

EXAMING THE RESEARCH LANDSCAPE AND IDENTIFYING GAPS IN DIGITAL REFERENCE SERVICES IN SRI LANKAN ACADEMIC LIBRARIES: INSIGHTS FROM LITERATURE

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Abstract

Digital Reference Service (DRS) is generally identified as the provision of online mediated reference services by specialized personnel using the internet and computer technologies to communicate with the users and the staff without being physically present at the libraries. The main objective of this study is to identify the core areas discussed in the literature regarding Digital Reference Services and the research gap in the context of Sri Lankan academic libraries. The Web of Science, Emerald, and Google Scholar databases were searched with the identified keyword combinations to achieve this purpose, and the study included 39 studies selected from a total of 788 articles by following the methodology set out in the PRISMA statement. These 39 articles were selected as the primary dataset for the research, and the researchers have followed the review of the studies method to obtain the results. The study is qualitative in nature. Data gathered was analyzed using the frequency of the themes, and it found that there were no research studies conducted on digital reference services in Sri Lanka that mainly discussed reference services in general. Hence, this study recommends conducting studies on digital reference services to cater to the demands of net generation users by minimizing the challenges identified through the literature. It will be most important as a proactive decision when facing pandemic situations like COVID-19 as a readiness approach.

Keywords: Digital Reference Services, Qualitative research, Sri Lanka

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Introduction

Libraries are now facing the challenge of changing concepts of the role and the place of libraries in this era. Further, obtaining information is a right of all humankind, and it can be gathered not only from books but also from various sources, methods, and forms. Due to the COVID-19 pandemic, patrons have some restrictions to attend physically for reference works at the libraries. Hence, patrons and librarians searched for opportunities to utilize the resources without limiting the information needs during the period. Hence, librarians identified Digital Reference Services (DRS) as the answer for these smart problems to cater to the requirements of Generation Z. DRS is the provision of human intermediated service to users over a digital network (Khan et al., 2015).

Further, Uutoni (2018) defined *Digital reference services* as "Internet-based question-and-answer services that connect users with individuals who possess specialized subject or skills expertise" (p.342). Since libraries are service-oriented organizations, adopting digital technologies will provide the proper solutions for physical barriers to utilizing library resources. Hence, Digital Reference Services (DRS) have greater importance.

Tella and Soluoku (2016) elaborated on the trends in the digital environment related to libraries and their services. They stated that the new technology has changed the librarian from a person who meets patrons at the location library, providing access when the library operates at its working hours to a person who is always connected and providing library services without concern about the location time and the formats of the materials.

It is noted that there are plenty of discussions on the evaluation of libraries its resources and services Das (2015), precisely discussed this defining the library as original collection of books organized collection of books journals and other sources of recorded information he stated that the libraries are equipped with indexes which directs users to the relevant encyclopedias references and other information sources with the introduction of digital contents library are having contents such as CD's DVD's and online databases with that the traditional role of librarians which the intermediate between information sources and the pattern modified that stressed that the library is oh an efficient instrument which make available limited set of relevant information out of universe of knowledge library act as the filter for providing the authentic information for the users which are relevant and with required quality he has discussed that all library materials are may not belongs to a particular library where it can access via consortia basis or can be shared between the libraries somehow library is providing such services either free of charge or for a minimum amount of cost to its users. Further, he discussed the value addition of the products and services of the libraries. He stated that bibliographic creations, indexing, and the creation of systems help add value to the library, especially mentioning that reference services have a remarkable place as one of the forms of value addition to the libraries.

Bandyopadhyay and Boyd-Byrnes (2016) highlighted that information needs and expectations have gradually changed in numerous ways, and libraries must change their way of delivering their services must be changed.

Further to the above Greenberg and Bar-Ilan (2015) pointed out that due to the rapid technological developments, 21st century patrons tend to use online services to fulfill their information needs. However, out of all the services provided, digital reference services play a more vital role than face-to-face reference services.

Research problem

During the COVID-19 pandemic, almost all parts of the country were shut down, and everyone stayed home. During this period, the library also closed, and many safety measures were implemented for the well-being and safety of the employees. At the same time, almost all the resources became idle due to the barriers to physically attending to the services. Somehow, when the situation became normal, many sectors shifted to online or virtual modes, including libraries. Since libraries are service-oriented organizations, almost all librarians have to play the role of reference librarian in an online setting. At that point, the library community, who were not ready to provide their service through online modes, faced difficulties, and ICT literacy was a significant barrier for them. Hence, this study has been conducted to identify such circumstances in existing literature in the global context and to identify the research gap regarding DRS in the Sri Lankan library sector.

