

American Journal of Humanities and Social Sciences Research (AJHSSR)

e-ISSN:2378-703X

Volume-4, Issue-8, pp-507-515

www.ajhssr.com

Research Paper

Open Access

“Challenges of Implementing Technological Services in Dhaka University Library in Bangladesh: A case study”

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Abstract: This paper explores the understanding of technology-related services determined by the students of Dhaka University (DU) in Bangladesh. The other objectives of the study were to state the current situation of technology-based services (TBS) in Dhaka University Library (DUL) and identify whether it is essential for DUL or not? To gather information from the students a closed-ended questionnaire was sent among 335 students of this university. The paper identified that the majority of the respondents are familiar with technology-related services. The findings also suggested that there are a lot of rooms for improvement in technology-related services of DUL in Bangladesh. The acquisition to reference section of this library requires better policies and practices of TBS and this will help the students to figure out easily how to make the best use of technology-based information services. It is expected that the research findings will be supportive for the authority to find out the possible way to provide technology-based services to its users. At the same time, the paper will provide a clear idea of the students and their involvement with DUL.

Keywords: TBS, information service (IS), DUL, library services, information, and communication technology (ICT), Bangladesh.

I. INTRODUCTION

Technology has brought the world within the grip of humans. Such kind of advancement has changed the necessity and demand of users. They want to get the latest information without a waste of time and money. Such development has given birth to technology-based IS in libraries and university libraries are more rapidly adopting this service to turn their services more dynamic. E-resources, e-library, e-journal, e-book, etc. are the demand of this era. To provide such electronic resources and services to meet up information needs, university libraries have to adopt a technology-based environment in libraries to cope up with the challenge of the advancement of technology. Web-based services in libraries facilitate libraries to serve information services beyond geographical barriers at any time. It has introduced 24/7 information services in libraries. The DUL was launched on 1st July, 1921. The collection of the DUL was only 18,000 books that were inherited from the libraries of Dhaka College and Dhaka Law College. Presently, it has six lacs and 80 thousand books and magazines, 30,000 rare manuscripts, 20,000 old and rare books, and a large number of booklets, leaflets, pamphlets, and puthis (University of Dhaka, 2020). Some rare books and documents are collected in microform. Science library building has a circulation desk, reading rooms for students and the faculty, a reprographic section, a reference section, a reading room section for current journals, a seminar section, and a stack books area for the faculty of science and applied sciences. DUL provides a variety of services such as; reading room facilities, book lending facilities, online public access catalog, digital borrower's ID card, internet facilities, reference services, journal/ online journal and newspaper facilities, reprographic facilities, resource center for sight savers etc.

Aims and objectives of the study

This paper aims to understand technological services determined by the students of DU in Bangladesh. The other objectives of this study are:

- i. To state the current situation of technology-related services in DUL.
- ii. To identify whether TBS is essential for DUL or not?
- iii. To evaluate the initiatives taken by DUL.
- iv. To identify the gaps and challenges of technological services in DUL.

Research questions:**Q1.** What is the current situation of TBS in DUL?**Q2.** Why are students reluctant to take TBS from DUL?**Q3.** How can DUL improve their status to bring back the students more library-oriented?**II. METHODOLOGY**

The case study method was chosen for the study as this method is also reliable to find out the contextual result based on single or more than one case. Research has included a survey method for data collection and analysis. The study has included the students of DU of different departments. 335 randomly selected students from different departments of DU were provided with a structured questionnaire to collect their answer or opinion regarding technology-based information services in DUL. Among them, 300 questionnaires were usable for analysis of the research result. We categorized data based on demographic information like respondent's academic details, age, and user status of DUL. Each data was analyzed by SPSS 20. A descriptive analysis was chosen for getting the frequencies.

III. LITERATURE REVIEW

As the relevant literature of technology-related services in the libraries of Bangladeshi perspective was inadequate, the literature survey was prolonged to international studies which were carried out from 2005 to now. The study of the literature is given below:

