Cultural Heritage Digitization: Challenges and Opportunities

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ABSTRACT

The main purpose of this study was to identify the challenges and opportunities of cultural heritage digitization in Ethiopia. In order to conduct the study, structured questionnaire data collection technique was used, besides both purposive and convenience sampling techniques were employed. In line with the relevant data were collected from digital librarians, archivists, tourists and tourism professionals.

The findings of this study showed that lack of policy, plan and procedures, inadequate funds, lack of concern from higher officials, and lack of digital technology materials for cultural heritage digitization were identified as the major challenges.

The study also identified the major opportunities of cultural heritage digitization such as, enhancing accessibility, preserving and promoting cultural heritage materials.

Therefore in order to develop a successful cultural heritage digitization, the government should develop policy, plan, standards, and guidelines. In addition to this, increase the allocation of funds, higher officials should give attention for the digitization of cultural heritage materials, and appropriate digital technologies are needed.

Keywords

Digitization, Challenges, Opportunities, Culture, Heritage, Ethiopia

1. INTRODUCTION

1.1 Background of the study

Cultural heritage is the legacy of physical artifacts and intangible attributes of a group or society that is inherited from past generations. The term cultural heritage designates a monument, group of buildings or site of historical, aesthetic, archaeological, scientific, ethnological or anthropological value. It includes both tangible culture such as buildings, monuments, landscapes, books, works of art, artifacts (books, documents, pictures, objects) and intangible culture such as folklore, traditions, language, and indigenous knowledge, and natural heritage [1].

Cultural heritage is important because it strongly influences our sense of identity, loyalties, knowledge, beliefs and behavior. Cultural heritages should be preserved and safeguarded since they are an identity that can introduce people to the world. Digitization has played a large role in the preservation and promotion of cultural heritages. Digitization is representing an object, image, document or a signal (usually an analog signal) by a discrete set of its points or samples [3] [4].

Nowadays, digitization is becoming a center stage for the cultural heritage collection, preservation, promotion and a new method for wider heritage access opportunity. This is becoming high business potential [3][4][15]. as the national libraries and archive agency of Ethiopia proclamation no. 179/1999 stated, the collection of historical documents, cultural heritages, audio and video recording, pictorial or photograph representation, manuscripts, microfiche and other records should be managed with the help of digital technology and promoting the services to broader audience is very necessary [5]. In literatures surveys, various benefits of digitization have been identified for cultural heritages. Preservation, promotion and more access opportunity are some of the benefits of digitization [3] [4] [10] [15].

In Ethiopia, the digitization of cultural heritages has been started few years back in different tourism archival sectors and agencies. However, as different literatures revealed that, its' implementation lags behind [3] [7]. Therefore, this research was addressed the following research questions:

- What are the major challenges that affect the digitization of cultural heritages?
- What are the major opportunities for digitization of cultural heritages?

1.2 Objectives

The main purpose of this study was to explore the major challenges and opportunities of digitization of cultural heritages in Ethiopia.

2. METHODOLOGY

2.1 Research method

In order to collect the required data and to achieve the objectives of the study, a quantitative cross-sectional survey research method was used.

2.2 Target population

The target population of this study was consisted of digital librarian, archivists and tourism professionals from selected Institutions in Ethiopia. The selected Institutions were Addis Ababa University, University of Gondar, Bahir Dar University, Jimma University, Haromaya University, Hawassa University, Arba Minch University, Mekele University, Adama Science and Technology University, National Library and Archive Agency of Ethiopia, Ethiopian Authority for Research and Conservation of Cultural Heritage, National Museum of Ethiopia and Ministry of Culture and Tourism Office.

2.3 Sampling design

In order to draw representative samples from the target population, the study was adopted purposive sampling technique. The samples were selected based on pre-prepared criteria articulated by the researchers. For any institution to be included in the selection, it was critically assessed that institutions were required to have an account on cultural

heritage digitization or related activities. Anchoring in the above premises the target population was set for the study.

Out of 180 digital librarian, archivists and tourism professionals from selected institutions, 100 participants were selected based on stratified sampling technique. Out of this all digital librarians (total 26) and 73 tourism professionals and archivists were selected based on non-probability convenience sampling technique.

2.4 Data collection method

A well-structured questionnaire was designed and piloted for completion by tourism professionals, archivists, museum professionals, library managers and librarians, and record managers. It was covered the trends, challenges and opportunities of cultural heritage digitization in Ethiopia. The questionnaire was send to the libraries in ten selected public universities in Ethiopia and four selected institutions to complete the questionnaires.

