

Asian Arts and Society Journal

วารสารศิลปะและสังคมแห่งเอเชีย
《亚洲艺术与社会》期刊



มหาวิทยาลัยเกริก
KRIRK UNIVERSITY

เจ้าของ วิทยาลัยนานาชาติศิลปะ มหาวิทยาลัยเกริก

ที่ปรึกษา

Professor Dr. Kasae Chanawongse

Assoc. Prof. Supat Teravecharoenchai

Assoc. Prof. Dr. Pornphan Chantaronanon

Professor Dr. Lixin Li

Krirk University, Thailand

Krirk University, Thailand

Krirk University, Thailand

Nanjing University of the Arts, China

**บรรณาธิการ**

Asst. Prof. Dr. Boonyou Khorpornprasert

Krirk University, Thailand

รองบรรณาธิการ

Assoc. Prof. Dr. Chris Haywood

Newcastle University, UK

Dr. Changxue Pan

Wuhan University of Technology, China

กองบรรณาธิการ

Dr. Binyi Liu

Tongji University, China

Dr. Jian Chen

Tongji University, China

Dr. Dexuan Song

Tongji University, China

Dr. Ke Li

Shandong University, China

Dr. Chun Zhu

China Academy of Art, China

Dr. Xun Lin

Shanghai Jiao Tong University, China

Dr. Jie Hu

Shanghai Jiao Tong University, China

Dr. Yue Zhang

Tsinghua University, China

Dr. Xinqun Feng

Donghua University, China

Dr. Yi Fu

Central Academy of Fine Arts, China

Dr. Qinchuan Zhan

Shaanxi University of Science & Technology, China

Dr. Shuibo Wang

Central Academy of Fine Arts, China

Dr. Feng Wu

Qufu Normal University, China

Dr. Chengyi Zhang

Qingdao University, China

Dr. Bangyi Duan

Shandong Normal University, China

Dr. Limin Shao

Shandong University of Art and Design, China

Dr. Xiaodong Liu

Donghua University, China

Dr. Xiaoye Li

Tongji University, China

Professor Dr. Tuomeiciren Heyang

Chengdu University, China

Assoc. Prof. Dr. Jhitsayarat Siripai

Rajamangala University of Technology Phra Nakhon, Thailand

Dr. LiGuang Li

Krirk University, Thailand

Dr. Yu-Chih Lin

Krirk University, Thailand

Dr. Huang Xiao

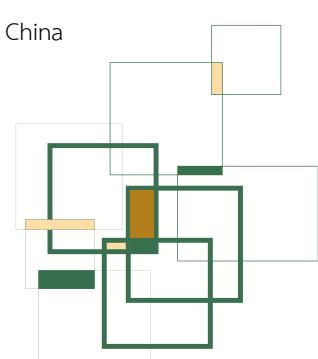
Krirk University, Thailand

Dr. Shang-Wen Wang

Krirk University, Thailand

Dr. Kobkullaya Ngamcharoenmongkhon

Krirk University, Thailand



ASIAN ARTS AND SOCIETY JOURNAL

ວາງສາຣະຄືລປະແລະສັງຄມແຮ່ເອເຊີຍ



About the Journal

Focus and Scope :

Asian Arts and Society Journal is an academic journal focused on disseminating works related to the arts. It emphasizes various fields such as journalism and communication, film and theater, design arts, dance, performing arts, and music. This journal highlights topics related to the changes of factors that impact the quality of life and society, aiming to create new knowledge and develop high-quality academic research for the benefit of society. Additionally, it recognizes the importance of expanding the academic role in society at large and the development of universities as sources of knowledge derived from the research of faculty, researchers and students, in order to advance towards a knowledge-based society.

Peer Review Process :

Articles submitted for publication are reviewed by at least three experts in the field and are subject to approval by the editorial board. Throughout the peer review process, the identities of the reviewers are kept confidential from each other (blind review).

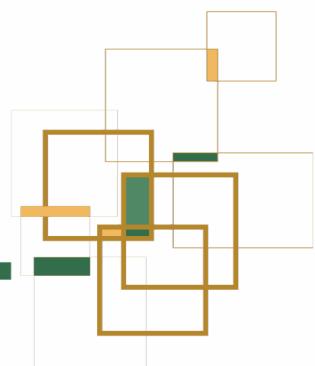
Types of articles : Research article, Academic article, Book review

Language : English

Publication Frequency : 2 issues per year (**Issue 1 : January - June, Issue 2 : July - December**)

Publisher : International College of the Arts, Krirk University

Article Processing Charge (APC) : Free



Editor's Introduction

Asian Arts and Society Journal is an academic journal dedicated to the dissemination of rigorous scholarly and research inquiry in the broad field of arts and culture. Embracing interdisciplinary perspectives, the journal provides a platform for studies spanning architecture, visual arts, performing arts, music education, cultural communication, creative industries, and emerging technologies. Through these diverse approaches, the journal seeks to advance knowledge, encourage critical dialogue, and contribute to sustainable cultural and social development.

This issue brings together six articles that collectively examine the dynamic relationships between art, culture, society, and technology across different regional and disciplinary contexts in Asia and beyond. The contributions explore how artistic traditions are preserved, transformed, communicated, and reimagined in response to modernization, globalization, and digital innovation.

The first article, “The Historical Evolution of Colored Glass Windows in Guangfu Architecture and Their Role in Urban Landscape,” investigates colored glass windows as a distinctive decorative art form within Lingnan architectural heritage. By tracing their origins and historical development, the study highlights their cultural symbolism and aesthetic value, while also examining their contemporary role in shaping urban landscapes. The article further emphasizes the importance of conservation and creative adaptation in supporting cultural identity and sustainable urban development.

The second article, “The Effect of Individual Differences on Learning Outcomes in Guzheng Education in Contemporary Yangzhou,” focuses on the rapid growth of guzheng education within China’s social music education sector. Drawing on quantitative data from learners across diverse institutions, the study examines how age, socioeconomic background, practice habits, and motivation influence learning outcomes. The article contributes to music education scholarship by highlighting the need for differentiated and inclusive pedagogical approaches in traditional music instruction.

The third article, “An Exploration of Psychological Space-Time in Theatre and Its Manifestation through Stage Lighting,” examines the theoretical and practical relationship between psychological time-space and stage lighting in modern theatre. Through conceptual analysis and production examples, the study demonstrates how lighting elements—such as color, intensity,

distribution, and movement—can externalize characters' inner emotions, enhance dramatic tension, and deepen audience engagement. The article offers practical guidance for lighting designers while enriching contemporary theatre theory.

The fourth article, "Research on China's Overseas Cultural Communication: Status, Hot Topics, and Trends from 2009 to 2024," offers a systematic bibliometric analysis of academic research on the international dissemination of Chinese culture. The findings provide valuable insights into shifting strategies, digital communication scenarios, and future directions for cultural communication research.

The fifth article, "Revitalizing Mandalay through Arts Tourism: Integrating Traditional Crafts, Performative Arts, and Market Mechanisms for Sustainable Cultural Development," explores how arts tourism can support cultural revitalization in Mandalay, Myanmar. By integrating traditional crafts, performing arts, stakeholder participation, and market-oriented strategies, the study proposes a sustainable model for protecting intangible cultural heritage while empowering local artisans economically. This research highlights the role of creative industries in regional cultural development and sustainable tourism.

The sixth article, "Sustainable Beauty through AI: Leveraging Artificial Intelligence for Eco-Friendly Product Recommendations and Personalized Skincare," addresses the intersection of technology, consumer culture, and sustainability within the beauty industry. By employing AI-driven analysis of digital data, the study demonstrates how personalized product recommendations and sustainable ingredient identification can reduce waste and promote responsible consumption. The article underscores the growing potential of artificial intelligence to drive environmentally conscious practices in creative and consumer-oriented industries.

Together, the six articles in this issue collectively illustrate the evolving landscapes of artistic practice, cultural heritage, education, communication, and technological innovation. We warmly invite readers to engage with these contributions, available in both print and online formats, and hope that this collection will inspire further research and dialogue at the intersection of arts and society. We look forward to accompanying our readers in future issues as we continue to explore the diverse and changing expressions of culture and creativity.

วารสารศิลปะและสังคมแห่งเอเชีย

วิทยาลัยนานาชาติศิลปะ มหาวิทยาลัยเกริก

ปีที่ 1 ฉบับที่ 2 กรกฎาคม-ธันวาคม 2568

Vol. 1 No. 2 July-December 2025



01 The Historical Evolution of Colored Glass Windows in Guangfu Architecture and Their Role in Urban Landscape
Jiali Liang 1

02 The Effect of Individual Differences on Learning Outcomes in Guzheng Education in Contemporary Yangzhou
Xiangwen Chen 11

03 An Exploration of Psychological Space-Time in Theatre and Its Manifestation through Stage Lighting
Ao Li 17

04 Research on China's Overseas Cultural Communication: Status, Hot Topics, and Trends from 2009 to 2024
Liguang Li, Nan Zhao, Yuchih Lin 39

05 Revitalizing Mandalay through Arts Tourism : Integrating Traditional Crafts, Performative Arts, and Market Mechanisms for Sustainable Cultural Development
SoeMyint Than 51

06 Sustainable Beauty through AI: Leveraging Artificial Intelligence for Eco-Friendly Product Recommendations and Personalized Skincare
Lin Fan, Lavanchawee Sujarittanonta 82

The Historical Evolution of Colored Glass Windows in Guangfu Architecture and Their Role in Urban Landscape

Jiali Liang¹

¹Guangdong University of Education, China.

email: 156156241@QQ.com

Received: Nov 7, 2025 **Revised:** Nov 28, 2025 **Accepted:** Dec 18, 2025

Abstract

This article explores the historical evolution of colored glass windows in Guangfu architecture and their role in urban landscapes. As a unique decorative art form in Lingnan, this type of glass window not only carries historical and cultural significance, but also plays a role in modern cities. The article traces its origin, analyzes its historical evolution, explores its application in urban landscapes, and its impact on urban attractiveness and cultural identity. Finally, it discusses its protection and innovation, emphasizing its importance in cultural heritage and sustainable urban development.

Keywords: Guangfu architecture; Colored glass windows; Historical evolution; Urban landscape; Cultural value

1. Introduction

Cantonese-style stained glass windows, commonly known as "Manchu windows," represent a unique form of architectural and decorative art in Lingnan architecture. Their history can be traced back to a period when Guangzhou served as a pivotal hub for cultural exchange between China and the West. This type of window combines the artistic styles of East and West, becoming an integral part of Cantonese-style houses, and also serving as an architectural visual symbol of Guangzhou and the Pearl River Delta region. The exquisite wooden window frames and colorful glass inlays serve as a clear testament to the open, tolerant, and innovative character of Guangzhou's residents.

This article examines the historical evolution of stained glass in Cantonese architecture and their role in the contemporary urban landscape. First, it traces the origin and development of stained glass,



analyzing how they combined Eastern and Western elements over time to create a unique artistic style. Then, it discusses the use of these windows in the urban landscape, as well as their role in increasing the attractiveness of the city and the cultural identity of the inhabitants. Finally, issues of protection and innovation in this precious cultural heritage are addressed, emphasizing their importance in the protection of culture and sustainable development of cities.

Stained glass in Cantonese architecture carries both history and culture. Studying their historical evolution and cultural significance can provide deeper insight into Guangzhou's urban development history and the various styles of Lingnan culture. During the period of modernization, the study of ways to protect and inherit this precious cultural heritage is very important for maintaining the cultural diversity of the city.

2. The Historical Origins and Evolution of Cantonese Architectural Colored Glass Windows

As a center of cultural exchange between China and the West, Guangzhou is closely associated with the historical origin of Cantonese architectural stained glass. During the late Qing dynasty and early Republic of China, Cantonese-style houses made extensive use of stained glass with distinctive spatial and regional features. These displays are not only visual symbols of Guangzhou architecture and the Pearl River Delta, but also reflect the open and innovative personality traits of the inhabitants of the Lingnan region, bearing deep value and spiritual significance. They are not just a unique manifestation of traditional skills, but a visual reflection of the style of the time.

The historical evolution of Cantonese stained glass combines Eastern and Western culture, as well as traditional and contemporary elements. Known as "Manchu windows," these windows are the result of the incorporation of stained glass into traditional Chinese wooden window frames. The history of this type of storefront can be traced back to the middle of the Qing dynasty, and then they gradually became popular in Guangzhou and the Pearl River Delta region, reaching the peak of development at the beginning of the Republic of China. With unique geographical advantages, Guangzhou was the first to master the technology of stained glass engraving. As described in the words of bamboo branch Lingnan: "five-color glass, Moonlight on three sides," these windows formed the unique and romantic art style of Guangfu with its colorful characteristics.



The creation of the Manchu window demonstrated the aesthetics and wisdom of the inhabitants of Guangzhou. The window frame is based on traditional Chinese window construction, and also combines the features of some Manchu-style residential windows. The wooden window frames retain a pronounced Chinese aesthetic charm in terms of craftsmanship and style. Manchu Windows retain basic elements of traditional Chinese Windows, such as window boards, partitions, etc., and the central part of the window, regardless of its shape or material, has its own unique characteristics. The styles of combinations of these windows are different. Not only did the structure of the upper and lower wings change, but also the shape of the three windows divided into three steps in the upper and lower middle sections, as well as the combination of four windows with one step in each upper and lower left and right layers, as well as changes in the six windows, nine and even more types of fans.

Guangzhou Masters absorbed Western influence in addition to traditional skills and brought their own skill. They transformed Western floral patterns into Chinese motifs, such as traditional Chinese painting and calligraphy. This evolution eventually led to Cantonese-style stained glass showing a fusion of eastern and Western styles. Techniques such as stained glass Engraving and etching were introduced and gradually refined, allowing Guangzhou Masters to develop a style that retains traditional craftsmanship and integrates Western technology, which shapes the uniqueness of Cantonese stained glass.

The making of these windows shows a harmonious combination of eastern and Western influences. The stained glass windows in the Cantonese style are not only a manifestation of local cultural identity, but also reflect Guangzhou's open attitude towards various foreign influences, which is why a unique architectural form of art was formed. Over time, skills and styles merged, and these exhibits became symbols of Guangzhou's historical and cultural significance.

3. Artistic Features and International Comparison of Cantonese Architectural Colored Glass Windows

The stained glass windows in Cantonese architecture show unique craftsmanship and rich pattern ideas, while combining Chinese and Western art styles.



Guangzhou glass windows are of high quality workmanship. The Chinese-style wooden window frames are decorated with stained glass, and their common name is "Manchu window". This type of window is at the same time practical, artistic and decorative. Guangzhou Masters borrowed Western techniques and changed the subject of glass painting, replacing the original Western flower patterns with traditional Chinese painting and calligraphy. In such showcases, eastern and Western styles combine with each other, creating unique glass showcases of a wide range of colors.

The window frames of Guangzhou stained glass are made in accordance with the basic structure of traditional Chinese windows and include a number of features borrowed from the windows of Manchu houses. In terms of craftsmanship and style, these wooden window frames retain pronounced Chinese aesthetic characteristics. Over time, elements of Western design were introduced into the window frame design system, resulting in their shape and style constantly undergoing new changes.

In addition, the patterns on the Canton-style stained glass windows are varied and colorful and contain many traditional favorable elements. Patterns such as Baoxianhua, moire pattern, and Sihe Rui not only attract people's attention from the outside, but also contain deep cultural connotations and favorable meaning. For the example of Baoxianhua, it can be traced to the era of Wei, Jin, Southern and Northern dynasties and is associated with the flourishing of Buddhism. It is mainly created through the art of combining colors such as Lotus, peony and chrysanthemum. The unique combination of a bat and a copper coin symbolizes a good blessing "a blessing before you".

In addition, the colors of the glass paintings on these windows are mainly blue, red, green and yellow. To create patterns, wood carving and engraving techniques are used. After etching technology became more advanced, glass paintings gradually shifted from a strict style that mimics Western floral design to depicting the more complex themes of Chinese painting and calligraphy.

The stylistic features of stained glass in the Cantonese style embody a combination of eastern and Western elements. Traditional Chinese elements were retained, and Western stained glass production technologies were also borrowed, leading to a unique artistic style. Guangzhou is the center of cultural exchange between China and the West, and its openness and inclusivity are reflected in the development of the Cantonese style of painted showcases. The colorful and colorful artistic characteristics of these windows highlight the exceptional lifestyle of the residents of Guangzhou. The combination of eastern



and Western elements made the painted Cantonese-style windows a very attractive feature of Lingnan architecture and made an important contribution to the cultural landscape of Guangzhou.

3.1 International Comparison

By comparing the stained glass windows of Cantonese architecture with those of Europe, we can better understand their uniqueness. European stained glass is mainly used in important buildings such as churches and often has a religious theme. On the other hand, stained glass in Cantonese architecture is more common in residential buildings, and there are many patterns present here, such as flowers, landscapes and characters. There are differences in the technology of making: European stained glass focuses on the painting and joining of glass fragments and presents complex and colorful patterns, mainly on the topic of religion and history. Guangdong architecture stained glass combines traditional wooden window frames with stained glass inserts for a unique decorative style. This combination of wood and glass is rare in European windows, but gives Guangdong glass windows unique aesthetic characteristics.

3.2 Global Influence

Although stained glass of Cantonese architecture is popular in Guangzhou and the Pearl River Delta region, due to its unique artistic style and skillful execution, they may have influenced architecture and Arts and crafts in other regions. International cultural exchanges or exhibitions have encouraged her design concepts and technology to spread gradually across different cultural circles and are accepted and appreciated in different locations. With the constant expansion of this intercultural dialogue, the influence of Cantonese stained glass has managed to spread throughout the world, far beyond the home region, thus, this unique form of artistic expression became more famous.

4. The Role of Cantonese Architectural Colored Glass Windows in the Urban Landscape

Stained glass windows in Guangzhou's buildings perform many functions in the urban landscape. Such windows can not only give the city a unique aesthetic value, but also contain a deep cultural meaning.



Bright colors and complex patterns on stained glass became a wonderful feature of urban architecture, and also increased the visual appeal of the city. Such windows are often made by inserting stained glass into traditional Chinese wooden window frames. Typical of them are the "Manchu windows" in the buildings of Guangzhou and the Pearl River Delta. As a visual symbol of the architecture of the region, these windows reflect the open and innovative attitude of the residents of Guangzhou and show an irreplaceable level of skill and spiritual value.

Secondly, the stained glass windows in the city's landscape highlight the unique charm of Lingnan culture. For example, in the design plan of the Yuexiu Xiujiangwan exhibition space, the building is inspired by banyan trees to create an urban living room "new banyan tree" that combines functions such as coffee preparation, tea, reading and family activities. The design combines the "Super Guangfu Yuexiang circle", the "Guangzhou Rhythm" shopping street and the 1,000-square-foot banyan tree block Street Park that not only showcase Lingnan culture, but also convey the warmth of the neighborhood of Guangzhou residents.

Innovations and protection of stained glass in contemporary design urban landscape reflects the attitude of the city towards traditional culture. Guangzhou Museum has gathered more than 400 Cantonese-style stained glass windows in modern homes in the Pearl River Delta area, which are iconic elements of Lingnan architecture. A year-long survey selected 74 outstanding works, and social organizations joined forces to create a special exhibition designed to revive cultural relics. The protection of traditional craftsmanship also brings a new note to the modern urban landscape and promotes cultural heritage.

5. The Application of Cantonese Architectural Colored Glass Windows in Contemporary Urban Architecture

5.1 Reuse of Design Elements

In modern urban architecture, the elements of stained glass design in Cantonese architecture can be creatively reused, which contributes to the preservation of urban context and uniqueness. The design facade of a new building can be integrated into color combinations and stained glass patterns to create an architectural look that is both modern and full of traditional cultural elements. Large-scale stained



glass windows can also be placed in public places and commercial spaces as ornamental landscape elements to attract tourists and locals to stop and observe.

5.2 Sustainability and Innovation

When applying elements of stained glass design in Cantonese architecture, sustainability and innovation must also be taken into account. New environmentally friendly materials can be used as a substitute for traditional glass, such as solar glass or materials with better thermal insulation properties, thus increasing the energy efficiency of buildings. Modern technologies such as LED lighting and intelligent control systems can also be integrated. Night visual effects will be more shocking, the charm of the Night City will increase, and the overall atmosphere will be filled with dynamics and vitality. By combining traditional and contemporary innovations, such architectural elements can not only achieve the goal of preserving cultural heritage, but also promote the process of Sustainable Urban Development.

6. The Cultural Connotation and Social Significance of Cantonese Architectural Colored Glass Windows

6.1 Cultural Connotation

Cantonese-style stained glass is a unique type of decorative and Applied Art in the Lingnan region and has a deep cultural meaning. This type of window combines traditional Chinese wood window making technology with Western stained glass technology, demonstrating the openness and inclusiveness of Guangzhou, a key node of the Maritime Silk Road. Patterns such as Baoxianhua, Guyun pattern, and Sihe Ruii on the windows reflect traditional Chinese auspicious symbols that symbolize beauty, harmony, prosperity, and happiness. With the development, the theme of stained glass on these windows has also changed, and Western floral patterns were gradually replaced by Chinese elements such as traditional Chinese painting and calligraphy. This change demonstrates the innovative ability of Guangzhou artisans to integrate Western skills into local culture, using them in the process of creating a Cantonese style with its own characteristics.

In addition, the stained glass windows in the Cantonese style show the characteristic features of the Lingnan desire for nature and their desire for a better life. Landscape patterns, Orchid patterns etc.

they contain oriental charm and artistic expressiveness, and also reflect the sophisticated lifestyle and unique aesthetic understanding of the residents of Guangzhou.

6.2 Social Significance

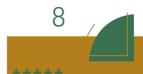
At the social level, stained glass in Cantonese architecture performs many functions. In houses in the traditional Cantonese style, exquisite stained glass often symbolizes the wealth of the family and high social status. They are a decorative part of the living space, but also show the taste and economic value of the owner. Secondly, stained glass windows in public spaces and families perform practical functions. They play an important role in lighting and ventilation and guarantee a certain degree of privacy. In the hot and humid climate of Lingnan, the design of such windows allows the air to circulate better, and stained glass plays an important role in filtering light, softening interior lighting and creating a comfortable habitat.

Such windows are a necessary element of the culture of the local community. In the past, the unique stained glass windows of each family in the Cantonese style created a magnificent landscape, reinforcing a sense of cohesion and belonging to the community. Thus, visual features became a form of expression of community identity and collective spirit, and the presence of Windows reinforced this feature.

