

Research on Management Innovation Methods of Museums under the Background of Experience Economy--Taking Jiangxi Provincial Museum as an Example

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Abstract: As people's material lives improve, they also have higher expectations for spiritual and cultural pursuits. It is supposed to enhance museums in providing public cultural services as significant public cultural venues. In the era of experience economy, it is crucial for museum cultural and creative workers to consider how to accurately position the development of museum cultural and creative products, and explore a cultural and creative development path that suits the museum's situation. This study analyzes the Jiangxi Provincial Museum using service design theory to promote innovative management strategies and enhance visitor experience. Additionally, it examines the current research on museum design strategies in the artificial intelligence environment and proposes specific processes for design sprint to be utilized in museum development.

Keywords: Experience Economy; Museum Management; Service Design; Design Sprint

1. Introduction

In light of the economic development, modern museums are encountering competition from a wide range of leisure activities and entertainment venues. To sustain their operations, non-profit museums must also consider how to deliver high-quality services and meet visitor expectations. The conventional management approach of museums is no longer adequate to address the demands of cultural tourism and the evolving economic systems worldwide. To overcome this challenge, museums must adopt innovative management models, implement reforms, and prioritize service concepts to foster the thriving development of the museum industry.

In recent years, the use of artificial intelligence technology driven by big data has become a prominent research topic in various aspects of

museum management, including collection management, exhibition services, and the design and development of cultural and creative products. These new technologies have led to innovations in enhancing cultural experiences. In the era of experience economy, museums have transformed from traditional venues for cultural relic collection and exhibition to public cultural institutions with a primary focus on educating and serving the public. They have become significant cultural landmarks in large cities, playing an increasingly important role in meeting the spiritual and cultural needs of the people. Consequently, museums now require the development of proactive 'services' and new approaches to 'museum service management' through the use of service design in order to enhance audience satisfaction.

This article presents a case study on the development of service design at the Jiangxi Provincial Museum. It explores the museum experience design in the context of artificial intelligence, using experience design and design thinking as research perspectives. The study applies service design theories and utilizes design sprint as the primary method. It aims to develop innovative strategies for museum management and the use of new technologies. The user's experience meaning of the museum visit is systematically analyzed using the experience design concept and experience EEI model, leading to the construction of a museum visit experience model. Considering the technical characteristics of artificial intelligence and the current era, a museum experience innovation strategy is proposed. This strategy involves establishing a museum digital experience platform with community characteristics and an offline museum visit experience model based on co-creation. Additionally, a closed-loop museum experience service system is proposed, combining online and offline services. These initiatives aim to

provide visitors with a new cultural experience, encourage the public to embrace museum culture as a way of life, and offer valuable research ideas and improved service processes for museum management strategies under artificial intelligence, ultimately enhancing the overall museum function.

2. The Management and Development Status of Museums in Jiangxi Province, China

China adopts a management system that combines subsystems and hierarchies for museums. The categorization of museums is based on factors such as size, number of collections, social status, and social influence. It is divided into four categories: central government, provinces (municipalities, autonomous regions), prefectures (cities), and counties (districts). Each level has its own relevant administrative departments responsible for hierarchical management. The State Council provides business guidance to local museums through the relevant departments (bureaus) of various provinces (municipalities and autonomous regions). Over the past 20 years, China has constructed numerous museums(Zhang and Courty 2022).

One such example is the Jiangxi Provincial Museum, formerly known as the Chinese History Museum. It is situated on the south side of People's Square in Nanchang City. The museum was initially planned in 1953 and officially opened on July 1, 1961. Initially, it served as a topographic and comprehensive museum. In 1971, it transformed into a specialized museum focusing on archaeological excavations, collection, and research of historical relics. In October 1978, it was renamed as the Jiangxi Provincial History Museum. Subsequently, in August 1980, the Provincial History Museum merged with the Provincial Revolution Museum to form the Jiangxi Provincial Museum.

The museum serves as a significant witness to the local history, bridging the gap between ancient and modern times. It is a valuable source of knowledge and a place where individuals can cultivate their sentiments. The museum allows visitors to appreciate the historical and cultural heritage of the city, experience the essence of traditional culture, and immerse themselves in the ancient atmosphere(Chen and Ryan 2020). Cultural heritage is a non-renewable resource that is irreplaceable and deserves our utmost

cherishment and care. However, with the rapid development of the social economy and advanced network technology, the traditional management model of museums has faced unprecedented challenges. An effective management model is not only necessary for the existence of museums, but also a way of showing respect for cultural heritage. Therefore, it is essential to explore new ways of transforming the traditional management model and embracing modern management concepts to ensure that museums adapt to the changing times(Bollo and Zhang 2017).

When people think of museums, they often associate them with terms like 'cultural heritage', 'precious cultural relics', and 'historical preservation'. However, for children and some young people, museums may be seen as 'rigid' and 'boring'. In modern society, individuals are increasingly seeking a better 'experience', and the traditional museum visit may struggle to capture the attention of the younger generation.

In light of this, museums, which have traditionally focused on knowledge dissemination, now need to also provide a space for leisure and entertainment, becoming an integral part of people's cultural lives. This is actually the biggest opportunity and biggest challenge that service design poses to traditional museums on the road to transformation: how to start from the user's perspective, pay attention to user experience and participation, and make some serious, heavy historical and popular science The content can be presented to users in a more vivid way, making them more willing to actively accept the content and create new content from it.

3. Experience Economy Era

The experience economy refers to the expansion of the goods and service economy, reflecting the current economic development situation. In recent years, there has been a significant shift in the economy, with the rise of cultural industries and their close connection to economic development. Museums, as part of the cultural industry, play a crucial role in this relationship. Therefore, it is important to explore innovative methods for managing museums in the context of the economy. By doing so, we can better express the practical significance of museum management innovation research and adapt the management model to the changing economic landscape(Andersson 2007).

3.1 Museums under the Background of Experience Economy

The era of the experience economy is becoming increasingly intertwined with the development of our lives. We are entering an era where social life is shaped by the experience economy. Museums, as national cultural institutions, are open to everyone and serve as custodians of our collective stories and memories. They play a crucial role in documenting history and culture, representing the evolution and progress from the past to the present. However, in order to adapt to the current economic landscape, museums need to align themselves with the development of the economy and society. This entails embracing innovative changes that allow culture to be preserved and developed over a longer period of time. It also involves creating engaging exhibitions and management practices that cater to the emotions and experiences of visitors (Zomerdijk and Voss 2010).