Vijayakumar & Vijayan (2011) stated that worldwide information technology has a significant influence on people's activities. Libraries are equipped to complete the information technology-based services in recent times and ready to fulfill the information necessities of the consumers at the right time in the right place and also to the right person. Ali & Javeed (2012) in their study highlighted the use of the internet by the faculty members of Aligarh Muslim University, India. They found that e-mail and the World Wide Web are the most used internet services among the faculty members and a decent number of respondents are facing difficulties while searching for information from particular departments. They also described that the majority of users are not satisfied with the infrastructure facilities of the university for the service. In another study, Harilal (2018) established that the majority of digital libraries of Hyderabad do not have separate funds for their digital libraries. The study also recommended that a authority should arrange for sufficient funds for the establishment of digital libraries in Telangana. Griffiths and Brophy (2005) surveyed students searching behavior on the web. They identified that students have a preference to find information through Google. Shuling (2007, cited in Ansari & Zuberi, 2010) stated that the majority of students of Shaanxi University of Science and Technology knew little about electronic resources. The study also established that almost half of them use printed and electronic resources together. Mostofa (2011) revealed that students are using the internet gradually and it conquers a vital place among numerous information sources. He also added that students of private universities are using the internet and other technology for their educational and research purposes. The study also suggested that more efficient technical staff should be selected in the internet section to provide better services. Similarly, Habiba & Chowdhury (2012) in their study found that the majority of the users of DUL use e-resources for their educational purposes. They also identified that though DUL has some challenges like lack of infrastructure facilities, the existing e-resources can fulfill student's needs. On the other hand, Sivakumaren (2017) found that the majority of the users are visiting the libraries to borrow printed resources and also prefer print resources than e-resources. The study has suggested inspiring the users to increase the usefulness of e-resources and also implement remote access service to the users.

IV. TECHNOLOGY-RELATED SERVICES PROVIDED BY DUL

IS is the basic function of a library. The library is built for performing such kinds of services. As a university library, DUL has to perform this service with more care. The main users of this library are students and teachers. User demand is most of the time related to educational or research purposes. So, they need advanced and up to date IS which is impossible without the help of TBS. Technology can keep us always updated and developed. New information and knowledge and their update can be got within a second with the help of technology. Technology can change a library's interface and promote its services from various aspects. Uses of technologies in libraries have given another level of advancement. Users can get information without the coming library physically. DUL has launched many TBS already. DUL comprises three buildings – the administrative building, the main library building, and the science library building. Each library building has some separate sections. Administrative offices, acquisition section, a book processing section, a reprographic section, a book binding section, manuscript

section, and seminar section are the part of the administrative building. University College Cork of Ireland has described the core functions of IS. This are-

- a. Maintain and develop the university’s IT infrastructure.
- b. Acquire, preserve, and provide access to relevant manuscript, printed, and electronic content.
- c. Provide services that meet user needs, and develop new services to anticipate emerging and future needs.



Fig. 1: Model range of IS for the professional association (Madden, 2008)

The use of technology in every service of the library is not a new matter. It is updating and advancing day by day. Increasing the use of ICT and other technologies are forcing users to adopt electronic habits. Demands of library users are also changing with such changes. The latest and current information and updated technology, access to ICT are the requirements of the users. Patel (2018) has described some benefits of the use of ICT in libraries which are giving below:

- a. **Speedy and easy access:** Provide speedy and easy access to users.
- b. **Remote access:** Provide remote access to users.
- c. **24/7 services:** Provides round the clock 24/7 access to users.
- d. **Access to unlimited information:** Provides access to unlimited information from different sources.
- e. **Information flexibility:** Provides information flexibility to be used by any individual increased flexibility.

Pathak (2017) provided a chart regarding developments in information activity which is given below:

1.	Generate, originate	Writing, Typing	Word processing, Text editing, Character recognition, voice recognition.
2.	Preserve, store	Manuscript, Paper print media	Electronic publishing, magnetic storage, Videotext, Tele-text, Computer disk, Rom
3.	Process	Classification, Cataloguing, Indexing	Electronic data processing, Artificial intelligence, Expert system
4.	Retrieval	Catalogs, Indexes	Database management system, Information retrieval off-line, On-line.
5.	Disseminate/communicate	List, Bibliographies, Abstracts, Hardcopies	Electronic mail, Electronic document delivery, Computer conferencing, Tele-facsimile, View data
6.	Destroy	Physical wedging	Magnetic eraser, Optical erasers, Reuse the medium

V. RESOURCES OF DUL

This resource can be accessed through the library web site of DUL. Catalog search, new catalog search, DU Journal, DU repository, Online Journals, e-books, off-campus access to e-resources, manupatra, Hein online, Thomson Reuters EIKON, SciFinder, South Asia archive, SciFinder, Oxford Art Online, IMF E-library, EBSCO discovery service, e-resources through resources have consisted of this.



