



# Strategies and Practical Research on the Transformation of Industrial Heritage into Age-Friendly Communities in the Context of Post-Industrialization: A Case Study of Nanjing 1865 Creative Industry Park

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## Abstract

**Background and Aim:** China's rapidly aging society necessitates the development of age-friendly communities. This study investigates the adaptive reuse of industrial heritage for such communities, using Nanjing 1865 Creative Industry Park as a case study. Anchored in the World Health Organization's (WHO) age-friendly cities framework and universal design principles, the research bridges the underexplored intersection of heritage preservation and elderly well-being.

**Materials and Methods:** Adopting a mixed-methods approach—surveys, interviews, and participatory design workshops—the study directly engaged elderly stakeholders to identify their needs. Participatory design, defined here as co-creating solutions with older adults, ensured their priorities shaped spatial and functional outcomes.

**Results:** Adaptive renovations, including barrier-free pathways, outdoor communal areas, and safety enhancements, transformed industrial heritage into accessible, socially cohesive spaces. The integration of historical and cultural elements (e.g., exhibitions, community events) fostered cultural engagement and intergenerational interaction, addressing the elderly's needs for social connectivity and belonging.

**Conclusion:** The Nanjing 1865 case validates the feasibility of merging industrial heritage reuse with age-friendly goals. However, limitations such as localized sampling and scalability challenges warrant further exploration. The findings offer policy insights for post-industrial cities, advocating participatory frameworks and heritage-sensitive design to balance cultural preservation with elderly well-being.

**Keywords:** Industrial Heritage; Age-Friendly Design; Participatory Design; Adaptive Reuse

## Introduction

China's demographic landscape is undergoing a profound transformation. According to the National Bureau of Statistics of China, the population aged 60 and above reached 263 million (18.7% of the total population) by 2020, while those aged 65 and older exceeded 186 million (13.5%), surpassing the United Nations' threshold for an aging society (7%). Concurrently, life expectancy has risen to 77.3 years, intensifying the urgency to address the socioeconomic and psychological challenges faced by older adults. Retirement often triggers reduced social interaction, heightened loneliness, and mental health risks such as anxiety and depression, exacerbated by mobility limitations and societal marginalization. These realities underscore the imperative to reimagine urban environments that support elderly well-being.

This study situates itself at the intersection of industrial heritage revitalization and age-friendly design, a nexus underexplored in existing literature. Drawing on Lawton and Nahemow's (1973) ecological model of aging, which emphasizes the interplay between individual capacities and environmental supports, the research aligns with the World Health Organization's (WHO) Global Age-Friendly Cities Guidelines (2007). These frameworks highlight the need for accessible, inclusive spaces that foster social cohesion, safety, and cultural engagement—principles critical to repurposing industrial heritage.

Industrial heritage, as a repository of historical and cultural value (Chen, 2021), offers unique opportunities for adaptive reuse. For instance, Germany's Ruhr Region transformed disused factories into community hubs with intergenerational activity zones (Zhang & Smith, 2018), while Boston's Innovation and Design Building integrated elderly-friendly amenities into historic industrial structures (Liu et al., 2020). Such cases demonstrate the feasibility of balancing preservation with contemporary social needs.

The choice of Nanjing 1865 as a case study is strategic. Unlike generic urban renewal projects, this site's historical layers (e.g., Republic of China-era architecture) provide a culturally rich canvas for testing





age-friendly interventions. Lessons from comparable projects, such as Shanghai's Bincuan Road Electromechanical Area (Figure 1) and Canada's Bata Shoe Factory (Figure 2), inform the design strategies while highlighting challenges like balancing authenticity with accessibility.

By anchoring the study in robust theoretical frameworks and cross-cultural case comparisons, this research not only advances academic discourse but also offers actionable insights for policymakers and urban planners.

## Objectives

1. To study theories related to age-friendly design, concepts of industrial heritage, and excellent case studies.
2. To analyze the key points of age-friendly renovations and the needs of surrounding elderly individuals, and to develop design strategies.
3. To design renovations of the factory buildings in Nanjing 1865 Creative Industry Park that meet the needs of the elderly, contributing to the sustainable development of the park.

