

User Perceptions on Intangible Cultural Heritage of the Ancient Bini Kingdom and the Acceptance of Extended Reality (XR) in Its Recreation and Representation

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How to cite this paper: Zainab, O. N., Jin, C., Yulan, Z., Ehi, O., Penninah, N., & Ikechukwu, O. (2022). User Perceptions on Intangible Cultural Heritage of the Ancient Bini Kingdom and the Acceptance of Extended Reality (XR) in Its Recreation and Representation. *Art and Design Review*, 10, 280-295.

<https://doi.org/10.4236/adr.2022.102021>

Received: April 6, 2020

Accepted: May 28, 2020

Published: May 31, 2020

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Abstract

Current study sought to measure the perception of intangible cultural heritage and systems of the ancient Bini kingdom, as well as the acceptance of users when extended reality (XR) is used for its recreation and representation. Four aspects of intangible cultural heritage were identified and used for the study—stories, music, festivals and dance. The stories were recreated from folklore using the comic book storyboard technique with the Adobe Photoshop software, while three dimensional (3D) characters were generated and positioned within the virtual environment using commercially available Unity3D and Blender softwares; dance was simulated using non-immersive virtual reality, with created characters responding to sourced traditional music; festivals remain as celebrated yearly. With semi-structured questionnaires administered on a sample size of forty-two (42) consisting of palace/museum staff and local tourists (young and old) in Bini city, Edo State, Nigeria, several findings were generated and measured on the Likert scale. Although most respondents could remember some stories, they could not recall the names of key characters, implying that some names associated with oral tradition are lost as they pass between generations. For the application of XR in the reconstruction and restoration of intangible cultural heritage, most of the respondents agreed it was a fun and interesting way to learn about the cultural heritage of the Bini kingdom. However, youths were undecided on the issue of dance and music, showing the strong influence of Hip life and Afro Hip hop

music and dances.

Keywords

Folk Story, Music, Festivals, Extended Reality, Intangible Cultural Heritage

1. Introduction

At the mention of the term “cultural heritage”, one is likely to conjure up only images of old buildings, religious temples and some other physical object of historic or cultural importance, inadvertently neglecting the non-physical/intangible counterpart which includes a peoples’ language, their sounds, dance, craft, customary practices and celebratory occasions (Ministry of Foreign Affairs, Japan, 2016). The implication of this is that the cultural heritage of a people also includes their art, traditions, festivals, style of worship, rules, values, thought, dressing patterns, and traditional structures/architecture that are esteemed and conserved because of their historical, political, educational, recreational and religious significance (Koiki-Owoyele, Alabi, & Egbunu, 2020; Adamu, 2020). Other aspects, such as games, are also important parts of intangible cultural heritage (Ma, Li, & Bianba, 2021; Yang et al., 2018).

The global community in recent times, has been actively engaged in intense deliberations on the identification and the accordance of respect to cultural differences existent in this era of globalization. Indeed, intangible cultural heritage is an important legacy shared by all of mankind. Spearheading these discussions is the United Nations Educational, Scientific and Cultural Organization (UNESCO), an organization that has been, and is still constantly championing the “preservation” of rich cultural items (artefacts) in Africa and other countries of the world.

Out of the many African nationalities is the ancient Bini kingdom, which is examined in current study. The Bini (or Benin) nation of Nigeria has a rich cultural heritage which has been impacted by Western acculturation. Bini is one of the principal historic kingdoms of the western African forest region (fl. 13th-19th century) (Britannica, 2021), (Green, 2015; Ogot, 1992) known for their vast experience in bronze casting and ivory carving.

With the increasing attention given to the preservation of ancient antiquities around the world, the current study highlights the importance of safeguarding the intangible cultural heritage that comprises the roots of the Bini people’s cultural identity using information and communication technology, extended reality (XR) to be precise. The essence of intangible cultural heritage cannot be recovered once lost. In Africa, there is a saying that when an elder dies, a library burns. This is because, prior to colonization, countries in sub-Saharan Africa employed oral means for passing down customs and traditions. The “Elder” here can be the clan or village head, king, chief, deity priest, aged/older man or woman who serves as repositories and custodians of the traditions (Onyima,

2016).