Objectives

The study's main objective is to review the studies on Digital Reference Services in Academic Libraries. To achieve the main objective, it was divided into the following sub-objectives.

1. To identify the forms of Digital Reference Services
2. To identify the challenges associated with Digital Reference Services
3. To identify the research gap in the field of Digital Reference Services in Sri Lanka

Research questions

To achieve the above research questions author has derived the following research questions.

1. What are the various types or models of Digital Reference Services implemented in libraries?
2. What specific challenges or obstacles are commonly encountered in the implementation of Digital Reference Services?
3. What specific areas or aspects within the realm of Digital Reference Services lack sufficient exploration or research focus within the context of Sri Lanka?

Methodology

Keywords and Search Strategy

First, the author reviewed the literature, found common keywords used in digital reference services worldwide, and screened keywords based on the highest frequency. The author has developed a search query based on these keywords. The same search query was adopted to three databases depending on the features provided in each database.

Emerald Database Query used

(content-type:article) AND (title:"Smart Technologies" OR (title:"Online Service") OR (title:"Web Based") OR (title:"Virtual Reference Service") OR (title:"Digital Reference Service") OR (title:"Web 2.0") OR (title:"Digital Technologies") OR (title:"Electronic Reference Service") AND (title:"University") AND (title:"Library"). Researchers have selected only peer-reviewed research articles among the selected articles from the results, relevancy, library as a location for the study, publication year should be after 2015, and reference service as a key theme within the study. These Omission criteria were used to filter articles for the study.

Databases and Resources

This research is mainly based on previous literature, where the author purposely selected three databases. They were Web of Science, Google Scholar, and Emerald databases. For the preliminary

study, the author has accessed local databases such as SLJOL to incorporate content related to the Sri Lankan context.