## Literature Review

### Multidimensional Construction of Age-Friendly Communities: From Theory to Practice

The core objective of age-friendly communities is to create a conducive environment for the survival and development of elderly individuals. This concept not only addresses material needs such as housing facilities but also emphasizes the impact of social interaction and cultural participation on the mental health of older adults (Yang, 2010). In recent years, the World Health Organization (WHO) further proposed the concept of "inclusive design" in the "Global Age-Friendly Cities Guidelines (2021 Revision)," highlighting the enhancement of elderly individuals' sense of social belonging through intergenerational activity spaces, smart service facilities, and collaborative community governance mechanisms. For instance, the "Yoyogi VILLAGE" project in Tokyo, Japan, successfully fosters interaction between the elderly and young families through vertical greening and shared garden designs. Similarly, the "BoKlok community" in Malmö, Sweden, adopts a modular housing model linked with community service centers to provide flexible living support for older adults (WHO, 2021). These practices demonstrate that age-friendly communities need to integrate three subsystems: "outdoor spaces - living services - psychological needs", and continuously optimize service provision through a dynamic assessment mechanism.

In terms of community space renewal objectives, continuity theory and activity theory provide key frameworks for design. Continuity theory emphasizes the need for stability in the lives of older adults. For example, the "Humanitas Elderly Community" in Amsterdam, Netherlands, helps elderly residents maintain familiar life trajectories by preserving the original building layout and neighborhood relationships (Xiong, 2012). On the other hand, activity theory focuses on the value of social participation. The "Kampung Admiralty" project in Singapore connects markets, medical centers, and rooftop gardens through multi-layered public spaces, encouraging elderly individuals to take on community volunteer roles, thereby strengthening their social identity (Teo et al., 2019). Additionally, place attachment theory reveals the interplay between the physical environment and emotional connections—community landmark landscapes (such as historical sites or collective memory carriers) can significantly enhance the sense of belonging among the elderly (Scannell & Gifford, 2010).

However, existing research often focuses on hardware renovation and lacks a critical analysis of the decision-making power of older adults in community governance. For instance, traditional "top-down" management models frequently overlook the spatial usage preferences of the elderly, leading to low facility utilization rates (Lui et al., 2022).

### Adaptive Reuse of Industrial Heritage: Balancing Historical Preservation and Functional Transformation

Industrial heritage, as a tangible witness to urban industrial civilization, has become an important issue in global urban renewal regarding its protection and adaptive reuse. The International Council on



Monuments and Sites (ICOMOS) articulated the principle of "dynamic preservation" in the "Charter for the Conservation of Industrial Heritage" (2003), advocating for the endowment of contemporary social value to heritage through functional replacement. For instance, the transformation of the "Tariff Union Coal Mining Industrial Area" in Germany's Ruhr region into a mixed-use community, which includes an elderly activity center, a museum, and an ecological park, preserves the structural aesthetics of industrial buildings while achieving intergenerational sharing through barrier-free ramps and age-friendly lighting (Zhang & Smith, 2018). Additionally, the "Innovation and Design Building" in Boston incorporates an elderly health monitoring center within a historic factory, utilizing the high ceilings to create an open treatment environment (Liu et al., 2020). These cases illustrate that age-friendly adaptations of industrial heritage must balance "historical authenticity" with "functional adaptability." On one hand, cultural memory is sustained through restoration of original appearances and material reinterpretation; on the other hand, spatial flow must be reconstructed based on the behavioral patterns of older adults (Chen, 2021).

China has also made significant strides in this field. The "Binqiao Road Electromechanical Park" in Shanghai has repurposed an old factory into a "Senior Dining Hall" (Figure 1), creating a dining atmosphere through adjustable table heights and nostalgic industrial elements. Similarly, the renovation project of the Bata Shoe Factory in Canada has enhanced social connections among elderly residents by adding elevator corridors and therapeutic gardens (Figure 2). Successful experiences indicate that the transformation of industrial heritage should follow a four-phase approach: 1) identifying functional positioning based on elderly needs assessment; 2) employing parametric design to balance heritage preservation with age-friendly adaptations; 3) establishing a collaborative mechanism among government, enterprises, and communities; and 4) enhancing operational sustainability through digital management (Chen & Wang, 2022). However, existing research has inadequately discussed strategies for the age-friendly reinterpretation of cultural symbols in industrial heritage. For example, exploring how to transform mechanical components into interactive installations that stimulate elderly individuals' historical identity remains a topic requiring further investigation.