Fig. 2: Resources of DUL via website

- i. **Internet service:** DUL provides good internet service. Users use the internet for searching, browsing, downloading, etc. It has a well-developed cybercenter.
- ii. **Personal laptop:** Users can use personal laptops in the library.
- iii. **Photocopy and reprography services:** Users can take a photocopy and reprographic service by paying fees.
- iv. **Automation:** DUL uses KOHA software for the automation of library services.
- v. **Repository:** Library has a repository which is known as Dhaka University Institutional Repository. It is created with the help of DSpace.
- vi. **Contact us service:** Contact us service facilitates users to contact librarians or other personnel of the library by their phone or email address and information.
- vii. **Turnitin – anti-plagiarism tool:** This tool is used to check plagiarism. It helps to avoid plagiarism.
- viii. **Information kiosk:** It is a square physical structure with a display and a computer terminal which gives information of the DUL user who passes by it. It displays library service and new arrivals. It is located beside the reference desk.
- ix. **News portal:** DUL provides news regarding the latest news related to the library and newly purchased book. DUL has many TBS which facilitate users and students to meet up their information requirement. Students and other users should be introduced to this service properly and informed how to use these services in their requirements.

VI. DATA ANALYSIS OF THE STUDY

A structured questionnaire was used and reviewed all data from those responses gathered from DU students. An initial inclusion criterion into an evidence format was adapted from MS Excel and SPSS. Several designated questions from the whole questionnaire have been explored below:

Familiar with TBS

This study was basically for the users of DUL who are mostly students, teachers, and researchers. We tried to utilize students' knowledge and perception regarding TBS. The respondents were asked if they were familiar with TBS or not. The percentage of response is demonstrated through a table below: Table 2 reveals that among the respondent's majority of them i.e. 78% is familiar with TBS whereas only 22% of students are not familiar with this service.

Familiar with TBS	Frequency	Percentage
Yes	234	78%
No	66	22%
Total	300	100%

Table 2: Familiar with TBS

Aware of TBS

Students were asked if they use the university library to know how many students are aware of TBS. They were asked two-segmented questions- yes and no. The response rate is demonstrated below through a pie chart. Among the students, 55% of students are aware of TBS whereas 45% have no idea about that (Table 3).

Aware of TBS	Frequency	Percentage
Yes	165	55%
No	135	45%
Total	300	100%

Table 3: Aware of TBS

TBS is essential for DUL

TBS is the demand of the modern library system. So, respondents were asked about their opinion on whether they think TBS is essential for the DUL. The percentage rates of the respondents were very positive. Most of them think that TBS is essential for DUL users i.e. 75% of students answered positively where 25% of them replied negatively (Figure4).



Fig. 4: TBS is essential for DUL

TBS is problematic to use or not:

As technology is developing day by day, it may seem critical to use technology-based information services as many advanced tools and services can be included. So, respondents were asked if they feel critical and problematic use of TBS. Figure 5 revealed that more than half i.e. 56% respondent answer that they feel critical to use TBS and less than half of them i.e.44% of respondents are not agreed to this statement.

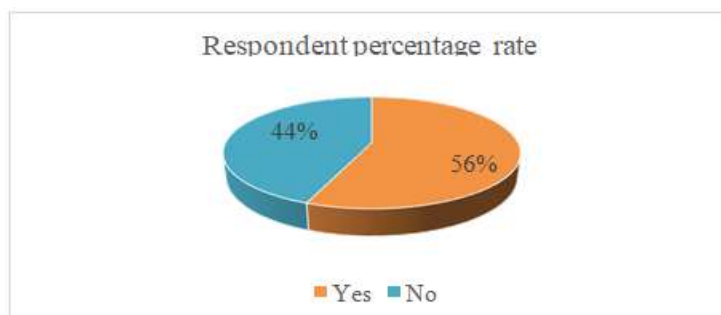


Fig.5: Response rate on TBS is critical or problematic to use

Problem while using TBS in DUL

Figure 6 shows that 24% of respondents think that outdated technology is a major problem while using TBS. is an issue for DUL which causes problems during getting information services. Among the respondents, 22% of respondents think TBS is not available due to the unavailability of the internet where 15% of them said that lack of skilled staff and infrastructure are other reasons for the problem of using TBS in DUL respectively. Rest 12% thinks an inadequate budget is responsible for not getting these services. Outdated tools and technologies also hamper students to receive services from DUL. Some students (12%) think that there are some other problems of TBS in DUL for instance lack of monitoring and accessibility of different sections in the library.