Systematic Literature Search

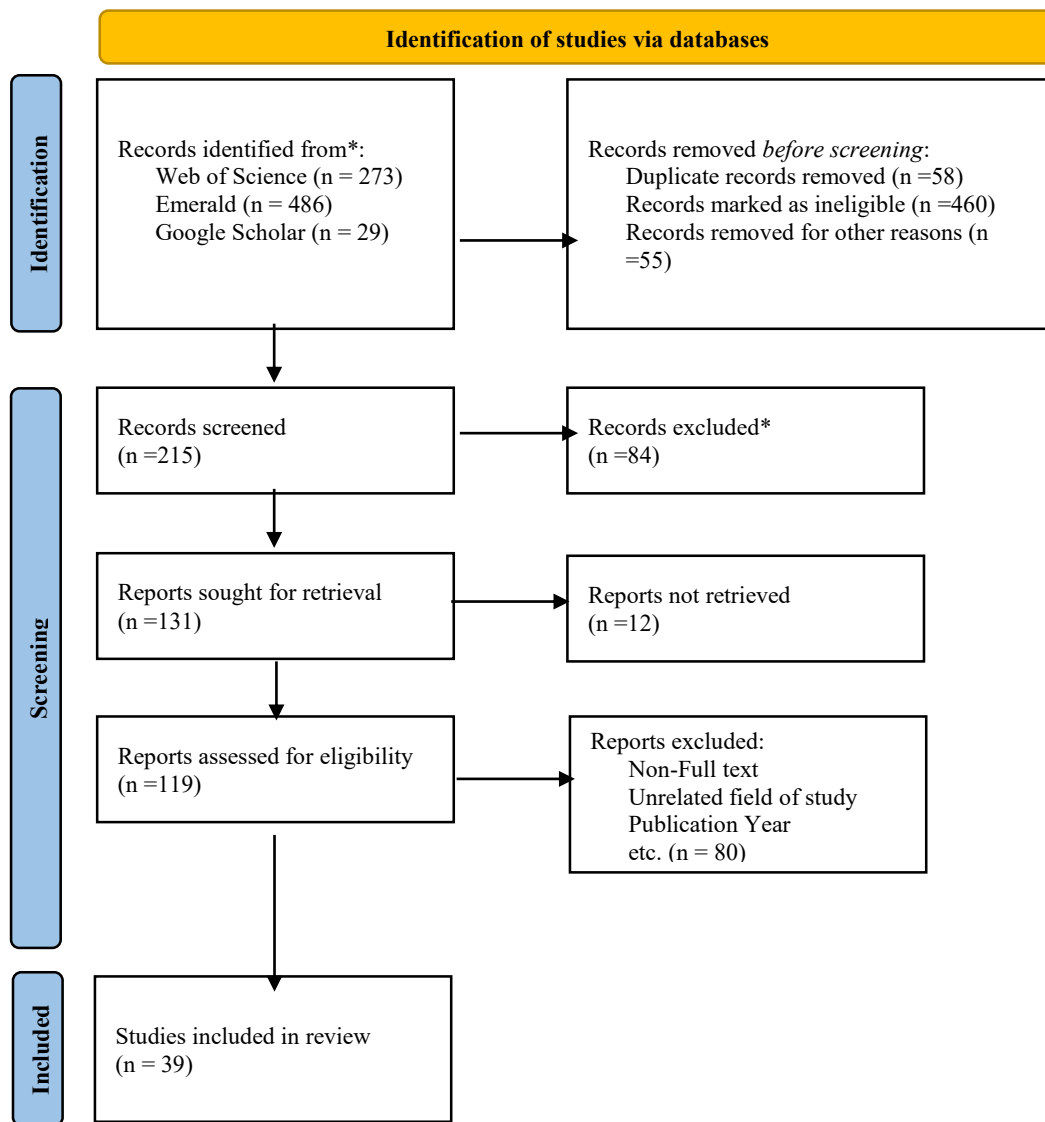


Figure 2. PRISMA Statement

*Excluded due to irrelevant

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

Article Selection and Data Analysis

Based on this search query, the author received 62 articles for the study altogether. These results are then screened again using the omission criteria defined earlier. Studies related to sectors other than

universities and higher education centers, book chapters, short communications, and studies related to education reforms were used as omission criteria. Priority has been given to the WOS and Emerald databases when keeping the articles within separate databases due to their reputation and authenticity. To avoid duplicates, it has selected 47 articles for this review, and the author has used 39 articles for this study. These articles were then used as the sample for the study and used to achieve the objectives derived.

Synthesis and Identifying Research Gaps

Based on the themes listed in Table 1 it was then categorized and summarized during this study. The main themes were then compared with the local content to identify the research gap for developing Digital Reference Services in Sri Lanka. When identifying the research gap, it was considered whether such studies were carried out in the local context, and if yes, what are the fields, related themes, and extent that the study was carried out.

Results and Discussion

Table 1. depicted the core themes identified in the selected articles within the range defined. Five main themes were analyzed, and two out of five themes were discussed in this study.

Table 1. Summary of Core Themes and Articles Reviewed

	Emerald	Google Scholar	Web of Science	Total
DRS Infrastructure	2	0	1	3
ICT skills on DRS	1	0	3	4
Forms of DRS	6	1	14	21
Challenges on DRS	1	1	13	15
User Perspectives on DRS	3	1	11	15

What are the Forms of Digital Reference Services existing in other libraries?

According to Bandyopadhyay and Boyd-Byrnes (2016), many academic libraries have face-to-face reference services of a good standard and telephone conversations, email reference, chat services, text messaging, and audio and video conferencing have been used to provide digital reference services in their review paper. Further, they have highlighted that Long Island University has introduced a DRS called Book-A-Librarian (BAL), a customized reference assistance through instant messaging and links through web portals. There, they shared research articles and information for most complex research studies, and a dedicated staff member was assigned to follow up on the process. The library website also has relevant forms and links to provide smooth service for the patrons. According to the study, BAL service has a high demand and is busiest during critical times in the semester. Therefore, reference librarians must dedicate much time to focusing on this service. Hence, digital reference services provided an alternative or another lifeline for the patrons who preferred to work offsite.

In their research, Bandyopadhyay and Boyd-Byrnes (2016) mentioned Morris Library at Southern Illinois University and their digital reference through Instant Messaging techniques. Users were aware and rated speed, anonymity, and convenience as top-notch benefits they were experiencing through the service. Due to the number of working hours, the inability of the responding librarians to show the

requested resources directly, and connecting issues with a more significant number of people online, users were not happy about the service. Comparatively, Adelphi University telephone conversations as a digital reference service were discussed. However, it was mentioned that the service needed to follow up repeatedly, requiring many enhancements for smooth functioning for remote users.

Pun (2015) stated that innovative elements for digital reference services, such as outreach programming and gamification, can be used for teaching and learning while extending libraries' physical collections in virtual modes. They used the WeChat application, which prompted them to experience the new applications for a better experience. Further, they mentioned that via the WeChat application, they can direct the users to general answers without delays if they do not need rigorous and methodical responses for the queries prompted. So customer satisfaction will be enhanced. He stressed that these innovative tools would enable libraries to enhance their services and promote libraries in virtual settings.