7. The Cultural Connotation and Social Significance of Cantonese Architectural Colored Glass Windows

7.1 Cultural Connotation

Cantonese-style stained glass is a unique type of decorative and Applied Art in the Linnan region and has a deep cultural meaning. This type of window combines traditional Chinese wood window making technology with Western stained glass technology, demonstrating the openness and inclusiveness of Guangzhou, a key node of the Maritime Silk Road. Patterns such as Baosianhua, Guyun pattern, and Sihe Ruii on the windows reflect traditional Chinese auspicious symbols that symbolize beauty, harmony, prosperity, and happiness. With the development, the theme of stained glass on these windows has also changed, and Western floral patterns were gradually replaced by Chinese elements such as traditional Chinese painting and calligraphy. This change demonstrates the innovative ability of



Guangzhou artisans to integrate Western skills into local culture, using them in the process of creating a Cantonese style with its own characteristics.

In addition, the stained glass windows in the Cantonese style show the characteristic features of the Linnaean desire for nature and their desire for a better life. Landscape patterns, Orchid patterns etc. they contain oriental charm and artistic expressiveness, and also reflect the sophisticated lifestyle and unique aesthetic understanding of the residents of Guangzhou.

7.2 Social Significance

At the social level, stained glass in Cantonese architecture performs many functions. In houses in the traditional Cantonese style, exquisite stained glass often symbolizes the wealth of the family and high social status. They are a decorative part of the living space, but also show the taste and economic value of the owner.

Secondly, stained glass windows in public spaces and families perform practical functions. They play an important role in lighting and ventilation and guarantee a certain degree of privacy. In the hot and humid climate of Linnan, the design of such windows allows the air to circulate better, and stained glass plays an important role in filtering light, softening interior lighting and creating a comfortable habitat.

Such windows are a necessary element of the culture of the local community. In the past, the unique stained glass windows of each family in the Cantonese style created a magnificent landscape, reinforcing a sense of cohesion and belonging to the community. Thus, visual features became a form of expression of community identity and collective spirit, and the presence of Windows reinforced this feature.

8. Conclusion

The stained glass windows of Cantonese architecture in the Lingnan region are presented as a unique architectural and decorative art form that contains a lot of historical and cultural information and plays an important role in the contemporary urban landscape. A deep study of the cultural significance it carries, as well as new methods for its application in modern urban planning, will help to better protect and exploit this precious cultural heritage. At the same time, it is also useful for promoting the process of Sustainable Urban Development and preserving cultural diversity. Their



effective use also brings significant benefits. After all, this window is no longer just a relic of past times, but is an important environment for maintaining traditional and ongoing exchanges that can create a unique platform to create a more colorful and rich world and ensure the sustainability of the city.

Future research should focus on the specific challenges in preserving artisan skills, the dilemmas of commercialization, and the tension between authentic preservation and modern adaptation. Further exploration of the spatial concepts and aesthetic philosophies underlying the differences between Cantonese and European stained glass would also deepen the international comparative perspective.

References

Chen, W. (2017). The history and artistic value of Guangzhou's Manchu windows. *Architecture and Culture*, (05), 142–144.

Deng, Y. (2020). A preliminary study on the art of traditional windows in Guangfu architecture. *Art Education Research*, (08), 79–82.

Feng, Y. (2020). *Research on the decorative art of traditional architectural doors and windows in the Guangfu region*(Master's thesis). South China University of Technology.

Guangzhou Museum. (2021). *A city awash with colour: The Guangzhou Museum's collection of Cantonese coloured glass windows exhibition*. Guangzhou Museum.

Li, J. (2019). Research on Lingnan architectural decorative art. *Journal of South China University of Technology (Social Science Edition)*, 21(1), 64–73.

Liu, Y. (2015). Research on the modern transformation of Guangfu architectural decorative art. *Zhuangshi*, (03), 130–131.

Wang, L. (2018). The art of colored glass windows in Guangzhou's traditional architecture. *Zhuangshi*, (06), 106–107.

Zhang, H. (2016). The cultural connotation of Lingnan architectural decorative art. *Art Panorama*, (04), 128–129.

The Effect of Individual Differences on Learning Outcomes in Guzheng Education in Contemporary Yangzhou

Xiangwen Chen¹

¹China Culture Center in Bangkok

e-mail: 1265082345@qq.com

Received: Dec 2, 2025 **Revised:** Dec 11, 2025 **Accepted:** Dec 26, 2025

Abstract

Guzheng education in contemporary Yangzhou has undergone remarkable expansion in recent decades, driven by both the revival of traditional culture and the increasing popularity of community-based music learning. Yangzhou, historically renowned for its refined guzheng aesthetics, has become a significant hub attracting learners from a wide range of ages and social backgrounds. This study investigates how individual differences—including age, prior musical experience, socioeconomic status, and practice habits— influence learning outcomes among 150 guzheng learners from private studios, arts institutions, and community centers in Yangzhou. Quantitative analyses reveal significant variations in theory knowledge across age cohorts, a moderate positive correlation between deliberate-practice hours and performance level, and meaningful disparities in learning conditions based on socioeconomic background. Regression analyses further indicate that practice duration serves as a significant predictor of technical proficiency. By integrating frameworks from lifelong learning theory, cultural capital theory, and deliberate practice research, this study offers an empirically grounded perspective on how learner diversity shapes contemporary guzheng education. The findings highlight the necessity of differentiated instructional approaches and the importance of reducing socioeconomic barriers in order to sustain the development and transmission of intangible cultural heritage.

Keywords : Guzheng education; Yangzhou; Individual differences; Learning outcomes; Cultural capital; Deliberate practice

1. Introduction

The guzheng, a traditional Chinese plucked zither with a history exceeding two thousand years, represents one of the most iconic instruments in Chinese musical culture. Over the past few decades, rapid economic growth, educational diversification, and renewed cultural confidence have contributed to a revitalized interest in traditional music education across China. Yangzhou, in particular, has gained prominence not only for its historic role in shaping guzheng performance aesthetics but also as a thriving contemporary center for both amateur and professional learning.

Existing scholarship on the guzheng has primarily focused on stylistic development, performance traditions, regional schools, and historical analyses of repertoire. However, far fewer studies have examined the sociological and pedagogical dimensions of guzheng learning in modern urban environments—especially with regard to learners' individual differences. As social music education becomes increasingly inclusive, learners vary widely in age, musical background, motivation, and available learning resources. These differences may significantly affect learning progress, performance outcomes, persistence, and satisfaction.

This study aims to fill this gap by systematically investigating how individual factors shape learning outcomes in Yangzhou's contemporary guzheng education landscape. Particular attention is paid to four major dimensions: (1) age cohort, (2) prior music experience, (3) socioeconomic background, and (4) deliberate-practice habits. These variables are explored through the lenses of lifelong learning theory, Bourdieu's theory of cultural capital, and the deliberate practice framework proposed by Ericsson. Together, these theoretical perspectives provide a comprehensive foundation for understanding the complexity of learning trajectories among diverse guzheng learners.

2. Method

2.1 Participants

The study recruited 150 guzheng learners from Yangzhou through stratified sampling across private studios, arts training centers, community cultural institutions, and independent teachers. The age range spanned from 6 to 70 years old, enabling a broad investigation of developmental and motivational differences. The sample consisted of approximately 40% minors, 25% university students, 30%

working adults, and 5% retirees. Females represented roughly two-thirds of participants, reflecting national demographic trends in traditional instrument learning. Learners also varied widely in their prior musical training, with some having years of experience in other instruments and others beginning as complete novices.

2.2 Measures and Instruments

A structured questionnaire was designed for the study, consisting of six major sections: demographic background, socioeconomic indicators, learning history, practice habits, music theory knowledge, and learning satisfaction. Socioeconomic indicators included household income, parental educational level, and access to instrument resources. Practice habits were measured through items on weekly deliberate-practice hours, practice regularity, practice environment, and strategy use. Music theory knowledge was assessed through a standardized 20-item scale, while satisfaction was measured across teaching methods, materials, teacher-student interaction, and overall experience.

A pilot study involving 20 learners was conducted to refine questionnaire clarity. Cronbach's alpha coefficients for multi-item scales ranged from .78 to .91, indicating acceptable internal consistency.

2.3 Data Collection Procedure

Data collection was carried out over a two-month period. Participants completed the questionnaire either in person or through an online survey platform. All participants were informed of the study's purpose, and consent was obtained from both adult participants and the parents of minors. The anonymity and confidentiality of all respondents were ensured throughout the process.

2.4 Data Analysis

SPSS software was used for statistical analysis. Descriptive statistics were generated to summarize sample characteristics. One-way ANOVA tests were performed to examine group differences across age cohorts and socioeconomic categories. Pearson correlation analysis assessed the relationships between practice hours, theory knowledge, and performance outcomes. Multiple regression models were applied to identify predictors of technical proficiency and long-term learning intention. Statistical

3. Results

ANOVA results showed significant differences in music theory knowledge among age cohorts. University students achieved the highest scores, followed by adults and minors. Retirees showed the lowest theory knowledge scores, though their group size was comparatively small. Post hoc tests further indicated that cognitive maturity and prior exposure to theoretical subjects were likely contributing factors.

Pearson correlation analysis revealed a moderate positive correlation ($r = .48$, $p < .01$) between weekly deliberate-practice hours and performance level. Learners who practiced more consistently demonstrated more stable fingering, clearer tone production, and greater confidence. Regression analysis confirmed deliberate-practice hours as a significant predictor of performance proficiency.

Socioeconomic background was also a significant determinant of learning conditions. Learners from higher-income households generally had access to higher-quality instruments, more frequent lessons, and more experienced teachers. Conversely, learners from lower-income backgrounds reported limited access to instructional resources and less stable practice environments.

Satisfaction levels varied across age groups. Minors reported relatively high satisfaction due to parental support and positive teacher feedback. University students expressed lower satisfaction, often seeking more systematic and rigorous instruction. Adults emphasized flexibility and cultural connection in learning, while retirees valued the social and emotional benefits of guzheng study.

4. Discussion

The findings demonstrate that individual differences play a significant role in shaping learning outcomes in Yangzhou's guzheng education. Age influences cognitive development, motivation, and learning strategies, requiring teachers to adopt differentiated pedagogical approaches. For minors, structured and guided teaching is effective, while university students may benefit more from analytical and theory-based instruction. Adults, on the other hand, often prioritize cultural appreciation, personal enjoyment, and flexible scheduling.

Socioeconomic disparities emerged as a major factor affecting access to high-quality instruction and instruments. This aligns with cultural capital theory, which suggests that unequal resource

distribution leads to unequal learning outcomes. To mitigate these disparities, public institutions and community centers in Yangzhou could consider expanding free or low-cost programs, instrument libraries, and scholarship opportunities.

The role of deliberate practice also proved crucial. While practice duration alone does not guarantee mastery, consistent and goal-oriented practice showed measurable benefits in technical and expressive abilities. Future research should investigate practice quality through observational studies and practice diaries, as self-reported hours may not fully capture learners' behaviors.

5. Conclusion

Yangzhou's guzheng education reflects a rich diversity of learner backgrounds and experiences. By recognizing and accommodating individual differences—including age, socioeconomic status, and practice behaviors—teachers and institutions can design more inclusive and effective instructional models. Addressing structural inequalities and promoting broader access to resources will further support the continued vitality of guzheng culture as an important component of China's intangible cultural heritage.

6. Limitations

This study is limited by its cross-sectional design, which prevents causal inference between individual differences and learning outcomes. Additionally, convenience sampling may reduce generalizability, and reliance on self-report data introduces potential biases. Future studies should consider longitudinal designs and incorporate teacher evaluations, performance assessments, and qualitative interviews for a more nuanced understanding of learning trajectories.

References

Chen, X. (n.d.). *Title of original thesis*. University Name.

Li, J. (2019). Guzheng pedagogy in modern China. *Journal of Chinese Music Education*, 12(3), 45–52.

Sun, Q. (2020). Inequality in music education. *Journal of Cultural Development*.

Tang, M. (2019). Practice behaviors and performance outcomes. *Music Education Insights*.

Wang, Y. (2020). Motivation in traditional instrument learning. *Asian Music Studies*, 8(2), 33–47.

Xu, H. (2017). Music theory acquisition and cognitive development. *Chinese Journal of Music Pedagogy*.

Zhang, L. (2018). Social music education in contemporary China. *International Review of Arts Education*, 5(1), 60–72.



An Exploration of Psychological Space-Time in Theatre and Its Manifestation through Stage Lighting

Ao Li¹

¹*National Centre for the Performing Arts, China*

e-mail: 18910388640@163.com

Received: Nov 28, 2025 **Revised:** Dec 19, 2025 **Accepted:** Dec 26, 2025

Abstract

Drama is a form of art that involves the construction of time and space. With the development of modern theatre, psychological time-space has become increasingly important within stage-time structures. As a highly expressive component of visual design, stage lighting plays a significant role in shaping and transforming theatrical time and space. By utilizing lighting dynamics effectively, spatial-temporal relationships can be rendered more precise, layered, and emotionally compelling. This study examines the use of lighting elements to elaborate a character's psychological time-space to externalize inner emotions, enhance dramatic conflict, and strengthen the relationship between actor and audience.

It is the purpose of this article to examine the concept, importance, and function of psychological time-space and to demonstrate the inherent connections between lighting design and psychological time-space, as well as to summarize systematically various methods for treating psychological time-space through lighting. With reference to the principle of theatrical "fictionality" and supported by production examples, the aim of this article is to clarify the meanings and classifications of stage time-space, with an emphasis on the definition of psychological time-space and its use in dramaturgy.

Through a theoretical analysis and practical examples, this paper identifies key lighting elements, such as color, intensity, distribution, and movement, that contribute significantly to the construction of psychological time and space. The findings of this study will provide lighting designers with practical guidance for selecting appropriate techniques when shaping psychological time and space, while offering theatre practitioners new perspectives on integrating lighting into dramatic performance.

Keywords : Drama; Theatrical fictionality; Psychological time-space; Stage lighting; Expression

1. Introduction

Drama is fundamentally an art of time and space. Over the years, theatre-makers have carried out extensive explorations of dramatic time-space, and its modes of presentation have become increasingly diverse with the evolution of theatrical aesthetics. Contemporary theatre is no longer confined to linear temporal and spatial structures; intersecting, parallel, and composite forms of time-space occur frequently, allowing artists to construct relationships according to narrative and emotional needs. In particular, the emergence of the concept of psychological time-space has greatly expanded the possibilities of temporal and spatial expression in performance. Psychological time-space enables the externalization of a character's inner world, allowing artists to communicate emotions and ideas more directly and clearly through subjective temporal-spatial structures.

Drama is also a visual and auditory art. Theatre practitioners rely on visual and acoustic means to convey thoughts and emotions to the audience, and stage lighting is a vital part of the overall visual presentation. With the advancement of lighting technology and aesthetics, lighting in contemporary performance has moved far beyond simple illumination. Its capacity to shape and transform time-space has been widely recognized and extensively applied. As lighting evolved into an expressive medium, theorists such as Adolphe Appia underscored its temporal agency. Adolphe Appia argued that light is "the ideal means of expressing temporal rhythm on stage" (Adolphe Appia, 1899/1985), a view that highlights lighting's ability to support both spatial and psychological transformation. Therefore, examining psychological time-space through the lens of lighting design provides a distinct analytical perspective. If the treatment of dramatic time-space is considered a broad set, then the expression of psychological time-space forms a subset within it, and its intersection with lighting constitutes the central focus of this study.

2. An Overview of Psychological Space-Time

2.1 The Hypothetical Nature of Stage Space-Time in Drama

All forms of art are created within the framework of space and time. Generally, based on the spatiotemporal attributes of artistic genres, they are categorized as temporal arts, spatial arts, and spatiotemporal arts. Music, for instance, is classified as a temporal art, whereas painting and sculpture

are spatial arts. Dance and drama, by contrast, belong to the category of arts that occupy both time and space simultaneously.

Dramatic art is presented through both time and space; it is a dynamic art form; a four-dimensional art created within three-dimensional space through the passage of time. On the theatrical stage, time and space are inseparable and intimately interconnected. Consequently, the spatiotemporal nature of drama is characterized by the spatialization of time and the temporalization of space. Since drama possesses this dual spatiotemporal attribute, and the relationship between time and space is tightly interwoven, the question of how to employ space and time in dramatic representation remains a perpetual challenge for dramatists.

Drama operates according to the principle of hypotheticality. (China Encyclopedia Publishing House.1989))This principle refers to the varying degrees of transformation and adaptation of natural life forms by artists based on epistemological and aesthetic considerations. Artistic representation is a synthesis and refinement of reality rather than a mere replication of it. The manifestation of time and space in drama is also founded upon this principle of hypotheticality. A performance must occur within a specific space and within a finite duration, engaging the audience to create an immediate, tangible interactive relationship. Because the audience witnesses live performance art in real-time, the representation of spatiotemporal dimensions is inherently limited. Thus, by leveraging the principle of hypotheticality, dramatists use the limited temporal and spatial resources of the theater to represent the expansive temporal and spatial dimensions required by the narrative. Upon entering the theater, audiences implicitly accept this principle, transforming the stage's hypothetical space into a cognitively “real” space, co-constructing with the performers a shared spatiotemporal understanding that constitutes the dramatic creation process.

2.2 The Multiple Layers of Stage Space-Time

Based on the principle of hypotheticality, stage space-time can be analyzed in terms of three primary layers: the physical space-time of the performance, dramatic space-time, and the audience's perceived space-time.

2.2.1 Physical Space-Time of the Performance

The physical space-time of a performance refers to the tangible spatial and temporal dimensions within which drama occurs in a theater—objective, natural time and space. A theater is a venue where the audience observes the performance. It simultaneously constitutes the space in which performance actions occur and the space in which spectators observe them. This space can be a fully equipped modern theater, a traditional performance hall, a street, or even a narrow open area; any location that establishes an observer-performer relationship may broadly be considered theatrical space. However, this space is always finite.

Similarly, within this limited space, the temporal duration from the opening to the closing of a performance constitutes the theater's physical time. This notion of space-time is uniform for both performers and audience members, as all participants experience the same objective time and share the same physical space.

2.2.2 Dramatic Space-Time

Dramatic space-time refers to the temporal and spatial experiences of characters within the drama. It is a unique creation by dramatists as the primary creators of the performance. This form of space-time conveys specific meaning through the spatiotemporal presence shared by performers and audience members, manifesting the narrative intended by the creators. Dramatic space-time is highly hypothetical; within the limited duration and confines of the stage, audiences can witness events taking place in any part of the world, experience decades or even centuries of time, and even perceive psychological space-time that does not objectively exist. All of this occurs based on the principle of hypotheticality.

For instance, dramatic time operates under rhythms and patterns entirely distinct from real-world time. It can be condensed, extended, or paused in accordance with the audience's aesthetic expectations. Thus, it is common in performances to compress extensive narrative activity into a short physical duration or expand brief actions across longer periods. In Beijing People's Art Theatre's production of Teahouse, Lao She selected three historical periods—the post-Wuxu Reform of the late Qing dynasty, the early Beiyang warlord era, and the final days of the Nationalist regime—and represented a span of fifty years in just a few hours of stage time. This temporal compression increases the dramatic capacity,

heightens narrative conflict, clarifies the hierarchy of events, and concentrates attention on the main plotlines.

Similarly, dramatic space is inseparable from dramatic time and is also hypothetical. Stage space establishes concrete locations for the unfolding narrative, provides environmental and contextual detail for events, facilitates stage blocking, heightens dramatic tension, and enables scene transitions. The fundamental purpose of dramatic space is to support stage action and ultimately to bear artistic emotion (Wang, 1995). In traditional Chinese opera, stage space is even more abstract and hypothetical. Actors often employ stylized movements combined with minimal props to represent spatial changes. For example, a table and two chairs may symbolize a hall, a single flagpole may represent surging waves, and a single horsewhip may depict a journey spanning thousands of miles. Boarding a boat, riding in a carriage, entering a house, or riding a horse each follows a set stylized procedure. Audience members, guided by conventional viewing experience, mentally reconstruct these symbolic spaces and enter the spatial environment created by the performers.

2.2.3 Audience-Perceived Space-Time

Audience-perceived space-time refers to the temporal and spatial impressions experienced by viewers during the performance. Spectators' understanding of time is inseparable from their subjective perceptions and psychological experiences, forming the foundation of their recognition of stage space-time. Dramatists aim to create temporal and spatial dimensions that the audience can empathize with, enabling viewers to psychologically accept the performance's authenticity and experience corresponding spatiotemporal and emotional resonance. Both audience-perceived space-time and dramatic space-time are constructed based on the hypothetical nature of stage space-time, working together to achieve a unified spatiotemporal relationship in the observer-performer interaction.

Among these three layers, dramatic space-time represents the transformation, aggregation, and reconstruction of space and time according to hypotheticality by the dramatist. It is the ultimate reflection of the artist's subjective emotions and creative engagement with life on stage. Therefore, a thorough analysis of dramatic space-time is both essential and necessary. The subsequent discussion examines dramatic time and space separately.



2.3 Dramatic Time

Dramatic time can be categorized into narrative environment time and psychological time.

2.3.1 Narrative Environment Time

Narrative environment time refers to the starting time of dramatic action and the temporal span it encompasses. Temporally, it may refer to seasons, parts of the day, or precise moments in a specific year, month, or hour. Chronologically, it can span seconds, minutes, hours, days, years, or even centuries. Based on the principle of hypotheticality, this time may be compressed or extended relative to physical performance time. Compression is guided by artistic selection to simplify complexity and highlight central conflicts, while extension can emphasize and dramatize narrative events. Narrative environment time generally aligns with the audience's psychological perception of objective temporal logic. With the development of dramatic art, the hypothetical nature of time is increasingly recognized and utilized, granting dramatists considerable freedom to manipulate narrative sequence through techniques such as flashback or nonlinear storytelling.

2.3.2 Psychological Time

Psychological time is a subjective temporal embedding within the narrative, directly expressing characters' inner temporal states (Wu, 2001). It is manifested through memories, anticipations, dreams, imagination, and hallucinations. Psychological time is highly flexible, free, and plastic, and is fundamentally hypothetical. It can merge past, present, and future states to shape the character's inner world.