The intangible cultural heritage of the Bini people has suffered the effects of Western acculturation and modernization (which some say is) due to Christianity and formal education (Sibani, 2018; Arowolo, 2010). Preliminary research reveals that some cultural elements and activities have negatively been impacted on. Specifically, cultural practices are either going into, or have already gone into extinction while others are gradually being abandoned. Bini Kingdom (geographically situated in Figure 1) was arguably way on its way to greatness before it was grossly plundered by the British. According to Arua et al. (2019), the palace of the King of Bini (or Oba) was plundered in 1897, when the British colonial administration attacked the Bini culture area, looted the rich bronze works and art treasures of the royal palace.

This is the most remarkable recorded destructive human activity in the Nigerian cultural heritage scene. It is reported that Consul Philips led an unarmed



Figure 1. Map of Bini Empire (Janakesho, 2016).

“trading expedition” to Bini City at a time when the king was performing the most important religious rite of the year. At such period, the king was not allowed to have contacts with foreign elements, including persons. The Iyase (commander-in-chief of the Bini army), acting against the Oba’s wishes, ordered the expedition attacked after Philips and his men insisted on entering Bini. The resulting scuffle led to the killing of some six British officials and about two hundred African porters. Britain responded immediately, with what is now called the punitive expedition of 1897. The palace was looted and the Oba exiled (Omipidan, 2017; Smithsonian National Museum of African Art, 2022). **Figure 2** shows the Members of the Punitive Expedition of 1897 posing with looted Benin artefacts.

The subsequent colonization brought about major changes in the lifestyle of the people and damage to varying degrees of the country’s cultural heritage. This presents researchers with the pressing task of rescuing and preserving the associated fragile intangible assets for history and future generations, as it is an important factor in maintaining cultural identity and diversity, especially now, in the face of growing globalization.

The purpose of this study therefore, is to examine the intangible cultural heritage of the ancient Bini kingdom and how extended reality can aid in its recreation, representation and preservation. The research will also attempt to find answers to the following questions:

- 1) What are the various intangible cultural heritage in the ancient Bini kingdom?



Figure 2. Membes of the Punitive Expedition of 1897 posing with looted Bini artefacts (Opoku, 2015).

2) What are the changes that have occurred in various aspects of the ancient Bini intangible cultural heritage?

3) What is the level of knowledge, recognition, and usage of this ancient cultural heritage?

4) Can XR, when used in representations and recreations of ancient Bini intangible cultural heritage, ensure remembrance and restoration?

2. Literature Review: Cultural Heritage, Preservation and Nigeria

The urgent need to conserve the Bini cultural heritage is highlighted through the functionalist perspective as enunciated by Bronislaw Malinowski (1884-1942) and presented in [Onyima \(2016\)](#). According to Malinowski, functionalist emphasize that society consist of interrelated parts which work towards the integration and stability of the whole system. Malinowski's functionalism assumes that all cultural traits are useful parts of the society they occur. In other words, all customary patterns of behavior, belief attitudes, and social structures perform a function within the society they occur. Consequently, preservation of Nigerian cultural heritage is capable of promoting collective consciousness in terms of unity, oneness, nationalism and fostering peaceful co-existence among Nigerians (*ibid*).

The review in this study is divided into two, namely: the Cultural Heritage, Preservation and Nigeria, and the application of XR (extended reality) in the restoration and preservation of cultural heritage.

A few studies were identified by random sampling that explores the cultural heritage in Nigeria. [Ekwelem, Okafor, & Ukwoma \(2011\)](#) described the preservation of cultural heritage through the investigation of the functions of libraries and information systems experts in the south-eastern part of Nigeria. [Probst \(2013\)](#) investigated and established the link between the two prominent extremes existent in cultural heritage literature: ancient artefacts of immense value that urgently needs to be protected, and a practice where even the past events become of great significance in the present. [Onyima \(2016\)](#) presented a functionalist perspective in a descriptive format, for several dimensions that cuts across history, anthropology and archaeology of the cultural heritage in Nigeria. He then enumerates the challenges of cultural heritage, which include ignorance, disagreements, change, globalization and development. [Abara \(2016\)](#) investigated the limitations of protecting cultural heritage artefacts in times of violent wars in Nigeria; two famous UNESCO sites namely Sukur kingdom and Osun Oshogbo sacred Grove, were used as case study. [Oyinloye \(2018\)](#) explored management of cultural heritage in such a manner that wooden artefacts of the Oron museum are preserved through a method called preventive conservation. [Arua et al. \(2019\)](#) presented a conceptual framework wherein culture and cultural heritage were defined in concrete terms. [Nwankwo & Itanyi \(2019\)](#) examined several studies done in Igbo land or south-eastern Nigeria, in order to elicit the challenges

experienced by the authors. Koiki-Owoyele, Alabi, & Egbunu (2020) evaluated the safeguarding of cultural heritage using digital approaches, employing both survey and interview methods. Adamu (2020) presented analyses for the conservation of the cultural heritage in Kano State, Nigeria. Ezenagu (2020) examined heritage resources as the driver of Nigerian cultural tourism with a conceptual framework on culture, tourism and cultural tourism.

