JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

# Digital technology in Tribal Museums: Modernization, Benefits, and Challenges

**SUBOOHI NASRIN**

Department of Museology, Aligarh Muslim University, Aligarh, India-202002,

**Abstract**

Many museums worldwide display the cultural history of various tribal cultures, especially those on the verge of extinction due to urbanization, industrialization, and natural or artificial threats. These museums recognize their responsibility to safeguard the cultural legacy of these communities in diverse ways. This paper proposes the introduction of new technologies in tribal museums, analyzing the role of digitization, its benefits, and the challenges it presents. Digital technologies aim to reduce or eliminate pollution and waste while enhancing productivity and efficiency. They have significantly impacted the educational system, especially during the recent COVID-19 pandemic, which reinforced the use of digital technologies in education. These technologies have created numerous opportunities for the public to engage with museum objects through telecommunications, digital platforms, and the Internet. Digitizing tribal museums promotes tourism and fosters a sense of cultural heritage identity. Technological advancements in education have also made students' lives easier.

**Keywords:** Museums, digitization, tribal, culture, technology

## Introduction

Our country has a rich cultural heritage, notably through its tribal people, who are found in nearly every part of the world (Stephens et al., 2005). According to a 2009 United Nations (UN) assessment, these communities are located in 90 countries worldwide (Stephens et al., 2005), with India and China having the largest populations at 106.40 million and 104 million, respectively (Gracie et al., 2005; Marmot, 2007). These tribal peoples are distinct in their culture, traditions, knowledge, language, and behavior, with each group being

significant in its own right (Huntington et al., 2017). Their traditional knowledge systems are invaluable for future generations. However, this intangible heritage is under threat of extinction due to globalization, modernity, and homogenization (Vinay, 2018). These pressures lead to permanent changes, making it imperative to protect intangible legacies to ensure their preservation for society and humanity.

Tribal museums play a crucial role in gathering and showcasing the diverse cultures of tribal communities within a specific region. These museums house collections of bows, daggers, and spears used for hunting and battle, as well as clay models, wedding apparel, lifestyle artifacts, jewelry, garments, kitchenware, photographs of notable occasions, and various musical instruments such as the dhol and madal. These exhibits highlight the history of many communities and are vital in preserving intangible cultural heritage.Digital technology significantly enhances the accessibility and dissemination of knowledge. It is highly effective in informing the public about museum activities, ongoing exhibitions, and available events. During the COVID-19 pandemic, when museums were closed to visitors, digital technology played a crucial role in engaging the public. The shift from physical to digital interactions ensured that cultural and heritage sites could continue to reach and educate audiences despite restrictions.

**Digitization in museums**

Digitization in museums involves converting traditional information into digital formats using various technological methods. This process helps disseminate stored knowledge and supports educational initiatives. Museums continuously seek innovative strategies to share their materials with the public, especially those who cannot visit in person. The integration of digital technology, such as mobile devices, tablets, laptops, simulations, dynamic visualizations, and virtual laboratories, enhances educational experiences for students and provides a world-class learning environment for all (KeengweandBhargava, 2014; DreimaneandUpenieks, 2022). Social media, in addition to serving as a platform for sharing important information, is a valuable tool for initiating new social activities and discovering professional opportunities (Haddad andDraxler, 2002; Buyukbakal, 2015).

The COVID-19 pandemic in 2020 had a profound impact on the museum sector, creating opportunities to engage the public with museum objects through telecommunications, digital technology, and the Internet (Abdurahim, 2022). During the lockdown, telecommunication technology enabled continued learning from home, allowing students to access education remotely (Emmanuel andSieff, 2008; KostopoulosandKotsiantis,

2022). Many museums adapted by embracing online platforms to teach and share their collections. According to the 2020 annual report, virtual museum tours were the most frequently searched topics over the past twelve years. The Natural History Museum of Los Angeles, for instance, organized a range of online events, including seminars, workshops, and lectures, to engage with audiences during this period.

**Need of digital technology in tribal museums**

In today's society, digitization has become a crucial element and has proven to be highly effective in enhancing museum collections. Technologies such as augmented reality (AR) and virtual reality (VR) provide immersive experiences that offer a true sense of the artifacts on display. Digitization serves as a bridge between knowledge and users, attracting visitors of all ages (SethiandNaik, 2021). To make tribal museums memorable and engaging, it is essential to incorporate innovative technologies that provide new insights into tribal cultures and traditions (Medic andPavlovic, 2014).

Museums are typically categorized into three main types based on their specializations: art collections, historical artifacts, and biological specimens (Pushakar, 2013). Tribal museums often encompass a broad range of collections, including arts, crafts, archaeology, anthropology, history, cultural heritage, festivals, dance, and music, offering a glimpse into the diverse cultures of various tribal communities. Notable examples include the Odisha State Tribal Museum, the Tribal Museum of Bhopal (Madhya Pradesh), the Tribal Museum of Araku Valley (Andhra Pradesh), the Tribal Museum of Ooty (Tamil Nadu), and the Tribal Museum of Pune (Maharashtra). These museums are dedicated to preserving tribal culture and traditions.

