Leveraging Technology to Improve Access to Health Information during Covid-19: Approaches and Challenges in Nigerian Libraries

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ABSTRACT
This work is focused on establishing how medical librarians in Nigeria leverage technologies to improve medical researchers' access to health information during and after the COVID-19 pandemic era. The descriptive survey method was adopted for the study while the purposive random sampling technique was adopted in selecting medical librarians in Nigeria. The instrument for data collection was a questionnaire and the data collected were analyzed using simple frequency and percentages. The result revealed that the librarians provide remote access to e-resources, circulate information on preventive measures for COVID- 19, and, provide health information literacy services. Mobile phones and email were the highest accepted tools adopted in this service. The most obvious challenges were reduced budget, inadequate skills possession by the librarians, and poor Internet access.

Keywords: Health information, Information technology, Information accessibility, Pandemic era, COVID-19, Medical Researchers

1. INTRODUCTION

Coronavirus also referred to as COVID-19 was first reported in December 2019 in Wuhan, Hubei Province, China, and was declared a public health emergency of international concern on 30th January 2020, and a pandemic on 12th March 2020 (Cennimo, 2022). The outbreak of this virus forced governments globally to place their nations in lockdown for several months to curtail the spread of this deadly virus. The lockdowns affected varying aspects of the economy and posed challenges to the educational sector making students, researchers, and medical practitioners unable to access physical classrooms and libraries. Even when the lockdown was relaxed, the accompanying social distancing restriction reduced the number of people that could access the library, thus, necessitating the adoption of technology in virtual library services delivery.

Before this pandemic outbreak, libraries in developing nations were seen to be technologically impassive and over-reliance on routine manual operations. This situation was linked to the level of technological skills possessed by the library personnel in addition to the dearth of facilities in the libraries. However, the sudden outbreak of Covid-19 with its restrictions made it expedient that libraries to regulate physical visits by users and embrace a paradigm that promises 'anytime' and 'anywhere' access to health information resources and services. The COVID-19 attendant demands for advanced clinical care information and research with the new global demand on libraries made it obligatory for libraries to evolve by leveraging technologies in providing enhanced and unlimited services.

1.1 Statement of the Problem

Medical libraries in Nigeria, just like their counterparts in other developing nations predominantly engage in traditional library operations. This was a resultant effect of poor funding which has left a majority of the libraries with inadequate technological facilities and hindered staff training in areas of technology adoption in library services. Conversely, the unexpected eruption of COVID-19 with its associated social distancing made it compulsory for libraries to adopt technological tools in providing virtual services to their users. The need to curb the escalation of this pandemic also resulted in increasing demand for access to health information by researchers. This situation calls for a shift in focus on leveraging technology for more effective information service delivery by libraries. A literature search on this subject revealed that studies have been carried out in the areas of roles of libraries in information dissemination during COVID-19 and lockdown; retooling the concept of information service delivery in times of pandemic; and evolving library and information services, etc (Ishtiaq, Sehar and Shahid, 2020; Winata, Fadelina and Basuki, 2021; Izuagbe, Ifijeh, and Ilo, 2021 and Ameh, Ukwuoma and Oye, 2021). The search failed to identify any study focusing on leveraging technology to improve researchers' access to health information in Nigerian medical libraries. It is this gap in knowledge that this study is focused to close.

1.2 Objectives of the Study

The specific objectives of this study are to:
  (i)   identify the specific health information services provided by medical libraries during and after the COVID-19 pandemic era leveraging technological tools;
  (ii) find out approaches adopted in deploying these technological tools in the medical information service provision;
  (iii) identify the specific technological tools adopted in making health information accessible to medical researchers;
  (iv) establish challenges encountered in deploying these technologies in improving researchers' access to health information.

1.3   Significance of the Study

This study will benefit health researchers by exposing them to the knowledge of varying technology-enabled services available to them, thus making their research conduct stress-free. The study will sensitize librarians and library management on the need to leverage technology in enhancing access to their library resources and services. It will also serve as a guide by revealing the approaches that could be adopted in deploying these technologies. Other researchers who will want to carry out further research in this area of study will also find this study very relevant as it will contribute to solving the problem of the dearth of literature in this area.

1.4 Scope of the Study

The study is focused strictly on investigating the technology-enabled services, approaches, and challenges encountered in leveraging technologies to improve medical researchers' access to health information hence, only medical librarians were involved in the study.