2.5 Data analysis method

Once the data were collected, it was analyzed with support of Statistical Package for Social Sciences (SPSS) version 20 application software tool. Particularly, this study used descriptive data analysis technique such as tables, charts, graphs, other easily understandable forms of reports, percentages and frequency distribution with respect to the specific objectives have been considered.

3. RELATED WORKS

Research work in the domain of cultural heritage digitization spans several decades. However, there are limited number of studies that attempted to find out the challenges and opportunities of cultural heritage digitization in Ethiopia. For instance the study conducted to investigate digitization process in selected institutions in Ethiopia, a baseline stakeholders' analysis survey report, and it identified factors such as uncertain needs, lack of awareness, unproved project executions, intellectual property issues, the failure of organizations to gear up digitization projects, resources inadequacy, poor long-term planning, unanticipated costs of technology resources, lack of clarity in interpreting the digital world [3]. In addition the study also investigated that original record/archives preservation is one of the major criteria and driving force for digitization. Another related work held at Mekele University on National Conference entitled with "safeguarding living cultural heritage of Ethiopia, challenges, perspectives and collaborative intervention". The paper has outlined digitization is one of the mechanism for safeguarding cultural heritages [2].

4. RESULTS AND DISCUSSION

4.1 Demographic survey

In the demographic section of the survey, total of 100 questionnaires were distributed to the selected institutions based on the respective participants for the study. Out of 100 questionnaires distributed, 50 were filled and returned properly. This means that 50% of questionnaires were filled properly and found appropriate for analysis. For that purpose literatures supported that a response rate of 50% and above is a good response rate.

The selected institution type most widely represented were archive and tourism offices with 32 responses (64% of the total samples), followed by university libraries with 13(26%) response rates.
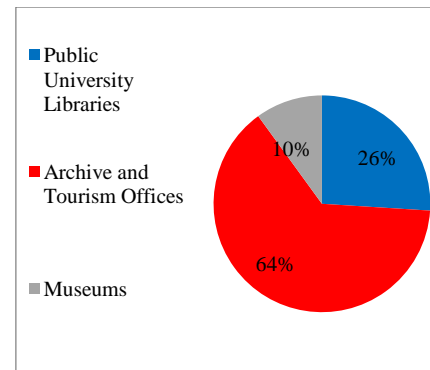

Figure 1: Types of selected institutions

Table 1: Distribution of respondent's

Departments	Frequency	Percent (%)
Tour guiders	3	6.0
Digitization section	15	26.0
Automation section	3	6.0
Cultural heritage section	6	12.0
Museum section	2	4.0
Tourism manger & expert section	23	46.0
Total	50	100.0

Table 1 shows the distribution of respondent's in terms of their respective departments in the institutions. The majority of the respondents, 23 (46%) were tourism mangers & experts followed by digital librarian which contains 15 (26%) of the respondents.

Table 2: Respondent's level of Education

Categories	Frequency	Percentage (%)
Diploma	5	10.0
Bachelor Degree	22	44.0
Master's Degree	22	44.0
PhD	1	2.0
Total	50	100.0

In order to understand the respondents' level of education there were asked to indicate their educational status category in which they filled on the questionnaire. The above table shows the analysis of the distribution of respondents' level of education. Based on the analysis, the respondent's educational qualification 44 (88%) implying that majority of the respondents who had Master's Degree and Bachelor's Degree. A single (2%) respondent had a PhD educational qualification.

4.2 Challenges of cultural heritage digitization

Identifying the challenges of cultural heritage digitization was one of the main research questions for this study. Accordingly, respondents were asked to mention different challenges for cultural heritage digitization in Ethiopia. From the questionnaire stated, respondents were asked to answer 8 different statements which required them to Provide their opinion using Likert scale rating methods. The results obtained were discussed in detail (see table 3).

Lack of cultural heritage digitization plan, policy and procedures was the first question to the sample respondents; accordingly, majority of them 32(64%) rated this statement as 'strongly agree' followed by 11 respondents (22%) rated this statement as 'agree' and 3 (6%) of them rated this statement as 'disagree'.

Regarding the statement for lack of professionals to digitize cultural heritages, half of the sample respondents 25 (50%) mentioned they perceived it as 'agree' and 12 (24%) sample respondents rated this statement as 'strongly agree'. Few of the respondents 4(8%) did not agreed about lack of professionals to digitize cultural heritages. Since it is not taken as a challenge in their respective institution.

