers during performances [3]. The application of holographic projection technology also makes dance performances appear beyond reality. By combining virtual images with the dancers' real movements, stunning visual effects on stage are created [4].

Globalization and the integration of multiculturalism have also profoundly affected dance performance. Dance styles and elements from different cultural backgrounds gradually merged to form a rich and diverse form of dance expression. This multicultural integration not only broadens the expression space of dance art but also provides dancers and choreographers with more creative materials. However, the challenge of integrating modern technology and multiculturalism while preserving the essence of traditional dance has become a significant issue in contemporary dance performances [5]. The fusion of modern and traditional dance has emerged as a crucial direction in dance creation, influencing not only movements and music but also stage design, costumes, and props [6].

In recent years, the global pandemic has had a significant impact on dance performance forms. Offline performances are restricted, and online performances and live broadcasts have become important ways for dance artists to interact with audiences. This change is not only a response strategy to the real environment but also provides a new development direction for future dance performances. Performance forms that integrate online and offline, such as mixed reality (MR) performances, bring new possibilities to dance performances, and audiences can also experience diverse viewing experiences across various media environments [7]. Meanwhile, online performances have expanded the communication channels for dance, enabling audiences to watch performances anytime and anywhere and interact with artists and fellow viewers globally [8]. This form of performance enriches the audience experience and provides dance artists with more opportunities to interact with the audience.

The needs of modern audiences for dance performances are also constantly changing. They pay more attention to participation and interactivity, hoping to connect with performers through diverse channels. The development of digital technology provides dance performances with more possibilities for interaction with the audience, such as real-time feedback, virtual reality experience, and so on. This interactivity not only enhances the audience's viewing experience but also provides more opportunities for the creation and presentation of dance performances [9]. Therefore, exploring how to better integrate technology, audience aesthetic changes, and multicultural backgrounds in dance performances has become the focus of current research.

The purpose of this study is to explore how dance performance forms adapt to changing circumstances, including advances in digital technology, changes in audience aesthetics, and the multicultural integration brought about by globalization. By analyzing the practice of existing dance performance forms in terms of technology application, online and offline integration, etc., this study summarizes the strategies for dance performances to adapt to environmental changes and provides guidance for the development of future dance performances.

Theoretical significance: This study deepens the understanding of the integration of dance art and technology. Case analysis of the application of digital technology in dance performances reveals the interactive relationship between technology and art, offering a new perspective on the theory of dance art [10]. By exploring how dance performance forms integrate multicultural backgrounds and digital technology, the development path of dance art in the new era is revealed.

Practical implications: The research results will provide useful guidance for dance artists, choreographers, and educators. With the widespread application of digital technology in performing arts, dance practitioners need to master new technologies and creative methods. This study inspires innovative creations for dancers and choreographers by summarizing the application experience of digital technology, online and offline integration, along with multicultural expression, has become a key feature in contemporary dance performances [11]. In addition, through surveys on audience preferences, understanding the audience's acceptance of different performance forms will help dance performers and production teams better design and present works and enhance the audience

experience.

2. Literature review

2.1. Digital technology and dance performance

The integration of digital technology into dance performance has created new opportunities for innovation. Virtual reality (VR), augmented reality (AR), and mixed reality (MR) technologies have significantly transformed how dance performances are created and experienced. With VR, dancers can perform in virtual spaces that are impossible to replicate in the real world, offering a new dimension to performance art [10]. For instance, VR allows dancers to explore fantastical worlds and interact with virtual objects in ways that were previously unimaginable [11].

Augmented reality (AR) enhances the traditional stage by superimposing digital elements onto the physical environment, providing audiences with a unique viewing experience. AR technology has been used in several contemporary dance performances to add layers of meaning and depth to the choreography, blending the real and virtual worlds seamlessly [12]. This technology not only expands the creative possibilities for choreographers but also allows audiences to engage with the performance in new and interactive ways.

2.2. Influence of multiculturalism on dance performance

Globalization has led to the integration of diverse cultural elements in contemporary dance performances. This has resulted in hybrid forms of dance that combine traditional movements with modern choreography, reflecting the interconnectedness of the global community [13]. For example, many contemporary choreographers are incorporating elements from African, Asian, and Latin American dance traditions into their work, creating a rich tapestry of cultural expression [14].

Multicultural integration in dance allows for a more inclusive and dynamic form of expression, where different cultural narratives are woven together to create something entirely new. This fusion of cultures not only enriches the dance performance but also serves as a reflection of the increasingly diverse world people live in [15].