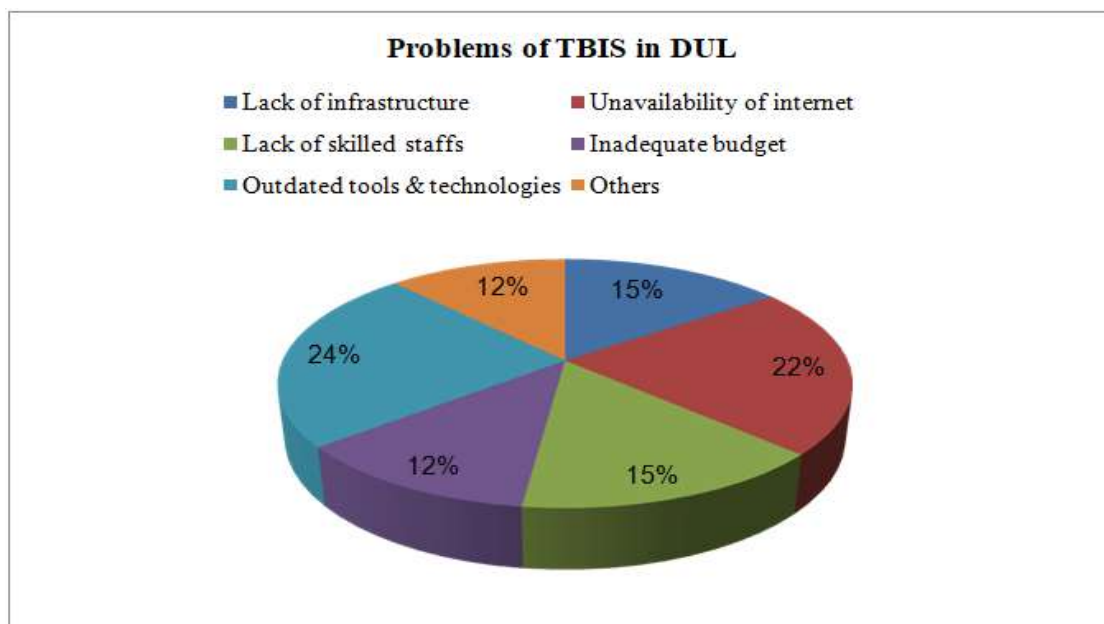


Figure 6: A response rate of problem while using TBIS in DUL

Tools for TBS:

The frequency rate of the tools for TBS proves that information services are being advanced and users prefer global use from anywhere at any time. Figure 7 identified that participants prefer Google (39%) for information services. A virtual tour (9%) can meet users demands without physically attending. Above 150 students think that social network services (26%) should be included for modern technology-based information services. Customized software (15%) is another popular service for the library and DUL also provides facilities for their use by this technology. Online encyclopedia and digital library initiation in DUL is also the demand of the respondents. This chart shows that other technology-based tools (11%) should be included for better information services.