2. LITERATURE REVIEW

Leveraging technology in the services provision of medical libraries will enable them to be more productive and enhance the quality of their services. The library, as a growing organism is constantly confronted with changes in different aspects of its activities such as the mode of acquisition of materials, organization, circulation, and preservation methods. The proliferation of information coupled with the sudden eruption of COVID-19 in the recent past has persuaded libraries and librarians, especially those from developing nations to move from traditional-based practice to technology-enabled practice. Igbo, Ibegbulam, Asogwa, and Imo (2022) assert that the new role expectations of librarians have made them move to a networked environment as an extension of traditional library services, and adopt changes in their collections to include digital formats while their method of delivery now includes online modes using social media platforms, such as e-mail, chat services, among others.

The above situation is confirmed by Winata, Fadelina, and Basuki (2021) in their study where they stated that during the COVID era, Indonesian librarians were made to realize that they should provide remote services in the areas of circulation, and information and research supporting systems beyond making their e-resources accessible to users. It is common knowledge that access to the right health information at the right time during a pandemic period such as COVID-19 is pivotal to reducing the level of uncertainty, taking the right decision, and curbing its escalation. Trauma and massive deaths associated with pandemics could be prevented and quality health achieved if reliable and quality health information is made accessible to concerned stakeholders. This view was corroborated by the African Development Bank (2014) which states that information is key to improving health, reducing the impact of health emergencies and epidemics, and increasing survival rates. AFLIA (2020) also supports this by affirming that misinformation, which is the same as not having the right information about COVID-19, was

engendering false hopes and generating fear among the people, while Alolayyan, et.al, (2020) emphasized that to implement effective decision-making, whether, at the clinical or strategic level of health care, you need high-quality health information.

However, effective access to health information during the pandemic can only be achieved by leveraging technological tools. These tools are generally believed to enhance access to health information resources and services. Technology adoption in health information management has a positive relationship with the quality of health information and can decrease medical errors and enhances the quality of healthcare processes (Kruse & Beane, 2018, Norton, Rodriguez, Shortell& Lewis, 2019, Alolayyan, Alyahya, Alalawin, Shoukat, and Nusairat, 2020).

Ishtiaq, Sehar, and Shahid (2021) conducted a study on 29 academic libraries on their information dissemination during Covid-19 and Lockdown. The result revealed that virtual services provision by the libraries scored 58.6% with an emphasis that email services were the most provided during the period. Ali and Gatiti (2020) also acknowledged that some libraries have initiated online webinars and sessions to keep in touch with their users via Google Classroom, Google Hangouts, etc. The study conducted by Liu, Tu-Keefner, Hartnett, & Hastings (2017) to identify health information services and technology accessed during and after the catastrophic flooding in South Carolina left them with the recommendation that public libraries should be proactively prepared to provide reliable disaster and health digital resources for their users.