By doing so, museums can leave a lasting impact on individuals, deepening their appreciation and understanding of history and culture, and igniting their enthusiasm and curiosity. To ensure the long-term development and preservation of museums in today's era, it is essential to consider the fundamental principles of the experience economy and its unique characteristics. This includes prioritizing the visitor's experience and incorporating their feedback into the museum's content and operations. By creating a memorable and enriching experience, museums can etch a historical imprint in the hearts of individuals. As cultural institutions, museums are evolving alongside the economy, gradually shifting focus from quantity to quality. Building upon this foundation, continuous improvement and innovation in research and management practices are crucial for sustained growth and development.

3.2 New Requirements for Museums in the Era of Experience Economy

(1) The Connotation and Characteristics of Experience Economy

The concept and characteristics of the experience economy involve enterprises focusing on providing services and using goods as materials to create memorable experiences for consumers. This economy caters to people's desire for unique experiences and integrates

consumption and production, with consumers as the primary value creators. The experience itself is intangible and resides in an individual's mind, resulting from their active participation in physical, emotional, and cognitive aspects. Each person's experience is unique due to the interaction between their mental state and planned events. The value of the experience economy consists of two key elements: the content of the experience and the method of communication.

The content of the experience refers to the level of value it encapsulates and whether it leaves a lasting impression and positive memories. The communication aspect includes how the experience content is conveyed and the way the experience unfolds. Communication in the experience economy is more interactive compared to other modes, as it requires active participation from both the consumer and the provider. Through this interaction, the consumer gains unique emotions and beautiful memories, while the provider obtains comprehensive information to enhance the experience content and improve the overall experience model.

(2) Museums in the Experience Economy Era Need to Adapt to New Requirements

In the future development of modern museums, we must fully consider the fundamental characteristics of the experience economy—participation and contact. In terms of project content arrangement and management and operation methods, consumers must play a certain role in the experience and be exposed to the products carefully designed for them. Experience clues, leaving endless aftertaste and sweet memories. Germany's museum culture as a whole has entered a new period of development, and its focus has shifted from quantitative increase to qualitative improvement. The next step should be to strengthen active research, explore the best ways of rational utilization and sustainable development, and create new Museum culture (Luksetich and Partridge 1997).

3.3 The Operation of Museums Requires the Introduction of New Management Concepts:

(1) Exhibition area management

The exhibition area is a familiar public place in museums. It is essential to manage the exhibition area with strictness without compromising the quality of visitors' experience. This allows visitors to emotionally connect with

history during their visit. By exploring history together, generating interest in historical visits, and immersing ourselves in the historical context, we can effectively convey the historical significance during the visit. When setting up exhibitions, it is crucial to prioritize the needs of tourists, comprehensively analyze their requirements, and ensure a well-rounded presentation that showcases art and enhances the overall experience. Visitor feedback should be taken into account for making adjustments to the exhibition area, aiming to increase visitor satisfaction and contentment with the tour. Furthermore, as technology advances and evolves over time, it can be integrated into history and culture. This integration allows for a better utilization of history and culture, enabling people to benefit from technological advancements. By understanding historical eras and comparing them with modern development, history can be seamlessly integrated into today's life (Moore 1994).

(2) Branding

A brand serves the purpose of identifying the products or services of a particular seller or group of sellers and distinguishing them from those of their competitors. This helps to ensure that consumers are satisfied with and continue to use the products and services. Museums can establish their brand by utilizing knowledge management and information management as tools, incorporating 'culture' as the essence, and embracing 'knowledge experience and cultural leisure' as the approach.

Firstly, the museum's brand image should be rooted in culture. Museums in different industries can adopt relevant cultural systems. For instance, cultural museums can focus on German Germanic culture and the historical development of Germany as their core. This not only benefits from Germany's rich cultural heritage and accumulation, which effectively supports the museum's brand image, but also complements and balances the museum's overall culture, making it more comprehensive.

Secondly, the museum's brand image should cater to different visitor groups. For locals, the museum is an ideal place for cultural leisure and education; for domestic tourists, it serves as an excellent complement to tourist attractions; and for foreign tourists, the museum provides an opportunity to experience exotic customs and ancient wisdom.

Third, the museum's brand image should be

supported by specific physical facilities, including the overall appearance of the museum's exterior and meticulous interior decoration.

Fourth, carry out visual design of the brand image of the museum. When conducting visual design, we must establish a "strategic" design idea and adhere to the design principles of "strategic" visual impact, precise information expression, and unique recognition memory. Systematize, standardize and symbolize the visual resources of the attractions in the form of pictures, indexes, slogans, titles and other system contents such as the names of the museum's services and facilities and the system contents such as logos, signs and signs.

(3) Knowledge management

The existence of every object in the museum holds inherent knowledge and meaning, representing the civilization of history and culture. As responsible citizens, it is our obligation to safeguard our historical knowledge and preserve our history and culture. By protecting history, we are also safeguarding our country. Furthermore, by observing the developments in history, we can better comprehend the changes of the current era and enhance our historical culture. A thorough understanding of historical and cultural knowledge enables us to fully appreciate its significance. Building upon this foundation, we can promote the development and preservation of our history and culture on a global scale, gaining recognition for our heritage worldwide. Additionally, we can leverage various mediums such as newspapers, news, and media to disseminate historical and cultural knowledge more efficiently, ensuring the preservation of the authentic and meaningful essence of our history. This enables people to access information that is both genuine and historically significant.

(4) Information System Management

The construction of a database and a general network platform is the first step. This involves establishing a database for cultural relic collection files to enable information-based and standardized management of the content and retrieval of collection files. In other words, computerized management of collection information is implemented. Additionally, a suitable database management system for the museum should be established, which includes a management database and a retrieval database on a network platform for data management.

The second aspect is making the museum building intelligent. During the construction of the museum, computer technology is consciously applied in all aspects to establish a 'museum computer system'. This system integrates information management and real-time monitoring, enabling comprehensive automated management of the museum's information, equipment, and environment.

The third aspect is the establishment of a digital museum. This involves creating an online communication system within the museum, utilizing the website and digital museum content. This not only facilitates education, leisure, and entertainment for visitors but also promotes mutual understanding between people from different regions and cultural backgrounds, thereby enhancing cultural communication.

