

RESEARCH ARTICLE

The Relevance of E-Aesthetics in The Sustainability Of Nigerian Libraries In The Digital Era

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Abstract

The digital library brought with it several challenges which do not fully erode the traditional libraries in developing countries such as Nigeria as most libraries have become a complex entity with the operation of both the traditional and the digital libraries. Therefore, as library service providers are trying to guarantee the smooth operation of the physical library, they are also struggling to ensure a seamless digital library. Therefore, various aspect of the design such as the aesthetic condition which include the e-aesthetics need to be put into consideration in designing the digital library web pages respectively. It was on this premise that this study focused on the relevance of e-aesthetics in the sustainability of Nigerian Libraries in this digital era. The study adopted an interpretivist research paradigm hinged on the a systematic literature review strategy of journal articles, books, and other online materials in addition to focusing on empirical studies between year 2000 and 2021 from Google Scholar. A content analysis was deployed and information resources obtained were grouped into the major themes to address the objective of the study. The findings of this study revealed that as aesthetic conditions and facilities were of high relevance and significance in the traditional library operation towards ensuring increase usage and sustainability, so the relevance of e-aesthetics in the sustainability of Nigerian Libraries in the digital era cannot be underestimated if Nigeria libraries must keep abreast to the global effect of digital transformational effect on the library and information service system. It recommends that e-aesthetic issues should be taken into considerations in the development of digital library webpages to create a user-friendly environment and also ease of usage is of high premium in ensuring increase usage and sustainability of Nigerian library.

Keywords: Aesthetic; E-Aesthetic; Digital Library; Traditional Libraries; Nigeria Libraries

Introduction

The global transformation of the library and its activities by the development of the digital technologies is no more a myth which has given rise to digital libraries. A major challenge brought about by the operation of digital library is that in the past, the traditional library operates through the development and management of various collection which include books, journals, articles, among others towards making such available, accessible, manage and preserve it (Council on Library and Information Resources, 2021). However, in recent times, the Information and Communication Technology (ICT) has progressively transformed the traditional methods of information collection, storage and retrieval leading to the operation of the digital library (Ali, Hussain & un-Nisa, 2017). A major challenge that the digital library poses is that, it does not fully erode the traditional libraries. Ogunsola (2011) noted that the existence of digital libraries implies that users do not have to visit a building to meet their information needs but users still need some assistance in locating the some needed information.

Leeder (2013) tends to approach the effect of digital library on traditional library from two perspectives and providing two schools of thoughts. The first is that, when approached rhetorically as an institution, which focused on the traditional library as physical spaces and materials, it has no further question, the traditional library has not future but this doesn't mean that libraries as institutions are dead. Second, if viewed from the digital perspective, the digital library has replaced the traditional library through expanded vision, encompassing the traditional values and features and extending outward to vast and free but also licensed digital resources. Hence, the digital library could be a combination of the traditional and digital resources. Resources of e-library include e-journal, e-books, and other online databases.

Meanwhile, there is need to ensure sustainability of library operation in Nigeria. According to Omiunu (2012), sustainability implies stable, enduring, and consistent, and could also be connected to making something last and does not crumble in the face of formidable problems and challenges. Several factors have been investigated to ensure library sustainability which could include environmental factors, institutional factors,

personal or staff factors, among others (Ucha, 2021). Oyewumi Oladapo and Adegun (2017) also noted that library aesthetic is a major factor that could influence its usage and sustainability. In the traditional library, different aesthetics is a type of design principle that stipulates the design's pleasing qualities and includes factors such as color, pattern, shape, visual weight, among others that are directed to complement designs' usability, and also enhance functionality with attractive layouts (Interaction Design Foundation, 2021). Hence, Oyewumi et al. (2017) noted that libraries in Nigeria generally must be functional in design, aesthetically pleasing and inviting in appearance which cuts across the thermal, visual and aural aspects. The thermal ensures that the environmental temperature and relative humidity are put into consideration else, air conditioning should be provided with comfortable cross ventilation in hot and humid environment such as Nigeria. Visual puts into consideration the level of illumination as very low or excessive illumination can cause discomfort in the use of library. For the aural, all unwanted sound that could cause distraction hence, the need to put this into consideration in the design and building of a library.