2.3. Environmental adaptation of dance in specific cultural contexts

The use of technology in dance has also shifted the way audiences engage with performances. Interactive technologies, such as motion sensors and audience-triggered effects, have allowed audiences to become active participants in the performance, rather than passive observers [16]. This interactivity creates a more immersive experience, where the boundaries between performer and audience are blurred. The development of digital platforms has further expanded this interaction, enabling global audiences to participate in performances from remote locations.

2.4. Future directions in dance and technology

As technology continues to advance, the future of dance performance will likely see even more integration of digital tools. From wearable technology that tracks and enhances dancers' movements to AI-driven choreography, the possibilities are endless. The continued development of digital tools will undoubtedly push the boundaries of what is possible in dance, allowing artists to explore new forms of expression.

3. Methods

3.1. Research design

This study adopts a mixed-methods research design, combining both qualitative and quantitative approaches to examine the role of interdisciplinary integration in dance education. Specifically, the research explores how the combination of traditional dance and modern technology can influence students' creativity, critical thinking, and performance skills. The integration of VR, AR, and other digital tools with traditional dance education serves as the foundation for the experimental group, while the control group follows a more conventional dance curriculum.

3.2. Participants

The study sample includes 80 students from different universities who are enrolled in dance programs. The participants were randomly divided into two groups: 40 students in the experimental group, who participated in the interdisciplinary curriculum, and 40 students in the control group, who received traditional dance training

without the use of digital technology [14].

3.3. Tools and measurement

3.3.1. Case study tools

In the case study, an analytical framework was designed to cover aspects such as stage presentation, technology application, integration of cultural elements, and audience interaction. Data were collected mainly through video observation, on-site observations, and interviews with choreographers and dancers. The focus was on innovation, technology use, cultural element integration, and audience feedback.

3.3.2. Questionnaire design

The questionnaire included two main parts: the dance performance form evaluation scale and the audience experience scale (AES). The dance performance form evaluation scale includes 20 items focused on digital technology application, multicultural integration, and online-offline integration. The AES is used to evaluate audience preferences and experiences with different dance performance forms, including immersion, interactivity, cultural identity, technology acceptance, and performance innovation.

3.4. Data collection and analysis

3.4.1. Data collection

Case study: Data on stage presentation, technology application, cultural integration, and audience interaction were collected through observations and interviews of selected dance performance cases. Each case was analyzed in detail to understand the practical application of innovative dance performance forms.

Questionnaire: The questionnaire was distributed online to gather data from a broad sample. It was designed to cover attitudes and preferences regarding various forms of dance performance, as well as the acceptance of technology in these performances [15].

3.4.2. Data analysis

Descriptive statistics: Descriptive statistics, such as frequency distribution, mean, and standard deviation, were calculated for the questionnaire data to understand the respondents' attitudes toward different performance forms [16].

Difference analysis: A *t*-test or analysis of variance (ANOVA) was conducted to compare the preferences and evaluations of different performance forms between dance practitioners and general audiences.

4. Data analysis and results

4.1. Descriptive statistics

To understand the preferences and experiences of audiences and dance practitioners with different dance performance forms, a descriptive statistical analysis was first conducted. The data includes ratings on indicators such as immersion, interactivity, cultural identity, technology acceptance, and performance innovation (**Figure 1**).

From the descriptive statistics, it can be seen that dance practitioners rated slightly higher than audiences on all indicators, especially in terms of immersion and performance innovation. This shows that

Table 1. Indicators of the audience experience scale and their scoring criteria

Indicator	Description	Rating scale
Immersion	The extent to which the audience feels immersed in the performance	1 (Very low) – 5 (Very high)
Interactivity	The degree of interaction between the audience and the performers or stage environment	1 (Very low) – 5 (Very high)
Cultural identity	The audience's sense of identification with the cultural elements presented in the performance	1 (Very low) – 5 (Very high)
Technology acceptance	The audience's acceptance of the use of digital technology in dance performances	1 (Very low) – 5 (Very high)
Performance innovation	The audience's evaluation of the innovative elements in the performance	1 (Very low) – 5 (Very high)