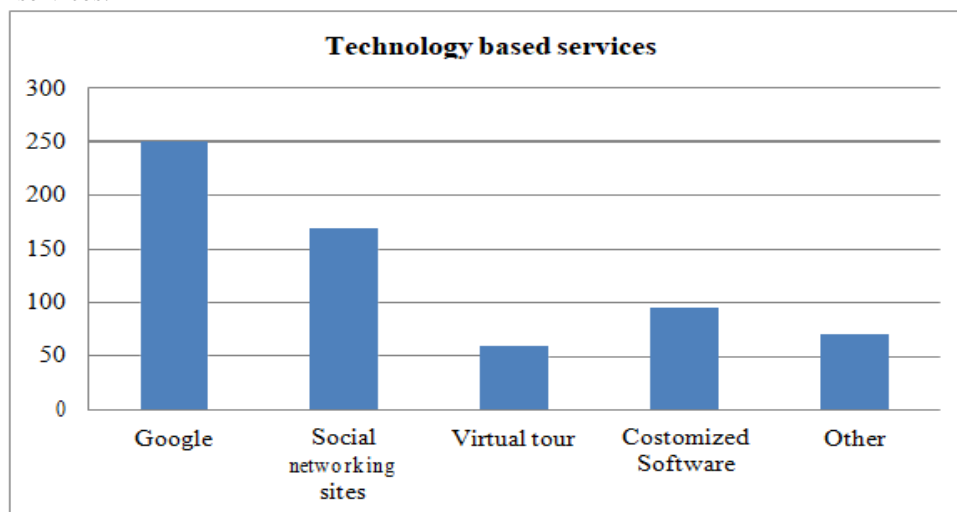


Figure 7: Frequency rate for tools for TBS

Current situation of TBS in DUL

DU library adopted different services and respondents were asked to find out the current situation of TBS. This question didn't cover everything that's why we dropped an open-ended question if anybody wants to add anything about it. Most of the students think that TBS is outdated regarding the requirement of research and higher studies. They cannot meet the need of the user according to current information technology criteria. 20% of the respondents mentioned that to make TBS more effective DUL should provide other library services. It's closely related to some services for instance library hours, accommodation, proper management and so on. The percentage rate who thinks that more promotional activities are required to spread the information regarding TBS is 15%. The students who are interested in virtual orientation their percentage rate is 10% and they think that this orientation is needed along with online training to avail TBS in DUL. Some 10% of students mentioned that a mandatory checklist for them to use TBS is required for quality education and research. They will mention initial technical information and provide detailed requirements to manage an efficient system regarding TBS (Figure8).

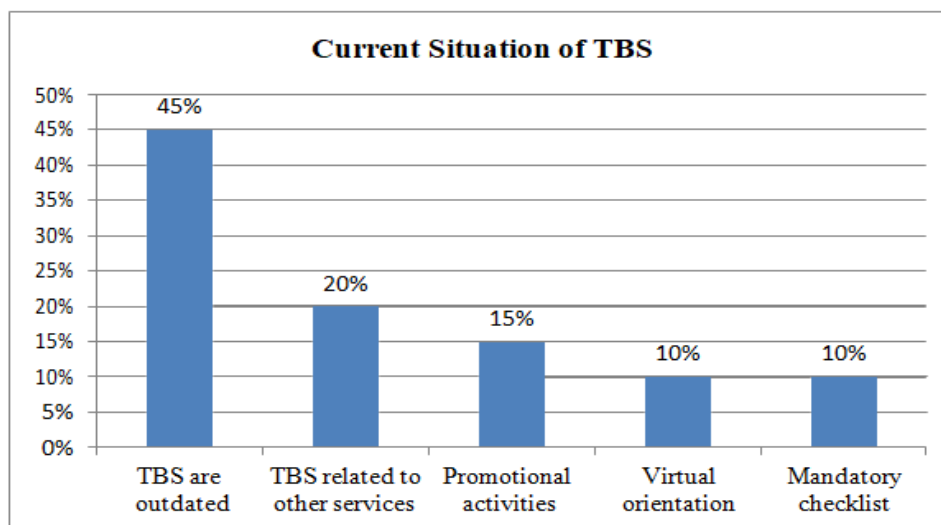


Figure 8: Percentage rate of respondent opinion regarding the current situation of TBS.

Services add-on to DUL:

Respondents were asked which services they expect to have from DUL. Some issues have been identified while students were mentioning some add-on to the existing services. Their response rate is shown in the following chart (Figure 9). Here we can see that the students are highly interested in setting up a cafeteria in the library and their percentage rate is 40%. Another 15% of students think that a computer lab can add more students to the library. In addition to the lab conference room is also necessary to enhance TBS in DUL. 20% of the respondents have given their opinion regarding the conference room. Group study room is another important add-on that DUL can renovate and 10% of students feel the necessity of this room. There are some other services that DUL can provide to make the best use of TBS, and the rate is 15%. Services can be online services, easy book lending, and scanning services.

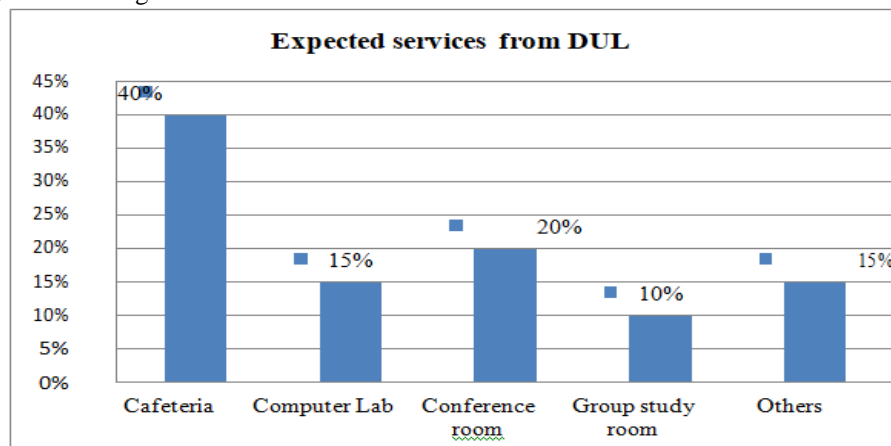


Figure 9: Respondent rate of the expected services by the students

VII. FINDINGS OF THE STUDY

This section discusses the findings on TBS from the above data analysis. Nearly all data contained determined gaps and challenges of TBS in DUL. Some multiple elements are also used to sort out the objectives and to maintain the quality of this study.