With regards to digital environment, webpage of digital libraries could provide a good visual aesthetics towards providing insight into the physical design features of the web pages. Lavie and Tractinsky (2004) noted that as aesthetics is a major factor that could influence library usage in the traditional environment, also, website aesthetics which in this study is referred to as e-aesthetic is an important factor that influences visitors' pleasure and satisfaction with the website especially in the use of digital library. Studies related to website aesthetics have focused on sensory information provided by the website environment couple with its influence on the web users such as users' attitudes, preferences, satisfaction, continual usage, among others (Deng and Poole, 2012). In the traditional environment, the sensory information from different senses could include vision, hearing and smell and could inform aesthetic experiences, while in the digital library experience, the visual aesthetics is the major focus because of the fundamental role that vision plays in the apprehension of website.

The long history of debate on aesthetic provided two school of thoughts which are the objective and subjective views of aesthetics (Deng and Poole, 2012). The objective perspective postulated that aesthetics as an objective property of things that focuses on the attributes of a thing that make it beautiful and appealing while the subjective view posits that it could be subjective, that is it resides in the user's experience and judgment. Drawing from the environmental aesthetics, human-computer interaction, among others, the webpage visual complexity and webpage visual order are two salient webpage aesthetic features in the digital environment (Deng & Poole, 2012; Tseng & Tseng, 2014).

Adapting the theory of Birkhoff (1933), aesthetic value is inversely proportional to its Complexity C and directly proportional to its Order. When approached from economic term, this implies that the value or utility

obtained by users is an inverse function of the amount of information content of diversity or numerosity of information provided on the website, and directly a function of the degree of spatial arrangement, upon which resolution of the tension depends. This reveals that the more the contents that are placed on digital library, the less the value or utility that users would obtain and the more the spatial arrangement, the higher the value or utility that users would obtain from such webpage. Library web page includes a variety of visual elements hence, it is also essential to identify the general e-aesthetic design variables that could inform webpage aesthetics in the digital library system especially in developing countries.

Website aesthetic relevance in library studies which connotes the desire for certain types of aesthetic experiences was informed by the study of Green (1997) and focuses on whether it should be calm and soothing, or emotionally invigorating, or warmly sensitive, among others. Studies of web aesthetics have examined different aspects of web design. Aesthetic effects of individual webpage elements could include image colour, image size, font size, link style, text-background colour combination, column width, typography, pictures, video clips, flash animations, among others (Hall and Hanna, 2004; Thorlacius 2007; Schmidt, Liu & Sridharan, 2009). Order refers to the degree of organization of the electronic environment such as the extent of coherence, fittingness, congruity, legibility and clarity while Complexity connotes that the multiplicity of the relationships among the parts of an entities in the electronic environment (Arnheim, 1966; Oostendorp and Berlyne, 1978; Nasar, 1984; Tseng & Tseng, 2014). According to Deng and Poole (2012), coherence, fittingness, and congruity relate to how the components of the website are united together to enhance harmony. The legibility of the electronic environment characterizes the ease with which the component parts could be recognized and further suggests the ease with which user could gain knowledge on the navigation around the environment couple with the deployment of such knowledge to search for and reach a destination. Clarity implies the ease to identify the different elements of the electronic environment.