As regards the statement for lack of knowledge to select metadata elements for cultural digital collections, majority of the respondents 20(40%) rated this statement as 'agree' followed by 11 (22%) rated as 'neutral and 9 (18%) rated as 'strongly agree'.

Majority of the respondents 21(42%) replied that lack of digital technology materials for digitization were one of the challenges of digitization of cultural heritage rated as 'Agree' followed by respondent contains 17(34%) rated this statement as 'Strongly Disagree'.

As it has been described in table 3 showed that, 26(54%) of the respondents strongly agreed that the lack of funds to support cultural heritage digitization was a challenge of digitization of cultural heritage followed by 15 (30%) of the respondents rated this statement as 'agree'.

Regarding the statement for lack of copyright and intellectual property right policy to digitize cultural heritage collections, 18(36%) mentioned they perceived it as 'agree', while 15 (30%) and 14 (28%) of them rated both 'Disagree' and 'strongly agree' respectively.

On the other hand, lack of concerns from higher officials was identified as a challenge regarding cultural heritage digitization which is rated as 'strongly agree' by majority 21(42%) of the respondents followed by 19 (38%) of them rated as 'Agree' and 6 (12%) of them rated as 'Disagree'.

Table 3: Challenges of cultural heritage digitization

Statements about challenges of cultural heritage digitization	Mean (X)	STDEV
Lack of cultural heritage digitization plan, policy and procedures	4.44	.884
Lack of professionals to digitize cultural heritages	3.86	.969
Lack of knowledge to select meta data elements for cultural digital collections	3.54	1.054
Lack of digital technology materials for digitization	3.96	1.009
Lack of funds to support cultural heritage digitization	4.16	1.131
Lack of copyright and intellectual property right policy to digitize cultural heritage collections	3.58	1.247
Lack of concern from higher officials on cultural heritage digitization	4.06	1.077
There are technological, economic, political, legal and social problems	3.62	.987

Table 3 shows that, technological, economic, political, legal and social problems was a challenge of cultural heritage digitization, 22 (44%) of the respondents rated as 'Agree' and 9 (18%) of them rated as 'Strongly Agree'.
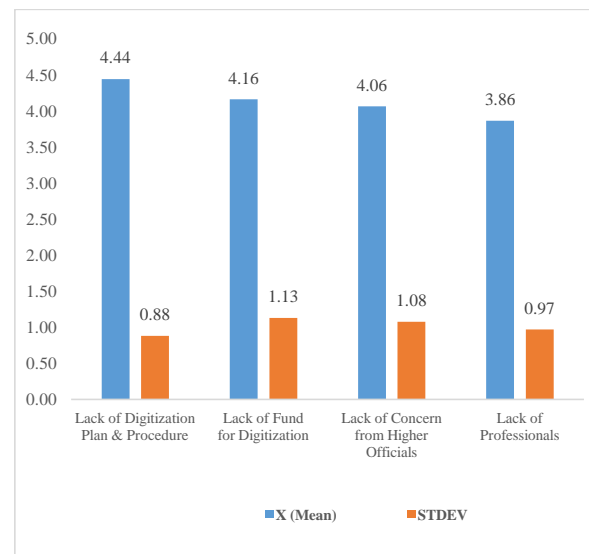
Figure 2: Major challenges for digitiziation

Additionally, the major determinant factors that affect the digitization of cultural heritage was identified (see Figure 2) as it indicated on figure 2, most of the respondents remarked that

lack of cultural heritage digitization plan, policy and procedures (X= 4.44, STDEV = 0.884) and lack of funds to support cultural heritage digitization (X= 4.16, STDEV = 1.131) were the major challenges followed by lack of concern from higher officials on cultural heritage digitization (X= 4.06, STDEV =1.077), lack of digital technology materials for digitization (X= 3.96, STDEV = 1.099), and lack of professionals to digitize cultural heritages (X= 3. 86, STDEV = 0.969).