Lastly, museum information system engineering is crucial. Museum informatization consists of three major components: exhibit informatization, building intelligence, and communication network. However, integrating these components and ensuring easy management poses another challenge. Therefore, it is necessary to propose information system engineering, which includes office informatization, systematization of management ideas, and improvement of administrator information skills, among other software and hardware factors.

(5)customer relationship management

In order to attract visitors and thrive in the era of experience economy, modern museums must prioritize the management of customer relationships. Relationship marketing revolves around fostering long-term connections between the museum and relevant stakeholders, including government bodies, enterprises, travel agencies, and most importantly, visitors. Customer relationships encompass government relationship management, school relationship management, tourism company relationship management, research institution relationship management, news media relationship management, and visitor relationship management.

However, achieving effective customer relationship management is not simply a matter of implementing customer relationship management software. It requires a deep integration of the concept of customer relationships into the mindset of management and staff. Building long-term cooperative relationships with key customers is essential, but

it is equally important to establish a higher-level customer relationship processing model. This involves providing zero-distance services to customers, cultivating customer trust, involving customers in management decisions, and fostering emotional communication. In the management process, it is crucial to emphasize customer participation, establish an effective customer feedback mechanism, listen to their ideas, respect their opinions, and encourage their active involvement in management. By integrating customers into the construction and development of the museum, giving them a sense of ownership, and truly meeting their needs, museums can enhance customer experience, improve satisfaction, and maintain a harmonious relationship characterized by lasting positive interactions(Hatton 2012).

(6)financial management

In a market-oriented environment, non-profit museums face higher requirements for financial management in order to maintain normal operations and ensure sufficient development potential.

Firstly, museums should focus on serving the public and strive to expand multiple sources of income to meet the reasonable wishes of public donors and accept their supervision.

Secondly, it is important to maintain a reasonable balance between different sources of income. Over-reliance on a single source, such as government funding, social donations, or product sales, can hinder the stable development of the museum.

Thirdly, financial management should transition from accounting management to budget management and establish an effective revenue management system. Additionally, emphasis should be placed on investment and financing management.

Finally, the introduction of financial analysis is crucial. Financial analysis allows for a correct evaluation of the museum's past operating conditions, a comprehensive reflection of its current financial status, and the ability to predict future development trends.

(7)Human Resource Management

People, finances, materials, and systems are the key aspects involved in managing museums. Among these, people play the most crucial role. It is essential to integrate the personal development of employees with the overall development of the museum. Emphasizing employee participation in management and

motivating them to continuously enhance their skills and unleash their potential is vital. Adopting an 'autonomous management' approach and considering employee involvement in management as a necessary means to create a 'harmonious management' model can be beneficial. Engaging employees in various forms and themes to different extents allows them to directly contribute to the museum's daily operations.

4. Service Design and Innovation Management Strategies

4.1 The Concept of Service Design

According to Levitt (1981), the concept of 'service' can be divided into two categories: tangible and intangible. Services are classified as intangible goods. Gronroos (1990) defines service as 'a product that is more or less intangible in nature' and typically involves interactions between customers, service personnel, and the physical environment. Lovelock and Wirtz (2004) and Kotler (2002) also emphasize the intangible nature of services. Parasuraman, Zeithaml, and Berry (1988) further describe 'service' with four characteristics: intangibility, indivisibility, heterogeneity, and non-persistence. Unlike tangible products, services cannot be seen or touched, and individual customers may have different experiences that vanish immediately after contact. Based on the discussions of these scholars, it can be concluded that 'services' are primarily perceived as intangible goods (Mager 2008).

Service is a complex entity that encompasses various tangible and intangible components, as well as intricate social interactions. Unlike standardized consumer goods produced in factories, services involve simultaneous production and consumption, with customers actively participating in the service process. This process can be likened to the experience of visiting a museum, where the essence lies in the interaction between individuals. According to Kotler (1999), an experience entails active engagement, immediate understanding through sensory stimulation, personal connection, and encounters that are intense, memorable, or out of the ordinary. From this standpoint, the concept of service design offers a fresh perspective for studying museum audiences (Zomerdijsk and Voss 2010).

4.2 Service Design Drives Management Strategies

According to the Innovation Learning Report of the Institute of Industrial Technology of ITRI, several European and American countries have established service design consulting companies and academic units. For instance, IDEO in the United States and Live/Work in the United Kingdom are well-known enterprise service design companies in the market.

The UK has been particularly active in promoting service design, as evidenced by the 'good design plan' published in 2007, which aims to enhance the country's competitiveness and creativity. Similarly, the governments of Sweden and Australia implemented the 'design ladder' service design promotion plan between 2003 and 2006, leading to positive effects on tax revenue and industrial upgrading.

Fances (2008) asserts that service design, along with employee and customer management systems, are crucial elements for service-oriented organizations. The success or failure of a service largely depends on the quality of its design. From the customer's perspective, service design focuses on making service interfaces more useful, usable, and necessary. On the other hand, service providers aim to make their services more efficient, effective, and distinctive through service design (Bailey et al. 1997).

UK Design Council (2010) proposed that service design is to make the services provided more effective, highly feasible and efficient, and more in line with customer expectations. Stickdorn and Schneider (2013) further summarized the academic definition of service design, whose purpose is to create a complete and rigorous service experience by integrating tangible and intangible media; from a practical point of view, service design is to provide users with System and process design planned for complete services.

In addition to its broad definition, service design is influenced and supported by various fields. It draws inspiration and contributions from other fields, such as research and tools on experience service marketing and management, as well as operation and strategic planning of service design. The theories of marketing management are also closely related to service design, including concepts like 'service delivery system', 'operating strategy', 'service concept', and 'target

market segment' (Kotler, 2002). In order to facilitate this, the British Standards Institution (1994) has established relevant standards for service design management, with the latest version being 'BS 7000-3 2008' launched in 2013. From the above, it is evident that service design is a new, comprehensive, and multi-disciplinary field (Moritz, 2005). It represents a new way of thinking, although it is not an independent academic field. It is an emerging orientation that requires a combination of design skills, management, and procedures (Zomerdijk and Voss 2010).

(1) To effectively meet customer needs, it is important to utilize creativity, customer-centeredness, and customer participation methods in determining the method and content process of service provision.

(2) In order for customers to truly experience the core values set by the organization, service provision should be integrated across multiple functions and organizations.

(3) This integration will help create a consistent and unified customer experience, considering the integrity of all touch points.

(4) Touch point design can encompass various aspects such as people, products, self-service, systems, and groups, in order to provide services.