In electronic practice and in the digital library, Order and Complexity are interrelated and antagonistic in the sense that Order in a digital library web design could reduce Complexity while Complexity could reduce Order (Arnheim, 1966; Tseng & Tseng, 2014). Hence, a certain level of Order could be needed to achieve accurate website Complexity as complexity without order could not be appealing to digital library users. However, some level of Complexity could be necessary to bring interest to high degrees of Order because, order without complexity could cause boredom (Arnheim, 1966; Tseng & Tseng, 2014). Hence, the design of digital library environmental Complexity and Order should be combined to ensure that Complexity provides visual richness, while Order structures diversity and helps to reduce uncertainty and provide understanding (Nasar, 2000; Deng and Poole, 2012)- this is what is referred to as e-aesthetic of digital

library in this study. In Nigeria, studies have focused on the relevance of aesthetics in the traditional library (Usuka, 2017; Oyewumi et al., 2017; Usuka, Nwachukwu & Nwachukwu, 2019) but very little have focused on the relevance of e-aesthetic in the sustainability of Nigerian libraries in the digital era. Therefore this study focuses on examining the relevance of e-aesthetics in the sustainability of Nigerian Libraries in the digital era.

Literature Review

Several studies such as Oyedum (2011); Usuka (2017); Oyewumi et al. (2017); Usuka et al. (2019); among others have focused on the relevance of aesthetics in the use and sustainability of Nigerian Libraries. Library aesthetics facilities such as ventilation, lightning, temperature, signage, art drawing; interior and exterior decoration; furniture, among others influence use and purpose of library patronage. Usuka et al. (2019) noted that the users' perception is that library aesthetics make the library very conducive, comfortable and exciting for reading, learning and research purposes. Studies such as Oyewumi et al. (2014) and Ibrahim and Sakiyo (2015) revealed that library patronage can be enhanced through its aesthetics. But in recent times, with the advent of technology and digital development which has given rise to the digital library, the traditional library has been challenged and these aesthetics that accompany its functioning seem to also be subjected to challenge. Deng & Poole (2012) noted that the use of Internet and other related technologies have continued to grow, various organizations which include the library have also continued to increase their recognition towards possessing a competitive edge through web presence and engaging in e-commerce such as the digital library.

Digital libraries could refer to as set of electronic and or online resources that are associated with technical capabilities and are designed to serve specific users community in an online environment (Buckland's electronic library, 2012; Gani & Magoi, 2014). It could also be referred to as a typical library with collection resources stored in digital formats which is an opposite of the traditional or print, microform, or other media hence are accessible through computers and other technology aided methods such as the internet, among others (Trivedi, 2010). It include text, visual material, audio material, video material, stored as electronic media, along with means for organizing, storing, and retrieving the files and media contained in the library collection (Aman and Norliyanan, 2002). Also, information resources are made available through computer process and the acquisition, storage, preservation, retrieval and dissemination of resources are carried out using digital technologies such as the Internet, among others (Gani & Magoi, 2014). In the transformation of the traditional libraries, it was believed that the digital library operation has brought lasting solutions to the challenges faced by the previous. But it wasn't long before it was discovered that the new digital library also has with it several other challenges. Hence, several studies have also tend to investigate the

various factors that could affect the sustainability and use of the digital libraries especially in the developing countries such as Nigeria.

According to Edem and Ani (2015) noted that frequent power outage, poor attitude of managements, among others are factors that could affect the use and sustainability of electronic libraries in Nigerian. Also, Lavie and Tractinsky (2004) and Oyewumi et al. (2017) stated that library aesthetic which could also include the e-aesthetic influence the usability and sustainability of library which also include digital libraries. Website aesthetics as referred in this study as e-aesthetic, is an important factor that influences visitors' pleasure and satisfaction with the website especially in the use of digital library (Lavie and Tractinsky, 2004). Website aesthetics or e-aesthetic include the different aspects of web design and include image colour, image size, font size, link style, text-background colour combination, column width, typography, pictures, video clips, flash animations, among others (Hall and Hanna, 2004; Thorlacius 2007; Schmidt et al. 2009). With the trend and development of the digital library, it should be important to understand the relevance of e-aesthetics in the sustainability of Nigerian Libraries in the digital era.