3. METHODOLOGY

The descriptive survey method was adopted for this study. A purposive random sampling technique was deployed in selecting medical librarians. The adoption of this sampling technique was necessitated by the fact that this study is concentrating on leveraging technology to improve access to health information hence, only librarians working in the medical libraries in Nigeria were used as respondents in the study. The instrument for data collection was a questionnaire administered using survey monkey. To ensure that data is collected from the target population, the instrument was initially administered to the WhatsApp group platform of Medical Librarians in Nigeria which has a membership of 211. When a poor response level was recorded after two weeks of administering the questionnaire, the researchers decided to harvest the personal phone numbers of the members of this group and sent the questionnaire individually to them. The data collected were analyzed using frequency and simple percentages.
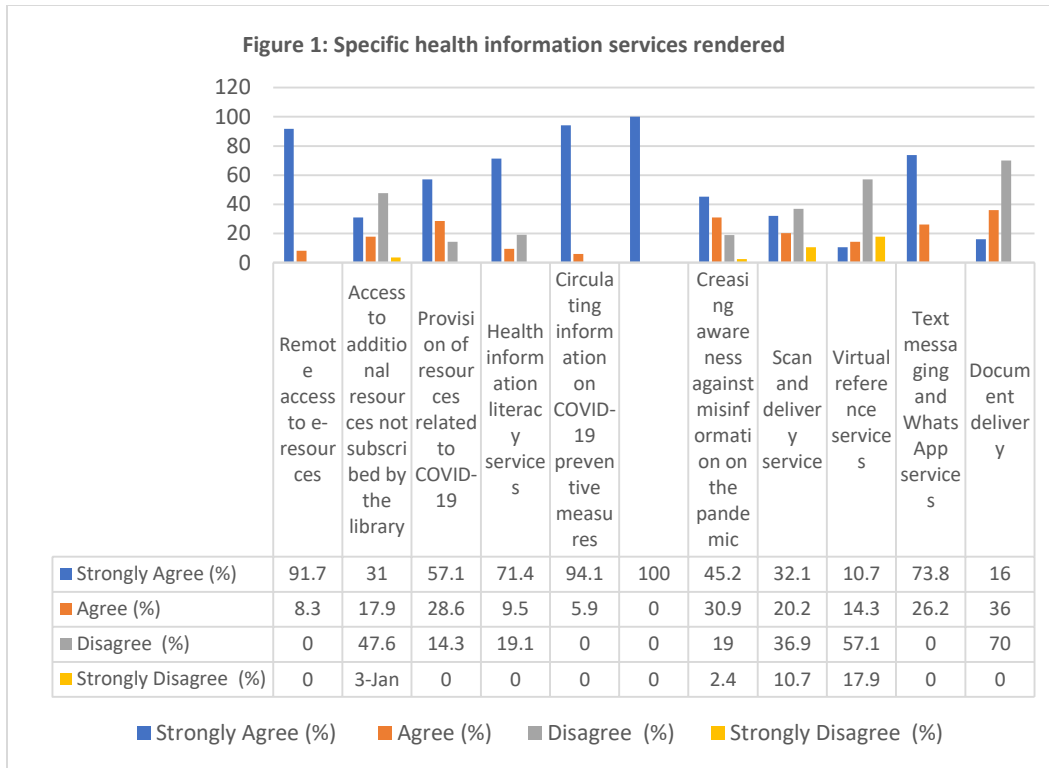
4. RESULTS AND DISCUSSION
4.1 Questionnaire distribution and response pattern

The questionnaire was administered to 211 medical librarians while only 168 responses representing 79.6% were received.
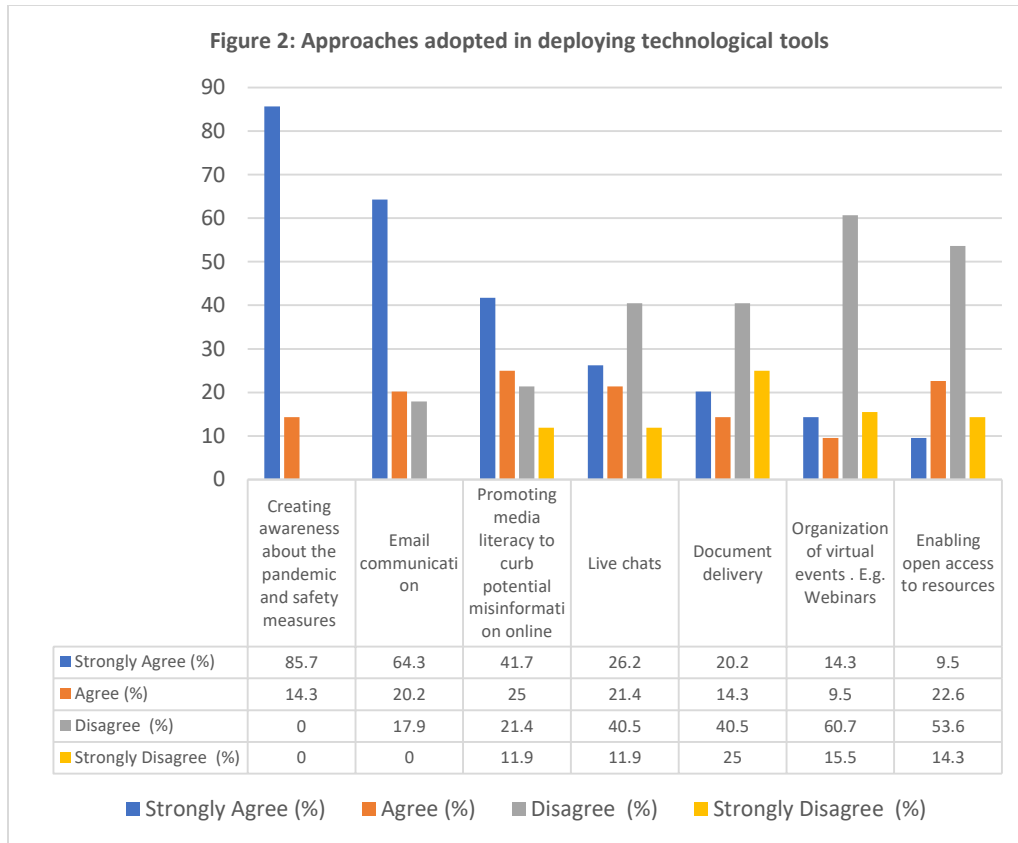
4.2 Health Information Services Rendered by Medical Libraries