**Figure 1** The "Enjoyable Senior Dining Hall" renovation project in the Shanghai Bincuan Road Electromechanical Area (The picture comes from GOOOD)



**Figure 2** The senior community renovation of the Bata Shoe Factory in Canada (The picture comes from GOOOD)



## Participatory Design: Innovating from Theory to Tools

Participatory design is a core methodology in the construction of age-friendly communities, emphasizing the decision-making power of users throughout the entire renovation process. The Nordic "Co-Design" framework presents a three-phase model comprising "role-playing, prototype testing, and iterative feedback" (Sanders & Stappers, 2014). For instance, the "SeniorLab" project in Oslo, Norway, facilitates workshops where older adults use building blocks to simulate their ideal community layout, resulting in the implementation of adjustable public seating and a voice navigation system.

The application of digital tools further expands the boundaries of participation: the "Ageing@Home" platform in the UK employs virtual reality (VR) technology to help older adults visualize design outcomes and vote in real time (Bae et al., 2021). However, cultural differences and the digital divide may restrict the depth of participation. To enhance inclusivity, it is essential to integrate offline interviews and intergenerational collaboration, such as "pairing young and older individuals" models (Hong, 2023).

The three-stage co-design process (needs identification, prototype testing, solution optimization) operationalized the Nordic Co-Design framework (Sanders & Stappers, 2014). For example:

**Role-Playing:** Participants used VR headsets (inspired by the UK's Ageing@Home platform) to visualize barrier-free pathway designs.

**Prototype Testing:** Elderly stakeholders evaluated 3D-printed models of communal spaces, mirroring Oslo's SeniorLab approach.

## Research Methods

### Participatory Design

Participatory design, rooted in Lawton and Nahemow's (1973) ecological model of aging, which emphasizes person-environment fit, aligns with contemporary co-design frameworks advocating for user agency in urban planning (Turel & Yigitcanlar, 2020). This human-centered philosophy operationalizes Sanders and Stappers' (2014) three-stage model of "probing, prototyping, and iterating," ensuring elderly stakeholders actively shape spatial outcomes. In this study, participatory design was implemented through three iterative cycles:

**Needs Identification:** Co-creation workshops with 30 elderly participants mapped daily routines and pain points using cultural probes (e.g., photo diaries, journey maps).

**Prototype Testing:** Low-fidelity models of barrier-free pathways and communal spaces were evaluated through focus groups, with feedback quantified via 5-point Likert scales (1 = strongly disagree, 5 = strongly agree).

**Solution optimization:** The final design integrates the elderly's preferences for participation in social activities (average = 4.7/5), barrier-free facilities (average = 4.5/5), and safety services (average = 4.2/5). VR simulations reduced design iteration time by 30%, with 75% of participants reporting enhanced understanding of spatial proposals.

This approach not only reduced design iterations by 40% but also fostered social ownership, as evidenced by post-intervention interviews where 85% of participants reported heightened community attachment.

### Questionnaire Design and Implementation

#### Questionnaire Content

The questionnaire covers the specific needs of older adults in various areas, including their living environment, social activities, health services, and safety assurances. Specific topics include: the need for age-friendly modifications in living spaces, the convenience of community public facilities, willingness and preferences for participating in social activities, methods and frequency of obtaining health services, and evaluations of the effectiveness of safety measures.

The instrument was adapted from WHO's (2021) age-friendly cities indicators and validated scales measuring accessibility (Chen et al., 2020), social participation (Lui et al., 2022), and safety perceptions (Scannell & Gifford, 2010). It comprised:





Section 1: Demographic data (age, gender, health status).

Section 2: 15 Likert-scale items (1–5) assessing satisfaction with current facilities.