Theoretical Underpinning

The study adapts the theory of Birkhoff (1933). Birkhoff defines an aesthetic measure and applies it to several types of objects from different perceptions which include the visual such as 3D objects, and auditory such as in music, poetry, among others. it is defined in respect to the effort which the object requires of the perceiver (which is the complexity), and the pleasing or displeasing features which can be recognised in the object by the perceiver (which represents the order). Birkhoff (1933) provides a mathematical formula of aesthetic value as:

$$M = O/C,$$

This suggests that aesthetic value (M) of an image is inversely proportional to its Complexity C on which attention and tension depend, and directly proportional to its Order upon which resolution of the tension depends. The Complexity C refers to the amount of information content which include its diversity or numerosity on which attention and tension depend, and Order implies the degree of spatial arrangement which include in unity and symmetry upon which resolution of the tension depended. According to Birkhoff, such aesthetic experience which could also be an e-aesthetic consists of three primary consecutive stages which are:

- The preliminary attempt of attention, which is for the act of perception, and increases in proportion to the complexity (C) of the object or website as used in this study to imply the digital library;
- The feeling of value or aesthetic measure (M) which rewards this attempt; and
- The realisation that the object which in this paper refers to as website for operation of digital

library is characterised by a certain harmony, symmetry, or unity called order (O).

In summary, the aesthetic quality or rather e-aesthetic quality as regards to this paper is in relation to the attention which is required to perceive the object or constituents of the digital library in its entirety, and is counterbalanced by their harmony or order. Therefore, the load of attention grows in proportion to the complexity of the objects or constituents of the digital library, and its counterbalancing quantity, often found in the forms of harmony or symmetry (Douchová, 2015).

Methodology

A systematic review strategy was adopted and information and materials used include journal articles, books, and other online materials that focused on addressing the relevance of e-aesthetics in the sustainability of Nigerian Libraries in the digital era which is a major aim of this study. Also, focus was on empirical studies which inform the information and materials deployed in this study. Also articles considered for this systematic review study include those between the year range of 2000 and 2021. The wide elasticity of the year range was attributed to the need to achieve a wide range of information and material resources that would account for the time span of the digital era in Libraries in Nigeria hence providing a better ground to affirm the relevance of e-aesthetics in the sustainability of Nigerian Libraries.

Also, several information and materials were searched for using the google scholar and through other search engines such as Google and yielded several results and outcomes but very few (only seven articles) were selected to fit in this study due to limited studies addressing the relevance of e-aesthetics in the sustainability of Nigerian Libraries. The articles selected includes the works of Unagha (2009); Ibrahim and Sakiyo (2015); Oyewumi et al. (2017); Usuka et al. (2019); Gbotosho (2019); Tella (2020); Okechukwu and Anunobi (2020). In addition, a content analysis is deployed and information resources obtained are grouped into the major themes of the research objectives to address the objective of the study.

Results

The study used seven studies from the total downloaded studies due to the limited studies that focused on this aspect at the local level. Unagha (2009) examined Nigerian university libraries and the challenges of users' service demands in the 21st Century and revealed that users complained about the non-application of technology to library service delivery among Nigeria libraries pose significant effect on the available limited resources, inefficient reference service, and less competition among the library service providers. This further revealed that with the low level of application of technology to library service delivery among Nigeria libraries, the aesthetic

condition of digital library may pose significant challenge.

Adopting a descriptive survey design, and using questionnaires to collect data and information from students and lecturers, Ibrahim and Sakiyo (2015) investigated the aesthetics and utilization of University libraries in North East zone of Nigeria; and found that there was a significant relationship between library aesthetic facilities and the use of libraries in federal universities in North-East zone of Nigeria. This could also implies that library e-aesthetic could pose significant influence on the use and sustainability of Nigerian Libraries especially in the digital era. Understanding the fact that in the digital library era, most library operate the traditional and the digital library to augment each other hence, the library aesthetic which could mean both the traditional and the digital library forms posed significant effect on the use and sustainability of Nigerian Libraries. Also, Oyewumi et al. (2017) examined library aesthetic and environmental condition as motivating factors for reading in Olusegun Oke Library, Ladoke Akintola University of Technology, Ogbomoso, Oyo State, Nigeria using a survey design, questionnaire was also deployed to elicit information from the respondents of the study. Their findings revealed that revealed that the majority of the users were not satisfied with the aesthetic interior of the library with a vast majority indicating that library aesthetic motivates them to use the library hence, e-aesthetic holds elastic relevance in achieving Nigeria libraries sustainability in the digital era.