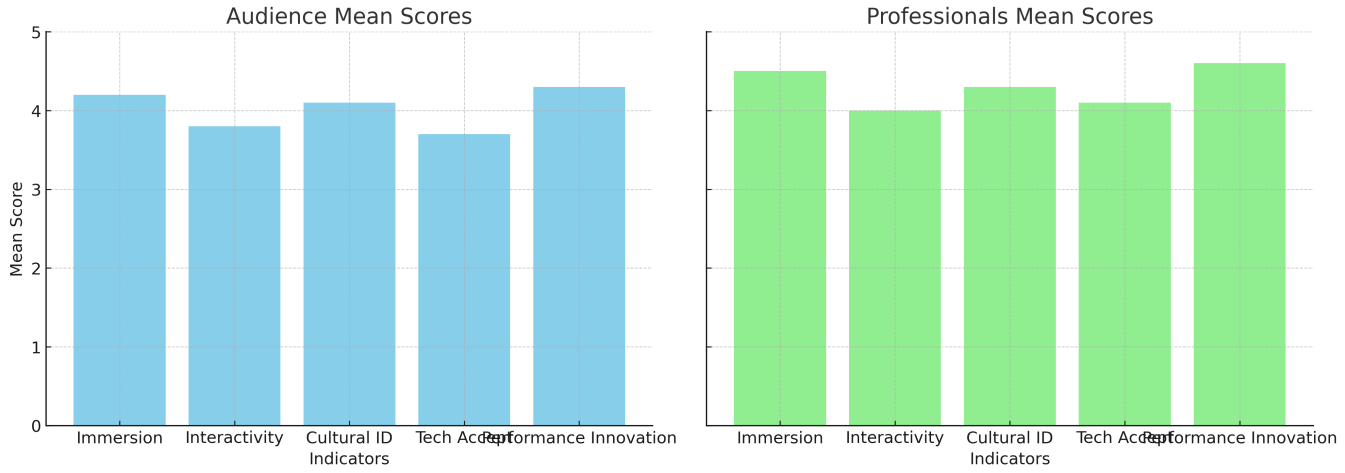

Figure 1. Demonstration on the average ratings of audience members and dance practitioners on different indicators

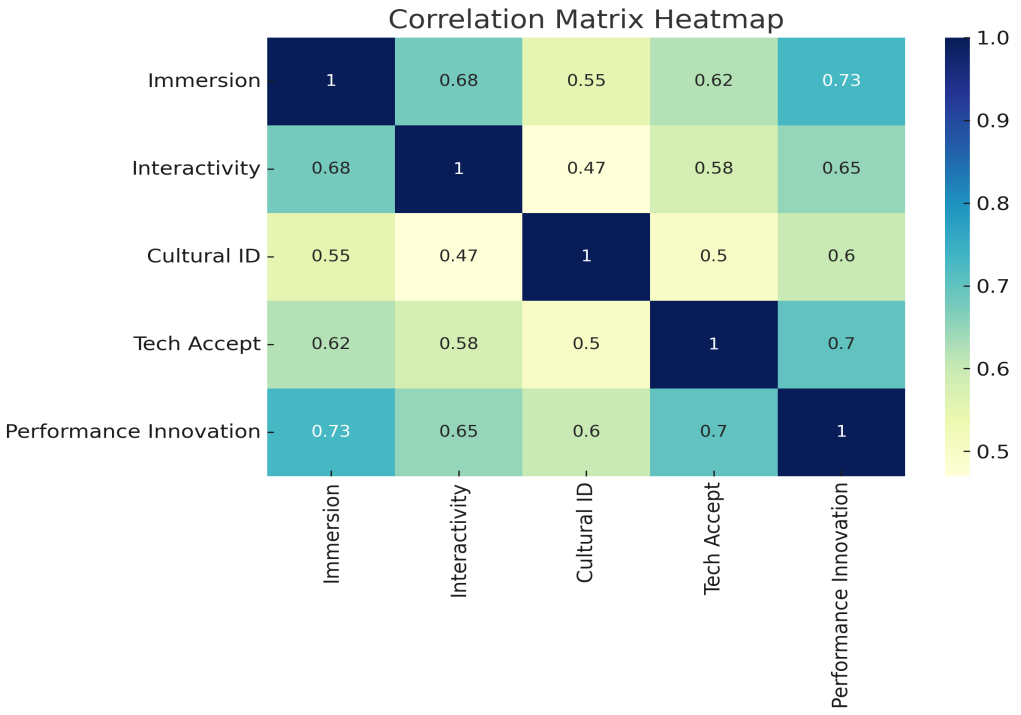

Figure 2. Correlation matrix diagram between various indicators

dance practitioners have a higher recognition of new technologies and innovative performance forms.