The current study however, focuses on the intangible cultural heritage of the Bini kingdom, to provide a blueprint for examining other cultures in Nigeria.

2.1. Intangible Cultural Heritage

Several folk stories of the ancient Bini Kingdom were discovered in a book by Eweka (1998) that enumerated several stories that were passed down through oral tradition. They include “Later Arrivals”, “The Great Debate”, “On Their Own”, “Leopard and its Spots”, “Never too Weak to Help”, “Tortoise and the King”, “The Undaunted Destiny”, “All or Nothing” and “More Powerful than Death”. Additionally, Ben-Amos (1967) identified and captured the stories of “Ozolua and Izevbokun” and “Igoroumi”. The elders in the Oba’s palace recounted the story of Aruan [Arhuanran (sometimes spelled Aruanran)] of Udo, the giant of Bini Kingdom (Figure 3), and brother to Oba Esegie (Figure 4), which was confirmed with the publication by Steemit (2019). Figure 5 shows the



Figure 3. Statue of Aruanran, the giant of Bini kingdom (Steemit, 2019).



Figure 4. Oba Esegie brother to Aruanran (painted by Erhabor Enopae).



Figure 5. Oba Ozulua (Steemit, 2019).

image of Oba Ozulua, the father of Aruanran, and Oba Esegie, preparing for war. The illustrations of [Bortolot \(2003\)](#) described the story of Queen Idia, the first queen mother of Bini. [Emielu \(2012\)](#) described several music and dance of the Bini people. All these provided the base upon which the digital characters were built.

2.2. Application of Extended Reality in the Restoration/Preservation of Cultural Heritage

Several studies were identified by random sampling that explore the use of technology in preserving cultural heritage. [Carrozzino & Bergamasco \(2010\)](#) proposed a classification of virtual reality (VR) installations, specifically oriented to cultural heritage applications, based on attributes such as interaction and immersion. [Rafi et al. \(2010\)](#) dwelt on the technical issues and needs, particularly on the optimal representation of real-time visualization for heritage structures in architecture erected 80 to 200 years ago. [Menghi, Maino, & Panebarco \(2011\)](#) virtually reproduced space with increased photo-realism yield by the use of 3D modeling approach, thereby enabling the improvement of Great Mtskheta—the ancient capital city of Georgia, which had been abandoned and was extremely deteriorated. [Pietroni et al. \(2012\)](#) discussed the basic ideas on the significance of virtual environments based on body mobility. [Fang, Hou, & Su \(2013\)](#) analyzed the concept of digital heritage using virtual approach of restoration and reconstruction of Chinese cultural heritage. [Pietroni, Pagano, & Rafa \(2013\)](#) dealt with the reconstruction of the Regolini Galassi tomb in Cerveteri using virtual reality (VR) applications based on inexpensive mark-less natural interaction interfaces for permanent use in museums.

With the active arguments on ensuring pleasurable and satisfactory experience with 3D models for immersive VR, [Webel et al. \(2013\)](#) sought to develop an inexpensive fully immersive and mobile VR framework for the intuitive re-

construction of cultural heritage artefacts. Kennedy et al. (2013) employed Open Virtual Worlds—an extensible virtual collaborative environment to underlie methods of engaging with cultural heritage existent in St. Andrews Cathedral, which is located on the east coast of Scotland. Davies, Miller & Allison (2013) aimed at solving the issues attendant to Poly Social reality through the presentation of an architecture that allows the implementations of tablet computer and the Pango-lin virtual world viewer to provide a mobile interface to a corresponding 3D virtual environment. De Graaf et al. (2013) used gigapixel and 360° photography to preserve and monitor a distant cultural site. Wang, Chiang, & Wei (2013) used the low-cost and trendy Microsoft Kinect devices to establish an interactive 3D museum navigation system that supports intuitional commands.