(5) A service blueprint can serve as a valuable tool for in-depth inspection and analysis, allowing the examination of customer behavior and service personnel behavior through customer interaction lines, customer visibility lines, and internal support lines.

(6) In addition to tangible services, it is crucial to prioritize experience innovation, as well as service procedures and system planning. By observing and experiencing service processes, existing touch points can be analyzed, allowing for the planning of potential touch points and innovative touch points.

4.3 Transformation of Service Design

According to Pine II and Gilmore (1998), the rapid development of technology and intense competition among enterprises have led to a transformation in the economic value of services. This transformation has shifted from commodities, goods, and traditional services to the development of experiences. Experiences are now considered the fourth economic product and a significant trend in today's market. Experiences offer a unique sensibility, store life

memories and experiences, and allow customers to immerse themselves, learn from diverse activities, and be emotionally moved, creating unforgettable experiences. The value of experiences is paramount in the experience economy. However, when it comes to developing new services or improving existing ones, the challenge lies in effectively describing and defining the stages of concept development, service development, and market testing. It is crucial to align service projects with customer expectations. One key aspect is the ability to objectively describe important service process characteristics and depict them in a way that employees, customers, managers, and other stakeholders can understand. This ensures that everyone involved comprehends the service's nature, their role in service delivery, and all the steps and processes involved in the service process (Zeithaml, Bitner & Gremler, 2008). Therefore, the service blueprint proposed by Zeithaml, Bitner and Gremler (2008)

Rheinfrank and Evenson (2004) emphasize that service design should aim to create a consistent and unified customer experience while considering the integrity of all touch points. To ensure customer satisfaction, the value of the experience that consumers gain during the consumption process should exceed their initial expectations (Huang Shengfeng, 2009).

The primary objective of service design is to enable customers to genuinely experience the core values established by the company. This relies on effective integration and alignment across multiple functions during service provision, along with the enterprise's strategic intent and the actual service experience (Wang Jianjun, 2012). Additionally, relevant theories include 'contact management' (also known as contact point management), which involves the company's decision on when, where, and how to engage with customers or potential customers, as well as the management activities carried out throughout the customer contact process and their outcomes (Jia Changrong, 2006).

Rakich, Longest, and Parr (1992) proposed that process refers to the conversion of resources into products or services, and the goal of process design is to determine how to meet customer needs efficiently and cost-effectively.

Deng Chenglian (2010) defines service design as a systematic approach that encompasses service systems, programs, belts, moments, and touch points. Touch points, being critical moments of

service, are considered the core of the overall service system. By controlling touch points, organizations can control the entire service system. Deng Chenglian (2010) emphasizes that enterprises striving for excellent services should consistently provide high-quality service. In every interaction between consumers and suppliers, suppliers should seize opportunities to create unique experiences and leave a vivid impression of their service in consumers' minds. The importance of touch points lies in the emotions and feelings they evoke during the consumption process. A positive consumption experience through touch points can leave customers with a good impression and foster consumer loyalty. To achieve this, service design requires analyzing existing touch points, planning potential touch points, and creating innovative touch points. This process helps in determining the design direction and scope for service design, as well as identifying existing, potential, and innovative touch points with development potential.

4.4 The Importance of Improving Service Management in Museums

To continuously improve the quality of their exhibition/event service system, museums need to engage in constant review and innovation. This involves expanding service concepts and scale, keeping up with today's technology advancements, and diversifying platforms. While scholars may have different opinions on the definition of service design, it is evident that the ultimate goal is to meet customer needs. Service design is a systematic process, with service touch points playing a central role. Service blueprints are valuable tools for in-depth observation and service process analysis. It is important to consider the possibility of contact points before and after the service to ensure a comprehensive service process.

With the rise of globalization and the borderless era, museums have taken on the additional role of cultural exchange, in addition to their traditional functions of research, collection, display, education, and promotion. To establish a unique image, museums not only offer exhibition content to their audience, but also strive to enhance audience satisfaction through quality services, aiming to gain recognition and understanding (Ames 1988). Furthermore, modern museums face competition from various leisure activities and entertainment venues.

Non-profit museums, in particular, need to consider how to provide high-quality services and meet visitor expectations in order to sustain their operations. In addition to comprehensive planning and the provision of internal resources, museums often promote museum-related content and services through special exhibitions and traveling exhibitions, in order to achieve resource sharing.

As the era of global services takes center stage, meeting consumer expectations and providing exceptional experiences has become crucial. Alongside the transformation of the economic structure, the service industry has emerged as a significant source of economic growth. Therefore, in the fiercely competitive market, museums must strive to provide the desired experiences that will truly capture customer favor.

5. Research Method: Design Sprint

5.1 Design Sprint

(1)define

"Design Sprint" is a set of design methods developed by GV (Google Ventures). In just 5 days, this approach aims to address core business problems through design thinking, innovation, business strategy, and behavioral science. It encompasses a series of steps, including research, prototyping, and user testing (or visitor testing in the case of a museum). Design sprints integrate tools and methods from the realms of design thinking, business strategy, and product innovation (Mendonça De Sá Araújo et al. 2019).

This methodology is increasingly adopted by technology companies, and some museums are also embracing it to design new exhibitions, products, and services. For instance, the British Museum team implemented design sprints to enhance the visitors' wayfinding experience and conducted field tests using simple logo prototypes. This initiative led to the identification of unexpected experience issues and resulted in significant improvements in the overall museum visitation experience and management efficiency (Keijzer-Broers and De Reuver 2016).

5.2 The Main Actions for Designing Sprints

(1)Sprint mentors and their main workflow

Design Sprint is a group design activity, which can be a team of 5-10 people or a large team of

100 people. It is crucial that who will lead this team to promote the entire project completely and smoothly. This person is called a Sprint Master. He is usually the lead of a design team and a senior experience designer. He needs to do the following three things:

- 1). Formulate the design theme of the Sprint, which everyone will focus on in the next five days.
- 2). Gather students with different functional backgrounds to form a team with synergy.
- 3). The team leading the sprint can make smooth progress in different aspects. Resolve some conflicts, stay on topic, etc.

Therefore, he needs to have these abilities:

- 1). UX method.
- 2). Strategies to make things go smoothly.
- 3). Negotiation skills and ability to solve troublesome problems.