In the modern era, tribal communities face the threat of extinction, with their traditional tools, equipment, weaponry, crafts, textiles, basketry, and pottery disappearing as their ways of life vanish (Das, 1989). Digitization in tribal museums not only enhances tourism but also fosters a sense of cultural heritage identity. Museums play a vital role in documenting, preserving, and presenting these rich heritages through digitization.

**Digital Initiatives for Tribal Museums**

Tribal museums in India should consider implementing several digital technologies to enhance user experience, such as:

1. **Audio-Visual Tablets:** To provide interactive and multimedia-rich content.

2. **Informative Maps:** To offer detailed and navigable insights into tribal regions and artifacts.
3. **Virtual Reality with Immersive Experiences:** To create engaging, interactive simulations of tribal life and environments.
4. **Virtual Tours:** To enable remote access to museum exhibits and collections.
5. **Touch Screens:** To facilitate interactive learning and exploration of exhibits.

1. **Audio-visual interactive tablets**

Audio-visual interactive tablets are highly beneficial for individuals with physical disabilities, the elderly, and children. These tablets can display short documentary films, gallery objects, drawings, animation graphics, and accompanying audio, enhancing accessibility and engagement.

2. **Informative Maps**

Informative maps can be accessed via mobile phones by scanning QR codes. These maps provide essential information about the geographical area, languages, and populations of various tribes, offering a comprehensive overview of tribal regions.

3. **Virtual Tours**

Advancements in digital technology have enabled museums to offer innovative virtual exhibitions. Virtual tours allow visitors to explore galleries and view brief descriptions of specific objects from anywhere. This approach enhances visitor engagement by creating an interactive and exciting experience.

4. **Touch Screens**

Interactive touch screens should be installed in tribal museums to provide detailed information about artifacts. These screens offer insights into the tribe's origins, religion, language, occupations, culture, and crafts, facilitating a deeper understanding of the exhibits.

5. **Virtual Reality with Immersive Experience**

360-degree virtual reality with immersive experiences is another valuable addition to tribal museums. This technology enables visitors to feel as though they are physically present within a tribal society, offering a unique and enriching experience that enhances their understanding of tribal cultures.

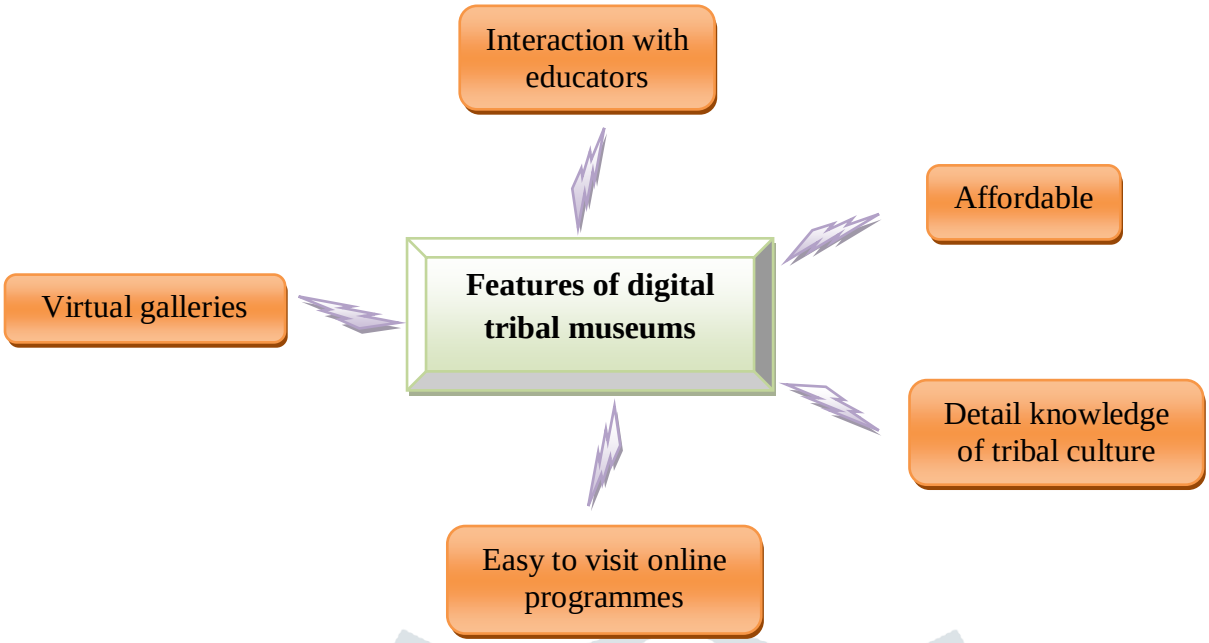


**Figure-1: Feature of digital tribal museum**

**Advantages of digital technology in tribal museums**

**i. Less conservation treatment**

The Digitized museums offer a digital representation of physical collections, allowing artifacts to be shared online. This approach addresses significant conservation concerns by reducing the need for physical handling of delicate objects. Conservation procedures are essential for preserving museum collections, but once valuable artifacts are damaged, they cannot be restored to their original condition, resulting in substantial loss. Digitization helps mitigate this issue by preserving valuable information in a digital format, thus safeguarding it from physical deterioration.