Lee et al. (2014) developed a system to experience the Goguryeo tomb murals in three-dimensional virtual world. Aziz & Siang (2014) conceived a conceptual model for combining both VR and AR for the reconstruction of Melaka. In the light of the challenging nature of implementing virtual environments of cultural heritage, Komianos, Kavvadia, & Oikonomou (2014) suggested some ideas on its stages i.e. requirements, design, implementation and evaluation using user tests. Rodrigues et al. (2014) proposed a method for the reconstruction and generation of architectural-period traversable houses, showing its application with the case study of Roman heritage houses, in particular Conimbriga's houses. Rizvić et al. (2014) explored the application of Light Detection and Ranging Technology for the development of virtually interactive cultural heritage application for use in the Early Christian Basilica in Cim near Mostar. Dow et al. (2014) used the Apollo Virtual World GRID to cater for the need to facilitate education on the development, engineering, usage and assessment of three-dimensional immersive system. Selmanović et al. (2020) studied videos presented by VR for the conservation of intangible heritage. Shih et al. (2020) purposed to preserve Taiwan's influential cultural elements as well as urban dresses with enhanced augmented reality.

3. Methodology

Current study sought to measure user perception on intangible cultural heritage of ancient Bini kingdom and assess user acceptance of using XR in its representation and recreation. XR comprises Virtual Reality (VR), Augmented Reality (AR), as well as Mixed Reality. Folk stories (such as Aruan of Udo, The Giant and Queen Idia, as well as Ozulua/Izevbokun), dance (Ugho and Esakpaide), music (Afan and Agbi) and festivals (Igue), were identified and used for study. The classical folk stories were selected and recreated using the comic book storyboard technique to map out scenes with simple sketches drawn using randomly selected, commercially available Adobe Photoshop software, and shaded to provide some depth (see Figure 6). This sketch was developed further using commercially available Blender software to capture the motion of created characters, like Aruanran sweeping the palace (see Figure 7), and the Esakpaide



Figure 6. Aruanran, according to folkstories, grew up to be a giant who used the tall palm tree to dust the ground (authors).

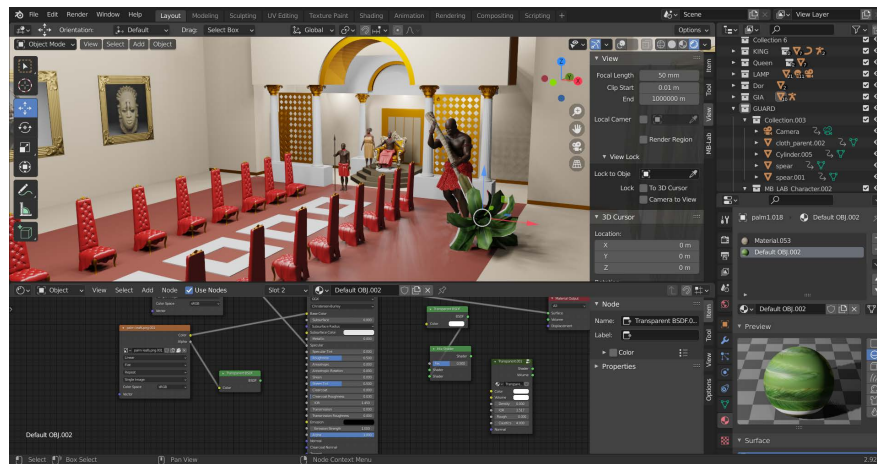


Figure 7. Creation of simulated motion of Aruanran sweeping the palace (authors).

dance usually performed during the Igue festival.

To assess user acceptance, a mixed method approach which consists of survey and interviews was employed for the study. The population of the study comprised staff of the Oba's palace as well as indigenous tourists who were visiting the Oba's palace and the Bini museum, popular choice destinations in Bini city, capital of Edo State in Nigeria, West of Africa. This was to ensure respondents were at least familiar with, or interested in the culture of the Bini kingdom. The study dwelt on two non-probabilistic sampling techniques. These were purposive and convenience sampling. Purposive sampling was used in selecting staff from the Oba's palace, as this group has adequate knowledge on the concepts studied. Besides identifying staff with knowledge on the concepts under study, other staff members and local tourists who were readily available and willing to respond to the research instrument were selected using convenient sampling technique. A sample (described in **Table 1** below) of 42 persons [staff (16) and local tourists (26)] were used for the study. The objectives of the study were distilled into question items in the questionnaire and are measured on a Likert scale

of 1—Disagree, 2—Undecided, and 3—Agree.