These are some soft powers. Next is the workflow of the Sprint Master sprint mentor. Three parts: before sprinting, during sprinting, and after sprinting. You can see that the vertical axis is the degree of investment. The Master's investment before the sprint will be more than during the sprint. If you want to accomplish something, you must be prepared to think and plan well in advance.

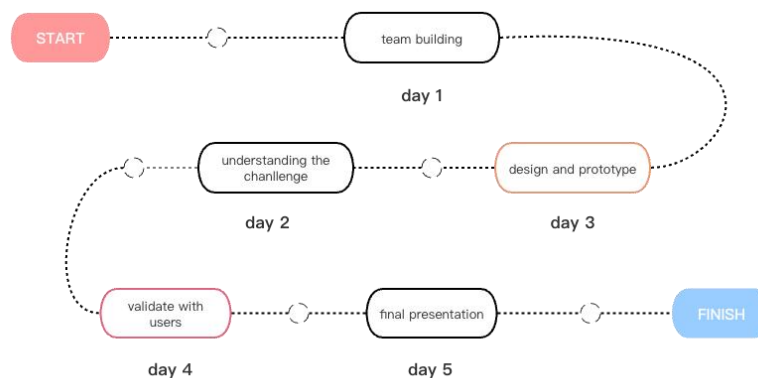


Figure 1. Sprint week 5 days task

(2)Start the sprint: Before the sprint:

- 1). Write an introduction to the design challenge task: How would you describe the design challenge task to everyone? What is your specific time plan? (Write a story development script!)
- 2). Invite members of the team to participate in this Sprint.
- 3). Schedule a quick interview. (The interview here is used to understand the context of the task)
- 4). Arrange user testing. 5. Prepare assistive devices. (This is an event, paper and pencil voting machine or something) 6. Arrange the venue.

(3)During the sprint:

- 1). Be prepared
- 2). Play a role in promoting and coordinating the process.
- 3). Theme correction. There will inevitably be deviations in the process, and you have to lead everyone in the right direction.
- 4). View the results output by everyone.
- 5). Send a daily summary email.
- 6). When it's over, let's celebrate with everyone.

(4)After the sprint:

1. Plan subsequent releases.
2. Write relevant documents.
3. Send a summary email.
4. Survey feedback from participating Sprinters.
5. Prepare for the next Sprint.

5.3 The Specific Process of Designing Sprints for Museum Development

(1)4 core tasks

The research focuses on innovation paths in museum management.

- 1).To ensure a diverse range of perspectives,
- 2).a team consisting of individuals from various backgrounds including designers, management professionals, visitors, sprint mentors, and researchers is invited to participate. Each group comprises 5-8 members, enabling the creation of unique insights.
- 3).The next step involves reviewing the current product design to validate the chosen theme. This entails interviewing key stakeholders, such as project leaders, gathering opinions, reviewing existing documentation, user research materials, and designs, as well as examining core user stories.
- 4).In terms of preparation, four commonly used

tools are utilized: N-time stickers, voting stickers, white paper and pen, and a timer. Additionally, time planning and the selection of appropriate process methods are crucial for achieving higher output within the allocated time.

(2) Start designing the sprint process important steps: Understand; Definition; Divergence; Decision; Prototype; Verification

(3) Understanding design challenges

Content that needs to be understood: user needs/business needs/technical capabilities

(4) methods

1). 360-degree quick interview.

5 minutes to explain business goals and success criteria. (Museum Director)

5 minutes describing technical capabilities and challenges. (Programmer)

5 minutes to explain the conclusions of the user research. (User Researcher)

1. User interviews + on-site visits.

Users are the ones who ultimately judge the quality of your product, so it's important to listen to their voices. Understand their likes and dislikes. In addition to listening, observation is more important. Go to the environment where they actually use the product, understand the context, and discover problems.

2). Stakeholder diagram.

Spend 30 minutes on stakeholder prioritization and demand mining. List the stakeholders related to this product in 10 minutes. It takes 2 minutes to do an aggregate classification. Categorize similar ones. Time remains to choose which stakeholder to design for and what the priorities are. After all, the sprint time is limited and it is impossible to cover everything, so you have to focus. Finally, organize everyone to conduct demand mining discussions around core stakeholders.

3). Summarize findings and preliminary idea summary.

Use N posts to record all the key points, thoughts and opinions just now. Cluster these contents and each category will have a theme. In this way, the understanding step is completed. I call this process comprehensive understanding and looking for opportunities.

(5) Define design opportunity points

What is defined is the key strategy in the design and what we want to focus on. There are 2 main methods: user journey/design principles/

1). Main user journey. There is an experience and exploration process for users from novice users

to expert users. Think about the process in between and discover? First experience? Come and experience it again? Expert user? What are the contact points?

2). Define design principles. Try to describe our services in 3 words. Innovative Technology? Attraction? interesting? Simple? List the design principles that you think are important, and design around this temperament during the design process.

After making a prototype, you might as well go back and let users experience your prototype. Try describing a few keywords to see if it matches the original design principles. Verify that the design works.

(6) Divergent ideas

We need to generate as many ideas as possible in this session. There are 4 methods: brainstorming

5 minutes for 8 ideas

5 minutes for 1 big idea

5 minutes for 1 storyboard method

1). Brainstorm.

There is individual brainstorming and team brainstorming. 3 steps:

Do personal brainstorming first. Write 1 idea on 1 post N times, write as many as you can.

2). Start sharing ideas together.

Find the appropriate location on the evaluation form on the whiteboard and paste it into categories. The vertical axis of the evaluation table is user value, and the horizontal axis is technical feasibility. Similar or identical ideas can be pasted together. 3. After everyone has finished sharing, you can start to speak freely. There must be people who have been inspired by others and have new ideas. Please feel free to add them at this time.

3). 8 ideas in 5 minutes:

What to do in 7 minutes. Fold A4 paper into 3 folds in 1 minute. Take 1 minute to prepare your emotions, unfold the paper and prepare to write for the remaining 5 minutes. Write/draw 1 idea in each of the 8 boxes.

4). 1 big idea in 5 minutes:

From the 8 ideas just mentioned, choose the one you think is the best.

Continue to refine this big idea and go deeper in 5 minutes. 1 storyboard in 5 minutes. Think about the big idea just now, and describe the key steps of the user in 5 minutes.

(7) Choose the final plan

To choose the best improvement method at present, a primitive approach can be used such as polling, team review, or the thinking hat

method. In the polling method, everyone in the team organizes and summarizes their ideas, which are then shared on a whiteboard.