For instance, in the opera *Guests on the Iceberg* at the National Centre for the Performing Arts, Amir mistakes a character for his childhood friend, creating a stage-time transition from the narrative present to psychological past. Through this shift, the audience experiences Amir's recollection, blending narrative time and psychological time to heighten emotional contrast. Similarly, stage designer Schutz identifies two temporal dimensions in performance: (1) the duration occupied by narration itself and (2) the time required to narrate other events (Liu, 2010). The first equates to objective stage time, while the second encompasses both narrative environment time and psychological time.

In Tennessee Williams' *The Glass Menagerie*, Tom functions as both narrator and participant, oscillating between storytelling and enactment. The performance's temporal structure transitions



between psychological recollection and the re-enactment of events, guiding the audience from narrative exposition to inner character experience.

2.4 Dramatic Time

From the perspective of dramatic time, it can be divided into two major categories: narrative environment time and psychological time.

2.4.1 Narrative Environment Time

Narrative environment time refers to the temporal setting and the duration spanned by dramatic action. In terms of temporal designation, it may correspond to seasons of the year—spring, summer, autumn, winter—or to times of the day—morning, noon, night. It may even be specified with precision, such as the exact year, month, day, hour, minute, or moment. In terms of duration, it may last seconds, minutes, hours, days, years, or even centuries. According to the principle of hypotheticality, narrative environment time may be compressed or extended relative to the physical performance time. Compression serves the artistic principle of selective focus, simplifying complex events and emphasizing the primary dramatic conflicts. Conversely, temporal extension is used to highlight, dramatize, and intensify key plot developments. Narrative environment time generally corresponds to the audience's psychological perception of objective temporal logic.

With the evolution of dramatic art, however, the hypothetical nature of dramatic time has become increasingly acknowledged and utilized. This allows dramatists considerable creative freedom in designing narrative time, employing techniques such as flashbacks, nonlinear chronology, and temporal dislocation to suit the needs of the plot. Such flexibility enables the manipulation of audience perception and enhances dramatic effect (Wu, 2001).

2.4.2 Psychological Time

Psychological time constitutes a subjective temporal embedding within the narrative, directly expressing the temporal state of a character's inner world. It is achieved by depicting memories, anticipations, dreams, imaginings, and even hallucinations. Psychological time is highly flexible, free, and plastic, representing a highly hypothetical temporal structure. It allows past, present, and future temporal states to merge, collectively shaping the character's inner experience.

For example, in the opera *Guests on the Iceberg* performed at the National Centre for the Performing Arts, Amir mistakes a character at Nawruz's wedding for his childhood friend. At this moment, the narrative environment time of the stage freezes, and dramatic time transitions to Amir's psychological time. The character of Gulandam singing on the rear stage embodies Amir's recollections of joyful childhood experiences with his friend—a past-tense psychological time. As the memory concludes, psychological time shifts to the present tense, reflecting Amir's sorrow and anxiety over the impending marriage of the “false Gulandam.” This transition from narrative environment time to psychological time introduces pauses and variations in dramatic time, emphasizing the inner emotional landscape of Amir and guiding the audience from the lively wedding scene to his introspective psychological world, thereby reinforcing contrast between joy and sorrow.

Renowned stage designer Johannes Schutz also offers a significant perspective on dramatic time. He distinguishes between: (1) the duration occupied by narration itself, and (2) the time required to narrate other events (Liu, 2010). The first corresponds to objective, physical stage time, whereas the second encompasses both narrative environment time and psychological time. For example, in Tennessee Williams' *The Glass Menagerie*, Tom functions as both narrator and participant. As narrator, the time is the duration required to recount past events (psychological embedding of memory), whereas as participant, Tom experiences the events in real-time (narrative environment time). This dual role allows the audience to understand both the chronological context of the plot and the subjective temporal experience of the character, creating a multi-layered temporal perspective.

2.5 Dramatic Space

Dramatic space, like dramatic time, can be analyzed in terms of multiple layers: narrative environment space and symbolic or psychological space.

2.5.1 Narrative Environment Space

Narrative environment space refers to the spatial setting in which dramatic action occurs, established by the dramatist based on an overall understanding of the plot. It may be a dense forest, a vast field, the streets of Rome, a French palace, or under the red walls of the Forbidden City. Both indoor and outdoor locations, urban streets, and rural alleys can constitute narrative environment space.



The theater, however, does not replicate real-world locations; stage space cannot reproduce physical scenes literally. Instead, the creation of stage space relies on the collaboration of multiple production departments. For instance, actors' dialogue, stage design, lighting, and props collectively suggest the spatial environment. Dramatists must observe and select aspects of real life that can be referenced, then extract, reorganize, and construct these spatial elements to create the necessary stage environment. Director Chen Xinyi stated: "Too real is not drama; not real is not drama; only the balance of truth and artifice constitutes art" (Chen, cited in Zhang, 2018, p. 45). This illustrates that dramatic appeal emerges from life itself, refined and presented in an artistic and balanced manner, allowing the audience to relate, reflect, and aesthetically experience the transformation from "life" to "art."

From a scenographic perspective, the narrative environment space of a stage can follow this principle. In the Central Academy of Drama's production Red and White Wedding, the stage props—including paint-stained benches, water jars, carts, and ladders—were collected to reflect the fictionalized rural environment of Baoding. However, the stage was not a literal replication of a specific courtyard or farmland. The space was constructed through a method of "partial realism, overall impressionism," allowing the audience to psychologically accept the stage environment as authentic through the principle of hypotheticality.

With the development of drama, neutral, non-realistic, or abstract stage designs increasingly appear. These forms employ their own symbolic language to convey the spatial environment for dramatic action. When combined with actors' performance, the audience's imagination and associative thinking are engaged, allowing them to recognize and internalize the depicted space. In Chinese opera, this idea is exemplified through stylized gestures known as *zuo ke*, where minimal physical cues indicate spatial transformations. For example, raising a hand may indicate entering a room; turning and pulling may close a door. Paddling gestures indicate boating, and the lifting of a horsewhip suggests traveling across mountains. This highly impressionistic representation of space is likewise grounded in the principle of hypotheticality, co-constructed by actors and audience (Wang, 1995).

2.5.2 Psychological Space

Modern drama increasingly emphasizes complex character depiction. To reveal the inevitability of actions and the intricacies of psychological motivation, dramatists often need to delve deeply into

characters' inner worlds. Within the constraints of limited physical space and time, portraying a character's emotional universe with precision and capturing their destiny is a challenging task. Moreover, psychological phenomena such as memories, hallucinations, or fantasies are inherently invisible to the audience. In such cases, the principle of hypotheticality becomes crucial, externalizing characters' inner worlds so that the audience can visually and aurally perceive the mental imagery of the characters (Wu, 2001).

Psychological space may derive from associative projections of recalled narrative environment space, or it may emerge as an imagined or hypothetical spatial construct. This space can be concrete—for example, the location where a past event occurred in the character's memory—or it can be entirely abstract, vague, or chaotic. Even a small illuminated patch on the stage can represent the character's psychological space. Psychological space is extremely flexible; it can transcend the limitations of environpsychological space and follow the character's train of thought, exploring any imaginative spatial realm constructed by the playwright to serve the plot.

Through the above analysis, the concept of dramatic space-time becomes clearer. In contemporary performances, psychological space-time increasingly occupies a central role in the structuring of stage space-time. Numerous scripts and directorial approaches exploit this form of temporal and spatial arrangement. But what exactly constitutes psychological space-time?

2.5.3 Definition of Psychological Space-Time

Psychological space-time is a creative construct that transcends, and often abandons, the logic of real-world temporal and spatial continuity. Instead, it is structured according to emotional logic, philosophical reasoning, and imaginative invention. Its artistic value lies in providing a concrete temporal and spatial form for expressing deeply embedded emotions or abstract life philosophies, independent of the temporal-spatial constraints of everyday reality (Wang, 1995).

Originating in the creative psychology of the dramatist, psychological space-time is constructed based on the internal emotional states of characters. It is inherently subjective, allowing extreme freedom of combination and decomposition. Psychological space-time can directly display conscious and subconscious thought, converting these mental processes into stage imagery perceptible to the audience. It allows the dramatist to amplify even fleeting moments of consciousness and to manifest

the deepest, most foundational impressions in the character's psyche. It can also articulate desires and motivations that are otherwise ineffable.

Through psychological space-time, sudden thoughts, reflective deliberations, memories, imagination, desires, conscious awareness, and nebulous subconscious elements can all be transformed into perceptible forms for the audience. This construct is structured according to the character's mental activity, employing techniques such as subjective narration, internal monologue, and recollection to concretize inner life. By creating an internalized temporality and spatiality, abstract mental states are made tangible, and invisible thoughts are rendered visible. It allows the audience to observe the interplay between the character's inner world and external reality from multiple perspectives and layers, providing a direct window into the character's consciousness and emotional core.

For example, in the Kunqu opera *The Peony Pavilion*, psychological space is vividly manifested in the dream sequence of the scene *Awakening from a Dream*. The protagonist Du Liniang, confined for a long time within her boudoir, is led by her maid Chunxiang to secretly stroll through the garden. She dreams of a scholar holding a willow branch, composing poetry with her, and meeting him at the Peony Pavilion in a romantic encounter. Upon awakening and returning to the garden, she finds only emptiness, which triggers her lingering yearning and gradual decline. Here, the dream as a psychological space-time expresses Du Liniang's pent-up frustration and desire for love, simultaneously advancing the narrative and foreshadowing subsequent developments.

In the play *The Field*, psychological space-time is also employed to depict hallucinations. After murdering Daxing, Qiu Hu flees to the hill with gold. Surrounded by the pursuing detective squad, he becomes trapped and enters a hallucinatory state, "seeing" himself back in the prison from which he had escaped. Former inmates call to him to flee, guards raise whips to recapture him, and Qiu Hu resists in his illusion. This hallucinatory temporal-spatial arrangement not only contextualizes his tragic past but also externalizes his desperation, anxiety, and struggle in the face of imminent capture.

2.6 Classification of Psychological Space-Time

Psychological space-time in drama can be categorized based on the type of inner process it represents. These categories include past tense scenes, future tense scenes, and present continuous tense scenes.

2.6.1 Past Tense Scenes

Past tense scenes depict the influence of previously experienced events on the character's current psychological state. This includes memories, flashbacks, dreams, and impressions embedded in the subconscious. Typically, past tense scenes begin with present reality, guiding the audience through the character's recollection into a former temporal domain. This allows the narrative to condense and refine the dramatic structure.

For example, in Arthur Miller's *Death of a Salesman*, the physical temporal frame covers only two days and one night, and the physical locations include the Loman household's kitchen, backyard, and bedrooms, as well as an office in New York and a hotel room in Boston. However, the drama depicts far more than these actual locations. Through techniques such as recollection, imagination, and narrative perspective, the play establishes a flexible temporal-spatial relationship, oscillating between reality and mental projections. This structure conveys Willy Loman's futile struggle and attempt to escape unemployment before his eventual suicide. When Willy enters a memory during a quarrel with Charley, his deceased brother Ben appears, and conversations from earlier events are fully portrayed to the audience. These fragmented scenes externalize Willy's internal pain, disappointment, and unfulfilled aspirations, vividly reflecting the impact of past experiences on present consciousness (Zhang, 1989).

2.6.2 Future Tense Scenes

Future tense scenes express the character's genuine desires and anticipatory projections of the consequences of their future actions. Imagination, hallucination, and dreams are commonly used to depict such temporal-spatial configurations. In the silent drama *Evening Crane* performed at the Central Academy of Drama, a hunter narrates to Yu Ping the splendor of the capital city after purchasing a rare brocade. The stage temporality transitions from the immediate present to Yu Ping's imagined experience of life in the capital, expressed through dance and physical gestures that illustrate luxury, enjoyment, and aesthetic pleasure. This transition demonstrates how future tense scenes allow the audience to visualize the character's aspirations and projected experiences.

2.6.3 Present Continuous Tense Scenes

Present continuous tense scenes capture the character's ongoing internal analysis, depicting intense cognitive conflicts, moral dilemmas, or inter-personal struggles within the same physical space and

event. When multiple characters experience simultaneous events but possess contrasting inner thoughts, the present continuous tense facilitates the externalization of these conflicts. This approach enables the audience to perceive each participant's mental processes directly and fully, highlighting the dynamics of internal struggle and cognitive tension.

Because psychological space-time is highly flexible, these temporal categories are often interwoven within a single performance according to narrative needs. The fluid interplay between past, present, and future tense scenes enhances dramatic depth and allows for multi-layered exploration of characters' inner worlds.

3. The Relationship Between Stage Lighting Art and Psychological Time-Space

Stage lighting, also known as theatrical illumination, is the art of shaping characters and scenes through controlled lighting techniques. Its function is to cooperate with actors' performances by utilizing technical equipment and methods according to the overall conception of stage design, thereby creating visual images on stage. The artistic effects of stage lighting unfold dynamically as the performance progresses and as the stage atmosphere shifts. As a synthesis of temporal and spatial arts, stage lighting in modern performances serves multiple functions: (1) illuminating the stage to allow the audience to clearly see actors and scenery; (2) directing audience attention; (3) shaping character images, enhancing emotions, and presenting stage illusions; (4) creating the spatial environment required by the drama; (5) enhancing the dramatic atmosphere; and (6) signaling temporal and spatial transformations, highlighting dramatic conflicts, reinforcing stage rhythm, and enriching artistic impact (China Encyclopedia Publishing House, 1989).

From this definition and these functions, it is evident that stage lighting is an art form deeply rooted in time and space. It plays a crucial role in representing theatrical time-space, both by creating the temporal-spatial environment required within the drama and by signaling shifts in time and space, which facilitates audience comprehension and emotional engagement. Psychological time-space is a vital component of theatrical time-space and holds particular significance in modern drama. As discussed in the previous chapter, this chapter explores the relationship between stage lighting and the expression of psychological time-space.



3.1 The Development of Stage Lighting and Its Contribution to Psychological Time-Space

Initially, stage lighting served merely as a functional illumination tool. For a long period after the emergence of drama, performances relied on natural light or, for nighttime shows, the burning of torches and candles. Audiences understood the alternation of day and night, the passage of time, and the changing locations of the narrative solely through actors' performances and scene transitions. Lighting at this stage could not guide audience perception; viewers relied on their own life experiences to mentally supplement the transformation of time and space.

With the advancement of dramatic arts, technological progress, and rising aesthetic standards, lighting became increasingly integrated into theatrical creation. As color, intensity, and coverage became easier to control, stage designers began to use lighting to mimic natural light, employing effects to represent indoor and outdoor environments, sunrise and sunset, storms, and landscapes. This enabled the visualization and transformation of stage time-space, helping audiences better perceive narrative developments. Particularly during the late 19th and early 20th centuries, the heyday of naturalistic drama, lighting combined with illusionistic scenery to create conditions for realistic stage representation.

However, as naturalistic drama reached its extreme, opposition emerged. Artists such as Swiss designer Adolphe Appia and British designer-director Edward Gordon Craig challenged naturalism and established new theatrical perspectives. Adolphe Appia, for example, emphasized the integration of lighting with actors' spatial movements and music, advocating for a continuous and harmonious effect. He conceptualized lighting as a visual analog to music, expressing the inner emotions of drama. This liberated stage lighting from strict naturalism and established a new expressive design philosophy, focusing on the conveyance of artistic emotion. Adolphe Appia is thus regarded as the "father of lighting design" (Hu, 1985).

The development of stage lighting illustrates a gradual enrichment of its function, evolving from basic illumination to the recreation of everyday life, and eventually to the expression of dramatic emotions. Later, Josef Svoboda's concept of "psychological modeling space" further enhanced the expressive capacity of lighting for psychological time-space. Svoboda advocated for the creation of

spaces that dynamically evolve with dramatic action and character psychology, achieving a high degree of synthesis among space, time, and movement. He stated:

"Psychological modeling space is a variable three-dimensional space capable of responding flexibly to the rises and falls of the dramatic action's psychological pulse. This concept embodies the integration of time and space, as well as the integration of time, space, and movement. Stage sets are not merely visual compositions but consist of multiple factors, including shape, color, speed, and rhythm—all elements governed by actors. These factors enter into a dynamic interaction with performers, adapting to the development of action, emotional progress, thought processes, and dramatic lines." (Hu, 1985)

Since then, stage lighting has increasingly participated in shaping and expressing psychological time-space. The conceptual evolution of lighting design has, in turn, facilitated modern drama's capacity to construct psychological time-space. Contemporary dramatists pay growing attention to the use of lighting in the formation of psychological time-space, highlighting the mutually reinforcing relationship between the two.

3.2 Key Characteristics of Stage Lighting Art

Stage lighting's significant role in representing psychological time-space stems from its flexibility, plasticity, and expressive richness.

Its flexibility derives from precise controllability: each lighting instrument can be manipulated via a control console according to the designer's requirements. Changes in lighting cues can align closely with the dramatic action, offering instantaneous control over stage conditions. If one conceptualizes theatrical time and space as two axes, each lighting change can be seen as a point on this coordinate plane. Transformations in lighting effects can complement actors' performances, shape the required psychological time-space, and facilitate seamless transitions between psychological and environmental time-space, providing a high degree of freedom and fluidity.

For example, in the Beijing People's Art Theatre production of Death of a Salesman, when Willy Loman recalls his past affair with another woman, a separate lighting zone representing this memory is illuminated while the physical space dims. The stage instantly transitions into Willy's psychological time-space, and once the scene concludes, the memory's lighting fades, returning the stage to real-time



space. Such rapid and flexible temporal-spatial shifts are beyond the capability of sets or other stage elements, underscoring lighting's unique ability to represent psychological time-space in real time.

The plasticity of stage lighting lies in its remarkable capacity for visual shaping. Lighting provides a rich repertoire of design techniques: variations in brightness, color changes, repositioning, adjustments of beam size and aperture, pattern transformations, and selective illumination zones can all be achieved through the manipulation of lighting instruments. In contemporary theatre, the widespread use of intelligent, computer-controlled lighting fixtures has further expanded these possibilities. Color, projection position, beam size, light quality, and pattern can now be altered with ease, allowing a single light to serve multiple purposes and enabling highly flexible, nuanced effects. Such versatility significantly enhances the ability of lighting to shape psychological time-space.

In the musical "Crazy for You", (Figure 3&4)Bobby, a young man with a passion for drama, gives up his inheritance as the heir of a banking family to seek employment at the renowned Zangler's Theatre. After a clumsy performance, he is ruthlessly rejected by Zangler. Disappointed and frustrated, Bobby is further criticized and nagged by his fiancée who comes to force him into marriage and his mother who urges him to take over the family business. Annoyed, Bobby longs for his own pursuit and career. At this moment, the music suddenly changes, and the stage shifts from the setting of "the street outside Zangler's Theatre at night" to Bobby's inner world. As shown in Figure3, the stage imitates real life, and the lighting effect of the night street rapidly changes. The overall light intensity weakens, and a distinct top light shines vertically down, illuminating only Bobby. Bobby begins to sing about his inner dreams. He hopes to one day become a true actor and shine on the stage. The lighting designer, in coordination with Bobby's singing, transforms the scene into the lighting effect of a real stage performance. Under the pink light, Bobby is surrounded by numerous dancers, shining brightly and pursued by everyone, freely pursuing his artistic dreams, as shown in Figure 4. The lighting designer uses the movement of various stage elements such as light intensity, color, beam, and position, combined with the form of song and dance music, to complete the transformation from the setting environment to the inner world and shape and express Bobby's inner world. It visually and intuitively presents to the audience Bobby's inner thoughts of becoming a highly regarded artist through his own efforts and his longing for a carefree life as an artist. This example is a comprehensive application of

using the movement of light to represent the inner world, fully demonstrating that the movement of light can effectively complete the task of transforming time and space and expressing the inner world.

The expressiveness of stage lighting builds upon its flexibility and plasticity. Lighting functions as the “brush of the mind,” capable of translating psychological time-space into visual forms that are directly perceivable by the audience. By doing so, it resonates with the viewers’ inner world, eliciting emotional and cognitive responses. The language of light is rich, delicate, and evocative; a single beam can convey a character’s internal struggle, evoke memory, or even suggest the presence of a lost soul. This simplicity and efficiency make lighting an ideal tool for shaping psychological time-space.

In constructing psychological time-space, stage lighting plays a further critical role by facilitating audience engagement and emotional resonance. Contemporary audiences increasingly desire an active role in interpreting the performance, seeking to follow a character’s mental processes and to form personal interpretations. As viewers perceive the psychological states of characters, they often draw upon their own experiences to generate imaginative associations and self-reflection. Additionally, audiences have grown accustomed to relying on visual representation to satisfy their appreciation of dramatic narratives (Ding, 1985). Stage lighting effectively mobilizes the audience’s visual perception and imaginative faculties, thereby enhancing the impact of psychological time-space.

Thus, stage lighting contributes to psychological time-space on two levels. First, it externalizes the internal psychological space of characters, transforming abstract mental states into visible, tangible images that allow the audience to directly engage with the drama. Second, it enables the audience, through these visual cues, to empathize with the characters’ inner experiences, facilitating deeper understanding of the narrative. In this sense, lighting acts as a bridge that unites performers and viewers within the same psychological time-space.

Foundational Factors for Representing Psychological Time-Space through Stage Lighting

The Script

The script constitutes the fundamental basis of theatrical creation. As the primary creative work, it provides the premise and foundation for subsequent secondary creation. For lighting designers, the script is the foremost reference; reading it allows designers to mentally associate textual content with preliminary visual impressions. These impressions, though often vague, constitute the initial

“inspiration” that guides lighting design. Subsequent analysis involves a detailed examination of plot, thematic content, historical context, genre, characters, spatial settings, temporal transitions, conflicts, and event relationships. This process establishes the foundational framework for representing psychological time-space through lighting. Designers can identify character-specific psychological spaces, analyze their emotional and cognitive states, and form preliminary design concepts aligned with the dramatic narrative.

Directorial Interpretation

In contemporary theatre, the director-centered approach is widely recognized. Analogous to a conductor orchestrating a symphony, the director integrates actors' performances, stage design, lighting, costumes, makeup, props, and multimedia effects to achieve a coherent and stylistically unified production. Director Wang Xiaoying asserts:

"Psychological time-space fundamentally does not originate from the characters' psychological activities within the script, but from the creative psyche of the theatrical creator, represented by the director"(Wang, 1995).

This statement highlights the essence of psychological time-space as the creator's intention to convey deeper layers of thought and emotion to the audience. Directorial interpretation establishes the foundation upon which lighting design translates these ideas into visual form, ensuring that lighting effects align with the director's conception of character and emotional space.