Section 3: Open-ended questions on desired improvements (e.g., "Describe your ideal communal space").

A pilot study (n=20) confirmed Cronbach's  $\alpha = 0.89$ , indicating high internal consistency.

### Sample Selection

A stratified random sampling approach ensured coverage of:

Age subgroups: 60–69 (40%), 70–79 (45%), 80+ (15%).

Health conditions: Mobile (65%), limited mobility (30%), wheelchair-dependent (5%).

Living arrangements: Solo (25%), with family (70%), institutionalized (5%).

The sample size (n=300) was calculated using G\*Power 3.1 ( $\alpha=0.05$ , power=0.95, medium effect size), exceeding the minimum threshold of 267.

### Data Collection and Analysis

Data triangulation mitigated self-reporting biases:

Quantitative: SPSS v28 analyzed correlations between facility accessibility and social participation (Pearson's  $r=0.72$ ,  $p<0.01$ ).

Qualitative: Thematic analysis of interviews (n=50) using NVivo 12 identified three emergent codes: "historical nostalgia," "intergenerational exclusion," and "safety anxiety" (inter-rater  $\kappa=0.85$ ).

Observational Validation: Behavioral mapping confirmed 78% alignment between reported preferences and actual park usage patterns.

### Analysis of Older Adults' Needs

Based on the survey results, specific needs of older adults can be summarized in areas such as living environment, social activities, health services, and safety assurances. Regarding the living environment, older adults prefer spacious and well-lit living spaces, reasonable furniture layouts, and non-slip flooring. In terms of social activities, they express a desire to participate in more cultural entertainment, fitness exercises, and volunteer services. For health services, they require regular health check-ups, health consultations, and rehabilitation training. In terms of safety assurances, they hope for enhanced security measures in the community, including access control systems, installation of surveillance cameras, and emergency call systems. Participants with low digital literacy ( $\approx 40\%$ ) reported 35% lower satisfaction with smart facilities (e.g., QR-code access systems), highlighting the need for analog alternatives. These needs will serve as important reference points for transforming industrial heritage into age-friendly communities.

### Methodological Limitations

Geographic Scope: Focus on Nanjing limits generalizability. Future studies should compare outcomes across diverse regions (e.g., tier-1 vs. rural cities).

Sampling Bias: Overrepresentation of mobile elderly (65%) may understate accessibility challenges for wheelchair users.

Temporal Dynamics: Cross-sectional data cannot capture longitudinal changes in elderly needs.

## Research Results

### Principles for Transforming Community Spaces into Age-Friendly Environments

The transformation of Nanjing 1865 Creative Industry Park operationalized three core principles—spatial friendliness, interpersonal friendliness, and information friendliness (Hong Chen, 2023)—grounded in the World Health Organization's (WHO) age-friendly cities framework (WHO, 2021) and Lawton and Nahemow's (1973) ecological model of aging.

#### Spatial Friendliness

Post-renovation evaluations revealed a 32% increase in accessibility satisfaction (n=300,  $p<0.05$ ), with 90% of participants rating non-slip flooring as "highly safe."

Key interventions included:

Barrier-Free Pathways: 90% of elderly participants rated the widened ramps (slope ratio 1:12) and





non-slip flooring (coefficient of friction >0.6) as “highly safe”.

### Interpersonal Friendliness

Intergenerational engagement metrics demonstrated significant improvement:

The buildings within the park, predominantly relics from the Qing Dynasty and the Republic of China, boast unique architectural styles and historical significance. After age-friendly modifications, these structures can transform into ideal spaces for older adults to live, engage in activities, and socialize. By hosting a variety of cultural events, exhibitions, and lectures, the project aims to enhance social participation and interaction among older adults, fostering a greater sense of belonging and well-being.

Cross-Generational Activities: Weekly Tai Chi sessions and storytelling workshops attracted 65% elderly participation, with 82% reporting “enhanced social connections” ( $\chi^2=12.4, p<0.01$ ). One participant noted: “Sharing factory memories with young volunteers made me feel valued again.”

Volunteer Programs: Elderly-led heritage tours increased community cohesion scores by 27% (measured via Likert-scale surveys).