4. Results and Discussions

This section deals with the presentation and analysis of the data collected for the study. The tables are populated with questionnaire items arising from the earlier stated research questions. The respondents were instructed to choose either agree, undecided or disagree. Intangible items evaluate for each research questions include folk stories (such as Aruan of Udo, The Giant and Queen Idia and Ozulua/Izevbokun), dance (Ugho and Esakpaide), music (Afan and Agbi) and festivals (Igue). Before administering the questionnaire to the participants, they were made aware of what they should do, and the comic with the simulated rendered motions shown to them. All the questionnaires were returned and they were analyzed to generate the results presented in the tables below. Since a semi-structured questionnaire was used, the participants were able to give reasons for their choices. The results for the research are presented in **Table 2** (Research Question 1), **Table 3** (Research Question 2), **Table 4** (Research Question 3) and **Table 5** (Research Question 4).

4.1. Research Question 1: What are the Various Intangible Cultural Heritage of the Ancient Bini Kingdom?

For item 1, i.e. the Aruaran of Udo folklore, it is obvious that a large percentage

Table 1. Distribution of the sample chosen from the population (authors).

Location/Festival/Celebration in Bini kingdom	Staff	Local tourists
Oba's Royal Palace	2	3
Traditional guilds	2	3
The Traditional grounds	2	3
The Bini moat and wall	2	3
The palace of the Oba's mother	1	2
The National Bini City museum	3	6
Igue festivals/celebrations	4	6
TOTAL	16	26

Table 2. Results of research question 1.

Items	A	%	UD	%	D	%
Aruanran of Udo, The Giant and Queen Idia are folk stories in Bini kingdom	28	66.7	2	4.8	16	38.1
Ozulua and Izevbokun are folkstories in Bini	7	16.7	35	83.3	0	0
Ugho and Esakpaide are dances in Bini	14	33.3	22	52.4	6	14.2
Afan (Afalame) and Agbi are music types in Bini	10	23.8	24	57.1	8	19
Igue is a festival/ceremony in Bini	38	90.5	1	2.4	3	7.1

Table 3. Results of research question 2.

Items	A	%	UD	%	D	%
Aruan's name is also Idubor and he could uproot palm trees with his bare hands	39	92.9	0	0	3	7.1
The complete songs (lamentations) of Izevbokun are not part of the story	6	14.3	34	80.9	2	4.8
Ugho and Esakpaide dances have been influenced by Nigerian Afro pop dances such as etigi, azonto, shaku shaku	12	28.6	23	54	7	16.7
Afan (Afalame) and Agbi music have been influenced/dominated by hip-life and afro pop	11	26.2	25	59.5	6	14.3
Igue festival is done by day now (not at night) and does not involve human sacrifices	41	97.6	0	0	1	2.4

Table 4. Results of research question 3.

Items	A	%	UD	%	D	%
Everyone, and recognizes the story of Aruan of Udo, the giant	40	95.2	1	2.4	1	2.4
Everyone, and recognizes the story of Ozulua and Izevbokun	5	11.9	0	0	37	88.1
Everyone, and recognizes Ugho and Esakpaide dances	12	28.6	24	57.1	6	14.3
Everyone, and recognizes Afan (Afalame) and Agbi music	11	26.2	26	61.9	5	11.9
Everyone, and recognizes the Igue festivals/ceremonies	40	95.2	0	0	2	4.8

Table 5. Results of research question 4.

Items	A	%	UD	%	D	%
Virtual reconstruction of Aruan of Udo, the giant story is fun and interesting	33	78.6	4	9.5	5	11.9
Virtual reconstruction of Ozulua and Izevbokun is fun and interesting	35	83.3	3	4.8	4	9.5
Virtual reconstruction of Ugho and Esakpaide dance will be fun and interesting	22	52.4	18	42.9	2	4.8
Virtual reconstruction of Afan (Afalame) and Agbi as music types in Bini will ensure remembrance and restoration	27	64.3	9	21.4	6	14.2
Virtual restoration of the Igue festival will ensure remembrance and restoration	41	97.6	1	2.4	0	0

(66.7%) of the respondents agreed that it is among Bini folk stories, while 38.1% disagreed. The second folklore, i.e. Ozulua and Izevbokun, 83.3% were not sure if it is a folklore in Bini, while 16.7% agreed it was. 90.5% agreed that Igue festivals/ceremonies are existent in Bini. Conversely, although the participants agreed to the existence of those dances (item 3) and music (item 4) with 33.3% and 23.8% respectively, most of the respondents are undecided with 52.4% and 57.1% respectively.

4.2. Research Question 2: What are the Changes that have Occurred in Various Aspects of the Ancient Bini Intangible Cultural Heritage?