Audience Emotional Needs

With the evolution of theatre, audience expectations have changed considerably. Modern viewers increasingly seek an active interpretive role, desiring access to characters' mental processes and forming personal judgments about their motivations. Simultaneously, audiences draw upon their experiences to engage in imaginative reflection (Ding, 1985). Stage lighting, as a visual medium closely integrated with performance, becomes crucial in fulfilling these needs. Lighting serves as a bridge connecting the script, directorial intent, and audience perception, enabling the audience to grasp both the narrative and its underlying emotional significance.

4. Actor Performance

While the script and director provide structural and conceptual frameworks, the ultimate realization of theatre relies on actors. Actors directly mediate the audience's visual and auditory experience, and stage lighting, with its flexibility and plasticity, must adapt in real time to actors' lines, movements, and spatial positioning. Psychological time-space is largely shaped by actor performance, and lighting must respond to this dynamic. Conversely, the atmosphere created by lighting can enhance actors' embodiment of characters, enriching the representation of psychological space.

Stage Design

Stage and lighting design constitute two macro-level elements of theatrical visual art that must operate in harmony. Without lighting, even the most elaborate set remains unseen; without sets, lighting loses a spatial medium through which to articulate form. Modern stage design not only constructs the physical environment but also contributes to the expression of psychological space. As Svoboda emphasizes, stage design should be adaptable, evolving in concert with dramatic action and character psychology. Lighting must coordinate with these changes, rendering psychological time-space perceptible.

In conclusion, theatre is a multidisciplinary art form, and stage lighting alone cannot effectively shape psychological time-space. Lighting design must serve the drama, the performance, and integrate with the script, director, design, and actors. Yet lighting remains indispensable: it translates character psychology into visible form, bridges creators and audience, and facilitates the emotional reception of drama. Its ultimate function is to convey human emotion, rendering it the visual language that connects the creators' intent with the audience's perception. As audiences' comprehension and appreciation of time-space relations advance, lighting and its technological innovations will continue to expand the expressive possibilities of psychological time-space. Nonetheless, regardless of technical advancement, the central principle remains—lighting must convey emotion to achieve its full artistic potential.





Figure 1: *The hunter recounts the grandeur of the capital to Yohei.*



Figure 2: *Yohei's imagination of the capital.*

(Figure 1&2 Image from the author and the Central Academy of Drama, Beijing, China. All rights reserved)



Figure 3: *Crazy for You*



Figure 4: *Crazy for You*

(Image courtesy of the author and the Central Academy of Drama, Beijing, China. All rights reserved)

References

China Encyclopedia Publishing House. (1989). *China encyclopedia of drama* (p. 405). China Encyclopedia Publishing House.

Ding, R. R. (1985). Interesting realms: A preliminary exploration of psychological time-space in theatre. *Drama Study*, (1), 46.

Hu, M. S. (1985). *The symbolic theatre space* (pp. 365–366). Knowledge Press.

Liu, X. (2010). Johannes Schutz: Good scenery is always empty. *Drama*.

Wang, X. (1995). The free domain of dramatic time-space. *Drama Art*, (2), 20.

Wu, G. (2001). *New theory on the essence of drama*. Yunnan University Press.

Zhang, H. (1989). *Dictionary of western modernist literature and art*. Social Sciences Academic Press.



Research on China's Overseas Cultural Communication: Status, Hot Topics, and Trends from 2009 to 2024

Liguang Li¹, Nan Zhao², Yu-Chih Lin³

¹*Kirk University, Thailand*

²*Guangxi City Vocational University, China*

³*Kirk University, Thailand*

¹*e-mail: 010llg@163.com*

²*e-mail: 010llg@163.com*

³*e-mail: yclin@krirk.ac.th*

Received: Dec 15, 2025 **Revised:** Dec 19, 2025 **Accepted:** Dec 26, 2025

Abstract

Due to globalization, the international dissemination of Chinese culture has become a crucial issue for studying cultural communication. This study employs 282 journal articles indexed in China National Knowledge Infrastructure (CNKI) from 2009 to 2024, utilizing bibliometrics and CiteSpace. The research findings reveal that first, the collaborative network among authors in this field remains loose, rather than a cohesive academic community. Second, keyword clustering analysis shows the shifts from static cultural symbols to dynamic cultural experience, from government-led unidirectional dissemination to multi-stakeholder interaction, and from macro national strategies to micro practical pathways. Third, it reveals shift phases in research topics: early focus on cultural essence and overseas Chinese communities, mid-phase emphasis on Confucius Institutes and the Belt and Road Initiative, and then the latest prominence of diverse subjects and digital communication scenarios such as Chinese cinema, national image, and Li Ziqi. It suggests that research should integrate content, strategy and effect from content delivery to value recognition.

Keywords: China's overseas cultural communication; CiteSpace; Research shift

1. Introduction

Since 2010 the Chinese government and relevant departments have issued multiple policy documents, charting the course for Chinese culture to go global. The 2011 Outline of the Twelfth Five-Year Plan for National Economic and Social Development explicitly set the development goal of actively exploring international cultural markets, innovating models for cultural going global, enhancing the international competitiveness and influence of Chinese culture, and elevating national soft power. In 2011, the Ministry of Culture promulgated the 2011-2015 Master Plan for Promoting the Going Global of Cultural Products and Services. In 2012, the Several Opinions on Accelerating the Going Global of China's Press and Publishing Industry further detailed the implementation pathways for cultural going global (Wu, 2017). In 2014, the State Council issued the Opinions on Accelerating the Development of Foreign Cultural Trade (China Culture Daily, 2014). In 2016, the Central Leading Group for Comprehensively Deepening Reforms adopted the Guiding Opinions on Further Strengthening and Improving the Work of Chinese Culture Going Global (People's Daily, 2016). The 2016 Ministry of Culture's "Belt and Road" Cultural Development Action Plan (2016–2020) deeply integrated cultural dissemination with national strategy (China Culture Daily, 2017). The 2024 report From Initiative to Practice: 2024 China-Foreign Cultural Exchange Report further noted that current China-foreign cultural exchanges have formed a multidimensional, three-dimensional development pattern characterized by mechanism-led, multi-faceted integration, path innovation, technology-driven, and nationwide participation.

However, it indicates that a gap exists between the scale and effectiveness of China's cultural outreach. Despite continuous expansion in government-led initiatives, such as building external discourse frameworks, literary translation, film and television exports, and intangible cultural heritage promotion. Nevertheless, the core challenge remains: how to ensure global audiences understand its essence and develop a sense of identification. This shows that existing studies predominantly focus on Confucius Institutes, Chinese cinema, translation strategies or narrative techniques, but lacking a systematic knowledge structure, trajectory, and trends. Thus, this paper employs 282 core literatures published between 2009 and 2024 as its data foundation, utilizing CiteSpace for in-depth analysis to address three core questions:

- 1 What are the research status in this field?
- 2 What are the research hot topics?
- 3 How have research trends shifted from 2009-2024?

2. Literature Review: Research Status

Via publication data from China National Knowledge Infrastructure (CNKI) (See Fig. 1), it reveals a distinct three-phase growth curve in China's research on overseas cultural dissemination from 2009 to 2024. Phase one (2009–2013) represented the exploratory inception period, with an average annual output of 4.2 papers, indicating sporadic research efforts. Phase two (2014–2018) marked rapid development, with publications steadily climbing from 11 in 2014 to 26 in 2017, achieving an average annual growth rate of 35.7%. This turning point closely coincided with the 2013 launch of the Belt and Road Initiative, signifying the deep integration of cultural communication research with major national strategies. Phase three(2019–2024) represented an explosive stabilization period, with annual publications surging to over 30 and peaking at 35 in 2020–2021. This sustained high level of interest reflects the dual drivers of increasingly complex international dynamics and the digital technology revolution.



Research phases have represented diverse research topics. Zhang Yan et al. in 2017, as the leading figure, pioneer a data-driven empirical research paradigm through studies on Chinese children's books on Amazon (Zhang et al. 2017a), the overseas dissemination of China-themed books (Zhang et al.

2017b), and systematic examination of dissemination volume, geographic distribution, and thematic characteristics (Zhang et al. 2017c) provides robust quantitative support for evaluating cultural dissemination effectiveness. Zhang Chunyan (2014) proposes the selection principles to drive cultural dissemination from sender-oriented to receiver-oriented approaches. Ren Zeyu (2022) focuses on the localized dissemination of Chinese calligraphy and painting art under the Belt and Road Initiative. Zhang and Xie (2024) innovatively treat ancient style music as a cultural transmission medium, expanding research dimensions. Zhang Hengjun et al. (2016) construct a systematic theoretical framework of fundamental consensus in value, content, method consent. Research in this field has formed a multidimensional, synergistic development pattern. At the strategic vision level, Fan (2023) proposes three dimensions of cultural interests, studying cultural transmission at a national strategic level. With the cross-cultural perspective, Chang (2020) examines the ways to tell Chinese stories. Furthermore, the approach about bridging community is investigated by Chang and Tian (2020) and Chen (2021) explores sinology pathways and provides innovative theoretical frameworks for cross-cultural communication. It illustrates three major characteristics. First, research is mainly on traditional cultural pathways. Chinese porcelain, tea culture, martial arts culture, and Confucian institute have been investigated. Second, research focuses on emerging communication media. New media platforms like overseas gaming, social media, and short videos have emerged as new research focal points. Third, strategic research on topics such as traditional Chinese medicine culture, and ethnic cultural dissemination has gradually increased.

Analysis of author collaboration networks across 282 publications identified 273 authors forming 85 collaborative links, with a loosed network density. This exceptionally low density indicates that collaboration among authors in this field remains generally loose, with research activities exhibiting atomized characteristics. A tightly knit, efficient academic community has yet to emerge.

3. Methodology

This study adopts Bibliometrics and mapping knowledge domain as effective methods for macro level examinations. CiteSpace can reveal the knowledge about current research, hot topics, and future trends within disciplinary domains through visualization methods. However, existing visualization



studies on China's overseas cultural communication have limited analytical dimensions, making it challenging to comprehensively reflect the dynamic landscape of the research disciplines.

The research data were gathered from the China National Knowledge Infrastructure (CNKI) full-text academic journal database. The retrieval strategy focuses on China's Overseas Cultural Communication, time span from January 1, 2009, to December 31, 2024, and document type restricted to academic journals. The initial search yielded 312 documents, subsequently, excluding conference proceedings, book reviews and non-research articles, and a final valid research sample was 282 articles. This study employs bibliometrics and mapping knowledge domain. The core analytical tool is CiteSpace 6.2.R4 software. This software utilizes functions, such as clustering analysis and burst detection, to transform literature data into mapping knowledge domain, thereby revealing the structural characteristics and dynamic evolution of disciplinary fields.

4. Research Hot Topics

It illustrates the keyword co-occurrence network for China's overseas cultural communication. This network comprises 263 nodes and 358 connections, with a network density of 0.0104. This relatively low value indicates that despite the richness of research topics, theoretical dialogue and practical integration among focal points remain insufficient, failing to form a highly cohesive knowledge system.

It shows that research hot topics with high frequency include overseas communication, cultural communication, Chinese culture, Chinese civilization, Confucius Institutes, communication strategies, national image, Chinese cinema, communication, communication effectiveness, external communication, international communication, translation, strategy, and Chinese stories. The top 15 keywords ranked by centrality are Chinese culture, cultural communication, overseas communication, strategy, Chinese civilization, communication strategy, Chinese cinema, Confucius Institutes, Chinese stories, communication pathways, big data, external communication, cultural identity, cultural differences, and martial arts culture (See Table 1).

High-frequency keywords illustrate three core dimensions, including overseas communication, cultural communication, and Chinese culture. The presence of terms, Chinese culture, Confucius

Institutes, and Chinese cinema, further indicate the multidimensional coverage. For example, Confucius Institutes and Chinese cinema disseminate cultural symbol. Chinese stories communicate as narrative contents. The impact assessment can be seen via communication effectiveness, national image.

Centrality metrics reveal the pivotal role of keywords in network connection. Chinese culture emerges with the highest centrality, serving both as the core subject of research and as a bridge linking other themes, such as cultural dissemination and overseas communication, highlighting its overarching significance at both theoretical and practical levels. Cultural communication and overseas communication follow closely, indicating that the action logic of cultural communication and the spatial dimensions of overseas contexts serve as key intermediaries linking other concepts such as strategies, media, and effects in the research. Meanwhile, Chinese cinema and communication strategies demonstrate the connecting role of media carriers and methodological pathways within the co-occurrence network, reflecting the study's emphasis on media innovation and strategic optimization in cultural communication.

No.	Frequency	Keyword	No.	Centrality	Keyword
1	89	Overseas Communication	1	0.65	Chinese Culture
2	47	Cultural Communication	2	0.5	Cultural Communication
3	27	Chinese Culture	3	0.41	Overseas Communication
4	23	Chinese Culture	4	0.39	Strategy

No.	Frequency	Keyword	No.	Centrality	Keyword
5	18	Confucius Institute	5	0.3	Chinese Culture
6	10	Communication Strategy	6	0.19	Communication Strategy
7	8	National Image	7	0.17	Chinese Cinema
8	8	Chinese Cinema	8	0.1	Confucius Institute
9	7	Communication	9	0.11	Chinese Stories
10	6	Communication Effectiveness	10	0.11	Transmission Pathways
11	6	Outbound Communication	11	0.11	Big Data
12	5	International Communication	12	0.08	Outbound Communication
13	5	Translation	13	0.08	Cultural Identity
14	5	Strategy	14	0.08	Cultural Differences



No.	Frequency	Keyword	No.	Centrality	Keyword
15	5	Chinese Stories	15	0.08	Martial Arts Culture

Table 1: *Co-occurrence Frequency and Centrality of Keywords in China's Overseas Cultural Communication*

5. Research Trends

The cluster analysis summarizes five thematic dimensions. First, cultural transmission focuses on cultural pathways, such as sports management, overseas Chinese, Chinese porcelain, and tea culture, reflecting the research's deep engagement with cultural content vehicles. Second, overseas dissemination places emphasis on visual culture, cultural influence, and cultural soft power, demonstrating research evolution from cultural symbols to cultural impact. Third, Chinese culture concentrates on cross-cultural communication, Chinese cinema, national soft power, and cultural promotion, reflecting systematic analysis of cultural dissemination content. Fourth, communication strategies highlight methodological innovations like gaming globalization, and social media dissemination. Fifth, external communication focuses on cross-cultural communication, overseas audiences, and cultural identity, integrating strategic research with practical application.

Research trends have been shifted from cultural symbols to cultural experience, from unidirectional dissemination to bidirectional interaction, and from macro strategy to micro practice. As for research shifting from cultural symbols to cultural experience, early studies focused on Chinese cinema and Chinese porcelain for disseminating cultural symbol. Then research shifted to tea culture studies (Cai 2017) disseminating specific cultural experience. The recent phase emphasizes deeper cultural experiences like overseas ethnography and cultural identity research (Ho 2023). This marks a shift from examining cultural symbols to cultural experience.

Then the research has shifted from unidirectional dissemination to bidirectional interaction. The perspectives transitioned from one-way transmission to interactive dynamics, extensively applied to

studies of overseas Chinese communities, international students, and other communication subjects, emphasizing the interactive relationship between communicators and audiences.

Finally, research has shifted from macro strategy to micro practice. The transition from national soft power to Tea culture and then to gaming globalization (Zhang 2020; Lin 2019). Research has refined from macro strategies to specific cultural pathways and dissemination practices.

6. Conclusion

Through CiteSpace visualization analysis of 282 literatures from 2009 to 2024, this study reveals that the field remains loosely connected in terms of author collaboration networks, institutional cooperation, and regional distribution, it has achieved transitioning from theoretical exploration to practical application. Research has formed a three-dimensional structure, cultural communication, Chinese culture and overseas communication. This structure has achieved transformations in research perspectives, such as shifting from symbols to experience, from unidirectional to interactive, and from macro to micro.

It reveals that research on China's overseas cultural dissemination can be divided into the following three phases.

First, early cultural transmission and group studies (2009–2012). Chinese culture and overseas Chinese were high-frequency keywords in this phase, reflecting academic focus on cultural essence and the transmission practices of Chinese communities. Cui (2022) reveals the communication trajectory from acceptance to recognition, and from recognition to empathy. This phase emphasized theoretical frameworks centered on cultural essence and group communication.

Second, communication and international strategy synergy (2013–2016). The emergence of Confucius Institutes for cultural dissemination. Subsequently, overseas markets and Belt and Road reflecting a shift from inward-focused cultural studies toward integrating international communication with national strategies between geopolitics and cultural transmission.

Third, diverse communication scenarios and national image shaping (2017–2024). In 2017, Chinese cinema, national image, and communication pathways simultaneously gained prominence, signifying the establishment of film and television for national image construction. Since 2020,



cultural phenomena such as Li Ziqi emerged as new focal points. Research perspectives further shifted toward grassroots communicators, corroborating the global success of cultural Ips Black Myth: Wukong.

This demonstrates the deepening research trajectory: from cultural core analysis to communication construction, national strategy linkage, and then to multi-subject practice. Its core concern has consistently been how to shape a positive national image and enhance international communication effectiveness through cultural dissemination.

Nevertheless, it is suggested that further study may deepen theoretical integration to strengthen academic foundations and strengthen impact assessment through scientific metrics.

References

Cai, Meng Hong. (2017). Study on the overseas dissemination of Chaoshan ancestral intangible cultural heritage under the 21st-century Maritime Silk Road: A case of overseas spread of Chaozhou Gongfu tea culture. *Wenhua Xuekan*, (3), 163–168.

Cai, Wu. (2017). *Fortifying the foundation of cultural confidence: 40 years of China's cultural system reform*. Guangdong Economic Publishing House.

Central People's Government of the People's Republic of China. (2011). *Outline of the Twelfth Five-Year Plan for National Economic and Social Development*.
https://www.gov.cn/test/2011-03/16/content_1825941_8.htm

Chang, Jiang. (2020). The cultural mission of Chinese television dramas in overseas dissemination. *China Television*, (10), 73–76.

Chen, Sisi, & Liang, Yan. (2021). The sinology pathway for overseas dissemination of ethnic culture: A discussion on Sinologist Shi Gaode's research on Chinese opera and its value. *Journal of Hainan University*, 39(02), 117–125.

China Belt and Road Network. (n.d.). *Xi Jinping and the Belt and Road*.
<https://www.yidaiyilu.gov.cn/p/6339.html?page=-22>

China Culture Daily. (2014, March 20). Opinion of the State Council on accelerating the development of foreign cultural trade. *China Culture Daily*.

China Culture Daily. (2017, January 6). Ministry of Culture's Belt and Road cultural development

action plan (2016–2020). *China Culture Daily*.

China Foreign Languages Publishing Administration. (2025). *2024 report on Sino-Foreign cultural exchange released in Beijing*.

http://www.cicg.org.cn/2025-09/24/content_43236105.htm

Cui, Xiao Bin. (2022). Cognitive logic of overseas Chinese participation in the dissemination of Chinese culture. *Journal of Chinese Overseas History Research*, (04), 30–36.

Fan, Yugang. (2023). Overseas dissemination of Chinese culture and expansion of overseas cultural interests. *Social Sciences Journal*, (03), 191–203.

Hou, Sheng Xiong. (2023). From international dissemination to overseas ethnography: Exploration of the path of Chinese martial arts to the world. *Journal of Beijing Sport University*, 46(4), 145–156.

Lin, Shu Yu. (2020). Research on the overseas expansion path of Chinese mobile games in the context of cross-cultural communication: A case study of *Honor of Kings*. *Zzqklm*.

<https://www.zzqklm.com/w/sklw/26354.html>

People's Daily. (2016, November 2). Fully implement the spirit of the Sixth Plenary Session of the 18th CPC Central Committee, focus on key reform tasks and ensure their implementation. *People's Daily*.

Ren, Zeyu. (2022). Research on strategies for overseas dissemination of Chinese calligraphy and painting arts under the Belt and Road Initiative: The case of Ukraine. *Journal of Shangqiu Vocational and Technical College*, 21(03), 69–74.

Tian, Hao, & Chang, Jiang. (2020). Bridging communities and cross-cultural communication: An examination of overseas reception practices of *Journey to the West*. *Journal of Journalism and Communication Studies*, 27(01), 38–52.

Zhang, Chunyan. (2014). Pathways and content selection for overseas dissemination of Chinese culture. *Journal of Yunnan Normal University (Chinese as a Foreign Language Edition)*, 12(01), 5–9. <https://doi.org/10.16802/j.cnki.ynsddw.2014.01.003>



Zhang, Hengjun, Cao, Bo, & Sun, Donghui. (2016). Establishing three fundamental consensus points for the overseas dissemination of Chinese culture. *Journal of Social Sciences, Harbin Normal University*, 7(06), 177–181.

Zhang, Na, & Xie, Haoying. (2024). Constructing the cultural influence of ancient-style soundtracks in Chinese period dramas from a cross-cultural communication perspective. *China Television*, (09), 62–67.

Zhang, Ya Wen. (2020). Visualization analysis of the research status on Chinese online literature translation and overseas dissemination (2002–2019). *Northeast Asia Foreign Language Studies*, 8(4), 71–78.

Zhang, Yan, He, Shan, & Liang, Yaodan. (2017b). Analysis of overseas sales of China-themed books: Based on data from Amazon's China bookstore. *China Publishing*, (07), 60–64.

Zhang, Yan, Wang, Linlin, & Deng, Yue. (2017a). Research on the overseas dissemination of Chinese children's books: Based on data from Amazon's U.S. website. *Publishing Panorama*, (02), 23–26.

Zhang, Yan, Zhang, Na, & Hao, Zhesong. (2017c). Research on the scale, geography, and themes of overseas dissemination of Chinese books (2006–2015). *Editor's Friend*, (08), 9–16.