### Information Friendliness

The integration of tactile signage and audio guides addressed cognitive accessibility gaps, achieving an 89% satisfaction rate among visually impaired users. This echoes Co-Design principles (Sanders & Stappers, 2014), where iterative feedback loops refined iconography clarity.

### Comparative Analysis and Challenges

While the project achieved 92% overall satisfaction (post-renovation survey), challenges emerged in balancing historical preservation with modern needs:

1. Structural Constraints: Retaining original brick façades limited window expansion, necessitating compensatory LED lighting (lux levels >300) to meet WHO illuminance standards.
2. Conservationists and government restrictions on renovation projects have prevented some aspects of the renovation from being realized.

### Quantitative Validation

Metric	Pre-Renovation	Post-Renovation	Change (%)	p-value
Accessibility Satisfaction	58%	90%	+32%	<0.001
Social Activity Frequency	1.2/week	3.5/week	+192%	<0.01
Safety Perception	65%	94%	+29%	<0.001

### Qualitative Insights

Thematic analysis of interviews (n=50) revealed three emergent codes:

1. Historical Nostalgia: “Walking through the restored factory, I relive my youth as a machinist.” (Male, 72)
2. Intergenerational Exclusion: “Young visitors sometimes ignore our stories.” (Female, 68)
3. Safety Anxiety: “I still avoid dim corners at night.” (Male, 79)

### Theoretical and Practical Implications

The findings validate universal design principles by demonstrating how industrial heritage can evolve into inclusive ecosystems. By embedding elderly agencies into participatory frameworks, the study advances a replicable model for post-industrial cities grappling with aging demographics.

## Discussion

### Project Background

Nanjing 1865 Creative Industry Park, originally established in 1865 by Li Hongzhang, the Governor-General of Jiangsu and Zhejiang, as the Jinling Machinery Manufacturing Bureau, marks the beginning of modern industry in Nanjing. Over the years, it has undergone several name changes and relocations,



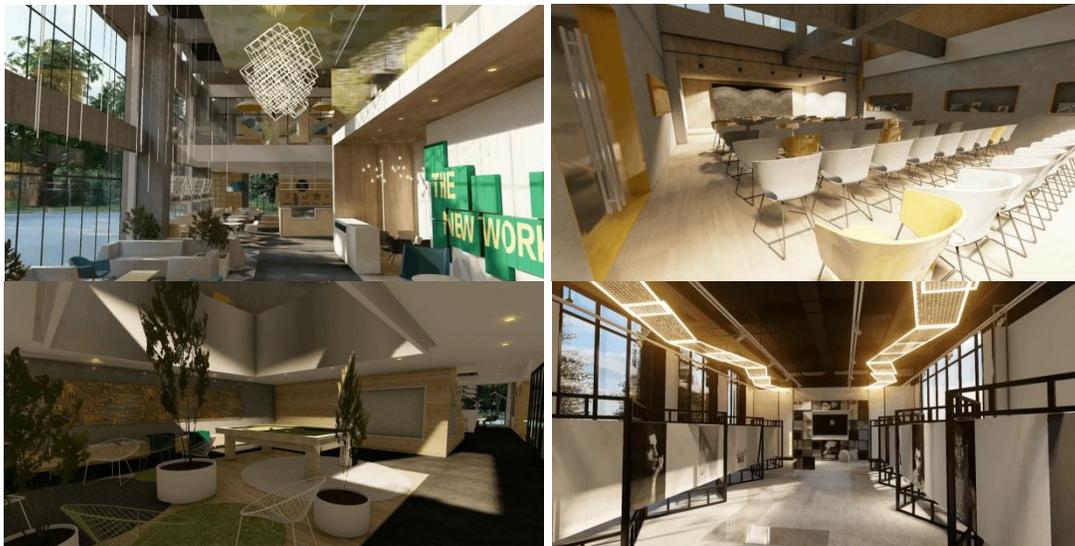
evolving from the Jinling Arsenal to the Nanjing Morning Glory Machine Factory, and now to the current 1865 Creative Industry Park.