Usuka et al. (2019), examined the availability of library aesthetics for enhanced educational purpose of library patronage by users in federal university libraries in South east, Nigeria using a descriptive survey design and questionnaires to obtain information from the library users. The result revealed that available library aesthetics facilities considered include ventilation, signage, lightning, art drawing; interior and exterior decoration. It was also revealed that library aesthetics influence users' educational purpose of library patronage; and users' perceived library aesthetics make the library conducive, comfortable and exciting for reading, learning and research. This could further mean that with respect to e-aesthetic, library e-aesthetics could also influence online users' educational purpose of its patronage hence, posing great effect on its sustainability.

Gbotosho (2019) investigated the electronic library services and its patronage among undergraduates in the faculty of health sciences, Osun State University, Osogbo, Osun state, Nigeria. The study noted that there is a pace of change in library operations brought about by new technologies which has posed significant effect on the use of electronic library services in Osun State University. Also, the use of electronic library and Information Communication Technology tool is of necessity and very germane for in recent digital era. Hence, the relevance of e-aesthetic with regards to the use and sustainability of Nigerian libraries in the digital era.

Tella (2020), in a survey research, investigated the interactivity, usability and aesthetic as predictors of

undergraduates' preference for university library websites in Kwara State, Nigeria. Issues considered in the study of Tella (2020) which were related to aesthetics in library websites designed were interface, interactivity, visual appeal, content quality, ease of use in terms of access and navigational links, and usability among others. He also noted that previous studies have treat aesthetic with respect to only library space, use, and preferences and that aesthetic with respect to library websites especially in the context of Africa, Nigeria inclusive are limited. The findings of the study revealed that aesthetics of library website is a major criterion that could pose significant impetus on preference for university library website however, users' perceptions and ratings with respect to aesthetics of library websites was very low. This implies that aesthetics of library website which in this study is referred to as e-aesthetics is very relevant in the use and sustainability of Nigerian Libraries especially in the digital era.

Okechukwu and Anunobi (2020) examined the availability and usability of academic library websites by undergraduates in federal universities in South east Nigeria. The study adopted a descriptive survey design and information were obtained through the structured questionnaire. The findings revealed that in the last six months, users have approximately visited the library website on a weekly basis for various needs such as e-text books, reference materials, searching for "what is new", library catalogues, databases, e-journals, e-newspapers, among others. This showed that the e-aesthetic becomes very germane in the Nigeria libraries system especially in the digital era of library development.

Discussion

Following the findings of this study, several empirical evidences have been provided to justify the relevance of e-aesthetics in the use and sustainability of Nigerian Libraries in the digital era. For example, the findings revealed there is a low level of application of technology to library service delivery among Nigeria libraries, hence, the aesthetic condition of digital library may pose significant challenge to the use of libraries in Nigeria. The findings of this study revealed that there was a significant relationship between library aesthetic facilities and the use of libraries in federal universities in North-East zone of Nigeria which could also implies that library e-aesthetic could pose significant influence on the use which include users' educational purpose and sustainability of Nigerian Libraries especially in the digital era. This is because according to Usuka et al. (2019), users' perceived library aesthetics as an important factor that make the library very conducive, comfortable and exciting for reading, learning and research purposes hence, the relevance of e-aesthetic. Also, the findings of this study showed that library aesthetic which could also include library e-aesthetics motivates the use of library hence, e-aesthetic holds elastic relevance in achieving Nigeria libraries sustainability in the digital era. This supports the findings of Ogunsola (2011) that in the

operation of digital libraries, users may not have to visit a building to meet their information needs but they still need some assistance in locating some needed information.