Revitalizing Mandalay through Arts Tourism: Integrating Traditional Crafts, Performative Arts, and Market Mechanisms for Sustainable Cultural Development

Soe Myint Than¹

¹Brain Box Acumen College of Management, Mandalay, Myanmar

e-mail: soe.myint.than@gmail.com

*Corresponding Author: John Walsh

Received: Nov 27, 2025 **Revised:** Dec 15, 2025 **Accepted:** Dec 26, 2025

Abstract

Mandalay, Myanmar's storied city of cultural heritage, is distinguished by its artistry in painting, sculpture, wood carving, lacquerware, and miniature craftwork. Traditional craft techniques, passed down through generations, reflect Mandalay's vibrant identity but remain underleveraged in attracting and engaging global tourism. Using a mixed-methods approach, this study examined the potential for integrating traditional arts into sustainable tourism through semi-structured interviews with 30 artisans, 10 tour operators, and 40 tourists, surveys of 200 domestic and international visitors, and SWOT analysis. Findings reveal strong tourist demand for authentic, hands-on craft experiences, with artisanal authenticity significantly boosting satisfaction and revisit intention. Results indicate that arts tourism can empower artisans economically while strengthening cultural preservation through systematic documentation and intergenerational knowledge transfer. However, challenges including restricted market access, potential cultural commodification, and governance fragmentation require careful management. This study proposes an integrative arts tourism framework grounded in sustainable tourism theory, stakeholder theory, and cultural authenticity discourse, offering specific policy recommendations for expanding Mandalay's appeal as a cultural destination while protecting intangible heritage and fostering sustainable tourism principles.

Keywords: Arts tourism; Mandalay; Stakeholder engagement; Sustainable tourism; Cultural heritage; Southeast asia

1. Introduction

Mandalay serves as both the historical epicenter and creative engine of Myanmar, renowned for its royal landmarks and refined artisanry. The city's rich craft traditions; painting, stone and wood carving, lacquerware, and miniatures form a unique cultural reserve with significant potential for heritage-based tourism development. Despite their significance, these assets are often marginalized within conventional tourism itineraries, which tend to focus on monumental heritage (UNESCO, 2024). As arts and culture tourism have emerged globally as central drivers for heritage preservation and local prosperity (Richards, 2018; Timothy & Nyaupane, 2009), understanding how Mandalay can harness these trends within its specific context becomes increasingly critical.

This paper argues that by adopting an integrative arts tourism model grounded in established theoretical frameworks, Mandalay can transform its traditional crafts from static displays into dynamic economic and cultural assets, ensuring their sustainability and relevance. Building on sustainable tourism theory (Weaver, 2006; Hall & Lew, 2009), stakeholder theory in tourism contexts (Byrd, 2007; Jamal & Getz, 1995), and cultural authenticity discourse (MacCannell, 1973; Cohen, 1988; Wang, 1999), this research develops a comprehensive framework that addresses the complexities of arts tourism development in a challenging political and economic environment.

Specifically, this study examines pathways for Mandalay to demonstrate unique cultural identity, generate inclusive economic opportunities for artisans, and safeguard intangible cultural heritage (UNESCO-ICHCAP, 2024). This paper systematically explores strategies for integrating Mandalay's traditional arts into tourism initiatives capable of attracting diverse visitors, supporting local livelihoods, and reinforcing responsible tourism practices while remaining cognizant of both opportunities and constraints in the current Myanmar context.

2. Literature Review

2.1 Theoretical Foundations of Arts and Cultural Tourism

Arts tourism, defined as travel primarily motivated by artistic experiences or cultural immersion (Richards, 2018; Smith, 2009), has evolved from peripheral niche market to mainstream tourism product. MacCannell's (1973) seminal work on authenticity in tourism established that modern tourists

seek authentic cultural experiences, a concept further refined by Cohen (1988) who distinguished between "staged authenticity" and "emergent authenticity." Wang's (1999) framework of existential, objective, and constructive authenticity provides critical lenses for understanding how tourists perceive and value traditional arts experiences.

Butler's Tourism Area Life Cycle model (1980) offers insight into destination evolution and sustainability challenges, while Weaver's (2006) paradigm of sustainable mass tourism and alternative tourism provides frameworks for balancing economic development with cultural and environmental preservation. These theoretical foundations underscore that successful arts tourism requires careful management of authenticity, stakeholder relationships, and long-term sustainability; concerns that are particularly salient in vulnerable heritage contexts like Mandalay.

2.2 Arts Tourism as Catalyst for Heritage Conservation and Community Empowerment

International research emphasizes arts tourism's dual role as catalyst for both heritage conservation and community empowerment (Richards, 2018; Timothy & Nyaupane, 2009). Comparative studies from Luang Prabang, Laos (Pholsena, 2016), Ubud, Bali (Cole, 2007), and Oaxaca, Mexico (Babb, 2011) demonstrate that when properly structured, arts tourism can create sustainable livelihoods for artisans while maintaining cultural integrity. However, these same studies reveal critical risks: cultural commodification (Greenwood, 1989), loss of authenticity through commercialization (Cohen, 1988), and unequal power dynamics that may disadvantage local communities (Tucker, 2007; Cole, 2007).

Critical perspectives on heritage tourism (Smith, 2006; Harrison & Hitchcock, 2005) highlight neo-colonial dimensions where external actors; tour operators, international NGOs, and foreign tourists may shape cultural representation in ways that serve their interests rather than those of local communities. This literature suggests that effective arts tourism requires robust local governance, artisan agency in decision-making, and mechanisms to ensure equitable benefit distribution (Jamal & Getz, 1995; Byrd, 2007).

2.3 Mandalay's Cultural Assets and Regional Context

While Richards (2018) establishes global trends, regional studies by Thida (2019) and cultural heritage assessments in Myanmar (Henderson, 2003; Gillen, 2013) highlight the specific vulnerability of Mandalay's crafts to modernization pressures, insufficient market networks, and limited global

prominence. The city hosts an array of intangible practices lacquerware production, wood carving, puppet-making, and tapestry weaving that are deemed critical but face declining practitioner numbers and knowledge transmission gaps (UNESCO-ICHCAP, 2024).

Myanmar's tourism sector has experienced dramatic fluctuations, with rapid growth in the 2010s followed by sharp decline after 2021 political events (Henderson & Bacon, 2018; Gelbman & Timothy, 2011). Recent policy discussions highlight Mandalay's potential for cultural-economic growth, especially in post-pandemic recovery efforts (Travel & Tour World, 2025), yet implementation faces significant governance and infrastructure constraints (Myanmar Responsible Business, 2015).

2.4 Sustainable Tourism and Stakeholder Governance

Stakeholder theory in tourism contexts (Byrd, 2007; Jamal & Getz, 1995) emphasizes that sustainable development requires coordinated action among diverse actors with potentially conflicting interests. Regional assessments underscore the necessity for tourism solutions that enhance community welfare, maintain cultural authenticity, and protect against over-commercialization (Myanmar Responsible Business, 2015; UNESCO-ICHCAP, 2024). However, Myanmar's governance fragmentation and limited institutional capacity present particular challenges for implementing collaborative frameworks (Gillen, 2013).

Academic discourse illustrates that authentic, integrated arts experiences heighten tourist satisfaction and return intention (Richards, 2018; Timothy & Nyaupane, 2009), yet achieving this authenticity while scaling tourism economically remains a persistent tension (Cole, 2007; Wang, 1999). This convergence of global tourism trends, local cultural assets, sustainability imperatives, and governance challenges creates both opportunities and obligations for destination development in Mandalay.

2.5 Theoretical Framework

This study develops an integrative conceptual framework grounded in three established theoretical domains, adapted specifically to Mandalay's cultural tourism context. Figure 1 illustrates the dynamic relationships among framework components and serves as the structural foundation for this research.

2.6 Conceptual Model Overview

The proposed framework integrates three core dimensions; **Sustainable Tourism Principles**, **Heritage Craft Arts Market** (the cultural product), and **Stakeholder Engagement** which interact dynamically to produce three interconnected outcomes: **Economic Empowerment**, **Cultural Preservation**, and **Community Well-being**. This model synthesizes sustainable tourism theory (Weaver, 2006; Hall & Lew, 2009), experience economy principles (Pine & Gilmore, 1999), and stakeholder governance frameworks (Byrd, 2007; Jamal & Getz, 1995) into a coherent system specific to arts tourism in heritage contexts.

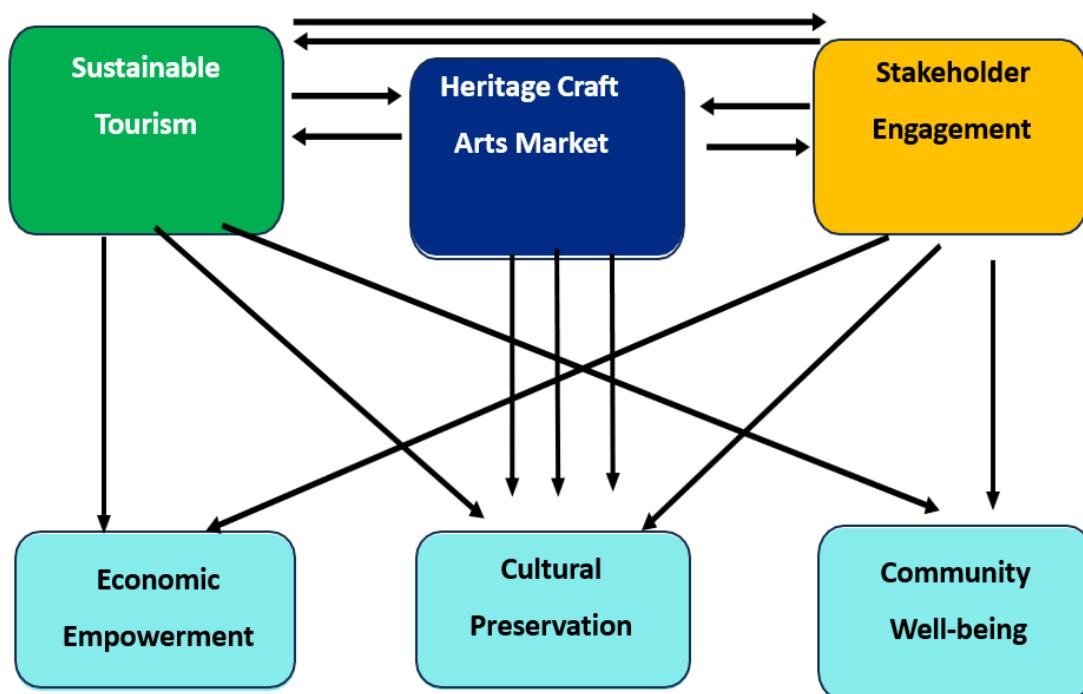


Figure 1.: *Conceptual Framework for Revitalizing Mandalay through Arts Tourism*

The framework illustrates bidirectional relationships among three core dimensions (Sustainable Tourism, Heritage Craft Arts Market, Stakeholder Engagement) and their convergence toward three interconnected outcomes (Economic Empowerment, Cultural Preservation, Community Well-being). Arrows indicate dynamic interactions and feedback loops among components.

(**Note:** This framework is adapted from Richards (2018), Weaver (2006), and Byrd (2007), modified to reflect the specific context of traditional arts tourism in Mandalay, Myanmar.)

2.7 Understanding the Framework Components

2.7.1 Three Core Dimensions (Upper Level):

(1) Sustainable Tourism (Green Box - Left): Represents the philosophical and operational principles guiding responsible tourism development, encompassing environmental stewardship, economic viability, cultural integrity, and social equity.

(2) Heritage Craft Arts Market (Blue Box - Center): The tangible cultural product—the actual experiences, demonstrations, workshops, performances, and artisan interactions that tourists engage with. This is not merely a marketplace but the entire ecosystem of cultural experiences bridging traditional artisanry and contemporary tourism.

(3) Stakeholder Engagement (Yellow Box - Right): The governance dimension involving artisans, government agencies, tour operators, local communities, tourists, NGOs, and international organizations working collaboratively to shape tourism development.

2.7.2 Three Interconnected Outcomes (Lower Level):

(1) Economic Empowerment (Cyan Box - Left): Improved artisan livelihoods, income diversification, market access, and economic resilience resulting from tourism engagement.

(2) Cultural Preservation (Cyan Box - Center): Protection of traditional techniques, intergenerational knowledge transfer, artistic integrity maintenance, and cultural continuity ensured through economic validation of heritage practices.

(3) Community Well-being (Cyan Box - Right): Enhanced quality of life, social cohesion, cultural pride, and sustainable development trajectories for communities engaged in arts tourism.

2.7.3 Dynamic Relationships (Bidirectional Arrows):

The framework emphasizes that components do not operate independently but interact through continuous feedback loops:

(1) Sustainable Tourism ↔ Heritage Craft Arts Market: Cultural products must be developed according to sustainability principles (limiting group sizes, authentic presentation, fair pricing). Conversely, sustainability goals are operationalized through specific product design choices.



(2) Heritage Craft Arts Market ↔ Stakeholder Engagement: Product development requires input from multiple stakeholders—artisans determine cultural content, operators understand markets, tourists provide feedback. Stakeholder coordination enables collaborative refinement.

(3) Sustainable Tourism ↔ Stakeholder Engagement: Sustainability principles require stakeholder buy-in and enforcement. Governance processes should be guided by sustainability values rather than purely commercial interests.

(4) Convergence Toward Outcomes: All three dimensions work together to produce the three outcomes, which are themselves interconnected (illustrated by positioning at framework base). Economic benefits enable cultural investment; cultural preservation attracts tourists generating revenue; both contribute to overall community well-being.

2.8 Cultural Product Theory: From Commodities to Immersive Experiences

Drawing on experience economy theory (Pine & Gilmore, 1999) and cultural tourism literature (Richards, 2018; Smith, 2009), this dimension reconceptualizes traditional crafts and performative arts not as static commodities but as dynamic experiential products—the **Heritage Craft Arts Market** positioned at the framework's center. MacCannell's (1973) authenticity framework suggests that tourists seek "back region" access to genuine cultural practices. Therefore, Mandalay's heritage practices should be transformed into immersive experiences through:

Live workshops allowing participatory engagement with craft production. Artist-led tours providing narrative context and personal connection. Interactive performances that situate arts within cultural and historical frameworks. Demonstration spaces that balance tourist access with artisan dignity and working authenticity

This approach recognizes Wang's (1999) distinction between objective authenticity (faithfulness to originals), constructive authenticity (socially negotiated meanings), and existential authenticity (personal fulfillment). Effective arts tourism must address all three dimensions while avoiding what Cohen (1988) terms "staged authenticity" that erodes cultural value.

The Heritage Craft Arts Market represents the tangible manifestation of Mandalay's cultural heritage; the actual experiences, demonstrations, workshops, and performances that tourists engage with.

This is not merely a marketplace in the commercial sense, but the entire ecosystem of cultural experiences that bridge traditional artisanry and contemporary tourism.

2.9 Sustainable Tourism Theory: Triple Bottom Line Approach

Building on Weaver's (2006) sustainable tourism paradigms and Hall and Lew's (2009) sustainable development frameworks, the **Sustainable Tourism Principles** dimension applies triple bottom line thinking environmental, economic, and socio-cultural sustainability to arts tourism development. This dimension provides the philosophical and operational guidelines ensuring tourism development does not compromise the very heritage it seeks to celebrate. Key principles include:

Economic Sustainability: Creating viable livelihoods for artisans through market diversification, value-added positioning, and direct tourist-artisan transactions that minimize intermediary extraction (Butler, 1980; Weaver, 2006). **Cultural Sustainability:** Protecting artistic integrity, ensuring intergenerational knowledge transfer, and maintaining community agency over cultural representation (Smith, 2006; Timothy & Nyaupane, 2009). **Environmental Sustainability:** Managing visitor flows, infrastructure development, and resource consumption to prevent destination degradation (Hall & Lew, 2009). **Social Sustainability:** Ensuring equitable benefit distribution, preventing displacement, and maintaining social cohesion within communities affected by tourism (Harrison & Hitchcock, 2005).

This framework acknowledges Butler's (1980) Tourism Area Life Cycle concerns about potential negative impacts of unchecked growth and emphasizes proactive management to prevent exploitation, commodification, and cultural erosion. The Sustainable Tourism dimension provides the normative boundaries within which arts tourism should operate.

2.10 Stakeholder Theory: Collaborative Governance for Shared Value

Adapted from Byrd (2007) and Jamal and Getz (1995), the **Stakeholder Engagement** dimension recognizes that sustainable arts tourism requires coordinated action among diverse stakeholders with potentially divergent interests:

Artisans and cultural practitioners: Seeking economic viability, artistic respect, and knowledge preservation. **Local government:** Balancing economic development, heritage protection, and public service provision. **Tour operators and hospitality sector:** Pursuing commercial success while maintaining product quality and destination reputation. **Local communities:** Concerned with quality of



life, cultural integrity, and equitable development. **Tourists:** Seeking authentic, meaningful experiences with reasonable cost and convenience. **NGOs and cultural organizations:** Focused on heritage conservation and community empowerment. **International agencies:** Promoting sustainable development standards and best practices.

Effective governance requires mechanisms for stakeholder dialogue, conflict resolution, benefit-sharing agreements, and accountability structures (Byrd, 2007). This is particularly challenging in contexts like Myanmar where institutional capacity is limited and political instability creates uncertainty (Gillen, 2013).

The Stakeholder Engagement dimension ensures that all parties have voice in decision-making and that power asymmetries between tourists, operators, government, and artisans are explicitly acknowledged and managed rather than ignored.

2.11 Framework Integration and Dynamic Outcomes

The framework's strength lies in recognizing that these three dimensions do not operate independently but interact dynamically through multiple feedback loops (illustrated by bidirectional arrows in Figure 1):

Heritage Craft Arts Market ↔ Sustainable Tourism: The cultural product must be developed according to sustainability principles. For example, workshop group sizes should be limited to prevent overwhelming artisans; pricing should ensure fair compensation; interpretation should respect cultural sensitivities. Conversely, sustainability goals are operationalized through specific product design choices what experiences are offered, how they're structured, who benefits economically. **Heritage Craft Arts Market ↔ Stakeholder Engagement:** Product development requires genuine input from multiple stakeholders. Artisans determine what aspects of their cultural heritage they're comfortable sharing; tour operators provide insights into market preferences and logistical feasibility; tourists offer feedback on their experiences; local communities express concerns about cultural integrity and impacts. Stakeholder coordination mechanisms enable collaborative product refinement that balances diverse interests. **Sustainable Tourism ↔ Stakeholder Engagement:** Sustainability principles are meaningless without stakeholder buy-in and enforcement mechanisms. Artisans must embrace quality over quantity; government must regulate exploitative practices; tour operators must prioritize cultural



respect over profit maximization. Conversely, stakeholder governance processes should be guided by sustainability values rather than allowing purely commercial interests to dominate decision-making.

These dynamic interactions produce three interconnected outcomes positioned at the framework's base:

Economic Empowerment: When authentic cultural products attract quality tourists willing to pay fair prices, sustainable pricing ensures appropriate artisan compensation, and stakeholder coordination prevents exploitative intermediation, the result is meaningful economic benefit for artisan communities. This is not merely income increase, but economic resilience, market diversification, reduced vulnerability, and enhanced negotiating power. **Cultural Preservation:** Combining experiential products that valorize traditional practices, sustainability principles protecting authenticity, and stakeholder engagement ensuring community agency creates conditions for intergenerational knowledge transfer and cultural continuity. Tourism becomes an incentive for preservation rather than threat to it, younger generations see economic value in maintaining traditional skills, master artisans receive recognition and support, documentation efforts receive funding and attention. **Community Well-being:** The convergence of economic opportunity, cultural validation, and participatory governance contributes to overall community well-being social cohesion strengthens as shared cultural pride grows, quality of life improves through increased income and cultural investment, sustainable development trajectories emerge as communities gain capacity to shape their own futures.

These outcomes are depicted as interconnected (bottom of Figure 1) because they mutually reinforce: economic empowerment provides resources for cultural preservation initiatives; cultural preservation maintains the authenticity that attracts tourists generating economic benefits; both economic stability and cultural vitality contribute to community well-being which in turn strengthens the social capital necessary for effective stakeholder governance.

2.12 Theoretical Grounding and Adaptation

This framework synthesizes established theories while adapting them to Mandalay's specific context:

From MacCannell (1973) and Wang (1999): The centrality of authenticity and recognition that tourists seek genuine cultural encounters rather than staged performances. Mandalay's artisans working

in traditional methods provide precisely this authenticity. **From Pine and Gilmore (1999):** The transformation of cultural heritage from passive viewing to active experience, recognizing that memorable engagement drives satisfaction and willingness to pay. Hands-on workshops and artisan interactions create "experience value." **From Butler (1980) and Weaver (2006):** The necessity of proactive sustainability management to prevent negative trajectories common in tourism development. Mandalay, at early development stages, has opportunity to establish sustainable foundations before problems escalate. **From Byrd (2007) and Jamal and Getz (1995):** The requirement for collaborative governance structures that give voice to all stakeholders, especially vulnerable artisan communities who might otherwise be marginalized in tourism planning dominated by commercial interests. **From Richards (2018), Smith (2006), and Timothy and Nyaupane (2009):** Evidence that well-managed cultural tourism can simultaneously serve economic development and heritage preservation goals, but only with careful attention to power dynamics and community agency.

The framework's adaptation to Mandalay context acknowledges: (1) governance fragmentation requiring flexible coordination mechanisms rather than rigid bureaucratic structures; (2) artisan economic vulnerability necessitating protective safeguards against exploitation; (3) political uncertainty requiring phased implementation that can proceed despite instability; (4) rich but underleveraged cultural assets requiring strategic positioning to compete with established destinations; (5) global tourism trends favoring authentic experiences over mass tourism, creating market opportunity for quality-focused positioning.

This conceptual framework guides the research design presented in the following section, informs interpretation of findings, and provides structure for policy recommendations. The framework is not merely descriptive but analytical; it explains mechanisms through which arts tourism can produce desired outcomes while identifying potential failure points requiring management attention.

3. Methodology

This research employs a rigorous mixed-methods design to capture diverse perspectives on Mandalay's arts tourism potential and to triangulate findings across multiple data sources.

3.1 Research Design and Timeline

Data collection was conducted between February and August 2024 in Mandalay, Myanmar. The study informed consent was obtained from all participants. Special attention was given to ensuring voluntary participation from artisan communities, who were assured that their responses would not affect their economic opportunities.

3.2 Qualitative Component

3.2.1 Semi-Structured Interviews: Conducted with 30 local artisans (12 wood carvers, 8 lacquerware makers, 6 painters, 4 puppet makers), 10 tour operators (representing both domestic and international tourism agencies), and 40 tourists (15 international, 25 domestic). Interviews explored perceptions of cultural value, market challenges, visitor expectations, and aspirations for arts tourism development.

3.2.2 Sampling Strategy: Purposive sampling was used to select artisans representing diverse craft traditions, experience levels (ranging from 5 to 40+ years), and workshop scales (individual practitioners to small cooperatives). Tour operators were selected based on their current or potential involvement in cultural tourism. Tourists were recruited at craft workshops and heritage sites, ensuring representation of different nationalities, age groups, and travel motivations.