After sharing all the ideas, a voting process is conducted. The team collectively reviews and decides which idea to prototype. Combining the voting results with the earlier discussion, the team engages in further discussions and decision-making.

On the other hand, the thinking hat method offers a more comprehensive way of thinking about the problem, especially suitable for new teams or teams prone to bias. Each team member is assigned a thinking hat representing a specific point of view or perspective, such as optimistic, pessimistic, technical, or user perspective. By considering multiple angles and perspectives, a more comprehensive understanding of the problem can be achieved, leading to more accurate decision-making.

(8) Design verification

To verify user experience/business value/technical feasibility. Method: User testing/Business stakeholder confirmation/Technical feasibility confirmation

6. Brief Summary

Design sprint is an efficient way of working that focuses on doing the right things and quickly verifying and learning. However, it is important to note that it is not a cure-all solution for bringing a product back to life. In order for a design sprint to be effective, it should be based on the following key points:

1. The goals must align with the decision-maker's objectives.
2. The user should be at the center of the design sprint process, avoiding self-indulgent design.
3. It is crucial to involve all stakeholders, as they may hold the power to determine the success or failure of the product. A unified goal among all stakeholders is necessary.

Design sprints can not only address product usage defects but also have an impact on service design. By following a step-by-step approach, design sprints can effectively provide solutions and yield maximum benefits within a shorter timeframe.

Currently, there are challenges in the operation and services of museums. To sustain their operations, it is essential to consider how to provide high-quality services and satisfy visitors. Design sprints can help improve the traditional management model and adapt to the global

development of cultural tourism. This can help overcome business difficulties, identify innovative management models, strengthen reform and service concepts, and promote the healthy development of the museum industry. Through the service design method of design sprints, museums can better develop positive 'services' and explore new forms of 'museum service management' to enhance audience satisfaction.

6.1 Research Status of Museum Design Strategies in Artificial Intelligence Environment

In recent years, there has been significant progress in the development of artificial intelligence technology in the cultural sector. Tate Britain, for instance, has proposed the use of artificial intelligence technology to explore the application of digital technology in works of art (Yang et al. 2024). In a publication titled 'Exploring the Impact of Artificial Intelligence on Museums,' Brandon, a member of the Steering Committee at the Boston Museum of Fine Arts, discusses the impact of artificial intelligence and machine learning on various aspects of the museum, including collections, ticketing and attendance data, and the use of machine vision for image detection and analysis. On May 18, 2018, in celebration of International Museum Day, the State Administration of Cultural Heritage of China and Baidu jointly launched the 'AI Museum Plan' which introduced the concepts of 'Smart Museum' and 'Museum 3.0.' These concepts aim to utilize artificial intelligence technology to enhance digital management, digital services, and digital experiences in museums. Furthermore, in 2019, Professor Zhang Wen and colleagues proposed intelligent design and development strategies in the artificial intelligence era to prevent the homogenization of cultural and creative products. This demonstrates the increasing attention given to the integration of artificial intelligence technology in the field of museums.

6.2 Analysis of Museum Visiting Experience Based on Service Design and Experiential Thinking

(1) The concept of experience design was proposed by Professor Xin Xiangyang in 2018. In his article 'User Experience to Experience Design', he systematically discussed the nature of experience and its attribute model, which

includes the experience EEI model and the experience 'ULTC' positioning.

This concept views experience as a design object, distinguishing it from using user experience as a design criterion. Instead, it focuses on understanding the experienter's expectations for an experience (Expectation), the choice of event development path (Event), and the reflection given to the user (Impact) throughout the process.

The experience EEI model provides a detailed interpretation of these three components, emphasizing their importance and inseparability in shaping a user's experience. In experience design, designers transition from being service providers to enablers, while users shift from passive recipients to active co-creators and sharers. The true essence of experience design lies in encouraging experiencers to actively create their own memorable growth experiences and inspire and influence others. This gradually leads to the formation of a new way of life.

(2) Under the concept of experience design thinking, the museum visit experience can be categorized into three service stages: before the visit, during the visit, and after the visit. By utilizing the user journey map from the service design tool, an analytical diagram illustrating the touch points of the museum visiting experience is created based on the exhibition viewing process. The diagram represents the three main stages of the complete experience for the public visiting the museum: the information acquisition stage, the visiting stage, and the memory reflection stage. This aligns with the three stages (expectations, events, and impacts) described in the experience EEI model, which outlines a comprehensive experience. Additionally, the contact points where users interact with the museum directly or indirectly are clearly identified at each stage. These touch points, as significant moments in users' experience paths, not only influence their visit experience but also present valuable opportunities for the implementation of new technologies to enhance the overall experience. Therefore, they are the primary focus of experience design.

7. Entrance to the Visiting Experience

(1) Information acquisition stage

The motivation for individuals to start a museum tour can vary, including reasons such as being a tourist attraction, a designated extracurricular study site, or a personal interest. These different

purposes result in different goals and expectations. The extent to which these expectations align with the actual experience determines whether the impact of the visit is positive or negative for the user. Consequently, the museum visit experience begins with the examination of user expectations, even before entering the museum. In Figure 1, the acquisition of information serves as the true gateway to museum visiting activities. The public obtains relevant information about exhibition activities through various museum online platforms, outdoor advertisements, or recommendations from friends either verbally or through information sources. By reading and searching for pertinent information, individuals can establish their expectations for visiting the museum and make a decision to participate. At this stage, users have already formed their goals and expectations for this journey experience in their minds.

(2) The visiting process is also a process of self creation

Events play a crucial role in the overall experience process. The museum's physical facilities, software services, and activity content serve as the foundation for the experience to occur. The process of visitors engaging with the museum's tour, in line with the established goals, is the process of event development. When participating in an event, users interact with products, environments, people, and even themselves, leading to self-creation. This process involves the experienter's understanding of the process itself, self, environment, and objective objects, as well as their thought process. Throughout the museum experience, users gradually strengthen their experience through viewing, interaction, integration, and creation, leading to a deeper impact. Figure 2's classification analysis of contact points reveals that, after entering the museum gate, users interact with four main components: guided tour service, museum environment, exhibition design, and cultural and creative design (including cultural and creative products, as well as cultural and leisure activity services). This close contact with the content enables experiencers to engage in active thinking and self-value creation through viewing, interaction, and integration. It also represents the internalization process of the user's visiting experience.