Answer of the research questions

Q1. What is the current situation of TBS in DUL?

This paper is not just a specific proposal to find out the current situation of TBS in DUL. Rather, its motive is to highlight the gaps and challenges students are facing and reflect it in this paper. While doing the research we have found that 55% of the students are aware of TBS and they feel the necessity of this service. Around 45% of the students figured out that the services which are provided by DUL, most of them are outdated. To cope up with the current technological flow, a user must need updated tools. Not only TBS but also the other services are not satisfactory. Since the library is not launching new services but they claim to have a lot of them. In that case, they need to promote their services. To reach out to the students no accurate promotional activities are taken here. The whole world is struggling to set up virtual activities of TBS and DUL has some sort of access in virtual orientation. But this is not enough based on the current development of other university libraries in Bangladesh. Outdated tools and technologies, improper management, and due to inadequate resource persons TBS have not flourished in this library.

Q2. Why are students reluctant to take TBS from DUL?

Maximum university students have this tendency to go abroad for higher studies. For this purpose, they do research and use the library to get everything easily. But it is a matter of sorrow that they don't get proper services from the library. Most of the resident students are getting internet facilities in their living place. Since the library is not a perfect place where they can avail of other necessary facilities, they are getting reluctant to visit the library and take TBS there. However, understanding the purpose of TBS is important for the student's career. Still, they are not willing to take services here due to some inconsistencies. DUL does not provide proper management, study room, well-equipped computer lab, adequate journal subscriptions, and seminar or conference room. A user always searches for their motivation to use a library. But DUL is not providing required facilities that are why students are reluctant.

Q3. How can DUL improve their status to make the students library-oriented?

DUL can launch some modern services to grab the user. Lighting is very important and the arrangement of bookshelves. This needs to be well organized and easy to access. The technology which is already being used in DUL needs to be updated according to the requirements of the students. New and emerging technologies along with proper internet connection need to be accessible for the user. For promoting TBS different distance learning programs, online seminars or effective webinars regarding the current situation of the university can be a better option to bring back the students in the library. A cafeteria, separate conference room or seminar room, group study room, and adequate spaces need to be ensured in library building. DUL has scope to utilize the spare spaces of the second and third floor of library building. It has already reading room but no proper sitting arrangement and the environment is not healthy for the students. DUL needs to ensure hygiene for the students, for instance, the water supply and other facilities are very important. This is how DUL can make the students library-oriented. Once students are coming to the library, they will explore the services. TBS will become the priority to them considering the current requirement of technology and the research purpose of the user.

VIII. LIMITATIONS OF THE STUDY

The sample was selected among students of DU. DUL users are not only students. So, other users were needed to be included and the number of samples was limited. Students have a lack of knowledge in some cases to comment on different tools and techniques of TBS. Many students were not aware of TBS and so they were not comforted to give information regarding their use of TBS.

IX. CONCLUSION

From the study, it is evident that TBS has great influence over university libraries. Academic libraries are more eager to adopt technology for serving their users according to their information requirements. Present technologies have transformed the scenery of different types of libraries and their users. To satisfy the requirements of library users, it is therefore suggested that all types of libraries should reshape their structure and their service model design to execute to the extreme and attain their essential obligation. (Shonhe & Jain, 2019). University libraries have to provide a lot of information regarding content, article, journal, etc. to fulfill the information requirement of students, teachers, researchers, staff, etc. As the University of Dhaka is a top-level public university of Bangladesh, DUL has to provide information and resources for higher education, research, daily academic need, and so on. The library is also being updated day by day. The use of technology is flourishing in every section. The study revealed that the majority of the students (75%) think that TBS is

essential for DUL. The study also established that they have outdated technology (24%) and the unavailability of the internet (22%) is the challenge for proper use of TBS in DUL. Finally, the paper suggested that TBS has a positive effect on DUL and its user and also reveals its weakness if any.

X. ACKNOWLEDGMENT

We acknowledge the contributions of the students who took part in this research and provided their valuable time and effort. The authors greatly benefitted from the help of library officers and library users of DUL. We also feel grateful to all authors and national and international publications whose work we used in our article and made the research possible.

Conflicts of interest: There is no conflict of interest.

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