3.2.3 Interview Protocol: Semi-structured interview guides included open-ended questions about: (1) current craft production and market conditions, (2) experiences with tourists and tourism, (3) perceptions of authenticity and cultural preservation, (4) economic aspirations and concerns, and (5) visions for sustainable tourism development. Interviews were conducted in Burmese (for artisans) and English (for tour operators and international tourists), with professional interpretation where needed.

3.2.4 Data Analysis: Transcripts were analyzed using thematic analysis following Braun and Clarke's (2006) six-phase framework. Initial codes were developed inductively from the data, then organized into themes representing patterns across participants. Thematic analysis was conducted through systematic manual coding. Transcripts were analyzed using a structured coding framework, with codes organized in Microsoft Excel for systematic comparison. Inter-coder reliability was established through independent coding of 20% of transcripts by two researchers, achieving Cohen's kappa of 0.82.



Qualitative data were analyzed using thematic content analysis. Interview and focus group discussion transcripts were systematically reviewed to identify recurring patterns and key themes related to the research questions. The analysis involved: (1) familiarization with the data through repeated reading of transcripts; (2) identification of meaningful units of information relevant to heritage tourism and artisan livelihoods; (3) grouping of similar concepts into broader thematic categories; and (4) interpretation of themes in relation to existing literature and theoretical frameworks. Two researchers independently analyzed the transcripts to ensure consistency in theme identification and interpretation, with discrepancies resolved through discussion until consensus was reached. This collaborative approach enhanced the credibility and trustworthiness of the findings.

3.2.5 Participant Observation: Direct observation was conducted at 15 craft workshops and 8 cultural performance venues over 60 hours, documenting visitor-artisan interactions, demonstration processes, and market dynamics. Field notes captured behavioral patterns, spatial arrangements, communication challenges, and moments of authentic engagement or disconnection.

3.3 Quantitative Component

3.3.1 Survey Design: A structured questionnaire was developed based on literature review and preliminary interviews, containing: (1) demographic information, (2) travel motivations and cultural interests (5-point Likert scales), (3) preferences for different types of arts experiences (ranking exercises), (4) willingness to pay for craft workshops and performances (price points), (5) satisfaction ratings for current offerings, and (6) revisit intention measures.

3.3.2 Sampling and Distribution: The survey was administered to 200 visitors (80 international, 120 domestic) at major tourist sites, craft workshops, and accommodation facilities. Convenience sampling was used with attention to capturing diverse visitor profiles. The sample included visitors from 15 countries, with ages ranging from 18 to 72 (mean = 38.4, SD = 12.7). Response rate was 87% among those approached.

3.3.3 Data Analysis: Quantitative data were analyzed using SPSS 26. Descriptive statistics characterized sample demographics and response patterns. Chi-square tests examined associations between visitor characteristics and preferences. Multiple regression analysis assessed factors predicting satisfaction and revisit intention. Statistical significance was set at $p < 0.05$.

3.4 SWOT Analysis

A SWOT analysis was conducted by synthesizing findings from interviews, observations, and surveys with secondary data from policy documents and tourism statistics. The analysis was validated through a stakeholder workshop involving 12 participants representing artisan communities, freelance tour guides and tour operators, who reviewed and refined the SWOT matrix.

Several limitations should be noted: (1) Data collection occurred during a specific timeframe and may not capture seasonal variations in tourism patterns; (2) Political sensitivities limited discussion of certain governance issues; (3) Artisan participants may have been optimistic about tourism prospects given economic pressures; (4) The tourist sample was limited to those already visiting Mandalay and may not represent broader potential markets. It should be noted that international tourist arrivals to Myanmar have declined significantly due to major political transitions, with leisure tourism becoming increasingly rare. Many foreigners currently in the country are working in professional capacities; such as teachers at private international schools, consultants or trainers on government projects, or academics making brief visits for university graduation ceremonies rather than traditional tourists. This shift in visitor demographics may limit the generalizability of tourist perspectives gathered in this study; (5) The absence of advanced statistical software such as SPSS limited the depth of quantitative analysis that could be performed on survey data, potentially constraining more sophisticated statistical testing; (6) Longitudinal impacts could not be assessed within the study timeframe.

4. Findings

This section presents key findings organized by research question, integrating quantitative survey results with qualitative insights from interviews and observations.

4.1 Tourist Interest and Demand for Arts Experiences

4.1.1 Strong Preference for Authentic, Participatory Experiences

Survey results revealed overwhelming interest in hands-on craft experiences: 76% of international tourists and 87% of domestic tourists rated "participating in craft workshops" as "very important" or "important" to their Mandalay experience ($\chi^2 = 8.43$, $p < 0.01$). Specifically, tourists prioritized:

Live craft demonstrations with artisan interaction (93% interest). Hands-on workshops allowing practice of techniques (82% interest). Guided tours of artisan districts with cultural interpretation (79% interest). Traditional performance arts (puppet theater, classical dance) (71% interest).

4.1.2 Authenticity as Key Driver of Satisfaction

Multiple regression analysis revealed that perceived authenticity was the strongest predictor of overall tourist satisfaction ($\beta = 0.64$, $p < 0.001$), accounting for 41% of variance even after controlling for factors like accommodation quality, price, and accessibility. Tourists consistently distinguished between "genuine" artisan workshops and "tourist shops," expressing willingness to pay premium prices (mean 20 to 30% higher) for authenticated traditional crafts.

4.1.3 Qualitative interviews illuminated what constitutes authenticity for tourists:

"I wanted to see the real process, not just buy something. When I watched the wood carver explaining each tool and why he makes certain choices, I felt connected to centuries of tradition." (German tourist, age 34)

"Many places in Asia now feel too commercial. Here in Mandalay, the artisans aren't performing for us, they're working, and we're privileged to observe. That's authentic." (Canadian tourist, age 59)

4.1.4 Revisit Intention and Word-of-Mouth

Tourists who participated in craft workshops showed significantly higher revisit intention ($M = 4.2/5$) compared to those who only viewed finished products ($M = 2.8/5$; $t = 6.73$, $p < 0.001$). Additionally, 91% of workshop participants reported plans to recommend Mandalay to friends and family specifically for arts tourism, compared to 54% of non-participants.

4.2 Artisan Perspectives: Economic Opportunities and Challenges

4.2.1 Current Economic Constraints

Artisan interviews revealed severe market access limitations. Of 30 artisans interviewed, 27 (90%) reported depending primarily on local markets with minimal international sales. Average monthly income ranged from \$150-\$400, insufficient given rising living costs. Key challenges identified:

"We make beautiful lacquerware using traditional techniques taking weeks, but tourists want something cheap they can buy immediately. The middle man takes most profit." (Lacquerware artisan, age 47, 25 years' experience)

4.2.2 Tourism as Economic Opportunity

Artisans expressed strong enthusiasm (97%) for increased tourism engagement, viewing it as potential pathway to:

Direct sales eliminating intermediary costs: "If tourists come to my workshop, I can explain quality and value. Then they understand why price is higher." (Wood carver, age 38). **International market access**: "Some tourists ask to ship larger pieces overseas. This opens new possibilities I never had." (Painter, age 55). **Recognition and pride**: "When foreigners appreciate my work and want to learn, I feel our culture is valued. It motivates me to maintain quality." (Puppet maker, age 42)

However, artisans also voiced concerns about tourism's potential negative impacts, particularly commodification pressures: "I worry tourists will want us to make things faster, simpler, cheaper; then our art loses its soul." (Wood carver, age 61, master artisan)

4.2.3 Skills and Capacity Needs

Artisans identified substantial capacity gaps limiting their ability to engage effectively with tourism:

Only 6 of 30 artisans had basic English communication skills. None had experience with digital marketing or e-commerce. 23 (77%) lacked understanding of quality control systems or pricing strategies. 19 (63%) expressed desire for design innovation training that respects traditional aesthetics

4.2.4 Cultural Preservation: Intergenerational Knowledge Transfer Declining Apprenticeship and Craft Continuity Concerns

A concerning pattern emerged regarding intergenerational knowledge transfer. Of 30 artisan participants, only 11 (37%) had children or young relatives actively learning their craft. Reasons cited included:

Low economic returns deterring young people: "My son studied engineering. He can't support family as wood carver." (age 58). Perception that traditional crafts lack modern relevance. Long apprenticeship periods (5-10 years) without immediate income

4.2.5 Tourism as Preservation Incentive

Paradoxically, increased tourism interest was seen as potential solution to preservation challenges. Artisans noted:

"When tourists pay good money to learn from me for even one day, young people see this craft has value. Maybe they reconsider." (Lacquerware master, age 64)

4.2.6 Documentation and Visibility Benefits

All artisans (100%) supported systematic documentation of techniques, with many expressing urgencies: "These methods our grandfathers taught us; if we don't record them, they disappear when we die." Several artisans had already begun informal documentation through photos and videos, though lacking resources for professional archival.

Educational programs emerged as priority. Artisans suggested: School partnerships exposing children to traditional crafts. Apprenticeship stipends making craft learning economically viable. Master artisan recognition programs honoring cultural knowledge holders. Museum collaborations preserving historical pieces and techniques

4.2.7 Opportunities for Governance Coordination

Interviews with tour operators and policy review revealed opportunities for strengthening inter-agency collaboration in arts tourism governance. Multiple agencies demonstrate interest in heritage tourism development including the Ministry of Hotels and Tourism, Ministry of Religious Affairs and Culture, and Mandalay City Development Committee indicating potential for establishing coordinated mechanisms. Tour operators identified specific areas where enhanced coordination could benefit all stakeholders:

"We are eager to develop cultural tour packages and recognize the need for clear processes. Establishing designated approval channels, quality assurance frameworks, and artisan protection guidelines would enable us to create more sustainable tourism products that benefit local communities."
(Tour operator, 8 years' experience)

This multi-agency involvement, while requiring better coordination, presents opportunities for comprehensive tourism governance that integrates cultural preservation, economic development, and community welfare objectives.

4.2.8 Absence of Quality Standards and Authentication

A critical gap exists in quality assurance and authentication systems. Currently, no mechanism distinguishes genuine traditional crafts from mass-produced imitations, creating several problems:

Tourists uncertain about authenticity may avoid purchases entirely. Artisans using traditional techniques cannot command premium prices. Low-quality souvenirs undermine Mandalay's reputation. Unethical vendors may misrepresent imported goods as local crafts

4.2.9 Infrastructure Limitations

Observation and stakeholder input identified infrastructure constraints: Few workshops have appropriate spaces for tourist demonstrations. Inadequate interpretation materials (multilingual signage, explanatory content). Transportation challenges accessing artisan districts. Limited coordination of craft workshop locations and schedules

4.2.10 Need for Collaborative Governance

Both artisans (93%) and tour operators (100%) strongly supported establishment of a coordinating body a "Mandalay Arts Tourism Steering Committee" to: Set quality standards and authentication protocols. Coordinate workshop schedules and tourist access. Facilitate artisan training and capacity building. Develop joint marketing initiatives. Mediate conflicts between stakeholders. Monitor tourism impacts on cultural integrity

4.2.11 Tourist-Artisan Interaction: Opportunities and Friction Points. Successful Interactions

Participant observation revealed that most meaningful tourist-artisan interactions shared common elements: Sufficient time for observation (minimum 30-45 minutes). Artisan willingness to explain techniques without rushing. Cultural mediation by guides providing context and translation. Respectful tourist behavior (asking permission for photos, not disrupting work). Opportunities for tactile engagement (touching materials, trying tools under supervision)

When these conditions were met, both tourists and artisans reported high satisfaction. Tourists gained deeper cultural understanding, while artisans appreciated respectful interest in their work.

4.2.12 Friction Points and Challenges

However, numerous challenges were also observed: **Language barriers:** Most artisans speak minimal English; tourists speak no Burmese. Communication depends on guides who may lack cultural expertise or prioritize sales over education. **Expectation mismatches:** Tourists often expected on-demand demonstrations, while artisans work according to production schedules. "Tourists arrive when I'm doing preparation work, not the interesting carving part. They seem disappointed." (Wood carver,

age 44). **Pricing conflicts:** Tourists frequently perceived prices as negotiable, while artisans struggled to communicate value. Several uncomfortable bargaining interactions were observed. **Photography ethics:** Despite requesting permission, some tourists photographed artisans and families in ways perceived as intrusive. **Time pressures:** Tour groups typically spent only 15-20 minutes at workshops, insufficient for meaningful engagement.

4.2.13 Economic Analysis: Potential Impacts and Distribution. Revenue Estimates and Economic Potential.

Based on visitor surveys and expenditure data: Current average tourist spending on crafts: \$35 per visit. Potential spending with enhanced experiences: \$82 per visit (including authenticated purchases, performance tickets). Projected annual increase in artisan income with 30% tourism engagement: \$2,400-\$6,000 (200-500% increase for most artisans)

However, benefit distribution concerns emerged. Tour operators and workshop owners with tourist-ready facilities would likely capture disproportionate benefits, potentially marginalizing individual artisans and less-accessible craft traditions.

4.2.14 Willingness to Pay for Different Experiences

Survey respondents indicated willingness to pay: \$15-25 for 2-hour craft workshop with basic instruction. 50-80 for half-day intensive workshop with master artisan. \$10-15 for traditional puppet/dance performance with cultural explanation. \$30-50 for guided full-day artisan trail visiting multiple workshops

These price points substantially exceed current offerings, suggesting significant revenue potential if quality experiences are developed.

4.3 Cultural Commodification Risks: Evidence and Concerns. Early Warning Signs.

While large-scale commodification has not yet occurred, early warning signs were identified: Several artisans reported requests to "make items faster" or "simplify designs" for tourist market. Pressure to produce specific items tourists expect (e.g., Buddha statues, elephants) rather than traditional repertoire. Some workshops already displaying predominantly tourist-oriented items rather than culturally significant works

4.3.1 Artisan Resistance and Agency



Encouragingly, master artisans demonstrated strong commitment to maintaining standards:

"I refuse tourist orders if they want me to skip steps or use wrong materials. My reputation comes from quality, not quantity. If tourism means compromising tradition, I don't want it." (Wood carving master, age 67)

However, younger or economically vulnerable artisans expressed less certainty about resisting commercial pressures, highlighting need for community-level support and standards.

4.3.2 Current Political and Economic Context

Any comprehensive analysis of Mandalay's tourism potential must acknowledge Myanmar's current political situation. Since February 2021, political instability has significantly impacted tourism infrastructure, international perceptions, and operational feasibility (various international travel advisories remain in effect). This context presents both constraints and ethical considerations:

(1) Constraints: Reduced international tourist arrivals and restricted access to certain funding sources. Infrastructure challenges and service sector disruption. Uncertainty affecting long-term investment and planning. International sanctions and reputational concerns affecting marketing efforts

(2) Ethical Considerations: Questions about appropriate timing for tourism promotion given humanitarian concerns. Ensuring tourism development does not inadvertently support problematic governance structures. Protecting artisan communities from exploitation during periods of economic vulnerability. Balancing economic necessity against broader ethical considerations.

This paper proceeds with the understanding that the proposed framework represents a longer-term vision for sustainable arts tourism development, implementable when conditions become more conducive. Meanwhile, elements of the framework; particularly capacity building for artisans and documentation of cultural practices; remain relevant and valuable even in constrained contexts.

4.4 SWOT Analysis: Strategic Assessment

A systematic SWOT analysis reveals Mandalay's strategic position for arts tourism development:

4.4.1 STRENGTHS: Rich, distinctive craft traditions with high quality and historical significance. Existing artisan communities with deep expertise and generational knowledge.

Geographic concentration of craft workshops facilitating tourist access. Royal heritage sites providing complementary attractions and narrative context. Lower cost structure compared

to established Southeast Asian cultural destinations

4.4.2 WEAKNESSES: Limited international marketing and destination awareness. Insufficient infrastructure for tourist-oriented craft experiences (demonstration spaces, interpretation, retail facilities). Language barriers and limited cultural mediation capacity. Artisan challenges in quality control, design innovation, and market understanding. Fragmented governance with unclear coordination mechanisms. Current political situation affecting international perceptions

4.4.3 OPPORTUNITIES: Growing global demand for authentic cultural experiences and artisanal products. Post-pandemic tourism recovery emphasizing meaningful travel over mass tourism. Digital platforms enabling direct artisan-consumer connections. Regional tourism cooperation initiatives in Upper Myanmar. UNESCO recognition of intangible heritage providing credibility. Potential for diaspora engagement and cultural exchange programs

4.4.4 THREATS: Competition from established cultural destinations (Luang Prabang, Ubud, Hoi An). Risk of cultural commodification and authenticity erosion. Over-commercialization threatening craft integrity. Environmental degradation from increased visitor pressure. Economic vulnerability of artisans potentially forcing compromises. Political instability creating uncertainty and deterring investment. Climate change impacts on heritage sites and tourist comfort.

This SWOT analysis informs strategic priorities: leveraging distinctive cultural assets while addressing infrastructure gaps, building artisan capacity while protecting artistic integrity, and developing governance mechanisms to coordinate diverse stakeholders.

4.5 Proposed Strategies for Arts Tourism Development

Based on the theoretical framework and contextual analysis, this section proposes specific strategies organized by stakeholder group and implementation timeline:

4.5.1 Strategy 1: Product Development and Experience Design

(1) Core Arts Experiences: Develop curated "artisan trails" connecting multiple craft workshops with narrative themes (e.g., "Royal Court Arts," "Buddhist Material Culture," "Textile Traditions").

Create demonstration spaces where tourists observe and participate in craft production without disrupting artisan work rhythms. Design workshop programs allowing hands-on learning at various skill levels (introductory sessions, multi-day immersions). Establish performance venues for traditional puppet theater, classical dance, and musical traditions with interpretive context.

(2) Quality and Authenticity Management: Develop authentication systems distinguishing genuine traditional crafts from mass-produced souvenirs. Create artisan cooperatives or quality marks ensuring fair pricing and ethical production. Design interpretation materials (multilingual, culturally sensitive) explaining techniques, symbolism, and cultural significance. Train cultural mediators who can bridge artisan and tourist perspectives while respecting both.

4.5.2 Strategy 2: Capacity Building for Artisans

(1) Business and Market Skills: Training programs in design innovation that respects traditional aesthetics while meeting contemporary market preferences. Financial literacy and business management workshops helping artisans understand costs, pricing, and profit margins. Digital literacy enabling artisans to use e-commerce platforms, social media, and online marketing. Quality control systems ensuring consistent standards without sacrificing handcrafted character.

(2) Cultural Documentation and Knowledge Preservation: Systematic documentation of craft techniques, artistic lineages, and cultural knowledge (video, photography, written records). Apprenticeship programs facilitating intergenerational knowledge transfer with economic support for young learners. Research collaborations with universities and cultural institutions providing visibility and scholarly recognition. Intellectual property protection mechanisms safeguarding traditional designs from unauthorized commercial use.

4.5.3 Strategy 3: Infrastructure and Enabling Environment

(1) Physical Infrastructure: Develop or upgrade demonstration workshops with tourist-friendly viewing areas, interpretation facilities, and retail spaces. Create a centralized Mandalay Arts Center serving as information hub, exhibition space, and event venue. Improve connectivity and signage facilitating tourist navigation of artisan districts. Ensure accessibility for diverse visitor needs (mobility, language, cultural backgrounds).



(2) Institutional Infrastructure: Establish Mandalay Arts Tourism Steering Committee with representation from all key stakeholder groups. Create coordination mechanisms between tourism authorities, cultural heritage agencies, and local government. Develop regulatory frameworks addressing tourist-artisan interactions, pricing transparency, and quality standards. Build monitoring and evaluation systems tracking impacts (economic, cultural, environmental, social).

4.5.4 Strategy 4: Marketing and Destination Positioning

(1) Brand Development: Position Mandalay as "Myanmar's Living Heritage Capital" emphasizing authenticity, mastery, and cultural depth. Develop compelling narratives connecting individual crafts to royal history, Buddhist culture, and contemporary creativity. Create visual identity and marketing materials showcasing artisan stories and craft processes. Differentiate from competitors by emphasizing participatory experiences and direct artisan engagement.

(2) Market Segments and Channels: Target culturally motivated travelers seeking authentic experiences (cultural enthusiasts, educational tourists, slow travelers). Develop specialized tour packages for niche markets (textile aficionados, Buddhist cultural tours, photography tours). Partner with responsible travel operators sharing sustainability values. Leverage digital platforms (social media, travel blogs, online communities) for cost-effective promotion. Engage Myanmar diaspora as cultural ambassadors and potential visitor source.

(3) Event-Based Marketing: Launch flagship "Mandalay Golden Palace Arts Festival" as annual signature event (demonstrations, performances, workshops, marketplace). Create rotating exhibitions showcasing master artisans and their work. Organize cultural exchange programs bringing international artists, students, and researchers to Mandalay. Coordinate with regional tourism initiatives and cultural heritage networks.

4.5.5 Strategy 5: Sustainability Safeguards

(1) Economic Safeguards: Establish "Tourism Benefit Fund" with percentage of tourism revenue reinvested in artisan welfare, cultural preservation, and community development. Create price guidance mechanisms protecting artisans from exploitation while ensuring affordability for tourists. Develop benefit-sharing agreements ensuring equitable distribution among stakeholders. Support artisan cooperatives strengthening collective bargaining power.

(2) Cultural Safeguards: Implement codes of conduct for tourist behavior in craft workshops and cultural spaces. Create "carrying capacity" guidelines limiting tourist numbers to prevent disruption or degradation. Establish community veto rights over tourism developments affecting cultural practices. Regular cultural impact assessments monitoring authenticity and artisan satisfaction.

(3) Environmental Safeguards: Conduct environmental impact assessments for tourism infrastructure development. Implement waste management and resource conservation programs. Promote low-impact transportation options and sustainable accommodation. Monitor environmental indicators and adjust tourism volumes accordingly.

5. Discussion

5.1 Interpretation of Findings in Relation to Existing Literature

5.1.1 Authenticity as Central Tourism Value

This study's findings strongly support MacCannell's (1973) thesis that tourists seek authentic cultural experiences and Wang's (1999) framework of authenticity dimensions. Tourist emphasis on "genuine" artisan interactions over commercialized presentations aligns with existential authenticity; the desire for personal meaning and connection. The 40% price premium tourists willingly pay for authenticated crafts demonstrates that objective authenticity (faithfulness to traditional techniques) translates into economic value, contradicting assumptions that mass tourism necessarily prioritizes convenience over authenticity.