(3) The impact of visiting experience

The significance of experience lies not only in

the process itself, but also in its impact on the individual. When visiting a museum, users not only experience the visual impact and interactive pleasure in the moment, but also carry the memory, reflection, and perception of the experience even after leaving the venue. This leads to a deeper appreciation and long-lasting memory. Different individuals, with their varying knowledge backgrounds, social experiences, and personal goals, are impacted differently by similar events. Therefore, instead of simply providing more services, the value of the experience lies in guiding individuals to create and realize themselves.

When tourists leave the museum, their experience enters the stage of memory and reflection. The memories they take away include not only the actual interactions during the event, but also the cultural and creative products purchased from the museum and articles about the exhibition evaluation on online platforms. These proactive 'memories' not only deepen the experiencers' memory, but also evoke emotional resonance among users. The memory and reflection of the experiencer directly influence how they share their experience with others and also lay the foundation for their next experience. By employing experience design thinking to analyze the complete visit experience, the audience can gain a clear understanding of the experiential value of the journey at a macro level. At a micro level, key touch points and opportunities for improving the user experience can be identified.

7.1 Construction of Museum Visiting Experience Model

Based on the above analysis, the significance of the museum visiting process to users from the perspective of experience design has become increasingly clear. The author has constructed a museum visiting experience model based on experience design thinking. The model illustrates a changing trend of divergence, convergence, and then divergence in form, vividly depicting the three-stage process of constructing the experiencer's experience value during their museum visit. As visitors gather information from various sources, they enter the initial stage of the museum experience and start forming expectations for their journey. This can be seen as the process of information input. With these expectations in mind, users then move on to the core stage of the museum visiting

experience.

Experience events, intimate contact and interaction, and real-life scenes that touch and inspire users' cognition and thinking about the environment, objective objects and themselves. This process is the process by which the experiencer processes and internalizes the information displayed in the museum. The user leaving the museum after visiting is not the end of the journey experience, but rather enters the memory and reflection stage of the experience, that is, the impact stage. At this stage, users comprehensively process and judge the information received in the first two stages (including comparison of the difference between expected values in the first stage), and compare the deeply remembered fragments (whether good or bad experiences) with the purchased items. Souvenirs, etc. allow you to review, reflect and comprehend the experience in your mind, and ultimately be willing to share this experience with others. This phase is where new information is constructed and outputted. This stage is not only the construction of the meaning of user experience value, but also lays the foundation for the beginning of a new experience. The core point of the museum visiting experience model based on experience design thinking is to emphasize that experiencers transform from recipients of technology and services to constructors of experience meaning. The role of the designer changes from a provider of design services to an enabler. This is an attempt to seek innovative strategies for museum experience design in an artificial intelligence environment from a new perspective through the transformation of design thinking.

7.2 Design Strategies for Artificial Intelligence Assisting Museum Experience Upgrade

7.2.1. Establishing a Digital Experience Platform for Museums with Community Characteristics

The design of the museum's online platform has a direct impact on visitors' overall experience of the museum. A survey was conducted on the online platforms (including social platforms and official websites) of various large museums, special museums, and private museums in urban NanChang. The findings revealed that these platforms mainly focus on providing explanations of museum cultural relics, exhibition consultations, and ticket sales information. Additionally, the sales of cultural

and creative products are a key component. However, users of these platforms typically passively receive information and have limited interaction. To enhance the cultural experience of the museum, it is crucial to develop a user-centered museum digital experience platform with community characteristics, utilizing modern technological advancements such as artificial intelligence and big data analysis. This platform should prioritize personalized services and create an online environment that caters to individual preferences. This approach represents an important design strategy for upgrading the cultural experience of the museum.

(1)The concept of online community

The concept of online community, also known as virtual community, originated from the birth of the Internet and emerged from the development of artificial intelligence technology driven by big data. It is widely present on various websites and mobile applications, and consists of informal groups formed based on real social relationships or common cultural goals such as hobbies and social topics [9]. In recent years, Internet companies such as Xiaomi and Tencent have leveraged the decentralization, fragmentation, and fission characteristics of online communities to establish exclusive and extensive 'user empires' and rely on 'community culture' to thrive in the fiercely competitive world of the Internet. They have rapidly expanded their business scope and achieved commercial success. Currently, the application of the concept of online community in the field of museums is relatively limited. However, as early as 2012, the Palace Museum in Beijing initiated a research project on the 'Digital Palace Community'. By creating a socialized open digital virtual platform that values public interactive experience, they aim to provide the public with a highly cohesive museum virtual information space. Compared to online communities, online communities place greater emphasis on interpersonal connections and have the advantage of being established and developed quickly.

(2)The museum digital experience platform based on community characteristics

The museum digital experience platform based on community characteristics is an extension of the existing museum digital service platform. It aims to create a personalized service environment for individuals with common

interests in museums to communicate, share, and promote their interests. The platform collects and analyzes user data through user portals, using big data analysis to establish user profiles and predict trends and demand characteristics. It then provides intelligent recommendations that match users' interest characteristics. Additionally, the platform encourages public participation in the design of museum cultural and creative products. Through community exchanges and discussions, users can customize online personalized cultural and creative products using the latest information and design materials related to hot social topics and theme movies. Users can showcase their design plans on the online platform and even initiate crowdfunding campaigns to turn their designs into real products for sale. These personalized services not only enhance user engagement with the platform but also promote public participation in museum co-creation. The online community development process progresses from relationship building to knowledge sharing to joint action, increasing the value of the platform. For participants in the museum's online platform, this process also enhances their overall experience.

(3)Establishing an offline museum visiting experience model in the sense of co-creation.

The process of museum visiting is the process of the experienter processing and internalizing the information displayed in the museum. This process not only verifies the stage of experience expectations, but also directly affects the visitor's understanding of the experience. Memories and reflections on museum experiences are the core stage of cultural experience. With the help of the analysis of the touch points of the visiting process, the use of new technologies to provide the public with an immersive and interactive viewing experience and the design of focused educational activities in the sense of co-creation is another example of artificial intelligence helping to upgrade the cultural experience of museums.

7.2.2.Important design strategies.

