

Chapter 11

New Technologies and Artificial Intelligence to Facilitate Access and Management of Zimbabwe's Museum Collections

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ABSTRACT

This chapter investigates the role that new technologies and Artificial Intelligence (AI) can play in enhancing the accessibility, control, and management of museum collections in Zimbabwe, offering solutions to current challenges while ensuring the preservation of cultural resources. By utilizing AI, museums can improve their collection processes and increase access to cultural resources. The chapter takes a qualitative approach that reviews and analyzes case studies from institutions where different types of technologies have been successfully implemented to improve operational efficiency and user experience. The chapter also explores ethical issues related to the use of AI in cultural settings, highlighting the importance of inclusive practices that acknowledge local cultures and traditions. Additionally, this research

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exposes the potential of new technologies and AI to improve museum collections management in Zimbabwe, while also contributing to the development of cultural narratives and promoting international engagement with Zimbabwean heritage.

BACKGROUND

Zimbabwe is home to many public museums and repository centers that hold important and rare collections ranging from archaeological and ethnographic collections to traditional and contemporary art. These collections are both a reflection of the country's history and cultural identity. However, managing and providing public access to these collections remains problematic due to many reasons among them limited resources, outdated systems, and the growing demand for digital accessibility. Mahachi (2008) cited theft as one of the reasons why museums in Zimbabwe limit public access to some collections that are considered of high value. For example, the Natural History Museum in Bulawayo lost a valuable 175-ounce gold Guinea Trophy in 1998; King Lobengula's bracelet at an unknown date, and several leopard skins in 2003 while the Kwekwe Mining Museum went on to lose 6 gold crucibles between 2000 and 2001 (Mahachi 2003). Another repository center, the National Art Gallery of Zimbabwe lost several artworks including paintings and sculptures (The Zimbabwean Daily, 2011). Apart from theft, the location of museums has also been seen as one of the factors that restrict public access. As put forward by Mataga (2014), the museums in Zimbabwe were established in urban centers away from local populations to serve the needs of the former white settlers. Post-colonial era, not much effort was made to decentralize museums hence they remain far away from most people, especially the rural population.

On the other hand, numerous transformations have been witnessed in museums globally. The management of collections worldwide has been transformed by the emergence of new technologies, particularly AI, which has made them more accessible to both the public and researchers. Axiell (2022) and Ghaith (2024) hold that the intersection of AI with the field of cultural heritage conservation represents a transformative phase in the methodologies employed for the preservation and interpretation of cultural assets. It is against this background that this article discusses how new technologies, and AI can be used to solve the challenges Zimbabwean museums face in managing their collections, keeping them safe from harm, and engaging the public effectively. In Zimbabwe, the museums are underfunded and under-resourced in terms of technology, with a high demand for artifact preservation (Chaterera, 2014); thus, this research contributes to the sum of knowledge by underlining new ways to alleviate these challenges. The integration of AI technologies, such as machine learning for artifact classification and virtual reality for immersive experiences, has

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