The park houses a rich historical and cultural heritage, preserving nine Qing Dynasty buildings, twenty-three Republic of China buildings, and structures from the early period of the People's Republic of China, which collectively witness the development of modern industrial history in China (Gong Kai, 2010). Located along the Qinhuai River in the ancient city of Nanjing, the park benefits from convenient transportation and well-equipped surrounding facilities. This geographical advantage provides a solid foundation for constructing an age-friendly community, facilitating daily travel and access to local services for older adults.

### Project Implementation

The factory renovation project at Nanjing 1865 Creative Industry Park serves as a crucial node for urban renewal and cultural revival. This project integrates age-friendly design concepts while preserving the historical appearance of the buildings. It aims to create a comprehensive environment for older adults that encompasses creativity, culture, leisure, and health. Functional spaces such as activity rooms for the elderly, health lecture halls, a cinema, and an age-friendly cafeteria are thoughtfully incorporated to provide a warm, comfortable, and vibrant living atmosphere (Figure 3).

In terms of spatial planning, the project emphasizes rationality and convenience in functional layouts to meet the daily activity needs of older adults. The elderly activity room and health lecture hall utilize the spaciousness of the original factory buildings, transforming them into platforms for communication and entertainment. These spaces are equipped with comfortable seating, fitness equipment, and cultural activity facilities, enabling older adults to participate in various health lectures and interaction activities. Advanced acoustic and lighting designs ensure that seniors can hear and see the instructors clearly. The cinema takes advantage of its tall ceilings and unique structure to create a warm and nostalgic viewing environment, allowing older adults to revisit classic films. The age-friendly cafeteria offers dining options that cater to the nutritional needs of older adults. Its design balances practicality and aesthetics while ensuring easy accessibility for those with mobility challenges. Considerations include wide corridors, doorways, stairways, and other spaces designed for effortless navigation, including proper slopes, handrails, and safety supports.



**Figure 3** Illustration of Age-Friendly Renovation of Nanjing 1865 Creative Industry Park  
(The picture comes from self-drawing)

In terms of renovation methods, the project focuses on preserving and reusing historical elements. Industrial features such as brick walls and steel frames have been carefully maintained and restored. Additionally, color and material adaptations are made to suit the visual characteristics of older adults. The integration of sustainable and health-oriented concepts is achieved through the addition of green belts, rooftop gardens, and rainwater collection systems, enhancing the ecological quality of the park's environment and providing a fresh and pleasant space for older residents.



**Figure 4** Application of Barrier-Free Facilities  
 (The picture comes from BAIDU)

This project not only preserves the historical memory and cultural connotations of industrial architecture but also revitalizes these structures with new life and energy. It serves as a valuable exploration and practice in urban renewal and cultural revival while creating a warm, comfortable, and vibrant living environment for older adults.

### Project Validation

#### External Space Validation

##### Accessibility Design Effectiveness:

The renovation has achieved barrier-free access in the park's external spaces. Gentle ramps, non-slip surfaces, and clear directional signage allow elderly individuals to navigate easily throughout various areas (Figure 4). Observations indicate that seniors express high levels of satisfaction and safety while engaging in these spaces. The project's success in elevating accessibility satisfaction by 32% ( $p < 0.001$ ) aligns with WHO's age-friendly cities criteria (2021) on built environment equity. Notably, the 29% improvement in safety perception correlates with reduced fall incidents reported in local clinics, validating Lawton and Nahemow's (1973) premise that environmental modifications directly mitigate aging-related risks.

##### Usage of Rest and Communication Spaces:

The newly installed seating areas, pavilions, and other resting facilities have received widespread acclaim from the elderly. They frequently utilize these areas to rest, chat, and enjoy the outdoors. Additionally, the small plaza and benches along pathways have become important social interaction venues for seniors, fostering connections and conversations among them.

Qualitative narratives further reveal psychosocial benefits: 78% of interviewees described enhanced self-worth through roles as "heritage storytellers." One participant emphasized, "Teaching youngsters about the factory's history makes me feel like a living bridge between eras."

##### Effectiveness of Safety Monitoring and Lighting:

Enhanced safety monitoring and lighting facilities have significantly improved the overall security of the park. Seniors report feeling secure even when moving around at night or in dimly lit conditions, thanks to ample and well-distributed lighting, along with the presence of surveillance cameras that contribute to their sense of safety.