(1)An immersive and interactive model for offline museum visiting experiences

An immersive and interactive model for offline museum visiting experiences has been developed in recent years. The application of artificial intelligence in the museum field has significantly advanced cultural experiences. Museums have adopted new technological

methods to enhance the exhibition environment and techniques for cultural relics. By incorporating multi-channel interactive modes such as sight, hearing, touch, and smell, museums have introduced innovative interactive experiences, moving away from the traditional single mode of exhibition viewing. The latest 'immersive' media technologies, such as virtual reality (VR) and augmented reality (AR), are commonly used in museum exhibition designs. These technologies utilize three-dimensional tracking and virtual scene rendering to transform non-intelligent and non-digital objects in museums into intelligent information. This transformation provides the audience with a highly immersive experience, featuring realistic and visually captivating effects, thereby enhancing the cultural value experience.

For example, Baidu launched the AI cultural heritage restoration plan in 2018, using artificial intelligence technology to present China's rich cultural heritage to the public in a vivid form. In cooperation with the Qin Shihuang Mausoleum Museum, viewers can dialogue; with cultural relics through a specific mobile phone application. Artificial intelligence technology simulates the cultural context of history, bringing visitors into historical scenes more than a thousand years ago, building a bridge for them to communicate with history, and talking to historical figures without any sense of disobedience. This immersive and interactive exhibition experience not only helps the audience better understand historical knowledge, but also leaves a profound memory of the experience in their minds. This experience method helps to stimulate the audience's interest and curiosity in historical knowledge, and is a booster for experiencers to internalize information and self-create; it is also a powerful cornerstone for the implementation of cultural self-confidence.

(2) Design of "Crowdsourcing" Educational Activities in the Context of Co creation

"Focused" educational activity design, in the sense of co-creation, allows audiences of all ages to discover participatory activities in the museum that suit their interests and align with the exhibition content [15]. For instance, we offer parent-child activities with simple crafts for children, knowledge lectures on ancient art for senior students, and special lectures and outdoor tours for adult audiences. Through these activities, participants can gain a

multi-dimensional understanding of cultural relics and deepen their cultural knowledge. Moreover, by engaging in the museum's online community platform, visitors transition from being mere spectators to becoming theme event planners or even event organizers. They collaborate with museum staff to provide meaningful educational activities to the public who share similar interests. As stated in the "Future Museum Research Report" by the Metropolitan Museum of Science and Technology Director, audiences desire to create, innovate, and curate their own museum experiences. Transforming museums into cultural activity centers that co-create and evolve with the public holds immense significance in enhancing the value of cultural experiences.

(3) Build a museum experience design service system with a closed loop of online and offline services.

The museum experience design service system aims to create a seamless integration of online and offline services. It addresses the common issue faced by young tourists who discuss their experiences online but feel lost when they actually visit the museum. By utilizing new technologies, an online experience is created to enhance user engagement and their sense of belonging to the museum. The system captures user registration information on the museum's online platform, allowing for personalized services to be seamlessly integrated with offline activities such as tours, exhibitions, and shopping. This personalized approach provides visitors with a sense of belonging and enhances their overall experience. Additionally, the system facilitates communication among users on the online platform, further enriching their museum cultural experience. The construction of this museum experience design service system is illustrated in Figures 1 and 2, showcasing the seamless connection between information reception, processing, internalization, meaning construction, and sharing. The significance of this system lies in its emphasis on visitor participation, co-creation, and influence in the experience value creation process.

7.2.3. The direction of innovative management development in museums

(1) To better serve the audience in the new era, museums should innovate their service management model. This can be achieved by actively improving social service activities.

(2) Additionally, museums should also focus on innovating the management model of information systems. By integrating more information technology into museum management, audiences can have access to various information systems for resource sharing. This will effectively enhance the management efficiency of the museum. To accomplish this, museums should prioritize the establishment of a stable and secure database and network platform. Within this platform, a database of cultural relics collections can be created and managed using computer technology. This will enable the museum to modernize, digitize, and provide integrated application functions, thereby promoting intelligent development. Furthermore, self-service multimedia tour services can be introduced. It is crucial to strengthen and improve the security system to ensure the safety of the museum.

(3) To ensure the sustainable development of the museum, it is essential to establish an effective financial management system. Despite being a non-profit institution, the museum still requires funds for its operations. Therefore, it is crucial to prioritize social benefits while managing the financial interests of the country, units, and individuals involved. Diligence, frugality, and adherence to legal regulations should guide financial management practices within the museum. Moreover, museum managers should enhance their oversight of funds and introduce financial analysis to evaluate the operational situation accurately. It is recommended to include some non-tax revenues in a unified fiscal management approach.

(4) In addition to financial management, human resources play a pivotal role in ensuring smooth museum operations. Therefore, it is imperative to innovate the human resources management model in museums. This can be achieved by adopting a scientific approach to allocate staff responsibilities and ensuring that each employee carries out their work efficiently. The management process should be systematic, and modern management methods should be employed to optimize management practices. Furthermore, the museum should consider recruiting young, high-quality talents to enhance the overall staff quality. Establishing an incentive system within the staff is also crucial to boost employee enthusiasm, allowing every employee to showcase their abilities and grow professionally. Ultimately, this will lead to

improved efficiency in the museum's work.

8. Conclusion

Museum cultural experiences have become a popular aspect of the experience economy, reflecting a cultural lifestyle. The advancement of artificial intelligence technology, driven by data and technology, has greatly enhanced the museum visiting experience. In this era of experience economy, museums need to actively adapt to the changing environment. Simply providing educational exhibitions is no longer sufficient for modern museums. Instead, museum products should offer visitors a genuine and enjoyable experience, satisfying both their intellectual and sensory needs. As key players in the 'museum tourism' industry, modern museums must adjust their management models and business practices, actively engage in experiential services and marketing, and meet the growing demands of visitors through appropriate strategies. By doing so, museums can ensure their own survival and development, continuously demonstrating their value as members of the cultural industry.

The development of museums is a collective responsibility, and each of us should actively participate in their innovative development. By witnessing the historical development and changes from ancient times to the present, museums provide educational and enjoyable experiences, enabling people to truly immerse themselves in history. As we progress in time and economics, it is crucial to conduct a comprehensive analysis of museum management and various aspects, implementing necessary system improvements and employing effective methods to provide visitors with the best service and operations, ultimately establishing a stronger presence of history and culture in the world.

In today's modern era, it is crucial to innovate the management model of museums in order to enhance their operation and development. Therefore, by improving the museum's management system and incorporating innovative technologies and design management methods of the new era, this significant institution, which preserves cultural history, can offer a wider range of educational and captivating spiritual and cultural products to the audience. This transformation will truly showcase the meaning and value of the museum's existence to a larger audience,

ensuring long-term and stable development of the museum industry.

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