The respondents were requested in the questionnaire to indicate the specific services they render to medical researchers during and after the COVID-19 period. Their responses as provided in Figure1below revealed that all the libraries involved in the study made specialized collections available. Other items that received very high acceptance are: circulating information on preventive measures for COVID-19 (94.1%), providing remote access to e-resources (91.7%), Text messaging and WhatsApp services provision (73.8%), etc. This finding corroborated the outcome of a study carried out by Ishtiaq, Sehar, and Shahid (2020) on information dissemination during COVID-19 and the Lockdown in Pakistan which revealed that academic libraries were rendering virtual services and that the most prominent of them are email and literacy services. Conversely, the items that received minimal acceptance scores are: document delivery (9.5%), Virtual reference services (10.7%), access to additional materials not subscribed by the library (31%), and scan and deliver services (32.1%). The result regarding access to additional materials not subscribed to by the library differs from the result of a study carried out by Dadhe and Dubeh (2020) on Library Services Provided. The COVID-19 Pandemic in India indicated 91% acceptance by their respondents. It is also worrisome to note that while libraries globally were busy expanding the volume of their e-resources and access to information by incorporating links to the open-access resources made available by notable bodies and publishers, medical libraries in Nigeria could not do much in this regard. The implication of the outcome related to reference services rendered during the period could be attributed to the insufficient skills acquisition on the side of the librarians and inadequate Internet services availability. The low outcome on the scan and delivery services could be a resultant effect of the low funding being experienced by Nigerian libraries which affected their ability to employ the services of courier vendors in delivering documents.
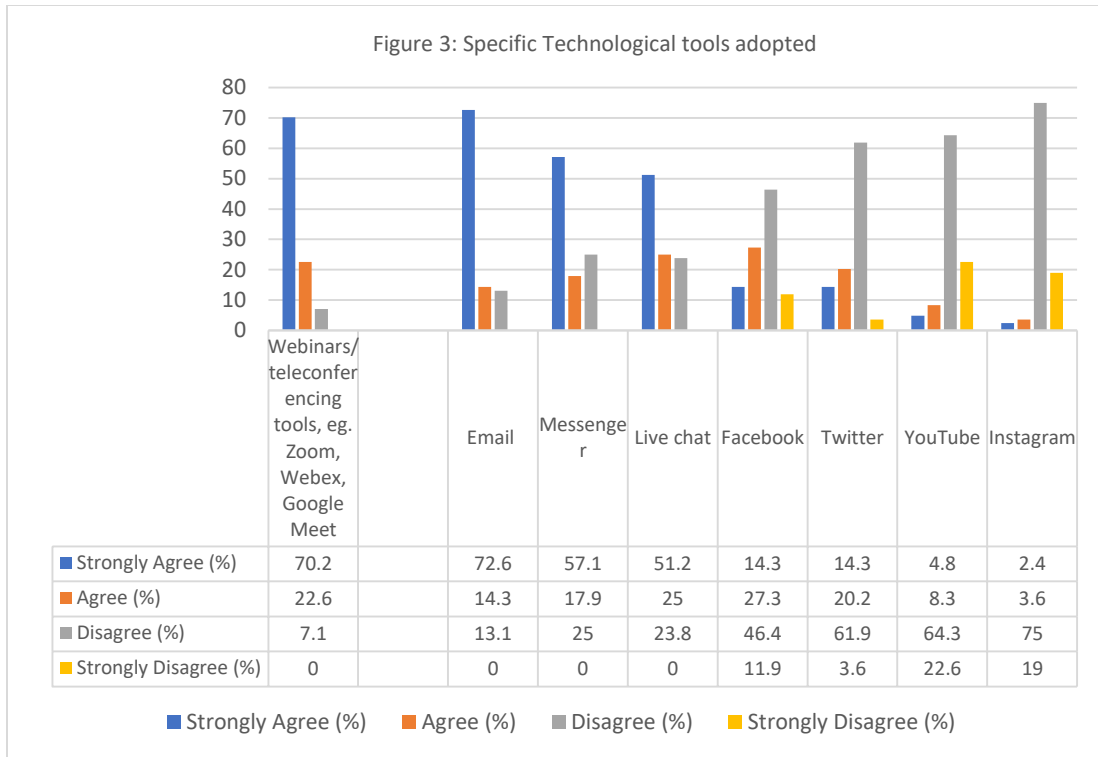
Figure 1: Specific health information services rendered