**ii. Data Management Efficiency**

Museums hold collections with immense cultural, historical, and scientific value, encompassing a wealth of records. Digital technology greatly aids in managing this information effectively. Tools and applications for data collection, cleaning, hierarchical management, and the creation of graphs and tables facilitate efficient organization and accessibility of museum data, supporting research and scholarly activities.

**Challenges of Digital Technology in Tribal Museums**

**a. Budget Constraints**

Museums often operate with limited budgets, making the implementation and maintenance of digital technologies challenging. Advanced digital solutions and technologies can be expensive to acquire and sustain.

Ensuring that such technology is installed and functions correctly poses a significant financial and logistical challenge.

**b. Limited Expertise**

There is a shortage of specialized staff skilled in museum digitization. For effective digital transformation, museums need a team of technology experts who can implement and manage new technological solutions. Without a clear strategy and sufficient expertise, the integration of digital technology can lead to ineffective outcomes and potential issues.

**Conclusion**

The Tribal Museum is a non-profit, permanent institution dedicated to educating the public about the customs, traditions, languages, beliefs, and practices of tribal communities. By preserving and showcasing a rich heritage of tribal culture, these museums play a vital role in passing knowledge from the past to future generations. The integration of digital technology in tribal museums is a significant benefit to society. Museums should ensure that digital technologies are designed to be accessible to all visitors. In tribal museums, digital technology serves not only as an educational tool but also as a means of conserving the culture and customs of endangered tribal communities. These technologies will enhance educational outcomes by improving the digital learning environment and student performance. They represent innovations that consider natural resources and promote economic and social growth. By addressing environmental and ecological concerns, these technologies help to prevent issues such as deforestation and pollution, while contributing to sustainable and long-lasting solutions

**Acknowledgement**

The author extends sincere gratitude to the chairman of the department of museology for their encouragement and support in writing this paper, as well as for providing the necessary facilities.

**References**

Abduraheem, K. and Sheri, J. (2022). Significance of Digitization of the Cultural Heritage:In the Context of Museums,Archives, and Libraries. *IGI Global*. Chapter-13.

Buyukbaykal, C.I. (2015). Communication Technologies and Education in the Information Age.*Procedia - Social and Behavioral Sciences*. 174 : 636-640.

Das, A.K. (1989). Museography for Ethno-Cultural Materials.*Agam Kala Prakashan, New Delhi.*

Dreimane, S. and Upenieks, R. (2020). Intersection of Serious Games and Learning Motivation for Medical Education: A Literature Review. *IJSEUS.*11(4).

Emmanuel, G.G.P. (2008). Challenges of managing information and communication technologies for education: Experiences from Sokoine National Agricultural Library. *Int. J. Educ. Dev.* 4(3): 137-142.

Gracey, M., and King, M. (2009). Indigenous health part 1: determinants and disease patterns. *Lancet*. 374 (9683): 65-75.

Haddad, W. D. and Draxler, A. (2002). Technologies for education: potentials, parameters, and prospects. 1(2): 2-17.

Haddad, W. D., and Draxler, A. (2002). The dynamics of technologies for education technologies for education potentials, parameters, and prospects, 1, 2-17

Huntington, H. P., Begossi, A., Gearheard, S. F., Kersey, B., Loring, P. A., Mustonen, T., Paudel, P. K., Silvano, R. A. M., Vave, R. (2017). How small communities respond to environmental change: patterns from tropical to polar ecosystems. *Ecol. Soc.* 22(3): 13.

Keengwe, J. and Bhargava, M. (2014). Mobile learning and integration of mobile technologies in education. *Edu Inf Technol*. 19(4): 737-746.

Kostopoulos, G. K. and Kotsiantis, S. (2022). Exploiting Semi-supervised Learning in the Education Field: A Critical Survey.*Advances in Machine Learning/Deep Learning-Based Technologies.*79-94.

Kumar, V. (2018). Preservation of Tribal Culture and Tradition: An Appraisal. *The Tribal Tribune.* 6(3).

Marmot, M. (2007). Achieving health equity: from root causes to fair outcomes. *Lancet.* 370 (9593):1153-1163.

Pushkar, R.K. (2013). Encyclopedia of Museology, *Centrum Press, New Delhi.*

Sethi, S. And Naik, P. (2021). Role of Digital Technology in Museum Development: A Special Reference to Odisha State Tribal Museum. *International Journal of Innovative Science and Research Technology*. 6(1), 800-804.

Stephens, C., Nettleton, C., Porter, J., Willis, R. and Clark, S. (2005). Indigenous peoples' health—why are they behind everyone, everywhere? *The Lancet.* 366 (9479): 10-13.