92.9% of the respondents agreed that they only know Aruan and not Aruanran,

the full name; while 7% disagreed with this questionnaire item. Similarly, 97.6% agreed that most of the rituals of the Igue festivals/ceremonies are performed in the day and do not involve human sacrifices. Like results of the research question 1, on dance and music, most of the respondents were undecided with 54.8% and 59.5% respectively. However, 28.6% and 26.2% agreed whereas 16.7% and 14.3% disagreed on the influences or domination of Nigeria's Hip-life and Afro Hip hop.

4.3. Research Question 3: What is the Level of Knowledge, Recognition and Usage of This Ancient Cultural Heritage?

95.2% agree that most people know and recognize the story of Aruan, the giant. This is different for the story of Ozulua and Izevbokun, whereas the 88% do not even know or recognize the story. For the dance, 57.1% and 61.9% were undecided (or unsure) on the knowledge and recognition of the aforementioned dances and music types. Conversely, 95.2% of the respondents agreed that everyone knows and recognizes the Igue festivals/ceremonies and only an insignificant 4.8% said otherwise.

4.4. Research Question 4: Can XR Representations and Recreations of Ancient Bini Intangible Cultural Heritage as Shown, Ensure Remembrance and Restoration?

After explaining the meaning and implication of XR, and showing the recreated stories and simulated movements, 78.6% and 83.3% indicated that viewing the reconstruction of Aruan of Udo, the giant as well as Ozulua and Izevbokun respectively, was a fun and interesting way to learn about their cultural heritage. 9.5% and 4.8% were undecided, while 9.5% and 4.8% disagreed. Similarly, 52.4% and 64.3% of the respondents indicated their excitement in experiencing the simulation of aforementioned dances with music types of the Bini kingdom. While 42.9% and 21.4% were undecided, 4.8% and 14.2% disagreed. The vast majority (97.6%) agreed that they would enjoy the virtual reproduction of the Igue festival.

These findings of course have implications, and here the researcher stipulates those implications for proper perusal and understanding of the current status of the Bini cultural system.

The implications of the study from above tables suggest that the story of Aruan is more popular than that of Ozulua and Izevbokun. This implies that the latter is almost lost, and can only be remembered by some elderly people in the Oba's palace. The popularity of Aruan's story may be since there is a physical statue of him erected in the (Bini) city. On the other hand, it is surprising that people cannot remember the stories surrounding the kingship of Oba Ozulua, father of Aruan and Oba Esigie. Aside the work by Ben-Amos (1967), there was no online evidence of the Ozulua/Izevbokun story. Although most of the respondents could remember the story of the Aruan, giant of Udo, they could neither remember his full name (Aruanran) nor his other name (Idubor). The implication is that most of language associated with oral tradition is lost as it is passed down

from generation to generation.

The Ugho and Esakpaide dances, as well as the Afan (Afalam) and Agbi music types are not popularly known amongst the participants. This may largely be because of influences and dominances of Hip life (mixture of Highlife and Hip hop) and Afro Hip Hop, if one considers younger ones who were hugely undecided (or unsure) on these questionnaire items.

Similarly, the Igue festival/ceremony is one the most popular in Bini Kingdom, so much so that even younger ones can remember them. On the changes to the Igue festivals, its performance during the day and the elimination of human sacrifices, respondents agree, are actually a welcomed development. For the application of XR/use of technology to recreate and restore these intangible cultural heritage experiences, most of the respondents agreed it would be fun and interesting. However, it was discovered that the youths were undecided on the issue of dance and music. This shows the strong influences of Hip life and Afro Hip hop music and dances (including azonto, skelewu, shaku shaku, soapy, etc). The youngsters confirmed that an upgrade is required to measure this is popular music genre, before they can enjoy it.

5. Conclusion and Future Directions

The current research has presented what one might call a critical appraisal of the Bini cultural heritage in the light of the application of XR, by eliciting answers from participants drawn from the palace staff and local tourists to the palace and museums. The Bini cultural heritage is an indispensable factor in the Nigerian tourism industry. From the research findings, it is evidently clear that modernization and globalization have both beneficial and adverse effects on the entire tradition of a people, but the negative impacts are more pronounced as the cultural heritage erodes overtime. As this study is based on Bini's intangible cultural heritage, it is necessary that enthusiasts/researchers expend efforts to also identify the attendant architectures, dresses and fashion of indigenous peoples and explore the use of XR in its recreation especially now as physical visits to museum buildings and heritage sites are on the decline.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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