4.3 Opportunities of cultural heritage digitization

Exploring the opportunities of cultural heritage digitization was one of the main research objectives in this study. Accordingly, respondents were asked to mention different opportunities of cultural heritage digitization in Ethiopia.From the questionnaire stated, respondents were asked to answer 8 different questions which required them to provide their opinion using Likert scale. The results obtained are discussed in table 4 below:

Table 4: Opportunities of cultural heritage digitization

Statements about opportunities of cultural heritage digitization	Mean (X)	STDEV
Digitization create opportunities for cultural heritage promotions	4.40	.728
Digitization enables to cultural heritage preservation	4.42	.758
Digitization increases cultural heritage accessibility	4.50	.763
Cultural heritage digitization support education	4.28	.809
Cultural heritage digitization creates job opportunity for youths	3.90	.909
Cultural heritage digitization enhances research	4.30	.789
Cultural heritage digitization enables for reusing the cultural heritages	3.90	1.035
Cultural heritage digitization increase revenue	3.54	.994
Cultural heritage digitization promotes online visits and online selling	4.18	.941

Respondents were asked to give their opinion about digitization creates opportunities for cultural heritage promotions, accordingly, majority of them 24(48%) and 24(48%) rated this statement as 'Agree' and strongly agree' respectively.

Regarding the second statement digitization enables to cultural heritage preservation, majority of sample respondents 26(54%) perceived it as 'Strongly Agree', followed by 21 (42%) rated this statement as 'Agree'.

As indicated in table 4 above showed that, 16(32%) of respondents strongly agreed about cultural heritage digitization creates job opportunity for youths was an opportunities of cultural heritage digitization followed by 15 (30%) of respondents rated this statement as 'Agree'.

Regarding the statement cultural heritage digitization enhances research works, 24 (48%) mentioned that they perceived it as 'Strongly Agree' and 18(36%) of them rated as 'Agree'.

Concerning about cultural heritage digitization enables for reusing the cultural heritages was another opportunity of cultural heritage digitization it has been rated as 'Strongly Agree' by 17 (34%) and the same percentage 17 (34%) of them rated as 'Agree'.

The Result in table 4 showed that, cultural heritage digitization increase revenue was another opportunity which contains 20 (40%) of the respondents rated as 'neutral' and 14 (28%) of them rated as 'Agree'

Majority of the respondents 22 (44%) replied that cultural heritage digitization promotes online visits and online selling was one of the opportunities of cultural heritage digitization rated as 'strongly Agree' and also similarly 20 (40 %) of the respondents rated this statement as 'Agree.
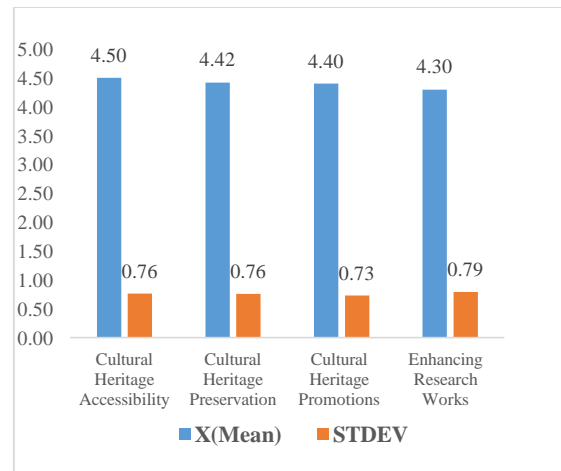
Figure 3: Major Opportunities of Digitization

The major findings identified about the opportunities of cultural heritage digitization were indicated on figure 3 , as the findings showed that most of the respondents remarked that to increase cultural heritage accessibility (X= 4.50, STDEV = 0.763) and to enable cultural heritage preservation (X= 4.42, STDEV = 0.758) and create opportunities for cultural heritage promotions (X= 4.40, STDEV = 0.728) were the major opportunities of cultural heritage digitization followed by to enhance research works (X= 4.30, STDEV = 0.789), to support education (X= 4.28, STDEV = 0.789), and to promote online visits and selling (X= 4. 18, STDEV = 0.941).

5. CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Digitization is representing an object by discrete set of points or samples. Digitization exponentially increased the spread of cultural heritage promotion, preservation and its contribution is very high for the sustainable development of tourism industry. This study explores the challenges and opportunities of cultural heritage digitization in Ethiopia.

The study also explores the major challenges that affect the digitization of cultural heritage and opportunities of cultural heritage digitization in Ethiopia.

5.2 Recommendations

Since the status of cultural heritage digitization is at low level and there is need of developing policies, well equipped information communication technology infrastructures such as scanning machine, high quality digital cameras and servers with high processing capacity are required for conducting the digitization. Additionally, sufficient funding and high management concern were required. In such a way that the ethical and privacy as well as copyright issues should be given a great concern to enhance the process of cultural heritage digitization in Ethiopia.

6. ACKNOWLEDGMENTS

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