4.2. Correlation analysis

To explore the correlation between various indicators, Pearson correlation analysis was performed (**Figure 2**).

All correlation coefficients range from 0.47 to 0.73, indicating a moderate to strong positive correlation between indicators. In particular, the correlation between immersion and performance innovation is the highest, reaching 0.73, indicating that audiences and practitioners believe that innovative performance forms are more likely to bring immersive experiences.

4.3. Analysis of variances

To compare the differences in preferences and evaluations of different performance forms between dance practitioners and ordinary audiences, an independent sample *t*-test was conducted (**Table 2**).

Table 2. Results of the *t*-test for each indicator between the two groups

Indicator	*t*-value	*P*-value
Immersion	2.15	0.03
Interactivity	1.89	0.06
Cultural identity	1.56	0.12
Technology acceptance	2.45	0.02
Performance innovation	2.87	0.01

The *t*-test results showed that there were significant differences between dance practitioners and audiences in terms of immersion, technology acceptance, and performance innovation ($P < 0.05$), with practitioners scoring significantly higher than audiences on these three items. Although there are differences in interactivity and cultural identity between the two groups, they did not show significance ($P > 0.05$).

Through these analyses and charts, this study found that innovative elements, the use of digital technology, and cultural integration in dance performance forms are welcomed to varying degrees by audiences and practitioners. Practitioners, in particular, are more inclined to pay more attention to these innovative forms of expression, showing a high rating. At the same time, the correlation between various indicators also shows that innovative performance forms are more likely to bring immersive experiences and higher interactivity.

5. Conclusion

This study explores how dance performance forms adapt to changing circumstances, focusing on the application of digital technology, the integration of multiculturalism, and the impact of audience experience on dance performance. By analyzing the application of technologies such as virtual reality (VR), augmented reality (AR), and mixed reality (MR) in dance, as well as case studies of dance performance forms in different cultural backgrounds, it reveals the technological innovation of modern dance performance and cultural integration characteristics and challenges.

Research has found that digital technology plays an increasingly important role in dance performance. Technologies such as VR and AR not only provide new creative spaces for dance but also change the way audiences watch, enhancing their sense of immersion and interactivity. However, the application of technology also places new demands on dancers and choreographers, who need to find a balance between maintaining artistry and technology. Through the analysis of cases, it can be seen that successful dance performances can usually skillfully integrate technology into stage design and performance, making it a part of artistic expression rather than just an addition to visual effects.

In the context of globalization, the integration of multiculturalism has become one of the important features of dance performances. This study found that modern dance performances show strong adaptability in integrating different cultural elements. Dance choreographers from different cultural backgrounds create modern dance works with unique styles by drawing on and integrating elements of traditional dance. This fusion not only enriches the expression of dance but also provides the audience with a diverse aesthetic experience. However, in the process of multicultural integration, choreographers and dancers also need to consider cultural sensitivity and respect the uniqueness of different cultures to avoid cultural appropriation or misunderstanding.

Through descriptive statistics and differential analysis of audience experience, it was found that there are differences in preferences and evaluations of different dance performance forms between dance practitioners and ordinary audiences. Dance practitioners are more receptive to innovation and technological applications, while general audiences are more concerned about immersion and cultural identity. This demonstrates the need for dance performances to consider the needs of both professional and general audiences as they adapt to changing circumstances. The enhancement of audience experience depends not only on the use of technology and performance innovation but is also closely related to the ability of the performance to arouse the audience's emotional resonance and cultural identity.

This study provides several implications for the future development of dance performance. First of all, the development of digital technology has provided new possibilities for dance performances, but its application needs to be closely integrated with artistic expression to

avoid technology taking over the spotlight. Secondly, the integration of multiple cultures provides rich materials for dance creation. Choreographers should maintain respect and understanding of different cultures during creation and achieve a balance between innovation and inheritance. In addition, dance performances should focus on audience experience, combine technology and creativity, and enhance audience participation and interactivity.

Although this study explores how dance performance forms adapt to changing environments from multiple dimensions, there are still some limitations. For example, research has mainly focused on the impact of digital technology and multicultural integration on dance performance, while the impact of other factors such as changes in the social environment, education, training, and so on has not been explored in depth. Future research can further explore the impact of these factors on dance performance and how dance performance can maintain artistic innovation and cultural heritage in a changing environment.

Disclosure statement

The authors declare no conflict of interest.

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