The findings of this study revealed that e-aesthetics in library websites designed were interface, interactivity, visual appeal, content quality, ease of use in terms of access and navigational links, and usability among others. The findings of the study also further revealed that aesthetics of library website which in this study is referred to as e-aesthetics is very relevant in the use and sustainability of Nigerian Libraries especially in the digital era. Putting into consideration the assertion of Omiunu (2012) about sustainability, it implies that for Nigerian libraries to be stable, enduring, and consistent, and last longer not crumbling in the face of formidable problems and challenges, the e-aesthetic of library website or electronic page should put into considerations good interface design that is user friendly, interactivity, visual appealing, content quality, ease of use in terms of accessing and navigational links, and its usability, among others. This supports the findings of Oyewumi et al. (2017) that library aesthetic which in this study is referred to as e-aesthetic is a major factor that could influence its usage and sustainability in Nigeria. This also add up to the works of Hall and Hanna (2004); Thorlacius (2007); Schmidt et al. (2009); among others that aesthetic effects of individual webpage elements could include image colour, image size, font size, link style, text-background colour combination, column width, typography, pictures, video clips, flash animations, among others.

This could be used to further augment the theory of Birkhoff (1933) on aesthetic value which is inversely proportional to its Complexity C and directly proportional to its Order. With regards to e-aesthetic, the Order could refer to the degree of the organization of the electronic contents towards ensuring effective coherence, fittingness, congruity, legibility and clarity. On the other hand, the Complexity could connote the fact that it should be ensured that the website is created in a state that could accommodate several information that should meet users needs especially in this digital era of information explosion but ensuring an effective relationships among the parts of the entities in the electronic environment. This further explains the justification of the works of Birkhoff (1933); Arnheim (1966); Oostendorp and Berlyne (1978); Nasar (1984); Nasar (2000); Deng and Poole (2012); among others about the relevance of e-aesthetic in the sustainability of Nigerian libraries.

The findings revealed that many library users use library websites often to access various needs such as e-text books, reference materials, searching for "what is new", library catalogues, databases, e-journals, e-newspapers, among others hence for efficient and effective usage, the e-aesthetic website condition becomes very germane in the Nigeria libraries system especially in the digital era of library development. This findings could be used to in conjunctions with the previous works of Oyedum (2011); Usuka (2017); Oyewumi et al. (2017); Usuka et al. (2019); among others who focused on the relevance of

aesthetics in the use and sustainability of Nigerian Libraries that e-aesthetic is also relevant in the use and sustainability of Nigerian libraries in the digital era since both are functioning hand-in-hand in the society.

Conclusion and Recommendations

In conclusion, as aesthetic condition and facilities were of high relevance and significance in the traditional library operation towards ensuring increase usage and sustainability, so the relevance of e-aesthetics in the sustainability of Nigerian Libraries in the digital era cannot be underestimated if Nigeria libraries must keep abreast to the global effect of digital transformational effect on the library and information system. Therefore, e-aesthetic issues which relate to the website design towards ensuring user-friendly environment and also ease of usage is of high premium in ensuring increase usage and sustainability of Nigerian library. To this end, it was recommended that:

- i. The management of the Nigerian library system should ensure that the e-aesthetic of the library websites has improved interactivity features towards attracting higher usability and sustainability.
- ii. Similarly, library website administrators and designers should put into considerations the aesthetic features that are acceptable to users and could ensure further usage by users,
- iii. The university library websites should be designed in a more interactive, usable and aesthetic ways that should include several information which represent the complexity yet ensuring orderliness of the information contents placed for the users.
- iv. Libraries should endeavour to ensure that their websites are easily accessible, appealing, and current, because any library that hopes to use the online medium to reach its users should ensure that there is ease of communication with users and navigation aids are fully implemented and functional in the website.
- v. Essential websites links should be incorporate to ease easy navigation from one point to another.
- vi. It should also be ensured that the physical and traditional libraries are also designed with focus and consideration on the physical aesthetics to ensure comfortability and usability towards ensuring its sustainability along side with the digital libraries in Nigeria.
- vii. Also, it would be necessary to provide necessary up dates of information and materials placed online and continuous maintenance culture so that the complexity would not at one time work against its orderliness.

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