	Remote access to e-resources	Access to additional resources not subscribed by the library	Provision of resources related to COVID-19	Health information literacy services	Circulating information on COVID-19 preventive measures	Creasing awareness against misinformation on the pandemic	Scan and delivery service	Virtual reference services	Text messaging and WhatsApp services	Document delivery
■ Strongly Agree (%)	91.7	31	57.1	71.4	94.1	100	45.2	32.1	10.7	73.8	16
■ Agree (%)	8.3	17.9	28.6	9.5	5.9	0	30.9	20.2	14.3	26.2	36
■ Disagree (%)	0	47.6	14.3	19.1	0	0	19	36.9	57.1	0	70
■ Strongly Disagree (%)	0	3-Jan	0	0	0	0	2.4	10.7	17.9	0	0

■ Strongly Agree (%)   ■ Agree (%)   ■ Disagree (%)   ■ Strongly Disagree (%)

4.3 Approaches in Medical Information Service Delivery

The result of the approaches adopted as provided in Figure 2 revealed that 100% of the study population shared the news on social media sites and also created awareness about the pandemic and safety measures. Email communication had a general score of (84.5%) as the next highest accepted approach. This is followed by promoting media literacy to curb potential misinformation online. On the other hand, the organization of virtual events such as webinars, and enabling open access to resources received the lowest acceptance rating at 23.8% and 32.1% respectively. Document delivery (34.7%) was also not effectively adopted as an approach to deploying technology in medical service delivery. The outcome of extensive e-mail adoption as seen in this study corroborates with the result of the study conducted by Ali and Gatiti (2020) on the Covid-19 (Coronavirus) pandemic: Reflections on the Roles of Librarians and Information Professionals.
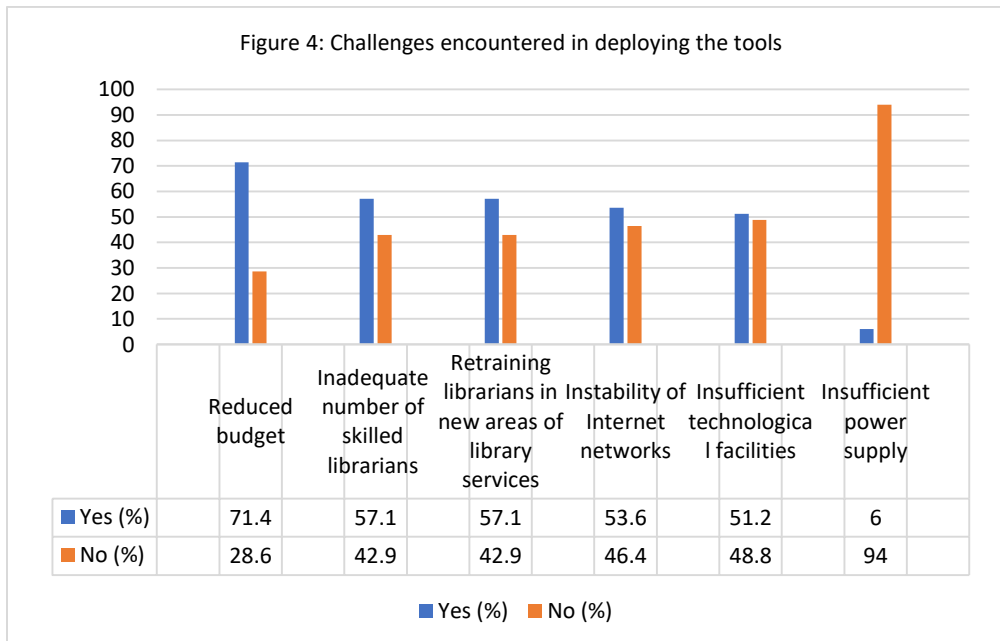
Figure 2: Approaches adopted in deploying technological tools