Tella and Oladapo (2016) discussed the library website as a digital reference service provider. He mentioned that the library website will provide the gateway to library resources, which provides remote access to the library databases and other resources. They compared South African and Nigerian library websites and mentioned that South African libraries have incorporated many Web 2.0 features that provide promising services to their patrons. Therefore, they highlighted the potential of having such an interface to promote library services in the current context. Further, he stressed that to get feedback for the service provided and to stay connected with the users, they have developed a blog, and via that, they can communicate new resources with the patrons.

Zhang et al. (2016) discussed the importance of having mobile applications for libraries and sharing information among users in this rapidly changing mobile world. They stressed that the demand for mobile applications has dramatically increased during the period, and it is time for libraries to explore new avenues with the development of mobile applications for the library as a digital reference service. They have discussed the library mobile applications from the developers' and users' perspectives. As discussed in this study, quality maintenance, efficiency, and compatibility were discussed as key parameters when utilizing the mobile application. Further, he mentioned that library applications differ from mobile commerce applications since library applications are not profit-oriented, where they satisfy the patrons or users by providing a better service.

Khobragade and Lihitkar (2016) discussed the collaborative digital reference services (CDRS), which function via the Library of Congress. He mentioned that CDRS is interconnected with museums, libraries, consortia, etc., for ask-a-service uses in worldwide help desk systems. In this study, the authors studied the awareness of digital reference services provided and obtained that 79% are aware of the services, whereas the majority mentioned that they are very useful for their research activities. Almost 68% of the respondents are satisfied with the CDRS and the other digital reference services provided by the IIT libraries in India.

In summary, many of the libraries use library website as a digital reference service gateway, instant messaging, chat services, library mobile applications, ask a librarian/ BAL, CDRS, email referencing, text messaging, audio and video conferencing, and telephone conversations as digital reference services around the world.

What are the Challenges Incorporated with Digital Reference Services?

Technological issues

Akwang (2021) stressed that the role of librarians and libraries has changed. New technologies such as augmented reality big data, Quick Response Codes, and artificial intelligence are taking over library services. Though the technologies have evolved with time, the author stressed that librarians are using these technologies for social networking and profile publicity. Motivation, ICT expertise, and weak infrastructure facilities have been identified as potential impacts for the general use of new technologies rather than professional purposes. The author has recommended going for an alternative power supply, continuous training facilities, re-training of librarians, developing policies to guide stakeholders, and application of Web 2.0 tools to overcome such challenges through the study.

Khan and Bhatti (2018) stated that librarians must learn Semantic web technologies, languages, and modern technologies to offer web-based services to their patrons. Semantic web technologies provide meaningful ways of information for working with computers and people. Further, they highlighted that while enabling interoperability among systems, librarians must develop web-friendly library catalogs and metadata systems for better and more efficient services to the tech-savvy generation. In order to overcome these challenges, the authors recommended obtaining the help of Semantic assistant agents in making digital libraries to structure the relevant metadata in an organized manner. Following the methods, librarians can adopt best practices to improve human-computer interaction.

Many of the resources became idle and less used due to the librarians' poor infrastructure and poor digital competencies. It is timely and important to study reference services provided by Sri Lankan University Libraries since there is a trend in libraries to move forward with new technologies (Thusitha Kumari, 2009). The author has elaborated that resource utilization will increase if the awareness of reference services is increased and further confirmed that the importance of employing reference librarians, reference inquiry desks, and induction programs for directing users to reference services will be an added advantage to popularizing reference services in Sri Lankan academic libraries.

Organizational issues

Radford et al. (2016) identified accessibility issues, library organizational structure-related issues, and restrictions on physical collections as significant challenges in providing digital reference services in academic libraries. The authors confirmed that increasing the collaboration between the librarianships and harnessing a better institutional structure and culture for flexible communication deliveries will mitigate these issues related to digital reference services.

Santosh (2017) discussed major challenges identified through his study, such as lack of incentives, poor institutional support, insufficient resource availability, poor training opportunities, and accessibility issues. The author suggested incorporating both intrinsic and extrinsic motivators, financial and infrastructural resource management, and improving the collaborative and interactive opportunities provided through Web 2.0 technologies as a solution for addressing the challenges discussed.