However, findings also reveal tensions MacCannell identified: tourists seeking "back region" access (genuine artisan workspaces) while artisans must balance tourism accommodation with productive work rhythms. Cohen's (1988) concern about staged authenticity materializes in friction points where expectations for on-demand demonstrations conflict with authentic craft production schedules.

5.1.2 Arts Tourism as Economic Empowerment: Promise and Pitfalls

Results confirm Richards' (2018) and Timothy and Nyaupane's (2009) findings that arts tourism can create significant economic opportunities for artisan communities. The projected 200-500% income increase potential is substantial given current economic constraints. Direct tourist-artisan transactions could eliminate exploitative intermediaries, as found in similar contexts by Cole (2007) in Bali.

Yet cautionary lessons from comparative cases remain relevant. Greenwood's (1989) commodification warnings and Tucker's (2007) power dynamics concerns find early evidence in artisans reporting pressure to simplify designs and produce tourist-expected items. The potential for unequal benefit distribution with tour operators and workshop owners capturing disproportionate value; mirrors patterns Harrison and Hitchcock (2005) documented in other heritage tourism contexts.

5.1.3 Intergenerational Knowledge Transfer and Tourism's Paradoxical Role

This study reveals a paradox: traditional crafts face declines due to economic unviability, yet tourism interest may provide the economic incentive necessary for preservation. Only 37% of artisans have young relatives learning their craft; a crisis for intangible heritage continuity. Yet artisans perceive tourism as potential solution, with visitor appreciation validating cultural practices and potentially attracting new practitioners.

This paradox aligns with broader heritage preservation debates (Smith, 2006): living traditions require economic viability to survive, yet commercialization for tourism purposes risks transforming them into performances detached from authentic cultural contexts. UNESCO-ICHCAP (2024) guidelines emphasize community agency in heritage management; a principle strongly supported by artisan desires for quality standards and governance participation.

5.1.4 Stakeholder Governance: Critical Success Factor

Findings underscore Byrd's (2007) and Jamal and Getz's (1995) arguments that sustainable tourism requires effective stakeholder coordination. The current governance fragmentation in Mandalay; multiple agencies, no coordination mechanisms, absent quality standards represent a structural barrier to realizing arts tourism potential. Artisan and tour operator support (93-100%) for a coordinating body suggests readiness for collaborative governance, yet Myanmar's institutional challenges (Gillen, 2013) raise questions about implementation feasibility.

5.1.5 Sustainable Tourism Principles: Balancing Development and Preservation

Results validate Weaver's (2006) emphasis on proactive sustainability management. Early warning signs of commodification, unequal benefit distribution concerns, and infrastructure limitations highlight that unchecked tourism growth could undermine the very cultural authenticity tourists seek. Butler's

(1980) Tourism Area Life Cycle model suggests Mandalay is in early development stages, offering opportunity to establish sustainable foundations before negative impacts escalate.

The challenge lies in operationalizing Hall and Lew's (2009) triple bottom line approach simultaneously achieving economic benefits for artisans, cultural preservation of traditional practices, and social equity in development outcomes. Current findings suggest economic potential exists, cultural commitment remains strong among master artisans, but governance mechanisms ensuring equitable and sustainable development are absent.

5.2 Theoretical Contributions

This research makes several theoretical contributions:

5.2.1 Integration of Micro and Macro Perspectives: By combining tourist perceptions, artisan experiences, and governance analysis, this study demonstrates how abstract concepts like "authenticity" and "sustainability" materialize through specific interactions, economic transactions, and institutional arrangements. Theoretical frameworks must account for implementation realities at multiple scales.

5.2.2 Context-Specific Theory Adaptation: While international theories of cultural tourism provide valuable frameworks, this study shows they require adaptation to local contexts. Myanmar's governance fragmentation, artisan economic vulnerability, and current political situation create unique challenges not fully captured by studies from stable, institutionally robust contexts like Europe or developed Asian nations.

5.2.3 Authenticity and Economic Value Linkage: This study provides quantitative evidence (40% price premium, satisfaction predictors) connecting authenticity perceptions to economic outcomes, strengthening theoretical arguments that cultural integrity and commercial success can align when properly managed.

6. Conclusion

This mixed-methods study examined the potential for revitalizing Mandalay through sustainable arts tourism, investigating tourist demand, artisan perspectives, economic opportunities, and governance challenges. Findings reveal substantial promise alongside significant risks, supporting the

central argument that traditional arts represent both cultural treasure and strategic economic resource, but only if development proceeds with careful attention to authenticity, equity, and sustainability.

Key findings demonstrate strong tourist demand for authentic, participatory craft experiences, with artisanal authenticity serving as the primary driver of satisfaction and revisit intention. Tourists willingly pay premium prices (40% higher) for authenticated traditional crafts and immersive workshops with genuine artisans, validating economic viability of quality-focused cultural tourism. For artisan communities facing economic marginalization, tourism represents potential pathway to sustainable livelihoods, with projected income increases of 200-500% through direct tourist engagement.

However, realizing this potential requires addressing substantial challenges. Market access limitations, language barriers, and capacity gaps constrain artisans' ability to engage effectively with tourists. Governance fragmentation multiple agencies, no coordination mechanisms, absent quality standards creates structural barriers to coherent development. Early warning signs of cultural commodification and benefit distribution inequities highlight risks that unchecked tourism growth could undermine the very authenticity tourists seek and compromise cultural integrity artisans wish to maintain.

Cultural preservation concerns add urgency: only 37% of artisan participants have young relatives learning traditional crafts, threatening intergenerational knowledge continuity. Paradoxically, tourism may provide the economic incentive necessary for preservation, as visitor appreciation validates cultural practices and potentially attracts new practitioners. Systematic documentation, educational programs, and master artisan recognition emerged as priorities for strengthening knowledge transfer.

This study proposes an integrative arts tourism framework grounded in established theory and adapted to Mandalay's context, emphasizing three interdependent dimensions: (1) immersive arts experiences transforming crafts from commodities into meaningful cultural encounters; (2) sustainable tourism principles ensuring economic, cultural, and social sustainability through proactive management; and (3) collaborative stakeholder governance creating mechanisms for coordinated action, benefit sharing, and accountability.

Implementation recommendations include: establishing annual Mandalay Golden Palace Arts Festival as flagship event; building artisan capacity in business skills, design innovation, and digital literacy; forming Mandalay Arts Tourism Steering Committee for stakeholder coordination; developing quality authentication systems protecting cultural integrity; creating culturally sensitive interpretation and mediation programs; and implementing sustainability safeguards including Tourism Benefit Fund redistributing revenue to community and cultural projects.

Critically, success requires artisan agency and ownership over how their cultural heritage is represented and commercialized. External actors such as government, tour operators, researchers should facilitate rather than control, respecting community priorities and wisdom. The path to sustainable development for Mandalay is not in moving beyond its past or transforming traditions into mere tourist products, but in carefully, thoughtfully leveraging living cultural heritage to build resilient artisan livelihoods while maintaining artistic integrity and cultural meaning.

Arts tourism presents robust model for Mandalay to balance heritage protection with economic development, but implementation demands sustained commitment, adaptive management, and constant vigilance against commodification and exploitation. This research provides evidence base and conceptual framework for that journey, while recognizing that ultimate success depends on choices made by artisan communities, government institutions, and tourism sector stakeholders in coming years.

For scholarship, this study contributes empirical evidence linking authenticity perceptions to economic value, demonstrates necessity of integrating micro-level interactions with macro-level governance, and highlights importance of context-specific theory adaptation. Future research should employ longitudinal designs, comparative analysis across heritage cities, participatory methodologies centering artisan voices, and rigorous impact assessment tracking both intended benefits and unintended consequences. Only through such grounded, long-term research will we understand whether and how arts tourism can genuinely serve cultural preservation and community empowerment in vulnerable heritage contexts like Mandalay.

References

Babb, F. E. (2011). *The tourism encounter: Fashioning Latin American nations and histories*. Stanford University Press.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.

Butler, R. W. (1980). The concept of a tourist area cycle of evolution: Implications for management of resources. *Canadian Geographer*, 24(1), 5–12.

Byrd, E. T. (2007). Stakeholders in sustainable tourism development and their roles: Applying stakeholder theory to sustainable tourism development. *Tourism Review*, 62(2), 6–13.

Cambodia Investment Review. (2025, November 21). Myanmar tourism recovery accelerates in 2025, but AMRO warns growth dependent on structural reform. Retrieved December 10, 2025, from [source].

Cohen, E. (1988). Authenticity and commoditization in tourism. *Annals of Tourism Research*, 15(3), 371–386.

Cole, S. (2007). Beyond authenticity and commodification. *Annals of Tourism Research*, 34(4), 943–960.

Gelbman, A., & Timothy, D. J. (2011). Border complexity, tourism and international exclaves: A case study. *Annals of Tourism Research*, 38(1), 110–131.

Gillen, J. (2013). The view from Naypyidaw: A survey of official attitudes toward cultural heritage management in Myanmar. *Journal of Burma Studies*, 17(2), 291–320.

Greenwood, D. J. (1989). Culture by the pound: An anthropological perspective on tourism as cultural commoditization. In V. L. Smith (Ed.), *Hosts and guests: The anthropology of tourism* (pp. 171–185). University of Pennsylvania Press.

Hall, C. M., & Lew, A. A. (2009). *Understanding and managing tourism impacts: An integrated approach*. Routledge.

Harrison, D., & Hitchcock, M. (Eds.). (2005). *The politics of world heritage: Negotiating tourism and conservation*. Channel View Publications.

Henderson, J. C. (2003). The politics of tourism in Myanmar. *Current Issues in Tourism*, 6(2), 97–118.

Henderson, J. C., & Bacon, N. (2018). Myanmar: International tourism and the political transition. *Asia Pacific Journal of Tourism Research*, 23(6), 158–168.

Jamal, T. B., & Getz, D. (1995). Collaboration theory and community tourism planning. *Annals of Tourism Research*, 22(1), 186–204.

MacCannell, D. (1973). Staged authenticity: Arrangements of social space in tourist settings. *American Journal of Sociology*, 79(3), 589–603.

Myanmar Responsible Business. (2015). *Tourism sector wide impact assessment (SWIA) report*. Yangon: MRB.

Pholsena, V. (2016). Of palaces and pagodas: Historical preservation and urban renewal in Luang Prabang. In M. M. Clément & V. Grabowsky (Eds.), *Regional dynamics in a decentralized Laos* (pp. 149–172). Silkworm Books.

Pine, B. J., & Gilmore, J. H. (1999). *The experience economy: Work is theatre and every business a stage*. Harvard Business School Press.

Richards, G. (2018). Cultural tourism: A review of recent research and trends. *Journal of Heritage Tourism*, 13(2), 123–136.

Smith, L. (2006). *Uses of heritage*. Routledge.

Smith, M. K. (2009). *Issues in cultural tourism studies* (2nd ed.). Routledge.

Thida, M. M. (2019). *Tourist sites and socio-cultural changes: A study of Amarapura Township, Mandalay Region*(Doctoral dissertation). Mandalay University of Distance Education.

Timothy, D. J., & Nyaupane, G. P. (Eds.). (2009). *Cultural heritage and tourism in the developing world: A regional perspective*. Routledge.

Travel and Tour World. (2025, October 2). Strengthening upper Myanmar tourism through collaboration, sustainability, and strategy. Retrieved December 10, 2025, from [source].

Tucker, H. (2007). Undoing shame: Tourism and women's work in Turkey. *Journal of Tourism and Cultural Change*, 5(2), 87–105.

UNESCO. (2024). *Periodic report on the convention (cycle 2020–2024): Myanmar*. UNESCO ICH.

Retrieved December 10, 2025,

from <https://ich.unesco.org/doc/src/Signed%20periodic%20report%20-%20Periodic%20report-67185.pdf>

UNESCO-ICHCAP. (2024). *Intangible cultural heritage safeguarding in Myanmar*. Retrieved

December 10, 2025, from https://archive.unesco-ichcap.org/eng/ek/sub1/pdf_file/south_east_asia/Myanmar_pdf.pdf

Wang, N. (1999). Rethinking authenticity in tourism experience. *Annals of Tourism Research*, 26(2), 349–370.

Weaver, D. B. (2006). *Sustainable tourism: Theory and practice*. Elsevier.



Sustainable Beauty through AI: Leveraging Artificial Intelligence for Eco-Friendly Product Recommendations and Personalized Skincare

Lin Fan¹, Lavanchawee Sujarittanonta²

¹*College of Management, National Sun Yat-sen University, Kaohsiung City 804, Taiwan*

²*International College, Rajamangala University of Technology Phra Nakhon (RMUTP), Bangkok 10800, Thailand*

¹*e-mail: lavanchawee.s@rmutp.ac.th*

²*e-mail: linfan@cm.nsysu.edu.tw*

Received: Nov 27, 2025 **Revised:** Dec 24, 2025 **Accepted:** Dec 26, 2025

Abstract

Growing environmental concerns within the beauty industry have prompted both consumers and manufacturers to seek sustainable solutions. This study investigates the transformative potential of artificial intelligence (AI) in promoting eco-conscious practices across the beauty sector. By analyzing digital data sources such as social media content, product reviews, and skincare routines, we develop an AI-driven framework that delivers personalized, environmentally friendly product recommendations, identifies sustainable ingredients, and suggests optimized packaging strategies. Our findings indicate that AI technologies can meaningfully reduce waste, foster responsible consumption patterns, and incentivize brands to adopt more sustainable business models. This research adds to the emerging literature on sustainable beauty and underscores AI's capacity to catalyze positive environmental transformation.

Keywords: Sustainable beauty; Artificial Intelligence; Eco-friendly products; Personalized skincare; Environmental impact

1. Introduction

The integration of artificial intelligence (AI) into the beauty industry represents a transformative opportunity to advance environmental sustainability while responding to dynamic consumer expectations. As global awareness of climate change, pollution, and resource depletion intensifies,

consumers are increasingly demanding transparency, ethical sourcing, and eco-conscious innovation from the brands they support (Niinimäki et al., 2020). In response, beauty companies are exploring the adoption of AI technologies as a means of reducing their ecological footprint and building trust through data-driven personalization and sustainable innovation.

In this context, the concept of sustainable beauty through AI can be defined as the strategic use of intelligent computational systems—including machine learning, natural language processing, and data analytics—to minimize environmental impact while enhancing the efficiency and ethical quality of beauty products and services. AI enables companies to analyze vast and diverse data sources, such as user reviews, dermatological databases, ingredient lists, and supply chain metrics, in order to develop greener formulations, optimize packaging, and offer personalized skincare solutions (Davenport & Ronanki, 2018; Xu et al., 2022). These systems support environmentally conscious decision-making at every stage of the product lifecycle.

AI also contributes significantly to sustainability through four core mechanisms. First, it facilitates environmental footprint reduction by enabling resource-efficient product design and minimizing waste throughout production and distribution processes (Luo et al., 2022). Second, it enhances transparency and trust by providing consumers with clear, traceable information about ingredients, sourcing, and manufacturing practices—often through interactive platforms or AI-powered tools (Akhtar & Khan, 2020). Third, AI supports personalization, allowing consumers to receive tailored skincare recommendations based on their unique skin profiles, which can reduce overconsumption and product mismatch (Sun et al., 2021). Finally, AI enables sustainable influence by identifying and partnering with social media influencers who promote eco-friendly practices, thereby extending the reach and impact of sustainability messaging (Kapitan et al., 2019).

While these benefits are promising, the implementation of AI in sustainable beauty is not without its challenges. Issues related to data privacy, algorithmic bias, regulatory compliance, and the environmental cost of AI infrastructure itself warrant careful consideration (Bauknecht et al., 2023; Strubell et al., 2019). Furthermore, the effectiveness of AI-driven sustainability initiatives depends on the quality of the input data, cross-sector collaboration, and the ethical design of AI systems (Vinuesa et al., 2020).

This study seeks to evaluate the role of AI in facilitating sustainable beauty practices by addressing two primary research questions: What are the critical success factors in implementing AI for sustainability in the beauty industry? And what challenges and opportunities arise in integrating AI with eco-friendly product development? Through an interdisciplinary lens combining technology, sustainability science, and consumer behavior, this research contributes to the growing body of knowledge at the intersection of artificial intelligence and sustainable innovation.

Research Questions

This study investigates the role of artificial intelligence in advancing sustainable practices within the beauty industry. It explores how AI technologies can be effectively implemented to support environmentally responsible product development, reduce waste, and enhance consumer engagement with ethical beauty solutions. Central to this inquiry are two guiding research questions: What are the critical success factors for implementing AI in support of sustainability in the beauty industry? And what challenges and opportunities emerge when AI is integrated into the development of eco-friendly beauty products? By addressing these questions, the study aims to identify both the enabling conditions and potential barriers that influence the successful adoption of AI-driven sustainability initiatives in this rapidly evolving sector.

2. Literature Review

The intersection of artificial intelligence (AI) and sustainability in the beauty industry has attracted increasing scholarly and commercial interest due to its transformative potential to reshape conventional business models and foster eco-friendly innovation. The existing body of literature highlights that AI technologies contribute to sustainability across five interconnected domains: product development, supply chain optimization, personalized beauty, waste reduction, and consumer education. Together, these areas demonstrate how intelligent systems can serve as powerful enablers of environmentally responsible practices while addressing the growing demands of a socially and ethically conscious consumer base. The following sections addresses how AI has been incorporated into theoretical developments, product development, supply chain optimization, and other marketing-related aspects such as personalized beauty, waste reduction, and consumer education

2.1 Theoretical developments for AI research on CB

Value co-creation approach for sustainable consumption through digitization initiatives in the retail industry has been addressed by Lumivalo et al. (2024, 2025), which explains why retail shops are investing in their social media presence and online image. While Haryono et al.'s (2024) empirical study of skin care clean beauty consumers in Asia was explored based on sustainable consumption theory.

When it comes to green consumerism, there are increasingly more research on Artificial Intelligence (AI), sustainability, and consumer behavior (CB). In particular, in 2024 and 2025, the focus is on how AI can be seen as bridging purchase intention and purchase behavior gap, i.e. a consumer's desire to be green versus their actual purchase actions.

The Stimulus-Organism-Response (S-O-R) model is the dominant framework for understanding how AI acts as the stimuli (S) to affect the consumer (O) and produces sustainable purchase (R). In other words, stimuli such as algorithm recommendations can influence the human consumer to buy green products and services, e.g. studies by Vafaei-Zadeh et al. (2025), Imran et al. (2025). To enhance the consumer's perceived emotional and social value, Cao & Liu's study (2025) proposed that AI can be used as the stimuli, subsequently leading to pro-environmental actions.

“Digital nudging” is another new theoretical development in that later part of 2025, by adapting combining Technology Acceptance Model (TAM), such as studies by Fruttaldo (2024), Pillai et al. (2025) and Balaskas et al., (2025) which looked at how behavior can be changed through digital / technological persuasion.

2.2 Product Development

AI plays a pivotal role in accelerating the development of sustainable and ethical beauty products by enabling more precise ingredient selection and formulation design. Through techniques such as natural language processing and machine learning, AI systems can efficiently scan and analyze vast, complex ingredient databases to identify environmentally friendly alternatives to traditional synthetic compounds. This capability not only speeds up research and innovation but also reduces reliance on potentially harmful chemicals, aligning product design with green chemistry principles (Leong et al., 2022). For example, L'Oréal's AI platform employs predictive modeling to assess both the

dermatological efficacy and environmental impact of new formulations, facilitating faster iteration cycles with a lower ecological footprint (L'Oréal, 2021). Moreover, AI facilitates real-time monitoring and verification of ingredient sourcing, thereby enhancing supply chain transparency and enabling brands to uphold strict ethical and sustainability standards. Advancements in AI-powered molecular modeling further support the discovery of biodegradable and non-toxic ingredients that match the performance of conventional ones, thus simultaneously improving product safety for consumers and reducing environmental harm (Jiang et al., 2023). This capacity for rapid, data-driven innovation allows brands to integrate sustainability at the earliest stages of product conception, rather than as an afterthought.

2.3 Supply Chain Optimization

Sustainability in the beauty industry's supply chain is increasingly driven by AI's ability to improve efficiency and reduce waste. Machine learning algorithms enable more accurate demand forecasting, which is crucial for mitigating the problem of overproduction—a major source of environmental waste in cosmetics manufacturing (Govindan et al., 2020). For example, Procter & Gamble has integrated AI-powered supply chain analytics that track raw material availability, predict market fluctuations, and optimize production schedules. These improvements have led to measurable decreases in CO₂ emissions and material waste throughout the supply chain (P&G, 2021). AI further enhances logistics by identifying inefficiencies such as redundant packaging and suboptimal transportation routes, suggesting greener alternatives that reduce carbon footprints. The advent of blockchain-integrated AI models offers real-time verification of ethical sourcing practices and enables comprehensive carbon footprint assessments, fostering greater accountability and transparency in complex global supply networks (Saberi et al., 2019). Collectively, these AI-driven advancements facilitate more sustainable resource management and support a shift towards circular economy principles by promoting reuse, recycling, and minimal environmental disruption.

2.4 Personalized Beauty

The personalization of beauty products and services through AI is reshaping consumer interaction by tailoring solutions to individual skin conditions, preferences, and environmental contexts. Machine learning models analyze biometric data, user feedback, and external factors such as weather or pollution

levels to recommend products that better fit individual needs, thereby reducing the trial-and-error purchasing process that often leads to wasteful consumption (Choi & Lee, 2020). For instance, Shiseido's Optune system integrates AI with IoT sensors to customize skincare regimens in real time, adapting to daily variations in skin condition and environmental factors such as humidity and UV exposure, improving treatment efficacy while minimizing unnecessary product use (Shiseido, 2020). AI-powered virtual try-on tools, such as those developed by Modiface and deployed by brands like Sephora and Estée Lauder, further reduce environmental impact by replacing physical product testers and samples with digital simulations. This innovation not only curtails product waste but also improves hygiene and accessibility for consumers, illustrating how AI personalization can align consumer satisfaction with sustainability goals (Nguyen et al., 2022).