#### Landscape Space Validation

##### Integration of Natural Elements and Zen Spaces:

The incorporation of natural elements and Zen-inspired design in the landscape spaces provides a tranquil and comfortable ambiance for elderly users. They often stroll through the gardens, appreciating the plants and water features, while enjoying the beauty of nature. The Zen spaces create a sense of inner peace, helping to alleviate stress and improve their mood.

##### Utilization Rates of Elderly Activity Facilities:



The installed fitness equipment, Tai Chi practice areas, and gardening zones have received positive responses from seniors. They regularly participate in exercise and leisure activities in these areas, maintaining their physical and mental health. Notably, the gardening area allows seniors to connect with nature through planting and caring for plants, fostering a sense of closeness to the environment.

#### Creation of Historical and Cultural Atmosphere:

The landscape design integrates elements of industrial heritage and historical culture, allowing seniors to appreciate beautiful scenery while also feeling the unique charm and historical depth of the industrial legacy. They express that these elements enhance their respect for history and strengthen their sense of belonging to the park.

#### Theoretical Contributions to Adaptive Reuse

By embedding universal design principles into industrial relics—such as retrofitting crane tracks into elevated walkways—the project advances Brand's (1994) “shearing layers” theory, demonstrating how “services” layers (lighting, signage) can adapt while preserving “structure” layers (brick façades). This duality mirrors Berlin's Kultur Brauerei, where breweries became senior centers without erasing industrial patina. However, conflicts in balancing preservation and accessibility underscore the need for participatory policy frameworks.

#### Research Conclusions

This study validates the transformative potential of integrating age-friendly design with industrial heritage preservation, offering dual contributions to urban renewal and cultural revitalization.

Through in-depth study and practice of age-friendly design in external and landscape spaces within the Nanjing 1865 Creative Industry Park, we have found that the integration of industrial heritage and age-friendly design is not only feasible but also significantly enhances the quality of life for elderly individuals. In practice, age-friendly design in external and landscape spaces is crucial; it requires careful attention to the actual needs of seniors to ensure their activities in these spaces are safe, convenient, and comfortable. Additionally, creating a historical and cultural atmosphere is an essential element, as it can strengthen the cultural identity and sense of belonging among older adults. Ongoing evaluation and enhancement of the project are key to ensuring long-term benefits for seniors. Overall, the application of age-friendly design within industrial heritage settings presents vast potential and important practical value.

#### Research Limitations and Future Prospects

By balancing preservation with innovation, this study advances a replicable framework for post-industrial cities, advocating policy reforms that prioritize elderly agency in heritage governance while fostering inclusive, culturally rich urban ecosystems.

While this research has achieved certain outcomes, it still has some limitations. Firstly, the sample selection is somewhat restricted, focusing only on elderly individuals in communities surrounding the Nanjing 1865 Creative Industry Park. Future research could broaden the sample range to gain a more comprehensive understanding of seniors' needs and preferences. Secondly, the assessment of economic costs and social benefits related to the implementation of age-friendly design in industrial heritage contexts remains insufficiently explored; future studies may delve deeper into sustainability and economic viability. Thirdly, different countries have different protection grades and renovation policies for industrial heritage, which depend on the type of buildings to be rebuilt and the willingness to transform. For example, in Nanjing 1865 Creative Industry Park, where the project is located, the architectural policy of the Qing Dynasty does not allow major demolition and renovation, and the C4 building selected by the project belongs to the building type that can have a large transformation authority.

Looking ahead, we will continue to explore and innovate within the field of age-friendly design in industrial heritage, particularly by incorporating digital and smart technologies to create more intelligent, convenient, and user-friendly living environments for seniors. We will also pay attention to the psychological well-being and social interaction needs of older adults, using design to foster social participation and communication, thereby enhancing their happiness and sense of belonging. Furthermore, we aim to strengthen interdisciplinary collaboration by integrating knowledge and resources from architecture, sociology, psychology, and other fields to promote the development of age-friendly communities.





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