User-related issues

In his study, Uutoni (2018) mentioned that maintaining digital reference services has several challenges. From the librarians' side, when there were no reference interviews, they could not identify the questions promptly. From the user side, providing quality service on time and not obtaining the proper answers were discussed as challenges in digital reference services. Dealing with web forms such as DRS will take a longer response time compared to face-to-face traditional reference service since it is not a real-time service. He elaborated on the scenarios if the user query is not clear or complicated when providing service over the telephone, email, video conferencing, etc., and it will take more than 24 hours or longer to provide prompt answers to the requested user. Again, in his study, he mentioned that librarians cannot

identify the tone, gestures, and expressions like clues via email or web forms. Therefore, the reference request may be misinterpreted. That will lead to a challenge for the librarians when responding, where real-time chat services and videoconferencing will reduce these issues. He has concluded that insufficient support from some librarians, bandwidth issues, and server issues are challenges when providing digital reference services. As a remedial measure to the above, the importance of marketing digital reference services, conducting user training programs, designing step-by-step guides as tutorials for the users, and searching electronic resources through the systems or via subject librarians have been suggested. Ranaweera (2023) also stressed the importance of having a subject liaison librarian service to cater to the ever-growing user demands in the technological and informational aspects of the Sri Lankan context.

Khan et al. (2017) stressed that librarians in developing countries could adopt digital reference services better. The student community and teaching staff must be aware of digital reference services. Outreach programs are essential to conducting to make them aware. Further, he stated that in Pakistan, lack of technology infrastructure, innovations, financial issues, lack of interest, poor motivation, and poor knowledge of online services were identified as major challenges associated with digital reference services.

Uutoni (2018) further focused on librarians' challenges and stated that librarians needed training to work with people in digital spaces, manage information sources, keep track of records, etc. Some librarians identified these topics as significant challenges when providing their patrons with a quality digital reference service. Also, his study highlighted that digital reference services should be indicated in the librarian's job descriptions as a mandatory service.

According to the above studies, challenges for digital reference services can be identified in crucial areas. Challenges related to internet and bandwidth problems. Poor infrastructure facilities, poor support from mother organizations, training and awareness-related issues, leadership and organizational barriers, access to the physical collections, and librarians' inability to welcome new technologies. By addressing these challenges, digital reference services can be uplifted to the next level, matching the current trends in user communities.

What is the research gap in the field of Digital Reference Services in Sri Lanka?

Regarding the Sri Lankan context, referencing services function well at government university libraries. Due to the COVID-19 pandemic, many users use digital referencing services, and library information professionals use them to extend their service over digital networks. Therefore, the digital reference service is much more popular, and other than the reference librarian, almost all the librarians extend their services towards the digital. Many local researchers have conducted general studies on reference services as a category in user satisfaction surveys, where no study has been found specifically on digital reference services. Global trends in digital reference services are more towards collaborative services with the help of the newest web technologies. Hence, librarians must be aware of these trends to fulfill the growing concerns and demands of the modern tech-savvy generation.

Ranasinghe (2012) stated that modern technologies have changed library reference services, and new developments have begun with changing social needs. Digital reference services have become one of the key services of the library with the involvement of ICT facilities. The author has elaborated on different types of digital reference services worldwide yet less discussed the contents in the local context. So, it is essential to share the current developments in the existing academic libraries in Sri Lanka.

Though there are studies conducted generally addressing the reference service as a service in the library, there is a considerable gap in the field of digital reference services in Sri Lankan academic libraries context specifically since this is a pivotal function in the future of libraries of Sri Lanka. Hence, conducting research specifically based on the digital reference service in Sri Lanka is very important to obtain the current status and enhance this service.

Conclusion

In this study, the authors have discussed three key areas in the context of digital reference services in academic libraries in the global context and compared the results with the local context to identify the current gap in the literature to enhance digital reference services in Sri Lanka. Forms of DRS identified our library website as a DRS gateway, instant messaging, chat services, library mobile applications, ask a librarian/BAL, CDRS, email referencing, text messaging, audio and video conferencing, and telephone conversations as digital reference services worldwide. Challenges highlighted in the literature for digital reference services are internet and bandwidth problems, poor infrastructure facilities, poor support from mother organizations, training and awareness-related issues, leadership and organizational barriers, access to physical collections, and librarians' inability to welcome new technologies. It is identified that no research study has been carried out specifically in the field of digital reference services in Sri Lanka to analyze the impact, usage, or assessment of satisfaction with digital reference services in academic libraries. Considering the above, the author can conclude that it is a mandatory requirement to identify the status of Digital Reference Services in Sri Lanka. The authors can recommend suggestions to improve digital reference services in Sri Lanka, adhering to the best practices in the international arena to customize the remedial measures and incorporate them to overcome the challenges identified through this study. It will be most important as a proactive decision when facing pandemic situations like COVID-19 as a readiness approach, and by addressing these challenges, digital reference services can be uplifted to the next level, which will match the current trends in the user communities.

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