	Creating awareness about the pandemic and safety measures	Email communication	Promoting media literacy to curb potential misinformation online	Live chats	Document delivery	Organization of virtual events . E.g. Webinars	Enabling open access to resources
Strongly Agree (%)	85.7	64.3	41.7	26.2	20.2	14.3	9.5
Agree (%)	14.3	20.2	25	21.4	14.3	9.5	22.6
Disagree (%)	0	17.9	21.4	40.5	40.5	60.7	53.6
Strongly Disagree (%)	0	0	11.9	11.9	25	15.5	14.3

■ Strongly Agree (%)　■ Agree (%)　■ Disagree (%)　■ Strongly Disagree (%)

4.4 Technologies Adopted in Health Information Provision

The response provided in Figure 3 revealed that mobile phones received the highest acceptance score at 100%. This is followed by e-mails (72.6%) and webinars (70.2%). Conversely, Instagram followed by YouTube ranked the lowest with acceptance scores of 2.4% and (4.8%), respectively. Facebook and Twitter scored 14.3% as the next poorly utilized tool. This result as it affects Facebook and Twitter shows that social media is not yet effectively adopted in the services delivery of librarians notwithstanding their obvious global acceptance in communication by libraries. The reason for this could be related to the fact that it is just very few libraries in Nigeria that have most of their social media handle active. This result differs from the outcome of the study carried out by Ishtiaq, Sehar, and Shahid (2020) which revealed that the most prominent technological tool adopted in their service delivery during the pandemic period is Facebook.

Figure 3: Specific Technological tools adopted

	Webinars/ teleconferencing tools, eg. Zoom, Webex, Google Meet	Email	Messenger	Live chat	Facebook	Twitter	YouTube	Instagram
Strongly Agree (%)	70.2	72.6	57.1	51.2	14.3	14.3	4.8	2.4
Agree (%)	22.6	14.3	17.9	25	27.3	20.2	8.3	3.6
Disagree (%)	7.1	13.1	25	23.8	46.4	61.9	64.3	75
Strongly Disagree (%)	0	0	0	0	11.9	3.6	22.6	19

■ Strongly Agree (%)   ■ Agree (%)   ■ Disagree (%)   ■ Strongly Disagree (%)

4.5 Challenges Encountered in Deploying the technologies

The outcome of challenges as presented in Figure 4 revealed that budgetary allocation (71.4%), Inadequate number of skilled librarians (57.1%), Instability of Internet networks (53.6%), and Inadequate availability of technological facilities (51.2%) are the major challenges that they encounter in deploying these tools in making information accessible to researchers.

Figure 4: Challenges encountered in deploying the tools

	Reduced budget	Inadequate number of skilled librarians	Retraining librarians in new areas of library services	Instability of Internet networks	Insufficient technological facilities	Insufficient power supply
Yes (%)	71.4	57.1	57.1	53.6	51.2	6
No (%)	28.6	42.9	42.9	46.4	48.8	94

■ Yes (%)   ■ No (%)

5. CONCLUSION AND RECOMMENDATIONS

This study was focused on establishing how medical librarians in Nigeria leverage technology in improving access to health information by researchers. The study achieved this by identifying the specific health information services provided, approaches adopted, and the challenges encountered by librarians in deploying these tools in their service delivery to researchers. The notable challenges encountered by the librarians in deploying these tools as identified by the study include; reduced budgetary allocation to the library, inadequate number of skilled librarians, poor Internet access, and insufficient technological facilities. To surmount these challenges and pave way for enhanced access and improved information service delivery by the libraries, the following recommendations are made;

(i) The management of these institutions should increase the budgetary allocation to the libraries so that they can be able to fund their needs.
(ii) The librarians working in these libraries should be exposed to training in the areas of technology adoption in library services.
(iii) The Internet bandwidth available to the libraries and the librarians should also be increased.
(iv) The management of the institutions should also provide technological tools for the libraries to enable them to operate optimally.

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