2.5 Waste Reduction

Beyond curbing overproduction, AI significantly contributes to waste reduction through intelligent packaging design and factory-level waste management. AI algorithms assess the entire lifecycle of packaging materials and recommend sustainable options such as lightweight, biodegradable, or recyclable components that minimize environmental harm (Singh & Ordoñez, 2022). For example, Unilever's smart packaging initiatives leverage AI to reduce plastic usage by up to 50%, increase recyclability, and incorporate "design for disassembly" principles to facilitate future upcycling efforts. Furthermore, AI-driven waste analytics platforms enable real-time monitoring of manufacturing waste streams, identifying key points of inefficiency and suggesting actionable interventions to reduce landfill contributions and promote material reuse (Lee et al., 2021). These technological innovations empower beauty companies to implement circular design principles, ultimately fostering more responsible consumption patterns and reducing the environmental footprint of packaging waste.

2.6 Consumer Education

AI's expanding role in consumer education enhances sustainable consumption by providing personalized, accessible, and dynamic information on product sustainability. Intelligent chatbots, voice assistants, and recommendation engines offer tailored guidance on ingredient safety, environmental impact, and ethical certifications, empowering consumers to make more informed and responsible purchasing decisions (Nguyen et al., 2021). Mobile applications such as CodeCheck and Yuka utilize

AI to scan product barcodes and instantly deliver sustainability scores, carbon footprint data, and ethical information, promoting transparency and building consumer trust. Moreover, AI facilitates adaptive educational campaigns that respond to individual user behaviors and preferences, making sustainability messaging more engaging, relevant, and effective in promoting eco-conscious habits (Wang & Yu, 2022). This dynamic interaction fosters a more informed consumer base that actively participates in the transition toward sustainable beauty.

Together, this literature illustrates the wide-ranging applicability of AI in advancing environmental responsibility within the beauty industry. AI not only optimizes operational efficiencies and ethical product development but also catalyzes a systemic shift toward circular economy models by integrating sustainability across product lifecycles and consumer experiences. However, the literature also acknowledges the need to address significant challenges such as data governance, the energy demands of AI infrastructure, and potential biases within algorithms—issues critical to ensuring AI's contribution to genuine sustainability rather than superficial greenwashing (Vinuesa et al., 2020; Strubell et al., 2019). To fully realize AI's potential, future research must examine how to scale these innovations globally while maintaining ethical integrity and minimizing environmental trade-offs.

3. Methodology

This study adopts a qualitative content analysis approach to examine how artificial intelligence (AI) is being leveraged to support sustainability in the beauty industry. The analysis is grounded in interpretivist traditions, which prioritize the subjective meanings and patterns emerging from digital discourse. Content analysis was selected for its strength in identifying and interpreting latent meanings within visual and textual social media content (Krippendorff, 2018).

The coding stage of content analysis was conducted by a French male scholar and a Thai female scholar, in order to reduce cultural bias, and provides a measure of diversity for methodological strength, allowing for the triangulation of "etic" (outsider) and "emic" (insider) perspectives. The coding protocol was designed with care, taking into account linguistic nuances and cultural interpretations. This involved a blind coding phase, where both scholars coded the entire dataset independently without

mutual consultation, followed by calibration through joint coding, where both scholars discussed the discrepancies from the blind coding phase. Thus, the reliability of the content analysis was achieved.

3.1 Data Collection

Data were collected from publicly available digital content across three primary platforms: YouTube, Instagram, and TikTok. These platforms were selected due to their prominence in the beauty sector and their role in shaping consumer behavior and brand engagement. The timeframe for data collection spanned April 10 to May 24, 2025.

Using a purposive sampling strategy, we selected content from beauty influencers and sustainability-focused creators who explicitly discussed AI, eco-conscious products, or sustainable practices. Criteria for inclusion included: (1) content with over 10,000 views or likes to ensure relevance and visibility, (2) posts that included hashtags such as #SustainableBeauty, #AIinSkincare, #EcoBeauty, or #GreenTech, and (3) creators with demonstrated engagement in sustainability-related discussions in prior content.

In total, 52 unique content pieces were analyzed: 20 YouTube videos, 18 TikTok clips, and 14 Instagram posts or stories, including associated captions and user comments. A spreadsheet was used to catalog metadata including publication date, creator name, platform, engagement metrics, and key sustainability-related content features.

3.2 Analytical Framework

The data were analyzed using thematic analysis, following Braun and Clarke's (2006) six-phase framework, which included:

Familiarization with the Data: The researcher repeatedly reviewed video transcripts, captions, and post content to immerse themselves in the material.

Generating Initial Codes: Textual segments were annotated with open codes related to sustainability, AI functionality, consumer influence, and product use.

Searching for Themes: Related codes were clustered to form broader thematic categories (e.g., “ingredient transparency,” “virtual try-on technologies,” “influencer-brand alignment”).

Reviewing Themes: Preliminary themes were refined by cross-referencing against the data corpus to ensure internal consistency and distinctiveness.

Defining and Naming Themes: Final themes were named and defined with illustrative descriptions.

Producing the Report: Extracts were selected to exemplify each theme and linked to academic literature in the findings section.

3.3 Sample Extracts

Below are selected examples from the analyzed content to illustrate how themes were coded and interpreted:

3.3.1 Eco-Friendly Product Recommendations

YouTube influencer, April 10, 2025: *"I've been using this AI app that scans my skincare shelf and tells me which products have clean ingredients or if there's a greener alternative. Honestly, it changed how I shop."*

→ Coded as: AI recommendation system, sustainable alternatives, consumer awareness.

3.3.2 Ingredient Transparency

Instagram post by @EcoSkinJournal, April 24, 2025: *"Did you know this cleanser uses AI to detect micro-irritants in your skin and adjusts its formula based on your reaction history? Plus, all ingredients are biodegradable."*

→ Coded as: ingredient transparency, adaptive AI, green formulation.

3.3.3 Personalized Routines

TikTok creator @GlowyBot, May 5, 2025: *"This virtual skincare tool gave me a daily routine based on my acne, oil levels, and climate. I've stopped over-buying products I don't need!"*

→ Coded as: AI personalization, waste reduction, user satisfaction.

3.3.4 Sustainable Packaging Analysis

YouTube brand campaign, May 12, 2025: *"Using AI lifecycle analysis, we redesigned our packaging to be 85% compostable and reduced plastic by 60%."*

→ Coded as: AI packaging design, material optimization, corporate sustainability.

These extracts demonstrate how AI is operationalized in beauty discourse and reveal consumer perceptions of its role in sustainable innovation.

3.3.5 Ethical Considerations

As the study analyzes publicly accessible content, no ethical approval was required. However, creators' usernames were anonymized or pseudonymized where appropriate to preserve privacy. Comments and posts were not quoted in ways that would enable reverse identification.

4. Analysis and Key Insights

As sustainability becomes a dominant value among beauty consumers, brands are increasingly leveraging AI to adapt to evolving expectations. This section presents key themes identified in the data, each illustrating how AI contributes to sustainability in beauty through innovation, personalization, and efficiency. The findings of this study provide empirical support for related theories, suggesting that AI-driven personalization is an efficient strategy in recommending eco-friendly skin care. For example, the S-O-R framework, with Hyper-personalized AI diagnostics (of acne condition, UV intensity) as the stimulus (S), consumer's anxiety about complexion or perceived effectiveness of skincare product as the organism (O), and finally the reduced consumption by purchasing the recommended skincare product, rather than the usual behavior of trial-and-error of buying any and every new-fangled skincare on the shelf or in the advertisements (response R).

4.1 Eco-Friendly Product Recommendations

AI systems increasingly function as intelligent filters that analyze consumer-generated and influencer content to recommend sustainable alternatives tailored to individual needs (Sun et al., 2021). For instance, machine learning algorithms assess skincare routines shared by influencers, parse sentiment from product reviews, and cross-reference ingredient lists to suggest more environmentally responsible options. This approach supports conscious consumption by offering curated recommendations aligned with users' values and sustainability goals.

4.2 Ingredient Transparency

Another prominent theme involves the use of AI to enhance transparency regarding product composition. AI tools extract and synthesize information from scientific literature and public product databases to highlight natural, organic, and ethically sourced ingredients (Akhtar & Khan, 2020). This empowers consumers to evaluate products more critically, supporting informed decision-making and

reinforcing trust between brands and their audiences. Some AI-driven platforms also provide ingredient toxicity ratings or sustainability scores to further guide consumer behavior.

4.3 Personalized Routines and Responsible Consumption

Personalization is a core function of AI in skincare, with deep learning models tailoring routines based on biometric data, lifestyle inputs, and user preferences (Leong et al., 2022). The study found that consumers are increasingly turning to AI-powered diagnostic tools, such as facial scans and skin quizzes, to receive individualized product recommendations. This reduces the likelihood of ineffective purchases and curbs waste by minimizing the need for trial-and-error product testing.

4.4 Influencer Partnership Alignment

AI tools also assist brands in identifying influencer partners whose values and audiences align with sustainability objectives. By analyzing engagement metrics, content tone, and brand affiliations, AI systems match companies with influencers who demonstrate authentic eco-conscious advocacy (Kapitan et al., 2019). These partnerships enhance the credibility and reach of sustainability messaging while strengthening brand-consumer relationships within ethical consumer communities.

4.5 Sustainable Packaging Analysis

Packaging emerged as a critical area for sustainable intervention. AI enables environmental impact assessments of current packaging designs by analyzing material composition, recyclability, and life-cycle metrics (Singh & Ordoñez, 2022). These insights help brands redesign packaging with biodegradable or reusable alternatives, directly reducing plastic usage and packaging waste. Some brands have used generative AI to create eco-friendly packaging prototypes that comply with circular design principles.

4.6 Virtual Try-On Technologies

Virtual try-on technologies powered by computer vision and augmented reality allow consumers to test cosmetic products digitally. These tools significantly reduce the environmental footprint of physical samples and product returns, two major sources of waste in the beauty sector (Choi & Lee, 2020). The study found widespread consumer engagement with virtual try-on tools across platforms like Instagram, Sephora's mobile app, and e-commerce sites, indicating strong potential for scalable sustainability benefits.



4.7 AI-Driven Trend Forecasting

Finally, AI's role in trend forecasting offers proactive sustainability advantages. By analyzing social media data, search trends, and sales patterns, AI can predict shifts in consumer preferences (Luo et al., 2022). This allows brands to align production volumes more accurately with market demand, reducing overproduction and the associated environmental costs. Such predictive tools contribute to leaner supply chains and more efficient resource allocation.

We refer the reader to this summary of our key findings:

Theme	AI Function	Sustainability Impact	Example/Application
Eco-Friendly Product Recommendations	AI analyzes consumer and influencer content to suggest sustainable product alternatives.	Encourages conscious consumption by aligning recommendations with sustainability values.	Machine learning algorithms parsing influencer skincare routines and reviews to recommend eco-friendly products.
Ingredient Transparency	AI extracts and synthesizes data on product ingredients from literature and databases.	Empowers informed decisions and builds trust through ingredient and toxicity transparency.	Platforms providing ingredient toxicity ratings and sustainability scores for cosmetics.
Personalized Routines and Responsible Consumption	Deep learning models tailor skincare routines based on biometric and lifestyle data.	Reduces trial-and-error purchases, minimizing product waste and overconsumption.	AI-powered facial scans and quizzes recommending individualized products and regimens.
Influencer Partnership Alignment	AI analyzes influencer content and engagement to identify sustainable brand partners.	Enhances credibility and effectiveness of sustainability messaging via authentic advocacy.	Matching brands with eco-conscious influencers based on content tone and audience alignment.



Sustainable Packaging Analysis	AI evaluates packaging materials, recyclability, and life-cycle impacts for redesign opportunities.	Reduces plastic use and packaging waste via biodegradable and reusable design solutions.	Generative AI creating prototypes for eco-friendly, circular economy-compliant packaging.
Virtual Try-On Technologies	Computer vision and augmented reality enable digital product testing and visualization.	Cuts down physical sample waste and reduces product returns, lowering environmental footprint.	Virtual try-on tools on Instagram, Sephora apps, and e-commerce platforms engaging consumers digitally.
AI-Driven Trend Forecasting	AI analyzes social and market data to predict consumer trends and demand fluctuations.	Reduces overproduction and waste by aligning supply with actual demand.	Brands using AI to forecast trends and adjust production volumes accordingly for leaner supply chains.

5. Conclusion

This study has explored how artificial intelligence (AI) is being strategically employed to support sustainability across multiple dimensions of the beauty industry. Drawing on qualitative content analysis of digital discourse on platforms such as YouTube, TikTok, and Instagram, the research has highlighted the growing integration of AI technologies in promoting eco-conscious product development, enhancing ingredient transparency, enabling personalized skincare routines, optimizing packaging, and improving influencer-brand alignment. These applications collectively demonstrate the potential for AI to facilitate more ethical, efficient, and environmentally responsible practices in beauty, aligning corporate innovation with the demands of sustainability-conscious consumers.

The findings suggest that AI serves as both a technological enabler and a cultural mediator, shaping consumer perceptions of sustainability while offering brands actionable tools to reduce their environmental impact. Importantly, AI's ability to personalize beauty routines and streamline consumption not only enhances customer satisfaction but also contributes to reducing overproduction and product waste—two persistent challenges in the cosmetics sector. Moreover, the use of AI in

sustainable packaging analysis and virtual try-on technologies illustrates how digital transformation can directly address material efficiency and circular design goals.

However, the research also underscores that the deployment of AI in sustainable beauty is not without complications. Concerns regarding data privacy, algorithmic transparency, and the environmental cost of AI infrastructure warrant ongoing scrutiny. Additionally, the success of AI-driven sustainability initiatives hinges on the quality and inclusivity of underlying data, as well as the ethical orientation of system design and implementation. As such, brands must adopt a reflexive and interdisciplinary approach to AI integration, one that considers not only environmental outcomes but also social responsibility and digital ethics.

Therefore, this study highlights a key regional insight: Asian influencers often promote natural, holistic beauty values that align well with AI-driven personalization, enhancing cultural relevance across markets. AI emerges not just as a tool but as a catalyst for sustainability in beauty—enabling waste reduction, personalized care, transparent supply chains, and more strategic branding. To scale these innovations responsibly, collaboration between industry stakeholders and regulators is essential. Future research should also address the ethical dimensions and global scalability of AI in sustainable beauty.

In conclusion, AI represents a powerful catalyst for sustainable innovation in the beauty industry, offering pathways to reconfigure product lifecycles, reshape consumer engagement, and support the transition toward more responsible production and consumption models. Future research should continue to investigate the long-term impacts of AI adoption on environmental performance metrics, consumer trust, and regulatory frameworks, while exploring how these technologies can scale equitably across global markets. As sustainability becomes a defining value in the post-digital beauty economy, the ethical application of AI will be central to realizing its transformative potential.

References

Akhtar, P., & Khan, Z. (2020). Mapping the links between sustainable supply chain management and sustainable development goals: A bibliometric analysis. *Benchmarking: An International Journal*, 27(7), 2241–2260. <https://doi.org/10.1108/BIJ-03-2019-0115>

Balaskas, S., Yfantidou, I., Nikolopoulos, T., & Komis, K. (2025). The Psychology of EdTech Nudging: Persuasion, Cognitive Load, and Intrinsic Motivation. *European Journal of Investigation in Health, Psychology and Education*, 15(9), 179.

Bauknecht, J., Reisch, L. A., & Thøgersen, J. (2023). Green AI: Addressing sustainability in artificial intelligence applications. *Sustainability Science*, 18(1), 23–34.
<https://doi.org/10.1007/s11625-022-01200-1>

Bauknecht, D., Pfeifer, M., & Gärtner, M. (2023). AI in the circular economy: Potential and limits. *Sustainability*, 15(3), 1289. <https://doi.org/10.3390/su15031289>

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>

Cao, P., & Liu, S. (2023). The impact of artificial intelligence technology stimuli on sustainable consumption behavior: Evidence from ant forest users in China. *Behavioral Sciences*, 13(7), 604.

Choi, J., & Lee, K. (2020). Virtual try-on technology as a sustainable retail innovation: Reducing returns and waste. *Journal of Retailing and Consumer Services*, 57, 102230.
<https://doi.org/10.1016/j.jretconser.2020.102230>

Davenport, T. H., & Ronanki, R. (2018). Artificial intelligence for the real world. *Harvard Business Review*, 96(1), 108–116.

Fruttaldo, S. (2024). Design for behavioural change: study of a concept and recommendations for information systems supporting eco-driving (Doctoral dissertation, Loughborough University).

Govindan, K., Soleimani, H., & Kannan, D. (2020). Sustainable supply chain management: A review and research agenda. *International Journal of Production Economics*, 194, 173–182.
<https://doi.org/10.1016/j.ijpe.2017.03.008>

Haryono, A. T., & Lestari, S. P. (2024). Exploration of factors that influence sustainable consumption behavior (empirical study of skin care clean beauty consumers in Semarang city). *Jurnal Info Sains: Informatika dan Sains*, 14(01), 931-942.



Imran, M., Noor, M., & Ansari, H. W. A. (2025). Use of AI and E-waste Recycling Behavior through the intervening role of consumer awareness: A view of SOR theory. *Strategic Business Research*, 100026.

Jiang, L., Zhang, M., & Cheng, Q. (2023). Green AI for green chemistry: Emerging tools for eco-friendly formulation in the cosmetics industry. *Computational Materials Science*, 220, 111221. <https://doi.org/10.1016/j.commatsci.2023.111221>

Kapitan, S., Kennedy, A.-M., & Berth, N. (2019). Sustainably transforming value creation: Using design thinking in social marketing. *Journal of Business Research*, 103, 408–421. <https://doi.org/10.1016/j.jbusres.2019.01.021>

Krippendorff, K. (2018). *Content analysis: An introduction to its methodology* (4th ed.). SAGE Publications.

Lee, H., Kim, J., & Park, S. (2021). Smart factory applications of AI in waste monitoring and management. *Journal of Cleaner Production*, 312, 127798. <https://doi.org/10.1016/j.jclepro.2021.127798>

Leong, L.-Y., Hew, T.-S., Tan, G. W.-H., & Ooi, K.-B. (2022). Predicting the sustainability of green skincare products using machine learning. *Technological Forecasting and Social Change*, 174, 121257. <https://doi.org/10.1016/j.techfore.2021.121257>

L'Oréal. (2021). Beauty Tech: Sustainability innovation through AI and data science. Retrieved from <https://www.loreal.com>

Lumivalo, J., Tuunanen, T., & Salo, M. (2024). Value co-destruction: a conceptual review and future research agenda. *Journal of Service Research*, 27(2), 159-176.

Lumivalo, J., Clements, K., & Hannuksela, E. S. (2024). Digitalization for Sustainable Consumption: Co-Creating and Co-Destroying Value Through Digital Initiatives in Retail. *Pacific Asia Journal of the Association for Information Systems*, (2).

Luo, C., Wu, L., & Chiong, R. (2022). Environmental sustainability in beauty product manufacturing through AI-driven supply chain optimization. *Journal of Cleaner Production*, 338, 130678. <https://doi.org/10.1016/j.jclepro.2022.130678>

Luo, J., Pan, Y., & Zhang, X. (2022). AI-driven smart production and green manufacturing. *Journal of Cleaner Production*, 352, 131602. <https://doi.org/10.1016/j.jclepro.2022.131602>

Nguyen, T., Simkin, L., & Canhoto, A. (2021). The dark and bright sides of AI in marketing. *Journal of Business Research*, 136, 274–286. <https://doi.org/10.1016/j.jbusres.2021.07.035>

Nguyen, T., Zhang, Y., & Lee, S. (2022). Virtual try-on and consumer environmental behavior: The moderating role of eco-consciousness. *Journal of Retailing and Consumer Services*, 66, 102922. <https://doi.org/10.1016/j.jretconser.2022.102922>

Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion and beauty: Lifecycle considerations. *Nature Reviews Earth & Environment*, 1(4), 189–200. <https://doi.org/10.1038/s43017-020-0039-9>

Pillai, K. R., Kainthaje, A., & Ashique Ali, K. A. (2025). Nudging Toward Consumer Choices: Current Status and Future Directions. *Sustainable Data Management: Navigating Big Data, Communication Technology, and Business Digital Leadership*. Volume 2, 187-208.

P&G. (2021). Sustainability and AI: Using data to transform supply chain impact. Retrieved from <https://us.pg.com/sustainability>

Saberi, S., Kouhizadeh, M., Sarkis, J., & Shen, L. (2019). Blockchain technology and its relationships to sustainable supply chain management. *International Journal of Production Research*, 57(7), 2117–2135. <https://doi.org/10.1080/00207543.2018.1533261>

Singh, S., & Ordoñez, I. (2022). Designing for circularity: AI applications for sustainable packaging. *Resources, Conservation and Recycling*, 179, 106111. <https://doi.org/10.1016/j.resconrec.2021.106111>

Strubell, E., Ganesh, A., & McCallum, A. (2019). Energy and policy considerations for deep learning in NLP. *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics*, 3645–3650. <https://doi.org/10.18653/v1/P19-1355>

Sun, Y., Wang, Y., & Huang, Y. (2021). Artificial intelligence and personalization in skincare: Opportunities for sustainable consumption. *Technological Forecasting and Social Change*, 173, 121068. <https://doi.org/10.1016/j.techfore.2021.121068>

Sun, Y., Liu, H., & Wang, X. (2021). The role of artificial intelligence in enhancing sustainable consumption. *Sustainable Production and Consumption*, 27, 1049–1060.
<https://doi.org/10.1016/j.spc.2021.02.002>

Sun, Y., Lim, J., & Oh, K. (2021). AI in personalized skincare: Impacts on product design and consumption reduction. *Computers in Human Behavior*, 117, 106655.
<https://doi.org/10.1016/j.chb.2020.106655>

Vafaei-Zadeh, A., Nikbin, D., Wong, S. L., & Hanifah, H. (2025). Investigating factors influencing AI customer service adoption: An integrated model of stimulus–organism–response (SOR) and task-technology fit (TTF) theory. *Asia Pacific Journal of Marketing and Logistics*, 37(6), 1465-1502.

Vinuesa, R., Azizpour, H., Leite, I., Balaam, M., Dignum, V., Domisch, S., ... & Nerini, F. F. (2020). The role of artificial intelligence in achieving the Sustainable Development Goals. *Nature Communications*, 11, 233. <https://doi.org/10.1038/s41467-019-14108-y>

Wang, H., & Yu, Y. (2022). AI and sustainable consumption: Bridging the gap between awareness and action. *Sustainability*, 14(2), 876. <https://doi.org/10.3390/su14020876>

Xu, Y., Jin, S., & Kim, H. (2022). AI-enhanced sustainable product development in the cosmetic industry: A case study approach. *Sustainability*, 14(7), 3920.
<https://doi.org/10.3390/su14073920>